
RESSOURCES, MOBILITY, AND CULTURAL IDENTITY IN NORSE GREENLAND, VATNAHVERFI PROJECT – REPORT FROM THE FIELD WORK 2008

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CONTENTS

Introduction	6
Methods.....	8
Excavations at ruin site E64	9
Introduction.....	9
Methods	9
Plans	10
Grid system & level	10
Excavation and recording	10
Area A Churchyard.....	11
Objectives.....	11
Description of the Archaeological units	11
Graves and skeletons	14
Backfilling	16
Human material – post excavation	16
14C-analyses	17
Artefacts.....	19
Conclusion	20
Area C – The church.....	20
Objectives.....	20
Description of the Archaeological units	20
Backfilling	23
Artefacts from Area C.....	23

Conclusion	23
Midden and structural unit excavation – Area B.	24
Objectives.....	24
Method.....	24
Description of archaeological units	24
Artefacts	26
Bone remains	26
Recovery and Excavation of the bones	27
Conclusion of the midden and structural unit excavation	27
Excavations at E64 – conclusions.....	27
The Igaliku Kujalleq excavation (E66)	27
Introduction.....	27
Method.....	28
Description of test trench.....	28
Excavations at E66 – conclusions	29
The Tiimerlit excavation (E68)	29
Introduction.....	29
Method.....	30
Finds	30
Description of archaeological units	30
Artefacts	31
Steatite.....	32
Stone and flint.....	32
Metal	32
Discussion of finds.....	33
Excavations at E68, Tiimerlit - conclusion	33
The Vatnahverfi school-project	34
Introduction.....	34

Class room discussions	34
Excavations.....	34
The Vatnahverfi school-project – conclusion	35
The 2008-surveys in the Vatnahverfi Region	36
Introduction.....	36
Method.....	36
Ruins	37
0801, N60.91983°/W045.25952°:	38
0802, N60.92068°/W045.26267°:	38
0803, N60.91964°/W045.26376°:	38
0804, N60.88811°/W045.30608°:	38
0805, N60.76567°/W045.44125°:	38
0806, N60.87904°/W045.31886°:	38
0807, N60.86824°/W045.33456°:	38
0808, N60.86798°/W045.33519°:	38
0809, N60.868261°/W45.212061°:	38
0810, N60.86777°/W045.21265°:	39
0811, N60.86783°/W045.21254°:	39
0812, N60.86805°/W045.21219°:	39
0813, N60.86655°/W045.22620°:	39
0814, N60.85782°/W045.27244°:	39
0815, N60.85667°/W045.28841°:	40
0816, N60.85662°/W045.28827°:	40
0817, N60.82998°/W045.31603°:	40
0818, N60.82456°/W045.29120°:	40
0819, N60.89635°/W045.27742°:	40
0820, N60.868623°/W045.213180°:	40
0821, N60.854648°/W045.313083°:	41

0823, N60.846872°/W045.289918°:.....	42
0824, N60.919431°/W045.257957°:.....	43
0825, N60.922227°/W045.257999°:.....	43
0827, N60.920547°/045.253578°:	43
E64 ruin 12, N60.919457°/045.256377°:	44
DNA-testing in the Vatnahverfi Region.....	45
Introduction.....	45
Objective	45
Sampling and methods.....	45
Location/description of DNA-Trenches	45
Figure 33	46
Ruin site E47 – Igaliku / Gardar	46
Ruin site E64.....	46
Ruin site E66.....	47
Ruin site E68.....	47
Ruin site E69.....	47
Ruin site E71.....	47
Ruin site E164.....	47
Ruin site E165.....	47
Ruin site E169.....	47
Ruin site E209.....	47
Coring at sites in the Vatnahverfi Region	48
Introduction.....	48
Ø66 Dwelling located on Eastern side of the stream at Igaliku Kujalleq (N 60.533340, W 45.160067)	48
Ø 67 (N 60.85399141, W 45.30485761)	49
Ø 69 Timerliit (N 60.85399141, W 45.30485761)	50
Ø70 – <i>the Mountain Farm</i> (N 60.504697, W 45.172999)	51
Ø72 (N 60.82618352, W 45.31681356)	52

Ø75 Taseq Ammalortoq (N 60.504872, W 45.132113).....	52
Ø168 Zucerip Tasia (N 60.521623, W 45.124248)	54
Ø169 Amikitap Tasia(N 60.88492256, W 45.30997611)	54
Coring at sites in the Vatnahverfi Region - Conclusions	55
Field work 2008 – conclusion	56
List of References.....	57

INTRODUCTION

Jette Arneborg

The summer of 2008 was the fourth season with archaeological field work in the Vatnahverfi region in the Norse Eastern Settlement.

The main purpose of the project is to investigate and discuss cultural, social and economic strategies of the Norse Greenland settlement from *landnam* in the late 980'ties to depopulation in the later part of the 15th Century with Vatnahverfi as case study area.

Knowledge of the culture landscape are prerequisite for the project and high resolution and GPS surveys of ruins and ruin groups were initiated already in 2005 and have continued ever since.

In 2005 and 2006 Niels Algreen Møller and Christian Koch Madsen surveyed parts of the large area measuring ruin groups with GPS (Møller & Madsen 2006 and Møller & Madsen 2007), and in 2007 Møller and Madsen headed continued surveys and GPS measurements in Vatnahverfi along with archaeological investigations at the small churches at the ruin groups E64 and E78. Konrad Smiarowski joined the fieldwork in 2007 especially focussing on economy, middens and midden excavations. (Møller *et al.* 2007; Smiarowski 2009).

In 2008 the strategy was to focus on single sites in Vatnahverfi and the ruin groups E64 and E66 were selected for archaeological excavations. Both ruin groups are situated in Kujalleq, an eastern branch of Igaliku fjord. Both sites had churches connected. The church at E64 was apparently built at *landnam* and abolished after some centuries whereas the church at E66 seems to have been in use up to depopulation. We do not know when the first church at E66 was established. As churches connected to farms are used as indicators of wealth the objective of the excavations was to make comparisons between the two sites.

At E64 both the church, church yard and the midden in front of the dwelling were the target for excavations. At E66 the midden was chosen for investigations. The conditions here were however more complicated than foreseen, and the excavations at E66 therefore had to be postponed. Midden excavations were carried out at E68 instead (Figure 1).

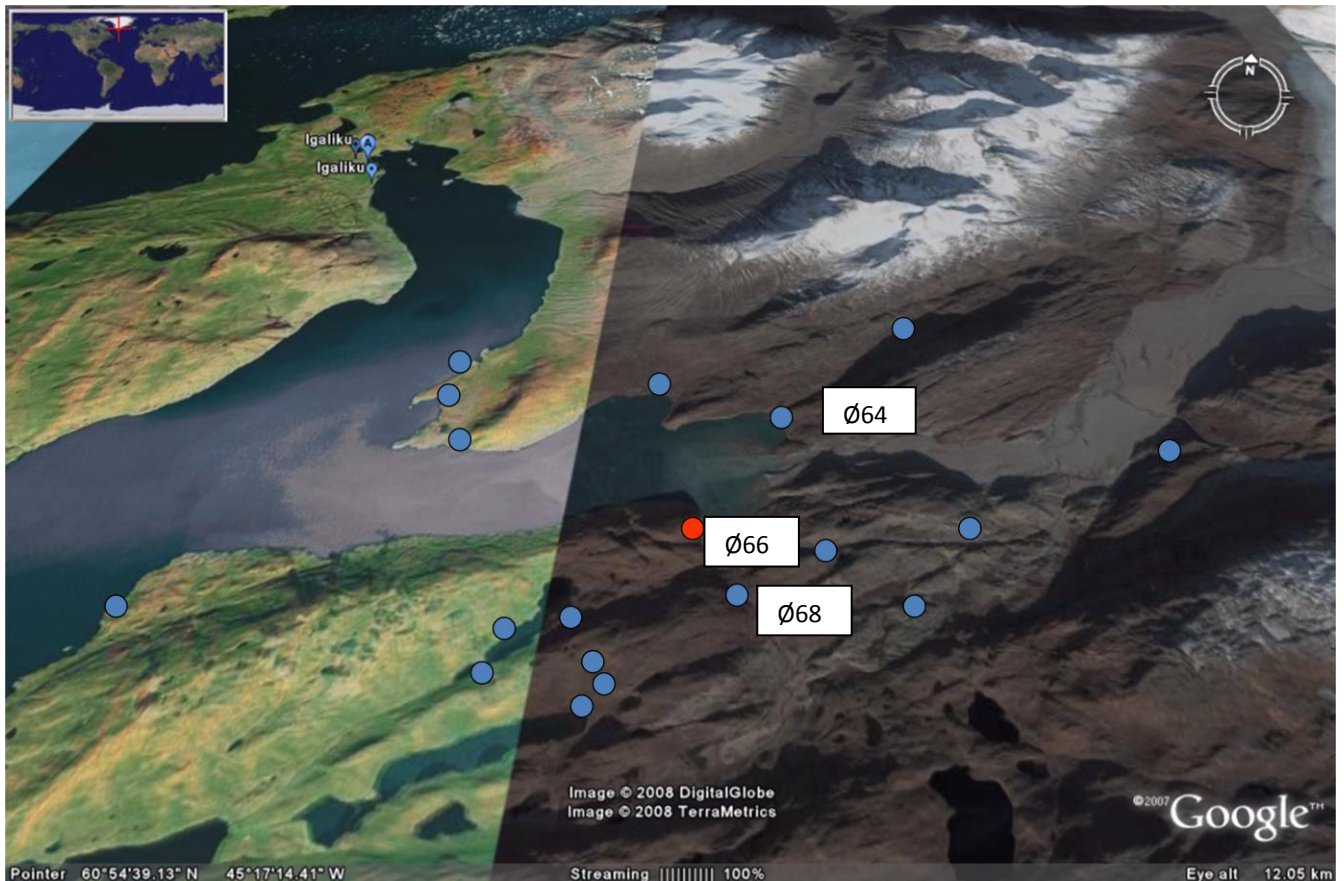


Figure 1.

The field work took place from the 15th of July until the 25th of August. During these 6 weeks there were a various number of participants. Konrad Smiarowski, Francis Feeley, Aaron Kendall (CUNY Graduate School and University Center) and Christian Koch Madsen (University of Copenhagen) participated the entire time. Caroline Polke Paulsen (University of Aarhus) participated from 15th of July until 2nd of August. Martin Appelt and Jette Arneborg (both National Museum of Denmark) participated from the 26th of July until the 25th of August. Martin Bay Hebsgaard (University of Copenhagen) participated from the 19th of July to the 2nd of August to collect DNA-samples from primarily pens and enclosures in the surrounding area of Igaliku Kujalleq. Catherine Jessen (Geological Survey of Denmark and Greenland) participated from the 12th of August to the 18th along with Uffe Wilken (Danish Polar Centre) from the 17th of August to the 20th of August.

Caroline Polke Paulsen was field director at E64. When Caroline left Jette Arneborg took over. Konrad Smiarowski was responsible for the midden exactions and Christian Koch Madsen was responsible for the further surveys in Vatnahverfi especially focussing on pens and enclosures.

Jette Arneborg is head of the project.

The excavations, surveys and registrations were carried out as a cooperative project between The National Museum of Denmark, The Greenland National Museum & Archives, North Atlantic Biocultural Organization (NABO) and CUNY Graduate School and University Center.



Figure 2. Martin A., Christian, Jette, Frank, Aaron and Konrad. An August evening at E64. In the box Caroline

The project was made possible by the generous support of the Commission for Scientific Research in Greenland (KVUG), CUNY Northern Science & Education Center, the UK Leverhulme Trust, grants (0527732, 0732327, 0352596, 0234383), the US National Science Foundation, Office of Polar Programs (Arctic Social Sciences Program), Archaeology Program, International Polar Year Program, and Human and Social Dimensions of Global Change Program).

Special thanks are to the sheep farmers and their families in Vatnahverfi - especially Andala & Soffianguaq Lund and Arnaq & Sikuu Motzfeldt. Jeppe Møhl and Hans Kapel are thanked for invaluable help. Also thanks to CH2M HILL Polar Services who provided invaluable logistic support. Last but not least thanks to all the participants in the field for doing a splendid job.

All documentation from the excavations is filed at the Greenland National Museum & Archives in Nuuk.

METHODS

Caroline Polke Paulsen & Konrad Smiarowski

The following is a data structure report of the international archaeological and zooarchaeological project at Innoqquasaq (60V2-0IV-612 / E64), Igaliku Kujalleq (60V2-0IV-611 / E66), and Tiimerlit (60V2-0IV-609 / E68), along with presentations from DNA-sampling of enclosures and pens at Timerliit. Descriptions for the selected methodology are included along with the descriptions of the excavations and surveys. Lists of everything that was recorded during the fieldwork, i.e. artefacts, samples, archaeological units are filed in National Museum in Nuuk. Within this data structure report is also included the preliminary interpretations of the data and a discussion of future work in this region. The main aim is to present the work and data from the fieldwork on such a level that it is accessible for scholars and laymen including a detailed description of all the elements of the project. The analysis of the data is still in progress and it is understood that the reader will not publish any of the material contained in the data structure report without the permission of the authors and project managers.

Through out the report the Danish National Museum numbering of Norse sites will be used. These numbers were first introduced in the 1894 by Daniel Bruun (1896) and were up until 1982 the only numbering of the sites. There will be referred to numbers such as E64, E66 and E68 (in Danish: Ø64, Ø66 and Ø68). Today these sites also have a number in the official Greenlandic Heritage Site Database referring to the geographical survey map they are located on followed by an individual number such as 60V2-01V-612 for E64, 612 being the site code for the E64 site and 60V2-01V referring to the map.

The report is structured in a way so that each individual site and/or trenches at the sites can be read separately. Only the references at the back are covering all parts of the report.

EXCAVATIONS AT RUIN SITE E64

INTRODUCTION

Jette Arneborg

Ruins at E64 were very briefly mentioned in Grønlands Historiske Mindesmærker in 1845. Laconically it is stated that the ruins do not deserve to be mentioned additionally (GHM III, 811). Gustav Holm left out the site when he visited the area in 1880, whereas Daniel Bruun recorded 12 ruins when he visited E64 in 1893 (Bruun 1895:366ff.) (Figure 3).

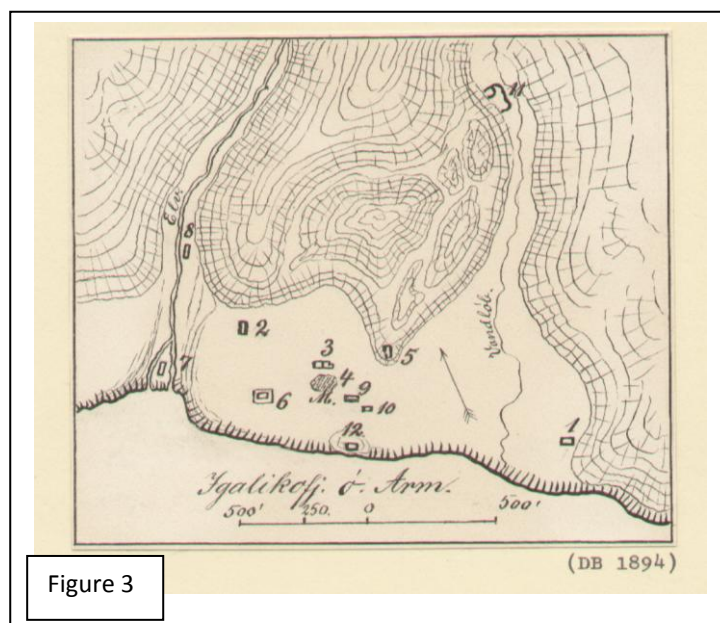


Figure 3

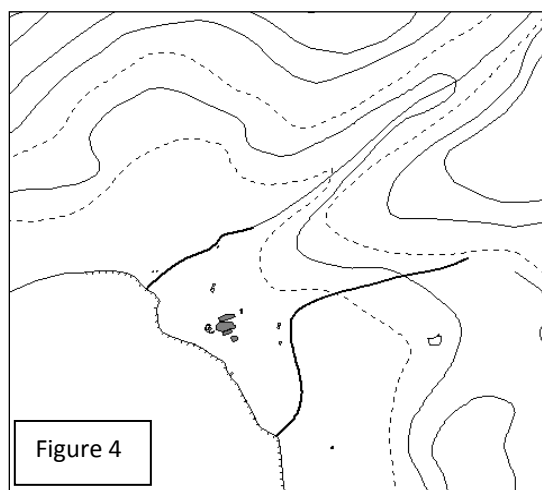


Figure 4

In this project 16 ruins have been GPS surveyed at E64 (Møller & Madsen 2006) (figure 4).

The church (ruin no. 6) was first recognized by C.L. Vebæk in 1962 (Vebæk 1991:9). The church belongs to the group of small churches surrounded by a circular church yard dyke that have been recorded mainly in the Tunulliarfik fjord. The most prominent of these churches are *Tjodhildes church* in Qassiarsuk / *Brattahlid*.

METHODS

Caroline Polke Paulsen & Jette Arneborg

In order to gain full understanding of not just the Norse activities on the site, but also any activity at the site that might have been there at any time everything prior to the excavation were treated as part of the site formation process. Everything, also earlier archaeological trenches will in this way be registered as any other archaeological unit

Three areas were excavated:

Area A. Church yard (ruin no. 6)

Area B. Midden in front of the supposed dwelling of the farm (ruin no. 4)

Area C. The church (ruin no. 6)

PLANS

The plans and sections were kept in 1:20cm on A3 sheets, and area A, B and C were measured into the same grid system. The plans in Area B were all aligned on the filed boundary with Plan 3 and 4 showing the grid points in the over all system.

All plans were numbered following the Greenland National Museum with the file number (KNK 2655) and serial number with a *t* (for drawing in Danish) (i.e. KNK 2655 t1; KNK 2655 t2 etc.).

Note: all plans from 2008 are numbered from t1 as are the plans from 2007. Because of that all 2007-plans are also provided with year.

GRID SYSTEM & LEVEL

The grid system was identical to the 2007-system (Møller *et al.*, 2007:22), however displaced 2 metres on the horizontal Y-aksis. The 2007-grid system was placed south of the church yard dyke N-S (magnetic) with the koordinates 500/500. The 2007 trench had the koordinates SW499/502 (2008 grid: 499/500), SE 500/502 (2008 grid: 500/500), NW 499/510 and NE 500/510. The 2008 koordinates.

In the first part of the excavation the height measurements of the excavated started with taking the daily temporary bench mark (TBM) from our fix point. The fix point used in 2007 was easily found (Møller *et al.* 2007:23), and used. All levels were then taken and written under the TBM on the plans. In the latter part of the excavation a permanent fix point were used. All levels were written on the plans, as read on the staff. Therefore the measurements on the digitized plans differ, those with a *z* in front are the calculated height measurements, and those just numbers are the numbers read directly from the staff.

EXCAVATION AND RECORDING

The methodology was test trenching with single context recording. With this recording each archaeological unit is registered as a context (deposit, cut, structure, dump etc.) and are excavated in reversed order starting with the youngest. The method seemed less suitable when excavating the intensely used area of the churchyard, area A. Here graves dug into older graves were nearly impossible to recognize before the skeleton in the grave was hit upon, and some graves were only identified with the skeleton in the grave.

All units were cleaned, photographed, planned, described level measured and finally removed. Phasing is usually used on large open area excavations to make sure the entire area is excavated on the same chronological level, and was here aimed at the chronological order in each individual trench, but with the knowledge that trenches only give us knowledge of a very limited area we are aware that the understanding of the development of the entire site is more limited and the interpretations more insecure.

Deposits from area B under the topsoil were sieved in a 4 mm mesh to collect bones, wood and artefacts. Control samples were taken from all deposits. Each sample was collected in a 5-liter bag.

The records were kept by hand in notebooks and transferred to an access database on a daily base. In the last period this was not done, and the the remaining registrations were transferred as part of the post-excavation work.

Samples were recorded according to the Greenland National Museum system with the file number (KNK 2655) and serial number with a *s* or *<>* (for sample in English) (i.e. KNK 2655 s1; KNK 2655 s2 etc.). Animal bones were recorded as samples.

Artefacts were also recorded according in the Greenland National Museum system with file number (KNK2655) and a x (i.e. KNK 2566x1; KNK 2655x2 etc.). In 2008 the x-nos. began with x101.

NOTE: In 2007 all finds including artefacts, animal bones and other samples were given x-nos.

The excavations at E64 have file number KNK 2655.

AREA A CHURCHYARD

Caroline Polke Paulsen & Jette Arneborg

OBJECTIVES

After the test excavations in 2007 (Møller *et al* 2007) the methods used were based on the results from that field season, placing the trench in direct connection with the 2007-trench. The aim was to expand the 2007-trench in order to get a full understanding of the recorded burials and possible re-burials and get as close to the building as possible to gain understanding of the building material, construction and dating of the building, and to determine the time span of use for the churchyard and possibly also the building. The trench was put so information of the churchyard dyke would be gained, and both the 2007- and 2008-trench was expanded to get information about *landnáma* layers, horizons of growth and activity phases from the area outside the churchyard in order to use it as comparative material. Also samples from the graves and skeletons were collected in order to get dating of the individual graves, and through isotope and genetic studies to get an understanding of origin of the dead, their diet and health through out the time the churchyard was in use.

DESCRIPTION OF THE ARCHAEOLOGICAL UNITS

The excavation started with locating and registering the 2007-trench in the churchyard. An expansion of the trench was put on the east side of the 2007-trench. First the topsoil was taken of both the expansion and the 2007-trench, and then the 2007-trench was emptied for backfill, referred to as Area A. This proved at some point fairly difficult since a layer of large stones and rocks were put in the middle of the backfill. Supported by the photos in the 2007-report the stones were removed as part of the backfill, and not recorded separately. All the backfill was recorded together in spite of differences through out the trench. It was hoped that with this excavation method, it would be possible, even in a small excavation as the trench to extract enough data to be able to understand the construction of the church and the dyke, and to understand the relations between the individual graves and the structures.

Unit 1 Cut. 2007-trench running north south on the south side of the church building. Cutting into churchyard dyke in south end of trench. Plan t1; t2

Unit 2 Deposit. Topsoil covering 2008-trench. Plan t1; t2; t22

Unit 4 Deposit. Backfill in [1]. Plan t1; t2

Unit 5 Cut for reburial in [1], Plan t5; t6

Unit 6 Deposit. Fill in [5], reburial, including skeleton <78>. In non-anatomical order. Plan t6.

Unit 10 Deposit. Overflowing midden. Silty, dark brown with stones – possibly mixed with collapse. Plan t11; t12; t23; t51. Identical to 2007 layer 2.

Unit 12 Deposit. Structural collapse from church building. Partly mixed with silt and gravel. Below unit 10. Plan t11; t12; t14

Unit 13 Group. Churchyard dyke. Plan t25;

Unit 14 Group. Church building.

Unit 16 Deposit. Mixed midden and turf collapse from church wall covering gravel. Plan t18

Unit 17 Deposit. Greenish, silty deposit. Grave ? Below unit 10. Plan t19.

Unit 21 Deposit. Dark grayish silt/gravel with large pieces of charcoal. Loose fill on top of gravefill. Plan t33.

Unit 22 Deposit. Similar to [21], but lighter and with larger stones. Possible gravefill, below [21]. Plan t39.

Unit 24. Windblown sediment, maybe landnáma-surface. Upon gravel. Samples #22 and #23.

Unit 31 Deposit. Brownish black. Fine sediment mixed with remains of cut up turf (structural remains from church). Stones from collapse caught by this unit. A lot of charcoal. Sealing grave [86] with skeleton <64>. Plan t33.

Unit 32 Deposit, gravefill. First recognized from level/unit 31. The surface from which it is cut could not be determined, but most probably unit 32 is below and sealed by unit 31. The fill mixed consists of white subsoil gravel mixed with charcoal. Skeleton <52>. Three upright stones (ca. 10 x 10 cm) were placed ca. 60 cm above and following the sides of the coffin. Perhaps as gravemarkers? (Plan t33). Strayfind in gravefill: human bone <53> (plan t45).

Unit 33 Deposit. Subsoil gravel (plan t33).

Unit 34 Deposit. Pale, white subsoil gravel. Below [33].

Unit 35 Deposit. Dark brown / black vegetation surface, possible landnáma surface. Plan t33

Unit 37 Deposit. Greyish yellow sandy gravel with pieces of charcoal and bones. Compact fill in a possible grave or dump. Maybe cut for common grave. Plan t39

Unit 38 Deposit. Greyish brown compact silt lens in unit 37 (?). Plan t39

Unit 39 Deposit. Dark Brown sediment. Gravel fist sized stones, lots of charcoal, bit and pieces of bones. Iron rivet. Traces of wooden coffin. Pieces of turf. Below [31]. Not documented on plan

Unit 42 Deposit. Untouched fine silt sediment below [34]. Not documented on plan.

Unit 56 Deposit. Dense and soft silty layer, varying colour from pure silty grey to dark brown with humus fraction and reddish yellow. Many modern roots. Above [10]. Plan t14

Unit 66 Deposit. Gravefill in wooden coffin containing skeleton <52>, below [32]. Plan t45

Unit 67 Cut for [22]

Unit 68 Cut for [32]

Unit 69 Cut for [66]

Unit 71 Group. Contexts from churchyard

Unit 74 Deposit. Grave and skeleton sampled as <71>

Unit 75 Deposit. Grave and cranium Cranium sampled as <70>

Unit 76 Deposit. Grave and cranium sampled as <69>. Cranium <69> secondary position. Found in the gravefill of the grave to skeleton <66>. The cranium was exposed already in 2007. Plan 2007t19

Unit 77 Deposit. Grave and skeleton sampled as <68>. Cranium <68> secondary position. Found in the gravefill of the grave to skeleton <66>. The cranium was exposed already in 2007. Plan 2007t19.

Unit 78 Deposit. Grave and hip sampled as <67>. Hip <67> secondary position. Found in the gravefill of the grave to skeleton <66>. The hip was exposed already in 2007. Plan 2007t19.

Unit 79 Deposit. Grave and skeleton sampled as <66>. Skeleton <66> was partly exposed and sampled in 2007. Plan 2007t19.

Unit 80 Deposit. Grave and skeleton sampled as <72>. Skeleton <72> buried above common grave. Cut and delimitation of grave was not recognised/not documented.

Unit 81 Deposit. Grave and skeleton sampled as <73> Common grave

Unit 82 Deposit. Grave and skeleton sampled as <74>. Common grave

Unit 83 Deposit. Grave and thigh bone sampled as <75> Presumably common grave. Only femur exposed and sampled.

Unit 84 Deposit. Grave and jaw sampled as <54>. First unearthed in 2007. Originally sampled in [32] along with other skeletons. Secondary position. Found in gravefill of grave to skeleton <66>. Plan 2007t19.

Unit 85 Deposit. Grave and skeleton sampled as <53>. Originally sampled in [32] along with other skeletons One large bone from foot, løsfund, indsamlet i gravfyld, unit 32.

Unit 86 Deposit. Grave and skeleton sampled as <64>. Plan t39; t42; t64

Unit 87 Deposit. Grave and skeleton and grave sampled as <49>. Originally sampled in [32]. Plan t42; t64.

After identification of [1] the expansion of the 2008-trench seemed obvious and [2] was removed along with [4]. Early the churchyard dyke [13] was registered in the very south end of the trench, consisting of large stones and nicely laid turf on the inside. The 1 m wide 2007-trench [1] had emptied the northern half of the dyke between the stone rows and the south end of the trench, showing the turf infill in the sections both to the south, the east and to the west. The turf infill seemed by the sections to be made of carefully laid down *strengur* turf some places and more mixed turf infill other places. An 1m expansion to the south of both the 2007-trench and the 2008-addition was made, so the entire dyke would be visible, and also possible activity phases outside the dyke could be recorded and used for comparative studies with units from the inside of the churchyard (Figure 5)



After trying to get an overall understanding of the dyke, recording of the topsoil was done before it was removed. After removal the contexts below were studied closely to find cuts for graves or any other disturbing elements. Not much was visible in the homogeny silty deposits during the long sunny days, though it was kept constantly moist. In 2007 [5] (cut for reburial 2007: grave 5) was recorded and the top of this, [6] (fill in 2007:grave 5) excavated and part of one of the top bones taken out as sample (KNK2566x11, 12 & 13). This year we excavated the entire reburial (Figure 6), to determine the completeness of the skeleton (sample #78) reburied here. In 2007 a horse Maxillae (KNK2566x27) was registered in the top of the fill of the reburial. This year we further down found a possible sheep vertebra among the humane remains. During the analyses of the humane

remains in the lab an additional sheep vertebra and 2 seal vertebrae were identified along with another fragmented non-human vertebra. Although there is a slight possibility that the fragment of a horse Maxillae from 2007 was just overlying the reburial, stemming from the backfill of the grave, the sheep bone was definitely part of the reburial, since it was placed in the middle of the non-anatomical correct bones and had a humane rib going through it.



Figure 6

It seemed that the majority of the bones were all in the reburial, except for all the minor bones, such as fingers, toes and bones from feet and hands. Almost all the missing small bones turned up in the lab. They had been carefully placed inside the cranium. The bones all had a good preservation, and also the cranium seemed intact with for instance ear bones. Of the teeth only molars were preserved – almost all incisors were missing.

The 2008-trench was excavated with the single context recording, and after removing the topsoil the surface was thoroughly cleaned. Dark areas were described and put into the plan but interpreted as part of [10] consisting of heterogenic material which could possibly be an overflowing midden from Area B at this site. Large variations in this context would therefore be accepted as local patches or lenses within the same event

often occur in midden material. In the north end the structural collapse from the church building [12] and [16], consisting of turf and varying sizes of stones had occurred before the midden started overflowing the churchyard, since the midden was lying up against the collapse, and some places in between the stones. The extension to the 2008-trench made in the northeast part also showed the overflowing midden [10] up against and in between the structural collapse [12] in the original trench and [56] in the extension of this trench.

Beside [13], the group of contexts belonging to the churchyard dyke, also a group for the church building [14] was made, and later a group for contexts in the graveyard [71] was added.

GRAVES AND SKELETONS

Jette Arneborg

Most of the skeletons were recorded in the same context which turned out to be a large common grave. The skeletal material was numbered with sample numbers, so in order to split out each individual skeleton from the context the skeletons were given context numbers as part of the post-excavation work. The context numbers around each individual skeleton was also artificially created as part of the post-excavation work in order to distinguish between the samples taken from the grave fill (Figure 7).

The turf collapse from the church building covered the actual fill in the large grave cut, and on top of that was the overflowing midden.

Skeleton <49>. Large bones from feet recognised in the N profile. May belong to a in situ grave very close to the church. The bones were misinterpreted in the field. They were recorded as stray finds apparently lying up against the cut for unit 32. This may however be a wrong conclusion since the feet may – as noted above – belong to a separate grave i.e. unit 87 (plan t42; t64.)

Skeleton <52>. Reburial, close to church. Skeletal parts placed very carefully in a wooden coffin, long bones placed east-west. The grave was not excavated in total. Ca. 60 cm above the coffin was three upright stones (ca. 10 x 10 cm) that seem to mark the eastern part of the grave. Iron nails in the coffin. Preservation of bones not too good. Only mandible, part of one arm and femur removed.

Skeleton/foot <53>. Secondary position in unit 32.

Skeleton/jaw <54>. Secondary position in gravefill of grave with skeleton <66>. First exposed in 2007. Plan 2007t19.

Skeleton <64>. Pair of badly preserved legs and feet. The grave, of which only the lower part was excavated, was recorded below unit 31. Gravefill mixed with large pieces of charcoal. Plan t39; t42. Unit 86.

Skeleton <66>. The upper part of the skeleton not excavated. Samples brought home. Exposed and sampled (x29) in 2007. Plan 2007t19.

Skeleton/hip <67>. Secondary position. Found in gravefill of the grave to skeleton <66>. Exposed in 2007, plan 2007t19.

Skeleton/Cranium <68>. Secondary position. Found in the gravefill of grave to skeleton <66>. Exposed 2007, plan 2007t19

Skeleton/Cranium <69>. Secondary position. Found in the gravefill of grave to skeleton <66>. Exposed in 2007, plan 2007t19.

Skeleton/Cranimu <70>. From mass grave. Plan t60

Skeleton <71>. From mass grave. Almost the whole skeleton removed. Feet left in grave. Plan t60.

Skeleton <72>. Intact skeleton above mass grave. Above <73>Whole skeleton removed.Plan t62

Skeleton <73>. Intact skeleton in mass grave. Cranium, left and right femur sampled. Below <72> Only cranium removed. Plan t60

Skeleton <74>. Intact skeleton in mass grave. Only cranium and femur brought home. Plant62

Skeleton/femur <75>. Only femur exposed and removed. Below skeleton <74>. Presumably in mass grave. Plan t62

Skeleton <78>. "Reburial" first recorded 2007. Almost intact skeleton, however not *in situ*. Almost all small bones from hands/feet inside cranium. All skeletal parts removed.

The skeletons 70, 71, 73, 74 all belong to to the same large mass grave and skeleton 75 below skeleton 74 also seems to belong to the grave. The large mass grave was bounded and covered by large wooden planks. The many iron nails and rivet recorded in connection to the grave indicate that either the dead had been buried in a large wooden coffin, or – more likely - the planks were reused timber from either a torn down building or a decommissioned boat. Unfortunately the wood was decayed and could not be collected.

Pressed for time neither horizontally nor vertically was the full extent of the mass grave established. Horizontally the grave seems to continue to the NE, and skeleton 75 seems to represent a second layer of skeletons in the grave.

The grave to skeleton 72 was cut into the fill of the mass grave.



Figure 7

BACKFILLING

By the end of the season the dig was backfilled after a careful placement of tarp making a clear and visible division between the backfill and the layers not disturbed. These will ease a reopening of the trenches and will make it clear for future archaeologists that excavations have been carried out in this area.

HUMAN MATERIAL – POST EXCAVATION

Caroline Polke Paulsen & Niels Lynnerup

All the human material taken out from the excavated graves was registered as samples and can be linked up to the context of the grave fill and grave cuts. Some of the skeletons were taken out as intact samples of the entire preserved skeleton. From others only samples were taken out such as cranium and/or femurs (see list above). More graves were registered but not recorded in the opened trench. The sampling strategy of the humane remains was based on dating and genetically surveys of the remains and also analyses of gender, age and physical health was part of the aims.

During the analysing of the human remains samples were taken out. Teeth were taken out for both DNA-analyses and for Strontium analyses from each cranium. Preferably molars were taken for both tests, for the strontium the priority was 1st molar, 2nd molar or premolars. The only tooth not suitable was 3rd molar. It was possible to find usable molars in all craniums so no incisors were used. From each individual skeleton was also taken a bone for 14C-dating. The aim was an intact small bone such as vertebra, finger, hand, toe or hand bone if possible. Some of the skeletons could not provide such bones and fragments of the cranium were taken out. A few of the skeletons had so little skeletal material and in a preservation stage of no use, and samples were therefore not taken from those.

On medieval churchyards the customs are that gender plays a significant role in the place of burial. Also by the small churches in Greenland is this the case. Most often the males are put to the ground on the south side, where as female skeletons are located on the north side. It is not completely accurate, and it has been suggested that the females buried on the south side of the church could be part of the elite in society, belonging to the highest classes, and therefore be allowed resting on the sunny side of the churchyard. Fewer rules refer to the children. On some churchyards they are buried by the western end of the church, closer to the western end of the churchyard, know as the gate of souls. Other places they are buried among the adults, probably divided by gender when reaching a certain age.

At the churchyard at Ø64 the gender and age of the 17 collected skeletons could be determined on 14 cases and was dividing on:

Male: 8

Female: 4

Children: 2

Even the reburied skeleton <78> in [6] was placed on the correct side of the church yard according to gender. This skeleton was clearly masculine, and reburying on the south side therefore fits the pattern. In theory it could also be discussed that a person important enough to rebury including all bones, also small finger and toe bones must have belonged to the elite and therefore could also have been a female. But the skeleton left no doubt about the gender. The question here is also how long after the death or first burial the reburial happened and if the people moving their possible ancestor to the holy ground had knowledge of the identity and gender of the person.

The graves were all situated very close to the church building. Several of them cutting each other, and creating reburials of the bones. One remarkable grave seems to be a large grave, dug down disturbing several others containing at least 3 skeletons – these 3 were sampled, but due to the limited time of the fieldseason the rest of the skeletons were left as untouched as possible. The indications for this grave being contemporary are first of all the orientation of the skeletons, and the position of the cranium. All three are placed with the head tilted so it is lying on its right side facing south. Along the edges of this large grave was a large amount of nails and rivets. These could originate from each individual coffin, but it is more likely that a large coffin for these three was made, or a plank from a ship found its secondary use as a stabiliser for this large grave cut while placing the dead.

In total 6 teeth were taken out as samples from <68>, <69>, <70>, <71>, <72> and <72>#2 from Ø64. These 6 skeletons are generally in a better state of preservation than other Greenlandic Norse skeletons (among others those marked “KAL”) previously researched. The DNA-investigations from Ø64 has started, but no results are ready yet. So far Mitochondri-DNA has been isolated from 3 of the skeletons, and an analysis of these are on its way, but it is yet uncertain if any certain results will be reached.

14C-ANALYSES

Jette Arneborg

Five samples have been AMS dated at the AMS14C Dating Centre, Aarhus University (Figure 8 & 9).

Skeleton <78>, “reburial” was dated (AAR-12969) 893AD – 1014AD (95,4 % possibility).

Horse bone KNK2655x27, collected in 2007 close to skeleton <78> was dated 1039AD – 1209AD (95,4 % probability).

Skeleton <66> was dated 1046AD-1211AD (95,4 % probability).

Skeleton <72> from mass grave was dated 893AD-1014AD (95,4 % probability).

Skeleton <73> from mass grave was dated 802AD-972AD (95,4 % probability).



Figure 8

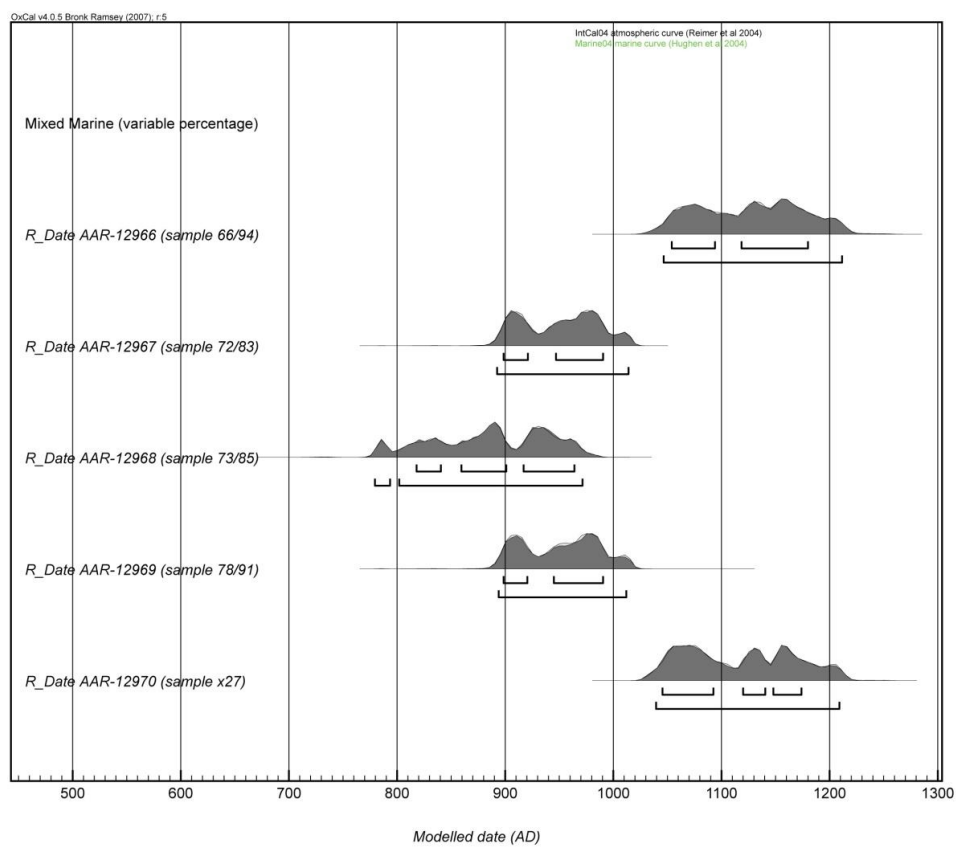


Figure 9

The early date of skeleton #73 indicates that the mass grave was established most probably before the year 1000AD, and that the skeleton #72 was buried on top of the mass grave shortly after the mass grave was established. The dates of the two skeletons are consistent with the archaeological interpretation.

The date of skeleton #66 is consistent with the change of arm positions (crossed on chest).

Horse bone sample x27 were collected on top of the human bones <78>, and the dates of the two samples indicate that the horse bone is from the midden layers above the burial.

ARTEFACTS

Caroline Polke Paulsen

In total 104 artefacts were registered from Area A. The by far largest group of material and objects are the iron nails and rivets. 81 iron objects are registered from this area – all of these rivets or nails, presumably all from coffins/planks in the graves (Figure 10-11). Also 10 soapstone artefacts – primarily shards from vessels was found. Beside that 4 sandstone objects, interpreted as whetstones (Figure 12), 1 unknown of tusk, 1 of agate, 1 unknown piece of a bronze-plate, 1 piece of basalt and 5 unidentified bones.

Some finds were registered in context but most of the finds were recorded on the plans in three dimensions.



Figure 10



Figure 11



Figure 12

The animal bones registered as finds are from the churchyard. Several were found in the reburial together with skeleton #78 (see description above), other may derive from the midden layer [10] above the church yard (see results from AMS dating above).

The context richest on small finds is [10], the overflowing midden. The artefacts from this context is a mixture of different materials and object types, but dominated by the soapstone and sandstone probably due to the poor preservation for organic material in this floating layer sealing the churchyard.

CONCLUSION

Caroline Polke Paulsen, Christian Koch Madsen, Konrad Smiarowski & Jette Arneborg

The aim of the 2008-excavation in the church yard was to expand the 2007-trench in order to get a full understanding of the recorded burials and possible re-burials and get as close to the building as possible to gain understanding of the building material, construction and dating of the building, and to determine the time span of use for the churchyard and possibly also the building.

The graves recorded in 2007 were thoroughly reexcavated and the connection to the newly registered graves were determined and registered. The trench was expanded during the excavation in order to get the full length of the graves. Only in the southern part of the churchyard towards the churchyard dyke the trench was dug down to subsoil. In the north end, towards the church building and inside the church building the subsoil was never reached.

The trench in the church yard did not tell us much about the church building (see however the description of excavation area C below). The excavation however gave a good picture of the church yard dyke and the relatively well preserved graves, and a relative chronology in the excavated part of the grave field was established.

Even though we have not yet the results from neither the dating programme (AMS-dates) nor the other scientific analyses - and it is important to note that the samples taken out might only represent a short period of time in the use of the churchyard (the last phase?) we can already state that the trench in the church yard met our demands. To get the full insight into the period of use we need more excavations.

AREA C – THE CHURCH

Christian Koch Madsen

OBJECTIVES

In Area C the interior of the small churchbuilding a trench was made orientated North-South in order to determine whether any details of the construction methods could be registered and dated (Figure 13).

DESCRIPTION OF THE ARCHAEOLOGICAL UNITS

Unit 36 Deposit. Collapse consisting of stones from the walls and turf from the wall infill. The westsloping stones suggest the collapse being from the eastern gable.

Unit 40 Deposit. Collapse. Since none of the boulders of the previous [36] layer cut [40] and rather rested on top of it, this latter layer, consisting of relatively fine grained silty soil, might represent the remains of totally dissolved roof collapse, mixed with [36].

Unit 41 Deposit. Turf wall / turf wall collapse / turf bench. Although with a somewhat uneven transition from [40] to [41], a rather regular series of light brown, redbrown and dark brown *strengur* laid turf layers resting on the natural subsoil [52] and sloping slightly southwardly.

Unit 43 Deposit. Collapse / floor layer. Homogenous grey brown gravelly silt with many specs of charcoal and protruding patches of red brown gravel (subsoil) [51][52] and somewhat mixed with [41].

Unit 44 Deposit. "Stenspor". Mixed grey brown and red brown slightly gravelly silt with a few specs of charcoal. [44] is actually the compressed layers of [41] and [40] depressed slightly into the subsoil [52] by the weight of the above lying stone.

Unit 45 Deposit. "Stenspor". Mixed grey brown and red brown slightly gravelly silt with a few specs of charcoal. [44] is actually the compressed layers of [41] and [40] depressed slightly into the subsoil [52] by the weight of the above lying stone.

Unit 46 Deposit / wall fill. Red brown gravely silt, partly surrounding, partly penetrated by the stones of the church wall, for which reason [46] most probably is deliberate wall fill.

Unit 47 Deposit. Turf layer / collapse. Yellow brown to red brown turf lump, overlapped by [40], but no by and seemingly contemporary with [43]. Either turf collapse or turf packing to stabilize boulder [?].

Unit 48 Deposit. Turf layer / wall construction. Vertical red brown and light grey turf layer overlapped by [55] and resting directly on stone slap [49], thus comprising part of the *in situ* wall construction.

Unit 49 Deposit. Stone slap / wall construction. Large, vertical stone slap lying *in situ*.

Unit 50 Turf deposit / wall construction / wall fill. Red brown and light grey turf layers sloping southwardly, forming an *in situ* part of the wall or wall fill.

Unit 51 Deposit. Natural subsoil. Red brown loose gravel with many stones (of up to 5x5cm) and pebbles. Identical to [52].

Unit 52 Deposit. Natural subsoil. Red brown loose gravel with many stones (of up to 5x5cm) and pebbles. Identical to [51].

Unit 53 Cut or natural depression. Homogenous light brown silt with a few specs of charcoal overlapped by the uncut layer [43]. Is either earlier cut or the filled depression of a stone removed before/during the building of the church.

Unit 54 Deposit. Stone in wall / wall fill. Smallish *in situ* stone slap sloping to south.

Unit 55 Deposit / wall fill. Red brown fine gravel, possibly *in situ* or slightly disturbed part of the wall construction and very similar to [64]. Not distinguished as separate layer during excavation.

Unit 57 Deposit. Natural subsoil. Gravel mixed with a few larger stones and light grey silt.

Unit 58 Deposit. Turf layer / old vegetation layer. Dark brown turf layer under stone slap [49] and resting on the natural subsoil [57]. Could either be a turf foundation or the old vegetation layer.

Unit 59 Deposit. Stone in wall. Somewhat displaced stone in the wall.

Unit 60 Deposit. Stone in wall / wall fill. Probable *in situ* part of the wall construction.

Unit 61 Deposit. Stone in wall. Smaller slap, *in situ* part of the wall construction.

Unit 62 Deposit. Turf layer in wall. Dark brown to red brown, *in situ* turf layer, part of wall construction.

Unit 63 Deposit. Turf layer in wall. Yellow, dark brown and light grey, *in situ* turf layer, part of wall construction. Not separated from [40] during excavation.

Unit 64 Deposit. Fill layer in wall. Red brown, fine gravel, very similar to [55]. *In situ* wall fill only discovered in the section.

Unit 65 Deposit. Fill layer in wall. Red brown silty gravel, very similar to [64]. *In situ* wall fill only discovered in the section.

Unit 88 Stone referred to as stone "A" on plans

Unit 89 Stone referred to as stone "B" on plans

Unit 90 Stone referred to as stone "C" on plans



Figure 13. Christian recording the layers in area C

The trench was cut and underneath the topsoil the entire area was covered by collapse layer [36] of many stones and turf from the wall infill. The slope of the stones suggested that the collapse originated from the eastern gable of the church building. The top part of [36] had the highest density and the largest of the stones, these generally getting fewer and smaller towards [40]. Notably, only [88][89] and [90] cut through or penetrated both [36] and [40], suggesting that this latter layer comprises the first event in the collapse of church or might even be the remains of roof collapse, onto which parts of the wall [36] then fell. This interpretation is supported by the observation that [40] everywhere directly overlies those parts of the building, which are interpreted as being preserved *in situ*.

Although with a somewhat mixed transition from [40], the thin layer of [43] with many specs of charcoal stood out in the sections as a clearly separate layer, which could only be detected in the northern half of the trench and rested directly on the natural subsoil. This could be interpreted as a very thin floor layer. The southward boundary of [43] seemed to be the three large stones [88][89] and [90] that did penetrate [40]. Whether this was the really case, was hard to establish with any certainty, because the soil beneath the stones was so compressed. However, [43] could not be identified anywhere south of [88][89] and [90].

Sealed by [43], the trench cut the minor cut, natural depression or depression after a removed stone [53], which had a quite distinct fill and few specs of charcoal. The function of [53] is unknown, but it must belong to an early time in the construction of the church building.

The fact that stones [88][89] and [90] did actually penetrate both [36] and [40] does indeed suggest that they also belong to an early phase in the collapse of the church (they fell directly on the lowest layer, perhaps with the collapse of the roof) or they might alternatively have formed some part of the church's interior construction (e.g. some sort of "syldsten" or "stolpebaser"). In case of this latter interpretation, [47] might not be turf collapse, but some kind of turf packing to stabilize the stone [?]. In any case, the three stones of [88][89] and [90] seem to form a quite distinct boundary between the layers in the north and south part of the trench (see below).

In the southern part of the trench, [40] rested either directly on the subsoil layer [52] (although there is a slight chance that the layer [43] was not detected here) or on top of the turf layers of [41]. This latter series of *strengur* turf

emerged with a rather uneven transition from [36] and [40], strongly suggesting that the top of [41] was somewhat disturbed. Soon, however, [41] turned into a series of more regular, roughly horizontal turf layers of different colour and in the sections [41] stood out in fine layers, these sloping notably towards the south and the church wall proper (see below). Although [41] does not have the appearance of a well build *strengur* turf wall and could be interpreted as collapsed/turf wall slid into the interior of the church, it is noticeable how the boundary towards [46], [62], [63], and [64] (i.e. the butting layers of wall fill to the south, see below) seems very marked and not at all like what one would expect of collapse. [41] might therefore be the actual remains of a turf wall running southeast-northwest (apparently the general orientation of the church) on the inside of the stone wall. This would, however, be a novel way of wall construction. Alternatively, [41] was suggested to be a turf bench running along the wall. Considering the rather uneven level of the natural subsoil within the church, [41] could also be suggested to have been used to level out the floor layer, although it would seem highly impractical to use turf as the material to accomplish this.

The southernmost part of the trench (into which area it was only secondarily enlarged) revealed part of the slightly disturbed or *in situ* remains of the southwest-northeast running stone build church wall (comprising [48], [49], [55], [59], [62], and [65]). This wall seems to have been built by somewhat irregular and different sized stone slaps/blocks, separated where necessary by turf, gravel and silt layers/fillings. The wall rests on [58], either on a old vegetation surface or turf layer. Since the trench did not span the entire wall, nothing can be said about its breadth. Interestingly, the lowest stones in the wall lie at a considerably lower level than the floor layer of the church, suggesting that the church wall was either erected on a rather uneven surface or, for unknown reasons, possibly cut slightly into the slope of the knoll where the church stood. Considering the rather limited amount of collapsed stones visible on the surface of the ruin and the relative shallow layers revealed by the excavation, the stone walls of the church must either have been relatively low, thin or, alternatively, only have comprised a high foundation for a turf/wood construction (that is unless a large number of stones were removed and reused after the abandonment of the church).

In between this stone wall/foundation and the abovementioned possible turf wall/bench [41], was a series of minor, but distinctly cut or outlined layers (comprising [46], [50], [54], [63], and [64]) and stones, which seems to represent some sort of *in situ* fill between the two aforementioned walls. Albeit somewhat makeshift of appearance, the layers do indeed seem to be deliberately placed and contemporary with both of the other described wall features.

BACKFILLING

By the end of the season both trenches were backfilled after a careful placement of tarp making a clear and visible division between the backfill and the layers not disturbed. These will ease a reopening of the trenches and will make it clear for future archaeologists that excavations have been carried out in this area.

ARTEFACTS FROM AREA C

In total 4 artefacts were recorded from area C : a fragment of a whetstone of sandstone, a soapstone shard, an unidentified iron object and a piece of worked bone was recorded during the excavation.

CONCLUSION

Needless to say, the very limited dimensions of the excavated trench made it impossible to establish with any great detail or certainty, how the church was constructed and subsequently collapsed. However, the observations made during the excavation do establish that *in situ* structural details are preserved, although not to any great height. Still, careful future excavations should be able to identify constructional details and phasing of the church building of E64 on the basis of the preservation unearthed and documented in the excavated trench.

Notable is the observation, that the midden layer overflowing the church yard also is recorded above the destruction layer of the church building – documenting that church and church yard was shut down simultaneously.

MIDDEN AND STRUCTURAL UNIT EXCAVATION – AREA B.

Konrad Smiarowski

OBJECTIVES

The goal for investigating the midden at this site was to locate and excavate a substantial archaeofauna from surviving stratified midden deposits, to gain better understanding of Norse subsistence economy in the Eastern Settlement throughout its occupation.

METHOD

The midden excavation at Ø64 started after locating the best preserved and most promising midden deposits associated with the main dwelling structure. Surface topography and an extensive coring exercise (34 cores at this site) indicated the thickest midden with bone residue just ca. 5 meters west of the main structure. The core indicated a depth of cultural deposits of ca. 71cm in many locations west and south of the dwelling, therefore we chose that area for the excavation. The midden was thinning out as it followed the slope westwards, towards the erosion face of the beach.

The trench was placed east-west and used the same grid as Area A and Area C. Originally, the midden trench was 2 x 6 meters in size, but after removing the turf layer and topsoil, it became apparent that the 2 meters at the eastern end (closest to the dwelling) consisted of wall collapse material such as large stones and structural turf [03],[07],[08],[11],[15],[18] (group 72). We realized that the midden material in that section must be underneath, but since we did not want to disturb structural remains, we decided to reduce the trench by 2 meters in the east section. This resulted in 2x4m trench dimensions, placed only in the midden area, which we completely excavated to the natural surface [73].

DESCRIPTION OF ARCHAEOLOGICAL UNITS

Konrad Smiarowski & Caroline Polke Paulsen

The organic preservation was not encouraging since the beginning of work, but the soil acidity was good (pH over 6.2). During the excavation, it became apparent that we have again run into the same preservation problem we encountered in 2007 at Ø78 *Eqaluit* and Ø60 *Isotarfik*, and in 2006 at Ø74 *Qorlortorsuaq*. The site was located on a gravel, moraine, rocky subsoil [073] and the good drainage was responsible for leeching out of the organic component of the site. Bone preservation was very poor, and the best-preserved bone fragments crumbled on contact with a trowel or hand. Nevertheless, we followed the NABO protocol and excavated all stratigraphic layers using single context recording method, sieved all deposits with a 4mm mesh, and took soil samples. The midden layers [008], [009], [019], [020], [023], [025], [026], [027], [028], [029], and [030] were fairly uniform throughout the profile, consisting mostly of brown sandy silt, mottled with turf specs, and lenses of sand and fine gravel (see context descriptions below). The inclusions consisted of fire-cracked stones, poorly preserved animal bones, some charcoal, and several artifacts.

At the end of the excavation, we also took kubiena tin geomorphology samples (samples no. 46 and 47) from two profiles of the trench (west and south) to be analyzed by Prof. Ian Simpson at Stirling University in United Kingdom. We also took two samples of this kind from the home field area at this farm (using a section already prepared for DNA sampling), some 20 meters east of the main dwelling (samples no. 44, 45).

The churchyard crew had encountered midden layers ([010] and [016]) sealing the investigated area of the churchyard, Area A. The organic preservation there was slightly better than in the main midden area (Area B), and that excavation produced a larger archaeofauna than that in the proper midden, which will also be studied at the NORSEC labs in New York.

After the coring and de-turfing of the trench, the topsoil was removed. Below the turf and topsoil the archaeological contexts were registered.

Unit 4 Deposit. Structural collapse consisting of rectangular flat stones sloping to the west from east.

Unit 7 Deposit. Light brown sandy silt deposit in the western part. Most likely a midden deposit west of the dwelling and its wall collapse.

Unit 8 Deposit. Wall collapse of large stones and turf mixed with soil. Located roughly in the middle part of the trench

Unit 9 Deposit. Grey-brown layer of windblown silt mottled with patches of light brown turf and some bones (midden?)

Unit 11 Deposit. Mottled brown soil (turf) with stones from structural collapse.

Unit 15 Deposit. Wall collapse of mixed turf (regular mix and mottled) west of the dwelling. Few stones mixed in.

Unit 18 Deposit. Structural turf collapse.

Unit 19 Deposit. Gravel and dark turf. Brown mottled soil.

Unit 20 Deposit. Greasy black midden deposit. Very thin.

Unit 23 Deposit. Mixed midden. Reddish with black lenses.

Unit 25 Deposit. Dark, sandy soil with small gravel mottled with some brown turf.

Unit 26 Deposit. Brown midden deposit.

Unit 27 Deposit. Ash with turf. Dump mixed with silt and gravel.

Unit 28 Deposit. Light brown midden.

Unit 29 Deposit. Dark black, greasy layer right above subsoil. Landnám? *Strengur*-turf?

Unit 30 Deposit. Black soil with sand and gravel. Midden layer with bones and ash.

Unit 70 Group of contexts from midden

Unit 72 Group of contexts from dwelling.

Unit 73 Deposit. Natural subsoil in trench

Below the topsoil the area was covered with windblown material [4] and bits of structural collapse from the dwelling. Directly under this [7] structural collapse of primarily turf covered almost the entire trench, to the east up against the possible remains of the wall or collapse of stones and turf from the lower part of the wall [8]. Charcoal and burned bones were registered in a small amount in this context. In the western end of the trench a uniform sandy midden deposit was registered with a fair amount of bones preserved. More structural collapse [11] was registered under [7] and [8], very similar to [8] with a mix of turf and stones and small amounts of charcoal and bones. Also the underlying [15] had a similar composition and inclusions but with a darker, almost black complexion and with several small finds of steatite. Also the structural collapse [18] had a similar look, but the amount of large stones was a lot higher. The thickest end of the context was 30 cm in the eastern end of the trench and thinning completely out towards the western end of the trench, where hardly any stones were recorded in this context. The midden deposit [19] differed from the midden deposit [20] in its composition. [19] was sandy, brown and with inclusions of gravel, whereas [20] was greasy black and uniform with no disturbances and a higher frequency of bones than any other previous recorded midden deposits. Under this midden deposit a midden deposit [23] of a more mixed composition was registered, covering the entire trench. This midden deposit had a poor preservation for organic material including bones. [25] is interpreted as structural collapse in the very most western end of the trench, consisting of turf and mixed with windblown sandy silt and small patches of gravel. A 20×80cm test trench was dug in the new southeast corner of the trench to establish the depth of the midden deposits. No individual recording was made of the contexts in this test trench, and the sections that came were used for interpreting the following contexts in the area. A dark midden dump [27] with greenish turf, silt and ashes were recorded in almost the entire trench, except for the very eastern part with bits of charcoal in. With the exact same extension towards the east the brown midden deposit [28] was recorded, but

this one with a poor preservation for bones. In the very most southwestern corner a black sandy midden [30] was recorded with a high frequency of bones, charcoal and gravel. The last recorded archaeological context above the subsoil was [29] a black greasy midden deposit. No inclusions or finds were recorded in this context.

ARTEFACTS

Caroline Polke Paulsen

In total 9 artefacts were registered in the Area B-trench, 6 of these in [15], one of the registered wall collapse-contexts above the actual midden deposits. 2 artefacts were found in [4], the first archaeological context consisting of turf and windblown material and one artefact in [27] one of the lowest lying midden deposits in the trench. The most common material in this area was soapstone. 7 of the artefacts were soapstone, and one each of iron and agat. The dominating type of artefact was shards from vessels, with 2 rimshards, one shard and an unknown fragment of soapstone that might be from a large vessel. The most remarkable artefact found was a soapstone loomweight with incisions, runes, on one side (Figure 14).



BONE REMAINS

Konrad Smiarowski

In 2007 animal bone remains was collected in the church yard trench and are now completely analyzed (Smiarowski 2009). The bones from 2008 season, excavated from the midden layer overflowing the church yard, as well as from the kitchen midden associated with the dwelling, only arrived at the NORSEC lab in November 2008. The analysis of this heavily fragmented and poorly preserved collection will begin shortly, as the bones need to dry slowly so they will not disintegrate further at the touch.

As the 2007-sample the bones are poorly preserved and fragmented (and the sample is small again), and it is not expected that the collection will be large enough to perform any quantifiable comparisons with other sites.

RECOVERY AND EXCAVATION OF THE BONES

The 2007-2008 project followed standard NABO bone recovery protocols (stratigraphic excavation, complete sieving through 4 mm mesh dry sieve) and a zooarchaeologist (Konrad Smiarowski) was a member of the field crew and was able to assist in bone recovery. The field recovery of bone and other ecofacts was thus directly comparable between other Greenlandic sites, and with NABO excavations in Iceland and the Faroe Islands.

CONCLUSION OF THE MIDDEN AND STRUCTURAL UNIT EXCAVATION

Konrad Smiarowski & Caroline Polke Paulsen

The aim of the midden excavations was to get dateable stratified organic material (bones or charcoal) to date the occupation period of the Ø64 farm site, especially its settlement and abandonment phases, which was accomplished successfully. In addition to the dates from the midden, the dates from the graveyard will provide a unique opportunity to correlate the time the cemetery was in use (it seems to go out of use early, based on stratigraphy), to the use and abandonment of the farm itself. The idea of gaining understanding of the construction of the dwelling (by placing the trench close to the wall collapse layers associated with the main house) was abandoned quickly, and the trench size was reduced. The collapse layers, made of turf and stone, were too complex; therefore, we realized that it would require a larger area and more time to be able to add to the knowledge of Norse Greenlanders' construction techniques. This allowed the excavators to concentrate on the midden layers, which they excavated successfully to the natural subsoil, retrieving enough datable bone material to be used for AMS C14 dating of the site, and to get some zooarchaeological information about the subsistence and/or economic activity on this small farm site. Although the preservation of bones was not as good as the team hoped for, the small archaeofauna we retrieved will be a valuable addition to the datasets previously excavated in both settlements of Norse Greenland, and overall knowledge of the Norse economy in Greenland.

EXCAVATIONS AT E64 – CONCLUSIONS

Jette Arneborg

The excavation in 2008 at Ø64, Innoquasaq gave a good picture of the researched areas. The trenches in the two areas, Area A, the church yard, and Area C the interior of the church building proved a good preservation for organic material in the actual contexts belonging to the churchyard and the building remains. The demolitions phases and overflowing material from the dwelling from after the use of the church and church yard turned out to have very little organic material preserved.

The excavations in the midden in front of the dwelling (area B) were less convincing, but may however give some indications on the economy/subsistence of the farm.

Notable is the observation that the church and church yard was shut down simultaneously, probably in the first centuries after *landnam*, and the 2008-excavations show that the E64 site would be obvious for further research into the status of a *landnam* farm over time as would studies in early Christian life in Norse Greenland.

THE IGALIKU KUJALLEQ EXCAVATION (E66)

Konrad Smiarowski

INTRODUCTION

This high status church farm had been a focus of many researchers (i.e. Gustav Holm in 1880, Daniel Brunn in 1893, and Aage Roussell in the 1930'ties to mention just a few). The church and the dwelling, as well as some parts of the midden have been excavated several times (Figure 15).

27 ruins the church included have been GPS surveyed at E66 (Møller & Madsen 2006)

The investigation at E66 has file no. KNK2677

METHOD

We tried to locate undisturbed midden deposits associated with the dwelling, but without definite success. Even though the midden mound is clearly visible, several trenches were dug in it, and never backfilled. They deteriorated with time; their sides collapsed and are now visible as depressions in the surface. The spoil heaps from those excavations form lumps on the surface, and are usually located next to the old trenches. This had formed a topography that resembles a “chess board” pattern. The dark “squares” are the trenches themselves, and the lighter ones (or vice versa) are the spoil heaps. However, the pattern is not as regular as on a chessboard so the location and extent of trenches and spoil heaps is not very clear. Wind and water erosion, by depositing ca.50cm of natural silt (documented in all core profiles at this site), further complicated the assessment. Vatnahverfi is prone to silt deposition by wind and water from the Jespensen’s glacier, as evidenced by the filling of the harbor. This erosion and re-deposition is so severe that when the tide is low it is possible to walk several hundred meters into the fjord without walking through water. This makes this bay shallow at high tide, and hard to navigate by boats.

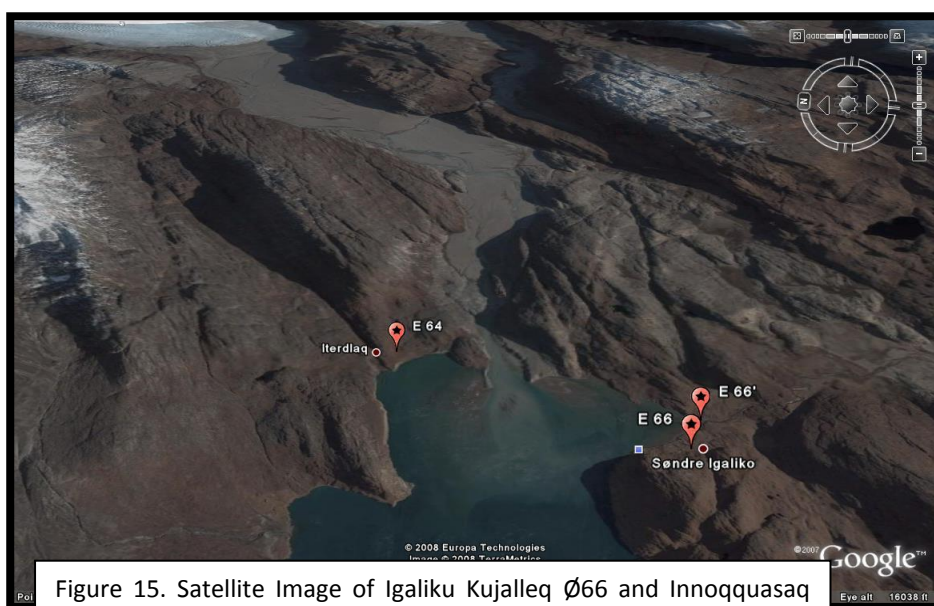


Figure 15. Satellite Image of Igaliku Kujalleq Ø66 and Innoquasaq Ø64. Note the glacial river depositing large amounts of silt into the fjord (gray areas).

We performed systematic transect coring on northern, western, and eastern side of the farm mound. The main dwelling and the church are located immediately to the south. The best results were from borings on the northeastern part, just at the foot of the farm mound, where we also exercised judgmental coring. Some of these borings encountered well-preserved bones, including a fragment of a seal mandible with a tooth still intact. This area was immediately located next to an old trench dug by Daniel Bruun in 1893 and now only visible as a shallow (ca. 70-80cm deep) depression. We decided to empty out a part the trench, and cut back one of its sides until the fill and collapse was removed, and undisturbed deposits exposed. This would allow us to have a more detailed look into the composition and stratigraphy of the midden, without disturbing the site, than the narrow profiles provided by the corer.

DESCRIPTION OF TEST TRENCH

The trench had collapsed sides, and while we cut back more than 60 cm to the south, and emptied the trench to the depth of two meters, we still found modern trash deposits. The local farmers used the trench depression in 20th century as a garbage dump. We found modern metal kettles, American mugs (most likely from the abandoned base in Narsarsuaq), several iron objects (parts of fuel barrels, etc.), rubber boots, and fragments of plastic mixed with bones

of seals, cattle, sheep, fish, and birds. Objects associated with modern day sheep farming such as sheep skulls cut with mechanical saws, and wool-cutting shears further testified to the modern provenance of these deposits.



Figure 16. Profile from the old trench at Ø66 after cleaning. Note the uniform stratigraphy and the 2 meters long scale.

EXCAVATIONS AT E66 – CONCLUSIONS

While the objective of emptying out an old trench to gain understanding of stratigraphy and midden composition, as well as organic preservation we set up to achieve is doable, it would require aid of a back hoe (or a much larger team) to clear the overlying silt deposits, and the modern trash. As this task proved labor and time consuming we decided not to focus on this site during 2008 season. We suggest that to further understand the midden, its disturbance and composition, an open area excavation would have to be conducted. This will allow for a larger overview, and detection of old trenches, even the back-filled ones. This job was too large to be performed with the small crew we had available in 2008.

THE TIIMERLIT EXCAVATION (E68)

Konrad Smiarowski

INTRODUCTION

After the completion of excavation at Ø64 the midden team (Konrad Smiarowski, Francis Feely, and Aaron Kendall) left the main camp site at E64 and relocated inland to conduct excavations at Ø68 Timerliit. This site was chosen after the completion of a coring survey at this farm complex, which located the midden. The modern sheep farmer had dug a series of irrigation trenches near this site ca. two years ago, and one of them divided the midden area in two parts. Systematic coring showed that one side is under a modern hay field, but another is still undisturbed, and we were able to find the extent of the midden deposits on each side. The good thing about the irrigation trench was that a long profile that was created, exposing deep midden layers associated with this farm site. After cleaning some of the sections, we encountered Norse steatite artifacts and animal bones, preservation of which seemed to be better than at other sites surveyed up to that point during the season.

Because we could not disturb the farmer's hayfield, we decided to open an archaeological trench into the section created by the irrigation ditch, on the undisturbed (eastern) side of it. The farmer, Siiku Motzfeldt, is aware of the Norse remains and had informed us that he had not encountered any archaeological remains (i.e. artifacts) while digging those ditches, even though he was occasionally looking for them. He had found some worked wood fragments while digging another irrigation trench at Ø69 (see coring survey this report).

Site Ø68 is located on an eastern shore of Normu1'ip Saqqaata Tasia (lake), on a mountain slope rising east. It consists of several farm buildings (Møller and Madsen 2006a) and a small dwelling structure with the midden located 2-4

meters east of it (down slope), directly outside the entrance. When Daniel Bruun visited these inner parts of Vatnahverfi I 1893 he described the landscape as fertile with luxurious green grazing grounds with lots of hares, foxes and game birds. The area had not been occupied since the Norse left and was rather impassable (Bruun 1895:388ff.). Bruun describes ruin site E68 as small with six ruins only: a dwelling with midden, a byre/barn complex and besides that a few minor houses (Bruun 1895:391).

The excavations at E68 have file no KNK2676 at the Greenland National Museum & Archives.

METHOD

We spent roughly two weeks excavating a trench cut into the section exposed by the drainage ditch. This method gave us good stratigraphic control from the start, while excavating using single context recording method and sampling by the NABO protocol. The dimensions were 2x3.5 meters on east-west axis of the grid system we lay out for the purpose of this excavation. The trench was 130cm deep at the eastern end and deeply stratified, with all the deposits sloping west.

FINDS

Although the preservation conditions were not as good as we had anticipated (conditions only slightly better than at Ø64), we were able to collect a small bone assemblage (samples 301-312), several artifacts of soapstone, iron and stone, as well as a granite spindle whorl (x370), and a whetstone (x336). We took soil and geomorphology samples (samples no. 314, 315, 316, 319, 320, 321, 322, 323) from several layers for chemical analysis, and we expect to use some terrestrial animal bones to date the site with AMS C14 dating.

DESCRIPTION OF ARCHAEOLOGICAL UNITS

All archaeological units in this midden were deposits, either of cultural material or of natural content (both aeolian and alluvial), with lens inclusions of the windblown silt patches that are present in the northern part of Vatnahverfi. An old archaeological trench (ca. 1x3-4 meters) was dug 5 meters northwest of our trench long time ago (this may have been done by C.L. Vebaek). Its straight walls, were overgrown with vegetation, and the trench was never filled. We did not observe any human disturbance to the area where we worked, so no cuts or robber trenches were recorded during the excavation. The stratigraphy is very straight forward, representing the classic case of the law of superposition with unit [301] being the youngest, and context numbers increasing consecutively with each, underlying new deposit, until the oldest (natural) [316]. The Harris matrix for this site is a single column of consecutive numbers.

The earliest (last in the stratigraphic sequence) midden layer at the site is [312] which lays on top of a burned layer [313] that we originally thought also was a midden dump, but were convinced otherwise during excavation. This was a burned vegetation layer, and while digging it we observed that this unit only has charcoal as inclusions, without any bones, artifacts or even stones. Immediately under it was an unburned, organic layer [314] with similar silky feel to it, but the only inclusions in this one were unburned, regular patches of shrub twigs. These two layers are on top of [315], the original topsoil at this site before human settlement. It has two turf growth horizons, upper being the remnants of the grasses and vegetation, the lower roots and topsoil. All of these lay on top of the natural sandy subsoil of the area [316]. The lack of artifacts in these layers seems to confirm our interpretation of these natural deposits. Below are descriptions and interpretation of the units from Ø68.

Unit [301]. Turf and roots, topsoil. Natural.

Unit [302]. Light brown aeolian natural silt. This silt is deposited in most places in Vatnahverfi by the glacial wind. Natural.

Unit [303]. Windblown light brown silt mixed with little turf specs and gray brown silt. Frost action polygons (orange-brown) are clearly visible. Midden deposit.

Unit [304]. Mixed red-brown silt mottled with orange-brown turf lenses and gray silt. Midden deposit.

Unit [305]. Dark gray silt mixed with turf, charcoal, and bones. Midden deposit.

Unit [306]. Red-brown silt mixed with little turf lenses and charcoal. Midden deposit.

Unit [307]. Gray midden deposit mixed with gray silt lenses and mottled with yellow-red and orange turf specs. Bone and charcoal rich midden deposit.

Unit [308]. Red-brown midden deposit mottled with turf and gray silt.

Unit [309]. Several black and gray small midden dumps lumped together. Very mixed and impossible to separate in only two meters wide trench.

Unit [310]. Water deposited (alluvial beach sand) sand in the Eastern end of the trench. This deposit stretches half way through the trench and has some midden material (charcoal and bone) mixed in due by the freeze and thaw action movement. Natural deposit.

Unit [311]. Gray black midden deposit mixed with red-brown and yellow sand.

Unit [312]. Midden deposit rich in charcoal and mixed with alluvial sand. Some dark red-brown turf patches and lenses of yellow sand.

Unit [313]. Gray midden layer. Very regular charcoal mottling. No other inclusions, only a lot of charcoal. Burned Vegetation.

Unit [314]. Dark, red-brown charcoal and wood rich layer. Midden or the original site surface. This seems to have been a shrub layer that was not burned down. Has different layers of organic growth (vegetation) and very fragile shrub branches preserved. Pre-settlement vegetation shrubs.

Unit [315]. Probably the original turf layer before the site was settled. This layer has two growth horizons. One, the upper layer is gray-brown and very organic. This is possibly the grass surface. The underlying one is more red brown, and was the root part. Together they lay on natural yellow sand surface [316]. Pre-settlement turf.

Unit [316]. Yellow alluvial deposited coarse sand subsoil. Pre-settlement natural subsoil.

ARTEFACTS

The total number of artifacts recorded during the 2008 season was 119. The assemblage consisted of; 18 iron pieces (15.3%), 2 flint (1.68%), 94 steatite (78.99%), 4 stone (3.36%) and 1 schist (0.84%) Figure 17).

From the total, 6 (5.04%) were found during cleaning the section of the drainage ditch, 6 (5.04%) in unit [302], 3 (2.52%) in unit [303], 33 (27.73%) in unit [304], 6 (5.04%) in unit [305], 11 (9.24%) in unit [306], 15 (12.61%) in unit [307], 23 (19.33%) in unit [308], 15 (12.61%) in unit [309], 1 (0.84%) in unit [311]. A specialist did not closely study these finds yet, so this analysis is only preliminary.

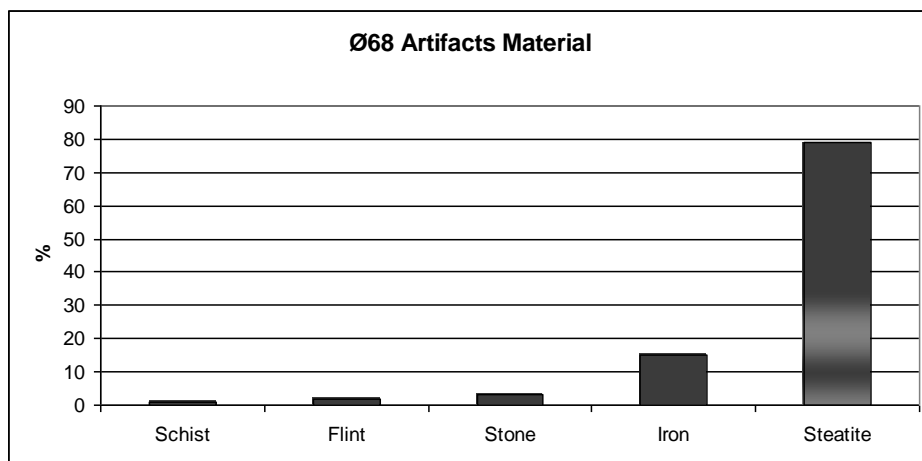


Figure 17. Finds sorted by material

Material	Quantity	%
Schist	1	0.84
Flint	2	1.68
Stone	4	3.36
Iron	18	15.13
Steatite	94	78.99
Total	119	100

STEATITE

The largest group of finds from the assemblage consists of finds made from steatite. This is typical for most Norse Greenlandic sites, as this raw material is found throughout Greenland, therefore is easily accessible.

It seems that most of the steatite fragments are pieces of vessels, 9 of which had holes drilled in them for patching or to be used as loom weights (x302, x312, x319, x345, x366, x367, x373, x374, x375). At least one of the steatite fragments had remnants of burning (x312), and 2 were identified to be rim shreds (x318, x343). Four steatite spindle whorls were found (x305, x316, x355, x371), of which one was found while cleaning the profile of the drainage trench, and therefore is unstratified (x371), and one (x316) is decorated with an incised line.

Table 1. Finds by material

STONE AND FLINT

Three unknown objects made of stone other than steatite were found at Ø68 in 2008 (x309, x313, x329). One unusual spindle whorl made of stone (most likely granite) (x370) was found in one of the youngest contexts [311].

Two small fragments of flint (x334, and x358) were recorded, but are too small to be associated with any particular object. They were found in a cultural deposit and therefore are treated as artifacts. A single whetstone made of schist (x336) was found in context [304]. This artifact is only slightly used, and had a hole drilled in the handle.

METAL

All 18 metal objects found during the excavations were made of Iron. There were 6 nails (x301, x323, x331, x350, x359, and x363), 1 rivet (x322), and a single knife blade (x326), and 10 others were not identified to an object.

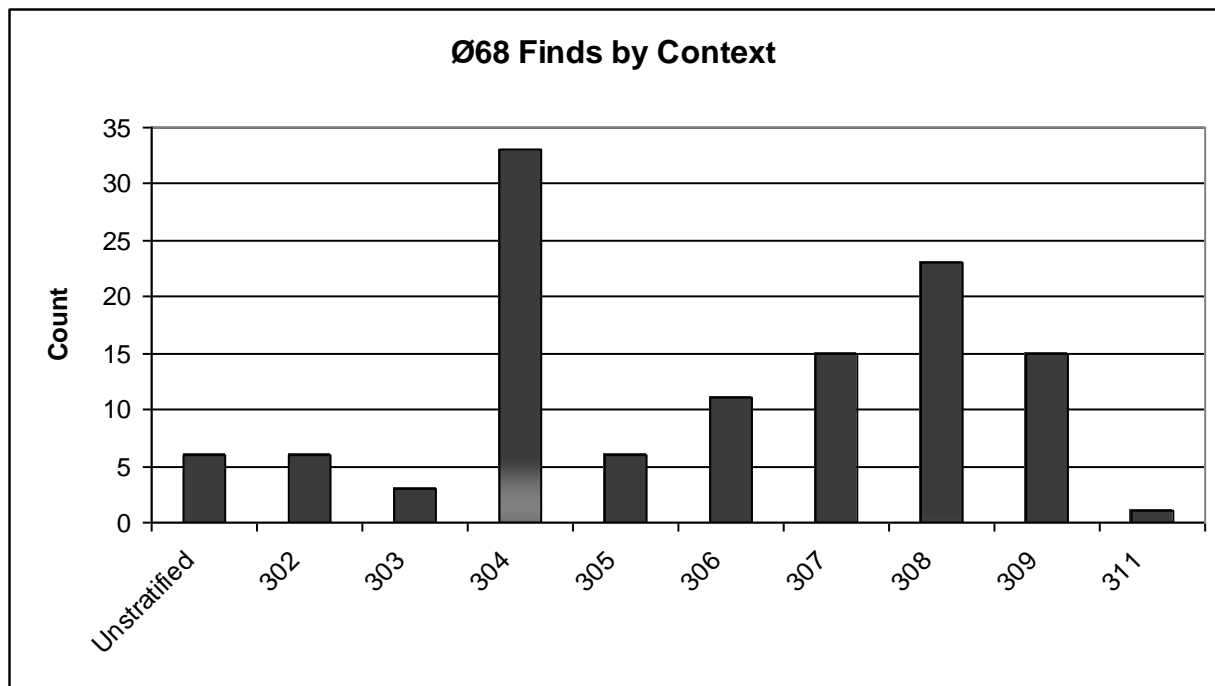


Figure 18. Finds by context

DISCUSSION OF FINDS

This is a small assemblage, so it only includes a small variety of material and object types, but this is just a preliminary analysis. The collection may provide more interesting and informative once analyzed by a finds specialist in detail. Due to poor preservation at the site, no finds made of organic material were recovered. Other sites excavated by the author had bone, wood, antler and even horn artifacts preserved (Ø29a, Ø74, Ø172). Christen L.Vebaek also encountered good preservation in Vatnahverfi, where he recovered several zooarchaeological collections and artifact assemblages made of organic materials (Vebaek 1993). Figure 18 shows the relative distribution of finds in context layers. Note that the strata we identified as natural, either alluvial or aeolian, do not contain any artifacts. The six unstratified finds all come from cleaning of the section of the drainage ditch while assessing the midden location and depth.

EXCAVATIONS AT E68, TIIMERLIT - CONCLUSION

Konrad Smiarowski & Caroline Polke Paulsen

Ø68 is a small size Norse farm in the inland district of Vatnahverfi. Even though the main goal to generate a large, well preserved and stratified zooarchaeological collection was not fully achieved, we were still able to generate a small, stratified collection. The thorough excavation throughout the whole midden deposition sequence enabled us to take bone and charcoal (local flora, not driftwood) samples from all layers, which will be used to date the settlement and abandonment of this farm through AMS C14 dating. Soil, micro-morphology, botanical, and ancient DNA samples were taken for analysis by specialists, and we hope to be able to reconstruct the vegetation conditions in this part of Vatnahverfi region prior, and during the human settlement, and compare it to modern conditions. Several aeolian silt deposition events were recorded throughout the midden sequence (mixed in the midden layers, and large enough to form a context on their own [302]) testifying to heavy wind erosion or the landscape, similar to today's conditions. The single context excavation method also enabled us to observe, and sample in detail the thin, fragile pre-settlement natural layers.

This site, as most others investigated during the past three seasons has serious preservation issues. While the site has a good pH (over 6.2) the freeze-thaw cycles, and drainage have ravaged all the organic artifacts and ecofacts. This is probably a major site management finding, as the preservation from past digs in Vatnahverfi was much better (Vebaek, 1993). This is a climate warming effect-taking place. Moving to full melting every summer (and re-freeze in winter) from permafrost conditions (which may have been common in southwest Greenland) is a worst possible situation. If the ground is frozen the organic component is kept cold, sealed from destructive oxygen, and the drainage is blocked as well. The new conditions favor extreme leaching of the organic material, intake of oxygen when porosity and composition of the soils is altered, and lead to rapid decomposition of the archaeofauna and artifacts made of organic materials on Norse sites. With this recent thawing of middens in Southwest Greenland observed in most investigated sites, we are running out of time in the attempt to preserve what we can for archaeological research. This is one of the reasons for our multi site approach to midden investigations.

THE VATNAHVERFI SCHOOL-PROJECT

Konrad Smiarowski

INTRODUCTION

In collaboration with the local teachers Arnaq Motzfeldt and Sofiannguaq Lund we were fortunate to establish a successful cooperation with the local elementary school at Timerliit. The education-outreach component was received with enthusiasm, and the teachers were pleased about bringing archaeology, as well as social and natural sciences into the classroom. In collaboration with them, we developed and implemented classroom and field modules, which incorporated history, archaeology, and environmental science, to the local schoolchildren. The participating children are from various age/learning groups: Naja Nuka Kristiansen and Natuk Lund are 1st grade students, Tuperne Lund and Ivik Lund are 3rd grade students, Parnuuna Lund is a 5th grade student, and Arnajaraq Bibi Bjerger and Nujartina Lund are 8th grade students. Working with all of them was equally pleasant and rewarding.

CLASS ROOM DISCUSSIONS

The first part of the module was a classroom session (held in the morning), that introduced the background of the Norse colonization of Greenland and the North Atlantic region, and described the drive and reasons behind it. This class exercise was organized into discussing the sedentary, Norse way of life; so similar to modern local one, and comparing it to the hunting and gathering cultures of Greenland, ancestors of our hosts. We talked about the everyday activities taking place at Norse farms in the inland Vatnahverfi region; such as weaving, cooking, hunting, raising livestock and trading, and what remnants of these activities we find archaeologically on site. We helped the children to visualize this by using selected finds and animal bones from our excavation.

All the children attending the Timerliit School are from a sheep farming community and their view of land, land organization, and farm structure has been structured by modern Scandinavian influence and organization of landscape, as well as by their Inuit heritage. Therefore, this made an effective, tangible link between past and present since the modern life ways of their community are based on economy similar to the Norse, and the children could relate to these activities very well. Regional trade for resources not immediately available at an inland farm, such as marine fish and seals, is as much a part of their modern life as it was in Norse Vatnahverfi more than 500 years ago.

Once the children were comfortable with our presence, we were able to get involved in a dialogue, with them, and their teachers, about important elements that make up their every day lives. This was an invaluable experience for us, and a unique interaction that allowed us to see through their eyes the life, culture and traditions that the local people identify with. We talked about summer grazing of their sheep, the decision-making as to where (and how many) animals to put out for summer pastures, the use of wild plants and animals, as well as how they subsidize their diet with other Greenlandic specialties such as seal and whale meat. Our classroom module ended with discussion of how similar and different the Norse farming way of life was to the modern Greenlandic one, in this marginal environment.

EXCAVATIONS

The class module was followed by a hands-on excavation exercise. The children helped us excavate the last remaining cultural layer of the Ø68 midden trench. Basic excavation techniques, the reasons and methods behind sieving, soil and environmental sampling, and why archaeology is important in the first place (not only to archaeologists) had been discussed and demonstrated in practice. That was followed by recording methods session, and why it is important to preserve archaeological sites. Schoolteachers are dynamic components of knowledge transfer in small communities and the dialogue with our teacher hosts about cultural heritage conservation and protection was a key element of public archaeological outreach, and an effective way of establishing continuity between our visits.

The children were divided into three groups to maximize supervisor-student interaction and individual attention. Each group had a specific focus such as stratigraphic excavation, residue sieving, and site recording. These groups were rotated periodically so all children could experience all the tasks. Our concerns that it might be hard getting their interest and attention to archaeology proved unnecessary. It was obvious that they loved the activity as evidenced by cutting the lunch break short, so they could excavate longer. The class module prior to the field component proved effective already in the field, as it provided necessary training at artifact and bone recognition and handling, before it

was put to test during proper excavation. The day ended with enthusiasm and with a new direction for some kids. A fifth grade girl, Parnuuna Lund, had announced at home that she found a career in archaeology, and since there are so many archaeological sites in the area, she does not ever need to leave home.



Figure 19. The children were able to experience first hand how archaeologists reconstruct the past through excavations and ecofact and artifact analysis.

THE VATNAHVERFI SCHOOL-PROJECT – CONCLUSION

The response to this education day by kids, their parents, and the teachers was very positive and rewarding to the excavation crew. This has been a learning experience for both the children, as well as us. While they learned about the Norse farmers and archaeology, the crew learned about their lives at modern Greenlandic farms, where they are using the same landscape and resources that were available to the Norse. Praises received from the teachers and the interest and enthusiasm of the children inspired us to continue this education component as long as our project continues.

In the formal setting, the teachers are interested in designing more modules that they can incorporate into the classroom teaching. One of our host teachers, Sofianguaq Lund, may be joining us in Iceland during 2009 season so she could experience some of the archaeology modules already in place as part of the Kids Archaeology Program in Litlulaugaskóli. One of the elements that we will incorporate into the 2009 season will be to replicate the methods of a project already in place in Iceland. By supplying the school and teachers with small portable GPS units so the children could place some hard survey location data along side of traditional knowledge of the cultural landscape. This data can prove very useful for the survey of Vatnahverfi region project conducted by SILA Greenland Center at the National Museum of Copenhagen, and for the purposes of our IPY project. This way the community outreach and education will work closely with archaeologists, and benefit mutually from this relationship.



Figure 20

THE 2008-SURVEYS IN THE VATNAHVERFI REGION

Christian Koch Madsen

INTRODUCTION

Surveying and reconnaissance proper was not *a priori* planned as a part of the Vatnahverfi field season of 2008. However, since two of the other planned projects, the DNA testing and coring in the middens, would take us to a number of different ruin groups in the region, both some reconnaissance and surveying could be integrated as part of this other field work; this would normally be accomplished by choosing routes (see figure 21) to the ruin groups that had not previously been taken during the Vatnahverfi Project (Møller & Madsen 2006a; Møller & Madsen 2006b; Møller *et al.* 2007). As a rule, we would also ask the local Greenlandic sheep farmers whether they had knowledge of any ruins not previously registered, which account for two of the new ruins registered this year (see below).

METHOD

Practically, reconnaissance was conducted as “simple walks” in groups of two or three persons, each person scouting for ruins. Only few detours were taken from the primary and easier path to the ruin group (hence staying in the valleys, walking along lakes, streams etc.). All kinds of ruins – cairns, fox traps, houses, both Norse and Inuit – was sought out and, if found, registered and described. Smaller structures – cairns, fox traps etc. – were GPS’ed with a hand held Garmin Etrex Vista Cx GPS, while the larger Norse ruins were surveyed with a Leica SR20 RGPS. However, because of a defective cable and the inability to recharge batteries of the Leica GPS, not all measurements could be corrected using baseline corrections.

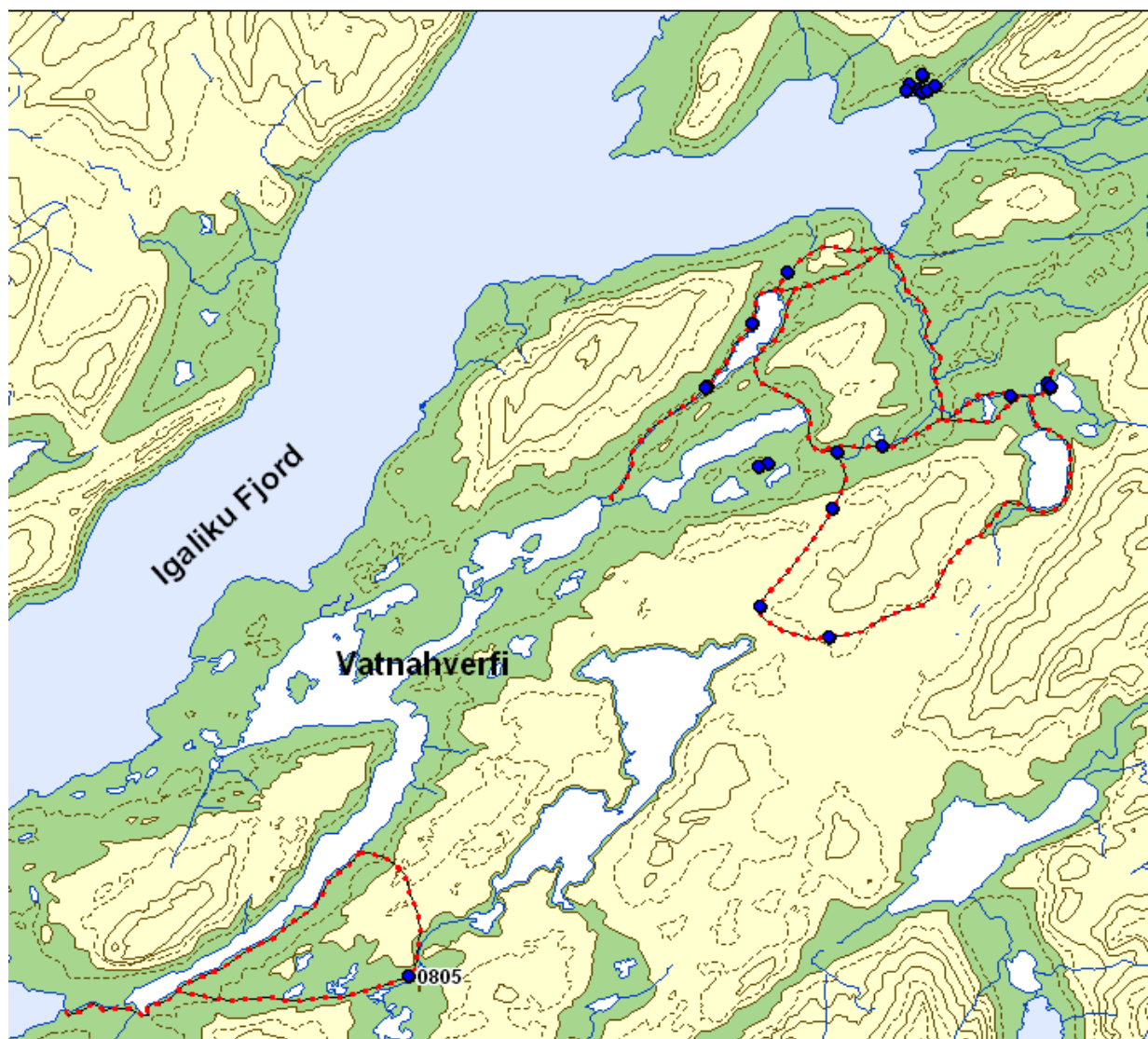


Figure 21. Surveyed routes and location of new ruins

RUINS

(position format hddd.ddddd°, map datum: WGS 84): *E+ number* refers to the old system of ruin group numbering within the eastern settlement, *ruin nr.* is the individual number of the ruin within the ruin group (after Danmarks Middelalder og Renæssance, Field Rapport 24, 25, 26).

In the following, fox traps have divided into two different types:

- *Fox traps with chamber*, which are build in stone by constructing a cairn-like structure of elongated form and with a central, rectangular chamber, which opens only in one end. Here, a furrow or groove is made to accommodate and hold in place the vertical drop stone, which will come down and close off the chamber, once the release mechanism is disturbed by the fox. Traps of this type may be of Norse origins, but have likewise been used by Inuit trappers.
- *Fox traps with horizontal drop stone*, which are a new kind of fox trap, where a stone circle or outline carries the weight of a large, flat, horizontally lying stone (or a wooden frame weighed down by a number of stones). The flat stone will then, when triggered by the fox, drop down a crush and hold fox trapped. How long this type of trap have been in use is uncertain, but most are certainly newer of date.

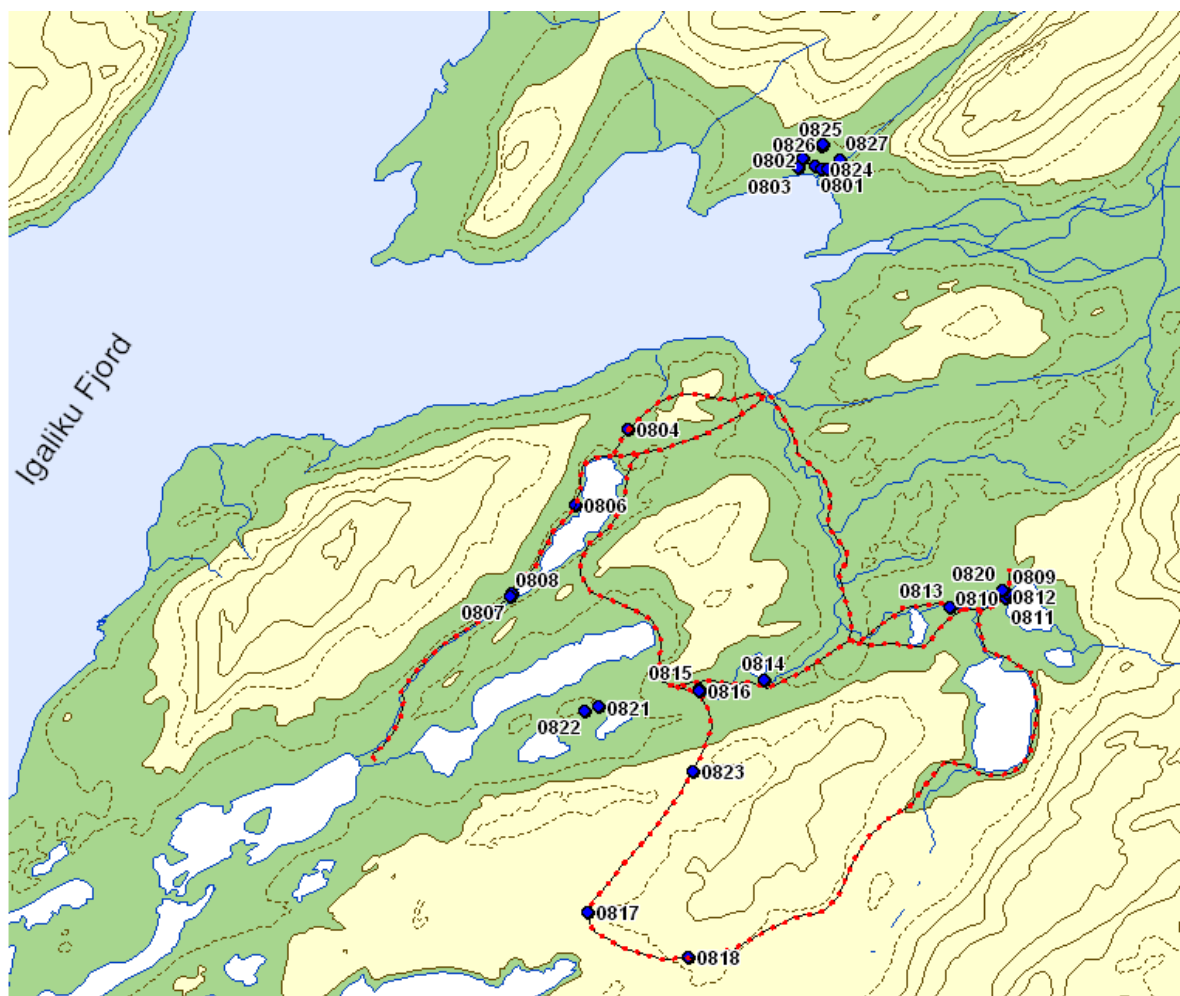


Figure 22. Close-up of the area with the most surveyed ruins and their numbering

0801, N60.91983°/W045.25952°: Inuit(?) Tent ring. On the outermost edge of the plateau in front of the Norse ruin group E209, one finds a rectangular stone foundation, c. 4x7m's, made out of rounded stones of up to the size of a football. In the NW end of the ruin, the remains of a square, stone lined fireplace can be found, connected to the tent wall with stones. Older ruin, probably Thule culture, with lichens of up to 5,6cm in diameter.

0802, N60.92068°/W045.26267°: Possible cairn. In the cliffs SW of the Norse ruin group E209 one finds a single, upright standing stone block (44cm high), which has been forced into a minor crevice and secured in this position by a smaller stone wedged in underneath. This stone has probably been erected and considering its visibility (especially from the dwelling of E209), it could have functioned as some kind of marker.

0803, N60.91964°/W045.26376°: Larger, collapsed cairn. In the cliffs SW of the Norse ruin group E209 one finds a rectangular, c. 140x110cm, heap of stones, the probable remains of a larger cairn. Just c. 2m's NW of the cairn a newer foxtrap is found and might have been made by using some of the stones from the older cairn.

0804, N60.88811°/W045.30608°: Foxtrap w. chamber. In the sloping hills north of the Norse ruin group E169 and clearly overlooking this, lies on a naked cliff surface a partially collapsed foxtrap made out of rather heavy stones of up to 40x40x40cm. Its dimensions are c.110x90, the chamber – still clearly visible and with the opening towards W – 13x20cm in cross section.

0805, N60.76567°/W045.44125°: Figure 23. Foxtrap w. Chamber. On a naked cliff knoll, some 500m's east of and overlooking the Norse ruin group E164, one finds a partially collapsed fox trap w. chamber measuring c.120x100cm. The chamber opens to the west. Lichens cannot be measured.



0806, N60.87904°/W045.31886°: Foxtrap w. chamber. On a rocky knoll west of the lake Amikitap Tasia lies a partially preserved and rather poorly build foxtrap with chamber. Its dimensions are c.130x110cm, the stones up to 40x40x30cm and rather irregular. The chamber opens towards the east and has a cross section of 15x20 cm. Lichens cannot be measured.

Figure 23. 0805 seen from the NE with E164 in the background (at the small

0807, N60.86824°/W045.33456°:

Collapsed cairn. On a naked cliff knoll south of lake Amikitap Tasia a totally collapsed cairn can be found. It had been build be oblong or irregular stones of 30-40cm's long.

0808, N60.86798°/W045.33519°: Cairn. It lies on a rocky knoll south of lake Amikitap Tasia, situated in such a way that it marks the beginning of the decent from the valley with Amikitap Tasia down through Qoororsuasik. It is rectangular in ground plan, c.80x50cm, and, judging from the surface of the stones, of a newer date. The surface of the rocky knoll under the cairn and a pile of stones lying at the foot of the knoll and overgrown with lichens, suggest that an older cairn might also have stood here.

0809, N60.868261°/W45.212061°: Figure 24. Norse economy building/skemman. Standing at the beginning of the stream that drains the lake Zucerip Tasia, just east of E168, one sees a small rocky knoll just north of the stream. On top of this knoll a square dry-stone building, presumably a skemman, has been build. The building measures c.6,2x4,4m (outside dimensions) with walls up 1m thick and preserved to a height of 120cm's height (5 courses) in the

western end/gable (though completely collapsed in the eastern end/gable). The inside is filled with great heaps of *collapsed stones and no entrance can be discerned*.



Figure 24. The knoll with 0809 seen from the S and lake Zucerip Tasia to the right

0810, N60.86777°/W045.21265°: Small collapsed cairn. Lying on a small rocky knoll by the edge of the lake Zucerip Tasia and the river running from this, just south of the Norse ruin group E168, one finds this one of three small, stone structures. 0810 measures c.100x75cm and has been made of squarish stones of up to 45x25x15cm.

0811, N60.86783°/W045.21254°: Small, partially collapsed cairn. Approx. 10m's from 0810, one finds another small cairn, this one oval with the longest diameter of c.100cm. The flattish, oblong stones, c.35x20x13, seem to form a stone circle.

0812, N60.86805°/W045.21219°: Fox trap w. horizontal drop stone. Just on the other side of the stream from 0810 and 0811, one finds a fox trap with horizontal drop stone. From the look of the stone surfaces, the fox trap is recent.

0813, N60.86655°/W045.22620°: Cairn, partially collapsed. On the side of the stream running from lake Zucerip Tasia, just where a marked drop in the terrain forms a small waterfall, lies a small collapsed cairn, which must have been clearly visible from further downstream. It is square in ground plan, measures c.110x110cm and was made of flat stones of up to 75x40x10cm. One large, flat stone, now lying horizontally, may once have been standing upright.

0814, N60.85782°/W045.27244°: Cairn (figure 25). About halfway between the Norse ruin groups of E67 and E69, stands a simple, but intact cairn. It has been made by placing three rather large, rounded stones (c.50x30x25cm) across from each other and then placing an even larger (75x60x45) stone on top of these three. The cairn itself is standing on a naturally exposed stone block, making it even more visible from afar (especially from E67). The size of the stones and the lichens suggest that this cairn could be Norse, possibly some land demarcation.



Figure 25. Cairn 0814 with modern farm and Norse ruin group E67 in the background.

0815, N60.85667°/W045.28841°:
Collapsed cairn/fox trap. On a naked cliff by bank of one of the small lakes between the Norse ruin groups E67 and 69, one finds two heaps of stone, both possibly collapsed cairns or fox traps. 0815 measures c.120x100cm in ground plan and was made of flat stones of up to 60x45x12cm.

0816, N60.85662°/W045.28827°:
Collapsed cairn/fox trap. On a naked cliff by bank of one of the small lakes between the Norse ruin groups E67 and 69, one finds two heaps of stone, both possibly collapsed cairns or fox traps. 0816 measures c.150x100cm in ground plan and was made of flat stones of up to 55x30x18cm.

0817, N60.82998°/W045.31603°: Animal or hunting shelter. On a low rocky ridge in the highlands of central Vatnahverfi, one finds a horseshoe-shaped stone foundation measuring c. 140cm in length and with an inside width of c.60cm. The stones are rounded of up to football sized only preserved in one course. Judging from the collapsed stones, the wall can not have stood

more than two courses high and it most probably an Inuit hunting shelter.

0818, N60.82456°/W045.29120°: Foxtrap w. chamber. On a rocky knoll in the Vatnahverfi highlands, some 1200m from the Norse ruin group E72, one finds a perfectly preserved foxtrap with chamber, measuring c.160x100x50cm, and made out of stones with dimensions of up to 40x40x40cm. The vertical drop stone is here even preserved in the groove. The chamber, which opens towards the SV, measures 85x22x18cm.

0819, N60.89635°/W045.27742°: Shelter, Norse sheep/goat shelter. Among the debris and boulders of the rocky slope NW of ruin group E66 and c. 40metres from the storage building (Ruin 1), one finds a huge, horizontally lying boulder, on the north side of which is a small, square entrance (c.50x50cm). This opens up to a naturally formed cave or chamber of oblong (c.490cm) and roughly trapezoid shape, measuring c.130cm in the wide end and c. 60cm in the narrow. The corners and gaps between the boulders forming the cave have been blocked up with smaller stones, thus creating an almost completely sealed off cave/chamber of no great height (though the floor has been filled with sand/silt and rubbish, for which reason it is hard to ascertain the precise height of the cave). Structure looks Norse and has most probably functioned as some sort of shelter, e.g. for sheep/goats.

0820, N60.868623°/W045.213180°:
Norse economy building/stable (figure 26). Close

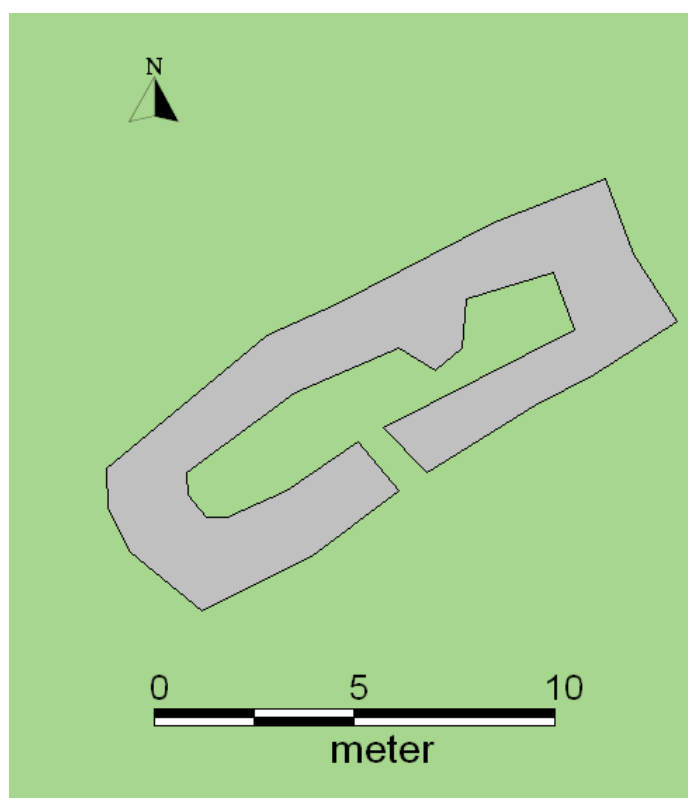


Figure 26. Ruin 0820

to ruin 0809, one finds 0820, a stone/turf built, rectangular c.14,6x4,90m (outside dimensions) structure, probably a stable building. The building is oriented SW-NE. The northern long side of the building is formed by a naked cliff side, although remains of the wall build on top of this cliff is still preserved. The walls are c.2-2,5m wide at the base, c.1m wide at the top and in some places preserved to a height of 120cm. A narrow entrance is visible approx. in the middle of the southern long wall. In the eastern end of the building, a partition of the inside can be discerned.

0821, N60.854648°/W045.313083°: Norse economy building (figure 27). According to Siggu and Arnaq, the sheep farmers at Timerliit, some Norse ruins should be found just west of their farm. Following their directions, we walked along below the low ridge between the lakes of E68 and E69, which led to the discovery of ruin 0821 and 0822. The former, a Norse structure, was found c. 400m west of the modern farm. With inside dimensions of c.5,4x2,5m, outside dimensions of 6,5x5m, this oblong, collapsed building was build against the naked face of a large boulder, this thus forming the eastern gable of the structure. The wall was build in turf and stone and was relatively oorly preserved (c.1,5m wide). The stones es-pecially in the eastern part of the wall were smallish (no greater than the size of a closed fist) which shows that the-se were most probably fill in a wall rather than laid in courses. The remains of a wall on top of the boulder allows for the observation that this building was roofed and not an open pen/enclosure. The function of the building is otherwise unknown. The ruin is overgrown with low willow shrub.



Figure 27

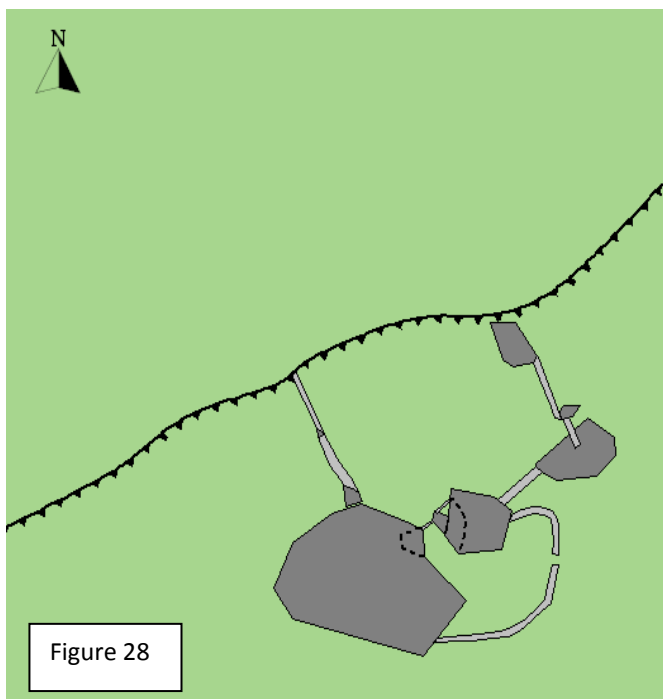


Figure 28

0822, N60.854136°/W045.316724°: Large Norse enclosure (figure 28-29). A further c. 200m's from 0821, lying directly below the low ridge and exploiting this and several large boulders, is a rather larger enclosure consisting of two main compartments. One wall, c.50cm wide and standing 50cm (4 courses) where best preserved, has been build against the face of two large boulders, thus forming an enclosed area of uneven shape (c.9,3x7,40-10,30m) and enclosing c.71m². However, in the NW corner of this area the Norse have exploited natural hollows under the boulders and by

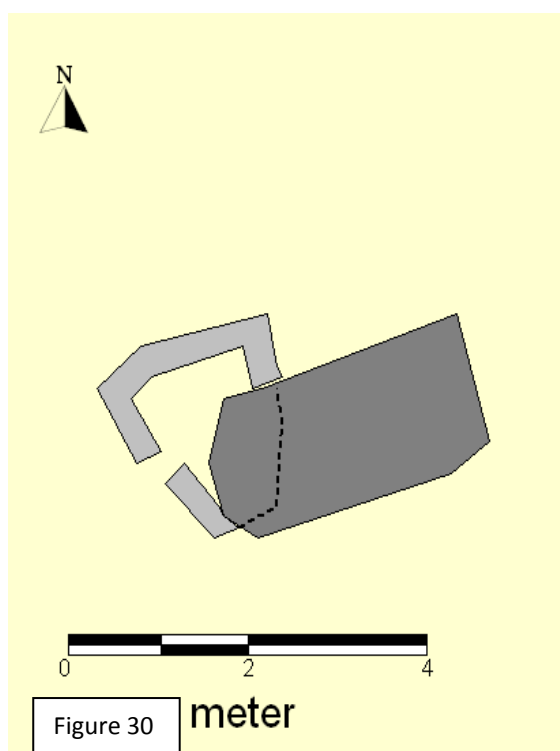
walling up crevices and openings, created two roofed shelters, which seem also to have been walled off from the rest of the compartment. A clearly visible entrance, c.60cm wide, into the pen opens towards the east. This part of the ruin is covered by very short, lush green grass.

North of this compartment is a second larger, which has been created by building dry stone walls between the boulders and the almost vertical cliff face of the ridge. In some places these walls are preserved in up to 8 courses (a height of c.80cm) and a width of c.70-80, although most stretches are more collapsed than the walls of the first



Figure 29. Close-up of the inner "rooms" under the boulders in ruin 0822

compartment. The compartment measures c.18,50x14,80m and encloses an area of c. 222m². The inside of the second compartment is strewn with rocks, boulders and stone collapse and is overgrown with willow and birch shrub.



0823, N60.846872°/W045.289918°: Norse sheep/goat shelter (figure 30). Just east of the easternmost registered ruin of ruin group E70 is the remains of a small structure, which consists of two stretches of "wall" build against the naked side of a boulder, thus creating a small, squarish room of c. 2,1x1,8m (outside dimensions), partly lying under the boulder. Because the "walls" are only preserved in one course c.30cm wide and no other collapse can be seen lying around the ruin, they are more probably a foundation for a now completely dissolved turf wall. The entrance to the small room is no wider than 30-40cm, scarcely enough for anything but lambs/kids. The structure was built directly on top of the naked cliff.

0824, N60.919431°/W045.257957°:

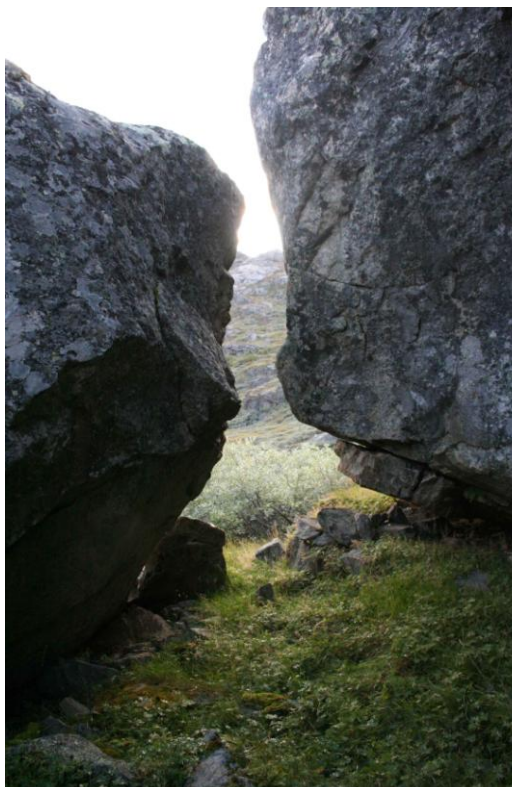
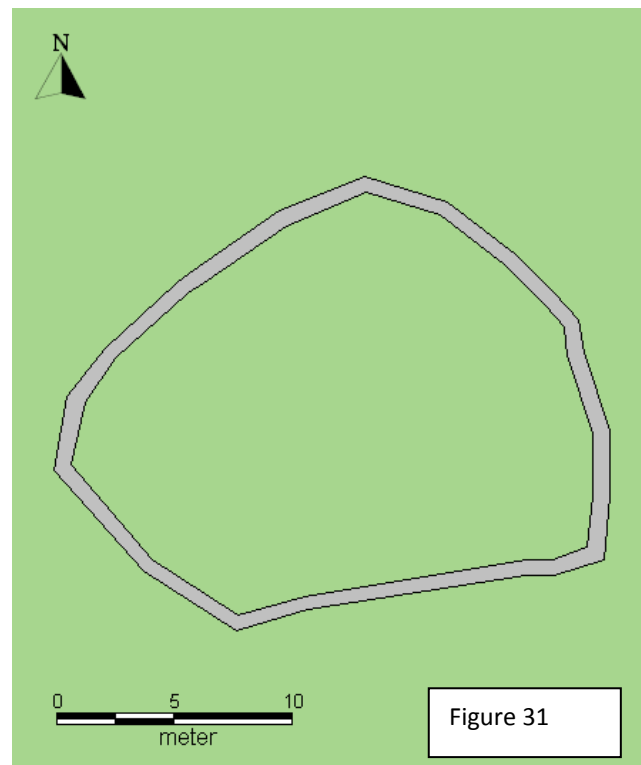
Enclosure/pen. Location of ruin kindly provided by Ole Guldager. In the slope leading up to the plateau where the Norse ruin group E209 is found and just north of the stream, one finds a small, unevenly shaped, natural gorge, which have been used as an enclosure, by barring off the entrance to the gorge by a dry-stone wall. This main stretch of wall measures c.7,2m in length, c.60cm in width and preserved in up to three courses. A second, short and very poorly preserved stretch of wall can be seen running along the top of the edge to the gorge. The enclosed area is c.200m².

Today, the gorge appears as a very impracticable place to keep animals, because a small stream runs into the gorge and forms a small lake at its bottom. The gorge is overgrown with birch/willow shrubs.

0825, N60.922227°/W045.257999°:

Enclosure/pen (figure 31). In the hill side just northeast of the Norse ruin group E209 is the remains of a rather larger enclosure. Lying on a strongly sloping cliff surface with little vegetation, it is today seen as a low wall running along the edge of the small cliff plateau. The enclosure is of roughly trapezoid shape with rounded corners and measuring c.21x19m. The wall is preserved only as a low stone/turf bank, up to c.1m wide and 20-30cm high where highest. It encloses c. c.300m². From the low number of stones lying around the ruin, it can be ascertained that the wall was primarily made of turf, perhaps resting on a stone foundation. The strong slope of the cliff plateau makes it an unlikely location for an animal enclosure and it was most probably used for sheep/goats.

0826, N60.922461°/W045.257838°: Shelter or enclosure (figure 32). Just a further c.20m's uphill from 0825 lies a ruin, which can best be interpreted as an enclosure or animal shelter. Here, a gap between giant boulders leads to an enclosed space measuring c.5x3m. Because the cliff wall stand 4-5m's high, the



enclosed area is very protected and has the actual feel of a room. At the gap forming the entrance, the remains of a stone build wall can be seen. At the back end of the enclosed area is another stone build wall, c.3m long, closing off the bounded area towards the North. Unfortunately, because of poor satellite reception, the ruin could not be measured with accuracy.

0827, N60.920547°/W045.253578°: Stretch of wall. In a survey in 1999, O. Guldager, S. Gleie and S. Stummann Hansen discovered a number new ruins, which should be associated either with E209 or E64. Most of these could be confirmed in the 2008 survey (though not all were surveyed). In addition to the ruins found by O. Guldager, S. Gleie and S. Stummann Hansen, one further stretch of wall was found and surveyed. This was a stone build wall stretching c.8,30m between a naked cliff face and the gorge with the stream running between the ruin groups E64 and E209, thus completing the bounding off of the small plateau, where the earlier survey discovered an early long house + 2 outhouses.

Figure 32. Inside view of the entrance to 0826. Notice the remains of the wall.

E64 RUIN 12, N60.919457°/045.256377°: Possible additions to the already registered E64 ruin 12 (enclosure). Exploiting some large boulders north of and up against ruin 12, there seems to be an additional compartment measuring some c.7,8x6,3m, which is bounded on the north side by the stream. On top of the boulders poorly preserved remains of wall can be discerned.

Running SW from the opening of the already registered ruin 12 and along the bank of the stream, is a flat stretch of land with little vegetation. Some c.15m from the already registered enclosure, this flat stretch of land seem to be delimited towards the south by a very poorly preserved stretch of wall (on top of naturally deposited boulders), which runs for c.17m and then turns north towards the stream, where it then ends. If really a wall, an area of c.220m² between the wall, the stream and the already registered ruin 12, will have been bounded off. Alternatively, gravel and stones eroding down from the slope above the stream might account for the strange positioning of stones interpreted as wall.

DNA-TESTING IN THE VATNAHVERFI REGION

Martin Bay Hebsgård & Christian Koch Madsen

INTRODUCTION

The first promising DNA-analysis on soil column samples taken during the archaeological excavations of the Farm Beneath the Sand (GUS) 1991-96, suggest active fertilizing of the home fields (Hebsgaard *et al.* 2009). The DNA-analyses have shown that the soil samples can be used to identify the presence humans, animals and plants. The method is new in the research field of Norse archaeology and is expected to provide evidence of function, outline home fields and modes of production, as well as investigate diachronic changes in the subsistence economy.

OBJECTIVE

The aim of the investigation of E66 is to develop the method and the use of soil samples from sections to:

- determine the function of enclosures and ruins
- help assess the economy of the farms

The development of this method will generate new insight into the economy of the Norse Greenlanders, as well as help to outline and designate future investigations on archaeological structures and their use, e.g. discover the exact function of specific enclosures as part of the “enclosure-project”.

SAMPLING AND METHODS

The sample trenches are in all notebooks and on original section drawings referred to as *DNA-Trenches*. The actual sampling entailed: an arbitrary selection of a spot within the enclosure, pen or home field area and the subsequent digging of a small pit of approx. 50-60x50-60cm to the depth of the undisturbed subsoil (because of collapse and stones, several attempts often had to be made, before the actual DNA-trenches could be dug). One section was then cleaned, photographed and scale drawn (1:10), and a stratigraphic series of samples were taken from the observed layers, the position of these being noted both on the plastic sample tube, the section drawings and in the notebook. Finally each DNA-trench was assigned coordinates with a handheld GPS (see below).

In all 86 samples were retrieved from the DNA-trenches and excavation section (see below). During the field work these were kept as chilled as circumstances allowed and were then transferred to the Biological Institute at the University of Copenhagen, where they are stored in the freezer at:

Juliane Maries Vej 20,

2100 Copenhagen Ø.

The DNA-analysis is expected to start in the second quarter of 2009. However, this future work necessitates funds and the testing of selected samples to assess the preservation of DNA in the soil.

LOCATION/DESCRIPTION OF DNA-TRENCHES

(position format hddd.ddddd°, map datum: WGS 84): *E+ number* refers to the old system of ruin group numbering within the eastern settlement, *ruin nr.* is the individual number of the ruin within the ruin group (after Danmarks Middelalder og Renæssance, Field Rapport 24, 25, 26). Figure 33.

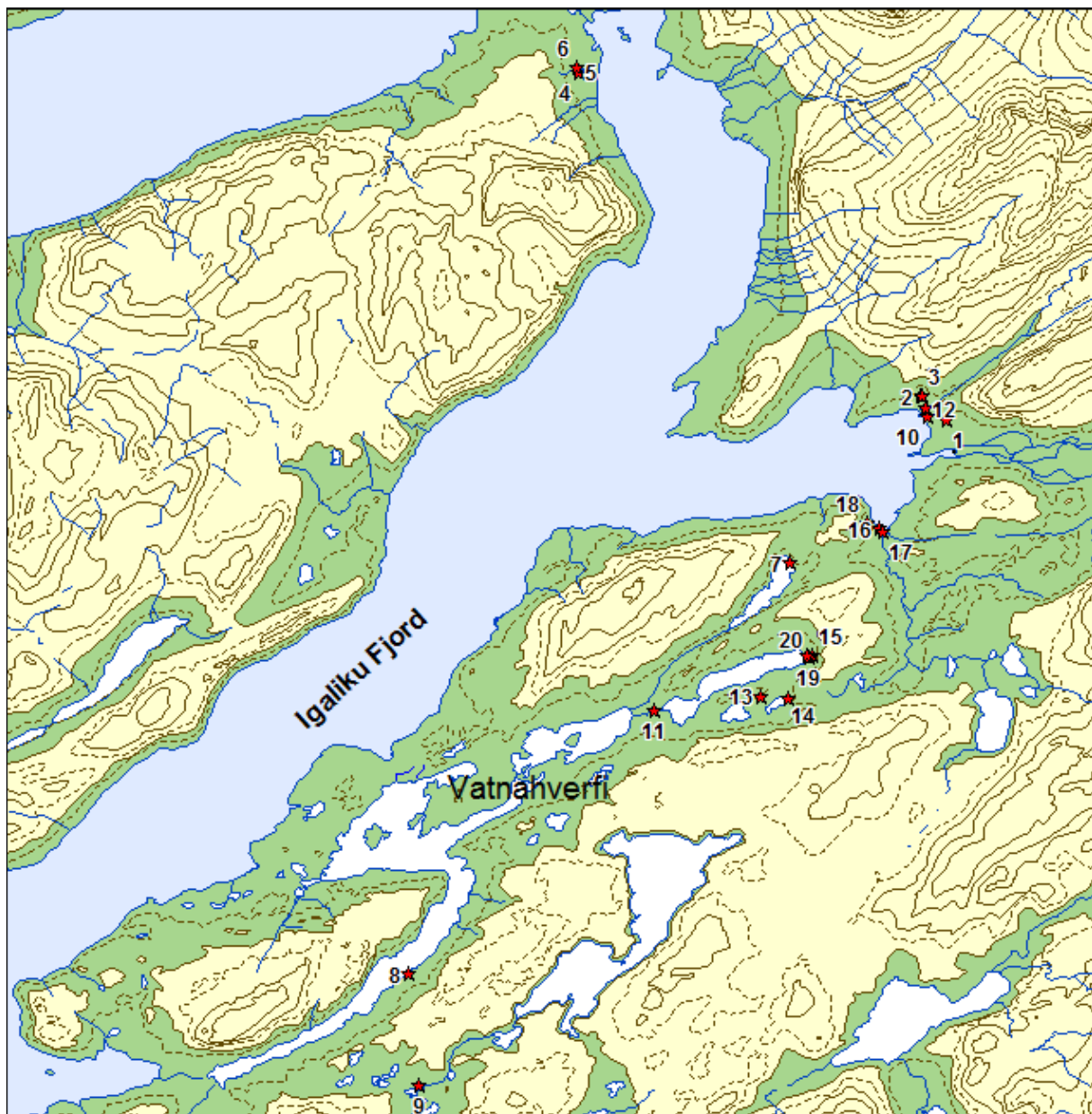


FIGURE 33

RUIN SITE E47 – IĞALIKU / GARDAR

4: N 60.98403°/W 045.42432°: E47, inside ruin 40 (smaller enclosure)

5: N 60.98413°/W 045.42389°: E47, inside ruin 40 (larger enclosure)

6: N 60.98513°/W 045.42519°: E47, inside ruin 39

RUIN SITE E64

DNA-Trench 1: N 60.91733°/W 045.24694°: E64, inside ruin 16.

12: N 60.91945°/W 045.25636°: E64, near ruin 12 (inside newly discovered enclosure)

RUIN SITE E66

16: N 60.89264°/W 045.27201°: E66, inside ruin 25

17: N 60.89192°/W 045.27058°: E66, inside ruin 21

18: N 60.89367°/W 045.27765°: E66, inside ruin 11

RUIN SITE E68

15: N 60.86406°/W 045.29645°: E68, inside ruin 7

19: N 60.86366°/W 045.29731°: E68, inside ruin 4

20: N 60.863944°/W 45.298335°: E68, excavated section in the midden just east of ruin 6

RUIN SITE E69

13: N 60.85418°/W 045.31667°: E69, inside newly discovered enclosure just west of the ruin group

14: 60.854128°/W 45.305068°: E69, exposed section in midden layers just west of ruin 2

RUIN SITE E71

11: N 60.84904°/W 045.36358°: E71, inside ruin 20

RUIN SITE E164

9: N 60.76353°/W 045.45000°: E164, inside ruin 12

10: N 60.91771°/W 045.25515°: E64, home field east of ruin 4

RUIN SITE E165

8: N 60.78730°/W 045.45950°: E165, inside ruin 2

RUIN SITE E169

7: N 60.88325°/W 045.30960°: E169, inside ruin 2

RUIN SITE E209

2: N 60.92172°/W 045.25930°: E209, homefield south of ruin 1.

3: N 60.92194°/W 045.25856°: E209, inside ruin 8.

CORING AT SITES IN THE VATNAHVERFI REGION

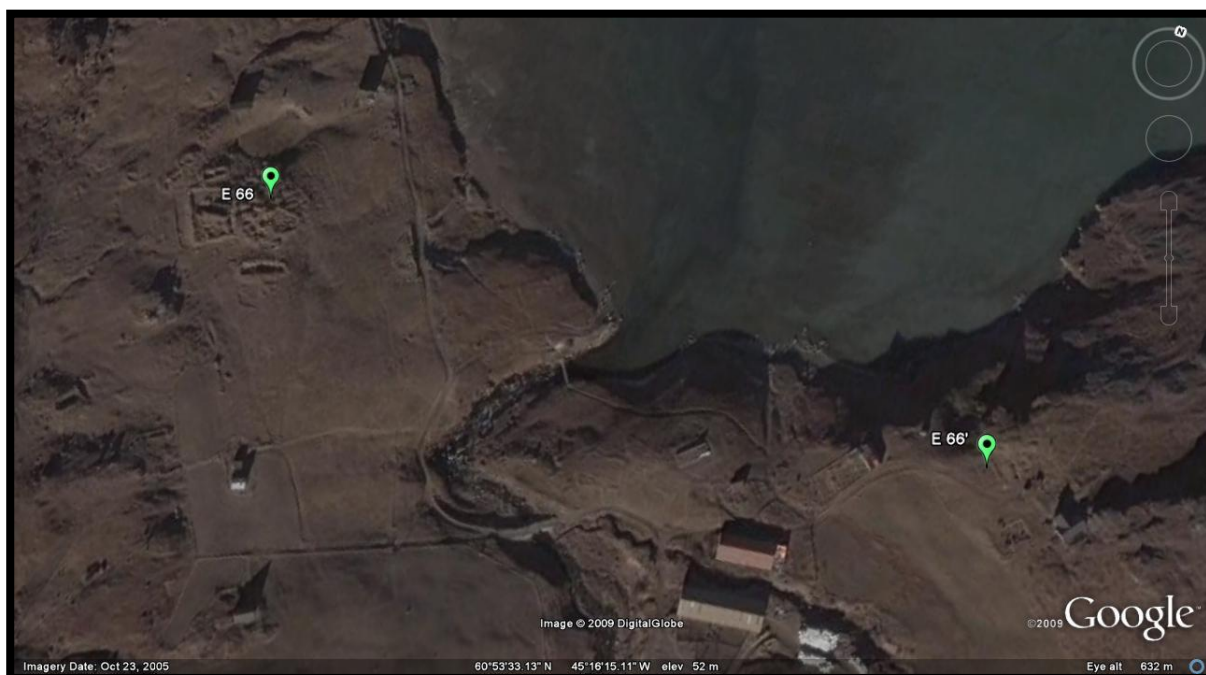
Konrad Smiarowski

INTRODUCTION

Based on the results of midden prospecting survey in 2007 and 2008 (Śmiarowski 2007, Śmiarowski this report, Møller & Madsen 2006a) we were able to locate middens at Ø64 Innoqqasaq and Ø68 Timerliit, where we conducted archaeological excavations. This season, we also completed a program of survey and systematic coring (using a tube-type Oakfield soil corer) of 13 Norse sites: Ø64 Innoqqasaq, Ø66 Igaliku Kujalleq (2 farm sites), Ø169 Amikitap Tasia, Ø67 Quorlortukasik, Ø68 Timerliit, Ø69 Timerliit, Ø70 the Mountain Farm, Ø71N and Ø71S *Saqqaa*, Ø72, Ø75 *Taseq Ammalortoq*, and Ø168 *Zucerip Tasia*. We located over 18 middens associated with dwelling buildings, and assessed the organic/bone preservation (to a degree possible without archaeological test trenching). Together with 8 sites assessed in 2007 (21 in total) we have acquired a rich data set reflecting location, depth, composition, and organic preservation conditions of Norse middens in the Northern and Western part of the Vatnahverfi region. Based on this data, site accessibility, and field observations we were able to assess the potential for further zooarchaeological investigation at those sites.

Ø66 DWELLING LOCATED ON EASTERN SIDE OF THE STREAM AT I GALIKU KUJALLEQ (N 60.533340, W 45.160067)

This dwelling is located ca. 450 meters east of the main Norse farm complex at Ø66 (see figure 34). This site, interpreted as a possible Norse dwelling, is located very close to a modern day farm. It is partially included in a fenced off home field area where most of the dwelling room depressions are visible on the surface. The modern farmer had filled several of these with sheep manure and planted rhubarb in some of them creating a kind of garden (fig. 26). After looking into one of these depressions, and cleaning off a bit of a profile from under the angelica plants overgrowing it, we observed a possible midden deposit, full of charcoal and few bone fragments. This is not clear if it actually is Norse refuse, as it may represent modern garbage dump, as at Ø66. We decided to core around the structure to find any surviving midden deposits.



Figure

Figure 34. Location of Norse sites at Igaliku Kujalleq.

A series of cores NW of the structure revealed a thin ca. 17-47 cm charcoal rich layer testifying to human activity, under 45-60 cm of sterile windblown silt. Only two white burned bone fragments were noticed, and no unburned

bone or other organic material traces. Other possible midden area was located SE of the dwelling. Transect, and judgmental coring in this area showed even less human activity than N of the structure. Here a dark, charcoal rich bands disrupted by windblown silt deposition events were only ca. 5cm thick, and did not contain any preserved bone or organic material. This site does not seem to have much potential for further zooarchaeological excavation.



Figure 35. The other dwelling at Igaliku Kujalleq. Note the rhubarb growing in the depressions that possibly indicate separate rooms of the dwelling.

Ø 67 (N 60.85399141, W 45.30485761)

This middle-sized farm site, located inland, consists of several farm buildings, and an extensive area of midden deposition southwest of the main dwelling structure (Møller and Madsen, 2006a). By placing series of core transects and using judgmental coring the author was able to locate two main middens within that area. While coring, some bone remains were encountered at a depth of ca. 60 to 80 cm from the surface. We were unable to assess the total depth of the middens, because permafrost (or frost still from previous – supposedly harsh winter) was present at depth of 80cm throughout the site. It is recommended to test this site with a small trench, and logistics in this case should not pose a problem. A dirt road from the harbor at Igaliku Kujalleq leads to modern day farm (Quorlortukasik) near the archaeological site.

While digging an irrigation ditch in the area of the site the farmer, Andala Lund, found several fragments of worked wood and a cattle bone (see figure 36). This area is now under a hayfield, but we did not observe any archaeological structures in the immediate surroundings of the vicinity the area where those finds were picked up. Nevertheless, the preservation of these organic artifacts, found some 150 meters from the main dwelling, suggests that this site may have a potential of generating a zooarchaeological collection.



Figure 36. Andala Lund's finds of wood and bone from Ø67.



Figure 37. The landscape and the modern farm buildings at Ø67 looking north-west from the top of the Norse farm mound. The middens are located under the willow trees in the foreground. Note the eroded landscape in the background.

Ø 69 TIMERLIIT (N 60.85399141, W 45.30485761)

This ruin group is located near modern sheep farm at Timeriit, in close proximity (ca. 1km) from Ø 68 (Figure 38). Their location in the landscape is also very similar. Both are located on gentle slopes of mountains that shelter them from the northeastern winds sweeping Vatnahverfi from the glacier. Both are located on shores of small lakes, and their home fields encompass areas around those lakes. The same farmer dug irrigation trenches here as at Ø68, but here he found some wood fragments in close proximity to the main dwelling. This ditch too, separates the midden in two parts, but while cleaning the section for geomorphology sampling no bones or artifacts were found. It was possible to assess the extent of the midden based on this section, and judgmental coring. Most of it lies east of the trench, while only small part is on the western side. Both sides are not used for agriculture, so there is no threat to the deposits. The coring transects revealed the extent of the midden layers down the slope (west) from the main dwelling. Very badly preserved single bone fragment was noted in the core only once. Despite the wood fragments found here some years ago, the coring and section clearly demonstrates that the preservation conditions here are not good. It is therefore not recommended to excavate the midden at this site.



Figure 38. Location of Timerliit, a modern day farm in relation to the Norse farms Ø68 and Ø69. Note the similar placement in the landscape of the archaeological dwellings.



Figure 39. The midden at Ø69 looking west from the main dwelling. The drainage ditch is located at the boundary of the lush grass overgrowing the midden in the foreground, and the willow in the center of the picture.



Figure 40. Irrigation trench section at Ø69.

Ø70 – THE MOUNTAIN FARM (N 60.504697, W 45.172999)

This site was excavated by Christen L. Vebaek in 1950, but not finished due to the onset of winter weather (Vebaek 1992). This small farm, and may have started as a shieling, which is located over 200 meters above the sea level. A series of spoil heaps and stone cairns from the old excavation are still there. In front of the dwelling (south), there are

areas of lush, green grass that looked like a potential midden. Both transect and judgmental coring did not prove effective at finding the midden. In several areas, all around the structure, we evidently cored through old spoil heaps (soft, empty feeling when inserting the core and uniform/lack of clear stratigraphy) that had been spread down slope by wind and water. Since the spoil heaps contained organic material from the occupation phases, the grass grew better there but conditions of organic preservation were not good. We did not encounter any midden material at this site. The core readings were shallow, only ca. 50 cm deep, including ca. 20 cm of windblown silt at the top. It is possible that this site was mainly managed as a seasonal shieling rather than a full farm (like those of roughly contemporary shieling/ sel sites in Iceland), and the midden may not have ever contained much bone debris. This site seems to have very limited potential for further zooarchaeological investigation.



Figure 41. Ø70 the Mountain Farm. The excavated structure and the remains of the spoil heaps and stone cairns resulting from these excavations.

Ø72 (N 60.82618352, W 45.31681356)

This middle-sized inland farm was only briefly surveyed and cored by the author. The main dwelling is located on a south sloping hill, and it was expected that the midden residue had been rolling downhill from the main entrance located on this side. There are areas of lush vegetation there, but series of coring transects did not locate the midden. Judgmental coring was employed, and finally a small midden was found on the northern (back) side of the building. It is not evident from the ruin remains, but there might have been another door on that side. The midden was shallow (ca. 44 cm deep, including 10 cm of silt at the top), and did not extend over a large area (only about 2x2 meters). This site has little potential for midden exploitation, and the logistics of getting to this very remote place without a helicopter are very difficult.

Ø75 TASEQ AMMALORTOQ (N 60.504872, W 45.132113)

This inland site is unique among the sites investigated during this project in Vatnahverfi area. It comprises of three dwelling structures clearly visible in the topography of the terrain, that are located within 25-50 meters from one another, and a number of associated farm buildings (Møller and Madsen 2006a). The dwellings are placed on similarly low altitude on a gently south sloping side of a mountain. The site overlooks a river that flows from a small lake to the S-W of the site, towards another lake (Taseq Ammalortoq) in the east. The three dwellings are very similar to each other and it is probable that they are contemporary. Since there is not much flat terrain around them for a prosperous home field, it is possible that these were shielings belonging to different farms, and functioning at the same time. The coring exercise aimed at locating and assessing the middens associated with these dwellings found that the middens are spread out, shallow, and their accumulation was probably not as intense as at a typical Norse farm. This further suggests that the site was a shieling rather than a full time farm site.

For the purpose of the survey and this report, the dwellings were named according to their location: Western Dwelling, Middle Dwelling (Figure 42), and Eastern Dwelling. It was suspected for all of them, that most of the midden

material would be located down slope, on the southern side of the structures. This area had pronounced topography of terrain and much more green and lush vegetation than anywhere else. Nonetheless, cores were also drilled north, east, and west of all dwellings to make sure that was the case. Coring exercise proved our earlier assumption to be the truth, and the only midden material detected at this site was in fact on southern (down slope) side of the dwellings, located approximately 4-5 meters south of the visible ruins. All the cores drilled had revealed heavy deposits of windblown silt over the whole site that ranged from 8cm to over 40cm thick.

The midden associated with the eastern structure was located ca. 5 meters down slope from the remnants of southern wall. It was approximately only 20-25cm thick and located under 20-28 cm of windblown silt. The midden layer consisted of small amounts of charcoal that reflected human activity, spots of decomposed organic material, and very little white burned bone specs. This midden is not recommended for zooarchaeological excavation.

The middle dwelling is located approximately 50 meters west of the eastern one. In the cores taken in the most promising places on the northern side, we only recorded some structural turf collapse mixed with little charcoal, but no clear evidence for midden deposits. Approximately 4 meters south of the dwelling, a midden was found sloping ca. 16 m south towards the river. In the deepest part (ca. 5 m south from dwelling), the midden was 87cm deep, and thinned down slope to 34cm at the 16 meter mark. The cores closer to the building (ca. 4-10m from the dwelling wall) produced the richest, although poorly preserved evidence of organic preservation (unburned bone), as well as burned bone, and gray ash indicating proper midden deposits. All this stratum was located under 16cm of windblown silt in the northern part of midden, to 42cm of the same silt down slope.

Cores taken on northern side of the western dwelling (located ca. 20 meters from the middle dwelling) only revealed 30-45 cm deep deposits of windblown sand, under which an orange-brown sandy silt substrate, that underlies the whole site was found. As in previous two dwellings, the midden associated with this building was located south, and extended for 10 meters down slope. The midden layers were only 15-25 cm deep and did not contain preserved organic materials. There were some large charcoal fragments present, but no bone remains at all.

The poor organic preservation at this site may be partially attributed to the leaching of such materials with water running down slope towards the river, especially during spring snowmelt. The gravel moraine located immediately under the sandy silt underlying the whole site is definitely a factor further contributing to leaching at this site. There is no potential for recovery of a well-preserved zooarchaeological collection from this site.

Figure 42. Middle dwelling and midden looking south, towards the river.



Ø168 ZUCERIP TASIA (N 60.521623, W 45.124248)

The site is located on a flat plateau near the northwestern shore of lake Zucerip Tasia (Figure 43). There is a large dwelling with several rooms visible on the surface at this site. Large area with lush vegetation and earth lumps just southwest to the dwelling is a classic example of midden topography. The site area is flat and it seems that there has not been much disturbance on the site since Norse abandonment. The earth lumps mentioned before are midden dump areas, which seem to be in situ since Norse deposition. Several cores were drilled in all directions around the building to confirm the midden location. The midden was located SW from the dwelling and cores resulted with some well and poorly preserved bone fragments. The greatest thickness of the midden deposits encountered was 99cm, located under ca.38 cm of windblown silt. Single fragment of wood and a piece of birch bark were identified in a context with charcoal, in one of the cores.

The mixed signals of good and poor bone preservation, especially the preserved wood, leads author to believe that this midden may have a good potential to generate a bone collection. Further investigating with a small test trench, to assess the preservation condition is advised for this site. Although the logistics of large-scale excavation on this site may be difficult, a 2-3 person survey team should be able to make small-scale test trench excavation (1m x1m) and assess the preservation conditions.



Figure 43. Ø168 is located on the plateau.

Ø169 AMIKITAP TASIA(N 60.88492256, W 45.30997611)

This site is located on the northern shore of Amikitap Tasia (lake). It comprises of the dwelling and two farming buildings, as well as an interesting animal enclosure that uses the natural topography of a small lake peninsula (Møller and Madsen 2006a). Two coring transects placed southwest of the main dwelling; down the slope towards the lake revealed midden deposits with relatively well preserved animal bones. The deposits are ca. 70 cm deep (excluding the ca.15 cm of topsoil and natural windblown silt deposited everywhere in the northern part of Vatnahverfi region) and appear to be highly stratified (Figure 44). This site has a potential for recovery of an archaeofaunal collection, but the logistics of getting an excavation crew there may be hard. The author proposes to place a small test trench there

(1x1m) to confirm the preservation conditions. This can be done as part of the coring/survey project planned for 2009 season.



Figure 44. Test core no.7 at Ø169. Black and gray layering of the midden deposits is clearly visible to the depth of 70cm from the surface.

CORING AT SITES IN THE VATNAHVERFI REGION - CONCLUSIONS

While many archaeological midden deposits at Norse sites in Vatnahverfi Region are poorly preserved, few of them may still prove productive in generating a well-stratified, zooarchaeological collection. Sites such as Ø169, Ø67, and Ø168 have potential, but need to be tested with a small excavation trench. Other sites mentioned have poor, to non-existent organic midden preservation. Ø66 may prove to be a large midden with good preservation, but it would require a large effort, and numerous team members to conduct excavations there. Even with all such effort, this would be a gamble, and the results may be similar to our excavation at Ø68. A table with immediate results of the midden assessments, and some immediate recommendations is presented below. The preservation is judged on a scale: good/fair/poor/none, and the maximum midden depth includes the windblown silt deposited since farm abandonment. Farms Ø71N and Ø71S were cored, but the extensive excavations by Christen Vebaek, and limited time spent at that site by the author, lead to inconclusive results summarized in the table. For further discussion about the preservation conditions in Vatnahverfi area, and site management recommendations see a discussion and conclusions of excavation at Ø68 Timerliit (chapter 7.6).

Site Code	Locality Name	GPS Coordinates	Maximum Depth from the Surface	Preservation Condition	Recommendation
Ø64	Innoqqasaq	N 60.550331, W 45.152323	71 cm	Poor	No further midden excavation
Ø68	Timerliit	N 60.86369061, W 45.29716462	130 cm	Poor	No further midden excavation
Ø66	Igaliku Kujalleq	N 60.89275938, W 45.27507923	Uncertain	Uncertain	Large scale excavation at high risk
Ø66'	Igaliku Kujalleq	N 60.533340, W 45.160067	107 cm	Poor	No further midden excavation
Ø169		N 60.88492256, W 45.30997611	85 cm	Fair	Testing with small trench
Ø67	Quorlortukasik	N 60.85399141, W 45.30485761	Uncertain, at least 80cm	Fair	Testing with small trench

Ø69	Timerliit	N 60.85399141, W 45.30485761	115 cm	Poor	No further midden excavation
Ø70	<i>Mountain Farm</i>	N 60.504697, W 45.172999	40 cm	None	No further midden excavation
Ø72		N 60.82618352, W 45.31681356	44 cm	Poor	No further midden excavation
Ø75	Taseq Ammalortoq	N 60.504872, W 45.132113	103 cm	Poor	No further midden excavation
Ø168	Zucerip Tasia	N 60.521623, W 45.124248	137 cm	Fair to Good	Testing with small trench
Ø71N	Saqqaa	N 60.8480799, W 45.36820435	Not Found	Uncertain	More coring and Testing with small trench
Ø71S	Saqqaa	N 60.84751303, S 45.36883953	Not Found	Uncertain	More coring and Testing with small trench

FIELD WORK 2008 – CONCLUSION

Caroline Polke Paulsen & Jette Arneborg

The 2008 season of surveys and excavations in the Vatnahverfi-region produced a lot of knowledge, creating a base where upon future work can be based. The church and churchyard proved very easy assessable and with a good preservation in the graves at the churchyard. The trench in the interior of the church questioned the construction of the actual building, suggesting a possibility where the building has consisted of only one row of stones in a wall supported both on the inside and the outside of turf walls. Only further investigations will be able to support or reject this hypothesis according to the construction.

The preservation state of the graves and the density of graves in the excavated area give a unique opportunity to study a group within the medieval Norse society. The samples taken this year will give indications on dating, the health and possibly family relations between each individual. A large scale excavation covering the churchyard will give a broader understanding of the entire burial pattern on this site, and include not just the males or few women on the south side of the church, but also give information and knowledge of the individuals put to rest on the North side, to the east and possible children by the western gable. So the results from the graves and skeletons can give an indication of healthy Norsemen, but it will take further and larger investigations to put up a pattern and model the demographic possibilities for this site. With a large scale excavation on this site the churchyard dyke can also be examined over a larger area. This year it seemed as if an entrance was hit, and only the one meter from 2007 revealed little information about the construction of the dyke. Therefore only little information exists on the dyke beside the fact that it can be followed on the surface almost in an entire circle around the church.

The midden excavation and survey added much information to the existing body of knowledge of Greenlandic sites. Two stratified zooarchaeological collections (that will provide datable material and isotopic samples), were excavated and will be phased and analyzed at the NORSEC laboratories at CUNY's Hunter and Brooklyn Colleges in New York. The coring survey assessed preservation, disturbance, thickness, extent, and composition of midden deposits at 12 different sites throughout northern Vatnahverfi region, and together with coring results and excavations from 2007 is a unique dataset that can be used when planning further archaeological work in the area, as well as for long term site management and conservation.

One of the most important results of this season, and the previous two, are the preservation problems. While there is good soil pH, serious problems with freeze-thaw cycles and drainage occurred. The preservation conditions from the past excavations in the earlier part of 20th century were much better, and this is most likely a climate warming effect taking place. When the ground is frozen for the most part of the summer (nearly permafrost), then not only are organic site components kept cold, but drainage is blocked too. Moving to full melting every summer (and re-freeze in winter) is worst possible situation, and unfortunately it is happening right now in southwest Greenland. Next year we hope to excavate one of these middens before it will decompose as many others already did.

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