

# Hofstaðir 2000

Framvinduskýrslur/Interim Report

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## INTRODUCTION

Now in their sixth consecutive season, archaeological excavations at Hofstaðir in Mývatnssveit continued to expand the areas under investigation. Starting with small trenches in Areas G and D at the southern end of the skáli in 1995, open area excavation has continued to grow in subsequent seasons, with the addition of new areas to the west, east and south of the skáli (E and A), and finally this year, the opening of the greater part of the interior (A/B). Last year also saw the first investigations by the medieval farm mound, specifically the area centred on the chapel and graveyard which was further expanded this year. The primary aims this year were manifold. On the one hand, there was the intention to complete many of the structures begun in previous seasons: the pithouse in G, the various structures in A, and the structure in Z. On the other, two new aims were initiated: to commence investigation inside the skáli and begin systematic excavation of graves in Z. To differing degrees, most of these aims were met, although of the structures in A, only two of the four were effectively completed (A1, A2). Inevitably, in working through these objectives, several new issues were raised which will inform next season's fieldwork.

The methodology of excavation this year followed that of previous seasons, i.e. single context excavation and recording; the major innovation this year was the use of a mechanical excavator (JCB back-hoe with toothless bucket) to remove turf and topsoil, and in the case of the interior of the skáli, the greater part of Bruun's backfill. This unquestionably accelerated the work and enabled greater progress to be made and although no damage or stratigraphic information was lost, no doubt the number of finds from the topsoil layer and backfill which were not retrieved due to this method is greater than if the material had been removed by hand. On balance however, this was considered a sacrifice worth making for the time saved.

In anticipation of the detailed reports which make up this volume, I will conclude by outlining what I consider were the main results of the 2000 season at Hofstaðir. In the area of the main Viking period ruins, perhaps the major result was being able to view the main interior of the skáli at last as a whole and compare our cleaning with Bruun's excavation. As observed before, his records proved to be fairly accurate, but more importantly perhaps, is the fact that a large part of the floor layers and internal features remain more or less intact. The primary 'damage' (if one can use such a phrase) lies in him having cut away much of the inner face of the walls and the deposits associated with the stone rows. This loss of stratigraphic information makes interpretation of the above floor structural elements much harder; nevertheless the intactness of large parts of the floor and features such as the hearth will still allow scope for substantial understanding and, hopefully, fresh interpretation. Outside the skáli, a major feature of interest is the number of sunken floored structures - while the deepest, G, has been long known about, the presence of two more (A3/4 and A5) open up new visions of the earliest phase of occupation at Hofstaðir - is the skáli preceded by a whole settlement cluster of such buildings? Questions of sequence and contemporaneity still remain to be resolved here, but the proliferating number of buildings which may pre-date or be contemporary with the skáli is clearly changing our understanding and perception of the site. Similarly, investigation in Area Z by the

old farm mound has revealed an extensive series of pre-1300 midden deposits which reinforces the idea that the farm was re-located from the skáli to the farm mound area in the 12<sup>th</sup> century - and moreover, that a great deal of stratigraphy is preserved here and awaits investigation.

The continued involvement of a large number of specialists in the project ensures that further, more detailed understanding of the complex nature and development of the site will be engendered. However, new material coming to light requires the engagement of new specialists - the large quantities of slag recovered from Structure A2 open up a whole new dimension to activities taking place on the farmstead. Although reports on all the various components could not be included here such as the faunal and plant remains, their analysis is in progress and previous reports have revealed their potential. Of those that are included, several important results are worth mentioning. Karen Milek's work on the micromorphology of in situ deposits is a keystone in linking the excavation and interpretation of structures through analysis of floor deposits. Although no results are available from this season, the work clearly demonstrates its usefulness in both identifying floors and activities which may have taken place upon them. For the first time, a pollen analysis has been conducted and its results are very promising; Alex Chepstow-Lusty's analysis of decomposed hay deposits in D taken in previous years suggests that variation in the pollen may relate to different types of hay (e.g. fodder or bedding) or hay harvested at different times of year. Although tentative at this stage, its potential is clear for understanding both harvesting practices and building function. Similarly, Gestsdóttir's analysis of palaeopathologies on the human remains excavated reveals the potential in this material and that, if her estimate of the size of the graveyard is accurate, it will provide an unparalleled assemblage for investigation.

The work at Hofstaðir would not be possible without the involvement of a large number of people, both professionals and students, who provide their expertise and labour as part of an international team. Continuing its dual role as research excavation and fieldschool, the excavations were greatly aided this year by the co-operation of Christian Keller of the Viking and Medieval Centre in Oslo, who organised the intake of European students, while from the States, Tom McGovern at Hunter College was joined by the return of Sophia Perdikaris of Brooklyn College, who together organised students through CUNY. The number of students totalled 14 and are listed below by their affiliation: Dan Boggs, Kelly Walsh, Briana Myers, Matthew Brown, Jennifer DeFoore, Jennifer Rosenberg, Irina Fusaylova (CUNY (USA)); Mari Østmo, Kristin Fjaerestad, Kim Hjardar (Centre for Viking & Medieval Studies (Norway)); Kristine Loh (University College London (UK)); Kevin Hayward (University of Reading (UK)); Elin Karlsson (University of Uppsala (Sweden)) and Oddgeir Hansson (University of Reykjavik (Iceland)). They were taught and supervised by the professional staff of the FSÍ including Oscar Aldred, Ragnar Edvardsson, Adolf Fridriksson, Garðar Guðmundson, Hildur Gestsdóttir, Elin Hreinarsdóttir, Gavin Lucas, Karen Milek, Howell Roberts, Mjoll Snæsdóttir and Orri Vésteinsson, as well as by the attending academics Tom McGovern (New York), Sophia Perdikaris (New York), Clayton Tinsley (New York), Christian Keller (Oslo) Andy Dugmore (Edinburgh), Anthony Newton (Edinburgh) and Ian Simpson (Stirling).



## THE VIKING FARMSTEAD

Oscar Aldred, Gavin Lucas, Howell Roberts & Orri Vesteinsson (Figure 1)

### The Pithouse (Area G)

(Orri Vésteinsson) (Figure 2)

In 1999 the pit house in Area G had been fully excavated. It only remained to remove the floor and see what was underneath.

The floor was excavated in 75 50x50 cm squares, each bagged separately for macro-refuse analysis. A separate 300 ml sample was also taken from every square to measure magnetic susceptibility and geochemical composition. These analyses will be carried out under the direction of Karen Milek and results are expected in 2001.

First every other square was removed, leaving a number of sections all over the floorspace. These confirmed observations already made, that the floor is nowhere deep, 1-1,5 cm at the most, and much thinner towards the eastern side and in the southwest corner. A roughly 1 m wide belt along the eastern side of the structure was particularly barren, with only a faint charcoal smear on top of the iron pan which has formed on the old surface. The floor was really only substantial along the middle axis of the structure, a very homogenous pitch-black charcoal layer, fat and compacted. In the northwestern corner the same sort of material was somewhat thicker, up to 15 cm, but not compacted at all. This part of the floor had been suggested to be a robbed-out fire place in 1999 and continued excavations in 2000 only strengthened the case for this interpretation. This was the only place in the structure where charcoal rich earth was untrodden, suggesting an edifice of some sort which barred people from walking on the surface. The original layers had been disturbed and mixed with intrusive material from after the abandonment of the building (i.e. [008] type of material) and underneath this mix there were two parallel slots, some 50 cm long, 10-15 cm wide and about 10 cm deep. Similar slots have been found in D1 and A5 and they all seem to be the marks of fire places where a horizontal slab was placed on top of two vertical slabs, like a small table, on top of which the fire presumably burned. Between the slots there were pockets of greyish ash mixed with the charcoal rich earth, no doubt ash from the last fires to burn on it.

The removal of the floor layer revealed that two of the post-holes, [720] and [708] did not extend through it and must therefore postdate the original construction of the pit-house. It had been hoped that removal of the floor would reveal more post-holes along the western side of the structure, where only a single post-hole had been observed in 1999 to match the nine post-holes alongside the eastern side. It turned out that there was only one further post-hole alongside the western wall. This one was behind the fire place and was filled with floor material, although it could not be discerned whether this material had been deposited in the hole after the abandonment of the house (i.e. during the robbing of the fire-place) or while it was still in use.

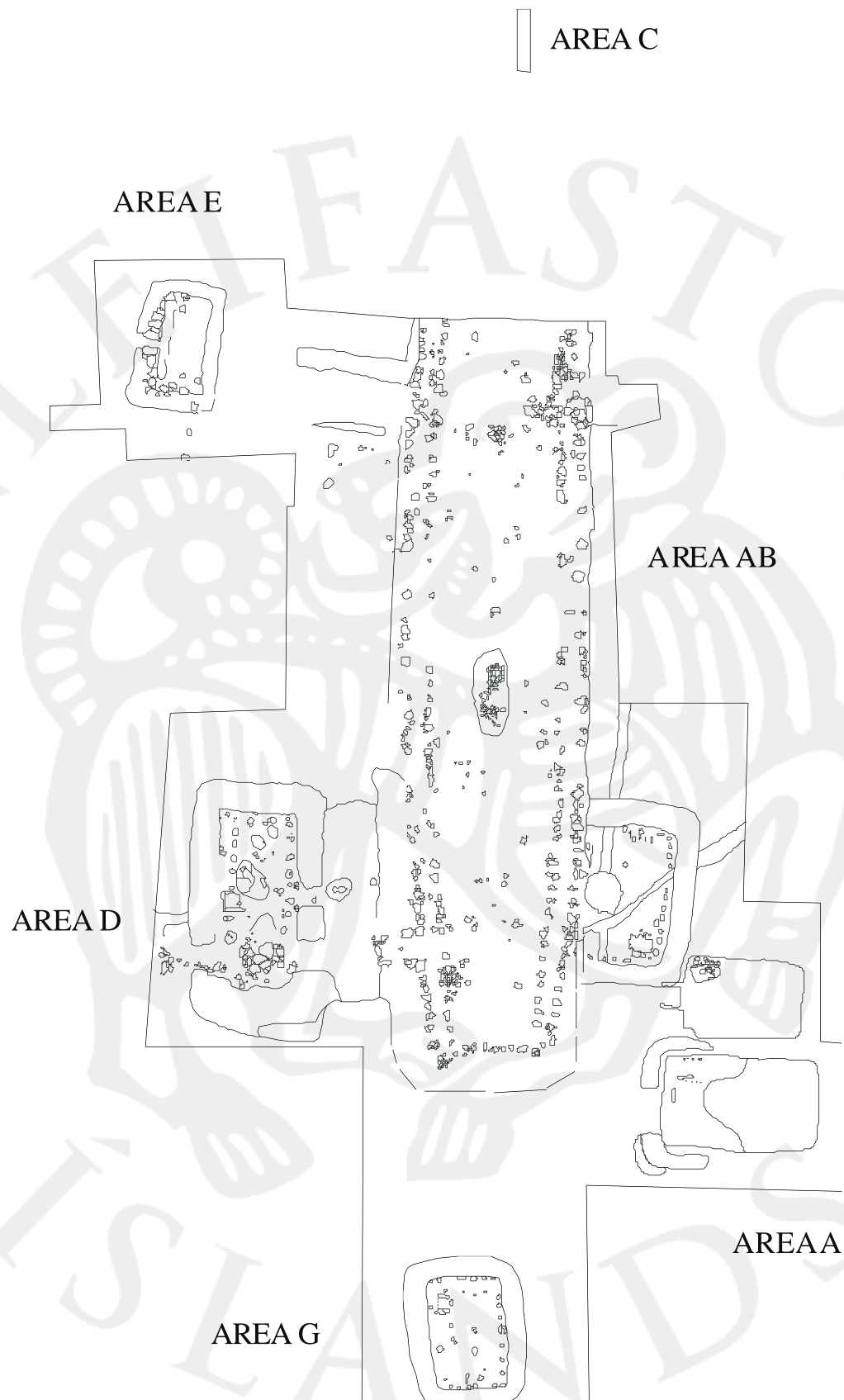


Figure 1. The Viking settlement

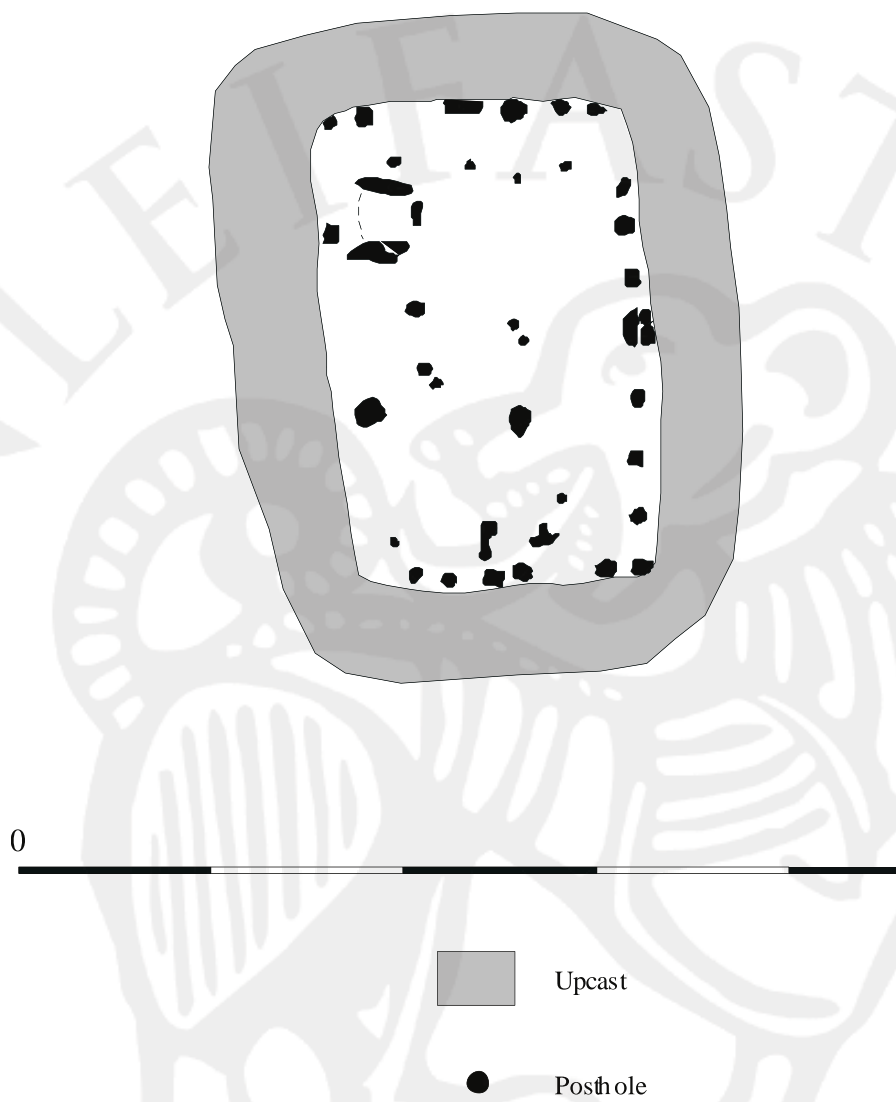


Figure 2. Structure G (Pithouse)

A large number of smaller holes and depressions were revealed in and under the floor. Two shallow pits, both 40 cm in diameter, and both closer to rectangular than circular, were found under the floor in the southern half of the structure. One was up towards the western side, 10 cm deep, infilled with grey-blue claylike soil with large chunks of H3 tephra, which can be presumed to have fallen off the insides of the structure, possibly during its construction. The fill was cut by six small holes (1 cm in diameter) which in turn were capped by the floor. In the middle of the floor, due east of the aforementioned depression, was the other pit, 7 cm deep. In its bottom there was a thin layer of grey ash and charcoal. This was also capped by the floor proper. This latter depression may be an ad hoc fire-pit from the construction phase or at least from before the floor began to form.

60-75 cm from the northern side there were three like-sized holes in a row, all 10 cm in diameter, with 90 and 75 cm between them. Considering the large number of holes in this floor it is unsafe to attach much meanings to these three, the alignment of which may be arbitrary, but it is possible that they represent the remains of some furniture, a shelf or table-top perhaps, which was built up to the northern wall.

Most numerous (77 in all) were very small holes, most 1 cm in diameter or less, scattered all over the floor (except the eastern side), but concentrating mainly in two places, in front of the fire place, and in the southwestern corner, where the floor was extremely thin. Such stake holes are commonly observed in pit-houses, but rarely in other types of buildings in medieval Iceland. Their significance remains a mystery. In G it could be seen that the stake holes had been formed at various stages of the formation of the floor. Some were cut from the original surface before the floor formed while others were cut from the floor at different depths. They do not however seem to belong to the final phase of occupation of the pit-house as they were all either infilled with the floor or capped by it, leaving a cavity underneath.

The only objects found in the floor were around the fire-place, a loom-weight <00-116>, a composite bone-comb <00-141> and a small iron loop or ring <00-199>. The comb lay on the floor just south of the fire-place whereas the ring and the loom-weight were embedded in the floor towards its base, the ring a short distance south of the fire place and the loom-weight underneath it. 15 further loom-weights – most of which had been observed in 1999 – lay on the floor or protruded from it, but these were scattered more widely over the floor, all of them within 70 cm of the northern, western and southern sides of the structure <00-124> to <00-138>.

From the distribution of the objects and holes in the floor it seems that the fire-place was the principal focus of activity in the pit-house. The eastern one-third of the structure on the other hand is lacking in any evidence of activity while the southwestern corner had a very thin floor and thin iron-pan but a high number of stake-holes and a few loom-weights, suggesting that while a floor did not form it was nevertheless the place for some activity.

A full interpretation of the function of pit-house awaits the completion of micro-morphological analysis of the floor, and analysis of the distribution of magnetic susceptibility, geochemistry and macro-refuse in the floor layer. As to the structural characteristics of the pit-house, the lack of post-holes along the western side may be



taken as evidence that the roof rested on the surface on the western side but rose at an angle to be supported by posts on the eastern side – where the entrance would have been – as well as along the northern and southern sides. This would account for the asymmetry of the post-holes – such a single plane roof would not require much of a frame to support it. However, the location of the fire-place speaks against this interpretation, as it would be expected that a fire-place was located under the highest portion of the roof. Nevertheless, as was noted in the 1999 report there is clear evidence that posts were re-set, suggesting that the pit-house was in use for more than one season.

### **The Skáli or Longhouse (Area A/B)**

(Howell Roberts) (Figure 3)

The primary aim of the 2000 season was to remove the backfill of Daniel Bruun's 1908 excavation from the area of the Skáli A/B to assess both the potential for further excavation and the accuracy of the original publication. In view of likely truncation within the Skáli, it was also hoped that areas D and E could be stratigraphically linked by excavation external to the western Skáli wall. To achieve these aims an area of 340 square metres encompassing the greater part of the Skáli was targeted for open area excavation, extending from and joining previous limits of excavation for areas A, A/B, D and E. This was later extended by an additional 50 square metres between areas D and E. The subsidiary structure C at the northern limit of Skáli A/B was excluded from this season's investigations as it represents a well defined unit for future study.

The scale of these endeavours inevitably meant that the 2000 season must serve largely as an investigation preparatory to excavation in the future. As such, only the most preliminary indications of potential can be offered at this time. Previous investigations in 1992, and 1996-1999 indicated that surviving archaeological deposits were likely to be present at a depth of between 0.40m-0.90m below the current ground surface. In order to achieve our excavation aims the upper portion of the overburden was removed by machining with a backhoe excavator using a toothless ditching bucket, under continuous archaeological supervision. This process left some 0.20m-0.30m of overburden to remove by hand.

Removal of the remaining backfill and subsequent hand cleaning required more than half of the available excavation time, but revealed extensive surviving archaeological deposits and confirmed the extent of previous excavation. That extent of truncation (context [252]) was then planned in detail at a scale of 1:20, and a strategy for sample excavation of the surviving archaeological deposits/features was devised and implemented.

Survival of archaeological deposits was highly variable. The best preserved areas are located in a central 2-3m band along the north-south axis of the skáli, and particularly around the central hearth noted by Bruun. This feature [374] also survives, much as illustrated in Bruun's report. However, parallel areas adjacent to the long walls of the Skáli exhibit much greater truncation. In these areas occupation layers are largely

absent, with truncation extending down into underlying natural deposits. This truncation has nonetheless exposed a significant number of probable negative features, interpreted as structural postholes and associated features indicative of a substantial timber superstructure.

Two areas were selected for sample excavation of these variably preserved deposits, firstly a 5m grid square to the west of the hearth, and secondly an apparent north-south line of postholes located towards the eastern wall of the Skáli. Sample excavation proceeded by single context, and all layers exhibiting a high potential were 100% recovered for flotation. An extensive probable floor layer [318] was sub-sampled on a 1m grid for potential micro-refuse analysis and to investigate any possible spatial patterning.

It was additionally decided to commence excavation of undisturbed layers to the west of the Skáli between areas D and E (designated area D/E). This work only progressed as far as exposing the upper horizon of collapsed turf debris within area D/E and awaits further investigation.

### *Results*

A substantial pit (feature [370]) was identified around a stone built hearth [374] at the centre of the skáli structure. Feature [370] had been partially excavated by Daniel Bruun, to a level at which the hearth [374] had been exposed, but still retained a portion of its original fill [266]. In order to preserve the hearth, only the southern portion of feature [370] was excavated. Only one fill [266] was identified within feature [370], a highly mixed deposit derived from the natural subsoil including frequent angular stones, charcoal and ash. No evidence of layering could be discerned in the extant section of deposit [266]. Removal of this fill revealed feature [370] as an irregular sub-rectangular feature 3.42m in length, 1.55m in width and up to 0.58m in depth. Both the irregularity of this feature and its size point to several episodes of construction and reconstruction, but to investigate these fully would entail the destruction of the hearth [374]. Feature [374] is formed from irregular angular slabs and blocks of a dense dark grey stone (basalt?) that show surprisingly few signs of heat cracking or reddening. These stones show little evidence of shaping, but have been carefully selected and placed to form a rectangular feature 1.16m in length, 0.74m in width with an extant height of up to 0.26m. The base of feature [374] is formed from horizontally bedded slabs, and its sides by blocks set on edge. As feature [370] can be seen to cut the surviving occupation deposits, hearth [374] is likely to relate to a phase of activity that has been substantially truncated elsewhere, and may represent the last period of occupation of the skáli structure.

To the west of feature [370] numerous isolated, discontinuous fragments of occupation deposits were identified (layers [274], [275], [287], [293], [299], [303], [307], [309]). Removal of the latter deposits exposed an extensive compact black charcoal rich layer [318] extending beyond the sample excavation area to the north, south and east. This layer or analogous layers could be seen to extend throughout the central area of the skáli and are likely to be the central charcoal rich area identified by Daniel Bruun on his original excavation plan. Layer [318] extended up to 1.8m west from the limit of the sample excavation area, with a thickness of up to 0.09m, being at

its thickest where truncated by feature [370]. Removal of layer [318] exposed numerous possible negative features, both small stakeholes and larger postholes as well as a possible earlier hearth to the north of feature [370]. These possible features all await further investigation.

To the west of this floor layer, two isolated patches of turf debris ([310], [319]) were identified. Removal of layer [310] exposed two associated features; [361] – a large sub-square posthole 0.48m in depth, and [362] – a small rectilinear slot aligned north-south. Both are seen as further evidence for a timber superstructure, but await further similar discoveries for their significance to become clear.

Sample excavation toward the eastern wall of the skáli identified three substantial but irregular postholes (features [282], [284] and [356]). The largest of these (feature [356]) measured 0.58m in length, 0.31m in width and 0.34m in depth. Feature [282] was seen to truncate the fill of a possible small east-west beam slot, but this latter deposit was seen to extend beneath layers surviving towards the centre of the skáli and excavation was thus discontinued.

Five further small negative features were excavated at the north-eastern limit of the excavation area (features [331], [333], [337], [339] and [369]). Of the latter, features [331], [337] and [333] are shallow irregular cuts interpreted as truncated postholes or postpads. Feature [339] was a small oval posthole with stone packing, and feature [369] represents either a removed post-pad or a cluster of several contemporary shallow stakeholes. Cleaning within this area indicated that a significant number of additional slots, pits and postholes will require further attention.

Other features brought to light by the re-excavation of the Skáli include the curving parallel lines of stones adjacent to the surviving turf walls. It is thought that the outer most of these stones represents the inner face of the walls, and that the inner line of stones are part of an internal structural element. Unfortunately, many of these stones have been pedestalled by previous excavation and their original context is thus obscured. The islands of stratigraphy preserved beneath these stones await detailed study.

It is nonetheless clear from a comparison of plans that Daniel Bruun's original excavation drawings are remarkably accurate. Individual features and the vast majority of individual stones can be securely identified. Of particular interest is the large stone slab ("P" on Bruun's plan) located towards the north-eastern limit of excavation. Excavation in 1908 had truncated an area around this feature to a deeper level than elsewhere, and also continued through the eastern wall of the skáli. Re-exposed this area appears to indicate a partially paved entrance, more substantial than others thus far investigated within the skáli structure. A cluster of heat damaged stones ("J" on Bruun's plan) was also identified towards the southern limit of excavation.

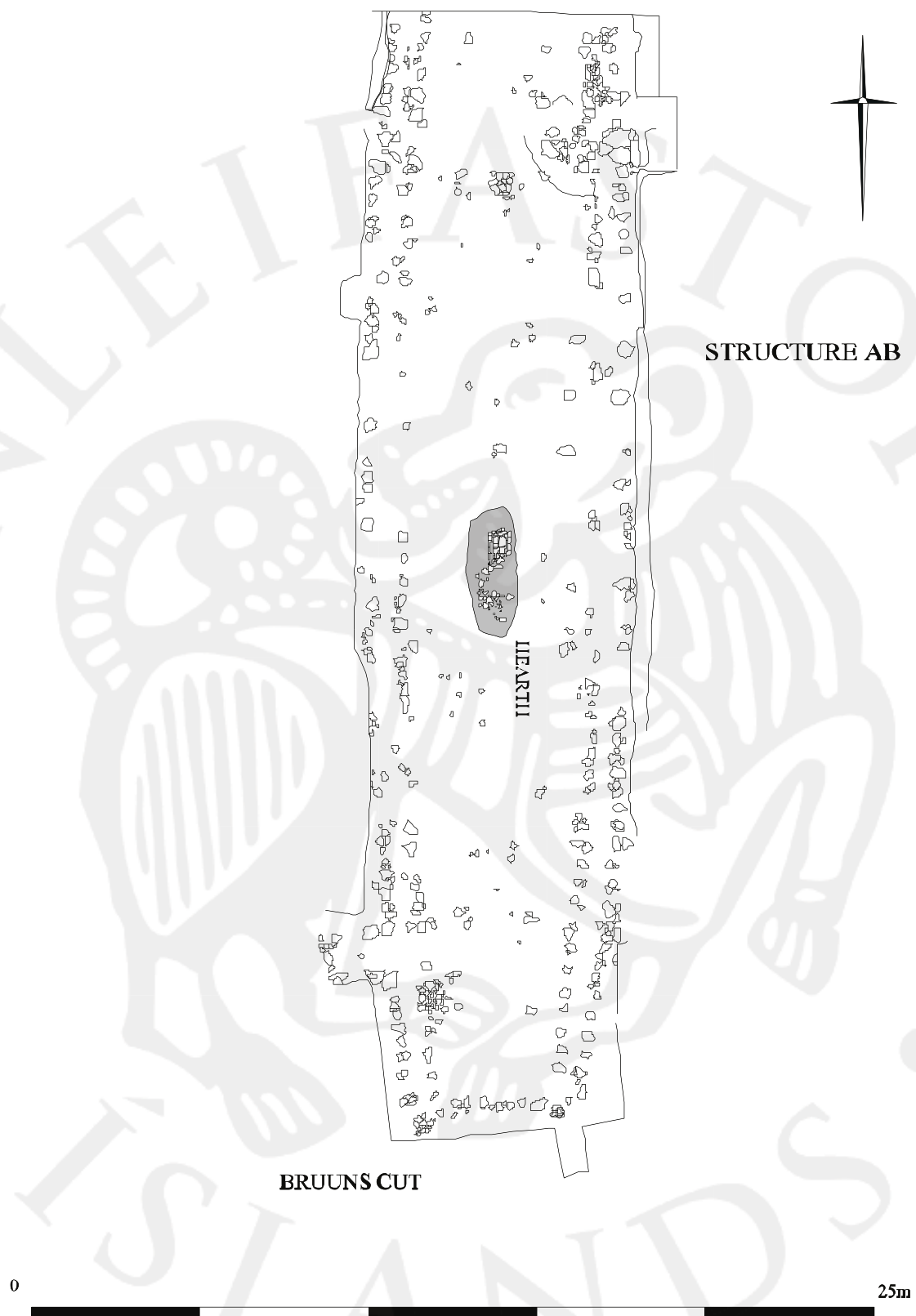


Figure 3. Structure AB (Skáli)



## *Discussion*

The limited excavation results of the 2000 season show that a substantial amount of work is still to be done. Both extensive occupation deposits and a very large number of negative features will merit continued excavation. The discovery of postholes and other structural features in all areas thus far investigated is of great interest. There is the potential to significantly improve our understanding of construction techniques and the division of internal space within buildings like the skáli at Hofstaðir. The well preserved occupation layers in the central portion of the skáli also show tremendous potential for the recovery of both artefacts and environmental evidence. It is hoped this ongoing work will shed new light on the use and function of the skáli at Hofstaðir, and thus the role of this remarkable structure within the Hofstaðir complex.

### **Structure A2 (Area A)**

(Oscar Aldred) (Figure 4)

The excavation of structure A2 continued the work carried out the 1999 season by removing a series of pre-, use- and abandonment related deposits and features.

#### *Pre-A2 phase*

The area outside A2 and to the east of the skáli consisted of various dumps, collapses and aeolian derived deposits. At the end of the sequence, immediately north of A2 and east of the skáli, running south towards Area A under the walls of A2 and over a layer which goes under the skáli [212], a shallow depression [214] parallel with the skáli wall was found. The landnám tephra appears to have been compressed rather than truncated, suggesting a load bearing structural feature pre-skáli or contemporary with the present wall. Alternatively, the feature may be the imprint of an earlier skáli wall; several truncated, poorly preserved turf wall bases have been seen on the east side of the skáli [314] in A2 and in A, which may relate to an earlier structure, near to or, on the site of the skáli. Suggestions on the function of the linear feature await confirmation that the tephra has been compressed and for further visible evidence that the feature exists on the west and continues both north and south on the east side of the skáli.

A linear gully [217] ran northeast-southwest down slope through A2 and under the walls of the skáli. The silting deposits within it suggest some water action, and may relate to the stone-capped drain found in structure D. The gully can be seen running towards and up the east slope.

[212], [335] and [373] (and [215]) are all of similar denotation, clean gritty hay layers. [212] lies under the skáli wall perhaps suggesting activity on the site prior to the construction of the skáli. Occupation of the pit houses may relate to this phase of activity.

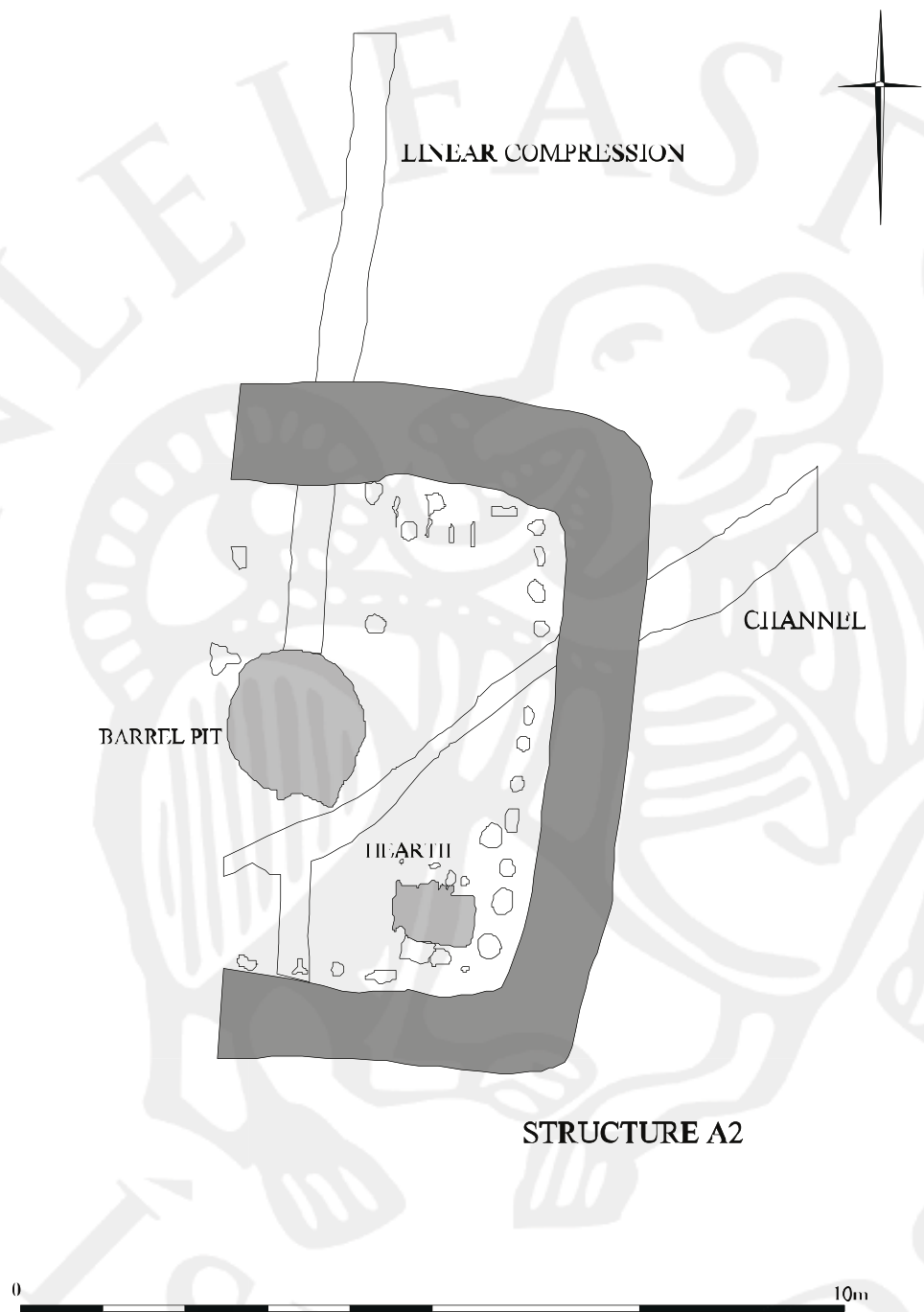


Figure 4. Structure A2

A number of interleaving layers of hay and charcoal rich deposits have been dumped on the outside of the skáli's east wall. The earliest in the sheet midden sequence contained more hay and less charcoal than the later ones. More evidence of occupational use come from this sequence. The ashy sheet midden layer [291] is the same as [324] in Area A and contained slag and occasional hammer scale (a sampling strategy to look at hammer scale distribution was carried out over this layer); [289], [288] corresponds to [290] in Area A. The sheet midden/dumpings are consistent across the west area of Area A and those found within the confines and under structure A2 relate to them. To the north the sheet midden layers [322] – [335] relate to probable layers on the north side of A2.

### *A2 occupation*

The wall of A2 [125] measures c. 8m by 4.5m, 1m thick and survives to a height of 0.5m and is constructed with strengur turf. Continuous on three sides, it abuts the skáli wall which is located on the west side of A2 running north-south and over the sheet midden/dumping sequence. The wall on the north, and south sides is well built, though the southeast corner is built upon the upcast of an earlier structure in Area A – Pit house A5. The construction of the wall as a result is different and vertical turf has been used for added support over an uneven and liquid foundation. The area between the two ends of A2, against the skáli wall was severely truncated by Bruun. There is enough of the wall to gauge the stratigraphic relationship between A2 and the skáli, though the abandonment phase, indicated by blocking, has been removed except for red bog turf block in the SW corner. A limit of the area shown by [154b] (red bog turf) reinforces this interpretation. Given the location of the blocked entrance in structure D and its position just north of the southwest corner, a similar scenario for a possible location in A2 is inferred. A cluster of stones on the east side of the skáli at a location next to the possible entrance way into A2 may reveal a deliberate blocking (something for next season). The structural features align mostly along the east side of A2 [342] et al. There are 6 post holes and 2 small rectangular slot holes, which range in depth and size, none of which are substantial enough to support a roof alone. It is suggested that the roof was a lean-to up against the wall and roof of the skáli. This is supported by a number of post depressions, some of which had small flat stones in situ. Some possible internal divisions within A2 were found in the northeast corner, [345].

The actual use of A2 is associated with the hearth [315] and the pit [341]. There are no floors relating to the occupation of the structure, and the previous year's assumption that the natural ground surface – the landnám tephra [003] – was used as the floor surface is probably correct. Evidence from other areas of the site suggest that they were meticulous in their cleaning within structures, and the case for no obvious floors layers in A2 may relate to this. Alternatively the function of A2 may not have necessitated a substantial floor.

Investigation into the idea that the structure had a raised floor was continued. Although the results were not conclusive either way the fact that a hearth existed on the base of the lowest layer in the sequence of A2 suggests that there was not one. The wood found in the southeast corner of the A2 probably relates to the hearth construction rather than a remnant suspended floor part. The pit [341] is centrally placed within A2 and suggests the functioning of the building. It is likely that the pit

was originally used as a barrel pit. Though no remains of the original use survive, there is some scarring on the sides and on the south side at the top of the pit suggesting constructional use or damage in removal of the barrel. The deposits within [341] indicate a secondary usage that relates to the immediate abandonment of the A2. The uppermost of the fills within the pit [254a] was similar to [256] which represents the last use within A2. The preceding use showed a deliberate capping [260] of the underlying deposits within the pit which contained slag produced from industrial smelting. The slag residue from [267] and [316] amounted to a total 19.464 kg and 1993 individual pieces. The capping was either a response to the containment of the slag within the pit, or to provide a stable platform for the inferred blocking that occurred across the entrance from the skáli into A2. The packing produced by the slag and the subsequent turf over it would provide a stable foundation for the blocking and addition to the skáli wall.

#### *A2 abandonment*

The peat ash layer [170] initially thought to be a floor relating to the structural use of A2, and other layers [225], [231], [232], [233] suggest a post-occupation use of the structure, in some state of disrepair, as a dump for heavily burnt deposits. The directional flow of these showed that they had been dumped over, or placed up against the wall and had flowed out towards the north; the earliest more contained than the consequent layers. These deposits sealed the hearth [315] and the pit [341] found in the central and to the west side of A2. They contained many burnt bone fragments, and frequent ash and charcoal inclusions.

#### *Discussion*

The 2000 season saw the completion of structural remains of A2, the preceding phase within the building and the partial abandonment prior to the collapse seen in the 1999 season. The successive dumping of material from the skáli onto the area outside its east wall under A2 and north and south of it contained heavy amounts of hay and charcoal as well as potential for industrial usage. The unusual concentration of slag in pit [341] suggests at the very least smelting was occurring somewhere on site. Slag came from various contexts across the site and *in locum* to A2 in the collapse [159] and in some concentration within the sheet midden [291]. This suggests that metal working occurred prior to the construction of A2 or contemporary with it, at some other location on the site, and that the slag was put into the pit during the abandonment phase of A2 after the initial use of pit, possibly as a barrel pit. Distribution of slag across the site in Area A and A/B west of the skáli suggest that dumps occurred in isolation and were later removed and redeposited into pits, such as [341]. Therefore it is not possible to indicate the phase of smelting within the occupation of the site, only the time of redeposition of material which must have occurred very quickly after the abandonment of A2. The peat ash layers [170], [225] both seal the pit with slag within it, and are possibly related to the smelting process given the idea that very high heats are produced from using peat as fuel. The redeposition of smelting material also contained hammer-scale, the micro-refuse of smithing activity. Comparisons with other Viking sites such as Jarlshof, Shetland, and other early medieval sites suggests that the ratio of hammer-scale to sample should be 5% of the weight of the sample to suggest a meaningful location for



smithying. The smithying samples taken from [291] and the barrel pit [341] are yet to be processed.

The structure of A2 relates closely to the skáli, using it for support and access. The abandonment of A2 and its subsequent blocking both internally to A2 and externally in the skáli (row of stones) may suggest more than one phase of occupation of the skáli. Indeed the construction of the skáli is problematized by the linear gully [214]. The wall may have required a buttress for the roof on the east side. The internal construction of the skáli will be investigated further in next years research, as should the external evidence for its construction. In fact, there are several questions which remain to be answered from this season's work: What is the nature of the linear depression running parallel but external to the skali? Does it represent an earlier structure? Where did the material infilling the pit come from and what is the nature if its use and abandonment in relation to A2? These questions have bearing on the sequence given above and their answer may suggest alternate interpretations – for example, is it possible the pit pre-dates structure A2?

### **Structure A3/4 (Area A)**

(Gavin Lucas) (Figure 5)

This year saw another extension to Area A, this time eastward and upslope, in order to locate the back of two pithouses uncovered in previous years (Structures A4 and A5). These were found and although all the structures in Area A have now been delimited, many external deposits continue southward and it may be fruitful to extend the area in this direction in future seasons. Certainly a modern structure exists to the south (hay silo), but given that one of these was found to overlie an earlier Viking building within the present area of excavation, it is not impossible that more early structures are to be found to the south. The turf and topsoil over the new area was removed mechanically with the JCB, the remaining layers, hand excavated. The results and interpretation of the structures and features within Area A are discussed below by structure and include some re-interpretations of previous work.

In 1999, two different structures were believed to underlie 19<sup>th</sup> century buildings; A3, a small structure regarded comparable to E2 was identified primarily on the basis of its turf walls [126] which stopped after c. 4m, a fact interpreted from them having turned to form a back wall at this point, but which was truncated by Feature [108]. Beneath and beyond this lay further remains of a sunken building, subsequently designated A4, of which little survived but patches of floor and wall collapse. It now seems more parsimonious to join A3 and A4 as there is little real reason to argue for their separation; the walls [126] may not stop so much as simply peter out as the ground slopes up, their extent simply a product of differential survival. However, there is still reason to believe that these walls may belong to a later phase of the structure, perhaps a repair, as will be shown below. The discussion below will thus treat A3 and A4 as the same structure, and beyond that, alters little the details of associated deposits given in the 1999 report.

The structure consisted of a rectangular cut east-west into the slope, thus deeper at the back/eastern end than the front/western end. The building measured 7m long by 4m

wide and had turf walls placed on upcast around the upper edges of the cut. At the back end, the upcast was spread wide and thin ([301], [317]) and no real traces of wall survived, just turf debris covering this upcast; however, a substantial section of wall appears to have slipped down into the structure along the back wall ([340]), its composition suggestive of the green and dark brown herringbone turf comparable to the skáli walls. This and the general turf collapse surviving within the rear and sides of the cut was noticeably different to the surviving walls at the front, western end which were a yellow brown strengur turf ([126]). The difference is probably accounted for on the basis of a repair or extension to the front (or that the original interpretation of two separate structures still has merit). These walls were built directly onto upcast with no immediate signs of an earlier wall, although there is some complexity along the western face which remains to be resolved, especially over the positioning of the entrance. Some blocking, remodelling or misleading collapse deposits complicate its interpretation which will have to await the next season for clarification.

Internally, most of the deposits have been truncated by Feature [108] or Structure A1, especially in the western half where only patches of ashy material (?floor) survived in hollows ([117], [207]) and collapsed upcast ([175], [193]) and turf debris ([176], [185]) along the edges. These were all excavated and recorded in previous years. Survival was better in the back eastern half where most of the deposits have survived; these were partially excavated this year and consisted of a series of turf debris ([244], [249], [328], [285], [359], [366],[355], [365], [327], [276], [313]) and upcast slips ([273], [264], [357], [320]), interleaved with periodic ash dumps ([321], [326], [248]). This sequence suggests gradual decay and abandonment of the structure with occasional use as a midden, although in no way as extensive as for Structure G. Excavation ceased at an extensive deposit of mixed turf debris and ashy dumps ([269], [371]), and it is hoped that preserved floors will be found at the base of these layers, giving us some idea of the use of the structure. The only internal feature which may be associated is a possible hearth, although this is tenuous: in 1998 around one of the disturbed hollows in the northwest corner of the structure (interpreted as a post-removal pit from Feature [108] - see above) were two linear slots originally interpreted as beam slots. It is conceivable these may in fact be the slots for upright stones lining a hearth, and indeed they were filled with an ashy deposit ([117]). However, until the structure is completed, and the area re-investigated, this remains speculative.

## **Structure A5 (Area A)**

(Gavin Lucas) (Figure 5)

The better preserved and in many ways, more interesting of the two sunken structures in Area A, A5 was excavated down to its floors this season. Unlike A3/4, this structure had not been damaged or truncated by later buildings or activity and additionally, its abandonment was of a very different nature, both factors accelerating the speed with which it was excavated. Smaller than A3/4, but similarly cut east-west into the slope, it measured *c.* 5.5m long and 3.5m wide, cutting deeper upslope at the back/eastern end. At its front end, projecting *c.* 1m from the entrance it also had a pair of beam slots with post settings inside, demarcating a kind of 'porched' opening 0.9m

wide. This is an unprecedented feature in Iceland. In its north-western corner lay a probable stone-lined hearth ([367]); although it was only partially cleaned this year, two large upright stones were placed along its northern side and a large amount of loose stones lay inside, around and over it, with some pockets of ashy material. Only the uppermost floor was excavated this year and consisted of a thin, charcoal/ashy layer ([354]) which was removed and sampled in eight 1m squares. This surface only survived in the central area, but beneath it lay a more extensive, organic floor as well as a series of postholes around the sides of the structure. All these remain to be elucidated in a future season; a cross-baulk was left in the structure in order to record right-angled sections across the floors and collect micromorphology block samples, of which three were taken this season.

Around the cut lay a bank of upcast material ([262], [251], [358], [245], [177]), which along its southern side was impossible to distinguish from that of A3/4, suggesting possible contemporaneity. Over this was some turf debris but no real trace of a wall, although under the northeast corner on which Structure A2 was built, some turf arranged diagonally lay beneath the strengur of A2, suggesting a possible herringbone construction. This certainly compares well with the collapsed section of wall found in A3/4 (see above). Internally and sealing the floors was a series of interdigitating turf debris ([242], [248], [114], [272]) and upcast slips ([177], [263], [111]), although at the base lay a very homogenous and structured deposit of turf debris ([283], [298]) suggestive of collapsed roof. The whole sequence of abandonment deposits in this structure was markedly different to A3/4 and more indicative of fairly rapid abandonment, even demolition, which may be linked directly to the construction of A2.

### *External deposits*

Between structures A2, A3/4, A5 and A/B (the Skáli), most of the deposits were removed down to natural, although some midden type dumps still remain in the northwestern and southwestern corners of the area of excavation, the one linked to the skáli, the other probably fanning out from the pithouse in G. Of the deposits removed, most were turf debris linked to the adjacent structures A2, A/B and A3/4: [236], [237], [238], [243], [253], [255], [258], [257], [261], [277], [304]. In addition, two major sheet midden layers were excavated, which bracketed much of this turf debris, [246] near the top and [290] at the base of the sequence. The uppermost layer ([246]) appeared to run through a possible doorway in the skáli at its southeastern corner and may be contemporary with the later floors in that structure. Further evidence was also found for an outer, additional wall to the skáli of strengur turf along the southeastern side as was found in 1998 along the back, southern end of the longhouse. The lowermost layer ([290]) of sheet midden continued beneath Structure A2 (where it was equivalent to [288]) and almost certainly ran into Structure A5 (where it was contemporary with the upper floor layer [354]). This latter point is significant insofar as it suggests contemporaneity between the skáli and at least one of the sunken buildings, A5.

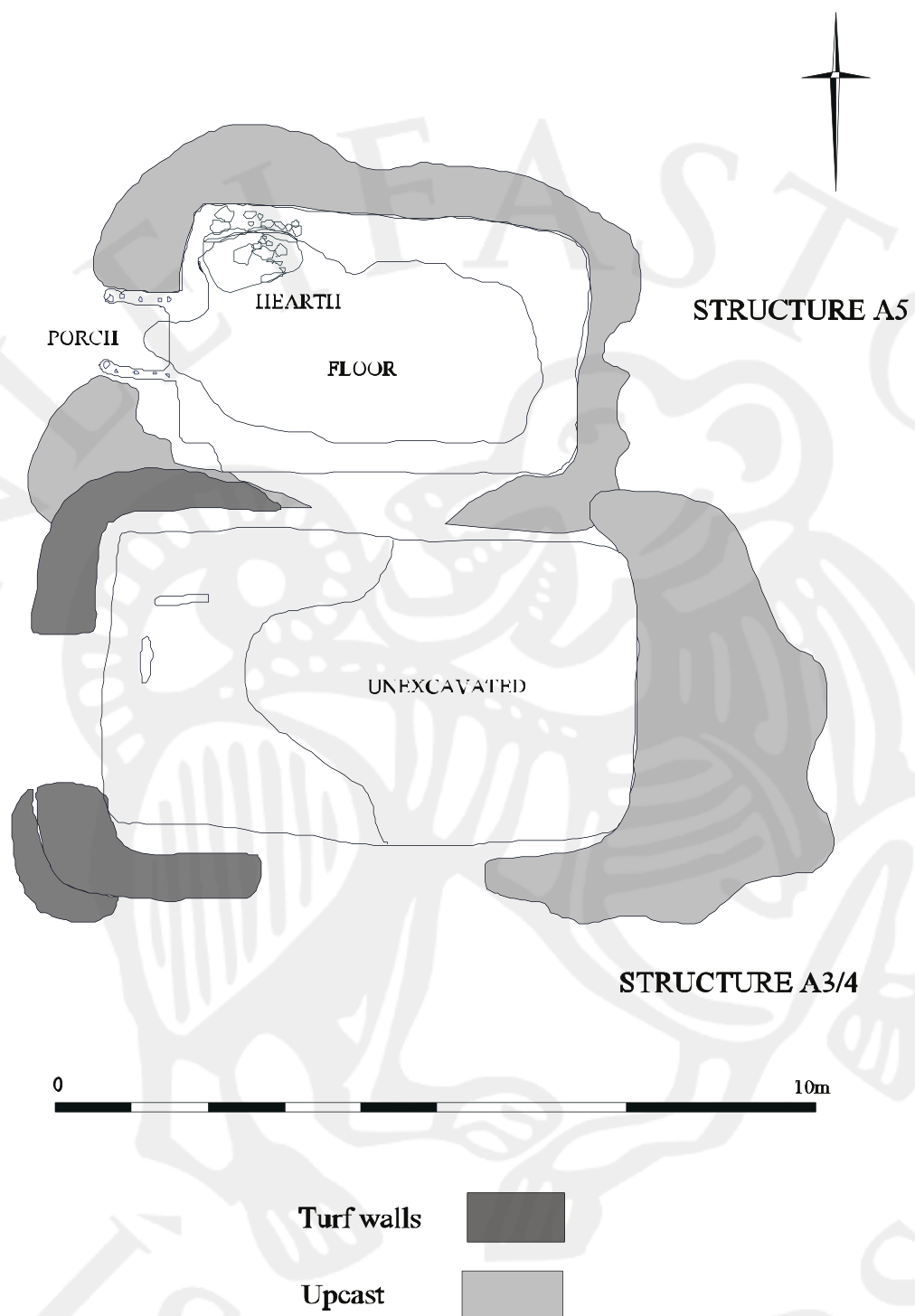


Figure 5. Structures A3/4 and A5



## THE MEDIEVAL CHAPEL AND CHURCHYARD

Hildur Gestsdóttir

The 2000 season at Hofstaðir marked the second year of excavation in Area Z. During the 1999 season the remains of a structure, Z1, were identified in the centre of the circular enclosure identified by a geophysical survey. These remains had been heavily damaged when the area was levelled in the 1960's. In trench Zt 6 grave cuts were identified, one of which was excavated to reveal an excellently preserved skeleton. In the eastern end of trench Zt a possible ditch was identified, corresponding with the location of the circular enclosure around the cemetery as identified by the geophysical survey (Gestsdóttir, 1999).

The primary aims during the 2000 season in Area Z were threefold. The first was to complete the excavation of structure Z1, and identify if it as the remains of the chapel, and whether it overlies older structural remains. The second was to investigate whether cut [1555] is the remains of the churchyard enclosure, and to identify its extent. The third aim was to start the excavation of the cemetery. In order to carry this out, the eastern limit of Area Z was extended by 6m along the line of trench Zt, and a 15,8m long trench (Ztii) was opened extending north from the centre of the northern edge of Area Z. The turf covering the 1999 excavation area was removed by hand, but the new areas were deturfed using a machine. The excavation of the site was carried out in the same manner as the other excavations at Hofstaðir using single context planning.

### Excavation Results

There were three features identified in this season's excavation of Area Z. These are Structure Z2, the boundary wall of the graveyard and the graveyard itself. Also to be discussed are pre-1300 peat ash deposits. The excavated units have been divided into three preliminary phases which are only applicable to Area Z.

#### *Post 1477*

The 1999 excavations of Area Z exposed the remains of a badly damaged structure, Z1. All that remained of this structure were the disturbed remains of the southern turf wall with the V-1477 tephra [1542]=[1543] and two lines of stones, possibly forming the inner [1547] and outer [1548] stone linings of the southern wall. Remains of a curved stone footing [1546] were in the north-eastern corner along with some disturbed turf [1577], possibly the remains of the northern wall. On the eastern end of structure Z1 were several large rocks, some of which had been exposed on the surface prior to the start of the excavation of the area in 1999, which were surrounded by disturbed turf [1605] with a large amount of birch, timber fragments and iron nails, probably the disturbed remains of a collapsed turf roof. The extent of the damage of this structure means that little can be said of its construction, the size is unknown,

although the maximum length of the southern wall is 3,6m and the maximum width between the fragment of northern and southern wall is 2,9m. During the 1999 season several organic layers, although none of them clearly floors, were removed from the inside of this structure, and one such layer [1540] was removed during the 2000 season. It is therefore impossible to say whether this represents the last phase of the church, or the remains of an outhouse associated with the farm mound, which lies to the southwest of the excavation area, built on top of the remains of the chapel.

#### *Pre-1477?*

The remains of a second structure, Z2 were exposed underneath Z1 (Figure 6). This structure is 5,6x3,6m, orientated east-west, and is divided into two. The main body of this structure is formed by a 3,6x3,1m rectangular foundation, possibly for some sort of wooden structure, formed by a single row of stones on the eastern end of the structure. To the south of this (0,5m), and parallel with the southern line of stones is a thin line of burnt wood, probably representing a structural element of Z2. The western end is sunken, measuring 3x2,3m at its widest point, with two postholes on the western end, (0,6x0,3m and 0,5x0,40), 1,1m apart forming the entrance. Apart from the removal of a turf debris (roofing?) fill from within the entrance portion (western end) of the structure, excavations of this structure have not started, so presently the entire structure is filled with disturbed turf debris, probably representing the roof. Seven nails have been removed from the main body of the structure, all of them found approximately 20cm away from the southern, western and northern walls, possibly part of the roof construction. The ground level to the east of structure Z2 is 0,3m lower than the level of the structure it self. It is possible that this is due to some truncation by structure Z1 or its subsequent damage, but it was in this area that several large stones, probably associated with structure Z1, and large amounts of roofing turf were.

Presently there is no dating evidence for structure Z2. No tephra can as yet be seen to be associated with it, and as excavations of the structure have not started, there are no finds.

Remains of a turf wall [1592], 1m thick and 0,3m high was found 7,5m to the north of the chapel within trench Ztii. The wall was constructed entirely of *strengur* turf, with no sign of repair. Both the V-1477 and the H-1300 sealed the wall (Figure 6). This wall probably represents the churchyard wall. To the north of the wall and extending beyond the northern limit of Ztii were several layers of peat ash ( [1571], [1596] & [1616] in total up to 66cm thick), banking up against the turf wall. These probably represent debris layers associated with the farm mound which is situated to the southwest of Area Z, and may suggest that its occupation extends well into the 13<sup>th</sup> century.

Approximately 40 graves have now been exposed in the Hofstaðir cemetery, and during the 2000 season seven of these were excavated ([1567] = SK002, [1569], [1576] = SK003, [1589] = SK004, [1602] = SK005, [1607] and [1609] = SK006). All the graves are orientated approximately east-west. The majority of the graves are in the eastern part of Area Z, in the newly opened area to the north of trench Zt. However two additional graves were located in the southern limit of trench Ztii

(Figure 6), two graves were to the northwest of the chapel (Z2) and three graves were located in 1x1m Slot b taken up against the limit of excavation to the south of the chapel. Of the graves excavated five are to the east of the chapel ([1567], [1569], [1576], [1602] and [1607]) and two are to the northwest of it ([1589] and [1609]).

No skeletal remains were found in two of the grave cuts. Cut [1569] almost immediately truncated a lower grave and the western end of cut [1607] truncates another grave cut visible on the current surface. Only one of the graves [1567] had clearly had a coffin as a total of 79 nails were found in the grave. However the only clear coffin remains found in the grave were a few fragments of wood found among the thoracic vertebrae. One other grave [1602] had a possible coffin, with a line of slight discolouration of the soil to the right of the right leg.

All the skeletons were supine with the head orientated to the west. In most cases the arms were slightly bent at the side with the hands in the region of the pelvis or across the waist, and the legs extended straight with the feet parallel to each other or resting on top of one another. However SK003 had the legs bent to the right and the left arm underneath the body and the neonatal skeleton (SK006) was in a similar position. In most cases, with the exception of perhaps SK003 did the skeleton look like the body had been deliberately laid out.

Of the graves in the eastern part of the cemetery, only one [1567] was clearly sealed by the V-1477 tephra. The other excavated graves from that section of the cemetery ([1569], [1576], [1602] and [1607]) all appear to be contemporary with that as they are all cut into the same level. No clear dating evidence is available for the graves in the north-western corner of the site ([1589] and [1609]). The graves exposed in Slot b appear to be sealed by the H-1300 tephra, so at this stage it can be stated that the use of the cemetery extends from some time before 1300 to just before the V-1477 tephra fell.

## Conclusion

The 2000 season at Hofstaðir revealed a structure, probably the remains of a chapel, 5,6x3,6m in diameter. The structure appears to have been made of timber, with stone foundations forming the main body on the western end, and the entrance sunken with two postholes marking the entrance. This structure is yet to be excavated, and as yet there is no dating evidence.

Remains of what is believed to be the cemetery wall, 1m wide and 0,3m thick, built solely of *strengur* turf and sealed by both the V-1477 and the H-1300 tephra was located 7,5m to the east of the chapel. The exact dimensions of the cemetery wall are not yet known (see discussion below).

Within the cemetery approximately 40 graves have been exposed, eight of which have already been excavated (one in 1999). Two of the graves were empty, but of the six which contained skeletons, one was a neonatal child, the other 5 were all women, aged between 18-45+ (see skeletal report).

Approximately 35 graves have been exposed at the current level of excavation. An additional 4 are in two 1x1m slots taken through occupation layers, one in the central part of the extreme east part of the site (Slot a, containing one grave cut), and the other towards the western end of the southern end of the site (Slot b, containing 3 grave cuts). Both of these are shown in figure 6. All of these are clearly sealed by the V1477 tephra, and at the moment the three graves in Slot b all appear to be sealed by the H-1300. This seems to indicate that the graves exposed in the eastern part of the cemetery are only the top layer of graves, and the layers they cut seal more grave cuts. It also indicates that the occupation layer to the north, west and east of the chapel are quite likely to seal more grave cuts. It is estimated that only about a quarter of the cemetery at Hofstaðir has so far been exposed, so it can be expected that there may be up to a total of between 120-150 graves in total within the cemetery.

The graveyard wall is as yet an unsolved problem. Although the wall was uncovered during the 2000 season, clearly sealed by both the V-1477 and the H1300 tephra, its dimensions are as yet uncertain. The wall was seen to be 7,5m to the north of the northern wall of the chapel in trench Ztii. However, trench Zt extended 18,8m to the east of the eastern limit of the chapel, and no trace of the wall was seen there. The geophysical survey carried out in 1999 indicated that the cemetery boundary was completely circular, approximately 30m in diameter with an anomaly interpreted as a structure, 6x3m, in the centre of this enclosure. If the remains of the turf wall are indeed the remains of the boundary wall, then it is clear that it is either not circular, or that its extent to the east of the chapel has been destroyed. The latter is an unlikely explanation, as the easternmost grave exposed so far is approximately 11m to the east of the eastern limit of the chapel.



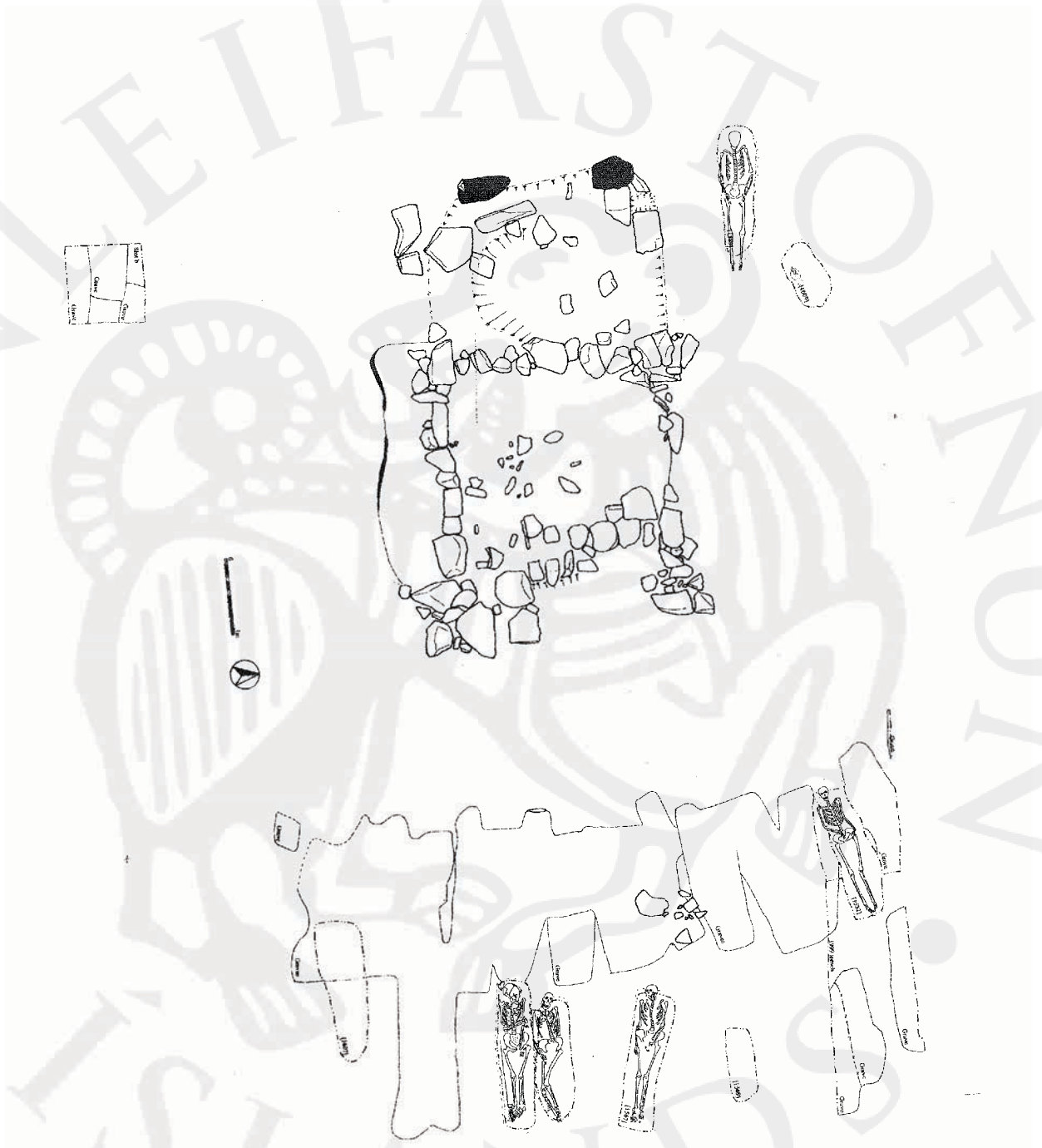


Figure 6. Area Z (main area)

## THE POST-MEDIEVAL FARM

Hildur Gestsdóttir & Gavin Lucas

### The Farm Mound Midden (Area Z)

(Hildur Gestsdóttir)

Under and within the grass roots northern end of Trench Ztii, north of the cemetery wall was a 30cm thick midden deposit [1565]. This consist mainly grey ash and contained large amounts of animal bone and finds, mainly pottery and glass dating to the 19<sup>th</sup> and earlier 20<sup>th</sup> century. A photograph taken during Daniel Bruun's excavations of the Hofstaðir long house in 1908 show a large mound in the region of the midden. This would have been levelled along with the ruins in the area in the 1960's.

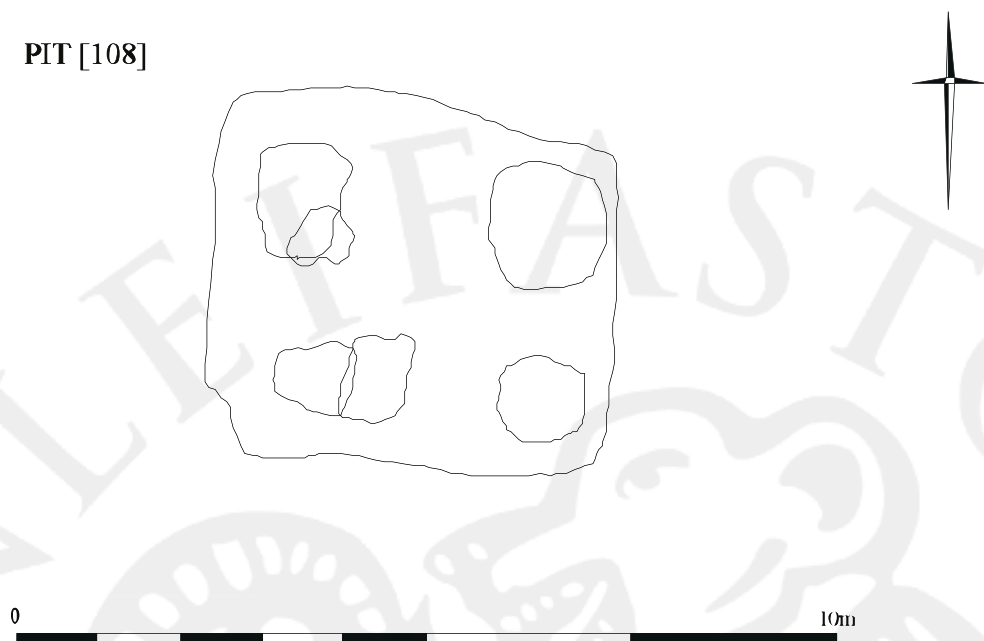
### Structure A1 (Area A)

(Gavin Lucas) (Figure 7)

The third year on this structure saw its final resolution and understanding. Always complex because of the multiple phases of building and demolition on this spot, the following is a summary. The building was defined by a rectilinear cut [110] running east-west into the slope, sloping down east to west and additionally divided into two sections; the lower (westernmost) section was the longest at 7m, whereafter the structure stepped up slightly (by 0.1m) and then continued for a further 2m. The total width measured 3.5m but its internal space was much reduced to c. 2.5m by thin internal turf walls ([105], [158], [224], [226], [227], [240]), which survived best in the lower half. These were constructed in simple strengur turf and rested on a turf floor ([100], [157], [220]), on which lay a row of stones along the northern side, although it is likely a corresponding row also once existed along the southern side also. In general the southern side was more disturbed than the northern.

Given the layout and form of this structure, it almost certainly represents a sheephouse (fjáarhus), with the typical division of the byre section in the lower, longer half, and a hay storage room at the back, the whole floor generally sloping down to facilitate mucking out. Its date is late 19<sup>th</sup> century on the basis of associated finds (including ceramics dated to c. 1860/1880 - 1930) in the abandonment deposits. These deposits consisted of some primary turf collapse ([219], [221]), followed by a major infilling dump which included most of the cultural material ([107], [121]). Bruun in his 1908 excavations makes no mention of the structure and it is not visible in his photographs or drawings so it is possible it may have already collapsed by this time, and certainly the current owners of the farm have no recollection of the structure so it was definitely abandoned by the 1930s/40s. As stated in previous reports, the siting of the structure was clearly utilising an earlier *tóft* or ruin, although its immediate precursor seems to have been a square pit/sunken structure [108] which itself was probably no earlier than 19<sup>th</sup> century on the basis of associated finds.

PIT [108]



STRUCTURE A1



Figure 7. Nineteenth centu

## **Feature [108] (Area A)**

(Gavin Lucas) (Figure 7)

This feature was defined by a square cut 5m east-west by 4-4.5m north-south, and cutting at its deepest to c. 0.8m. It had remains of a possible turf floor [178], but this was not extensive and it appeared to have been backfilled in a similar manner to Structure A1 by very mixed material containing finds of a similar date and type ([115], [222]). Previously interpreted as a silo or storage pit, this may need some qualification as it now appears as if the structure had four post settings at its corners. The eastern pair when first uncovered were thought of as animal disturbance, and indeed there were small burrows at the base of the feature. However, following removal of the back, western half, another pair of depressions were identified, with stones at tipped angles suggestive of post removal holes. It seems probable that there were originally four posts at the corners of this feature, perhaps resting on post pads which have been dismantled during the abandonment of the structure, the posts almost certainly having supported a roof. This does not preclude its function as a storage feature but a search for parallels would be useful, and probably productive as it is not older than 200 years.

Before closing this section, it is worth remarking on some of the ceramics found in the abandonment of Structure A1; in general, as an assemblage they are remarkably similar to that found in the late upper midden deposits [1565] excavated in Area Z this year, indeed two sherds came from two identical vessels (<00-07> with <00-43> and <0010> with <00-44>) although they did not refit. This suggests close contemporaneity, if not in fact, that the source of the infilling of Structure A1 was the midden in Area Z. Further study of the ceramics may yet reveal some refits/conjoining sherds which would confirm a link and open up interpretive possibilities for midden dynamics on the late farm mound.



## APPENDIX 1: CONTEXT DESCRIPTIONS

Area	Context	Context Type	Description
A	219	layer	compact "springy", mottled (red, brown, yellow) mid brown, silt, occ. stone, 40-45cm
A	220	layer	compact/springy, varied - bright orange-red and M/O brown, silt, v. occ. angular .... and v.occ. charcoal, 10-15cm thick
A	221	Partition wall	turf strengur c. 100x160 x?mm, strengur, partition wall (E-W), none, W. 0.7m, 0.16m thick
A	222	layer	friable, mottled (cream, reddish brown, black) mid brown, silt, occasional charcoal frags (less than 10m). Hekla 3 flex, grey ashy flex, 20cm max thickness, fills western half of structure only
A	223	Fill	friable, mid to dark brown, silt, grass roots, one large (30x20cm) stone, 20cm fills depression (1x1m)
A	224	layer	turf strengur, W. 210mm, 60mm thick, L. 590 + tephra? grass down, strengur, main wall, none, 0.6 x 0.6 x 0.4
A	226	structural element	turf strengur 82mm thickness, 285mm width & 930mm length, loess, tephra? red-brown layer, grass down, strengur, wall (main), none, 82x1195x387high
A	227		turf strengur 85mm thick, 840mm length, 502mm width, strengur, partition wall, none, 165x502x840
A	228	fill	friable, mottled, dark brown, light brown, redish brown, silt, ash (flecks) 1%, charcoal flecks 1%, large stone 20cm, turf blocks layer at 70* 40%, 70 cm thick
A	229	Fill	1-4: see 228 - turf blocks and mixed upcast/etc., , , , 0.6x0.6x1.3
A	234	layer	friable, yellowish brown, silt, charcoal fleyed >1%, 19cm max/12 min
A	235	Cut	2 rectangular cuts with a passage way, subangular, 4m wide, 3.20m long (continues beyond LOE to the East and west where excavated in 98 & 99), near vertical, Eastern part is flat western side drops down after the passage by 40cm then it is flat again except for two deeper cuts on the north and south sides 1.5m wide, 1m+long, 30cm deep
A	236	layer	friable, orange, light to dark brown, silt, turf, tephra (2 landnám)- green, purple, patchy 25-50mm thick
A	237	layer	friable, mid to dark brown, green, redish brown, white, silt, landnám tephra - turf, charcoal, 1%, 50-100mm, 30cm max by wall of A2, thinning out
A	238	layer	friable, green, brown, light brown, silt, charcoal, occasionally, 20-5cm thick lies on top of wall
A	239	layer	friable, middark brown, silt, v. rare charcoal (<1%, <1cm), v. rare fragment, lavastone (<5cm), varies - max. 3-4cm, not extensive over whole area, mostly present only in "hollans" of structures
A	240	structural element	Strengur (N) 400-500mm (S) wide, 100 mm thick - length? Friably-springy, mid brown silt-some w. orange -red layer, Strengur -ca. 4 high, main/side walls in upper (eastern) part of structure, none, not seen when excavated - only in section
A	241	layer	friable, v. mottled mid brown and yellow brown, silt, Hekla 3, charcoal, by/tephra-fragments (<5cm) -all c 10%, max 5cm thick, 1.3m L. 0.7m W.
A	242	layer	friable, midbrown also some red and light brown, silt, charcoal, turf bits, 5-1.5-20cm

A	243	layer	friable, mottled yellow brown/med brown, silt, green tephra- landnám, decayed organic specs 1%, charcoal specs 1%,
A	244	layer	friable, dark brown very mottled yellow-brown green white, silt, turf dubree - green and dark brown (LNL tephra), Hekla 3 flex 10%, 20cm max, thinning out
A	245	layer	friable, pale brown, with heavy white mottling, silt, H3 tephra, rough size 110mm, 20-25% yellow, brown flocks (large brown blocks w. LNL tephra and pale yellow brown silt.,
A	246	layer	friable, midbrown with charcoal, silt, turf collapse,
A	248	layer	friable, mid- to dark brown with red spots, silt, turffragments, tephra,
A	249	layer	friable, dark brown/purple/green, silt, tephre (LNL in turf) v. raare H3 tephra v. rare charcoal flecks, v. rare small stones (<5cm), 5-25cm thick
A	251	layer	friable, light brown with, silt, tephra H3,
A	253	layer	friable, mid brown with some paler mottling + orange, silt, charcoal (flecks 2-5%) tephra (LNL) + wood, max 10cm
A	255	layer	friable (slightly firm), dark brown, slight mottling, silt, charcoal (5%) burnt bone frags, sa. rocks (10-20cm) bits of cut wood, 5-15cm
A	257	layer	friable, mid yellow - brown with mottling/stripes - dark brown and green, silt, LNL tephra, charcoal fragments (1% <2cm) patches, decayed organic (hay?), 5-20cm
A	258	layer	friable, mid brown, some mottles and stripes (dark brown and green), silt, tephra (LNL), charcoal fragments (<1%, <2cm) occ. burnt bone fragments and burnt stone, 2-10cm
A	261	layer	friable, mid-pale, yellow brown, with reddish brown and green stripes (tephra), slightly sardy silt, tephra (LNL),
A	262	layer	friable/firm, light brown to white, silt, tephra, 3-7cm
A	263	layer	friable, light brown to white, silt, tephra,
A	264	layer	friable, reddish brown, silt, charcoal fragments, Hekla,
A	265	layer	friable, dark brown, silt, charcoal fragments (less then 2cm, 5-10%) bone fragments less then 1cm, 1%, maximum 10cm
A	268	layer	friable, reddish brown, silt, charcoal 2%, 6cm thick to North of A5
A	269	layer	firm & friable, mid brown to dark brown, silt, charcoal (white tephra),
A	270	layer	friable, mid to light brown, light yellow, silt, two stones, turf tephra,
A	272	layer	friable, brown, black, white, yellow, silt, tephra, turf,
A	273	layer	firm, dark brown, silt, , up to 5cm/1m or a bit less
A	277	layer	friable, brownish yellow, slightly sandy silt, frequent charcoal 5%, max 5cm
A	283	layer	friable, mid-light brown, white, silt, tephra,
A	285	layer	firm?, , turf collapse?, ,
A	286	layer	firm, friable, brown-grey, silt, ,
A	290	layer	friable, dark brown with pale of mottling, very slightly sandy silt, charcoal 5%, burnt bone 2%, 2cm
A	294	layer	cemi circular, rounded, , concave, from rounded to flat
A	298	layer	friable, multicoloured, green, yellow, brown with dark/red brown, silt, charcoal fragments 2%, stone >1%>10cm, tephra, <35cm >15cm
A	301	layer	firm, friable, brown, mixed turf and upcast, , up to 10cm
A	304	layer	friable, mottled dark, reddish brown, slightly sandy silt, charcoal and burnt bone (1%), tephra (LNL), organic (hay), H3 tephra (2%), 5-10cm
A	313	layer	firm, mid brown, sandy and silty, , up to 5cm / very small

A	317	layer	friable, light brown/white Hekla/dark brown, green turf, silt, Hekla 3, turfblocks, 20cm fading out
A	320	layer	friable, light brown with white flecks and black patches, silt, upcast of Hekla 3, 5cm
A	321	layer	soft, orange, silt, charcoal, up to 5 cm
A	324	layer	friable - slightly compact, mid brownish grey, slightly sandy silt, charcoal (10%, flecks, small fragments), bt bone fragments (1%), stone fragments (25cm, 2%). v. angular and rounded types, greyish white layer (ash?), max 10-15cm
A	326	layer	very firm, grey, , charcoal, 1 to 2 cm
A	327	layer	firm, friable, brown, green, silt, , up to 5cm
A	328	layer	friable, dark brown, light brown, turf mix, silt, ,
A	334	Fill	friable, light yellow brown, silt, ash, charcoal and Hekla 3,
A	340	wall	turf, , klömburhús wall, ,
A	346	layer	friable, black patches mixed with reddish brown, silt, charcoal pikat ash, small rocks, thin 3cm
A	347	layer	friable, dark/medium brown, sandy silt, , 1-7cm
A	348	layer	friable, black, white, dark grey, sandy silt, charcoal (less than 1cm) 1-2% burnt bone, see 6, 3cm fading cut
A	355	layer	friable, light, reddish brown, silty upcast + turf debris, flecks of Hekla 3, 2cm
A	357	layer	firm, brown, white (upcast), silt, spots of white thepra,
A	358	layer	friable, speckled, sandy silt, bones, charcoal, burnt bone, 10cm
A	359	layer	friable, light to dark brown, with tephra in green and black, silt, LNL sequence tephra and Hverfjall tephra, 10cm fading cut
A	360	layer	friable, turf, green/brown, silky silt, charcoal, burnt bone, ash, 3-10cm
A	363	layer	, , , ,
A	364	layer	friable, mixed green turf debris with flakes, silt, ,
A	366	layer	friable, light brown, white, black, silt, Hekla 3, fine LNL tepra and turf fragments (less than 2cm) 10cm,
A	371	layer	firm, , ....silt, charcoal, ash, bones, teeth, wood?,
A	372	cut	, , , ,
A/B	0252	Cut	Irregular, , , ,
A/B	0266	Fill	, , , ,
A/B	0271	layer	, , , ,
A/B	0274	layer	, , , ,
A/B	0275	layer	, , , ,
A/B	0279	Fill	, , , ,
A/B	0280	Fill	, , , ,
A/B	0281	Fill	, , , ,
A/B	0282	Cut	, , , ,
A/B	0284	Cut	, , , ,
A/B	0287	layer	, , , ,
A/B	0293	layer	, , , ,
A/B	0299	layer	, , , ,
A/B	0303	layer	, , , ,
A/B	0307	layer	, , , ,
A/B	0309	layer	, , , ,
A/B	0310	Fill/Layer	, , , ,
A/B	0318	layer	, , , ,
A/B	0319	layer	, , , ,
A/B	0329	Fill	, , , ,
A/B	0330	Fill	, , , ,
A/B	0331	Cut	, , , ,
A/B	0332	Fill	, , , ,

A/B	0333	Cut	, , , ,
A/B	0336	Fill	, , , ,
A/B	0337	Cut	, , , ,
A/B	0338	Fill	, , , ,
A/B	0339	Cut	, , , ,
A/B	0356	Cut	, , , ,
A/B	0361	Cut	, , , ,
A/B	0362	Cut	, , , ,
A/B	0365	layer	, , , ,
A/B	0368	Fill	, , , ,
A/B	0369	Cut	, , , ,
A/B	0370	Cut	, , , ,
A/B	0374	Hearth	, , , ,
A/B	125	layer	turf, strengur in S+N+E sides/SE corner, wall to A2, , 0.75m:T;0.36m:T:T
A/B	1604	layer	Firm, friable, Dark brown - v. mottled, silt, small fragments of charcoal, 0.10m 3x1.8m
A/B	210	layer	compacted/friable, mixed green-brown turf, silt turf, occ. charcoal flecks + tephra (turf), variable -1 layer of turf ca. 0.05m thick.....skáli wall and extending E ca.0.8-0.9m from wall
A/B	211	layer	friable/loosely compacted, dark greyish brown - mottled into Hekla? +other green+black tephra. Mix of windblown + hay., silt, occ.charcoal, 0.05-0.15m thick extent- 3.8m wide and firm structure to edge of exc. (N-S) packing into landnám poking up underneath
A/B	212	layer	fairly compacted, friable a torch, light yellowish brown with light hay spots, silt, hay spots, ?grithy hay spots, variable in gully 0.05m.....0.01m-0.05m extent defined in part by gully (most concentrated) but up to 2m from skáli wall) extent up to edge of exc. end structure wall.
A/B	213	layer	loosely, compacted/friable, mixed - dark green+turf with landnám tephra +red collapse debris - .....?, silt, occ. charcoal flecks, N. end of trench area 0.7m from N. edge 2.20m long (E-W) localised only to that area
A/B	214	Feature	linear feature running paralll to skáli wall (N-S), , , , 0.4m wide -running under structure and in to edge of excavation (should be seen under floor of structure)
A/B	215	fill	compacted in places=potential trampled surface, mixed dark greyish brown with landnám/Hekla/red turf (bog) + charcoal flecks, silt, occ. charcoal/tephra patches mixed, 0.8m to 0.5m thick (wide N-S) extends from structure (goes under!) to edge of exc. area ENE-WSW
A/B	216	layer	loosely compacted - friable, mixed - turf red+green+black (exposed turf (rof?) + landnám turf, silt, , 0.05m thick extent E. of structure 2m (E-W) 0.1m (N-S)
A/B	217	cut	Irregular linear .... ENE-WSW, sharp Bof slope at ..., gradual towards base-is shaped (flat based), 0.40-0.45m wide - extends under structure towards entrance to skáli and into edge of excavation. (linear extent uncertain as yet), straight-/concave towards base, flat
A/B	218	layer	firm (friable), dark, black, silt, charcoal 60% bones/burnt bones,
A/B	225	layer	compacted/friable, pinkish red, ash (peat ash)+charcoal+organic+? yellow mortar, charcoal+bone (burnt), 0.01m-0.003m extent ca. 3m (N-S) 0.7-1m (E-W) located in S. end of structure, centrally to A2



A/B	230	layer	fairly compacted, mixed green+brown (turf), silt, occ. charcoal - turf debris, 0.05m thick (greatest) -
A/B	231	layer	fairly compacted spread/ hearth debris, whitish grey - mixed .... with peatash+charcoal, ashy silt, charcoal+burnt bone, 0.05m max thick normally 0.01m thick extent over and in situ within hearth (247) 2m (E-W) 1.2m (N-S) variable - tails towards W away from hearth (247)
A/B	232	layer	friable, whitish grey with occasional brownish yellow, ash+silt, moderate charcoal, extent 0.02m thick at most ca. 0.005m mostly, 2m (N-S) 1.5m (E-W) amorphous in plan
A/B	233	layer	friable, greyish, white with pink+black flecks, ash+silt, peatash flecks ca. 30-40+charcoal flecks/pieces ca.20-30%, 0.01m thick in most, through S. edge of pitfeature (which this context falls into) 0.05m thick.=only on sides, the base still ca. 0.01m=patchy towards N. of pit
A/B	247	layer	loose-friable, mixed peatash+charcoal/ash+...(231)+(170)+(225), ash+silt, charcoal+burnt bone, variable -up against sides of hearth/stones and underneath stones 0.001m-0.1m thick
A/B	250	layer	looser, friable, mixed turf debris-upcast material, green+light yellow and Hekla 3, spots-very mixed, silt, Hekla 3 spots, variable 0.3m-0.01m ca. 2m (E-W)/0.8m (N-S), slopes from E to W. Piped into SE corner - from digging of hearth. More concentration of upcast material in SE corner.
A/B	252	layer	, , , ,
A/B	254a+b	layer	fairly compacted, dark brownish mottled, sandy silt, charcoal 5-10%, thickest on the east side 14cm west 5cm, inside barrellpit 150cm
A/B	256	layer	fairly compacted firm- friable, yellowish with occ. charcoal flecks (light yellowish, brown), silt, occ. charcoal 10-20%, (E-W) 0.7m (N-S) ca. 1m thickness
A/B	259	layer	firm/friable, mixed black with reddish burning, silty (ash), moderate charcoal 30-50%. Black is completely charcoal, 0.01m thick, SW+SE Quad amorphous in plan 0.8m wide (E-W) ca. 1.3m long (N-S)
A/B	260	layer	soft, loose, red, green, light-brown, silty clay, mostly turfdebris, this is a fill of a barrellpit, thickest to the West (10cm) 3-5cm at the east side circular pit - 150cm
A/B	266	layer	firm/friable, brown/greyish, silt, charcoal 15%, burnt bones 15%/ piet 10%, other; stones/turf 5%, 2cmx1.50m ext/thick 20-45cm
A/B	267	fill	firm, black, charcoal/slag, charcoal 50%, slag 50%, 5cm
A/B	271	layer	friable, black, dark brown, silt, 10% charcoal, occasional small rounded stones, 1,4mx1m, 8cm thick
A/B	274	layer	Friable, dark brown with speckles of white, black and orange, silt, 5% charcoal, small flecks of white H3 tephra, small turf fragments, 3.45mx1.25 to limits of excavation
A/B	275	layer	friable, dark brown with dark patches, silt, charcoal - less than 5%, 1.88m x 0.64m
A/B	279	Fill Layer	firm, friable, cream, red-brown, black mixed/ with white tephra, silt, tephra, as cut (356)
A/B	280	Fill	friable, cream, red brown, black mixed with white tephra, silt, tephra 35%, charcoal 2%, 33cmx32cm, 26cm deep
A/B	281	Fill	Firm, friable, cream, red-brown, black mixed with tephra, silt, 20% tephra (H3), -5% charcoal, Goes from 13cm down to 21cm/31cm across

A/B	282	Cut (posthole)	square, square, 33x32cm <sup>2</sup> , 26cm deep, W:vertical, N:nearly vertical, E:sloping, S:vertical, sharp break of slope at the top, sharp break of slope, flat base
A/B	284	cut-posthole	oval, rounded, 52x31cm, 21cm deep, sharp break of slope; concave sides; East more vertical, gradual base
A/B	287	layer	firm, friable, grey with dark brown, black flecks, some cream flecks, patches of light brown, silt, charcoal 10%, 1.80mx0.9m, 1-12cm thick
A/B	288	layer	firm-friable, dark, greyish brown + occ/with charcoal, silt, charcoal 15-30%, N. extent only as goes under structure A2 wall towards S. 1.2 (N-S) 1.5 (E-W)
A/B	289	layer	firm-friable, mixed yellowish brown - greyish brown patches=more yellowish than green, and patchy, silt, charcoal - 20-30% moderate, extent- goes S of structure A2 under the wall- within A2 it is 1.6m (E-W) ca.2m (N-S) to wall
A/B	291	layer	firm - friable, whitish gray, clayish silt, charcoal 30-35% bone fragments, ashy components, thickness 0.03m, (S-N) ca. 2.00m to wall, E-W 2.10m
A/B	293	layer	firm/friable, medium brown with dark brown, light brown and white specks, silt, 1% white tephra, charcoal 1%, 0.76mx0.48m, 2cm thick/0.60mx0.46m
A/B	296	layer	firm/friable, yellowish brown (light), silt, charcoal 20-30%, bone fragments, N-S 1.91m / E-W 2.10m/ thickness 0.01m-0.03m variable, this is cut forward N
A/B	299	layer	friable, medium brown, silt, turf, burnt bone, slag, 190cm x 50cm/ 10cm deep
A/B	300	layer	fairly firm- friable, mixed light and dk yellowish brown hay spots, silt+fine grayish sand, occ. charcoal flecks/bits ca. 20%, very thin ca. 0.01m over extent (comes down to grayish brown layer-interface is not clear. (E-W) ca. 2.2m (N-S) ca.2m
A/B	302	FB	soft to firm-friable, mixed dark yellowish brown, silt with occ. ashy mix, v. occ. charcoal flecks, 0.07m thick extent of hearth mat.
A/B	303	layer	firm, friable, dark brown, white, orange, black, grey, light brown, silt, turf, charcoal, tephra H3, 1.28x1m
A/B	305	layer	loose - friable, pinkish brown -peatash with searing amounts of charcoal, silt+ash, charcoal - 40% moderate, 0.4m by 0.45m 0.01m thick
A/B	306	layer	firm, friable, dark greyish brown, silt, v.occ. charcoal <5%/some hay in ....., 0.02m thick
A/B	307	layer	friable hard, brownish/with black patches, silt, turf 10%, charcoal 15%, other 70%, 1.32x1.50 / 5cm thick
A/B	308	layer	firm-friable, mottled brown with some turf/sketch 3/hay, silt+occ. hay spots, occ. hay spots, 1.8m (E-W) ca. 0.8m (N-S) to S wall of A2 0.05 thick
A/B	309	layer	friable, medium brown with specks of black, orange white and light brown., silt, tephra H3 less than 5%, charcoal less than 5%, 0.53mx0.32m, 8cm thick
A/B	310	layer	friable, soft, greenish/brown, silt, turf + 50% tephra, 80cm x 60cm/ posthole:50cm/slot:10cm
A/B	311	layer	fairly compacted-friable, ...brown, silt, , 0.05m at most .... extent ca.2m x 0.7m
A/B	312	layer	Looser, soft, mid, pale grey, ash & silt, frequent charcoal, small frags burnt bone, W/A
A/B	314	layer	firm-friable, mixed dark greyish brown+green (turf debris), silt, , Isolated to SW edge of A2 0.8m x 0.3m

A/B	315	cut	rectangular, rounded, 1m long (E-W) 0.7m (N-S), concave - shalter ca. 0.1m deep, undulating - perhaps due to animal borrowing - flatish
A/B	316	fill	firm, black, charcoal/slag, charcoal 50%, slag 50%, thicknes 30cm
A/B	318	layer	friable, black with specks of light brown, silt, charcoal 80%, 5m x 1.5m
A/B	319	layer	soft friable, Brown/greyish/patches, silt, tephra (see below), 1.20m- 4m
A/B	322	layer	firm, friable, dark greyish, slightly mottled, silt, turf debris, E-W 1.36m, N-S 1.94m
A/B	323	layer	firm, friable, yellowish brown, silt, very occasional charcoal, E-W 0.60m N-S 0.78m
A/B	325	layer	firm to compacted, mixed mottled dark yellowish brown (turf LNL), silt, v.occ. charcoal/turf, variable next to skáli 0.08m thick
A/B	329	Fill	compact, friable, dark greyish brown, silt with ash/charcoal content, charcoal ca. 30% in lenses. - v. occ. AWG stone, 0-5cm
A/B	330	Fill	loose, friable, mixed-orange brown/white, silt & tephra, below, L. 0.22m x W. 0.24m x D. 0.11m
A/B	331	Cut	sub-square, gradual, 0.22mx0.24mx0.11m, variable, irregular. - 80* at W, 60* LTE, small disturbance LT E. edge, slightly concave
A/B	332	Fill	medium compact - loose, friable, orange-brown with cream flecks - few ashy speckles, silt and small amount ash, tephra flecks - some charcoal, 8cm
A/B	333	Cut	roughly circular - irregular boundary, bounded - no sharp edge/distinct corner, apx. 40cm x 20cm, sloping: gradual on east - sharper on west, slightly concave - rising slightly on east
A/B	335	layer	fairly compacted - friable, mix light yellowish brown+greyish/white areas of long concentrations, mixed with some LNL turf, sandy silt, v. occ. charcoal,
A/B	336	Fill	soft/friable, mixed - white/orange brown, with darker brown horizon at base, silt/tephra, , L. 0.35m x W. 0.19m x D. 0.08m
A/B	337	cut	irregular - sub-square (see over), rounded at W, imperceptible at E., 0.35 E/W x 0.19m N/S x 0.08m D., concave, shallow, slightly concave
A/B	338	Fill	soft, friable, mid orangey brown, silt, occasional white tephra, frequent small charcoal (up to 10%) - angular stone packing, L. 0.28m x 0.20m x D. 0.20m
A/B	339	cut	oval (E-W), , L.0.29m x W. 0.20m x D. 0.19m, v. steep, slightly concave, N/A (packing left in situ)
A/B	341	cut	circular with some .... on sides, sharp at top slightly under cutting ... base=round, 0.9m deep, 1.64 (E-W) 1.64 (N-S), step/vertical/ same undercutting on slope/at base concave to base. /90*, flat
A/B	342	C/F	friable, circular, dark grey, round/sharp, silt, 0.2m diam., concave, 0.07m thick, rounded
A/B	343	layer	friable, circular, dark grey, rounded, silt, ca. 0.2m diam, occ. wood fragments, concave, 0.07m thick, "U" shaped
A/B	344	layer	loose, mixed dark grey, , ,
A/B	345	layer	, , , ,
A/B	349	layer	, , , ,
A/B	350	layer	, , , ,
A/B	351	layer	, , , ,
A/B	352	layer	, , , ,

A/B	356	Cut	irregular - sub triangular, rounded, L. 0.58m x W. 0.31m x D. 0.34m, stepped, vertical + at top, 80° concave towards base., tapered, rounded, circular depression at 5. edge
A/B	361	Cut (posthole)	sub-circular, rounded, L. 26cm x W. 23 cm, D. 48cm, straight - vertical, flat with step in northern corner
A/B	362	Slot/Cut	rectangular, squared, L. 33cm x W. 11cm x D. 10cm, straight, flat
A/B	365	layer	loose, friable, medium brown, silt, bits of charcoal; tephra (Hekla3), L. 1.26m x 48cm
A/B	368	Fill	loose, friable, mixed - yellowish brown- with white flecks, sandy silt, flecks of tephra, up to 20cm E/W x 15cm N/S x 10cm D.
A/B	369	Cut	deeper round posthole to NW of cluster shallow oval depression to it immediate west. Longer rectangular feature runs along southern edge of both., vary -see sketch on reverse, total cluster -ca. 20cm (E-W) x ca. 15cm (N-S) up to 10cm D., round posthole-straight sides (apx. dimensiones 10x10cm) small oval depression-gently sloping sides- concave bottom, large rectangular depression-sides ca. 125* - slope toward concave bottom.
A/B	370	Cut	rectangular, rounded, L. 3.24m, W. 1.55m, D. 0.58m, steep, parts rounded, parts flat
A/B	373	layer	loose to firm, yellow brown, (gritty) sandy silt, long spots, ca. 0.02m thick in SW Quad
A/B	374	Hearth	irregular flat slabs of basalt - up to 0.35m, irregular/random, fireplace, N/A, 1.16m N/S x 0.74m E/W x 0.26m
A5	354	layer	friable, dark brown with black charcoal, silt, charcoal fragments 5%, max 5cm, ashpinkish grey patches 2%,
A5	367	layer	friable, mottled mid greyish brown, silt, charcoal and ash patches (2%), loose stones (5%),
D/E	0292	Fill	, , , ,
D/E	0297	layer	, , , ,
D/E	0312	layer	, , , ,
D/E	292	Fill	soft, loose, dark greenish/greyish brown, sandy silt, with root/organic content, , L 3.0 x W 2.20m x D
D/E	297	layer	firm, red-compact, brownish/red, silt with organic content, occasional small flecks of tephra, up to 20cm , 10.30m v/s to LOE x 3.50m to LOE
Z	1539	layer	, , , ,
Z	1540	layer	Allþétt í sér, rauðleitt, brúnt, gult, torf "rusl", lítilsháttar af köðluðum spreikum (minna en 5%), 10-15 cm þykkt
Z	1541	layer	quite loose, spolted, light brown, silt - light brown, Hekla 3 disturbed, charcoal, 2-20 cm /see plan
Z	1542	layer	Rirm, friable, Dark+light orange red, Silt (turf), Rocks (some fireburnt) ash, 30 cm/ 3.5x2m
Z	1545	layer	V. loose, light brown, silt, tephra, , 10cm/ 140x60
Z	1548	Structural	, , , ,
Z	1566	Fill	Compaction is loose, Light brown with mottled light of dark ditches, silt, charcoal (small fragments), 0.6m 1.66m x 0.53
Z	1567	cut	Rectangular, Rounded, 0.60 m deep 1.66 x 0.53m, vertical & under cut, Flat
Z	1568	Fill	Friable with pockets of very firm and very loose soil at the base, Mainly light + brown with mottled dark and light + patches, Silt, Charcoal, 60cm, 90cm x 40cm
Z	1569	Cut	Rectangular, Rounded, 90x40x60cm, vertical, flat
Z	1575	fill	Loose and friable, Many light brown with light and dark mottled soil, Silt, Small fragments of charcoal, 0.62m 1.53x0.55m
Z	1576	Cut	Rectangular, Rounded, 0.62m deep 1.53x0.55m, undercut, due to collapse, flat



Z	1577	layer	Firm-friable, dark reddish/orange, Turf frags, , 10.10m 1x1.5m
Z	1578	layer	Loose, friable, medium brown, silt, small fragments of charcoal, 0.10m 7.30x1.30
Z	1580	layer	Allþétt í sér, Rautt,gult, brúnt, torf, hrímið, nokkuð af steinum í laginu, 5-15cm, 2.5x2m
Z	1582	layer	See context 1587, , ,
Z	1583	layer	Loose-friable, Light brown, silt, small fragments of charcoal, 0.10 x 1.0x2.5m
Z	1587	layer	Turf layer mix same as (1582) Loosely compacted - close to base move. Loosely compacted-closer to base more compacted?, Mix same as (1579) red turf+landnám (v. green turf)., Silt, turf, Occ. charcoal flecks, ca. 5m long (NS) extent of trench (EW) 0.03m-0.2m thick - thicker towards cemetery
Z	1588	Fill	Loose with some extremely loose cavities around the skeleton, light brown with specks of darker and lighter soil, silt, charcoal sandl. areas of turffragments, 0.54m deep, 1.60x0.52m
Z	1589	Cut	Sub-rectangular, narrow at Eastern End, Rounded, 0.54m deep, 1.6x0.52m, West end is vertical and stepped once eastern end and southern side are undercut, possibly due to collapse., Flat-slight slope up on E end= may have caused vertical position of skull.
Z	1595	Fill	laus mold með torfsneplum, dökkbrúnt með ýmsum innskotum, mold + torfsneplar + kol og viðaraska, , Misþykkt, 5-20cm, 3.60x1.60
Z	1599	layer	, DK yellowish brown + moderate charcoal flecks, , ,
Z	1600	layer	Friable, Multicoloured turf debris, red, yellow, dark brown, Turf debris, , 0.25m 8.7x2.6m
Z	1601	Fill	loose - pockets of very loose material, light brown v. mottled, silt, small fragments of charcoal, 0.68x1.79x0.42m
Z	1602	Cut	Rectangular, Rounded, 0.68x1.79x0.42m, Vertical - slightly undercut on W+SW end- possibly mainly due to collapse, Flat
Z	1605	layer	Allþétt torf (friable), Brúnt/rauðleitt, torf, lítilsháttar af viðarflísum og berki, 10-30cm, ca. 2x2.5 um sig
Z	1606	Fill	loose, mainly light brown - mottled, silt - some turf fragments - up in E end., fire crached rocks, small fragments of charcoal, 0.11x1.74x0.53m
Z	1607	cut	sub-rectangular, rounded, all x 1.74x0.53m, vertical, flat
Z	1608	Fill	fairly loose, light mottled brown, silt, charcoal, 0.30x0.45x0.85
Z	1609	cut	oval, N/A, H 5x0.85 0.30 deep, steep slope, SE edge undercut,
Z	1610	layer	friable, dark purple-brown, silt, turf fragments, small fragments of charcoal., 0.10m 6.6x2.0m
Z	1611	layer	loose, friable, light brown, silt, fragments of charcoal, alot of wood + bark (wood=sampled), 0.20x1.5x1.4m
Z	1613	layer	Þétt í sér, rauðleitt, gul, grátt, torf, engar, 4-8cm, ca. 3x0.4
Z Tr. 2	1571	layer	Friable, reddish pink with occ. charcoal flecks, peat ash - greasen with silt clay matrix, occ/charcoal flecks ca. 25-30%, Thickest extent 6.15m (see section)
Z Tr. 2	1572	layer	friable, DK yellowish brown - with some charcoal flecks., silt (wind blown), moderate/freg. charcoal flecks - pockets of Hekla (white), 0.23m thickest extent, thing cut towards N.
Z Tr. 2	1573	layer	loose, Greyish - with charcoal base, silty clay + charcoal, charcoal ca. 30%, 0.05m thick 0.55m (EW) (NS)
Z Tr. 2	1584	layer	Loosely compacted, Mixed windblown with v. occ. turf + occ. charcoal, dark yellowish brown, Thie silt, Occ. charcoal, thickest 0.2m

Z Tr. 2	1586	layer	Loosely compacted, Black, charcoal+ash, 70% charcoal 0.01m, 0.4m (EW) 0.5m (NS)
Z Tr. 2	1591	layer	Fairly compacted, A DK reddish brown; B DK yellowish brown; C DK greyish brown, silty clay, greasy in texture - C v. fine clay, B occ. charcoal, each ca. 0.03m thick, extend under turf wall (1592)
Z Tr. 2	1594	layer	Loosely compacted, Black, Ash+charcoal, 70-90% charcoal, 0.02m thick extent 0.4m S of wall? out of Midden see N section.
Z Tr. 2	1596 A+B	layer	Lower mixed peat ash, , , ,
Z Tr.2	1570	layer	(1570)=(1593) see (1593), , , ,
Z Tr.2	1579	layer	Fairly loose, Green, red, yellow=mixed turf, Turf silty, turfs 0.3m long/wide, Charcoal, 0.15m/ Ext.=4.5m
Z Tr.2	1581	layer	Loose, Greyish brown, Silty dry=turf mix, N/A, 0.05m thick extent ca. 4m
Z Tr.2	1585	layer	Loosely compacted, Black with white ash+burnt bone/greyish white, Ash+silty clay, 50-70% charcoal + ash, 0.04m thick extent 0.4 (NS) 0.3 thin edge of W section.
Z Tr.2	1590	layer	Windblown-back filtering layer. Friable, mixed A, DK yellowish brown (PTO) B, light brown, silt-windblown?, occ. charcoal flecks + Hekla tephra, 0.15m thick extent (NS) 2m
Z Tr.2	1592	layer	Turf, layered flat on top of one another -strengur-, Landnám turf, , 0.5m wide long turfs+thin running cut of trench EW
Z Tr.2	1593	layer	compacted, DK brown + charcoal, silty, clay like, occ. small charcoal flecks + Hekla, 0.15m thick S of wall
Z Tr.2	1597	layer	loosely compacted, yellowish brown, , Hekla 3, 0.02m thick
Z Tr.2	1598	layer	friable, mixed pinkish/brown/white, silt, moderate charcoal approx: 6-7 layers ca. 0.005m thick, start 5m from wall (1592) to end of trench continuous

## APPENDIX 2. GEOARCHAEOLOGICAL SAMPLING REPORT

*Karen B. Milek (Fornleifastofnun Íslands, Reykjavík, Iceland)*

### Introduction

Since 1992, archaeological investigations at Hofstaðir have included an extensive sampling program of on- and off-site soils and sediments. This has principally involved the removal of undisturbed blocks for thin section micromorphology, in addition to undisturbed blocks and small bulk samples for supplementary analyses such as organic geochemistry, magnetic susceptibility, mineralogy, phytolith, diatom and pollen analyses. In thin section, it is possible to assess the mineralogy, structure and texture of soils and sediments, as well as the orientation and distribution of any bones, shells, artefacts, coprolites, phytoliths, diatoms, ash crystals, pollen, charcoal or plant remains that may be present. In addition, it is possible to observe compounds that include iron, manganese, phosphorus, carbonates, organic matter and clay minerals, the mobility of which can be linked to various soil formation processes, human activities and environmental conditions. Micromorphological analysis has therefore been used as the principal means of determining the composition of complex archaeological sediments, such as middens and floors, and of assessing both cultural and natural site formation processes.

In 2000 the geoarchaeological sampling program at Hofstaðir continued to focus on midden and floor deposits, as part of ongoing investigations into fuel ash and food residues, and the use of space in Viking Age Norse buildings (Milek et al. 1998; Milek and Simpson 1999, Simpson et al. 1999). Micromorphology samples were taken from floor sediments in Structures A2, A5 and Skáli AB, as well as from a midden deposit in Area A. In addition, floor deposits in Skáli AB and the pit house in Area G, which were well preserved and therefore suitable for a more detailed analysis of the spatial patterning of activities, were bulk sampled on a grid system for the analysis of microrefuse (artefacts and charred remains <4mm in size), phosphate content and magnetic susceptibility. This sampling program represents, for the first time in Iceland, an attempt to integrate a spatial analysis of the horizontal variation in floor composition with the analysis of vertical variation provided by micromorphology. A list of geoarchaeological samples and the contexts from which they were taken can be found in Table 1.

### Sediment Sampling: Rationale and Procedure

#### *Structure A2*

Structure A2, which abuts the eastern wall of the skáli, contained a series of undisturbed floor deposits sealed by turf collapse. As this building was added to the main longhouse during the Viking Period, it provides an excellent opportunity to investigate the growth, changing needs, and/or the reorganisation of space on a prosperous farmstead within the first few generations of settlement. A series of thin,

fairly compacted deposits, composed predominantly of pinkish-red, whitish-grey and brownish yellow peat ash, wood ash, charcoal and small fragments of burnt bone (Contexts [170], [225], [232], [233]) were found spreading north and northwest of a hearth ([247]) on the southern end of the structure. These presumed floor deposits were thickest towards the western side of the building, where they infilled a depression created by a circular pit containing charcoal and slag.

Five block samples for micromorphological and supplementary analyses (if needed) were removed from a north-south baulk through the central axis of the building (see Figures 8 and 9 and Table 1; full context descriptions are provided in the section of this report that describes the excavation results for Structure A2). The analysis of these deposits in thin section will enable the study of the many fine layers that could not be excavated or sampled discretely in the field. The goals of micromorphological analysis will be: 1) to confirm that the presumed floor deposits have indeed been trampled and that their formation can therefore be attributed to the activities that took place within Structure A2 during its use; 2) to determine the precise composition of the presumed floor deposits and the degree to which their composition changed over time; this will contribute to an interpretation of the function of the building, whether it had a specialized function or variable functions, and whether the use of the building changed over time; 3) to detect any physical or chemical alterations to the original floor sediments, which could provide information about environmental conditions and human activities within and around the building during and after its use.

Area	Context	Sample Numbers (HST-00-XXX)		
		Micromorphology Sample	Block Sample for Subsampling	Bulk Sample
Structure A2	Ash floors: [170], [225], [232], [259]	084		
		085	086	
		089	088	
Structure A5	Floor [354]	110	111	
		112		
Skáli AB	Floor [318]	113	114	122
		120	115	(A1 – A10)
		121		
Area A	Coprolite? From [246]			172
Area A	Midden [324]	118		
Area G, Pit House	Floor [9]	HST-99-01	HST-99-02	001-038,
		HST-99-03		040-041,
		HST-99-08	HST-99-07	057-082
		HST-99-04		
		HST-99-05	HST-99-06	

**Table 1. Summary of micromorphology samples taken at Hofstaðir in 2000**



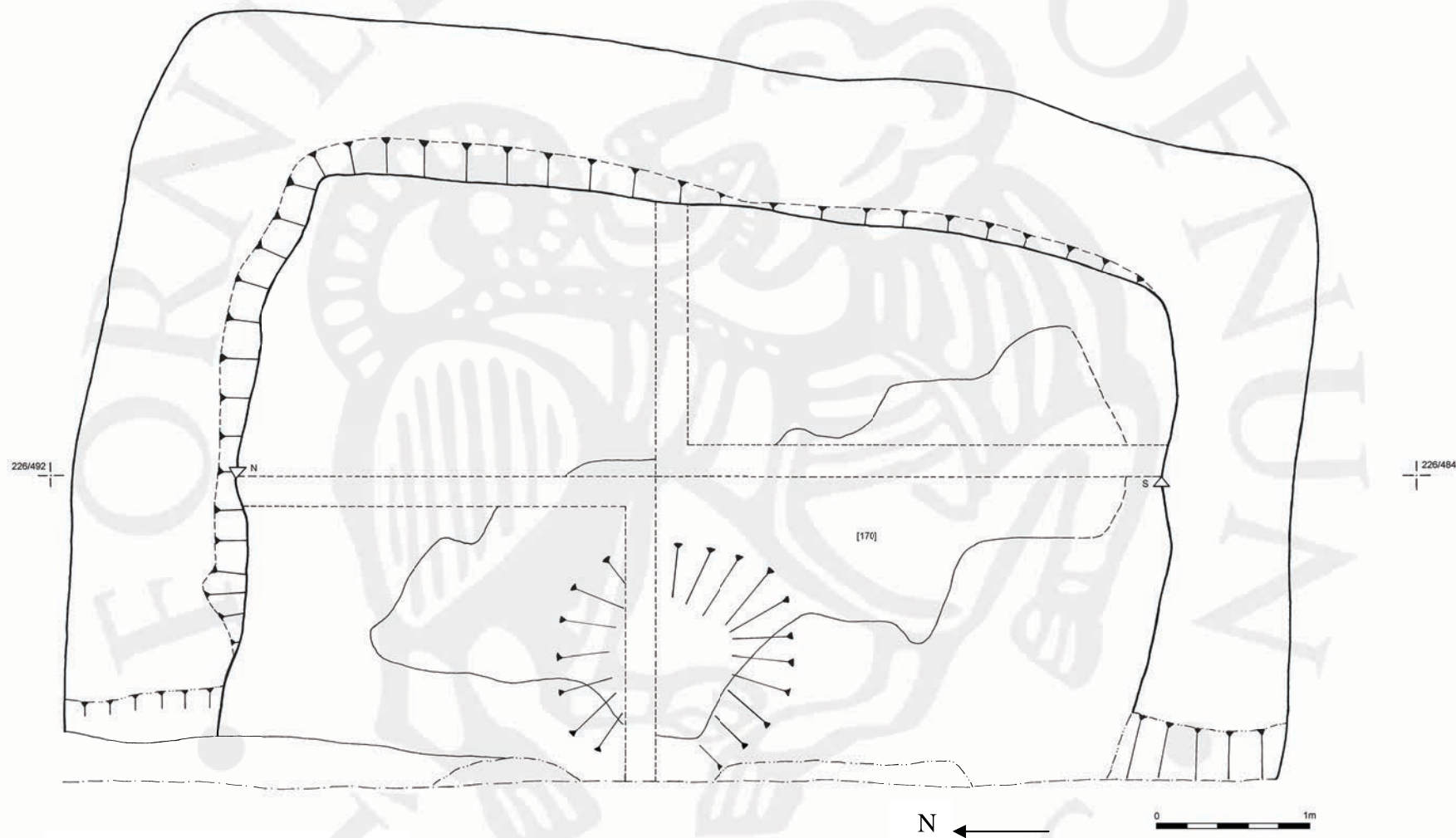


Figure 8. Plan of Structure A2

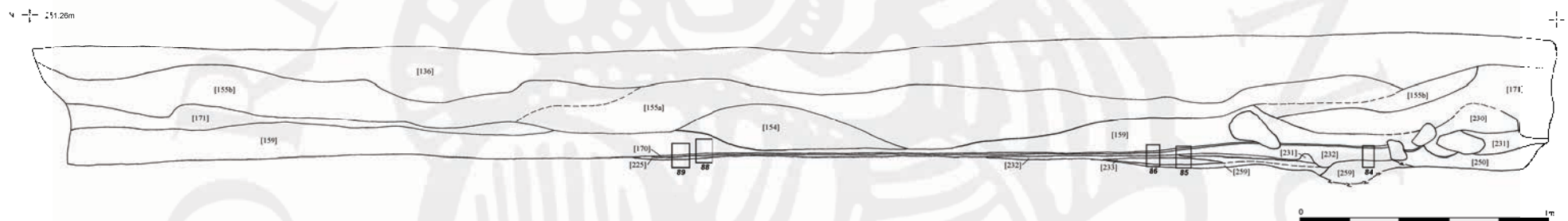


Figure 9. North-south section through Structure A2, showing the location of micromorphology samples

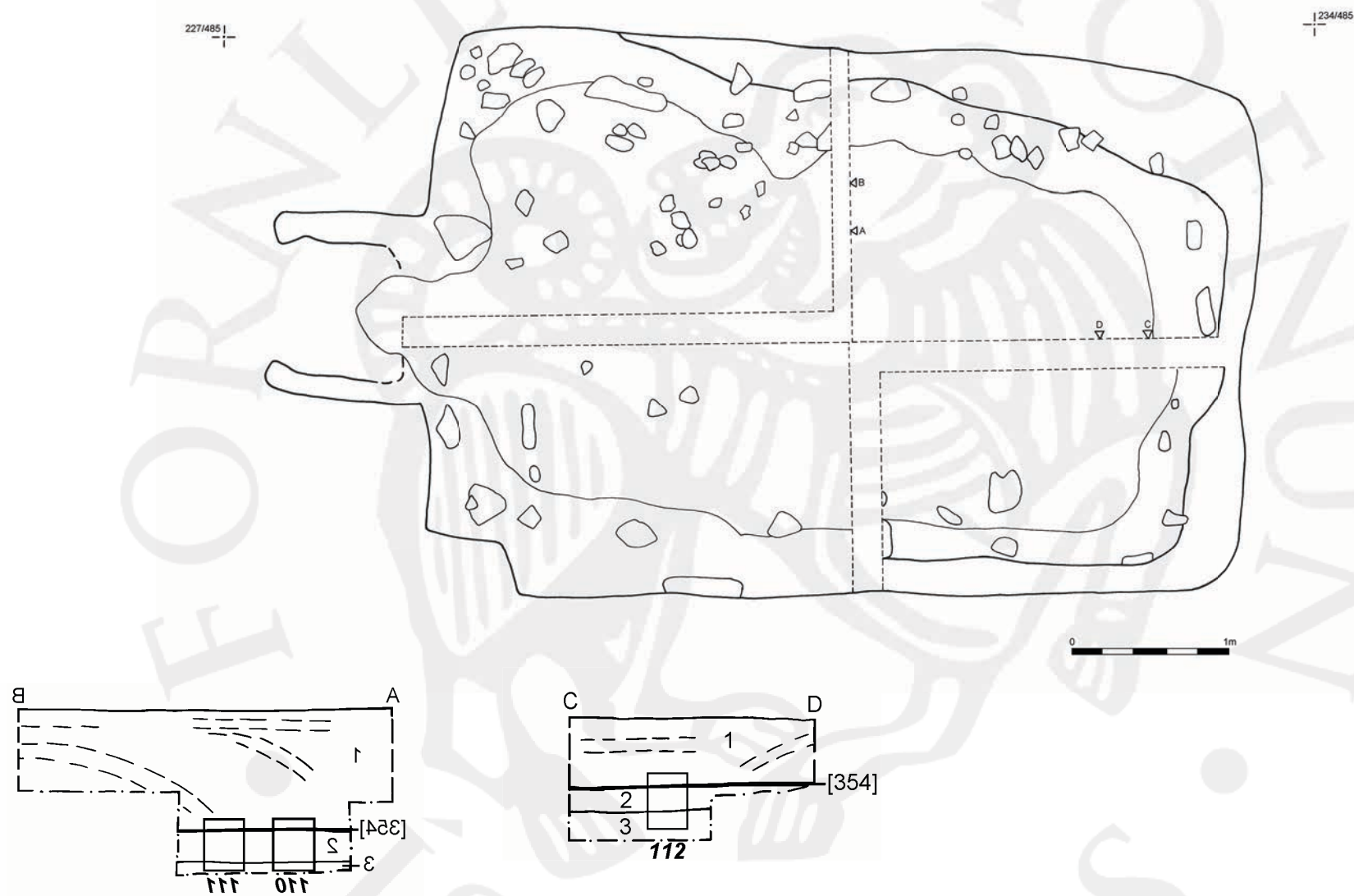


Figure 10. Plan of Structure A3, and sections showing the location of micromorphology samples

### *Structure A5*

Structure A5, which is located south west of Structure A2 and predates the latter, is a sunken-featured building embedded into the slope of the hill on the eastern edge of the site. The structure was sealed by a number of layers of upcast, turf debris and midden material, all of which served to protect a floor deposit exposed only at the end of the 2000 field season. This deposit exhibited dark greyish-brown organic staining in fine horizontal lenses, contained charcoal and small fragments of calcined bone, and was capped by a thin (c. 1-1.5cm) layer of dark-greyish brown to black organic silt (Context [354]).

Three block samples for thin section analysis and supplementary analyses (if needed) were removed from baulks running east-west and north-south through the central axes of the building (see Figure 10 and Table 1). Since Structure A5 has yet to be fully excavated, Figure 3 provides preliminary section drawings, showing only the segment of the section from which the micromorphology samples were taken. The goals of micromorphological analysis will be similar to those listed for Structure A2: 1) to confirm the identification of the presumed floor deposits; 2) to determine the composition of the floor deposits and the degree to which they changed over time; this will contribute to an interpretation of the function of the building and whether its use changed over time; 3) to detect post-depositional alterations to the floor sediments, which could provide information about environmental conditions and human activities within and around the building during and after its use.

### *Area G Pit House*

In 1999, excavations in Area G exposed the well-preserved floor deposit of a sunken featured building, which had been sealed by collapsed turf construction material prior to the use of the pit for the deposition of midden material (Friðriksson and Vésteinsson 1997; Simpson et al. 1999). The floor (Context [009]), a compact, black, charcoal-rich, organic silt layer, which contained loom weights, small bone fragments, and a disturbed hearth in the north-west corner, had already been sampled for micromorphological analysis in 1999 (see Milek and Simpson 1999). The full excavation of the floor of the pit house took place during the 2000 field season, and since it represented the first floor of a domestic building at Hofstaðir that had not been truncated by the excavations of Daniel Bruun earlier this century, an excavation strategy was designed to maximize the data on the composition of the floor and its horizontal variation.

Context [009] was 100% bulk sampled on a 50cm<sup>2</sup> grid. Small samples of c. 250ml were taken for the analysis of organic and inorganic phosphate content and magnetic susceptibility, and larger samples of 5-10 litres were taken for wet sieving and for the analysis of microrefuse (artefacts and charred remains under 4mm in size). The goal of these analyses will be to discern spatial patterning in the composition of the floor and its chemical and magnetic properties. Clear spatial patterning has the potential to provide information about the presence of internal partition walls, furnishings and the spatial organisation of activity areas, which could not be detected during excavation. Since this is the first time that microrefuse analysis, phosphate analysis and magnetic



susceptibility will be applied to the spatial analysis of a Viking Age building in Iceland, this study will provide a valuable assessment of the methods and their potential in the Icelandic environmental and cultural context.

#### *Skáli AB*

In 2000, the longhouse at Hofstaðir was fully exposed for the first time since its excavation by Daniel Bruun. Although the floor deposit adjacent to the east and west long walls had unfortunately been truncated by Bruun, it was preserved in a strip running the length of the building along its central long-axis. Here, the floor (Context [318]) was a black, charcoal-rich, organic silt containing small calcined bone fragments. Due to the immense size of the building and the need for a well-designed and efficient sampling strategy, a 5x5m area west of and adjacent to the central hearth was targeted for intensive assessment in 2000. Five undisturbed blocks for micromorphological and supplementary analyses were taken from a section exposed on the western edge of the cut that had been created by Bruun when he was investigating the hearth (see Figure 11 and Table 1). In addition, Context [318] was 100% sampled on a 1m<sup>2</sup> grid for microrefuse analysis, phosphate analysis and magnetic susceptibility, following the same sampling strategy as that used for the pit house in Area G. As in Area G, the goal of integrating micromorphological analysis with bulk chemical and magnetic analyses is to maximize the available information on the composition of the floor deposits and their variation over time and space.

### **Conclusions and Proposal for Future Work**

Preliminary analysis of micromorphology samples taken from occupation deposits at Hofstaðir in 1997-9 has shown that the technique can provide the type of high-resolution data that is needed for an understanding of the living conditions and the activities that took place within buildings on the Viking Age farm complex. The geoarchaeological samples taken from Structures A2, A5, Skáli AB and the pit house in Area G will provide valuable information about the activities that took place within these buildings, how they were organised spatially, and whether they changed over time. In addition, micromorphological analysis will indicate whether or not there has been any post-depositional alteration of the sediments that can be attributed to specific environmental conditions or human activities. The program of bulk sampling for the detailed spatial analysis of microrefuse, phosphate content and magnetic susceptibility, which is being used for the first time in Iceland, will provide an assessment of these methods and their value in the Icelandic environmental and cultural context. If they prove to be successful, the spatial analysis of the floors at Hofstaðir will provide information about the structure and organisation of interior activity areas, and thereby contribute to ongoing research into the organisation of social space in Viking Age Norse houses in the north Atlantic region (e.g. Smith et al. in press).

**Key:**

[318] – Blac

1 – Greyish

2 – Upcast; yellowish brown silt mixed with Hekla-3 tephra

3 – Natural; yellowish brown silt

4 – Hekla-3 tephra layer *in situ*

5 – Cut

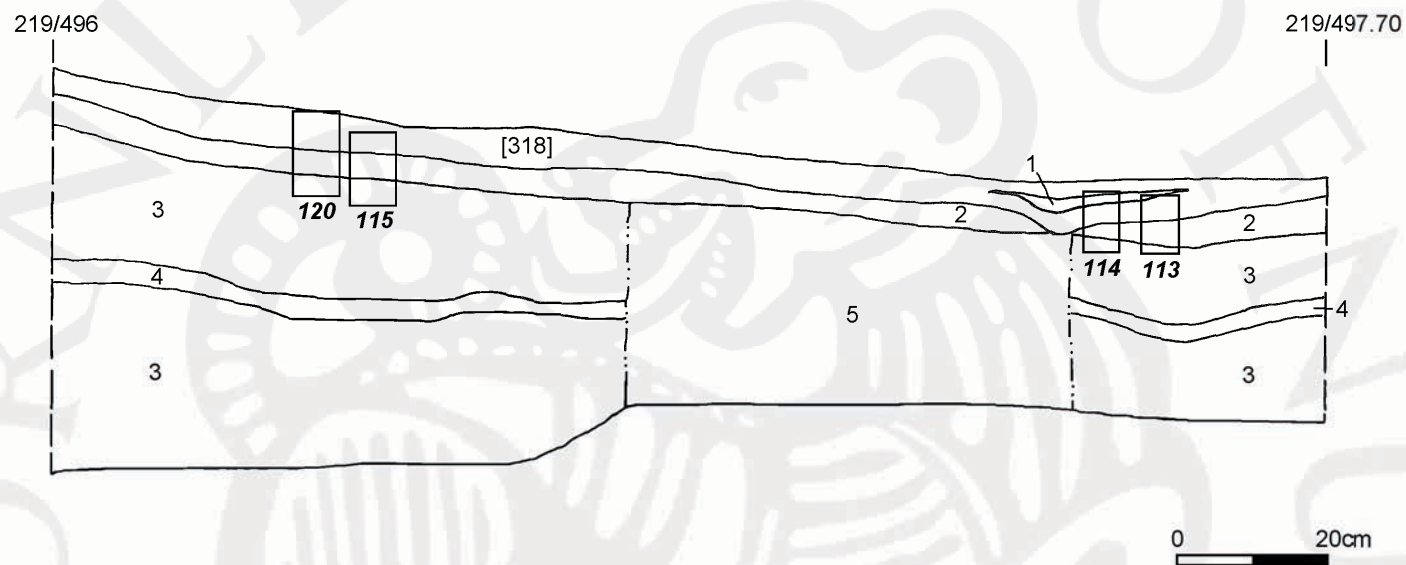


Figure 11. West-facing section of the cut for the hearth in Skáli AB, showing the location of micromorphology samples

### APPENDIX 3. FAUNAL REMAINS

23.5kg of animal bone was retrieved from the excavations in 200; these have been sent to Hunter College, New York for analysis with material from previous seasons with a report forthcoming. A breakdown of the quantities (by weight) by context is given below.

#### BONE

Context	Area	Weight (g)	Notes
1	A	64	
2	AB	280	
2	AB	58	
2	AB	445	
2	AB	238	
2	AB	227	
2	AB	256	
2	AB	452	
2	AB	274	
2	AB	124	
2	AB	155	
2	AB	273	
2	AB	174	
2	AB	235	
2	AB	41.5	
2	AB	15.5	
16	DE	95	
107	A	379	
107	A	364	
159	AB	23	
159	AB	77	
170	A	11	SW QUAD
170	A	3	NW QUAD
209	AB	6	
219	A	239	
220	A	85	
220	A	21	
222	A	8	
223	A	13	
224	A	145	
225		3.5	
225	AB	42.5	A2 SE QUAD/HEARTH
225	AB	8.5	A2
227	A	19.5	
229	A	53	
230	AB	71.5	A2
231	AB	24.5	SW QUAD
232	AB	4.5	
232	AB	4.5	A2
233	AB	34.5	
237	A	193	
240	A	72	A1

241	A	8	
242	A	28	A5
246	A	193	
248	A	99.5	A5
249	A	128	
249	A	49.5	
250	AB	61.5	
250	AB	352	
252	AB	131	
252	AB	43	
252	AB	11.5	
253	A	22	
254	AB	24	
254	AB	6	
255	A	91	
255	A	134	
255	A	269	
256	AB	9	
258	A	265	
260	AB	5	
265	A	26	
265	A	477	
266	AB	81	HEARTH IN SKALI
267	AB	13.5	
267	AB	14	
269	A	57	
271	AB	202	
273	A	19	
274	AB	11	
276	A	97.5	A4
276	A	234	
277	A	94.5	
283	A	27.5	
285	A	154	
286	A	56.5	
287	AB	14	
288	AB	25.5	
289	AB	27.5	
290	A	75.5	
290	A	339	
290	A	34.5	
290	A	1696	
291	AB	109	
291	AB	20	
292	DE	36.5	
297	DE	235	
298	A	160	
298	A	8.5	
298	A	63	
300	AB	36.5	
304	A	18.5	
308	AB	39.5	
316	AB	6	



319		128
321	A	34
324	A	273
327	A	6.5
328	A	43.5
329	AB	11
340	A	189
357	A	319
360	A	121
360	A	7
367		145
1541	Z	3.5
1565	Z	524
1565	Z	329
1565	Z	720
1565	Z	686
1565	Z	801
1565	Z	525
1565	Z	786
1565	Z	488
1565	Z	604
1565	Z	689
1565	Z	500
1565	Z	211
1566	Z	41.5
1568	Z	25.5
1573	Z	8.5
1578	Z	5.5
1578	Z	37.5
1578	Z	19.5
1579	Z	88
1580	Z	3.5
1580	Z	2
1580	Z	5.5
1582	Z	53.5
1583	Z	33
1587	Z	21.5
1595	Z	369
1595	Z	31
1595	Z	875
1598	Z	56.5
1600	Z	30
1600	Z	924
1603	Z	3
1604	Z	33
1604	Z	11
1605	Z	62.5
1605	Z	11
1608	Z	9
1610	Z	227
1610	Z	86.5
1614	Z	103
1615	Z	35.5

226/483

254A	A	50.5	A2
254B	AB	8	A2
9 & 48	G	15.5	
SURFACE	A	52	A1
SURFACE	Z	3	
SURFACE	A	72.5	A1
SURFACE	DE	29	
SURFACE	A	13	
X	X	151	

**SHELL**

230	AB	6
265	AB	6.5

## APPENDIX 4. PLANT REMAINS

The plant remains are primarily collected through bulk samples and are being processed and analysed by Gardar Gudmundsson of Fornleifnastofnun Islands. Below, a full list of all samples taken this season are given.

Sample No.	Area	Context	Location	Comments
S-00-002	G	009	Square 2, floor	
S-00-003	G	009	Square 4, floor	
S-00-004	G	009	Square 6, floor	
S-00-005	G	009	Square 7, floor	
S-00-006	G	009	Square 9, floor	
S-00-007	G	009	Square 11, floor	
S-00-008	G	009	Square 14, floor	
S-00-009	G	009	Square 16, floor	
S-00-010	G	009	Square 18, floor	
S-00-011	G	009	Square 20, floor	
S-00-012	G	009	Square 22, floor	
S-00-013	G	009	Square 24, floor	
S-00-014	G	009	Square 26, floor	
S-00-015	G	009	Square 28, floor	
S-00-016	G	009	Square 30, floor	
S-00-017	G	009	Square 32, floor	
S-00-018	G	009	Square 34, floor	
S-00-019	G	009	Square 36, floor	
S-00-020	G	009	Square 38, floor	
S-00-021	G	009	Square 40, floor	
S-00-022	G	009	Square 43, floor	
S-00-023	G	009	Square 45, floor	
S-00-024	G	009	Square 47, floor	
S-00-025	G	009	Square 49, floor	
S-00-026	G	009	Square 51, not floor	
S-00-027	G	009	Square 53, floor	
S-00-028	G	009	Square 55, floor	
S-00-029	G	009	Square 57, floor	
S-00-030	G	009	Square 59, floor	
S-00-031	G	009	Square 61, floor	
S-00-032	G	009	Square 65, floor	
S-00-033	G	009	Square 67, floor	
S-00-034	G	009	Square 69, floor	
S-00-035	G	009	Square 62, floor/hearth	
S-00-036	G	009	Square 68, floor	
S-00-037	G	009	Square 75, floor	
S-00-038	G	009	Square 60, floor	
S-00-039	A/B	170	SW Quad (170)	Peat ash charcoal rich
S-00-040	G	009	Square 54, floor/hearth	
S-00-041	G	009	Square 48, floor/hearth	
S-00-042				
S-00-043				
S-00-044	A/B	225	SW Quad	Peat ash sample (less charcoal)
S-00-045	Z, Tr2	1585		Ash dump layer
S-00-046	Z,	1586		Charcoal dump

	Tr2			
S-00-047	A/B	225	SE Quad	Peat ash in situ hearth?
S-00-048	A	246		Debris + charcoal in silt
S-00-049	A/B	231	SW Quad	2/2 90%
S-00-050	A/B	231	Hearth SE Quad	In situ (247) hearth
S-00-051	A/B	233		Mixed ash + peath ash layer/dump structure A2
S-00-052	A	253		Wood
S-00-053	A/B	254		Fill, charcoal rich within barrel pit
S-00-054	A/B	259		Hearth/burnt dump 100% sample A2
S-00-055	A	265		Midden
S-00-056	A/B	271		Internal midden dump
S-00-057	G	009	Floor 1a	
S-00-058	G	009	Floor 3	
S-00-059	G	009	Floor 5	
S-00-060	G	009	Floor 8	
S-00-061	G	009	Floor 10	
S-00-062	G	009	Floor 12	
S-00-063	G	009	Floor 15	
S-00-064	G	009	Floor 17	
S-00-065	G	009	Floor 19	
S-00-066	G	009	Floor 21	
S-00-067	G	009	Floor 23	
S-00-068	G	009	Floor 25	
S-00-069	G	009	Floor 27	
S-00-070	G	009	Floor 29	
S-00-071	G	009	Floor 31	
S-00-072	G	009	Floor 33	
S-00-073	G	009	Floor 35	
S-00-074	G	009	Floor 37	
S-00-075	G	009	Floor 39	
S-00-076	G	009	Floor 44	
S-00-077	G	009	Floor 46	
S-00-078	G	009	Floor 50	
S-00-079	G	009	Floor 52	
S-00-080	G	009	Floor 58	
S-00-081	G	009	Floor 64	
S-00-082	G	009	Floor 66	
S-00-084	A/B	009	SW Quad	Bulk sample micro morph. A
S-00-085	A/B	009	SW Quad	Bulk sample micro morpl. C
S-00-086	A/B	009	SW Quad	Bulk sample micro morpl. D
S-00-087	A/B	266		Ash deposit in fireplace (5 bags)
S-00-088	A/B	266	NE Quad	Bulk sample micro morph. E
S-00-089	A/B	266	NE Quad	Bulk sample micro morph. F
S-00-090	A/B	267		Charcoal/slag (3 bags)
S-00-091	A	277		Bulk samples
S-00-092				
S-00-093	A/B	274		Floor layer (2 bags)
S-00-094	A/B	275		Floor layer (1 bag)
S-00-095	A/B	287		Floor layer
S-00-096	A/B	291		Hammer scale sampling
S-00-097	A/B	247		Sample of fill under hearth (1 small bag)
S-00-098	A	290		Sheet midden
S-00-099	Z	SK2		Ash
S-00-100	Z	SK2		Thoracic cavity
S-00-101	Z	SK2		Delvic cavity
S-00-102	Z	SK3		Ash
S-00-103	Z	SK3		Thoracic cavity
S-00-104	Z	SK3		Pelvic cavity
S-00-105	Z	SK4		Ash



S-00-106	Z	SK4		Thoracic cavity
S-00-107	Z	SK4		Pelvic cavity
S-00-108	Z	SK5		Thoracic cavity
S-00-109	Z	SK5		Pelvic cavity
S-00-110	A5			Micromorph - turf collapse + floor (N. edge)
S-00-111	A5			Micromorph - turf collapse + floor (N. edge)
S-00-112	A5			Micromorph - turf collapse + floor (E. edge)
S-00-113	A/B	318		Micromorph - Floor and upcast (hearth)
S-00-114	A/B	318		Micromorph - Floor and upcast (hearth)
S-00-115	A/B	318		Micromorph - Floor and upcast (hearth)
S-00-116	A/B	329		100% bulk sample -charcoal, charred plant
S-00-117	A	324		15 l bulk sample
S-00-118	A	324		1 .... tin of organ. ash layer
S-00-119	A	326		Grey layer very hard with burned bones and charcoal
S-00-120	A/B	318		Floor (micromorph.) fireplace
S-00-121	A/B	318		Floor (micromorph.) fireplace
S-00-122	A/B	318		Floor, (8 large, 5 small)
S-00-123	Z	SK6		Charcoal
S-00-124				Discarded
S-00-125				Discarded
S-00-126	A5	354A		Floor layer
S-00-127	A5	354B		Floor layer
S-00-128	A5	354C		Floor layer
S-00-129	A5	354D		
S-00-130	A	359		Tephra?
S-00-131	A5	354E		Floor layer
S-00-132	A5	354F		Floor layer
S-00-133	A5	354G		Floor layer
S-00-134	A5	354H		Floor layer
S-00-135	A	255		Charcoal
S-00-136	Z	1616		Charcoal
S-00-137	A	298	SW corner of A5	Charcoal
S-00-138	A	363		Charcoal
S-00-139	A	286		Charcoal
S-00-140	A	367		Charcoal
S-00-141	A/B	316	A2	Charcoal
S-00-142	A/B	267	A2	Charcoal
S-00-143	A/B	260		Charcoal
S-00-144	A/B	295		Charcoal
S-00-145	A	320		Charcoal
S-00-146	A/B	254a	A2	Charcoal
S-00-147	A	321	A2	Charcoal
S-00-148	A/B	260		Charcoal
S-00-149	Z	1595		Charcoal
S-00-150	A/B	267		Charcoal
S-00-151	A	265		Charcoal
S-00-152	A	267	A4	Charcoal
S-00-153	A	246		Charcoal
S-00-154	A	298		Charcoal
S-00-155	Z	1605		Charcoal
S-00-156	Z	1540		Charcoal
S-00-157	A/B	159		Charcoal
S-00-158	A/B	002		Charcoal
S-00-159	?	319		Charcoal
S-00-160	A	313		Charcoal

S-00-161	Z	1580		Bark
S-00-162	A/B	231	A2	Bark
S-00-163	Z	1580		Wood (worked?)
S-00-164	Z	1605		Wood
S-00-165	Z	1540		Wood
S-00-166	Z	1566		Wood (coffin?)
S-00-167	A	255		Wood
S-00-168	A/B	002		Wood (worked?)
S-00-169	A	107		Wood
S-00-170	Z	1611		Wood (worked?)
S-00-171	A/B	002		Charcoal
S-00-172	A	246		Caprolite?
S-00-173	A	265		Caprolite?
S-00-174	A	298		Caprolite?

## APPENDIX 5. POLLEN ANALYSES

Alex Chepstow-Lusty ( Department of Geography, Downing Site, Cambridge, UK)

### Introduction

This present study forms part of a multidisciplinary approach to the analyses of occupation deposits from the 10<sup>th</sup> century Viking farmstead of Hofstaðir in conjunction with micromorphology, plant phytoliths, geochemistry, present day plant collections and other relevant data, etc. Pollen analyses of these selected deposits arose originally from Karen Milek's observations of pollen sized objects in some of her micromorphological sections, in particular what appeared to be grasses. It was hence considered worthwhile that quantitative pollen analyses could shed some light on the nature and origin of these occupation deposits.

### Methodology

Four representative samples were carefully selected, three of which were thought to have originated from decomposed hay deposited on the floors of the sites, and a fourth was a control sample obtained from the collapse of a turf roof/wall. Volumetric samples of 1cm<sup>3</sup> were carefully removed and placed in sealed containers, preventing the possibility of contamination from modern pollen rain. These were then processed according to Method B of Berglund and Ralska-Jasiewiczowa (1986), after the addition of a *Lycopodium* tablet; this contains a known number of *Lycopodium* spores, which are counted during pollen analyses, allowing the calculation of pollen/spore and microcharcoal concentrations. Additional techniques, during pollen processing included standing the samples in a hot water bath of 0.1 M sodium pyrophosphate for 10-20 minutes; this was subsequent to washing in distilled water after standing overnight in hydrochloric acid. The sodium pyrophosphate assists disaggregation of fine matter in the samples. After coarse sieving through a 125 micron sieve, the samples were sieved through a 10 micron sieve to remove the fine fraction, which can otherwise interfere with pollen counting. The residues were mounted in silicone oil, and a count of over 600 terrestrial pollen and spores was made. Finally, the microcharcoal was assessed using the point-count method of Clark (1982), where 50 fields of view are examined at a magnification of X 400, using an eye piece graticule.

### Results

(Please refer to Tables 2 & 3)

**HST 97, Structure D1, Sample Pr.2/2, Context 16: turf collapse, as a control sample (referred to here as H1 for purposes of pollen analyses)**

This sample after coarse sieving at 125 microns left behind only very fine inorganic and plant matter; no macrocharcoal or coarse inorganic material was observed. This material

was not retained. Similarly, charcoal was generally rare during microcharcoal analyses (0.07cm<sup>2</sup>/cm<sup>3</sup>) but the sample was rich in shards of tephra (not quantified).

Pollen analyses showed this sample was indeed quite different from the other three samples. It is dominated by a high abundance of microspores from *Selaginella selaginoides* (87%) a member of the clubmosses and allies. The next two important taxa are sedges and grasses, but these occur at much lower frequencies (approximately 5% and 6% respectively). The diversity of taxa recorded is also at its lowest and preservation of pollen is mixed. The whole slide was examined for this count representing an area of 576mm<sup>2</sup>. Overall concentration of spores and pollen at 56080 /cm<sup>3</sup> are nevertheless comparable with samples H2 and H3, which are 54689/cm<sup>3</sup> and 57735/cm<sup>3</sup> respectively. A single pollen grain of *Myriophyllum*, an aquatic genus was found only in this sample.

**HST 98, Structure D1, Sample 47, Context 74.1: possibly decomposed hay (referred to here as H2 for purposes of pollen analyses)**

After coarse sieving, some large pieces of macrocharcoal with discernible transport vessels, and other plant matter were observed and retained for future quantification if necessary; some insect remains were also found. Microcharcoal analyses produced results not as high as expected (0.38 cm<sup>2</sup>/cm<sup>3</sup>), but certainly significantly higher than samples H1 and H3. During pollen analyses, tephra shards were much less noticeable than in H1, but this was not quantified.

The pollen was in an excellent state of preservation. The sample is dominated by a high percentage of grasses (66%), whilst *S. selaginoides* is greatly reduced (<7%). Sedges increase (<10%) and the diversity of taxa markedly expands. Other taxa barely making an appearance in H1 increase in abundance such as *Betula* (5%), *Plantago* (>1%) and *Galium* (>1%), whereas many other taxa appear for the first time: Caryophyllaceae (<3%) Compositae (Liguliflorae) (>1%) Ericaceae (>1%), *Ranunculus* (<1%), *Salix* undiff.(>1%) and others.

**HST 98, Structure D1, Sample 53, Context 74.2: possibly decomposed hay, but more compacted (referred to here as H3 for purposes of pollen analyses)**

Coarse sieving left behind only fine inorganic and plant matter; since no macrocharcoal fragments or coarse inorganic remains were recovered, nothing was kept for further analyses. Microcharcoal was scattered (0.14cm<sup>2</sup>/cm<sup>3</sup>) and less abundant than in H2; tephra shards were noted as quite common (but not quantified).

The preservation of the pollen was generally good, though some signs of degradation were evident compared to H2. Grasses are by far the most abundant taxa (50%) with very minor increases in sedges (>11%) and *S. selaginoides* (>9%) compared to H2. A similar diversity of taxa are present as in H2, but there are a few noticeable changes. There is a marked increase in Compositae (Liguliflorae) to almost 3%, which includes genera such as *Taraxacum* type, and an expansion in “woody” taxa, such as *Betula* (<7%), and especially *Salix* undiff. (<7%), as well as a major increase in the fern *Botrychium* (>4%), relatively rare in H2. Other noticeable taxa such as Caryophyllaceae, *Galium* and *Plantago* remain at similar levels; Ericaceae were not observed during the count.



**HST 98, Structure E2, Sample 69, Context 1087.1: possibly decomposed hay on floor (referred to here as H4 for purposes of pollen analyses)**

Coarse sieving left behind many pieces of small macrocharcoal, and this has been retained for quantitative analyses if necessary. Microcharcoal analyses reinforced the evidence for high charcoal abundance (2.3 cm<sup>2</sup>/cm<sup>3</sup>), being much higher than H2, the only other sample with noticeable charcoal. Tephra shards were not noted as being particularly common.

The preservation of the pollen was mixed, and the overall concentration of pollen/spores at 107,399/cm<sup>3</sup> was approximately twice that of the three other samples (mean concentration of 56,168/cm<sup>3</sup>). This is worth noting as it can mean that some taxa may have maintained relative abundances, e.g. Compositae (Liguliflorae) at almost 3% as in H3, but in fact are present in double the concentration.

The major changes are the increase in sedges (25%) relative to grasses (55%), but this must also be considered in terms of concentrations. Therefore, grasses are in fact showing the highest concentrations of all the samples at 59,538 grains/cm<sup>3</sup>. This can be compared to H2 with the next most abundant grass pollen concentration of 36,090 grains/cm<sup>3</sup>, where in fact grasses consisted of 66% of the total sum of pollen and spores. Taxa showing a decrease in relative terms, and absolute concentrations compared to H3 (the sample with which best to compare) include *S. selaginoides* (3%), *Salix* undiff. (2%), *Betula* undiff. (<3%), *Galium* (<0.5%) and *Botrychium* (>1%). However, the Caryophyllaceae and *Plantago* appear to decrease in relative abundance, but maintain similar concentrations as observed in H3. Ericaceae make a minor appearance. A single pollen grain of *Geranium* type was observed, which was not noted in any of the other samples.

## Comments

The information obtained here from the pollen analyses and other observations represents only a small fragment of the information that shall be finally integrated to make a proper interpretation. It must be emphasized that there is no direct relationship between the representation of pollen and the real abundance of plant taxa in the samples; there is always a bias to those that are wind-pollinated producing the most pollen, such as the grasses and sedges. There needs to be independent confirmation of the plant macroremains to genuinely confirm independently the trends indicated here. However, one can make the assumption that if grasses make up a large component of the plant remains, their pollen will be well represented. A few observations and armchair speculations are still probably worthwhile at this early stage to stimulate debate.

There is no doubt that sample H1 is very different to the other three samples, which themselves show some interesting differences.

**H1** was a control sample and obtained from a turf collapse of a wall or roof. This may fit the data accordingly. One would expect a much lower diversity and abundance of pollen from an area that was cut for turf than from harvesting a meadow. In such a wet environment one may expect a similar representation of sedges to grasses, and this may be the habitat favoured by *S. selaginoides*, a member of the clubmosses, which certainly require wet conditions. It is even conceivable that if this was an exposed surface such as a

roof that *S. selaginoides* could have colonized such a potentially wet environment. It would be useful to have some ecological feedback from the botanists who made a reference collection of plants in the area. The noticeable abundance of tephra shards may be explained by the more likely deposition on a turf layer (*Landnam* tephra), whether *in situ* or as part of a roof; less tephra might be expected from an association of meadow plants presumably cut for hay above the ground surface, unless post-depositional processes have mixed them up with the *Landnam* layer. The turf having very low microcharcoal concentrations, and no observable macrocharcoal may be expected; it is derived from a wet environment unlikely to have been exposed to fire, and from a building where fires were not used, or it was on the outer surface.

**H2** fits in easily with the notion that this sample was derived from decomposed hay. This sample has the best preservation of all the samples, and there may be additional contextual information that explains this. Grasses make up the majority of the pollen types (66%), but there is also a noticeable diversity of other types, which would be expected from a meadow, where *S. selaginoides* would be rare. Some evidence of burning is apparent, and this is probably from fires within the structures as opposed to burning to maintain pasture land from where the hay was collected. With such a high component of grasses, this may have been “higher quality animal fodder” obtained from a meadow nurtured for this purpose. Could the macrocharcoal be derived from plants used for burning which have been mixed up with this assemblage, or the two sources were stored together?

**H3** similarly fits the notion that the original material was decomposed hay, and is dominated by grasses (50%). However, there are some minor differences in the other components, which might indicate either a different area for collection or time of the year, or post-depositional mixing. Some additional information on the timing of flowering and hence dispersal of pollen, and the likely time of harvesting hay could obviously effect the records obtained. The major differences are the increase in *Salix* undiff., *Betula*, *Botrychium*, Compositae (Liguliflorae), and minor increases in sedges and *S. selaginoides*. This dilution by other components may have reduced the nutritional content of the hay, or it was just used for animal bedding. Very little microcharcoal, and no macrocharcoal was observed with this sample, which might indicate the hay was laid down or given to animals in a structure not used for domestic burning. The slightly poorer preservation may be partly explained by the mix of plants, some of which favour wetter conditions, and more effort may have been put into drying higher quality fodder to get the animals through the winter, than that just required for bedding. The qualitative observation that this sample appeared to contain more tephra than in H2 may support these observations. One would not want valuable livestock to be fed too much tephra as this could have deleterious consequences, and hence there was little observed in the “higher quality fodder”. However, just for gathering bedding from poorer pasture, and perhaps using less careful techniques about avoiding tephra shards becoming incorporated from the ground layer may explain the higher abundance. Lying on the material may equally enhance the abundance of tephra or there may be trampling and mixing with the *Landnam* layer. This material may also contain some plant matter stored for burning, but not actually burnt at this site, such as the increase of *Betula* and *Salix* undiff., although the latter is also known to be gathered for fodder.

**H4** seems to be both different to the envisaged “high quality fodder” sample for H2 and the “bedding” sample for H3. The high concentration of pollen/spores being twice the other samples could be a real reflection of the timing of the harvesting when particularly more of

the grasses and sedges were flowering, or a post-depositional artefact of major compaction increasing the concentration. This may be enhanced by the mixed preservation indicating some of the plant material had been removed by decay; it was also noted that most of the grass pollen was folded which could relate to the high degree of compaction. In spite of the high concentration of grasses in this sample (59,538 grains/cm<sup>3</sup>), no other sample has such a high abundance of sedges, representing 25% of the total pollen and spores (equivalent to 27,102 grains/cm<sup>3</sup>). Sedges favour wetter, frequently more infertile areas, and are generally nutritionally poorer than grasses. However, there are numerous sedge species, and it would be interesting to learn more about their nutritional qualities compared to the high diversity of grass species in Iceland; the latter obviously have different nutritional properties. It is admitted that the sizes of grass pollen were highly variable, but it would be a large taxonomic study to delimit the species in view of this high diversity. It is imagined that the high sedge component would have reduced the hay as a quality fodder crop, but this is very speculative. Most of the other major taxa show a decrease in relative terms, and absolute concentrations compared to H3 (the sample with which best to compare) including *S. selaginoides*, *Salix* undiff., *Betula* undiff., *Galium* (<0.5%) and *Botrychium*. Whether this was poor quality fodder for animals, with grass pollen still at 55% may be possible; tephra were rare if this was bedding for animals and the material had not been heavily mixed through trampling with the *Landnam* layer. This sample contained the highest abundance of microcharcoal, combined with notable macrocharcoal indicating the plant material was deposited in a structure where domestic fires regularly occurred; are we also observing some stored and burnt combustible plant material mixed in with this assemblage? I would be curious to examine the pollen content of the kind of peaty material used commonly for burning?

## Postscript

This brief report probably raises more questions than are solved, some of which can hopefully be answered by the complementary techniques. The four samples were probably carefully selected to bring out these contrasts. I would appreciate any feedback from whoever this stimulates, and who can constrain these wild speculations with other evidence. Creating a pollen reference collection from the recently abandoned turf house at Þverá could be highly fruitful for comparative purposes, as well as examining contemporary peat, dung, turf, stored plant material for burning and compressed animal bedding/fodder samples.

**Table 2. Pollen/spore percentages from 4 selected samples.**

**Total sum of pollen and spores and microcharcoal concentrations are also shown.**

	H1	H2	H3	H4
	HST 97	HST 98	HST 98	HST 98
	Struct. D1	Struct. D1	Struct. D1	Struct. E2
	Samp.Pr2/2	Samp. 47	Samp. 53	Samp.69
	Cntxt 16	Cntxt 74.1	Cntxt 74.2	Cntxt 1087.1
	H1	H2	H3	H4
Gramineae	5.111821086	65.99063963	49.63592233	55.43624161
Cyperaceae	5.750798722	9.672386895	11.16504854	25.23489933
S.selaginoides	87.22044728	6.864274571	9.101941748	3.087248322
Plantago undiff.	0.319488818	1.248049922	1.334951456	0.939597315
Caryophyllaceae	0	2.652106084	2.548543689	1.610738255
Betula undiff.	0.798722045	4.992199688	6.796116505	2.818791946
Salix undiff	0	1.248049922	6.796116505	2.013422819
Compositae (Lig.)	0	1.248049922	2.791262136	2.953020134
Compositae (Tub.)	0.159744409	0.780031201	0.242718447	0.268456376
Galium type	0.159744409	1.404056162	1.213592233	0.268456376
Ericaceae	0	1.404056162	0	0.536912752
Thalictrum type	0	0	0.36407767	0.67114094
Ranunculus	0	0.780031201	0.970873786	0.402684564
Rosaceae	0.159744409	0.468018721	0.121359223	1.208053691
Umbelliferae	0	0.31201248	0.242718447	0.402684564
Botrychium	0	0.31201248	4.247572816	1.342281879
Urtica	0	0.15600624	0.606796117	0
Artemisia type	0	0.15600624	0	0
Cruciferae	0	0	0.485436893	0.268456376
Juniperus	0.159744409	0	0.242718447	0
Triglochin type	0	0.15600624	0.970873786	0.268456376
Geranium	0	0	0	0.134228188
Polypodium type	0	0	0.121359223	0
Unidentified trilete spores	0	0.15600624	0	0.134228188
Lycopodium type	0.159744409	0	0	0
Myriophyllum	0.159489633	0	0	0
<b>Total Concentration /cm<sup>3</sup></b>	<b>56080.65714</b>	<b>54689.94558</b>	<b>57735.24022</b>	<b>107399.8851</b>
<b>Microcharcoal (cm<sup>2</sup>/cm<sup>3</sup>)</b>	<b>0.076121248</b>	<b>0.376377279</b>	<b>0.145899058</b>	<b>2.283637426</b>
<b>Total sum of pollen and spores</b>	<b>626</b>	<b>641</b>	<b>824</b>	<b>745</b>



**Table 3. Concentration data for pollen and spores/cm<sup>3</sup>**

	H1	H2	H3	H4
	HST 97	HST 98	HST 98	HST 98
	Struct. D1	Struct. D1	Struct. D1	Struct. E2
	Samp.Pr2/2	Samp. 47	Samp. 53	Samp.69
	Cntxt 16	Cntxt 74.1	Cntxt 74.2	Cntxt 1087.1
	H1	H2	H3	H4
Gramineae	2866.742857	36090.2449	28657.41899	59538.45977
Cyperaceae	3225.085714	5289.823129	6446.167598	27102.25287
S.selaginoides	48913.8	3754.068027	5255.027933	3315.701149
Plantago undiff.	179.1714286	682.5578231	770.7374302	1009.126437
Caryophyllaceae	0	1450.435374	1471.407821	1729.931034
Betula undiff.	447.9285714	2730.231293	3923.75419	3027.37931
Salix undiff	0	682.5578231	3923.75419	2162.413793
Compositae (Lig.)	0	682.5578231	1611.541899	3171.54023
Compositae (Tub.)	89.58571429	426.5986395	140.1340782	288.3218391
Galium type	89.58571429	767.877551	700.6703911	288.3218391
Ericaceae	0	767.877551	0	576.6436782
Thalictrum type	0	0	210.2011173	720.8045977
Ranunculus	0	426.5986395	560.5363128	432.4827586
Rosaceae	89.58571429	255.9591837	70.06703911	1297.448276
Umbelliferae	0	170.6394558	140.1340782	432.4827586
Botrychium	0	170.6394558	2452.346369	1441.609195
Urtica	0	85.31972789	350.3351955	0
Artemisia type	0	85.31972789	0	0
Cruciferae	0	0	280.2681564	288.3218391
Juniperus	89.58571429	0	140.1340782	0
Triglochin type	0	85.31972789	560.5363128	288.3218391
Geranium	0	0	0	144.1609195
Polypodium type	0	0	70.06703911	0
Unidentified trilete spores	0	85.31972789	0	144.1609195
Lycopodium type	89.58571429	0	0	0
Myriophyllum	89.44283436	0	0	0
<b>Total Concentration/ cm<sup>3</sup></b>	<b>56080.65714</b>	<b>54689.94558</b>	<b>57735.24022</b>	<b>107399.8851</b>
<b>Microcharcoal (cm<sup>2</sup>/cm<sup>3</sup>)</b>	<b>0.076121248</b>	<b>0.376377279</b>	<b>0.145899058</b>	<b>2.283637426</b>
<b>Total sum of pollen and spores</b>	<b>626</b>	<b>641</b>	<b>824</b>	<b>745</b>

## APPENDIX 6. PALAEOPATHOLOGY

Hildur Gestsdottir

### Nutritional disease

Only one individual displayed signs of nutritional disease. SK003 has slight *cribra orbitalia* in both the left and right orbit, indicating childhood iron deficiency anaemia.

? *Cribra orbitalia* 1/5

### Infectious disease

There was one case of non-specific infection, a small cloaca in the middle of the proximal articular surface of the right 2<sup>nd</sup> metatarsal of SK003. There is no indication of healing.

SK001 has a large (8x13mm) cloacae in the right side of the palate, extending from the first premolar to the second molar, and opening into the nasal cavity. The abscess which has resulted in this has completely destroyed the alveolar bone surrounding those teeth, and a quarter of the palate, leaving a cavity 13mm deep. The bone surrounding the cloacae is very porous and its edges are very sharp, showing no sign of healing, suggesting that this infection might be the cause of death.

Four ossified cysts 7-10mm in diameter were found among the left ribs of SK002, possibly parasitic cysts. This will need further analysis before a definite diagnosis can be made

? *Infectious disease* 3/5

### Trauma

Three individuals have fractures. SK002 has a well remodelled fracture of one left rib (3<sup>rd</sup>-10<sup>th</sup>?) and an oblique fracture of the proximal third of the left fibula. There is little displacement of the fracture although there is a slight overlap of about 5mm. The fracture line is sealed by well remodelled lamellar bone. The same individual also displays a fusion of C2 and C3 on the left process and along the left side of the arch. This is sealed by well remodelled lamellar bone, and is probably due to some trauma, although no fracture line is visible. There is also a possible compression fracture right hand side of the L4 of the same skeleton. All these traumas are long standing and are possibly the result of the same accident

Three individuals have a fracture of the phalanges of the foot. SK001 has a possible fracture of the proximal articular surface of the first distal phalange of the right foot;

SK003 has a transverse fracture of the left middle phalange of the 2<sup>nd</sup>-4<sup>th</sup>(?) digit and SK005 has an oblique fracture of the left distal phalange of the 2<sup>nd</sup>-4<sup>th</sup>(?) digit. In both cases the fractures have been well remodelled, and there have been some changes to the associated articular surfaces.

There is one case of possible sharp instrument trauma. SK005 has a small wedge shaped indentation, 4mm deep, 4mm in width across the surface in the edge of the inferior body of C5, medial to the right transverse foramen. It's edges are very sharp, showing no sign of healing and a small indentation, 6mm in diameter, 2mm deep, on the right anterior surface of the superior body. The surface of the indentation is the compressed cortical bone. These results need further investigation before it can be conclusively stated that this individual did suffer sharp instrument trauma to the neck.

There is one case of *osteocondritis dissicans*, the fragmentation of the joint surface due to significant obliteration of the blood supply to the joint (Roberts and Manchester, 1995). SK003 has *osteocondritis dissicans* of the anterior part of the left glenoid fossa with the fragment rehealed.

Four individuals have some sort of soft tissue damage. SK001 has a bony growth (8mm in diameter) on the medial surface of the proximal end of the shaft of a right proximal phalange of the foot (possibly the third digit). SK002 has a large ossification on proximal ? of the palmar surface of the shaft of the left middle phalange (3<sup>rd</sup> digit?) of the hand and SK003 has a slight enthesopathy formation on the right fibula, superior to the articular surface of the lateral malleolus, on the attachment of the interosseous ligament. In all cases the new bone formations are well remodelled lamellar bone and probably represent some form of soft tissue damage.

The fourth individual with soft tissue damage is SK004, who has calcified thoracic cartilage is attached to the stem of the hyoid, indicating some sort of neck injury, possibly hanging.

- ? **Fractures 4/5**
- ? **Sharp instrument trauma 1/5**
- ? ***Osteochondritis dissicans* 1/5**
- ? **Soft tissue damage 4/5**

## **Joint disease**

### *Spinal joint disease*

Only one individual, SK002, displays osteoarthritis (eburnation) of the spine. In this case osteoarthritis of the body and processes of C1-C6, associated with a severe increase in porosity and osteophyte formation. This is probably associated with the trauma and subsequent fusion of C2 and C3 (see discussion on trauma).

Four individuals have Schmorl's nodes on the inferior and/or superior surfaces of the vertebral bodies. These are formed by pressure on the bodies of the vertebrae due to

degeneration of the intervertebral discs (Roberts and Manchester, 1995). The individuals affected are SK001, T6-T11; SK002, T5-T10; SK003, T7-L4 and SK005, T5-T11

Other spinal joint disease are spondylolysis, a fracture of the vertebral arch, of L4 in SK001, and the formation of a pseudo arthrosis lateral to the left occipital condyle and on the opposing proximal surface of the left transverse process of the C1 in SK003. There is slight enthesopathy formation on the posterior surface of the arthrosis.

- ? **Osteoarthritis of the C vertebrae 1/5**
- ? **Schmorl's nodes 4/5**
- ? **Spondylolysis 1/5**

#### *Other joint disease*

Four individuals displayed osteoarthritis in other joints than the spinal column. This was seen most commonly in the hips. SK001 and SK002 displayed severe osteoarthritis of the right hip joint, and in the case of SK001, partial ossification of the transverse acetabular ligament. SK003 has severe bilateral osteoarthritis of the hip joints. In all cases there is eburnation and increased porosity of both the acetabulum and femoral head.

Other joints which display osteoarthritis are the manubrium-clavicular joints, bilateral, in SK002 and the triquetral facet of the pisiform and the pisiform facet of the triquetral, SK003.

- ? **Osteoarthritis of the hip 3/5**
- ? **Osteoarthritis of the hand 1/5**
- ? **Other osteoarthritis 1/5**

#### **Occupational stress indicators**

Two individuals had sesemoid bones, indicating increased stress on the hands or feet. SK002 in both feet and SK003 in the left hand. There are between two and four sesemoid bones in each, ranging in diameter 5-13mm.

Three individuals in the collection, SK002, SK003 and SK004 have the formation of a new articular surface between the anterior surface of the acromion and the acromial end of the sternum. This is bilateral except in the case of SK004, where only the right shoulder is affected, In all cases the new articular surface is extremely porous with slight osteophyte formation in most cases. It is probable that these modifications of the shoulder joints is connected to some repeated activity

- ? **Sesemoid bone formation 2/5**
- ? **Shoulder joint pseudo-arthrosis 3/5**



## Neoplasm

One individual has any neoplastic growths, SK001, who has a total of five button osteomas, a benign cancer, varying in diameter from 2-7mm are located on the left and right parietal bones and the frontal bone.

? **Neoplasm 1/5**

## Non-specific stress indicators

Three individuals, SK002, SK004 and SK005 in the collection have very slight linear enamel hypoplasia indicating periods of stress during childhood. This is in all cases seen either on the incisors or the canines.

? **Enamel hypoplasia 3/5**

## Dental disease

Four individuals, SK002, SK003, SK004 and SK005 in the collection have calculus formation, an indicator of poor dental hygiene, on the dentition, ranging from flecks to heavy. It is most commonly found on the labial and/or buccal sides of the molars, but can be found on any teeth.

? **Calculus 4/5**

## Other pathologies

### *Pathologies of unknown aetiology*

The incisive foramen of SK005 is greatly enlarged, 10mm in diameter, with slight sclerotic woven bone formation at the base of the foramen. The aetiology for this change is unknown.

## APPENDIX 7. FINDS

The artefacts recovered from the 2000 season are listed below by material categories; a large proportion are of post-medieval/Modern date. Further analysis is still in progress and discussion will have to await a later date.

### Bone Objects

Only a few bone artefacts were recovered, including two Norse pins/needles from Bruun's backfill in the skali, and an in situ comb from the pithouse in G.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-113	1616	Z	10			124	Peatashfill
00-143	0002	AB	1	Needle	Bone	1	
00-142	0002	AB	1	Pin	Bone	2	
00-141	0009a	G	7	Comb	Bone	13	Comb, made of bone, broken in 7 pieces

### Fired Clay

Three fragments of what appear to be fired clay/daub were recovered. Little more can be said at this stage but they raise some interesting questions of attribution.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-123	267	AB	5		Clay	25	Unfired clay small pieces
00-121	1540	Z	1		Clay	9	Fired clay?
00-077	1613	Z	6		Daub	10	Ashy - daub?

### Glass

A small group of modern vessel and window glass was retrieved.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-065	107	A	5	Window	Glass	20	Clear glass - window.
00-064	002	AB	1		Glass	13	Clear glass -? Stopper shark.

00-061	1565	Z	1	Bottle	Glass	6	Green glas - bottle.
00-062	1565	Z	1	Bottle	Glass	89	Green glass bottle base moulded - beer/wine.
00-063	1565	Z	7	Bottle	Glass	164	(slightly bluish) green glas bottle base moulded name at base...VN (Kobenhavn)? Beer?
00-058	1565	Z	4	Bottle?	Glass	54	Clear glass "square" bottle?
00-057	1565	Z	2	Vessel	Glass	4	Blown? Clear glass w. thin -vessel prob. 2 different vessel.
00-060	1565	Z	2	Vessel?	Glass	9	Blown? White glass - vessel?
00-055	1565	Z	4	Window	Glass	44	Clear glass - window - flat.
00-056	1565	Z	1	Window?	Glass	5	Clear glass - window? Flat
00-059	1565	Z	2	Window?	Glass	9	Clear glass?Fe straining1 warped?

## Metalwork

The large collection of metalwork comprised chiefly of iron nails, many of them associated with coffins in the cemetery area. Apart from a few other items – a blade, a clasp, a hinge and a horseshoe, there was nothing of outstanding interest.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-201	002		1	Coin	Metal	0	10 kr icel. coin 1984. In backfill from 1992. Not given special context number?
00-200	267		2	Nail	Metal	0	
00-155	0001	A	1	Clasp	Metal	3	
00-154	0001	A	1	Unknown	Metal	3	Fe. obj. from turf/topsoil
00-146	107	A	5	Nail	Metal	140	5 different Fe. obj. incl 1 long nail
00-153	107	A	1	Nail	Metal	3	Horseshoe nail
00-151	107	A	5	Unknown	Metal	113	

00-145	253	A	1	Nail?	Metal	3	
00-068	254b	A	3	Nail	Metal	11	Fe obj. remains of nail?
00-150	255	A	1	Unknown	Metal	5	
00-147	258	A	6	Nail	Metal	27	Fe. obj. 1 hook and broken nails.
00-148	265	A	2	Nail	Metal	14	Two broken nails.
00-069	267	A	2	Nail	Metal	13	Fe obj. nails.
00-070	267	A	3	Unknown	Metal	75	Fe obj. unknown.
00-152	301	A	1	Unknown	Metal	6	Fe. obj. underneath the 340 wall.
00-149	324	A		Nail	Metal	23	Fe. obj. one broken nail and some unknown obj.
00-166		AB	1	Nail	Metal	8	Horseshoenail (cleaning - west wall)
00-158	0002	AB	1	Blade	Metal	21	
00-164	0002	AB	1	Horseshoe	Metal	72	Horseshoe fragment with a nail.
00-165	0002	AB	1	Nail	Metal	8	Long broken nail or pin.
00-156	0002	AB	3	Unknown	Metal	117	Unidentified Fe. obj.
00-163	0002	AB	2	Unknown	Metal	6	
00-162	0016	AB	1	Unknown	Metal	14	
00-159	170	AB	1	Nail?	Metal	9	
00-167	222	AB	2	Unknown	Metal	16	Broken fe. obj.
00-161	260	AB	1	Nail	Metal	6	
00-160	274	AB	1	Nail	Metal	11	
00-157	287	AB	2	Nail	Metal	6	Fe. obj. remains of nails
00-168	318	AB	1	Nail	Metal	3	Head of a nail.
00-198	0002	BF	1	Unknown	Metal	4	Unidentified fe. obj. from Area BF
00-197	312	DE	1	Hinge	Metal	17	
00-199	0009	G	1		Metal	5	Ring shaped fe. obj. Context 9 (47).
00-174	1540	Z	5	Nail	Metal	33	Miscellaneous fe. obj.; nail horseshoenail and other remains of nails.
00-194	1540	Z	7	Nail	Metal	46	horseshoe fragment.
00-187	1541	Z	3	Unknown	Metal	54	
00-185	1542	Z	1	Nail	Metal	8	
00-195	1542	Z	3	Nail	Metal	8	
00-186	1565	Z	15	Nail	Metal	695	Miscellaneous fe. obj. ;horseshoe nail and unidentified fe. obj.
00-180	1565	Z	5	Unknown	Metal	415	Unidentified fe. obj. (Z Tr. 2)
00-181	1565	Z	4	Unknown	Metal	346	Unidentified fe. obj.
00-169	1566	Z	40	Nail	Metal	392	Coffin nails with wood.
00-170	1566	Z	10	Nail	Metal	50	Coffin nails
00-172	1566	Z	12	Nail	Metal	39	Coffin nails.



00-171	1566?	Z	17	Nail	Metal	107	Coffin nails
00-184	1578	Z	1	alloy	Metal	3	Copper alloy
00-176	1578	Z	2	Nail	Metal	8	
00-173	1578	Z	1	Unknown	Metal	5	
00-177	1580	Z	2	Nail	Metal	3	Head of a nail and unidf. fe. obj.
00-178	1580	Z	3	Nail	Metal	15	2 heads of a nail and a nail.
00-190	1582	Z	3	Unknown	Metal	2	Copper obj. (Tr. 2)
00-191	1586	Z	1	Nail	Metal	6	Nail from Tr. 2
00-192	1587	Z	3	Unknown	Metal	36	Unidentified obj.
00-182	1595	Z	4	Nail	Metal	31	2 nails and unidentified fe. obj.
00-193	1598	Z	2	Nail	Metal	33	Head of a nail and a ró...
00-144	1603	Z	5	Nail	Metal	30	Fe. obj. remains of nails.
00-188	1605	Z	10	Nail	Metal	72	
00-183	1611	Z	6	Nail	Metal	58	2 nails and other unid. fe. obj.
00-196	1611	Z	2	Nail	Metal	5	
00-179	1614	Z	3	Nail	Metal	7	
00-175	1616	Z	1	Nail	Metal	5	
00-189	unstratified	Z	1	Unknown	Metal	9	Unidentified fe. obj. with a small hole.

## Pottery

A large assemblage of pottery was retrieved, most of it modern (late 19<sup>th</sup> century): the only exception is an interesting green glazed sherd of Medieval date, found in Area Z [1542] and is the earliest found so far on the site.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-002	1565		2	Cup	Pot	29	Whiteware coffee cup handle missing rim + base
00-038	0001	A	2	Bowl	Pot	9	Ironstone - plate/bowl? sharked1 repair hole1 burnt
00-046	107	A	1		Pot	1	Whiteware burnt - w. blue TP? ("Copenhagen pattern")
00-049	107	A	6	Bowl	Pot	33	Rim sherd - whiteware - min. 6 vessels- 5 bowls and 1 cup.
00-050	107	A	1	Bowl	Pot	22	Base of bowl (footring missing).
00-052	107	A	1	Bowl	Pot	7	?Whiteware -base of bowl/plate - trace of blue decoration.
00-044	107	A	1	Plate	Pot	2	Burnt repair hole White ware - yellow

00-047	107	A	1	Plate	Pot	3	assular ware - possibly same vessel as <00-010> -plate w. repair hole.
00-048	107	A	1	Plate	Pot	13	Whiteware of saucer with blue chinese TP
00-053	107	A	3	Plate	Pot	15	Whiteware frgm. of plate w. repair hole
00-054	107	A	1	Plate	Pot	2	Ironstone - plate - 2 rims1 base
00-043	107	A	1	Vessel	Pot	1	Whiteware - plate - rim with grooved edge and green (feather-edge?)
00-045	107	A	5	Vessel	Pot	19	Whiteware - blue annular ware - possibly same vessel as <00-007>
00-051	107	A	18	Vessel	Pot	62	Whiteware - Spongeware green and red (+blue) floral2 burnt. Max 3 vessels all body sherds.
00-042	224	A	1		Pot	1	Misc. vessels - min. of 2. 2 burnt.
00-039	A1 unstrat	A	3	Bowl	Pot	12	Whiteware - body sherd.
00-040	unstrat	A	3	Bowl	Pot	8	Whiteware bowl2 rims1 body
00-041	unstrat	A	1	Cup	Pot	1	Whiteware - high saucer/bowl.
00-037	0002	AB	7	Plate	Pot	19	Whiteware w. blue TP (floral) - cup. plate + bowl?
00-034	1542	Z	1		Pot	3	Whiteware - 3 rims
00-008	1565	Z	3		Pot	14	Grey stoneware with slash green lead glaze Medieval. Base sherds
00-010	1565	Z	2		Pot	5	whiteware. Saucer/small plope; brown underglaze. TP (floral); Makers mark (TP) underneath "D..." over "ST.....".
00-014	1565	Z	1		Pot	4	Ironstone with overglazed painted bands (yellow w. black trim); Plate; 2 rim; type of Annular ware?
00-030	1565	Z	1		Pot	1	Whiteware body sherd
00-032	1565	Z	3		Pot	2	Ironstone - blue TP
							Whiteware - black TP underglaze w. blue wash and green overglaze.

00-033	1565	Z	4		Pot	10	Whiteware body sherds.
00-005	1565	Z	1	Bowl	Pot	10	Whiteware bowl red & green Spongeware rim
00-006	1565	Z	3	Bowl	Pot	3	Whiteware bowl red & green spongeware; rim
00-011	1565	Z	4	Bowl	Pot	4	Ironstone; yellow ochre painted band with red trim and black "star" patterns - type of Spongeware? Bowl1 rim
00-018	1565	Z	7	Bowl	Pot	48	Ironstone; rim sherds bowl3 repair holes; possibly same vessel as <00-017>.
00-020	1565	Z	3	Bowl	Pot	20	Ironstone; bowl/dish - body caviation2 repair holes
00-001	1565	Z	1	Bowl	Pot	94	Whiteware; Foutrug/base - bowl? 5 rims joining
00-013	1565	Z	1	Bowl?	Pot	9	
00-015	1565	Z	5	Cup	Pot	25	
00-016	1565	Z	3	Cup	Pot	17	Ironstone cup/small bowl. Possibly same vessel as <00-016> 1 repair hole1 burnt.
00-027	1565	Z	6	Cup	Pot	32	Ironstone; cup - 1 base + 2 joining handles kick ware; possibly same vessel as <00-015
00-028	1565	Z	1	Cup	Pot	3	Ironstone - cup - same vessel as <00-015> and <00-016> 3 base sherds1 rim1 handle1 body.
00-003	1565	Z	4	Jug	Pot	43	Whiteware - rim of cup?
00-004	1565	Z	1	Plate	Pot	17	Whiteware jug3 mm (1 w. spout) 1 body???? rim band w. 3 gilt bands beneath (overglaze) 5 cm diam
00-012	1565	Z	2	Plate	Pot	4	Whiteware plate/dish rim w. blue ?Spongeware -rusted rope over ?jars
00-021	1565	Z	1	Plate	Pot	2	Whiteware/; plate/dish; 1 rim; red + p1 burnt
00-022	1565	Z	1	Plate	Pot	4	Ironstone; plate rim.
00-023	1565	Z	1	Plate	Pot	6	Ironstone; plate body sherd.
							Ironstone plate rim with dark greenish-

00-029	1565	Z	1	Plate	Pot	3	blue TP on rim edge and a repair hole. Whiteware - base - plate?
00-007	1565	Z	1	Vessel	Pot	6	Whiteware vessel Annular ware blue bands with black lines; body
00-009	1565	Z	2	Vessel	Pot	10	Whiteware closed vessel with deep blue paint drips - Mocha ware?; Repair holes Body Sherds
00-017	1565	Z	16	Vessel	Pot	124	Ironstone; bare sherd fragm. of bowl possibly same vessel as <00-018>.
00-019	1565	Z	2	Vessel	Pot	7	Ironstone; base of saucer with recess for cup burnt
00-024	1565	Z	2	Vessel	Pot	2	Ironstone body sherds w. black + green painted decoration (flora); 1 w. repair hole.
00-025	1565	Z	13	Vessel	Pot	105	Ironstone - body sherds possibly from same vessel as <00-017> and <00-018>.
00-026	1565	Z	22	Vessel	Pot	35	Ironstone - body sherds possibly from same vessels as already catlogged; 4 repair holes.
00-031	1565	Z	1	Vessel	Pot	1	?Whiteware - blue painted decoration underglaze - possibly same vessel as <00-009>?
00-035	1583	Z	1		Pot	8	Whiteware/Ironstone burnt saucer rim.
00-036	1595	Z	2	Plate	Pot	5	Creamware plate rim
00-122	1616	Z	2	Vessel	Pot	4	Body-sherds

## Clay Pipe

The only clay pipe fragments recovered were from Area A.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-066	unstrat	A	1	Claypipe	Pot	7	Clay pipe stem burnt.



## Industrial waste

Mostly consisted of slag, the majority of it coming from a pit in Area A.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-080	159	A	2	Slag	Slag	18	
00-081	170	A	1	Slag	Slag	12	Slag found NW Quad.
00-079	246	A	1	Slag	Slag	25	
00-082	249	A	3	Slag	Slag	14	Slag ? Fly Ash
00-067	254b	A	8	Slag	Slag	340	Slag mix of types.
00-084	265	A	42	Slag	Slag	155	
00-071	267	A	1043	Slag	Slag	11361	Various stones inc. Globular Bases (large) others unseived x 5 bags.
00-072	267	A	650	Slag	Slag	4950	Various.x2 bags ...Seived x 2 bags.
00-085	277	A	13	Slag	Slag	99	Slag + Fe component.
00-086	286	A	1	Slag	Slag	7	
00-087	291	A	1	Slag	Slag	13	
00-088	298	A	3	Slag	Slag	60	
00-074	299 SF2	A	2	Slag	Slag	34	
00-090	303	A	1	Slag	Slag	6	
00-089	308	A	3	Slag	Slag	12	
00-073	316	A	300	Slag	Slag	3153	Slag unseived x 2 bags.
00-091	346	A	2	Slag	Slag	31	
00-078	002	AB	5	Slag	Slag	126	
00-083	002	AB	1	Slag	Slag	381	Previous Finds No. 00-078.
00-075	1595	Z	8	Slag	Slag	26	Slag ash? Unidentified silt/sand.
00-076	1605	Z	3	Slag	Slag	46	Slag Fe component
00-119	107	A	1		Coal	5	

## Worked Stone

A substantial group of worked stone was retrieved, including predominantly whetstones and loomweights: in addition however, some smaller flakes from worked stone tools were found, in obsidian, jasper and flint.

Find Number	Context	Area	Quantity	Object	Material Group	Weight (g)	Comments
00-098	107	A	1		Stone	17	
00-139	107	A	2	Whetstone	Stone	28	Whetstonefragment. Upper fill - st. A1 107
00-108	246	A	2		Stone	17	
00-100	265	A	1		Stone	8	
00-099	0002	AB	1		Stone	2	Flint
00-140	0002	AB	8	Spindle whorl	Stone	31	Spindle whorl broken in 8 pieces.
00-104	002	AB	3		Stone	158	
00-092	002	AB	1	Whetstone	Stone	34	
00-118	002	AB	1	Whetstone	Stone	9	
00-109	170	AB	1		Stone	4	
00-114	209	AB	1		Stone	74	Stoneobject.
00-115	215	AB	1		Stone	717	
00-101	254	AB	1		Stone	4	
00-120	254b	AB	1		Stone	1	Sulphat
00-117	266	AB	1		Stone	1	Flint?
00-094	287	AB	1	Whetstone	Stone	30	
00-102	318	AB	1		Stone	2	Obsidian.
00-124	008	G	1	Loomweight	Stone	539	Loomweight (1/15)
00-116	009	G	1	Loomweight	Stone	657	Loomweight sq. #61
00-125	009	G	1	Loomweight	Stone	540	Loomweight (2/15)
00-126	009	G	1	Loomweight	Stone	460	Loomweight (3/15)
00-127	009	G	1	Loomweight	Stone	386	Loomweight (4/15)
00-128	009	G	1	Loomweight	Stone	352	Loomweight (5/15)
00-129	009	G	1	Loomweight	Stone	287	Loomweight (6/15)
00-130	009	G	1	Loomweight	Stone	783	Loomweight (7/15)
00-131	009	G	1	Loomweight	Stone	535	Loomweight (8/15)
00-132	009	G	1	Loomweight	Stone	440	Loomweight (9/15)
00-134	009	G	1	Loomweight	Stone	317	Loomweight (11/15)
00-136	009	G	1	Loomweight	Stone	723	Loomweight (13/15)
00-137	009	G	1	Loomweight	Stone	612	Loomweight (14/15)
00-138	009	G	1	Loomweight	Stone	499	Loomweight (15/15)
00-133	009	G	1	Whetstone	Stone	477	Loomweight (10/15)
00-135	009	G	1	Whetstone	Stone	613	Loomweight (12/15)
00-107	1540	Z	1		Stone	4	
00-106	1542	Z	1		Stone	8	Jasper
00-103	1580	Z	5		Stone	435	
00-110	1580	Z	1		Stone	3	
00-095	1580	Z	2	Whetstone	Stone	21	
00-105	1605	Z	1		Stone	2	
00-111	1605	Z	4		Stone	18	
00-112	1605	Z	1	Loomweight	Stone	196	

00-096	1605	Z	2	Whetstone	Stone	73
00-097	1605	Z	1	Whetstone	Stone	110
00-093	1610	Z	1	Whetstone	Stone	40



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