LASHIPA 5
Archaeological expedition on Spitsbergen
27 July - 17 August 2008
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Preface

This report presents the results of the 5th archaeological expedition of the LASHIPA project – a historical-archaeological research project within the framework of the International Polar Year (IPY). The field work was carried out between 27th July and 17th of August 2008. The purpose of the expedition was to gather archaeological evidence from mining and mineral exploration camps, as well as whaling and hunting stations on Spitsbergen and Bear Island. The scientific aims were closely tied to the overall objectives and research questions of LASHIPA, as well as to the individual sub-projects of the participants (PhD theses, post-doc projects etc). The data will be used for dealing with research problems concerning cultural contacts, technology transfer, design of technology, architecture and settlement planning in Arctic communities, social organisation of production and strategies for control over natural resources.

The work was executed by an international team of twelve persons – researchers and PhD students active in the LASHIPA project, as well as master students and technical assistants. The expedition was divided into four separate teams, active in different areas. Team 1 was mapping remains of prospecting and mining camps in the area of Ice sound (Isfjorden), Forland sound, Kings bay and Cross bay. Team 2 continued an archaeological excavation on Kokerineset at Green harbour (Grønfjorden), opened in 2007 (see the report on the LASHIPA 4 expedition) and Team 3 documented a whaling station and mining camps on Bear Island. Team 4 mapped remains of American coal mining activities in the Longyear valley and Advent valley, as well as in the Sassen Fjord and the Coles Bay. All of the sites were mapped using advanced and very accurate GPS-units. Most features were tape measured, sketched and photo documented.

The fieldwork was made possible by the permission of the Norwegian authorities and the financial support of the Dutch Polar Programme (NPP), the Dutch Research Council (NWO) and the Dutch IPY funds. Additional funding has been provided by the Groningen Institute of Archaeology (GIA) and the Arctic Centre of the University of Groningen, the Netherlands. Logistic support and equipment were supplied by the Swedish Polar Research Secretariat, the Arctic Centre of the University of Groningen, the Dept. of Industrial Archaeology at the Michigan Technological University in the USA and by the Governor of Svalbard. Expedition costs for Cameron Hartnell and Seth DePasqual were financed by the Svalbard Environmental Fund. We also want to express our gratitude to the Captain of the research vessel “Farm”, Mr. Stig Henningsen, for great cooking, navigation skills, local knowledge and for lending us important equipment when ours had failed.
Chapter One

Introduction

LASHIPA is the acronym for the research program ‘Large Scale Historical Exploitation of Polar Areas’. It is an ICSU/WMO joint committee endorsed project within the framework of the International Polar Year 2007-2008 (ID 10). The objective of the program is to explain the development of natural resource exploitation in the polar areas from the 17th century until the present and its consequences for the geopolitical situation and the natural environment.

The principal research questions of the program are: why, how and under what economical circumstances were the natural resources in the Polar Regions explored and exploited? What was the role of the settlements/stations in this process? What were the economic results and what were the consequences of these activities for the natural environment and the geopolitical situation?

The exploration and exploitation activities of companies from Norway, Netherlands, Sweden, UK, Russia and the USA are studied in the field and in archives. The outcome of the various studies are compared and integrated to achieve a better understanding of the exploration and exploitation of natural resources in Polar Regions.

The LASHIPA project studies exploitation of natural resources in a bi-polar and circum polar perspective. However, we have selected three areas as targets for case studies – Spitsbergen in the Arctic (with a focus on Green Harbour (Grønfjorden)) and South Georgia and South Shetland in the Antarctic/sub-Antarctic. These areas have been focal points for international competition over both natural resources and political influence through the course of their history. Moreover, the areas contain rich archaeological remains. Therefore, these are areas where the research problems of the LASHIPA project can be addressed in a more limited geographical context. This report deals with the results of an archaeological expedition to one of the target areas for LASHIPA case studies – Spitsbergen.

Historical background

The history of Spitsbergen has always been connected to the exploitation of natural resources. The archipelago was discovered by the Dutch explorer William Barentsz in 1596. In the decades that followed, Spitsbergen became the arena for intense whale hunting activities, involving several European nations. This activity almost drove the Spitsbergen stock of Greenland Right Whale to extinction. By the late 18th century the whalers left the archipelago.

During the 18th century, human activities in Spitsbergen were dominated by West European whalers and the Pomor hunters, originally coming from north-western Russia. The exact date of the arrival of the Pomors to Spitsbergen is a question that is still under research. The Pomors used a system of base stations and secondary camps for their activities. Although the Pomor hunting was substantial, their activities cannot be considered as an industry. By the early 19th century, the Pomor hunting diminished and was replaced by their Norwegian counterpart.

During the 19th century, the archipelago came to the attention of European scientists, seeing the natural resources as a source of knowledge and a potential economic asset, and of course as a path for future
careers in polar research. Especially in the latter part of the 19th century, several scientific expeditions were sent to the archipelago from several European countries.

During the 20th century, the archipelago once again became a centre for exploitation, but this time primarily of minerals. The first commercial coal mining operations was set up on Bear Island and on Spitsbergen in the years following the turn of the last century. Most of the mining camps were established by skippers from Northern Norway. These actors had limited knowledge and financial resources and most of them failed to open large scale mining operations. A few years later, most of these companies were bought up by foreign capitalists, who established more large-scale-all-year mining operations – Advent City and Longyear City at Advent Bay. In the years 1900-1925, a coal rush developed, with mining companies from USA, Great Britain, Russia, Sweden and the Netherlands, establishing mining settlements along the fjords of Western Spitsbergen.

There are several explanations for this coal rush – economical (need for coal in industrialising Scandinavia and Europe) and political (opportunities offered by the legal status terra nullius and the ambitions of national governments to claim sovereignty over polar territories). The Spitsbergen coal rush came to an abrupt end in the 1920s, because of falling world market prices on coal, and the fact that Norway established control over the archipelago with the ratification of the Spitsbergen Treaty in 1925.

From the early 1930’s there were basically only two nations involved in the industry: Norway (Longyear City, Sveagruvan and Ny Ålesund) and the Soviet Union (Grumant City, Pyramiden and Barentsburg), both with continuing economic and strategic interests on the archipelago. This situation has changed little up to this day, even though active mining has ceased at Ny Ålesund, Pyramiden and Grumant City.

Another branch re-establishing on Spitsbergen in the early 20th century, with relevance for the data presented in this report, was the whaling industry. After whaling was banned on mainland Norway in 1904, the industry moved to new territories, such as Spitsbergen, Bear island and South Georgia. All in all eight companies from the Finnmark region moved their operations to Spitsbergen. The whaling operations turned out to be disappointing however, partly due to drift-ice and fog, partly because the whale stocks were not as abundant as expected. Therefore, many companies soon chose to move their activities elsewhere.
Chapter Two

Objectives, implementation, methods and techniques

The aims of the field work on the different sites were closely connected to both the overall aims of the LASHIPA project and to the objectives of the individual sub-projects within LASHIPA.

The objectives of the individual site documentations were the following:

* The primary objective of the field work by team 1 at the Grumant City, the St Johns Bay, the Foreland Sound, the Cross Bay and its side bays, and at Kings Bay was to map remains of prospecting and mining stations, as well as claiming symbols – most of them remaining from British activities. The data will be used to analyse how the different actors analysed and used the landscape and its resources – for commercial purposes and more symbolically for political purposes, in the years preceding the signing of the Spitsbergen Treaty.

* The objectives of the field work by team 1 in Barentsburg, Cape Heer, Cape Laila, and Coles Bay were to complete the mapping of a) remains from activities by the Nederlandsche Spitsbergen Compagnie (NESPICO) (1920-1932) and its predecessors in the area, and b) standing and archaeological remains of Trust Arktikugol activities in the period 1932-2008. The data will complete the documentation made in Barentsburg during the LASHIPA 4 expedition (see the LASHIPA 4 report). It will be used to understand how NESPICO and the Trust Arktikugol designed their industrial operations – socially, technologically, and politically – and why.

* The objective of the continued archaeological excavation on Kokerineset at Green Harbour was to determine the chronological development of the site and to locate a European occupation layer that should be present there. This was done by extending the area excavated in 2007 by circa 60 m² at the remains of a complex of Pomor houses.

* At Bear Island, the primary objective was to map the remains of a) an early 20th century whaling station at Sørhamna and b) remains of the Tunheim coal mine on the eastern side of the island, and c) remains of prospecting and claiming activities in various locations. The data will be used to understand how the whaling station and the coal mine was designed in technological and social terms. Moreover, the data will be used to analyse how different actors used different symbols and the landscape in order to support their interests, in the years preceding the signing and ratification of the Spitsbergen Treaty, and why.

* The field work of Team 4 in the Longyear and Advent Valley, at Sassen fiord and at Coles Bay was to gather data for Cameron Hartnells PhD project and Seth DePasquals Masters thesis on American mining activities on Spitsbergen. Their research deals with research problems concerning the transfer of technology to Arctic environments, with the Arctic Coal Co as a case study.
Methods and techniques utilized

The sites were first thoroughly assessed during a walk-over survey at the same time as making a sketched site map. Thereafter, the sites were carefully documented and mapped, using different methods and technologies. Most sites were mapped with an advanced and very precise GPS-unit: a hand-held PDA with ESRI ArcGIS mapping software. In addition, all remains were tape measured, sketched and photo documented, using high quality Nikon, Canon and Panasonic digital cameras.

Participants

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4. Maxim Derbenev (Technical assistant)
5. Vladimir Prokurnov (translator, assistant).
Chapter three

Results

During the LASHIP 5 expedition, a large number of sites were documented and mapped by four different teams.

3.1 Farmhamna

Introduction

During an unscheduled stop at Farmhamna, named after Isachsen’s expedition vessel\(^1\), on July 29th, 2008, the team had the opportunity to retrace Birger Jacobsen’s steps, who prospected in this area for the NEC in 1913\(^2\), and to investigate the information provided by an NEC claim map of 1926.

Whilst a strong north-westerly breeze caused choppy conditions on the Foreland Sound and the sharp rocks of the Troms Island and Gudrun Islands presented a hazard to seafarers, the waters in the natural

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\(^{1}\) Place-names, 1942, p. 132

\(^{2}\) Place-names, 1942, p. 132
harbour were calm and suitably deep for anchoring. The team went on shore in a small east-facing bay near the northernmost tip of the Moringen Peninsula, which was occupied by a Norwegian hunting station, already recorded in some detail by Sundquist and Helberg in 1993.3

Aided by the GPS and digital cameras, a walkover survey progressed onto the rock outcrop immediately to the north of the hunting station and towards the northern tip, but failed to find NEC claim marker No. 96. However, two small stone cairns, the latter with an iron rod, obtained feature numbers. The walkover survey continued along the peninsula’s east coast until a third stone cairn was discovered on the rocky high ground of the small eastern headland (Fig. 1). From here, the tundra was crossed to reach the western shore that was littered with drift wood. What was initially thought to be a small hunter’s hut turned out to be a large wooden storage crate amongst the jetsam although its former contents remained unknown.

A freshwater source was found in form of a small stream feeding into a shallow pond immediately to the south of the northernmost rock outcrop.

Results

The following features were recorded at Farmhamna:

Feature 1 Cairn; loosely packed arrangement of cobbles and boulders readily available in the vicinity, approximately 50 cm high.

Feature 2 Cairn, loosely packed arrangement of cobbles and boulders readily available in the vicinity, approximately 40 cm high, comprising loosely fitted iron rod.

Feature 3 Cairn, loosely packed arrangement of cobbles and boulders readily available in the vicinity, approximately 80 cm high.

Feature 4 Large wooden crate, well constructed and sturdy.

Conclusion

It is currently unclear if the NEC claimed the area for economic reasons; there were no signs of mineral resources and none of prospecting operations. However, if the company would have desired to establish a harbour for shipping mineral resources exploited somewhere else along this coast line – or if they were in need for reliable shelter and freshwater on their way north along the west coast – then Farm Harbour was an ideal place to possess. Claiming it also meant preventing rivals from making use of the same facilities.

3 Sundquist & Helberg, 1993
3.2 Ebeltoft Haven (Ebeltofthamna)

Introduction

On July 30th, 2008, the team reached the west coast of Cross Bay and landed on the northern shore of the large natural harbour of Ebeltoft Haven (Ebeltoft was a legal agent to Nordenskiöld’s expeditions).\(^1\)

A walkover survey followed the broad raised beach westward where the anticipated remains of Norwegian hunters, the German weather station functioning between 1910 and 1914 and the NEC activities of 1918 were encountered on a small headland of southern aspect.\(^2\) The remains were partly drawn, fully digitally photographed, and recorded by PDA and GPS to allow for a comprehensive site map to be created. Following the recording, the survey continued onto a short sand and gravel spit reaching westerly into the bay to further assess harbour and freshwater conditions before concluding at the eastern promontory of Bouréeneset.

The earliest features encountered above the shingle beach and on the headland were graves, two on the way over the raised beach and another 14 on the small headland. However, further evidence for whaling or hunting activities was not immediately obvious and no extra time was spent looking for such.

Lüdecke\(^3\) merely identified the brick platform and the copper wire as being of German origin. However, proof as to the site’s former function as a weather station could also be seen in the former mast or antenna settings as well as nearby earthworks, suggesting a former building platform (feature 36), and rubbish piles in the vicinity, which are accounted for in historical texts that noted the ceramic insulators amongst other things, could be ascribed to the Germans.

A metal tripod (feature 6) that possibly functioned as a claim board holder or a trig point carried the signature of the NEC as two barrel-shaped chalk blocks were used to secure it in place. Furthermore, feature 29 was a tent ring not dissimilar to those found on other NEC sites.

However, substantial hut remains (feature 5), a boat-shaped hut (feature 7), a collapsed wooden hut (feature 8), a log foundation (feature 9) and several other features were not easily interpreted without further historic research.

A freshwater stream was located half-way between the site and the eastern promontory of Brouéeneset on which, overlooking Cross Bay, stood a well-constructed stone cairn (feature 20), potentially noting good harbour conditions but not letting on by whom it was made by.

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1. Place-names, 1942, 119
2. Hoel, 1966a, 450
Results

The following features were recorded at Ebeltoft Haven.

**Feature 1** Grave; the southern of two graves, on slightly prominent ground, orientated E - W, a central depression covered and surrounded by loosely placed boulders, .50 m x 1.50 m.

**Feature 2** Grave; the northern of two graves, on slightly prominent ground, orientated E - W, a central depression covered and surrounded by loosely placed boulders, 2.80 m x 1.80 m.

**Feature 3** Mast or antenna setting; four short wooden pegs in a roughly 7.5 m x 7.5 m square with a central area of re-compacted spoil.

**Feature 4** Foundation; roughly 0.8 m x 0.6 m, made of concrete into which two rows of four bricks were set, possibly only three or four bricks high judging by waste bricks in the surroundings.

**Feature 5** House foundation; lined by three ditches running approximately NW, remaining posts and planks show severe burning, rectangular building (5.0 m x 3.0 m) with a southerly protruding porch (2.5 m x 2.0 m), west-facing entrance marked by paving, later? ‘velkommen’ inscription on one of the stone slabs.

**Feature 6** Tripod; light metal rods (1.2 m high) secured by two barrel-shaped chalk blocks (0.63 m high x 0.4 m at base) and a slate boulder.

**Feature 7** Boat-shaped hut; wooden boat approximately 5 m long x 2 m at widest, secured with a wide bank of boulders, gravel and turf, south-facing entrance.

**Feature 8** Collapsed hut; roof would have been gabled with each side being 2.7 m x 2.0 m, constructed of wood and roofing felt, wall and floor construction difficult to distinguish, wooden door laying loosely, flimsy, sturdiest parts of hut appear to have been removed?

**Feature 9** Log frame; possible shed foundation?, 3.2 m x 2.9 m, pairs of corner posts (< 0.9 m high) holding loosely placed beams in place on three sides, west-facing side left open, occasional flat cobbles and boulders of schist inside.

**Feature 10** Tent ring; marked by changes in vegetation, circular arrangement of boulders and occasional pieces of wood.

**Feature 11** Tent ring; marked by changes in vegetation, circular arrangement of boulders and occasional pieces of wood.

**Feature 12** Tent ring; marked by changes in vegetation and circular arrangement of boulders.
Feature 13  Tent ring; marked by changes in vegetation and semi-rectangular arrangement of boulders.
Feature 14  Tent ring; marked by changes in vegetation and occasional boulder.
Feature 15  Tent ring; marked by semi-circular arrangement of boulders.
Feature 16  Tent ring; marked by circular arrangement of boulders and several flat slabs on what would have been the inside of the structure.
Feature 17  Dug-out feature; marked by a central depression and a spoil heap comprising slate or schist, 1.5 m wide and approximately 0.2 m above ground level.
Feature 18  Brick cross: comprising 12 arranged bricks on slightly higher ground.
Feature 19  Wire spool; approximately 0.40 m in diameter with much wire remaining.
Feature 20  Stone cairn.
Feature 21  Possible claim board; three planks of wood washed on the raised beach.
Feature 22  Possible claim board; five planks of wood with two supports amongst the former structures.
Feature 23  Rubbish pile; comprising tins and glass bottles as well as a large pot, a shoe, a shovel and some wood.
Feature 24  Rubble pile; comprising burnt and smashed bricks.
Feature 25  Rubbish pile; small and comprising mostly tins.
Feature 26  Raised ground; possible building platform between the two rubbish piles, larder?
Feature 27  Three wooden posts; < 0.3 m high, dug into the ground.
Feature 28  Graves; of similar construction as features 1 and 2.
Feature 29  Tent ring; clearly marked by sparse vegetation amongst brown plants, occasional non-indicative boulder, approximately 3.0 m in diameter, east-facing entrance.
Feature 30  Tent ring; outlined with cobbles
Feature 31  Tent ring; outlined with cobbles
Feature 32  Tent ring; outlined with cobbles
Feature 33  Tent ring; outlined with cobbles
Feature 34  Tent ring; outlined with cobbles
Feature 35  Tent ring; outlined with cobbles
Feature 36  Earthworks; large rectangular area of flattened ground, slightly swampy
Feature 37  Rubbish pile 3
Map 2. Ebeltoft Haven - Area 1. Drawn by Frigga Kruse.

3.3 Camp Zoe
Introduction

On the evening of July 30th, 2008, the team sailed from Ebeltoft Haven northward along Cross Bay to Cadiopynten at the southern tip of Kong Haakons Halvøy and noticed the remains of wooden posts and boards on the inaccessible but widely visible rock outcrop. An attempt at digital photography was made, but it is not certain if they presented a former claim board or marker.

To the east of Cadiopyten lies Tinayrebukta whose southern entrance is marked by Fanciullipyten, each of the place-names relating to the Prince of Monaco’s expeditions. The team landed on a short gravelly beach to the south of the point to resume work at Camp Zoe. The beach comprised the deltaic deposits of a freshwater stream immediately to the south of the hut, which itself lay on the rocky tundra above and could be reached via a well-trodden footpath.

The NEC hut of 1911 was a conglomeration of a tall side-gabled building which had received a northern extension comprising the west-facing main entrance, and the semi-detached northernmost outhouse, similarly with a west-facing door. Whilst the general layout had been known from historic photographs, an additional sign above the door noted the restoration of the place in 1971. It is likely that the roofing felt covering the majority of the hut was replaced at this time. The door was locked and access to assess the interior could not be gained (feature 1).

A flag post (feature 2) stood in front of the hut several meters above the beach. A flag stretched by a favourable wind would have been visible across the fjord. The mast was of uncertain date, and no other features shed light on the former owners, occupants and purposes of the site.

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Figure 4. Camp Zoe on the east side of Cross Bay, due north-west. Photo: Dag Avango.

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1 Place-names, 1942
2 Hoel, 1966a, 431
Results

The following features were recorded at Camp Zoe:

Feature 1  Camp Zoe; hut, main building and extension approximately 6.5 m x 2.5 m, semi-detached outhouse approximately 1.5 m x 1.0 m.
Feature 2  Flag pole; approximately 8.0 m high.

Conclusions

It is likely that the reason for establishing the Camp Zoe at this site was the relatively sheltered natural harbour on the northern side of the cape where the camp is located and the relative proximity to the marble deposits in Tinayrebukta. Moreover, the stream coming down by the site was a good source for fresh water. Finally, the location was favourable for the purpose of claiming the land, located at the intersection between Cross Bay and Tinayrebukta, visible from several directions and over long distances (Fig. 4).

3.4 Tinayrebukta

Introduction

On the morning on July 31st, 2008, the team left Camp Zoe on foot to follow the shore in a northerly direction to Fanciullipynten before turning eastward into Tinayrebukta. The aim was to find and record any evidence for prospecting activities or quarrying of the carbonate basement rocks supposedly undertaken by Ernest Mansfield in the summers of 1910 and 1911.1 Mansfield claims to have worked not far from the glaciers edge, but in recent times the glacial ice has retreated considerably.

The white marble cliff was visible from some distance, and with the aid of the PDA the team endeavoured to map the approximate geological outcrop boundaries of this mineral resource as far inland as feasible. Subsequently, the proverbial needle in a haystack was discovered in the form of a small borehole (feature 3) which was associated with a small quarried edge (possible to stabilise the drilling rig on the rock), some left-over coke and several metal finds. A slightly larger quarried edge (feature 4) was found not far away in a gully, but without any associated finds.

The most significant signs for marble extraction were along the shore (feature 5; Fig. 5) where accessibility and transport by boat would have been easy. In the absence of tool marks, the team assumed that marble blocks were simply broken out with crowbars and levers. Enough would have been extracted to provide marble experts and investors with samples, but the scale of the workings was too small to have supplied an economic market. None of the remains were drawn, but comprehensive digital photography was undertaken across the site.

On addition to signs of NEC activity in the area, the team came across a grave (feature 6) and a hut foundation (feature 7), possibly Pomor, which were sketched and digitally photographed as well as recorded by PDA and GPS.

Results

In addition to features 1 and 2 at Camp Zoe, the following features were recorded at Tinayrebukta.

Feature 3 Borehole; 6.7 cm in diameter, 2.65 m deep, dry, associated with small quarried edge, metal brace, metal strips and coke.

Feature 4 Quarryed edge; approximately 3.0 m long x 1.0 m high, marked by ring of spoil/waste rock slabs.

1 Hoel, 1966a, 430 - 432
Feature 5  White marble outcrop; cliff approximately 5 m high and 10 m wide at water’s edge, be traced inland for several tens of meters, can be quarried in blocks but breaks away in slabs along the edges of the outcrop.

Feature 6  Pomor grave?; central depression, covered and surrounded by loosely placed boulders.

Feature 7  Pomor hut?; low turf banks, roughly 2.8 m x 2.2 m with a porch (1.5 m x 1.1 m), several domestic items such as glass, nails and leather.

Feature 8  Remains of open fire, coke.

Map 5. Tinayrebukte. Drawn by Frigga Kruse.
3.5 Redingerpynten

Introduction

Recent topographic mapping shows a hut at Redingerpynten immediately north of Fjortende Julibukta at the foot of the Fjortende Julibreen on the east side of Cross Bay. Once more, the name Redinger signifies a connection with the Prince of Monaco, for whom Isachsen first mapped this region, whilst July 14th is the National Day of France.¹

Recent geological mapping also indicates this hut to lie on an outcrop of quartzite basement rocks, and in the afternoon of July 31st 2008 the team went on shore to investigate if this hut could be linked with Birger Jacobsen’s prospecting activities for the NEC in 1913.²

Results

The only feature at the site was a wooden hut:

Feature 1 Simple wooden hut, 2.50 m x 1.80 m, suitable for a single occupant, but no longer fit for use. The protruding wooden beams (Fig. 6) suggested that hunter’s hung their prey here. A sign above the door stated the hut’s name to be Nymuen.

¹ Place-names, 1942
² Hoel, 1966a, 444
Conclusions

The hut may be a claim hut situated visibly between two glaciers, or it may be a hunting hut. Prey could have been hung from the protruding beams. Quartzite rocks were found everywhere in the vicinity, which may have been what caught Birger Jacobsen’s interest in the area. However, it seems unlikely that these quartzite’s could have been of economic value to the NEC. Jacobsen’s decision to investigate this area could also possibly have been influenced by the stripy appearance of the cliffs, which hint at carbonate origins.

3.6 Port Peirson (Ny London)

Introduction

Although the team went on shore to carry out a basic reconnaissance under the midnight sun on July 31st, 2008, the bulk of the survey work at Port Peirson was undertaken during the next day, marked by a partial solar eclipse.

The settlement (Fig. 7) was begun by Ernest Mansfield for the NEC in 1911. It is favourably situated above the shingle beach at Port Peirson, in memory of an NEC director¹, which is otherwise lined with rocky cliffs. This natural harbour is located on the south side of Blomstrandhalvøya, also known as Marble Island, on the north side of Kings Bay. As the former English name rightly suggests, the solid strata comprise Late Precambrian carbonates, i.e. marble. However, when the glacier to the north retreated the ‘island’ emerged to be, in fact, the current peninsula. The name London was a later Norwegian creation which became popular.²

The team’s efforts to survey and map the settlement were strongly aided by the discovery of various maps and drawings at the Governor’s of Svalbard archives. Thus, the maps by Jørgensen et al. and by Nash and Løkken were found to provide spatially correct information about the whole site whilst Rossnes, Løkken and Nash further assist with detailed drawings of an upstanding house and the loading crane.³

In light of the limited time available, the team divided the tasks of digital mapping, digital photography and drawing of seemingly unrecorded upstanding structures amongst them and set out to collect information focussing on prospecting and quarrying activities by the NEC.

¹ Place-names, 1942, 336
² Ibid., 268
In the surrounds of the settlement, prospecting and analytical activities were evident in the form of small quarry faces and a substantial number of boreholes and test pits not all of which could be discovered and recorded.

An elementary set-up of marble extraction was found on the west side of Port Peirson. Here, marble was broken out manually (feature 28) and transported only a short distance overland before reaching what appeared to be a ‘harbour office’, now only a building platform (feature 30), and a narrow gully down to the gravelly shore. There may have been also a small loading facility at the cliff edge to lift the rock into small boats, perhaps the go-between to large ships anchored out on the harbour.

Quarrying activities of the much larger scale centred on a railway system (feature 33), characterised by mobile track elements, which joined equipment sheds (features 11, 18 and 20), quarry faces (features 22 and 23), spoil heaps (feature 19) and an impressive loading crane (feature 27; Fig. 8) at the cliff edge.

An example for the sophistication of the NEC’s infrastructure at the site could be seen in some iron pipes (features 10 and 21), the former of which led from a small waterfall to the north into the settlement and proved that the NEC not only used running water to improve living conditions, but had this facility at hand for their steam engines, etc. There was no evidence that they harnessed hydroelectric power though.

A structure formerly noted to be a shed for ‘steam engines’ (feature 11) was found to comprise the remains of so-called channelers (Fig. 9), the machines used for mechanically cutting the marble prior to extracting the blocks. These were observed to have been supplied by a number of firms, thus opening new leads for enquiry and research. Evidence for their operation was recorded at a quarry face.

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(feature 23) where lines had been cut but marble blocks were never removed, thus marking the end of exploitation at this locality (Fig. 4).

An additional marker of the original prospection, the intent to exploit, and the subsequent end of NEC activities can also be seen an unfinished railway track made from quarrying spoil. Its construction progressed from the loading crane (feature 27) towards the aforementioned western quarry face (feature 28) but fails to reach its destination.

The sequence of events at this site, highlighted by the replacement of the former hut with a newer one sporting the Norwegian lion (feature 29) and the favourable preservation of the small crane (feature 31) may lead to conclude the continuation of prospecting and quarrying activities here after the Norwegian take-over in 1932.

Additional evidence for the Norwegian activities was logged to the north of the settlement where a rock outcrop rises above a swamp. Nash and Løkken note a small square earthwork or ruin here, which the team failed to identify.\footnote{Nash, K. & Løkken, G., 1990, \textit{op. Cit.}}\footnote{Instead, a Store Norske claim board of 1935 immediately below a quarried edge was noted.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure9.png}
\caption{Presentation of channelling machines in the former ware house (feature 11), due north. Photo: Dag Avango.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure10.png}
\caption{Evidence for channeler cutting activity at marble quarry (feature 23, due east. Photo: Dag Avango.}
\end{figure}
Results

The following features were recorded at Port Pierson

Feature 1  Winch; turnable upright wooden log with square whole set in a sturdy wooden frame.

Feature 2  House foundation; roughly 12.0 m x 4.5 m, with a south-facing porch (3.0 m x 2.0 m, further extended by 2.5 m x 1.5 m), surviving as a grid of beams with internal sub-division into a large eastern and a smaller western room, the latter now covered with an assortment of scrap iron objects.

Feature 3  House foundation; roughly 4.5 m x 4.0 m, with a south-facing porch (1.5 m x 1.5 m), surviving as a wooden platform founded on beams with evidence for a central installation (stove or oven?), built on substantially raised ground.

Feature 4  House foundation; roughly 12.0 m x 4.5 m, with a south-facing porch (3.5 m x 2.5 m), surviving as a grid of beams with internal subdivision into an eastern room (4.5 m x 4.5 m), a hallway annexing the porch (1.0 m x 4.5 m), a central room and a western room (both 3.0 m x 4.5 m), a large cooking range, formerly clad in bricks, remains in the central room.

Feature 5  House; pre-fabricated, 'Camp Mansfield', roughly 4.5m high in the side gables, 4.5 m x 4.0 m, with a south-facing porch (1.5 m x 1.5 m), a northern extension (3.5 m x 3.0 m) housing the modern stove, a further northern extension with corrugated iron (2.5 m x 1.5 m) and an eastern extension (3.5 m x 2.0 m), in use, associated find of a wheel barrow.

Feature 6  House; pre-fabricated, roughly 4.5 m high in the side gables, 4.5 m x 4.0 m, with a south-facing porch (1.5 m x 1.5 m) and a northern extension (3.5 m x 3.0 m) housing the modern stove, flag post above door, in use, drawn by Rossnes and Løkken, 1988.

Feature 7  House foundation; measurements and survival as per feature 2, but without extended porch, associated scrap metal evident for a small stove/oven.

Feature 8  House foundation; measurements and survival as per feature 2, but without extended porch, associated finds a metal bedstead and a tin lid of 'Gibbs French Dentifrice London and Paris'.

Feature 9  House foundation; measurements and survival as per feature 2, but without extended porch.

Feature 10  Iron pipe; leading from loose pipe rods within the settlement to loose ends above the waterfall in the north.

Feature 11  Engine shed; surviving as a wooden platform (10.5 m x 4.0 m) with an arrangement of wooden support beams (highest 4.04 m), central tracks on which stand the remains of channelers and other quarrying equipment, hints at sub-division into smaller rooms/workshops, signs of burning and restoration at eastern end.

Feature 12  Not used.

Feature 13  Drainage ditches; elaborate system of ditches on lower ground, >0.5 m wide and > 0.3 m deep, specifically protecting feature 3 but also benefiting features 2 and 4, distant eastern end carefully lined with flat rocks and readily draining into freshwater stream immediately east of feature 4.

Feature 14  Footpath; or is it part of the drainage ditches?, lined loosely with rocks, but much broader and shallower, possibly serving feature 3.

Feature 15  Barrel; half a wooden barrel let partially into the ground, no suggestion as to former contents and purpose, proximity to iron water pipe (feature 10).

Feature 16  Claim board, wooden (0.4 m x 0.2 m) on a metal peg, inscription: 'SNSK A/S 1936 (?) NK2'.

Feature 17  Crane; mobile, parked on a track element, supplied by Taylor and Hubbard of Leicester.
Feature 18 Workshop; 7.2 m x 3.6 m x 2.7 m, made of wood and corrugated iron, associated with breaking equipment.

Feature 19 Spoil tip; approximately 25.0 m long x 10.0 m wide, comprising loose marble cobbles and boulders, was it meant to be a track?

Feature 20 Building foundation; roughly 4.0 m x 4.0 m, surrounded by a gravel embankment and comprising brick rubble (former stove or oven?) as well as coal or coke spoil, nearby vat.

Feature 21 Iron pipe; open proximal end near feature 20, unknown distal end, hot water supply?

Feature 22 Marble quarry; approximately 25.0 m x 10.0 m x 4.0 m, open towards the north, rough rock on east side with possible near-horizontal cutting marks, combination of near-vertical smooth rock and rough rock with tool marks on west side, retaining water at the bottom, single iron pipe may suggest use of running water for cooling of cutting machinery.

Feature 23 Marble quarry; possible former prospecting edge immediately east of quarry, 10.0 m x 5.0 m x c. 1.0 m, open towards north, remaining edges cut vertically by channeler, additional unexploited channeler marks at c. 0.9 m intervals along western quarry edge.

Feature 24 Plant foundation; approximately 2.0 m x 2.0 m, surrounded by substantial gravel embankment at head of quarry.

Feature 25 Building foundation; approximately 2.0 m x 2.0 m, substantial stone blocks in disarray with some wooden remains and sheets of corrugated iron.

Feature 26 Building and building foundation; building approximately 5.5 m x 5.3 m x 2.8 m, constructed of wood and some corrugated iron, with rack for storage of drilling or breaking rods at front; concrete foundation approximately 6.0 m x 6.0 m, former house was clad in corrugated iron.


Feature 28 Quarry; covering an area of approximately 15m x 15m, near vertical quarry face 1.5 m to 2.0 m high, associated with nearby rectangular boulders and separated spoil heap of cobbles and gravel.

Feature 29 Hut; 4.5 m x 2.24 m, constructed of wood, door and single window east-facing, black painting of Norwegian Lion and the number ‘1’, remains of a stove inside.

Feature 30 Hut foundation; approximately 5 m x 3.5 m, comprising dug-out base surrounded by low gravel bank, strengthened with boulders on downward eastern side.

Feature 31 Crane; simple metal tripod with the remains of a wooden platform.

Feature 32 Mast anchorage; four sturdy metal braces arranged in a large square, approximately 14 m x 14 m.

Feature 33 Railway embankments; arranged to suggest construction sequence crane - engine shed, crane - upper quarries (features 22 & 23), upper quarries – crane, crane – lower quarry (feature 28).

Feature 34 Italian monument; possibly brick with concrete rendering, possible function as a trig point metal rods possible boreholes stone cairn.

Feature 35 Railway embarkment from upper quarry (22) to stationary crane (27).

Feature 36 Railway embarkment from stationary crane (27 to lower quarry (28).

Feature 37 Earthworks; embarkment construction pit.

Feature 38 Wooden structure; possibly a beacon or claim marker.

Feature 39 Italian monument.

Feature 40 Cairns; small pile of marble cobbles.

Feature 41 Quarry spoil at lower quarry (28).

Feature 42 Earthworks; possible foundation or embarkment construction pit.

Feature 43 Possible cairns.
Feature 44  Possible cairns; small pile of marble cobbles.
Feature 45  Possible claim board.

Conclusions

The NEC seemed to have planned marble quarrying at a large scale but initially left the site by the outbreak of the Great War. The NEC returned for several years after the war, but quarrying did not prove economical and the site was later sold to Norway (Hoel).

3.7 Davis Island (Storholmen)

Introduction

Having secured the Governor’s permission to enter the bird reserve on the Lovén islands in Kings Bay, the team continued to Storholmen in the late afternoon of August 1st, 2008. Known to the British as Davis Island after a company director, the NEC built a hut on the west side that continues to be clearly visible across the fjord.¹

![NEC hut and track on Davis Island, due north. Photo: Dag Avango.](image)

The hut was principally the same type of pre-fabricated building that had been found in Port Peirson. The hut was open and showed the main room and the utility room to be spacious and in some disarray. There was a large attic.

A second feature was a track constructed of turf that led down to the western beach.

Results

The following features were recorded on Davis Island.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature 1</td>
<td>Hut, pre-fabricated, roughly 5 m high in the side gables, 4.5 m x 4.0 m, with a east facing porch (1.5 m x 1.5 m). Associated find of a bedstead and an old stove.</td>
</tr>
<tr>
<td>Feature 2</td>
<td>Track; made of a turf embankment.</td>
</tr>
<tr>
<td>Feature 3</td>
<td>Stone cairn.</td>
</tr>
</tbody>
</table>

Conclusions

The NEC may have intended the site as a claim hut or as a base camp from which to direct operations across the island group esp. Breccia Island (Juttaholmen), but on Davis Island itself no signs of prospection or extraction were discovered.

¹ Place-names, 1942, 108
3.8 Breccia or Maples Island (Juttaholmen)

Introduction

The team was in the possession of the description of a breccia quarry which could only have been on Juttaholmen, an island known to the NEC as Breccia or Maples Island after their company secretary. A zodiac trip was undertaken to the small southern bay - a NEC Breccia quarry - that formed the only landing point amongst the cliffs.¹

On the island, a camp was encountered comprising the remains of a rectangular structure, two tent rings, and a pit. These were photographed and sketched before a rapidly approaching fog bank cut the walkover survey short.

¹ Place-names, 1942, 213
Results

The following features were recorded on Juttaholmen.

Feature 1  Tent ring; 3.1 m in diameter, substantial turf bank, occasional wooden tent pegs, opening facing the high ground to the north.
Feature 2  Tent ring; 3.4 m in diameter, no turf bank, six wooden tent pegs, opening not obvious.
Feature 3  Hut foundation; 3.0 m x 2.7 m, substantial turf bank, possible entrance facing north.
Feature 4  Pit; 1.0 m x 0.5 m, spoil heap immediately to the west.
Feature 5  Quarry; inaccessible by land, vertical face approximately 15.0 m wide x 5.0 m high, conspicuous red colour.
Feature 6  Quarry; also the only landing place.
Feature 7  Hut; modern but appears to have re-used older building material.

Conclusion

Quarrying operations on Breccia Island seem to have been undertaken in tandem with exploitation at Port Peirson. The hut on nearby Davis Island may have been the operational office, but since Kings Bay may not always have been navigable in bad weather (as the team found out) a safe option would have been to construct a temporary tent camp on Breccia Island as well.

3.9 McVitie Point (McVitiepynten)

Introduction

British interest on Prince Charles Foreland first manifested itself when William Speirs Bruce, who was a member of the scientific expeditions to the Prince of Monaco and later instrumental in forming the Scottish Spitsbergen Syndicate, initiated his survey of the island in 1906. From his own accounts it is known that a base camp was erected in the vicinity of McVitiepynten.¹

When the team arrived here on August 2⁴d, 2008 it was found that the best landing point was the shingle beach immediately below an existing hut on the higher ground. The setting was exceptionally bleak, the view across the flat, brown grey tundra possible for miles, but a freshwater stream flowed a short distance to the north.

The existing hut (Fig. 13) has been said to have been constructed by Henry Rudi, who kindly carved his signature inside, in 1921, and a photograph of "Lewinhuset" was taken during the 1930s.²

A detailed drawing was recently made by a Norwegian archaeologist.³ Additional features were a rubbish tip, two stone settings and the remains of a sunken barrel.

Results

The following features were recorded at McVitiepynten.

Feature 1 Hut ruin; ‘Lewinhuset’, 4.7 m x 2.6 m, constructed of wood with left-overs of roofing felt, division into a main room and a utility room with a small toilet, south-facing entrance.
Feature 2 Rubbish tip; comprising mainly the remains of a former stove and several pots.
Feature 3 Stone setting; loose arrangement of rounded cobbles and boulders collected from the beach.
Feature 4 Stone setting; circular setting of stone with sloping sides to create a small pit.
Feature 5 Sunken barrel; almost completely eroded, comprising some metal and some small pieces of wood with associated loose cobbles.

Conclusion

It is unclear what form Bruce's base camp took, and assuming that the team came to shore at the right location, no evidence was discovered here to shed light on this question. It is possible that Rudi recognised the same advantages of the site and built over or obscured any earlier features.

3.10 Richard Lagoon (Richardlaguna)

Introduction

The name of the 7 km long lagoon on the east side of Prince Charles Foreland suggests a further connection with the Prince of Monaco with whose assistance William Speirs Bruce surveyed the locality in 1906 and 1907. It was not only this survey work that drew the team’s attention to this area on August 2nd, 2008; it was also a report to the Scottish Spitsbergen Syndicate by the geologist and mining engineer James Scott, detailing the prospection for iron ore in the summer 1919 and a corresponding claim map.\(^1\)

The team experienced the difficult harbour conditions in the lagoon when their zodiac utilised a favourable tide to navigate through the only opening in the shoal and promptly ran aground on a central sandbank. Once on shore, the decision to trace a freshwater stream westward paid off when a camp site comprising a tent ring (Fig. 14) and several discarded items, including a wooden oar, was discovered. It is very likely that this camp was established by James Scott on August 3rd, 1919.\(^3\)

The team continued westward and came within sight of a large outcrop of rust-coloured rock (Fig. 15), but a heavy dependence on the tide to leave the lagoon again meant that the mountain could not be reached in the time available. Instead, the team pressed for a local high point in the hope of finding occupation markers and was once more rewarded with the discovery of small-scale mining of iron ore as well as a stone cairn and a trig point.

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\(^1\) Place-names, 1942, 360  
\(^2\) SPRI, Syndicate Papers Vol 2 – Folio 19; Hoel, 1967, 1078  
\(^3\) SPRI, op. cit.
The small pit and the associated tools (Fig. 16) were presented in such a manner as to indicate on-going mining operations in the area and effectively consolidate the SSS claim.

Feature 1  Iron ore outcrop; small pit/mine opening with crow bars, hammer, spade handle.

![Small-scale iron ore workings, due west. Photo: Dag Avango.](image)

**Results**

The following features were recorded to the west of Richard Lagoon.

**Area 1**

Feature 1.1  Camp; comprising a tent ring approximately 4.0 m in diameter, all tent pegs survive as do tool handles, barrel top, oar, metal picks, leather pouch, tins, glass bottles, much firewood and other discarded wood.

**Area 2**

Feature 2.1  Test pit for iron ore; associated with several tools, such as crow bar, hammer, spade.
Feature 2.2  Cairns: well constructed of flat cobbles with central metal rod.

**Conclusion**

The camp was made near the harbour and fresh water source. No other tent ring was found (Rudmore Brown describes a tent that had a central pole - could this one have had one?)

The outcrop was 3 km away over rough terrain. Both camp and pit effectively marked the claim.

3.11 Kenmore

Introduction

Literary sources state that Bruce’s expedition of 1909 erected ‘Brucehytta’ to the south of the bay of Selvågen on the east side of Prince Charles Foreland whilst the summer of 1919 saw the construction of a prefabricated SSS hut to the south of Dawespynten. Rossnes suggests that these locations coincide and that the two huts co-existed for some time. The alternative name of Kenmore signifies a connection with a village in Perthshire, Scotland, and is marked on an obsolete map edition but has subsequently been removed. The team’s reconnaissance of the site was aided by detailed drawings recently prepared by Norwegian archaeologists.

The team went on shore at Kenmore in the evening of August 2nd, 2008 to map the location and photograph the existing hut (Fig. 17) which had the signature of the SSS painted onto each of its prefabricated structural elements and informed that it was in fact the fourth of four huts brought to Spitsbergen in 1919.

A semi-detached wooden platform to the south of the partially collapsed building was thought to be all that remained of ‘Brucehytta’. Its east-facing measured the 3.0 m previously recorded by Hoel. Associated finds allowed a glimpse into the former occupants’ work and pastime, but overall the site offered no other features.

Results

The following features were recorded at Kenmore:

Feature 1 Hut ruins; pre-fabricated, bearing SSS stamps ‘Hut 4’. A woorden platform (~ 5.0 m x 3.0 m) and a derelict hut of wood and roofing felt (~ 5.0 m x 5.0 m). The original entrance may have been on the south side of the platform and from there into the hut. The SW corner of the hut has been ripped away and building material as well as several artefacts (shoes, jar stoppers, picture frames, wet stone) lie scattered.

Feature 2 Ditch from NW around the hut’s west side to SE.

1 Hoel, 1967, 1044, 1059 & 1062
2 Rossnes, G., 1993, Norsk Overvintringsfangst på Svalbard 1895 – 1940, Norsk Polarinstitutt, Oslo
4 Hoel, 1967, 1062
5 Rossnes, op. cit.
Conclusions

A freshwater source was not immediately obvious. Nor was it clear why the hut had been placed at Kenmore and what function it had been assigned. There were no mineral resources of economic importance nearby, but the hut may have been of strategic importance and accessible from other areas of operation along significant transport routes.

3.12 Inchcolmodden

Introduction

Following the search for Bruce’s 1906 base camp at McVitie Point, the team also aimed to locate and document his base camp of 1907 which was known to lie “[...] on the west coast of Prince Charles Foreland, nearly 12 miles from Black Point, on June 11.” On advice of Stig Henningsen, skipper of the MS Farm, the team prepared to anchor at John Ross Bay on the calmer east side of Prince Charles Foreland and to cross the narrow Foreland Laichs on foot rather than risk bad weather and landing conditions on the exposed west side.

Bruce, 1908, 144
Although Bruce provided the co-ordinates for the said base camp, the navigational systems of the MS Farm showed these to be incorrect and adjusted them to 78° 22′ N 11° 35′ E. Here, in the vicinity of several lakes just north of the Edinburgh Islands, recent maps note Inchcolmodden, named after an island in the Firth of Forth, Scotland, and a historic photograph of the original Inchcolm hut exists. Personal communications with Norwegian archaeologists who had recently visited Inchcolmodden suggested that the only upstanding buildings there were a Norwegian hut with an outhouse, of which they kindly provided detailed drawings, and a small modern scientific station.

Nonetheless, the team traversed the island on August 3rd, 2008, and in addition to the Norwegian hut, they drew and photographed a hut foundation surviving as turf banks with wooden remains (Fig.18). Associated finds included part of a whetstone and leather shoes similar to those uncovered at Kenmore, but a Scottish connection could not be proven beyond any doubt.

Results

The following features were recorded at Inchcolmodden.

Feature 1 Hut foundation; approximately 6.0 m x 2.5 m, wooden boards and planks, finds such as barrel tops, whetstone, paint brush (reddish brown paint), leather shoes.

Feature 2 Hut.

Feature 3 Outhouse with flagpole.

Feature 4: Barrel; ‘Kraftstoff 200L, 1941’

Conclusions

It is assumed that Bruce erected a hut here primarily for scientific purposes. As a claim hut it would have been of more use on the east coast where ships frequented; and it could not have been a miners’ camp for the lack of resources. Bruce himself carried all his equipment across the island at least once as better and safer harbouring could only facilitate his pick-up at John Ross Bay.

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1 Ibid.
2 Place-names, 1942, 201, Hoel, 1967, 1045
Map 17. Prince Charles Foreland - Survey Track. Drawn by Frigga Kruse.

3.13 Copper Camp, St John's Bay

Introduction

With few literary references to content with, the team armed itself with a geological map that showed Copper Camp on the south side of St. Johns Bay and a former mine coinciding with a thrust fold in the basement rocks, and set out to delineate potential NEC activities at this locality.¹

On August 3rd, 2008 the weather was dominated by heavy fog which greatly reduced visibility from the beach and hindered the walkover survey in that indicative geological formation could not easily be discerned. Nonetheless, the team succeeded in mapping, drawing and photographing the hut (Fig. 19) which bore the following inscription above the door, ‘The southside of St Johns Bay from Cape Müller to Osborne Glacier claimed by NEC Co. London’.

A glacial meltwater stream led to a moraine in a south-easterly direction, and in this stream the team discovered traces of green copper ore. The survey continued along the stream to an escarpment that marked the fold, and chanced upon a mining area of four or five pits (Fig. 20) with the leftovers of an ore stockpile.

Results

The following features were recorded at Copper Camp.

Feature 1 Hut; 3.0 m x 1.8 m x 2.1 m, constructed of wood and roofing felt with a lean-to equipment shed, west-facing entrance.
Feature 2 Stone setting; loosely placed rocks with associated metal rubbish from stove and cooking pots.
Feature 3 Copper ore stockpile; approximately 1.5 m in diameter.
Feature 4 Mining pit; approximately 1.0 m deep with spoil on north side.
Feature 5 Mining pit; linear with poorly defined edges, rock outcrop visible, discarded tool shaft.
Feature 6 Possible quarry face; linear feature exposing rock outcrop.
Feature 7 Mining pit; approximately 0.7 m deep with spoil on north and west sides.
Feature 8 Mining pit; approximately >1.0 m deep, containing meltwater, spoil on north and west side.
Feature 9 Rock outcrop; potentially explored or worked

Conclusions

Judging by the size of the pits and the stockpile, it is unlikely that operations at this site reached economically viable proportions. A search for further mining activities in the immediate vicinity was fruitless.

¹ Bergh, S. G., et al, preliminary edition, St. Jonsfjorden, Svalbard 1:100.000
Figure 19. NEC hut at Copper Camp, due South. Photo: Dag Avango.

Figure 20. Small-scale copper ore mining, due west. Photo: Dag Avango.

3.14 Barentsburg

Introduction

In continuation of the historic LASHIPA 4 NESPICO survey in the Barentsburg area (see 2007 LASHIPA 4 report), Hidde de Haas and Dag Avango carried out further fieldwork surveys in 2008 in the Barentsburg area. The team focussed on three sectors, the Barentsburg settlement (sector 1), Cape Heer (sector 2), and Cape Laila (sector 3). The objectives of the survey were to find and document pre- and post-WWII remains, and thereafter analyze, date, and identify these. Ultimately, the information can be used to reconstruct and interpret the development of the historic mining settlement and all the activities within the claim-area under the Russiske Kulfelter Green Harbour (1915-1920), Nederlandsche Spitsbergen Compagnie (1920-1932), the Trust Arktikugol (1932-2008) and the various other companies and individuals, who were active in the area between 1900 and the present.

Figure 21. Sectors surveyed during Barentsburg fieldwork 2008. Map: Hidde de Haas.
Sector 1 - The Settlement of Barentsburg

Introduction

Prior to the fieldwork campaign, an analysis of the historic development of Barentsburg was made in ArcGIS. In this analysis, both the remains that were found during LASHIPA 3 and 4 and various historic maps and a contemporary map of the settlement Barentsburg were incorporated. With this spatial analyses, a great number of specific locations where building activities had taken place were identified on the contemporary map (Fig. 22).

In 2007, the northern half of Barentsburg was well covered by the survey, and the results were promising. The analysis pointed out more locations where remains could be expected. Based on this, the teams efforts focussed on these specific locations. However, once in the field, unfortunately, most of these specific locations turned out to be highly disturbed, both by land reconstruction and by present-day use as waste collection or storage area.

The survey itself was done on foot. All new finds were given feature numbers counting up from last years numbers. Thereafter, these features were described and photographed. The location of the features was drawn into printouts of the ArcGIS maps and recorded with a GPS/PDA in ArcPAD.

The actual identification and analysis of the found remains was partly done during the survey with the help of historical sources, photos, maps and the ArcGIS data and maps. However, further research on the features will take place at the Arctic Centre Groningen. All new data will be incorporated in the Barentsburg ArcGIS database for further analysis.

Figure 22. Map of Barentsburg, the blue circles formed the areas of special attention for fieldwork in 2008.
Map: Hidde de Haas and Ruben de Vries
Results

The results of the survey can be divided into four areas.

*Area 1*
Feature H69 A-E  Remains of the infrastructure connected to the mine.
H69A  Coal cart at the end of the rails leading out from the mine entrance hanging over the waste rock dump area.
H69B  The remains of an electric winch for hoisting coal carts.
H69C  Ca. 75 meters of rails leading from the mine, downhill towards the settlement of Barentsburg. Two different sorts of rails were found (see photo below).
H69D  Rails coming from the mine ending above the waste rock dump area.
H69E  Tipped coal cart.

Figure 25. Feature H69A, close up of the two different rails used. Photo: Hidde De Haas

Figure 26. Overview parts features H69 and H70. Photo: Hidde De Haas.
<table>
<thead>
<tr>
<th>Feature</th>
<th>H70 A-E</th>
<th>Remains of a mine, probably built by the Trust Arktikugol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H70A</td>
<td>Mine entrance, small building made out of bricks, wood and plate material, inside there are rails leading into the mine and various mining tools are laying around.</td>
<td></td>
</tr>
<tr>
<td>H70B</td>
<td>Remains of a foundation, with beams, poles and floor planks. Possibly the remains of a mine office.</td>
<td></td>
</tr>
<tr>
<td>H70C</td>
<td>The outline of the waste rock dump area on the sloping the area in front of the mine entrance.</td>
<td></td>
</tr>
<tr>
<td>H70D</td>
<td>Electricity cable leading up to the mine. Cable is resting on iron stands.</td>
<td></td>
</tr>
<tr>
<td>H70E</td>
<td>Path leading from the mine to a second mine entrance or ventilation shaft ca 50 meters further north.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feature</th>
<th>H71 A-C</th>
<th>Remains of a what probably was a ventilations shaft or secondary mine entrance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H71A</td>
<td>Collapsed entrance with stone, wooden poles and board material.</td>
<td></td>
</tr>
<tr>
<td>H71B</td>
<td>Remains of wooden poles, beams and floorboards. Possible remains of foundation of a structure connected to the mine.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feature</th>
<th>H72 A-B</th>
<th>Remains of the former Trust Arktikugol railroad that lead from Barentsburg to Cape Heer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H72A</td>
<td>Remains of railway, consists of partly raised terrace with rails, beams and remains of wooden cover, on some parts of this railway there is only the imprints in the soil of this railway.</td>
<td></td>
</tr>
<tr>
<td>H72B</td>
<td>Concrete, stone and wooden remains of a building structure connected to the railroad.</td>
<td></td>
</tr>
</tbody>
</table>
Area 2

Figure 28. Features Barentsburg area 2. Map: Hidde de Haas

  
    H67A Wall made out of armed concrete, part of protection against water/land coming down from the slopes.
    
    H67B Wall made out of armed concrete, part of protection against water/land coming down from the slopes.
    
    H67C Steel Structure with six steel poles and roofing framework based on concrete base pillars. The structure is overarching the area just in front of the actual mine entrance. Remains of a covered mine entrance dating from the post 1945 era.
    
    H67D Mine entrance built out of armed concrete in a half round tunnel shape. Inside are the rail tracks and various mining tools visible.

Feature H68 Remains of a wooden stairs and parapet leading up to the water reservoir.
Area 3

Figure 29. Features H67, Photo: Hidde de Haas

Figure 30. Features Barentsburg area 3, Map: Hidde de Haas
Feature H60  Path leading up the hill towards the old NESPICO mine. Outline of path leading over the waste rock pile (feature H50 in 2007 report), up to abandoned mine entrances (features H45 and H48 in the 2007 report).

Feature H61  Remains of a concrete pillar.

Feature H62  Area with various iron artefacts. The location is connected to the previous mining activities at this location. Amongst the artefacts found here are various rail tracks (see also 2005 and 2007), iron cables, tools, a bucket and various other unidentifiable remains that probably date back to the NESPICO and Lewin activities here.

Figure 31. Feature H62. Various rails, iron cables and other metal objects. Photo: Hidde de Haas
**Area 4**

**Feature H54 A-E**  Remains of a structure / foundation.

Remains of foundations enclosed by present-day buildings. Possibly part of one of the 120-workers barracks NESPICO built in 1923-1924. The remains consist of various concrete pillar bases, one of which is incorporated in a contemporary structure, remains of a wooden wall and part of a floor construction.

*H54A*  Part of foundation or floor, with wooden boards, beams and posts. Underneath is an underground space visible.

*H54B*  Concrete pillar base, half in and under a contemporary structure.

*H54C*  Concrete pillar base.

*H54D*  Concrete pillar base.

*H54E*  Imprint of line in soil with some remains of upstanding planks.

**Feature H55**  Remains of a round concrete structure.

Circular armed concrete structure, previously possibly part of water management system, not in use anymore.

**Feature H56 A-D**  Concrete pillar bases.

Four concrete foundation pillars that are in line with contemporary building with NESPICO parts (feature 57). Former part of the coal transport system between the entrance of the mine and the coal storage.

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**Figure 32. Features Barentsburg area 4, Map: Hidde de Haas**
Feature H57 In 2005, the lashipa-team identified the concrete foundation of a small building as possibly dating from the NESPICO period (feature 11, 2005). With the ArcGIS analysis this feature is now dated to 1925. It was part of the transport and sorting system in-between the actual mine and the coal storage. Together with H56 this concrete structure functioned as part of the coal transport system to the cleaning and sorting house.
Feature H58A-B

Concrete coal storage. Part of the contemporary concrete wall that limits the coal storage area on the west side. This 300 meter long wall dating from 1923-1925 was later on extended on the south side by the Trust Arktikugol with an additional 40 meters (see feature 6 previously described in the 2005 LASHIPA 3 report). Previously, the wall also functioned as a part of the coal transport system in the storage area and as part of the transport system leading coal towards the loading dock in the harbour.
**Feature H58B**
Part of the contemporary concrete wall that limits the coal storage area on the east side. This 300 meter long wall dating from 1923-1925 was later on extended on the south side with an additional 40 meters by the Trust Arktikugol (see feature 6 previously described in the 2005 LASHIPA3 report).

**Feature H59**
Entrance to tunnel.
Entrance tunnel, part of contemporary coal transport system from the coal storage to the harbour. In NESPICO times this tunnel entrance led to the older mines further north up the slope.

*Figure 37. Feature H58B. On the right: border of old (left) and new (right) concrete wall. Photo: Hidde de Haas*
3.15 Cape Heer (Heerodden)

Introduction

Cape Heer is in many respects an interesting area. It is one of the first mining sites on Spitsbergen, with exploitation starting as early as 1885-1886. In the following decades, various companies and individuals claimed the area. The first claimant was the A/S Isefjord Kulgrubekompagniet in 1900. This company built a hut, known as the Schrøder hut (area 4), put up claim signs, fenced the area and carried out some coal mining. A second interested company was the Arctic Coal Company, that claimed the area in 1905. The ACC built a claim hut at Cape Heer to strengthen their claim on the area, but did not proceed with actual coal mining (area 1). Among the other individuals and companies that claimed parts of the area were Falck Dessen (1908) and the AS Stavanger Spitsbergen company (1912). Eventually the Russiske Kulfelter I Green Harbour bought most of these claims and started exploitation of coal at Cape Heer in 1915 (area 2). After NESPICO bought the claim in 1920, exploitation of coal was permanently moved to Barentsburg. After the Trust Arktikugol took over the area in 1932, the Soviets renewed activities in the area (area 3).

The objectives of the survey were to find and document pre- and post-WWII remains, and thereafter analyze, date, and identify these. Ultimately, the information can be used to reconstruct and interpret the development of the historic mining settlement and all the activities within the claim-area by A/S Isefjorden Kulgrubekompagniet (1900-1911), the Arctic Coal Company (1906-1916), Russiske Kulfelter Green Harbour (1917-1920), Nederlandsche Spitsbergen Compagnie (1920-1932), the Trust Arktikugol (1932-2008), and all other companies and individuals active in the area between 1900 and the present.

Figure 38. Overview Cape Heer survey, Map: Hidde de Haas
Results

Area 1

Feature H77 A-C  Remains of a gamme, an earth walled hut. Study of the location on historic maps connect this feature to the Arctic Coal Company (ACC) activities in the area.

   H77A  A square raised area with on three sides an earth wall with wooden beam.
   H77B  Wooden post inside of the earth wall.
   H77C  Possible extension to the gamme, raised earth outline with two beams in them.
Area 2

Feature H78 Remains of a gamme, and earth walled hut. (Feature 15 in LASHIPA 5 2005 report).

    H78A Remaining wooden walls and posts inside the gamme.
    H78B Earth wall raised around the remains of the wooden structure feature. In and on the wall various metal and glass objects were found.
    H78C Wooden planks and board remains, possibly part of the roof for H78.
    H78D Pole

Feature H79 Area with remains indicating possible building site. Feature consists of wooden beams with additional slight imprints in the ground. Possibly remains of a foundation of a hut.

Feature H80 A-D Remains of the mines connected to the Russiske Kulfelter I Green Harbour dating from 1915-1920.
**Feature H80A**  
Mine entrance, dug in the face of the elevation with clear wooden carrying construction, rail tracks leading out of the mine. Furthermore there were various artefacts found such as a shovel, nails, wood, etc. (Feature 17 in LASHIPA 2, 2005 report).  

**H80B**  
Outline of an elevated area with coal lying around, probably the former coal storage area.  

**H80C**  
Rails tracks, part of tracks leading from the mine entrance to H80B. mine entrance with wooden structure at a small and narrow, quite inaccessible beach.  

**H80D**  
Collapsed mine entrance with wooden support structure at a small and narrow, quite inaccessible beach. (Feature 16 in LASHIPA 2, 2005 report).

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1 Also named feature 1 in unpublished report by Dag Avango, 2006.
Feature  H81  Remains of a hidden watch post embedded in the natural rock, covered with wooden boards, planks and rocks. Probably connected to the gun that was based at this location prior to WWII.
Area 3

Feature H73 A-B Raised path with beams and some rails, in line with the existing railway system. West of H73B there are no actual remains of the rails left. (Feature 20, LASHIPA 2, 2005 report).

Feature H74 Remains of a railway leading from the foot of the hill in a curve. Although further on the rails are missing, a raised path with a ditch next to it, shows the further direction of the previous rails. At various places the there are remaining beams and some sporadic rail tracks. (Feature 20, LASHIPA 2, 2005 report).

Feature H75 Drilling site (?) with drilling pipes, various tools laying around on the hillside.

Feature H76 A-B Possible remains of two structures. (Feature 21, LASHIPA 2, 2005 report).

H76A Area with large quantity of iron and wooden remains. Rubble pile or building location?

H76B Area with large quantity of iron and wooden remains. Rubble pile or building location?

Area 4

Feature H82 Outline and remains of a building knows as the Schroder hut, see report 2005.

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1 Feature 3 in unpublished report by Dag Avango, 2006.
3.16 Cape Laila

Introduction

Little is known on the building history at Cape Laila. NESPICO built some huts at the north-eastern extent of their claim in 1921-1926. Since 1932, under the Trust Arktikugol, various test and drilling operations were carried out at various locations along the Icefjord coast towards Coles Bay.

The objectives of the survey were to find and document pre-WWII remains, and thereafter analyze, date and identify these. Since the actual function and location of the first small Dutch camp are unclear, uncovering the location was of first importance. Ultimately, the information can be used to reconstruct and interpret the activities in the area of the NESPICO (1920-1932) and the Trust Arktikugol (1932-2008).

The survey was done on foot following the coast from Cape Heer to Cape Laila. Recording took place in several steps. Firstly, all new features were given a feature number. Thereafter, each feature was described and photographed. The location of the features was drawn into printouts of the ArcGIS maps and, furthermore, recorded with the GPS/PDA/ArcPAD. More substantial features were additionally hand measured and sketched on paper.

Results

Approximately 2.5 kilometres west from Cape Laila remains of human activity were found. The remains were located close to the coast and next to a melt water stream running into the Isefjord. The height, some 20 to 30 meters above sea level, and the fairly level grounds make the area suitable for building, unlike the lower and wetter area further towards Cape Laila. Since it is the only area near
Cape Laila with distinct building remains, it is suspected that this is the location of ongoing building activity since the NESPICO times. The found remains are so far however inconclusive, the remains themselves are unclear and hard to interpret while a lack of additional historic sources give little further understanding of the building history of the area.

**Feature 1** Imprint in soil with some wooden remains, possible building location.
**Feature 2A-B** Two poles, part of a larger set of poles leading towards Coles Bay. Possible function for carrying electricity or telephone cables.
**Feature 3** Outline of a structure, probably a hut. Burnt wooden remains of wooden beams, poles and planks, furthermore nails and other iron artefacts were found.
**Feature 4** A hut still in use. Possibly built on top of previous foundations.
**Feature 5** Clear rectangular imprint in the soil, possible historic building location.
**Feature 6** Imprints in the soil, possible historic building location.

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Figure 48b. Features Cape Laila. Photo: Hidde de Haas.

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Figure 49. On the foreground feature 3. In the background the existing hut, feature 4 is visible. Photo: Hidde de Haas.
3.17 Coles Bay (Colesbukta)

Introduction

Coles Bay (Colesbukta in Norwegian) is located on the southern coastline of the Ice Sound (Isfjorden), on the main island of Spitsbergen. The area around the bay is characterized by a coastal plain, bordered by lower gently sloping mountains. In the center of the bay the Coles River delta (Coleselva in Norwegian) is located, dividing the bay into an eastern and a western part. There are coal seams in the area, belonging to the Tertiary strata – the same as in Longyear Valley and Green Harbour - but at Coles Bay the seams are situated below sea level.

Coles Bay has been the scene of various mining and exploration activities from the beginning of the 20th century up until today. It was first claimed by the Arctic Coal Co in 1905, as the Ayer & Longyear tract no 2. The Arctic Coal Co kept the claim until 1916, when it was sold to the Store Norske Spitsbergen Kulkompani A/S (Store Norske), who maintained its claim to the area until the regulation of conflicting land claims following the Spitsbergen Treaty of 1920. In the years following the Arctic Coal Co’s claim of the area, parts of Coles Bay was claimed also by other companies: the “A/S Kulspids” in 1909, and by the “Stavanger Spitsbergen expeditionen 1912”. The last mentioned company sold the west part of the bay to the Russian “A/S De Russiske Kulfelter Green Harbour” in 1914, who in turn sold it to the M. Lewin & Co in 1925. The eastern part of the bay was claimed by the Russian Rusanov expedition in 1912, starting off a conflict with the Arctic Coal Co and later with the Store Norske. A Russian company was formed in 1913 to develop the claim for coal mining - the Grumant A.G. Agafeloff & Co - and in the following years, it built a house and conducted explorative mining in the area. In 1920 the project was taken over by the Anglo-Russian Grumant Co (a Russian-British joint venture), who established a coal mining community - Grumant City - in the nearby Grumant valley, to the east of Coles Bay. In the early 1930s, the claim was taken over by the Soviet Trust Arktikugol, who built a mining community and a shipping harbour at Coles Bay, connected to the Grumant City by a railway line and a tunnel. The Soviet settlements in Coles Bay and Grumant City were closed in the beginning of the 1960s. The area is still owned by the Russian Trust Arktikugol and the company has presented plans to re-open the mine in the future.

The Coles Bay area was surveyed by team 1 and team 4 at two different occasions. The purpose of the survey by team 1 was to locate and document remains of the a) Rusanov / Grumant A.G. Agafeloff & Co operations in the 1910’s and 20’s (see separate section in this report), and b) Trust Arktikugol mining operations. The survey group arrived to Coles bay by foot from Barentsburg and was based in the Rusanov hut during two days of documentation work. The purpose of the survey by team 4 was to look for the remains of an Arctic Coal Company / hunter’s hut, located adjacent the south-eastern corner of the bay, and for evidence of coal seam testing by that company.

There have been several previous surveys of the area. During the LASHIPA 1 expedition in 2004, a large team of researchers made a thorough survey of the west side of Coles Bay, from the Coles River to Cape Laila. The team started a survey also on the east side of the river, but this effort had to be cancelled immediately because of the presence of a polar bear. Surveys of the area had also been made by Susan Barr in 1981, Dag Nævestad in 1986, Gustav Rossnes in 1988, and Geir Stormbringer et al in the summer of 2000 (Stormbringers map is published in Martin, Avango, Hacquebord et al 2005).

Figure 23. Coles Bay - Area 2. Map: Dag Avango.

Results

The following features were found and recorded at the site of the Trust Arktikugol settlement and harbour facility at Coles bay, east of the Coles river.

Feature 1  Washing and dressing plant for coal, consisting of the following interrelated sections:
1A  Main building of the coal washing plant, for housing machinery and internal transport systems. Built out of Trust Arktikugol slag concrete bricks and steel bars.
1B  Round concrete structure, probably a support pillar.
1C  Square concrete tower.
1D  One storey building for unloading coal from coal carts and transporting it to building 1A via a built in conveyer belt (1E). The building is built out of Trust Arktikugol slag concrete bricks.
1E  Conveyer transport system for coal between 1D and 1A, covered by a steel and concrete gallery

Feature 2  Wooden shed filled with boxes of drilling cores. Standing wooden panel on a wooden framework construction. Tar paper covered roof.

Feature 3  Concrete foundation with remains of an iron structure. Its original function could not be determined.

Feature 4  Large foundation of a building, 43 x 15 meters. Concrete ground beams resting on concrete pillars. The foundation is situated in line with feature 8 and feature 12 along the Coles bay shoreline and judging from similarities with these structure, it may be the remains of a lodgement barrack.

Feature 5  Two concrete pillars.

Feature 6  Foundation of wooden structure.

Feature 7  Concrete building foundation with wooden remains.

Feature 8  Foundation of a large building, made up of concrete pillars. Judging from its location - in line with feature 12 - and the similar size (42 x 15 m), it is likely that this is the foundation of a workers barrack of the same type as feature 12.

Feature 9  Foundation made up of four wooden poles.

Feature 10  Foundation made up of six concrete pillars.

Feature 11  One storey building. In the west there is a main entrance with stairs and four windows. In the northern gable wall there is a wide entrance door and in the southern gable wall there is an additional entrance door. The house is built out of Trust Arktikugol slag concrete bricks. There is a creek passing close to the southern gable wall, posing a threat to the building.

Feature 12  Two storey building, 45 x 15 m - a workers barrack. On the ground floor the building contains apartments for workers. On the upper floor there are additional workers apartments and a cinema with a projector room. The building is threatened by a creek eroding the eastern and northern sides and flooding some of the rooms in the ground floor.

Feature 13  Two storey concrete building, 20 x 10 m, with white plastered facades and a foundation covered with horizontal brown painted wooden boards. Entrance doors in the northern and southern gable walls. The building contains lodgement rooms on both floors. The lodgement apartments have a higher standard then the barrack. This suggests that the building may have been a lodgement barrack for higher ranking Trust Arktikugol employees.

Feature 14  Water tank on a sledge.

Feature 15  Wooden shed, vertical wooden boards on a wooden framework, approx 2 x 3 m. Sloping roof. The building is a toilet/outhouse with designated male and female sides.
Figure 50. Feature 1: A coals washing and dressing plant. Photo: Dag Avango, LASHIPA 5.

Figure 51. Feature 8: Concrete foundation, most likely from a large workers barrack, similar to feature 12. Photo: Dag Avango, LASHIPA 5.

Figure 52. Feature 12: Large workers barrack, overlooking the Coles Bay. Photo: Dag Avango, LASHIPA 5.
Figure 53. Feature 12: Cinema inside of the workers barrack. An example on the efforts made by the Trust Arktikugol to provide social activities for their employees. Photo: Dag Avango, LASHIPA 5.

Figure 54. Feature 13: Lodgement barrack for higher ranking employees at the Coles Bay mining facility. Photo: Dag Avango, LASHIPA 5.

Figure 55. Lodgement room in barrack 13, designed for only two persons and with wallpaper covered walls. Photo: Dag Avango, LASHIPA 5.
with separate entrance doors in the western facade. The building is standing just behind the canteen building (feature 17) and may be the toilet belonging to that building.

**Feature 16**
One storey concrete building, 22 x 10 m, with white plastered facades and a brown painted foundation. There is an entrance door in the western wall. The building has functioned as a canteen and contains an eating hall, kitchen, storage rooms and a freezer room (see fig. x. in appendix x).

**Feature 17**
One storey building, 18 x 10 m, with vertical wooden board panel - natural coloured on the east and west facades and green on the north and south gable walls. The foundation has a brown painted horizontal board panel. There is one entrance in the southern gable wall and two in the northern, located in a glass veranda on this side of the building. The building contains bedrooms, a common room and a kitchen and seem to be in use. The wooden facades and house construction, suggests that the building is older then the concrete buildings a Coles Bay.

**Feature 18**
Three sheds attached to each other - two wooden sheds containing generators and one metal shed.
Feature 19  Stainless steel tank on a sledge, most likely for water, with a hose connecting it to the generators in feature 18.

Feature 20  Square hole in the ground, approx 2.5 x 1.5 m, several meters deep and dressed with horizontal wooden boards. Its function could not be determined.

Feature 21  Bore hole in the ground with a steel drilling rig.

Feature 22  Antenna mast.

Feature 23  House foundation, 35 x 15 m, covered with the remains of a burned building - wood and rubble. The building that used to be standing on the foundation was demolished some time between August 2002 and August 2004. The building was a two storey concrete building with white plastered facades. The western façade, facing the Coles bay, had 10 windows and the northern gable wall had 4. The building was most likely a lodgement building, but smaller and with slightly different room arrangements, compared to the barrack feature 12 (see Fig. 52).

Feature 24  Wooden platform.
Feature 25  Remains of a wooden building. On the outer end of the pier there is a wooden building. It has vertical wooden boards on a wooden framework construction. The facades show remains of groundwork for plastering, suggesting that the building used to be plastered. The function of the building could not be determined - possibly a harbour office.

Feature 26  2 storey building, 55 x 17 m, with walls of vertical wooden beams and white plastered facades. The building has entrances in the southern and the northern gable walls (upper and lower floors) and in the western facade. Inside the building there are railway tracks and extensive open rooms. The building has functioned as a warehouse and it has rail tracks on both the lower and the second floor. Previously, there has been a railway ramp leading in to the upper floor.

Feature 27  Wooden foundation, remains of unknown structure.

Feature 28  Remains of a large wooden structure, made up of wooden poles and wall remains. Most likely the foundation poles of a larger building, measuring approximately 50 x 15 m.

Feature 29  Remains of a wooden structure. Its function could not be determined.

Feature 30  Remains of a wooden structure. Its function could not be determined.

Feature 31  Wooden helicopter platform, 20 x 20 m.

Feature 32  Remains of a wooden foundation with a concrete foundation inside.

Figure 60. Storage building with railtracks on both levels. Photo: Dag Avango, LASHIPA 5.

Figure 61. Feature 31: Landing platform for helicopters at Coles Bay. Photo: Dag Avango, LASHIPA 5.
Feature 33 Concrete foundation with iron in the concrete
Feature 34 Wooden foundation
Feature 35 Concrete pothole
Feature 36 Underground tunnel with fitted with wooden logs (partly caved in and therefore visible). The tunnel leads south from the coal storage area (feature 37). Likely, it has functioned as a transport tunnel for coal (Fig. 62).

Feature 37 Outline of area with lot of coal, immediately inland above the pier (feature 38). The area marks the extent of the Coles bay coal storage area, from where coal from the Coles bay mine and the Grumant city mine was transported out to the pier (feature 38) and loaded on to ships (Fig. 62).

Feature 38 Remains of wooden pier (Fig. 62). This was the main pier for exporting coal from the Coles bay, situated adjacent to the coal storage (feature 37) and the unloading/reloading facility for coal (feature 42).

Feature 39 Unpaved gravel road leading through Coles Bay settlement.
Feature 40 Two concrete pillars with iron rings.
Feature 41 Tunnel - possibly a mine entrance.
Feature 42 Remains of a concrete building, connected to the railway system that led from Grumant city to Coles Bay (Fig. 62). Most likely, the building contained machinery for unloading and reloading coal from the Grumant city mine, to the coal storage area (feature 37).

Figure 62. Remains of a larger concrete building, built over the railway tracks connecting Coles Bay with Grumant City (feature 42). The building probably contained reloading machinery, for transferring the coal to the coal storage area (feature 37) which can be seen in the background. Below the coal storage the pier (feature 38) is visible. Photo: Dag Avango, LASHIPA 5.

Feature 43 Remains of a railway – an embankment, in some places with sleepers and sometimes rails. Parts of the railway is covered by a wooden gallery. The railway connected Grumant city with Coles bay and led all the way to the coal washing and dressing plant, feature nr 1 (Fig. 63).

Feature 44 Three concrete foundations with iron pins.
Feature 45 Remains of the Coles bay coal fired electrical power plant. The building was destroyed between August 2002 and August 2004. What used to be a very large concrete power plant, is today an impressive pile of concrete and iron rubble.

Feature 46 House foundation with remains of armed concrete constructions. Its exact function remains hidden, but is likely that it was a part of the power plant (feature 45).

Feature 47 Building foundation, 23 x 10 m, consisting of large vertical beams in the ground.
Feature 48 Concrete foundation with long pit in the centre, possibly maintenance building for trains and carts.
Team 1 failed to find the hut remains or evidence of testing, but did locate the remains of two sod huts, (see Fig. 67). These huts were photographically documented and their locations recorded by GPS. The team made measured drawings of the huts and the immediate surrounding environment. The team located the possible remains of a ‘gamme,’ indicated on a historic plan drawn around 1924-28 (Norwegian National Library, reference: no-nb_krt_00558). The feature rests atop a small earthen mound that is relatively level at top. It is composed of two distinguishable sod lines that join at a right angle. A small collection of barrel hoops is located within the structure’s interior. A box lid lies partially exposed at the feature’s east wall. Norwegian hunters likely constructed the hut.

The team located a hut foundation on the grassy foothills on the north-east side of Coles Valley. A handful of other, more recent ruins associated with an abandoned Russian mining settlement surround the hut. It has a rectangular sod footprint and a large earthen mound occupies approx 1/3 of the hut’s interior, perhaps related to a collapsed roof structure. The hut was likely part of the Russian settlement on Coles Bay, associated with coal mining activities at Grumant, to the north-east. The team surveyed for evidence of coal seam testing on the hillsides around 2,500 meters east of the bay, but found none.
Figure 65. Location map of the two hut remains found in MTU’s survey of the Coles Bay. Map: Cameron Hartnell, November 2008.

Figure 66. The “gamme” remains looking North West. Photo: Cameron Hartnell, August 2008.
3.18 Rusanov hut

Introduction

Following centuries of hunting on Spitsbergen, Russian economic interest in the archipelago was revived when Vladimir Alexandrovitch Rusanov, sponsored by Archangel merchants, undertook an expedition in 1912 and claimed, amongst other areas, the coal deposits around Coles Bay. His lead was followed in 1913 by the newly formed Grumant - A. G. Agafeloff Company, and in the two years three structures were erected on the east side of the bay.

The team documented a small derelict hut on a small hill top (Fig. 6B) which was possibly the first to be constructed. It was connected with Coles Bay via a dug-out track that has been truncated by the later railway from Grumant City to the bay. The Rusanov hut itself comprised an extension, housing a small museum dedicated to the explorer. Of the third structure which is evident in historic photographs, nothing remains. It would have been pulled down to make way for the railway.

Rusanov’s expedition and the Grumant - A.G. Agafeloff Co. - are forerunners of the Anglo-Russian Grumant Company who operated at Grumant City.
Results

The following features were recorded at the Rusanov hut at Coles Bay.

Feature 1  Wooden hut (“Rusanov hut”). Originally approximately 8.0 m x 6.5 m, extended to approximately 14.5 m x 6.5 m, in use as a shelter and museum.

Feature 2  Hut; wooden with roofing felt, approximately 3.3 m x 3.0 m, porch 1.7 m x 1.6 m, north-facing entrance, single bedstead, brick fireplace and chimney, derelict.

Feature 3  Track; from feature 2 to Coles Bay, truncated by later railway.

Feature 4  Flag pole.

Feature 5  Sawn-off wooden mast supported by cobbles.

Feature 6  Railway bridge; with an associated fond for other vehicles and pedestrians.

Feature 7  Dismantled railway line to Coles Bt, preserved as embarkment.

3.19 Grumant City

Introduction

To circumvent the terrible harbour conditions, brought about by shallows and numerous boulders, the team entered the steep valley on foot, but the journey was laborious and inconvenient. Freshwater streams traverse the valley, but the by-products of human occupation have rendered these unfit for drinking. At the bottom the team encountered a wealth of industrial remains (Fig. 69).

Due to time constraints, the team undertook a rapid reconnaissance survey with the aim to assess the nature and the conditions of the remains. The PDA was used to map the most obvious features, and digital photography noted additional details whilst drawings were not made.

The features on the site can be roughly divided into those on the slopes above the coal seams, the mine entrances and air vents associated with the coal seams, the transport system that initially began at the mines and led to the shore but which was then re-routed to join a tunnel to lead westward to Coles Bay, and the settlement that lay beneath the coal seams.
Results

The following features were recorded at Grumant City:

Feature 1  Upstanding building; long, side-gabled barrack, 2 stories high, brick with rendering and white wash, roof of sheet metal.
Feature 2  Upstanding building; a small and wooden hut with remains of roofing felt, blue paint.
Feature 3  sub-merged structure; linear feature possibly made of metal leading into the sea, possible pier
Feature 4 Upstanding building; side-gabled, 2-storey, of brick with rendering, roof comprises sheet metal.

Feature 5 Mine entrance; the building protecting the entrance is made of power plant bricks with several rows of decorative bricks, two parallel openings supported my metal beam lintels, cables entre the building at one corner, the roof is wooden, one opening is blocked by ice, the other shows two sets of narrow gauge rails.

Feature 6 Upstanding building; side-gabled, built on concrete piles, bricks with rendering and remains of blue paint, the roofing material is not discernible.

Feature 7 Spoil heap; to the east of Grumant City, accessible via rail embankment, possible signs of burning and bulldozer levelling.

Feature 8 Plant foundation; situated on uppermost terrace, made of concrete, surrounded by burnt wood, associated with metal fittings, a large winch, metal flywheel and machinery parts.

Feature 9 Building foundation; called the barrel store because the barely visible earthworks of a foundation are associated with numerous metal strips derived from barrels, signs of burning.

Feature 10 Dismantled railway; the track between the mine entrance (5) and the spoil heap in the east (7) survives partially as embankment only, partially as sleepers and narrow gauge rails, both single- and double-track, occasionally mining tubs stand on the rails.

Feature 11 Bridge; this survives as a chasm in the dismantled railway (10) on both sides of the stream, possible burning appears to have turned the surrounding soil red.

Feature 12 Dismantled railway, same as 10.

Feature 13 Mine entrance; adit into the hill, roofed and lined with wooden beams and occasional sheet metal, blocked with wooden logs.

Feature 14 Plant foundation; dug into the hill immediately west of the mine entrance (13), associated with wooden beams, planks, metal fittings and machinery parts as well as steel rope.

Feature 15 Tunnel entrance east; adit constructed of concrete with wooden supports beneath a concrete roof, opening blocked with sand bags, remnants of rails.

Feature 16 Tunnel entrance west; adit supported by wooden beams that have collapsed or sunk, opening not very high and associated with a number of rails that lead to tunnel entrance opposite (15) or along tracks on the opposite river bank (29).

Feature 17 Mine entrance; adit supported by wooden beams that have collapsed or sunk, opening not very high.

Feature 18 Spoil heap; elongated and flattened along the top with associated metal refuse; a dead end with no safe means to get either down to the river or up to the hut (2).

Feature 19 Building foundation; an uncertain building platform and many associated finds such as mining equipment and machinery parts, in disarray, signs of burning.

Feature 20 Dismantled railway, same as 10.

Feature 21 Mine entrance; not visited, though a support of thick wooden beams could be seen from a distance.

Feature 22 Track or path; below mine entrance (5) and buildings (19 and 28) the slope is flattened and levelled to suggest a trodden path, associated with small refuse heaps of a reddish colour and metal debris, possible signs of burning.

Feature 23 Upstanding building; L-shaped, 2-storey, with power plant bricks, rendering and signs of blue paint, roof covered in sheet metal, the NE sides has been ripped open and the view suggests a kitchen.

Feature 24 Track or path; linear flat feature leading from the mine entrance downhill.

Feature 25 Collapsed mine; above a certain mine entrance (13) is a large depression with numerous dispersed wood fragments, wooden beams lie nearby, it cannot be seen if this collapse is earlier than mine 13 or has affected it.
Feature 26  Collapsed mine; above a certain mine entrance (5) is a rectangular depression filled with cobbles and boulders as well as wood and metal rods, it cannot be seen if this collapse is earlier than mine 5 or has affected it.

Feature 27  Dismantled railway, same as 10.

Feature 28  Building foundation; noticeable for its many red bricks amongst its wooden supports which show signs of burning, associated with many discarded mining lamps.

Feature 29  Dismantled railway; the embankment under the line of wooden supports, sleepers and narrow-gauge rails has been washed away and the remains now hang precariously into the river, the line appears to come from the tunnel (15 and 16) but it is unclear where it leads to, associated with two large coal grabbers.

Feature 30  Plant foundation; the concrete structure is built on concrete piles and seems to have a ramp.

Feature 31  Mine entrance; this small hole in the ground appears to have been an air vent for the mine.

Feature 32  Dismantled railway; situated on a flat but narrow terrace between a mine entrance (33) and a possible transport system or coal shoot (49).

Feature 33  Mine entrance; adit looks much like features 17 and 43 with wooden beams supporting the opening.

Feature 34  Plant foundation; levelled ground looks much like a plant platform or even a building foundation, associated metal fittings.

Feature 35  Building foundation; accessible by broad stairs from the west and narrower ones from the east, rails lie across it which terminate at its edges.

Feature 36  Building foundation; across a grid of wooden beams wooden planks have been placed as flooring.

Feature 37  Building foundation; a large wooden platform on different levels connected by stairs, some metal remains, piles of an organic-rich clayey substance along the eastern side, next to a dismantled rail that runs down to the shore (46).

Feature 38  Building foundation with mast; founded on thick wooden beams with flooring of wooden planks, accessible via stairs on both west and east side, northern half higher than the rail that runs through it (40), but southern half continued at a lower level.

Feature 39  Dump; in the stream bed above the former bridge (11) lie numerous metallic objects such as large tanks, mining tubs, fence elements, possible monuments.

Feature 40  Dismantled railway; the track from feature 38 in the east to feature 35 in the west is associated with much wood, it is not known if the track was roofed.

Feature 41  Building foundation; small, close to the bottom of the spoil heap (7).

Feature 42  Track or path; constructed of wooden planks which have now slipped a little, leaves the small hut 2 and winds its way downhill to overcome the steepness of the slope, seems to end at building platform 35.

Feature 43  Mine entrance; large adit supported by wooden beams, the front ones have slipped but the interior appears intact.

Feature 44  Scrap metal; below mine entrance 5 lies a pile of scrap metal on what may have been a track or path (22).

Feature 45  Building foundation; a rectangular arrangements of wooden beams next to a wooden platform (37), possibly a continuation of the same building.

Feature 46  Dismantled railway; possibly a continuation of feature 24, previously recorded as a track or path, the rails partially survive and lead to the shore.

Feature 47  Metal tank; the large tank stands at the shore, two holes in the top show that it is empty.

Feature 48  Dismantled railway, same as 40.

Feature 49  Transport system; two parallel rows of wooden stumps could have been a coal shoot from the rail above (32), the line terminates in building remains (61), a set of bulldozer...
tracks appear to run from between these building remains and the larger platform 35 eastward across the river.

Feature 50 Dismantled railway; a track with occasional wooden sleepers leads from rail 10 below via a turntable or the like (51) to winch foundation 8.

Feature 51 Turntable (possible); located at a 90-degree turn in track 50.

Feature 52 Dismantled railway; same as 50.

Feature 53 Telegraph masts; a line of wooden poles comes down through the valley and seems to end above the winch foundation (8).

Feature 54 Dam; the remains of a dam comprising heavy wooden beams are found in the meltwater stream above the former bridge (110 and the dump (39).

Feature 55 Building foundation; this small wooden foundation was situated behind a barrack block (1) and may have been an earlier building on the site.

Feature 56 Plant foundation; the wooden remains were situated behind the barrack block (1) and may have been an earlier building on the site, they are in line with the mine (33) and plant (34) on the terrace above.

Feature 57 Building foundation; the grid of wooden beams was sketched by hand.

Feature 58 Track; the top of spoil heap 18 was elongated and flattened to allow for safe passage along it to deposit more spoil, the track is a dead end with no safe means to get either down to the river or up to the hut (2).

Feature 59 Dismantled railway; same as 40.

Feature 60 Track or path; footpath that leads up and out of the valley, no vehicle access.

Feature 61 Building foundation; only noticeable as level earthworks dug into the slope.

Feature 62 Building foundation; transport system 49 terminates here, a set of bulldozer tracks appear to run from between these remains and the larger platform 35 eastward across the river.

Conclusions

The reconnaissance survey concluded that the wealth of remains in such a restricted geographical location and from every major episode in the settlement’s limited lifespan warrants a survey by total station to maximise the information contained therein. Further archival research will show which remains in particular can be attributed to the activities of the Anglo-Russian Grumant Company and which remains can be attributed to the activities of Trust Arktikugol.

3.20 Kokerineset

Introduction

The LASHIPA 5 expedition included the continuation of the archaeological excavation of the pre-industrial whaling and hunting site of Kokerineset (Green Harbour). Many traces of whaling and hunting can be found at this site (Fig. 72): a whaling furnace on the shoreline (feature 1), an indefinable structure on a low terrace (feature 2), remains of a sod house (feature 3) and remains of a complex of log houses (feature 4), surrounded by ditches on the second terrace. Further, at least nine graves were found on a third terrace (feature 5) and another indefinable feature on the first terrace (feature 6). The site was probably first occupied by European (English) whalers in the 17th century, re-used by Pomor hunters in the 18th and/or 19th century, by Norwegian hunters in the 19th century, and by Norwegian coal prospectors in the early 20th century.
For the 2007 campaign permission had been granted by the Riksantikvaren (the Directorate for Cultural Heritage in Oslo) to excavate a total of 45-50 m² at four different features within the Kokerineset cultural complex. Test trenches were subsequently set out at feature 2, 3 and 4. The 2007 excavation was exploratory in character and the results of the excavation were published in the LASHIPA 4 report. The specific research questions of the excavation are:

* How did people exploit natural resources in the pre-industrial period, what parts of the killed animals did they use, what parts did they discard and what was the impact of their activities on the natural environment in the long run?
* How did people live under Arctic circumstances, what kind of accommodations did they build and how did people of different cultures adapt themselves to the same polar environment?
* What do archaeological objects tell us about the nature of the contacts between whalers and hunters in the 18th century?
* What was the character of the Pomor hunting station and how was the station organized?

The 2008 excavation team arrived at Kokerineset by a ship from Longyearbyen, the Farm, on July 28th. On August 15th the team was transported back by ship to Longyearbyen. At the site a camp was set up at the same location as in 2007, at a distance of at least 100 m from the archaeological features and on a spot with almost no vegetation. Protection against polar bears consisted of an alarm wire around the camp, flares and a rifle.

The fieldwork was carried out by a co-operating Russian and Dutch/Swedish team. The Russian team was led by Professor Starkov of the Archaeological Institute of the Academy of Sciences in Moscow and included in 2008 dr. Victor Derzhavin (archaeologist), Vitali Anuvrief (historian), Maxim Derbenev (technical assistant), Vladimir Prokurnov (translator, assistant). The Dutch team of 2008 included Professor Louwrens Hacquebord of the Arctic Centre of Groningen, PhD student Ypie Aalders.
(excavation leader), Sarah Dresscher (student archaeology), Martha de Jong (student archaeology), Wietske Aalders (assistant), Ben Bekooij (photographer).

Results

The 2008 excavation concentrated on the remains of huts at feature 4. In the 2007 campaign, 23 m² was excavated in the southern part of the complex. In 2008 permission had been obtained to excavate an additional 60 m² at feature 4. Figure 80 shows the location of the trenches in 2007 (white) and in 2008 (grey). In the 2008 campaign we decided to extend the 2007 trench (trench 1) in the northern and western direction (trenches 2-6, see Fig. 80).

The remains of at least three, and possibly even five huts, were uncovered by the excavation. The site was occupied during different periods, from the 17th century to the 19th century, and by different culture groups, making it difficult to determine during which period each structure was in use. Huts were often reused or demolished to collect new building material and new huts were constructed.

The terrain surrounding the site can become very moist and swampy, especially during the spring and summer months. In order to prevent the site from flooding, the huts were built on an artificially constructed terrace and ditches were dug out around the site, something which has never been found before at a Pomor hunting station. The terrace on which the huts were built appears to have been extended over time to the south and west.

One of the aims of the excavation was to find traces of western European occupation from the 17th century. Especially in trenches 3 and 6 we hoped to find a western European occupation layer since this part of the site is situated directly behind the English whaling furnace and seems to be the oldest part of feature 4.

However, no evidence for occupation by west European whalers was found in any of the trenches. We did find remains of huts (hut 1 and 2 in figure 81) in trenches 3 and 6 and although these do seem to form the oldest remains of the complex, the finds here do not indicate western European occupation. The presence of black Pomor pottery in this area indicates Pomors were active here. The remains of logs and boards we uncovered were in a poor condition. The structure standing here was probably demolished by newcomers in later periods so they could make use of the wood for building new huts.

In trench 3 we found a pile of grass sods which were probably placed against the walls of hut 1 for extra isolation. A concentration of bricks and layers of clay in squares 7 and 8 indicate the presence of a stove in this hut. Near this concentration a large wooden vessel, covered with tar was found. The
fabricated logs brought from Russia, but also used driftwood and wood from ships. The thick layers of wood debris and chips indicate a lot of shaping and working of the logs and boards was done at the site. The most intact hut (hut 3) was situated in the south and was partly uncovered by trench 1 and trench 2. This hut showed a typical lay-out that is typical for other Pomor huts we know in Spitsbergen. A stove was situated against the north wall of the hut. The hut was partly covered with a wooden floor. Remains of two very thick posts could be seen in the middle of the hut. These probably supported the sleeping platform. The hut was generally constructed in log-cabin style and measured about 5 x 4 m.

Hut 2 was situated directly adjacent to hut 3. Of this hut we only found the southern foundation log. A row of flat rocks in trench 3 indicated that another foundation log lay here. For all huts only parts of the foundations were preserved. There are no remains of the upperstructures. Most of the wood of the huts has not been preserved very well. It appears that the builders made use of pre-
vessel was probably used for water storage. Directly north of the stove and wooden vessel remains of a floor with thick wooden boards could be seen. The hut measured approximately 5 x 5 m. No foundation logs were found for this hut and too few remains were left to indicate whether the hut was built in log cabin style or in timber frame.

Structure 4 is partly attached to hut 2 and seems to have been built at the same time. In this space remains of wooden barrels were found, some very nice pieces of pottery and a big copper spoon indicating it might have functioned as a storage room.

Structure 5, situated west of 2 and 4 seems to have had at least two occupation phases. Remains from the first occupation consist of a floor of thick wooden boards. Also here a layer of wooden chips and bark was found below and on top of the floorlevel. Also a black charcoal layer could be seen through the whole area of the hut. Above this charcoal layer a gravel layer had been deposited and on this layer a structure with a furnace had been built (Fig. 82 ). In the opening of the furnace a large hammerhead was found (6 kilo). Around the furnace large stones had been placed. The furnace is not typical for a Pomor hut and was constructed in a later period by Norwegian hunters.

All the remains at feature 4 were covered with surprisingly thick deposits. At some parts layers of gravel could be seen, which was probably obtained from the beach for elevation purposes. The thick deposit could be the result from solifluction and erosion from the higher grounds.
Finds

The find list for 2008 has been included as Appendix 1. Majority of the finds consists of animal bones. Most of the bones are from reindeer. Meat from reindeer formed the major part of the diet of the hunters and the hunters made sure to kill a sufficient quantity of animals upon arrival to be able to survive the winter months. Further, the hunters made use of the furs, skin and antlers of the animals. Unfinished shoe soles and many small pieces of leather debris show that the hunters already worked with the leather at the site. Cutting marks on antlers we found show they also crafted these, possibly to make small tools or as leisure activity during the long winter months.

The furs of reindeer, polar fox and polar bear formed an important part of the Pomor trade goods from Spitsbergen and to obtain the best quality furs of these animals the hunters would have to winter on the archipelago.

Beside reindeer bones we found remains from seal, polar fox and walrus. Of walrus only parts of the skulls were found. Clearly, the hunters chopped of the heads of the animals at the kill sites and only brought the skulls back to the base camp. Traces of cutting and chopping on the skulls indicate that at the hunting station the hunters took the time to remove the valuable ivory tusks (Figs. 83 and 84). It is likely that also the blubber of the animals was removed and brought to the camp but this has left no traces in the archaeological record.

From historical sources we know the Pomors also hunted Beluga for their oil and skin. During the field campaign at Kokerineset we regularly saw groups of Beluga passing by in the fjord and the conditions for Beluga hunt seem good. In the excavation however, we only found one whale bone, part of a rib (Fig. 85). The bone has obviously been worked, but it is unclear for what purpose.

Very surprising was the discovery of a human skull in trench 5. Only the upper part was found. No other human bones were found in the excavation and there were no indications that it was a grave. Perhaps the skull was, for some reason, removed from the graves situated on the higher terrace.

Not many craft or hunting tools were found in the excavation. Two axes, a large hammer (probably not Pomor) and a knife were found. During the excavation about 450 ceramic sherds were collected. The sherds are generally very fragmented and no whole vessels were found. Due to the continuous process of thawing and freezing at the site, the sherds are not only broken but often also laminated. Most of
Figure 83. Pieces of Walrus skull. Photo: Ypie Aalders.

Figure 84. Cutting marks on a walrus jaw. Photo Ypie Aalders.

Below:
Figure 85. Crafted whake bone.
the sherds consist of typical black/grey Pomor pottery but also glazed sherds were found and some redbaked pottery with white slib, which could possibly be west European in origin.

The only finds from west European origin concern small pieces of clay tobacco pipes. Several pieces were found in the area of hut 2, 3 and 5. These pipes were not produced in Russia and must have been obtained from west European sailors or traders in either the ports of Russia or on Spitsbergen.

Summary

In August 2008 archaeological research was carried out at Kokerineset, Green Harbour. The historical complex at Kokerineset consists of the remains of a Pomor hunting station and an European whaling station, the remains of a sod house, at least nine graves and some indefinable structures. Archaeological excavations at the site were started in 2007, focusing on the gamme, the hunting and whaling station and a ship-shaped structure near the coast.

In 2008 the excavation concentrated fully on the hunting and whaling station (feature 4). The remains of at least three, possibly even five huts were uncovered. In all of these huts traces of occupation by Pomors was found. The size of the site, the amount of structures and the graves indicate it was a base camp. The thick layers of wood debris show that most of the shaping of the wood for the huts was done at the site. The whaling furnace near the beach indicates the site was also used by European whalers before the Pomors came here. However, no culture layer could be ascribed to occupation by European whalers. The only finds that are west European in origin are pieces of small tobacco clay pipes. These were found in Pomor context and indicate contacts between the Pomors and Europeans. Also some pottery sherds seem to be west European in origin.

Not many tools were found at the site. Numerous pieces of leather, unfinished shoe soles, parts of antler and bone with cutting traces show that the hunters already did a lot of crafting on the animal products at the station.

The large amount of animal bone remains collected during the excavation will provide insight into, among others, which animal species the Pomors hunted and in how efficient the hunters used the animal resources.
3.21 Longyear Valley (Longyeardalen)

Introduction

The field work at Longyear valley was performed by LASHIPA team 4, from Michigan Technological University in the USA. The primary objectives of the field work were to survey and document ACC Mine #1 and the ACC powerhouse and to digitally map the remains of four historic structures of Old Longyear City. A secondary objective was to complete the survey and documentation of ACC test pits in Longyear Valley, which was started during LASHIPA 4 in 2007. The survey team met all these objectives in the 2008 field season.

ACC Mine No. 1

Seth DePasqual and Cameron Hartnell performed the documentation of ACC Mine No.1. Wietske Aalders, Martha de Jong, Sara Dresscher, and Frigga Kruse provided assistance. Site documentation consisted of mapping and photography. These efforts resulted in the location and close inspection of numerous structural and technological features including those related to the mine surface plant, coal hopper, and Bleichert aerial tramway. The team made a detailed hand drawn site plan using a compass and electronic distance finder. It also photographed many individual features and made scale drawings of several important ones. The team complemented these efforts with a digital map made using a Trimble CX GPS.

As part of its classification system for features related to Arctic Coal Company history, the team designated the Mine No. 1 site complex as Area 5. The designation encompasses all Arctic Coal Company related mining features located on the northwestern slopes of Longyear Valley (Longyeardalen), above the remains of old Longyear City. Area 5 is comprised of features directly related to the operation of ACC Mine No. 1 including the mine surface plant, coal hopper, Bleichert aerial tramway, and other related surface elements.

The site complex has experienced various forms of disturbance. The most notable is that imposed by natural occurrences. Mountain slumping and erosion events have compromised portions of the mine surface plant and incline tramway. As a result, many related features have been either partially disturbed or completely obliterated. Other mine features have deteriorated through less intrusive events, associated more with the influences of gravity and decay. The Bleichert aerial tramway terminal bears...
witness to various stages of collapse. A large debris scatter found on the slopes immediately beneath the structural footprint reflects a related course of events. The coal hopper is presently the last standing structure at the site complex. Years of harsh weather conditions and soil movement have taken their toll on the feature. Much of the hopper’s structure is sagging; various elements are leaning and therefore compounding the pressures placed on related components. Without restoration work, the hopper structure is certain to eventually collapse.

Other features reflect more historic disturbances. The pit-mouth section of the mine surface plant is buried under mountain rubble and collapsed concrete. Its present condition reflects more of a blast event than natural phenomena. Much of this condition is related to the 1920 explosion, which led to permanent closure of the mine. Historic photographs taken shortly after the explosion corroborate discoveries made at the pit-mouth during the 2008 survey.

Additional features are affected by more subtle natural disturbances. All of the mine entries are now closed, attributable to gradual collapse and mountain erosion. Many of these features were barely recognizable; their locations identified by faint remnants of former compositions. An isolated case of looting was noted during the course of the documentation effort. In 1999, Dag Avango identified a horseshoe at the top of a waste-rock pile near the south end of Area 5. The artifact could not be relocated in 2008.

In sum, the LASHIPA team produced a detailed documentation of ACC Mine #1. Twelve separate features were designated to the Area 5 site complex. A variety of isolated artifacts were also noted. Individually, these items reflect a sense of use and abandonment, their locations providing evidence of purpose. Collectively, these features and artifacts convey broader concepts of arrangement within a larger mining system. The 2008 survey was successful in that it produced a more comprehensive understanding of the production system and related material remains associated with Arctic Coal Company Mine No. 1.

Feature 5.00  Coal Hopper. General Dimensions: 7 m wide x 30 m long x 11 m tall.

The Arctic Coal Company used the hopper for coal storage and constructed it to interface with the mine surface plant and Bleichert aerial tramway. The feature is framed of thick timberwork joined with a network of tie rods, timber brackets, and nail spikes. Most of the framework is “open” and devoid of planking, which once spanned between all heavy timberwork and helped contain the coal. The hopper rests on a concrete foundation, which is exposed on the north half of the eastern face. A timber sill represents the interface between foundation and framework.

The hopper rests on a level footprint measuring approximately 7 m x 30 m; the wider portion running parallel to mountain contours. The feature is approximately 11m tall and exhibits three levels of framework. The related footprint may not have been brought to complete level, as the interior floor surface is similar, (but not equal) to exterior slope angles. The interior floor is covered with slumping coal. Ten framed openings are equally spaced at the base of the bottom level. These openings are transfer portals, which once conveyed coal from the hopper down into empty aerial tramway cars. Although the coal portals once hosted coal chutes and related operative devices, no such evidence was noted at the feature.

Construction of the coal hopper commenced in 1907 and was completed by the fall of 1908. Foundation work was difficult in that large amounts of earth and rock needed to be cleared from the landscape to accommodate the large footprint. The hopper and Bleichert Aerial Tramway were built simultaneously. Total capacity for the hopper was 1100 tons. This amount filled quickly during winter production phases and the company had to seek alternative strategies for storage.
Figure 89. Site map of Area 5.

Legend
- Aerial Tramway Remains
- Other Artifacts / Remains
- Small / Possible Test Pit
- Mine Entry / Test Pit
- Telegraph Pole Base
- Structure
- Area of Debris
- Rail Car

Measured By: MTU / LASHIPA 2004-2008
Map Drawn By: Cameron Hartnell, October 2008
Contour lines measured in meters
Figure 90. ACC Coal Hopper from below. Photo: Larry Mishkar, LASHIPA 1,2004.

Figure 91. ACC Coal Hopper viewed from below. Photo: Larry Mishkar, LASHIPA 1,2004.

Figure 92. ACC Coal Hopper, north elevation. Drawing: Ulf Gustafsson and Seth De Pasqual.
Feature 5.01 Mine Surface Plant (Including Features 5.03, 5.06, 5.07, and 5.08)

The term ‘Surface Plant’ is used to describe a group of features located at the level of the mine’s main entry or “pit mouth.” This grouping is comprised of structural elements and artifacts including the pit mouth, coal chute remains (F5.03), the refuse dump for mine buildings (F5.06), the hoist house remains (F5.07), and the remains of the employee’s entrance (F5.08).

Most of the level surface that is present today was historically associated with the covered main entry and eating-house. The smaller section found directly south of the coal chute alignment likely hosted a portion of the blacksmith shop. Much of the south end has fallen into the drainage taking with it structural elements associated with the blacksmith shop, hoist house and ventilation tunnel entryway. The remains of some of these elements are found on the lower mountainside. A massive concrete wall segment was found roughly two-thirds of the way down the drainage. The segment mirrors the one presently standing at the south end of the pit mouth.

The eating-house remains occupy the northern half of the pit mouth platform. The feature is constructed of reinforced concrete and is composed of partially standing walls and iron roof supports. Using the standing wall section extremities as a guide, the discernable footprint of the eating-house measures approximately 12.5m N/S x 6.5m E/W. The western wall exhibits the tallest sections of concrete. This is where the eating-house sides up against the vertical sandstone outcrop. The southern end of the eating-house is largely obscured by natural rubble that has poured down from the mountain. The feature’s eastern wall has collapsed to the east, most of which is presently cantilevered over the edge of the retaining wall. With attention to the 2008 site drawing of the pit mouth, it appears that the eating-house hosted at least four individual rooms.
Longyear Valley’s Mine 1 was active between the years 1906 and 1920. The Boston-based Arctic Coal Company (ACC) opened the mine in 1906 and operated the property until its sale in 1916. Store Norske Spitsbergen Kulkompani (SNSK) purchased the property from the ACC and continued mining at the Mine 1 site until the fall of 1920. A catastrophic coal-dust explosion leveled the mine surface plant, killing 26 miners and laborers. The mine never reopened.

Contributing Features

Feature 5.03 Coal Chute Remains.

The coal chute is comprised of features found on top of and below the pit mouth platform. The east edge of the platform exhibits a large gap with an inclined plane. This gap served as a primary coal chute, which conveyed coal from the mine to a series of secondary coal chutes. The gap runs in line with the mine’s main entry, which is now covered with mountain rubble. The secondary coal chutes transferred coal to different sections of the coal hopper. The remains of these chutes are found beneath the platform and are comprised of sheet metal and timber pilings.
Feature 5.06 Surface Plant Refuse Dump.

The refuse dump for the Mine Surface Plant is located below the retaining wall and covers a broad area between the wall and the bluff edge above the coal hopper. The dump is spread wider at the bottom (east), fanning out from the top of the slope towards the bottom. This fanning is suggestive of the dump’s origin, which is the south end of the eating-house footprint. A doorway opening on this section of the eating-house lines up with the location of the dump. In a likely scenario, mine workers would exit the doorway and toss refuse items over the edge of the retaining wall. The dump is comprised of various materials including ash, coal clinker, iron artifacts, bottle fragments, cut bone, and other discard items.

Feature 5.07 Hoist House Entry.

Remains of the hoist house entry are located on the south side of the drainage that borders the south end of the pit mouth platform. The feature is barely recognizable, as slumping drainage material has obscured most of its character. Two vertical timbers and a protruding low-gauge rail identify the feature. One timber is found at the north end of a faint cut. This cut runs south for approximately 2.5 meters and then banks to the east where it intercepts the second timber. The cut appears to outline a portion of the now caved hoist house entry.

The hoist house was a recessed room carved into the mountainside. As the name implies, the feature housed the hoist that powered the Incline Tramway. The hoist was used to haul men and supplies up from the valley floor. Coal used for domestic purposes in Longyear City was delivered via incline tramway.

Feature 5.08 Employee Entry.

This feature is located approximately 24m north of the pit mouth platform’s northeast corner. It is composed of a single vertical post, which is largely obscured by local rock and earth.

No other features were noted in the immediate vicinity. Historically the entry was not a substantial construction. It was comprised of a timbered entryway that was capped with a projecting roof. The roof offered limited protection from rock and snow slides and was propped up with two vertical poles. Electricity for the mine interior ran through this entry.
The Bleichert-designed upper tramway terminal ran parallel with the long axis of the coal hopper. Empty tramway buckets entered the terminal on the uphill side of the tramway system. After entering the terminal, the buckets detached from the traction rope (continuous drive rope) and were diverted to a suspended track arrangement. The buckets hung below this rack and were connected by a long arm that interfaced with a rolling mechanism. Tram terminal laborers would then carry the empty bucket to one of the ten portals found at the base of the coal hopper. A lever was engaged and coal would pour from the open portal into the bucket. When the container reached capacity, the lever was released and the portal was shut. The laborer then pushed the loaded bucket around the suspended track system where it was then reattached to the traction rope. Gravity transferred the tram bucket to either an awaiting ship or to an open storage facility on the bluff near the base of the tramway.

In 1906, the Arctic Coal Company contracted with Germany-based Adolf Bleichert & Co. to construct a 4,000’ long tramway at their Spitsbergen coal mine location. Much of the timbering and ironwork associated with the Bleichert tramway was shipped to the mine location during the summer of 1907. Adolf Bleichert & Co. furnished the tramway’s iron components from the Leipzig factory as well as a competent engineer to oversee the construction project. All timberwork associated with the tramway was supplied by Trondheim area millers who cut the timbers according to Bleichert specifications. The tramway was completed in the fall of 1908 and remained in operation until the 1920 mine explosion. Portions of the tramway system including the buckets and braking apparatus were likely salvaged for use in other Longyeardalen mining systems.

The Upper Terminal feature is comprised of individual components and features related to the operation of the tramway system. The features include: Foundation Work associated with the Receiving Platform; Loading Platform; Machinery Mount Platform; and lower debris field.
Foundation and Sheaves
This section of the upper terminal is found below the northeast corner of the coal hopper and is comprised of foundation ruins, stepped levels of stacked rock, and a collection of cast iron sheaves. Although some of the original foundation work remains intact, most of the northern section has collapsed onto the lower mountain grades. Four rock pillars were observed within the body of intact foundation work. The location of the pillars is likely related to overhead placement of heavier equipment and machinery. Three individual cast iron sheaves are found at the top of the foundation work. They consist of a drive sheave, counter-rope sheave, and either a brake or belt sheave. All were related to the upper drive and braking assemblies.

Loading Platform
The loading platform consists of the features found southwest along the face of the hopper’s east elevation. This area ties in with features associated with the foundation section of the terminal. Features associated with this section include timber pilings, a band brake, beveled pinion gear and a hand hoist. Additionally, the area is covered with unidentifiable structural debris and small piles of coal that originate from the hopper’s open coal portals. The loading platform was a long, elevated deck where coal buckets were received, filled with coal, and then reattached to the tramway’s revolving carrier cable. The hand hoist may have been associated with a service area at the south end of the platform.

Machinery Mount Platform
The raised platform is located immediately north of the coal hopper’s north wall. The platform’s designation derives from the presence of concrete machinery mounts on its surface. The feature rests on a level fill pad that is buffered on the north and east sides by rock retaining walls. The area measures approximately 5m NW/SE x 10m SW/NE. The east face of the platform is elevated above the three iron sheaves and foundation area. The northernmost portion of this wall has collapsed towards the drive and counter-rope sheaves. Three standing machinery mounts are located on top of the platform. A fourth has collapsed onto the same surface that the iron sheaves rest upon. Two of the mounts are located towards the north end of the platform. They are placed square to each other and to the adjacent hopper and terminal. A smaller machinery mount was noted at the southern end of the platform, near the east end of the hopper’s north wall. Although speculative, all four machinery mounts are presumed to be associated with the tramways braking apparatus. The system was supplied with a hydraulic governor, which governed the speed of descending tramway cars.

Figure 99. Tramway sheaves. The counter-rope and drive sheaves are at left. The brake sheave is partially obscured in the foreground. Photo: Seth Depasqual, LASHIPA 5, 2008.
Lower Debris Field

A variety of tramway related features were found scattered on the slopes beneath the tramway terminal. These features stretch from top to bottom; their locations suggestive of a collapse event and subsequent dispersal by erosion and other natural phenomena. Features include suspension hangers, elevated track sections, track sections for attaching/detaching tram buckets, timber brackets, timber sections, and a collection of debris items that could not be identified. The locations of these features are presented within the Area 5 site map.

Figure 100. View of machinery platform and coal hopper. A concrete machinery mount is visible at left-center. Photo: Larry Mishkar, LASHIPA 1, 2004.

Figure 101. Suspension hanger with coupling attachment. The coupling attachment was used to divert / reattach tram buckets from the carrier rope. The buckets were suspended from the elevated track. Photo: Cameron Hartnell, LASHIPA 5, 2008.

Figure 102. Measured drawing of Drive and Brake / Belt Sheave. Drawing: Seth DePasqual.
The entry is located on the Level 2 coal seam, S/SW of the Mine Surface Plant (F5.01). It rests beneath a prominent outcrop. The feature is comprised of a collapsed entry, waste rock dump, the remains of a tramcar trestle, an adjacent pile of timbers, and a small collection of related artifacts. The collapsed entry is presently buried underneath earth and rubble. Two low-gauge tramcar rails that protrude from the rubble identify its location.

A pile of heavy timbers rests on the ground approximately 15m southwest from the collapsed entry. The pile is comprised of approximately ten individual beams resting parallel to each other. The size and dimension of all related timberwork suggests they were intended for use either inside the mine or on an entry exterior. Three small iron legs were found on the hillside approximately 2m below the timber pile. All three are equal in size and shape and resemble those found on small cast-iron box stoves.
Created sometime between 1906 and 1912, the entry was initially a small recess used for powder storage. This opening was further developed between 1912 and 1913 to serve as a supplementary portal for the removal of waste rock. The entry was situated on the south side of the mine workings and was created as a response to a dip in the coal seam.

Figure 105. Feature map for Waste Rock Entry

Feature 5.05 Lower Rock Dump

The feature is comprised of a large waste rock dump and two low-gauge rails. The rails are located at the top of the rock dump at the center of a small, leveled surface. The present angle of the rails suggests that they ran back towards the incline tramway corridor (northwest). Both are parallel to each other with an 80cm gap in between them. True length of the rails is unknown as the west ends are covered with earth and rubble. The purpose of this dump is not presently known. If related to a waste rock dump, the location would be relatively inefficient in respect to Waste Rock Entry’s 1 and 2 (F5.10 and F5.04). The dump could possibly be related foundation work for the coal hopper. No mention of the dump has been identified within available company records.
The Level 3 Entry is located approximately 18.3 m above ACC Mine No. 1 and is comprised of a collapsed mine entry, stacked wall and timber. The entry location is obscured by mountain rubble. A partially intact rock wall is visible at the south side of the entry. The same rubble that covers the entry obscures the north wall. Two vertical round beams were observed; one at the western end of the south wall, the other at the east end of where the north wall would be. No other timbers were noted. The entry feature is located at the base of a steep outcrop.

The entry measures 2.6m wide E/W by 4.8m long N/S. The rear (westernmost) section of the entry is obscured by rubble. The entry runs on a 76°/256° axis. The entry was opened on the Level 3 coal seam in 1908 and was operated as an exploratory effort. The workings were eventually abandoned, as the quality of related coal was deemed unmarketable. The entry was closed by 1912.

Located approximately 50m s/sw of the Mine Surface Plant, the entry is comprised of a small rock wall, a low-gauge rail, and two vertical timbers. The most visible portion of the entry feature is a section of stacked rock wall. The wall runs approximately 3.3m on an NW/SE axis. The uphill side of the wall is obscured by earth and rubble. The downhill side of the wall turns to the south and then tapers off. This turn represents the eastern end of the entry cut. This rock wall also represents the south side of the entry. A similar wall would have been located on the north side of the entry. This wall appears to have been covered or obliterated by natural slumping and erosion. A single low-gauge rail protrudes from the mountainside near the north side of the rock wall. The location of this rail is synonymous with a tramcar track system that would have run from the mouth of the entry. No other artifacts were observed.

No detailed information on the entryway currently exists. It was likely opened for use as a waste rock dump. The entry first appears on 1913 mine maps and appears to be the exit portal for a related rock drift. It should be noted that a related waste rock dump was not observed at this location during the 2008 survey. It is currently presumed that natural slumping and drainage activity may have obliterated most of this dump.

The remains of twelve individual tram towers were mapped during LASHIPA 1 in 2004 and again in LASHIPA 5 in 2008. The towers are numbered from the upper terminal. Identified remains are comprised of stone foundations and collapsed tower frames. The foundations are constructed of local rock and mortar. The bulk of all foundation work is found on the east side of the footprint. This is the
downhill side of the foundation where much work is necessary to bring the foundation to level. Iron mounting rods were noted on some of the foundations. The rods rise vertically from the foundation and were used as anchor bolts for tower framework. Ironwork related to the tower constructions is comprised of protection rollers, guide rods and protection saddles. All tower frameworks have collapsed onto the lower hillside. Although Tower 3 was standing during the 2004 survey, the tower has since collapsed, which was noted during a 2007 site visit. The towers are comprised of thick timber framing and ironwork associated with its assembly and that related to the operation of the tramway system. The towers were of the ‘through-truss’ design, where tramway buckets would travel through a framed window in the tower assembly. Each tower had two “windows”, one for the loaded buckets (downhill) and one for the empties (uphill). An improvised ladder was usually mounted to one of the tower legs.

Two separate track ropes were identified on the mountainside. These ropes were found between Towers 1 and 11. Both ropes disappear into the ground between Tower 11 and 12. The ropes are of different diameters, which corresponds to their use as either an empty or loaded rope. Heavier gauges were necessary for buckets loaded to capacity. The loaded rope (downhill) measures 38mm while the empty rope (uphill) measures 26 mm.
Cameron Hartnell and Seth DePasquale investigated and documented the remains of the ACC powerhouse, located at the foot of a hill on the southern side of Longyearbyen’s warehouse area. It stands around 75 m south-east of a 1921 powerhouse built by Store Norske, also disused. The remains are scattered and highly disturbed, offering only fragmented evidence of the past structure here. It appears that machinery demolished the structure and moved much of the remains to one side and earth-moving machinery has removed the northern section of a flat area that the powerhouse once rested on.

In late 1909, in response to a positive assessment of its coal lands, the Arctic Coal Company decided to upgrade its coal mining operations in Longyear Valley from a small-scale test facility mostly powered by human and animal energy, to a larger, more efficient operation powered by electricity. The powerhouse it built was badly constructed and some of the equipment was poorly chosen and the facility provided an unreliable service for the company. As much of the mining operations after 1910 relied on electric or steam power in some way, issues with the facility affected the entire industrial system. The ACC expanded and improved the facility in 1913 but remained unsatisfied with the facility at the operations sale in 1916. Store Norske further upgraded the plant in 1917 with a diesel motor plant. At around 1920,

Store Norske began construction on a much larger power plant adjacent the ACC plant, abandoning the original plant upon completion of the new facility.
Figure 112. A measured plan of the ACC powerhouse remains.
3.22 Sassendalen, Elveneset

LASHIPA team 4 surveyed the area east of Elveneset, on Sassendalen, for remains of an Arctic Coal Company claim hut and evidence of prospecting in the adjacent hills. The team found the wooden frame of a small hut, presumably built by the Arctic Coal Company, adapted into an A-frame hut. They found ancillary structures from several periods of occupation but found no evidence of any prospecting. The team photographically documented each structure and produced a measured plan of the finds. They digitally mapped the site by GPS.

The physical evidence suggests three periods of occupation. The Arctic Coal Company built the hut here in 1907 (period 1). It appears that a hunter later adapted the hut to be a satellite station for hunting (period 2). Finally, the site appears to have been used and partially adapted for recreational purposes (phase 3). In this final phase, a picnic table was built and the hut was adopted as a safety station and emergency food and petrol cans were supplied there.

Feature 1 and Feature 2 A rectangular prism hut frame (ACC) with a small A-frame hut (hunters hut) forming its west side. The layout and construction of the ACC hut appears somewhat improvised and is in poor condition. The frame sits on the ground with no foundation and is out of square. The hut has a flat roof with cut timber cross beams but no sheathing material. Only a fragment of the wall sheathing remains, attached to the northern wall. A few support posts and the A-frame help prop up the structure. A wooden ladder and simple wooden sled remain inside the hut.

The north-south axis of the A-frame hut sits on the former western wall alignment of the ACC hut, holding its two roof cross beams. It appears that later occupants of the area, probably hunters, used timbers from the ACC hut to construct this hut. It has a simple frame sheathed with several layers of alternating horizontal and vertical boards and a layer of tarpaper. The hut has a small detachable wooden door with a small plastic window constructed into its south side. Reindeer antlers hang over the door. The north side also has a small plastic window, this one with a wooden cover. Internally, the hut features a flat wooden sleeping platform that covers the majority of the floor space, a small area of ground by the door that has an unusable rusted iron stove with a flume projecting out of the roof, a shovelhead and a metal water pail, and several shelves. It stands in good condition. Heavy timbers buttress the hut on the north and south side. Survival food stored inside and numerous petrol tanks outside show that the hut serves a survival function today.

Features 3 & 5 Two fire pits made by a circle of stones. Surrounding one fire pit is a simple timber rectangular structure of unknown use.

Feature 4 A simple picnic table and benches stand just to the east of the attached huts, probably built using timbers from the ACC hut.

Feature 6 Coal bits.

Feature 7 A rectangular depression of unknown origin, approximately 1.5 m x 1 m.

Feature 8 A small square depression that may have been part of a privy structure.

Feature 9 A survey marker set into a stone reading “Norske Polarinstitutt 1977”.

Feature 10 The timber remains of a possible rowboat, 160 cm wide by 330 cm long, approximately 136 meters west of Features 1 and 2, and adjacent the De Geer River drainage. The possible boat rests upside down on the ground and most of its base is missing. The stern is flat and its western half is missing. A low sod mound and some large stones are adjacent the remains. Timbers of different shapes, some ill suited to a functional boat, suggest either that the rowboat was altered or that it served a different function.
Figure 113. Location plan of the Arctic Coal Company hut at Elveneset. Plan by C. Hartnell, November 2008.

Figure 114. Photograph of the ACC / A-frame hut (left) and picnic table (right) in front of an unidentified rectangular structure, looking north. Photo: C. Hartnell, August 2008.

Figure 115. Photograph of the possible rowboat remains. Photo: S. Depasqual, LASHIPA 5, August 2008.
3.23 Bear Island

Bear Island is a small island located in the middle of the Barents Sea between Norway and Spitsbergen. The island was discovered by a Dutch expedition led by the famous pilot Williem Barentsz in 1596, who also named the island “Beeren Eylandt” after having encountered a Polar Bear. The northern part of the islands landscape is rather flat and rocky, while its southern part is dominated by a mountainous area. The island contain a large number of small lakes and rivers that throughout history has supplied numerous people, industrial ventures and expeditions with freshwater.

Team 3 of the LASHIPA 5 expedition, surveyed a number of sited on Bear Island. Below, an overview map indicates the sites that were visited, mapped and investigated by the team.
3.24 Herwighamna

Introduction

Herwighamna is located on the north side of Bear Island, where access to the island is relatively easy. The area is flat and exposed to winds from all directions. In the area there are cultural remains spanning over two hundred years of activities: 1) Hammerfesthuset from the early 19th Century, 2) Tobiesen house, 3) Deutsche Seefischerei Verein activities. Today, the area is dominated by the Norwegian Meteorological Station facilities.

Hammerfesthuset was erected in 1822 by two Norwegian merchants (probably Akermand & Aagaard), as a wintering hut for hunting expeditions. The following year the two organised a wintering expedition for 9 men. This is the first known Norwegian wintering at the island. Over the following years, several hunting expeditions used the hut.

In 1865-66 Sivert Tobiesen of Tromsø, including a crew of six wintered in a hut erected as accommodation for the hunting expedition members. During this wintering Tobiesen also kept a diary where he notes meteorological observations. These observations were later published and Tobiesen was awarded a silver-medal for his work by the Swedish Academy of Sciences. In 1892 the hut was sold by his wife to Andreas E. Schrøder who seven years later sold it to Tromsø Fishery Association. In 1921 the hut was taken over by Bjørnøen A/S.

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Approximately three decades later, in 1897, a plan aimed at sending an expedition to Bear Island with the purpose to claim the island for the nation, was formed in Germany by the Imperial Ambassador in Emperor Wilhelm II entourage. This confidential letter stated that the claim could be used as a future compensation object against Russia. The Deutsche Seefischerei Verein expedition was dispatched on three ships, and its purpose was to establish a base for German whaling and fishing interests. A small piece of land at Hertwighamna was claimed and named after the company’s president. During the years 1898-1900, seven whales were caught and processed at Hertwighamna. In 1912, the steam engine is believed to have been used for drilling operations in the area.

Results

Feature 1  
Timbered wooden hut (6.4 x 4.4 meters) erected in 1822. The entrance door is on the northern and southern sides. There is a large flat rock just outside the northern door entrance. In the south, a small pathway has been established which runs alongside the wall in an east-west direction. With the exception of the two doors, there are no other openings such as windows.

![Figure 117. Feature 1. Hammerfesthuset. Photo: Gustav Rossnes, LASHIPA 5, August 2008.](image)

The hut is in good condition, and the roof has recently been restored by the Governor of Svalbard. This restoration has however made the hut almost completely tight, leaving no flow of air circulation through the hut. The air inside is damp and the team decided to ventilate for a few hours.

Feature 2  
Timbered wooden hut (6.9 x 6.0 meters). Only parts of the original extent of the hut remain due to rotting. The roof of the hut has recently been restored by the Governor of Svalbard with tar-paper. The foundation is resting on large rocks stacked on each other in the north and west. On the east and southern side, the foundation is resting on the ground.

The hut is located directly south of the Hammerfest house, and they are divided by a small rocky pathway, approximately 1.5 meters wide. The two huts have probably been attached by a roof, as there are incisions made in the wall of the Tobiesen hut indicating this.

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2 Ibid. P: 442ff.
Feature 3: Remains of the Deutsche Seefischerei Verein house (19, 9 x 5, 9 meters) erected in 1898-99. Originally a solid prefabricated wooden construction with plenty of details, that stands on a foundation on rocks that contain concrete. Parts of the original wooden floor are still visible in the western part of the house. The house was originally insulated with a woollen fibre and tarpaper. The house stood for a long time, and according to verbal information, the construction collapsed during a storm in 2003.

Feature 4: Deutsche Seefischerei Verein steam driven engine. The engine was originally used for processing whales, and later used as an engine for drilling operations in the area. Today, the artefact is in poor condition.
3.25 Nordhamna

Introduction

Nordhamna is a small peninsula located on the northern side of Bear Island, due west of Bear Island Meteorological station. The cultural remains are concentrated on a small outcrop, and the area contains remains spanning over hundreds of years. The remains of a Pomor-station, located there, that played an important role in sovereignty conflicts over the island that took place at the turn of the 19th Century.

The foundations of Pomor huts oriented in an east-west direction surrounded by a drainage ditch. In the central part of the north-eastern part of the station, there are two wooden poles that originally held a sign, placed there in 1899 by Captain Abaza of the Svetlana. Originally the sign contained the following text: “Belongs to Russia. Appartient a la Russie. Capitaine Abaza. Croiseur Svetlana”. The station seems to have had at least two rooms.

Directly north of this feature, there is a pile of rocks. Its function remains unknown. On the north-eastern part of the peninsula, there is one remaining grave. The site is slightly exposed to erosion from the sea, and one grave has already erashed into the sea below. The grave will probably be gone within a few years due to the high level of erosion.

In the north-western part of Nordhamna, there is a foundation of a hut that contains a number of interesting artefacts.

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Results

Feature 1  Elevated hut foundation with earthed walls (5.7 x 5.7 meters) that surrounds an interior wooden foundation (3.4 x 4.2 meters). In the centre of the feature, there are two wooden poles originating from Russian claims in 1899.

Feature 2  Drainage ditch running in N-S direction. Approximately 20 cm wide.

Feature 3  Slightly lowered part that comes down and tilts from east to west. Can possibly be remains of an extension made to feature 1, but only archaeological investigations can verify this.

Feature 4  Two holes in the ground located in the southern part of the station.

Feature 5  A large pile of rocks located in the southern part of the station, and that seem to have collapsed. The rocks do not bear any marks of fire.

Feature 6  Earthed wall, approximately 40 cm thick. It is probable that the wall surrounded the original building/buildings.

Feature 7  Pile of rocks with an approximately 1.2 meters high wooden pole that stands in the centre. A long metal chain is located in the pile. The entire feature contains scattered parts of concrete, and it is not unlikely that it has functioned as a flagpole. It is located on the brink overlooking the beach and is clearly visible from the sea. The feature is surrounded by a drainage ditch.

Feature 8  Single grave surrounded by a chain attached to four wooden poles. In the central part of the grave which is aligned in an east-west direction, there is a large metal cross without any inscription. It is possible that the grave originates from the St. Sebastian boat wreckage in the 1920s.

Feature 9  Hut foundation (4.2 x 3.5 meters) consisting of rocks and gravel. The eastern part of the feature is not visible in the ground. The feature contains several highly interesting artefacts such as flint-stone, traan-betong and red firebricks. Directly north of the feature, there seems to be a small drainage ditch that runs over the edge to the sea brink.
Figure 121. Feature 1. Foundation of a Pomor hut including the foundation of two wooden poles originating from the Svetlana affair in 1899. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 122. Feature 7. Wooden pole surrounded by a pile of rocks and a metal chain. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 123. Feature 8. Grave located on the north-eastern brink of Nordhamna. The grave is highly exposed sea erosion. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
Figure 124. Artefacts located within feature 9: flint-stone, traanbetong, charcoal and pieces of red firebrick. Photo: Gustav Rossnes. LASHIPA 5 August 2008.

Figure 125. Feature 1. Foundation of Pomor hut / huts consisting of elevated earthed walls. For further description, please see Appendix.
3.26 Gravodden

Introduction

Gravodden is located on the north side of Bear Island, in the direct vicinity of the present day Meteorological Station at Hertwighamna. This sandy area contains four graves and several other cultural remains.

Gravodden is comprised of a relatively loose sandy material, which possibly is the reason for that the area has been used as a burial site. The site is located on a very exposed place on the northern side of the island, making it a suitable place for sea-markers, flagpoles and claim boards.

Results

Feature 1 Grave comprised of stacked rocks including remains of a wooden cross in its northern end. The grave is oriented in an N-S direction unlike Christian burial traditions. Parts of the coffin are visible in the northern part.

Feature 2 Grave partially covered with rocks and vegetation. In its western part there are remains of a wooden cross. The grave is oriented in E-W direction.

Feature 3 Grave consisting of stacked rocks including the remains of a wooden cross in its western part. The grave is located high on Gravodden and is oriented in an E-W direction. The grave is highly exposed to coastal erosion.

Feature 4 Grave consisting of stacked rocks. In its western part there are remains of a wooden cross. The grave is oriented in E-W direction. The grave is significantly wider compared to the other graves and could possible be a double grave.

Feature 5 Square wooden pole surroundes by rocks, located on an elevated point at Gravodden.
Feature 6  Wooden foundation for flagpole, partly broken off. The feature is placed on the highest point in the landscape and close to the brink overlooking the sea. The feature appears on the Deutsche Seefischerei-Verein map over the area.¹

3.27 Antarcticfjellet

Introduction

On the northern slope of Antarcticfjellet there are remains of a lead mine. The lead-vein has been exploited from several entrances that almost all have collapsed. The mines are very shallow, and only the top part of the lead veins seems to have been exploited. The mine display remains of a transport route which connects the mine area with the shipping area at Russehamna. The route is difficult to distinguish in the landscape in the direct vicinity of the mine and is only visible for a short distance a few hundred meters away where it runs in the direction down towards Russehamna and the shipping area. It is likely that the company used a horse to pull the mined minerals down for shipping, and that they also facilitated the buildings by Krillvatnet for both accommodation and stable.

Lead or galena was discovered at Bear Island already in 1603 by a British expedition under the leadership of Stephen Bennet. In 1609 Jonas Poole claimed the island for the Muscovy Company in London. During this visit Poole found at Måkeholmen: “three Mynes of Lead Ure” and on the north-eastern side of the island his expedition encountered coal. The lead and coal deposits between Kvalrossbukta and Mount Misery were re-discovered and re-claimed in 1909 by the Norwegian Morten Andreas Ingebrigtsen, and on the 7th of June the same year he notified the Norwegian Ministry of Foreign Affairs that he claimed the part of the island situated in a straight line from the head of Sørhamna to Nordhamna. Later, in 1915, Ingebrigtsen extended his claim so that it included the part of the island situated east of the previous claim. In 1915 the whole island was claimed by the Stavanger based company A/S Bjørnøen Kulkompani. In December the company bought the rights to Ingebrigtsens claims and buildings. Small amounts of the lead deposits were exploited by the company from a vein north of Russehamna. The lead deposits at Antarcticfjellet were found in August 1926, but despite of this, no mining was done of the ore. During the summer of 1927 five men worked the deposit but none of the lead was shipped that year. In 1928 A/S Bjørnøen mined 101 tons of lead, of which they shipped 96 tons from the loading facility at Russehamna. The following years 1929 and 1930, the company produced another 63, 5 and 69 tons. The exploitation of the lead deposits at Antarcticfjellet was cancelled after a discouraging report of the Commissioner of Mines at Svalbard.

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2 Ibid. P: 112.
3 Ibid. P: 128.
4 Ibid.
5 Ibid. P: 128.
6 Ibid. P: 129.
8 Ibid. P: 1430.
9 Ibid. P: 1431.
10 Ibid: P: 1432ff
Results

Feature 1  Collapsed mine shaft .
Feature 2  Pile of waste rock, located north of F1.
Feature 3  Collapsed mine shaft, located east of F1.
Feature 4  Pile of waste rock with wooden planks on top, probably remains of the transport system from the mine down to the shipping area by Russehamna.
Feature 5  Area with wooden planks and scattered parts of corrugated iron
Feature 6  Pile of waste rock
Feature 7  Collapsed mine shaft located south of F4-F6
Feature 8  Pile of waste rock with parts of metal rail on top.
Feature 9  Mine entrance.

Figure 131. Feature 9. Mine entrance. A few meters into the mine, the roof has collapsed. There are large amounts of galena minerals scattered in the area. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Feature 10  Broken whale harpoon.
Feature 11  Foundation of collapsed hut/shed located at an elevated place in the landscape overlooking the mining area.

Figure 132. The road connecting the lead mine with the shipping area at Russehamna is visible for a short distance on the ridge in the slope behind Ulf Gustafsson. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
3.28 Russehamna

Russehamna is located on the south-east side of Bear Island. All huts and remains are located on a small ridge overlooking the harbour and the Russeelva stream which has its outlet just below. This stream has most likely functioned as a freshwater supply for numerous expeditions visiting the island. The site contains cultural remains spanning over hundreds of years and nationalities, and has on several occasions been a focal point for struggles over the legal status/sovereignty over the island. The team also investigated the area for the three iron-wedges that were established by A.E. Nordenskiöld in 1863-64, in order to measure tidal fluctuations. Unfortunately no traces of these were found, and it is likely that they have been removed by 144 years of erosion. It is not known exactly when the hut was erected, but most likely during the 18th Century. The hut was probably not in a good state in 1833-34 when a group of Norwegian erected a new hut beside it.

The lead and coal deposits between Kvalrossbukta and Mount Misery was originally discovered and claimed by the Norwegian M.A. Ingebrigtsen in 1909. In 1915 Ingebrigtsen sold his claims to I/S Bjørnøen Kulkompani, who reported the transfer to the Norwegian Ministry of Foreign Affairs on the 4th of October. The company mined small amounts of minerals were from a vein north of Russehamna. In spite of the knowledge of the deposits, almost none of the deposits were exploited until October 1924 when Theting and Orvin found pieces of lead on the hill slopes west of Krillvatnet. During the winter of 1925-26 mining works were conducted by Bjørnøen A/S in order to explore the resource further, but due to poor results the work was suspended. In 1926 the company shipped 75 498 kilos of lead-ore from the loading area at Russehamna in two loads. It is likely that the shipping ramp at Russehamna originate from this exploitation.


2 Ibid. P: 128.
3 Ibid. P: 128.
4 Ibid. P: 129.
5 Ibid. P: 101
Results

Feature 1  Foundation of a Pomor-hut (2.6 x 4.0 m), probably a secondary station. Remains of wall in the south-western corner of the feature. Elevated earthed wall surrounding the remains.

Feature 2  Foundation of older Norwegian hunting cabin (5.8 x 4.1 m). On historical photos it is seen that the hut was constructed from wooden beams joined together. Today, a field-cabin similar to the Norwegian Polar Institutes A-shaped pre-fabricated cabins stands on the site. The hut was erected in 1833 or 1834 by Ebeltoft and Pettersen from Tromsø for wintering purposes.1 The following winters, several people are believed to have used and wintered at the site. The winter 1834-35 one person died and was probably buried in the area. It is not unlikely, that the grave found south-east of the hut (Feature 6), are the grave of this person. In 1899 J.G. Andersson reported the presence of the hut, however two years later there was nothing but a pile of logs remaining of the hut. It is likely that the hut was disassembled by hunters who reused the material for other purposes, as Skipper Frostd reported in 1901 that nothing but the foundation remained.2 Today, a more recent A-shaped cabin has been erected on top of the remains of Feature 2.

Feature 3  Wooden hut standing on wooden poles. Secondary added part in the north with a kitchen and storage room. Currently the hut is being used as leisure cabin by the personnel at Bear Island Meteorological Station. The hut was erected in 1975 by personnel from the Bear Island Meteorological Station.

Feature 4  Foundation of a hut (2.5 x 2.5 m) erected by T. Lerner in 1898-99. On historical photos it is obvious that this pre-fabricated hut was rather simple in construction, and its main function was most likely to function as an actant to his claim. Today, a small shed stands on the site and is being used as storage for fire wood and other equipment. It is not unlikely that the shed is comprised of the remains of Lerner’s hut. In 1898 the German Theodor Lerner organised a private expedition to the island, the Helgoland Expedition.3 During the same year the expedition claimed large parts of the island with the purpose of commencing whaling, sealing, mining and much more.4 The exact date of the erection of the hut is unknown, but most likely it was erected in 1898.

Feature 5  Remains of shipping facility for lead ore (13.0 x 6.0 m). Consist of massive wooden beams placed parallel at the brink of the shore in a north-south direction. Beside the feature there are visible traces in the ground from the transport route going from the mine.

Feature 6  Imprints in ground after shipping of lead-ore from the exploration site to the shipping area at Russehamna.

Feature 7  Grave located on the ridge south-east of the other features at Russehamna. The grave is aligned in an east-west direction, and consists of stacked rocks. Parts of the wooden coffin are visible. Beside the grave, a fixpoint for mapping is hammered into the ground. The pole holds a small aluminium plate stating: AMV 92. The winter 1834-35 several people wintered at Russehamna and one person died in the course of the winter. It is probable that the person was buried in the vicinity. It is common burial practices to place the graves on an elevated spot in the landscape. It is not unlikely, that the grave found by the LASHIPA team south-east of the hut, are the grave of this person.

2 Ibid..
Figure 133. Foundation of Pomor hut. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 134. Feature 2. Foundation of older Norwegian hunting cabin and a present day pre-fabricated A-shaped field cabin. Photo: Gustav Rossnes, LASHIPA 5, August 2008.

Figure 135. Feature 4. Remains of T. Lerner's claim hut. Photo: Gustav Rossness. LASHIPA 5, August 2008.
Figure 136. Feature 5. Remains of lead ore shipping and transport route. Photo: Gustav Rossnes. LASHIPA, August 2008.

Figure 137. Feature 7. Gave located south east of Russehamna huts. Photo: Gustav Rossnes. LASHIPA, August, 2008.
3.29 Walrus Bay

Introduction

Walrus Bay is located on the south-eastern side on Bear Island, just north of Sørhamna. The site represent in addition to Sørhamna, one of the few harbours on the south-eastern side of the island. The site contains features from German claiming activities, a Norwegian whaling station, two graves and a German Second World War weather station.

Area 1 - Walrus Bay whaling station

Walrus Bay whaling station was erected during the summer of 1905 by the Norwegian M.A. Ingebrigtsen and his crew. The station was operational until 1908, and has remained abandoned ever since.

Results

Feature 1 House foundation of rocks (12 x 9.8 m) on the brink south of the production area. Originally the feature consisted of one large house with one small extension in the south. In the central part of the feature there is a small pile of red firebricks that probably descends from an oven, but yellow bricks are also scattered within the feature reading: “HEDDA” & “ATLAS”. The house had at least one chimney in the main building and one in the small extension to the south. The feature is the remains of the accommodation house for workers and foreman that operated on shore, while the owner M.A. Ingebrigtsen hunted whales with his catching boat.
Feature 2  Earthed/paved road connecting Kvalrossbukta with the top ridge overlooking Sørhamna. The road was constructed by the German Theodor Lerner in 1898-1899 in connection with him erecting a hut that originally stood on the brink overlooking Sørhamna.

Feature 3  Steam boiler located on a small ridge by the shoreline at Kvalrossbukta. The feature was used for producing steam for the winches and the cookers.
Feature 4  Parts of a wooden floor that sticks out under feature 3 and extends out to the beach. The floor is vegetated, and large parts of it have probably been eroded away by ice and sea.

Feature 5  Levelled foundation (4.3 x 4.1 m) with wooden beams in the northern and eastern side.

Feature 6  Foundation of a hut or shed (5.8 x 4.5 m), partly vegetated. Parts of the wooden beams are still visible in the eastern part of the feature. The inner part of the foundation has been levelled to a flat surface. It is not unlikely, that this feature used to contain a rotating blubber cutter which cut the long pieces of blubber into smaller pieces which enabled them to be filled into the cookers.

Feature 7  Slightly lowered area (5.8 x 1.7 m) between feature 6 and 8 that contain four wooden beams aligned in a W-E direction. This feature is possibly the remains of an “elevator” used for transporting the pieces of blubber up to the second floor of feature 8, where they were filled into the cookers.
Feature 8 Elevated and levelled foundation consisting of earth (6.5 x 6.0 m). The outline of the northern part is difficult to distinguish due to erosion of the river flow. It is likely that this feature is the main production building where the cookers were located.

Feature 9 Large wooden pole hammered down into ground. Approximately 50 cm in diameter.

Feature 10 Two wooden poles, approximately one meter high. Located on the brink by the beach just north of the processing area, and in the direct vicinity of feature 11. Possibly used as an anchor point for small boats.

Feature 11 Foundation of a hut/shed (5.2 x 5.0 m), most likely the blacksmiths shop. The southern part of the foundation consists of rocks. In the N-W corner there is a pile of red firebricks and a long metal plate.

Feature 12 Large wooden construction (3.7 x 2.2 x 1.0 m) comprised of wooden beams measuring 30 x 20 cm, which are attached to each other by solid iron tubes. The whole inner section is filled with gravel making the whole construction heavy. In the southern part ontop, there are two large iron bolts and one iron nail sticking up. Ontop to the north, there are five large iron nails sticking up. This was most likely the foundation for a winch used to pull the whales up on the beach for processing.

Feature 13 Large metal winch standing on a solid wooden construction filled with gravel, similar to feature 12. In the area there is one more winch, but feature 13 is the biggest one. The winch is marked: “Pusnæs ST & MEK VERKSTED. ARENDAL, NORGE. No 358”.

Feature 14 Four bladed iron propeller located in the gravel on the beach.

Feature 15 Large metal winch with rope located on the beach just east of its wooden foundation. The feature has most likely been attached on top of feature 12.

Feature 16 Pointy shaped metal object welded tight. Probably a buoy for small boats.

Feature 17 Large iron “bowl shaped” object with four smaller iron plates/ears on the sides.

Feature 18 Harpoon grenade with top part exploded. In the back, the screw-thread is visible.

Feature 19 Remains of barrels that today decayed so that only the limestone content remains.

Feature 20 A series of eight wooden poles in the ground aligned NNW. They are located just west of feature 11 and stand at approximately 1.5 m apart. It is not unlikely that this area functioned as storage place for the filled wooden barrels, awaiting transport to Norway.

Feature 21 A series of large rocks placed in a square formation (7.5 x 6.5 m). Probably a part of a foundation.

Feature 22 Wooden pole located on the brink east of feature 1, overlooking the beach.

Feature 23 Area with iron wire located in the riverbed.
Conclusions

The station was originally located in Finnmark until 1905, when it was disassembled and moved to Walrus Bay. The station is situated in a relatively sheltered bay that is only exposed to eastern winds. There are no traces of a flensing platform. However, historical photographs clearly show that the station had a flensing plane. It is likely that the hood at the platform has been re-used for other purposes after the station was closed. For pulling the whales onto the beach, two winches were used oriented in the same direction. The shot whales were not grounded alongside the beach waiting processing, but attached to buoys in both Walrus Bay and Sørhamna.

The station was operational until 1908 when it was abandoned.

Area 2 - Taaget weather station.

During the Second World War, the German armed forces erected a series of manned and unmanned weather stations across the European High Arctic (Jan Mayen, Spitsbergen and Bear Island) for forecasting weather fronts moving in across the European mainland. The coordination efforts between Luftwaffe and Die Kriegsmarine at Bear Island were however poor as they erected several stations unaware of each other.1

In the late autumn of 1944 the German weather station“Taaget” was transported to the island onboard the submarine U 1163. According to the literature, the station was relatively small and held three rooms.2 The station was manned by the Norwegian Leif Falk Utne and the Soviet Russian Ivan Pasjkurov. Three months after being established, Utne disappeared after a fishing trip and Pasjkurov was evacuated later that spring by the German submarine U 668.3

“Taaget” weather station is located a few hundred meters up the small river valley to the N-W, and hidden behind a small ridge which not only made it less visible but also less exposed to winds from all directions.

3 Ibid.
Results

Feature 23  Foundation of hut/shed (4.0 x 2.5 m) used by German armed forces during the Second World War.
Feature 24  Scattered coal-rods for batteries located south and directly outside feature 23.
Feature 25  Battery box including several coal rods.

Figure 143. Feature 23 and 25. German WWII weather station and a small metal battery box with coal-rods. The site (as seen on the photo) is well hidden from insight and protected from winds coming from all directions. Photo: Gustav Rossnes. LASHIPA 5 August 2008.
**Area 3 - Grave**

Two graves located on a small ridge just north of Walrus Bay. Both graves are located next to each other and on an elevated location. The origin is unknown, but it is not unlikely that they are trappers of sailors' graves.

![Image of graves on a map]

**Results**

**Feature 26**  
Grave located on the ridge just north of Walrus Bay. The grave is aligned in a north-south direction, which is uncommon for Christian burial practices.

**Feature 27**  
Grave located on the ridge just north of Walrus Bay. The grave is similarly aligned in a north-south direction.

![Image of graves]

*Figure 144. Feature 26 and 27. Two graves located on a elevated brink just north of Walrus Bay. Both graves are aligned in an N-S direction. Photo: Gustav Rossnes. LASHIPA 5 August 2008.*
3.30 Sørhamna

Sørhamna is a natural harbour that is located on the south-eastern part of Bear Island. The harbour has been used by numerous expeditions as shelter against severe weather. In the area, there are cultural remains. These are all located just above the sheltered harbour.

The area was claimed by the German journalist Theodor Lerner and Hugo Rüdinger, captain of the vessel Helgoland in 1898. On the north side of Sørhamna, the two staked off and claimed a piece of land by painting stones with the German national colours. Later the same year, the area was visited by another German expedition sent out by the Deutsche Seefischerei-Verein under the leadership of Dr. Hartlaub. At Sørhamna and Walrus Bay, the expedition erected two 2 x 2 meter huts which were marked: “Station des Deutschen Seefischerei-Vereins”¹ Later the two contested each others claims.

As a response to Theodor Lerner’s claims in 1898, the German company Deutsche Seefischerei-Verein erected a house nearby of his hut (feature 2). Unfortunately, no remains of their hut were found. The brink is highly exposed to coastal erosion processes, and it is likely that the foundation has collapsed into the sea long ago.

Results

Feature 1 Road constructed by the German Theodor Lerner in 1898 in connection to the erection of a hut (F 2) and claims in the area. The road starts by the beach at Kvalrossbukta by the remains of the former whaling station, and ends by feature 2. The road is in a relatively good state and is highly visible in the landscape.

Feature 2 Hut foundation located on the brink overlooking Sørhamna. The hut was originally erected by the German Theodor Lerner in 1898 in connection to claims made by him the same year. Later, German competitors (Deutsche Seefischerei-Verein) erected a house due west of this hut. The feature is highly exposed to coastal erosion.

Figure 145. Photo overlooking Sørhamna survey area. The hut to the right is Lerner’s hut, while the one to the left is the Deutsche Seefischerei-Verein hut.¹

Figure 146. Feature 1. The so called “Lerner road” constructed by him in 1898. Today the road is one of the most prominent cultural remains on the archipelago. Photo: Ulf Gustafsson. LASHIPA 5, August 2008.

Figure 147. Remains of Theodor Lerner’s hut located at the brink overlooking Sørhamna. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

3.31 Krillvatnet

Introduction

The lead deposits in the area was discovered and claimed by the Norwegian Morten Andreas Ingebrigtsen in 1909. In 1915 Ingebrigtsen extended his claim on the island so that it included the part of the island situated east of his previous claim. Later the same year, he sold his claims and buildings to the Norwegian mining company I/S Bjørnøen Kulkompani.

The company mined small amounts of these lead deposits from a vein north of Russehamna. In spite of the knowledge of the deposits, no larger mining operations was done in the area until October 1924, when Theting and Orvin re-discovered the lead vein on the hill slopes west of Krillvatnet. The following year exploratory work was commenced at the slopes of Blyhatten just west of Krillvatnet, and two houses from Tunheim were moved and re-erected at the site.

Area 1 - Krillvatnet mining settlement

Krillvatnet mining settlement contains the remains of four houses and one shed/stable. All features are located in the direct vicinity of a small stream which probably supplied the settlement with freshwater. There is also a pathway going from the settlement down to Russehamna a few hundred meters away. It is likely that after mining was cancelled at Blyhatten, the settlement still functioned for accommodating workers who mined at Antarcticfjellet.


1 Ibid. P: 128.
2 Ibid.
3 Ibid. P: 128.
4 Ibid. P: 129.
5 Ibid. P: 101
Results

Feature 1  House/hut foundation (2.5 x 4.5 m) partly consisting of wooden beams. The foundation contains relatively large quantities of scattered coal. Other artefacts within the feature are parts of an iron stove, iron nails, parts of a metal pipe and parts of a concrete chimney. The feature could possibly have functioned as a blacksmiths shop.

Feature 2  House/hut foundation (3.7 x 8.0 m). Large parts of the wooden floor are still intact. The feature contains scattered pieces of coal, part of an iron pipe and large quantities of broken window glass. It is likely that the feature is one of the houses that were moved from Tunheim to the site in 1925. It seems as if the feature has been disassembled and transported from the site.

Feature 3  House/hut foundation (3.8 x 9.7 m). The interior wooden floor is intact, and large quantities of scattered window glass are scattered on it. Other artefacts are parts of a
concrete chimney. The feature probably comprises together with Feature 2, the second house that was moved from Tunheim.

Figure 149. Feature 2 and 3. Remains of two houses that probably were transferred from Tunheim in 1925 and it is likely that they were used as accommodations. Photo: Gustav Rossnes. LASHIPA 5 August 2008.

Feature 4 Foundation of a stable (approximately 4.5 x 6.5 m, see appendix for accurate drawing and measurements). The entire foundation is comprised of wooden beams which are insulated with earthed walls except for its eastern site which is open. The feature does not contain any remains of a heat source, and it is probable that it functioned as a stable only during summer season.

Feature 5 Path connecting the site to Russehamna.

Feature 6 Part of a wooden wall located north of the other features. It is probably one of the wall sections from one of the house/hut remains.

Feature 7 Possible toilet located east and away from accommodations. Approximately 1.5 x 1.5 m. The surrounding vegetation is rich.

**Area 2 - Krillvatnet lead mine**

Krillvatnet lead mine is located on the east site of Blyhatten, overlooking Krillvatnet and the mining settlement. The mine is rather simple, and has the character of an exploratory mine.

Results

Feature 8  Northern collapsed entrance to lead mine, including pile of waste rock.
Feature 9  Southern mine entrance which remains intact. Square wooden beam situated at the top of the entrance. Inside large scattered parts of wooden beams are visible, including a wooden box. The pile of waste rocks probably held a rail system on top before operations were cancelled.
Feature 10 Square piece of iron.

Figure 150. Feature 8 and 9. On the photo left parts of the northern mine entrance are visible. Below, the intact entrance to the southern mine including parts of the wooden support beams are clearly visible. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
The historical photo is taken by the Commissioner of Mines inspection trip in 1958. It is obvious that the mine has not deteriorated much. Photo: RiksArkivet Norway.

Area 3 - Krillvatnet walking path to Russehamna


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Results

Feature 11 Walkway going from Krillvattnet settlement to Russehamna shipping area.

Conclusions

Krillvatnet lead mine appears to have been an exploratory mine, and that operations here were probably moved to the northern slope of Antarcticfjellet (see 4.27). It is however highly likely that Krillvatnet settlement still maintained an important function for accommodating the workers and also by having the blacksmiths shop and the stable located there. The workers who lived here during the season, walked back and forth to both the mine and to the shipping area at Russehamna. It is also highly likely, that the company originally had one horse here. This horse probably pulled the filled wagons of lead ore from the mines down to the shipping area, and that it during both operations were stationed at Krillvatnet settlement. The whole area (4.27 and 4.31) should be seen as one large system that has undergone development. For both mining operations, Russehamna held a central role as shipping area.

3.32 Engelskelva

Introduction

Engelskelva is a river located on the eastern side of Bear Island, and has its outlet just north of Tunheim coal mine. The surrounding area consists mainly of rocks and gravel, and is exposed to winds coming from the east.

The area is connected to the activities of the two competing German actors: T. Lerner and Deutsche Seefischerei-Verein who both investigated the area. In 1899 the latter company erected two huts in the area, but was later driven away by Lerner who maintained that the company had trespassed on his claim.

Map 42. Engelskelva. Map: Ulf Gustafsson.
Results

Feature 1  Hut foundation (3.0 x 4.0 m) placed in a small elevated area just north of the river. The outer part of the foundation consists of relatively big rocks, while the inner part consists of gravel. In the western and south-western side of the foundation, small pieces of broken glass were found (transparent and green).

Feature 2  Hut foundation (3.0 x 3.8 m), consisting of rocks and gravel. Located approximately 10 m east of feature 1. Scattered pieces of broken green glass in the central part of the feature.

Feature 3  Possibly the remains of a toilet located in between feature 1 & 2, consisting of stacked rocks which also are formed as wind protection for winds coming from the west.

Figure 151. Feature 1. Hut foundation consisting of rocks and gravel. Probably the remains of a hut erected by the Deutsche Seeischerei-Verein in 1899. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 152. Feature 2. Foundation of rocks, most likely the remains of a small hut erected by German actor’s in 1899. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
3.33 Tunheim

Introduction

The remains of the Tunheim coal mine are located on the eastern side of the island. The site contains a large number of features, and has been subjected to mapping by previous researchers. During the LASHIPA 5 fieldwork, the members built on previous mapping and focused their attention on making photo-documentation and feature descriptions, adding on to existing data on the site and documenting its current state.

The Tunheim coal mine was operated by I/S Bjørnøens Kulkompani which later were transformed to Bjørnøen A/S, the years 1915-1925. The meteorological station was erected in 1918 on a small elevated area just west of Tunheim settlement. The following years the station was equipped so that it could function as a radio station. After the abandonment of Tunheim coal mine, the station was maintained until 1932 when the Norwegian Meteorological Institute took over the station. During the Second World Warm, the station was destroyed and after the war a new station (present day Bear Island Meteorological Station) was erected at Hertwighamna.

The LASHIPA team had limited time at the site, and did only conduct a photographic documentation of the area. The team used the same feature numbers as suggested by Horn and Orvins map of 1928.¹

Results

Feature 1 Coal pocket located at Austervåg. Today the entire structure has collapsed and only the lower foundation remains.

Feature 2 Workers house at Austervåg. The whole structure is gone, only the stone foundation remains.

Feature 3 Explosives shed/house. Consist of a sturdy building of large stones. Today the feature has been rebuilt and functions as leisure hut.

Figure 154. Horn and Orvins map of 1928 which was the basis for the LASHIPA photo documentation.
Figure 155. Feature 3. Originally the feature was used for storing explosives, today the hut has been renovated and functions as a leisure cabin. The photo the left was taken during The Commissioner of Mines inspection trip to Bear Island in 1958. Photo: RiksArkivet Norway and Gustav Rossnes. LASHIPA 5 August 2008.

Feature 4 Remains of office, today only the foundation remains.
Feature 5 Foundation of stores and shop. The feature has also functioned as repair shop for mine cars and locomotives.
Feature 6 Remains of carpenters shop and stores. Parts of the building have collapsed and it is in poor condition.

Figure 156. Feature 6. Carpenters shop and store house. The photo the left was taken during The Commissioner of Mines inspection trip to Bear Island in 1958, and as the photos display, little has happened to the building. Photos: RiksArkivet Norway and Gustav Rossnes. LASHIPA 5 August 2008.

Feature 7 Remains of mine foremen’s house, only the outline of the foundation remain.
Feature 8 Remains of the men’s house, today only the outline of the foundation remains.
Feature 9 Foundation of servant’s house.
Feature 10 Foundation of staff house
Feature 11 Remains of piggery. Today only the outline of the foundation remains.
Feature 12 Foundation of men’s mess. Large amounts of broken and scattered parts of porcelain and metal pots.
Feature 13 Partly collapsed men’s house. The southern part of the feature has collapsed entirely, and its northern part is in poor state, but still standing.
Feature 14 Foundation of reserve power station. The feature contains a large amount of artefacts such as generators and metal parts.
Feature 15 Remains of power station and machine shop, containing a large amount of artefacts.
Feature 16 Foundation of blacksmiths shop.

Feature 17  Remains of storehouse. Today only parts of the foundation remains.
Feature 18  Locomotive shed (gone).
Feature 19  Wireless station (see separate description).

Figure 157. Feature 13. Remains of workers mess and accommodations including a bathtub. Photo: Ulf Gustafsson. LASHIPA 5, August 2008.

Figure 158. Feature 19. Remains of locomotive shed containing the two locomotives that were used to transport coal to Austervåg. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 159. Feature 21. Remains of the old power station which contains a belt driven system for producing electricity. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
The results of the survey showed that Tunheim mining settlement held a number of small paths connecting all the features. The settlement also display a clear hierarchical structure where the managers houses are located on the western side of the railway that effectively act as a divider of the settlement, while the mine workers accommodations are located east of the divider. Beside the manager’s house is also a servant’s house.

**Results**

- Feature 19a: Metal antenna including a concrete foundation with metal bolts.
- Feature 19b: Foundation of meteorological/radio station house.
- Feature 19c: Astronomical fix point for trigonometrically surveying.
- Feature 19d: Metal antenna including a concrete foundation with metal bolts.
- Feature 19e: Walkway connecting the station with Tunheim settlement.
3.34 Kap Nordenskiöld

Introduction

Kap Nordenskiöld is located on the eastern side of Bear Island, approximately 1.5 km south of Tunheim coal mine. The site contains the remains of what is believed to be the first successful wintering on the island, by the Dutch crew onboard De Jonge Arend in 1700.

The first known wintering at Bear Island took place in 1700, when the Dutch ship De Jonge Arend drifted off course during a severe storm on their return voyage from Archangel and wrecked at the shore of the island. The area was not registered during the Governor of Svalbard’s cultural heritage inventory expedition of 1997.

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Results

Feature 1  Hut foundation (3.4 x 3.7 m) consisting of wooden beams and rocks, located at a slightly elevated point in the landscape at the foot of the outermost point at Kap Nordenskiøld.

Feature 2  Elevated area surrounding feature 1.

Figure 163. Feature 1. Remains of a hut foundation at Kap Nordenskiøld. Possibly the remains of the wintering hut of the Dutch crew of “De Jonge Arend”. Photo: Gustav Rossness. LASHIPA 5, August 2008.

Figure 164. Feature 1. Foundation of hut, possibly the remains of the wintering hut “De Jonge Arend”. The feature is located on an elevated place in the landscape. For further description see the Appendix.
3.35  Grunningen

Introduction

The Grunningen area is located in the north-western part of Bear Island. The entire area is very flat, consisting of a gravely- sandy ground. The area represents one of the few places on the island where landing by airplane is possible. The area is however exposed to winds coming from all directions.

Area 1 - Landing strip

Grunningen landing strip was established by the German Luftwaffe during World War 2. The primary purpose for establishing the strip was to be able to establish an automatical weather station of the type “Kröte”. In October 1942 German soldiers were dropped by parachute to clean the runway of rocks. Here they established a tent camp and set up a machinegun position. In the end of October, a plane landed with the weather station, which was erected immediately. Two days later, the soldiers were picked up.

In 1943, a German “Arado Ar 232” landed and got stuck in the wet ground. These marks are still visible in the ground. During the two weeks the crew was stuck, they surveyed parts of the island, only to discover three weather stations along the north coast, erected by Die Kriegsmarine. A clear indication on the lack of coordination within the German armed forces during the Second World War.

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Results

Feature 1 Pile of wooden beams stacked in a square formation (1, 6 x 1, 6 x 1, 5 meters).
Feature 2 Metal pole hammered down into the ground. It is likely that the pole originally was used to mark the runway by lights attached to the top of it.
Feature 3 Metal pole probably used to mark the extent of the runway.
Feature 4 Wheel tracks from several landings and takeoffs.
Feature 5 Wooden box. Probably remains of an equipment box.
Feature 6 Probable tent site.
Feature 7 Two rusty parachute holders for equipment.
Feature 8 Point where a plane got stuck in the soft ground.

Figure 165. feature 1 and 5. Pile of stacked square wooden beams and a wooden box probably used to drop equipment. Photo: Gustav Rossnes. LASHIPA 5 August 2008.
Area 2

Feature 9  Single parachute holder for equipment
Feature 10 Metal plate probably used to mark off runway
Feature 11 Aluminium plate marked “Trygg Trafikk”.
Feature 12 Wooden handle for hand grenade
Feature 13 Aluminium plate marked “Trygg Trafikk”
Feature 14 Metal pole probably used to mark off runway
Feature 15 Metal pole as above
Feature 16 Metal pole as above
Feature 17 Single parachute holder for dropping equipment
Feature 18  Aluminium box
Feature 19  Single parachute holder for dropping equipment and additional straps
Feature 20  Single parachute holder as above
Feature 21  Aluminium box inclusive aluminium plate
Feature 22  Imprints in ground after German planes.

Figure 167. Feature 11. Handle from hand grenade. Photo: Gustav Rossnes. LASHIPA 5, August 2008.

Figure 168. Feature 18. Remains of parachute holder for dropping equipment and the straps to which the container was attached to the chute itself. Photo: Gustav Rossnes. LASHIPA 5, August 2008.
## Appendix 1  Kokerineset

### 2008 Finds feature 4

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Appendix 2  Kokerineset

Excavation drawings of feature 4
Finds:
1. sq. 5. Iron oven fork ▼ 44
2. sq. 2. Woden plate ▼ 53
3. sq. 2a. Woden cover of birch bark container ▼ 52
4. sq. 7. Copper button ▼ 55

Находки:
1. кв. 5. Железный ухват ▼ 44
2. кв. 2. Деревянная тарелка ▼ 53
3. кв. 2а. Деревянная крышка тюсса ▼ 52
4. кв. 7. Медная пуговица ▼ 55
Finds:
6 1. sq. 8. Copper button ▼52
2. sq. 8. Leather button ▼51
3. sq. 8. Iron fragment ▼50
4. sq. 8. Iron oven fork ▼42
5. sq. 8. Lead bullet ▼48
4 6. sq. 2. fabric-covered button ▼59

Находки:
1. кв. 8. Медная пуговица ▼52
2. кв. 8. Кожаная пуговица ▼51
3. кв. 8. Железный фрагмент ▼50
4. кв. 8. Железный ухват ▼42
5. кв. 8. Свинцовая пуля ▼48
6. кв. 2. Обтянутая тканью пуговица ▼59
TRENCH 2 - SECTIONS
Legend

- Culture layer
- Wooden chips and bark
- Gravel
- Grey sandy layer (sterile soil)
- Brown sandy soil
- Clay
- Top soil
- Shattered bricks
- Wooden post
- Bricks
- Pieces of wood
- Wood, part of structure
- Stone
- Ashes
Kokerineset 2008
Furnace in trench 4/5

1 m
Appendix 3  Bear Island
Feature drawings

Only sketched features from the Bear Island Survey will be present here. Photos of the sketches are available at the Arctic Centre. All sketches by Ulf Gustafsson and Gustav Rossnes.

1. Hertwighamna

- Feature 1. Wood and rock foundation of house erected by the Deutsche Seefischerei-Vereins in 1899. Solid prefabricated house insulated with a mixture of sawdust and peat.

Feature 3. Hammerfesthuset. Still standing hut/cabin on a foundation of rocks. The hut is in relatively good condition, and has recently been renovated by the Governor of Svalbard. The hut is very tight and upon the LASHPA teams visited, there was a strong smell inside the cabin which we ventilated out.

Feature 3 (Hammerfesthuset)  Still standing hut/cabin on a foundation of rocks. The hut is in relatively good condition, and has recently been renovated by the Governor of Svalbard. The hut is very tight and upon the LASHPA teams visited, there was a strong smell inside the cabin which we ventilated out.

169
Feature 4. Standing hut, the so-called Tobieden hut, standing on a foundation of rocks. The Southern part of the hut is gone, and only the northern part remains in good condition.
2. Nordhamna

Left:
Feature 1-6. Foundation of Pomor Hut, drainage ditch, claim board and earthed elevated wall.

Right:
Pile of rocks that surround a high wooden pole that is placed in the centre. A long rusted metal chain is also situated within the feature. The feature might represent the remains of a trigonometrical fixpoint.
Left
Feature 8. Single Grave surrounded by four wooden poles connected with a chain. In the centre of the feature, there is a large metal cross that is supported by rocks. The orientation of the grave is east-west. It is likely that the grave is connected to the wreckage of the boat St. Sebastian in the 1920s. Today, the grave is highly exposed to coastal erosion.

Right
Feature 9. Foundation of hut containing a large amount of artefacts such as flint, traan-betong, charcoal and red firebricks.
3. **Gravodden**

Left

Feature 6. Wooden foundation for flagpole erected by the Deutsche Fischerei-Vereins in 1899. The flagpole appears on the company's maps, and is located on an elevated and exposed place in the landscape.
4. Russehamna

Left
Feature 1. Foundation of Pomerfur, consisting of elevated earthed walls. Could possibly represent the remains of a secondary station.

Right
Feature 3. Wooden hut standing on wooden poles. Erected and is being used as recreational hut by the employees at Bear Islands Meteorological Station.
Left
Feature 4. Wooden shed with tilting roof construction to the east. The feature might represent the remains of the hut erected by T. Lerner at the site in 1899.

Right
Feature 5. Wooden foundation of lead shipping facility. Consists of a series of parallel large wooden beams. In the direct vicinity there are traces in the ground from a transport route.
Left
Feature 1. Foundation of house located on an elevated brink. Large parts of the foundation is partly gone and vegetated. In the southern part of the feature, there are remains of a chimney. The house was probably used for accommodating workers at the whaling station during its operational years 1905-1908.

Right
Feature 5. Foundation of hut/shed consisting of wooden beams. The centre part of the feature, has been levelled.
Left.
Feature 6. Foundation of hut consisting of rocks and wooden beams. The area has been levelled and is slightly elevated in the northern part. In the western part, there is a series of wooden beams, which may represent the remains of an elevator.

Right
Feature 8. Elevated and levelled foundation of house consisting of earth. The outline of the northern part is difficult to determine due to erosion from the river.
Left.
Feature 11. Foundation of hat, probably the blacksmith's shop. The feature is located on a brink just north of the productional area.

Right.
Feature 12. Foundation of winch system, consisting of a series of massive wooden beams attached together with iron nails. On top of the foundation, there is a series of iron bolts sticking up from the wooden beams, probably used for attaching the steam driven winch. The interior part has been filled with gravel from the beach.
6. Krillvattnet

Left.
Feature 1. Foundation of house/hut, consisting of wooden beams which have partly vanished. In the feature, there are large amounts of coal, iron nails, remains of iron stove and pipe, concrete chimney which suggests that this has been used as a blacksmith's shop.

Right.
Feature 2. Foundation of house. Large parts of the wooden floor remain intact. The feature contains artefacts such as iron pipes and window glass. It is highly possible that this feature represents one of the two houses that were moved from Tunheim. It is also likely that it functioned as an accommodation house.
Left.
Feature Foundation of house with intact wooden floor. The feature contains artefacts such as window glass, bricks, parts of rion stove, parts of concrete pipe and coal rods for batteries.

Right.
Feature 4. Foundation of stable consisting of elevated earthed walls with a wooden interior. All sides except for the eastern are closed, indicating that the entrance was in the east.
Feature 1. Foundation of hut consisting of wooden beams and rocks. The feature is placed on an elevated and prominent place in the landscape.
Left. Feature 1. Foundation of rocks located on an elevated area just north of Engelselva outlet. The outer part of the feature consists of large rocks, while the inner part is filled with gravel. Inside the inner part of the feature, there is scattered a large amount of broken green glass.

Right. Feature 2. Hut foundation consisting of rocks. The feature is located just north of Engelselva outlet and directly east of feature 1. The inner part of the feature contain parts of broken green glass.
Ebeltoft Haven - Feature 4
Ebeltoft Haven - Feature 5
Ebeltoft Haven - Feature 7

S - STOVE
PL - PLANK

FEATURE 7
EVELTOFT HANNA
PLAN

1:50
FK, 29/07/2008
Camp Zoe - Feature 1
Camp Zoe - Feature 1

SE - FACING ELEVATION
1: 50
FK, 20/07/08

SW - FACING ELEVATION
1: 50
FK, 20/07/08
FEATURE 7
TINAYREBUKTA
SKETCH PLAN @ 1:50
FK, 21/07/88

Tinayrebukta - Feature 7
Port Peirson (Ny London) - Feature 2
FEATURE 18
LONDON

E-FACING ELEVATION
1:100
FK, 01/08/88

S-FACING ELEVATION
1:100
FK, 01/08/88

W-FACING ELEVATION
1:100
FK, 01/08/88

N-FACING ELEVATION
1:100
FK, 01/08/88

Port Peirson (Ny London) - Feature 18
FEATURE 29

E-FACING ELEVATION
1: 100
FK, 01/08/88

S-FACING ELEVATION
1: 100
FK, 01/08/88

W-FACING ELEVATION
1: 100
FK, 01/08/88

N-FACING ELEVATION
1: 100
FK, 01/08/88

Port Peirson (Ny London) - Feature 29
Davis Island (Storholmen) - Feature 1
Brecca or Maples Island (Juttaholmen) - Features 1-4

FEATURES 1 - 4
JUTTALHOLMEN
SKETCH PLAN @ ~ 1:100
FK, 01/08/88
Richard Lagoon - Feature 1, Area 1.
Inchcolmodden - Feature 1
Copper Camp - Feature 1
Rusanovodden - Feature 1