



# Salme Ship Burials

## REVEALING A GRIM CARGO OF ELITE VIKING WARRIORS

Warriors cut down in battle on the Estonian island of Saaremaa were buried aboard their ship – the earliest known Viking vessel to sail across the Baltic Sea. Nearby is a smaller boat, its slain sitting eerily upright. Who are these dead men? **Jüri Peets** reveals his discovery of a mysterious double Viking ship burial.

**B**one and ancient artefacts began to appear almost as soon as workmen cut into the earth. They were laying an electric cable for a cycle path through the tiny village of Salme on the island of Saaremaa in Estonia. Work stopped immediately, and the archaeologists were called in.

That was in 2008. By the time excavations were complete, in 2012, they had revealed a most extraordinary discovery: two Viking boat burials, within 30m (98ft) of each other, and both dating to about AD 750, the very beginning of the Viking period.

The larger of the vessels is the first known example of a sailing ship to cross the Baltic Sea. Both are about 100 years older than the Oseberg boat in Norway – the earliest example of a Viking boat to be found in the region. And both bore a grim cargo: the remains of several men killed in battle. Alongside the dead were the possessions they had carried with them in life: their weapons, gaming pieces, knives, whetstones, and combs.

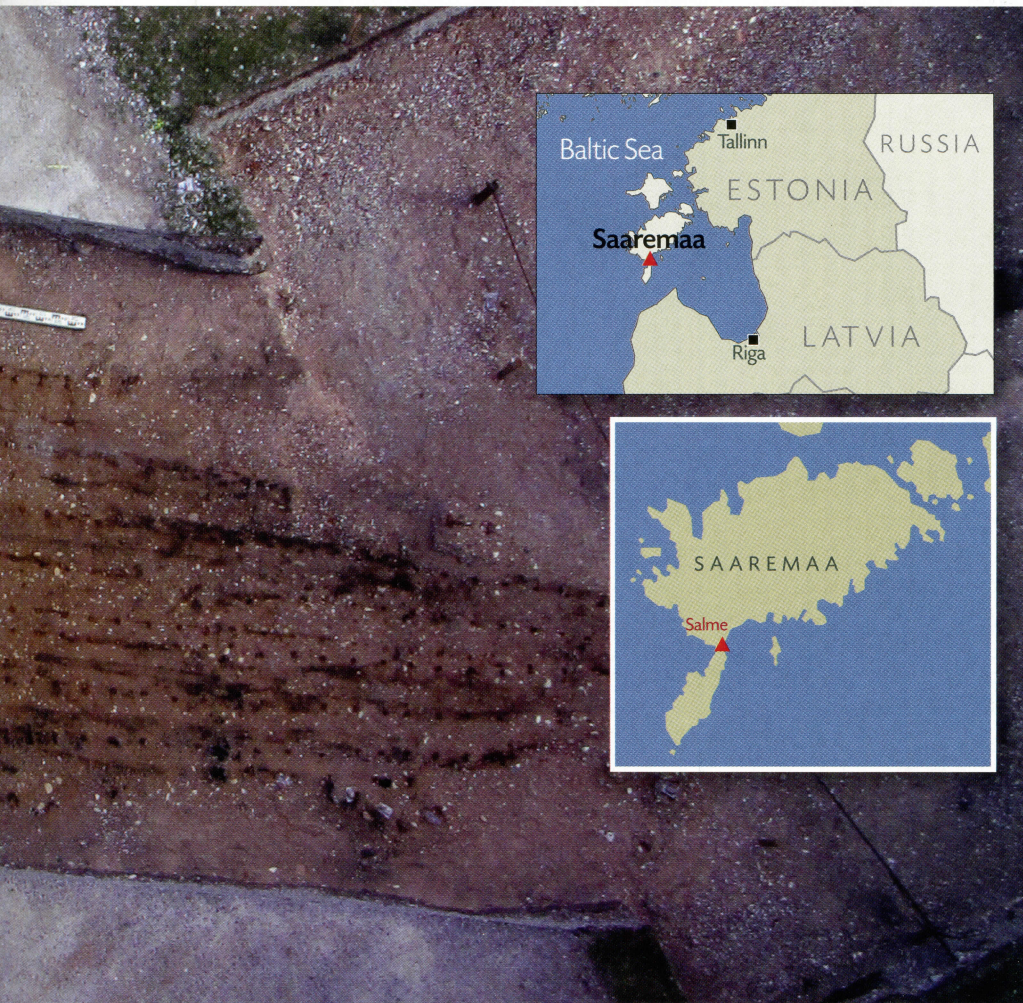
None of the artefacts recovered at Salme come from this region: they belonged to a style associated with Scandinavian settlements across the Baltic Sea. These men, then, were strangers to these shores.

### Finding the first burial

This smaller vessel was the first to be discovered. When the archaeologists, led by Jüri Peets of Tallinn University, began excavation at Salme, they recovered fragments of bent swords, boat rivets, and two antler dice from soil disturbed by the workmen digging the cable trench.

As the archaeologists continued to sift through the soil, they found more fragments of weapons, human and animal bones, and a total of 75 gaming pieces turned from whale bone or made from bovine femur-heads. Five of these gaming pieces are decorated with engraved ornamentation.

The style of weapon fragments suggests they belong to the Vendel Period or the beginning of the Viking Age, about AD 600-800. They had been deliberately damaged by bending, hacking, and breaking – a common practice during this period – and showed evidence of having been in a fire. Subsequent carbon-14 analyses of the



**LEFT** Salme II ship burial. The human remains, from the bottom layer, lay between the ship's ribs, across the boat's longitudinal axis.

found to the middle and stern. Because part of the boat was destroyed by the cable trench, it is difficult to ascertain exactly how or where they were positioned. However, no traces of human or other remains associated with the boat were found outside the hull's contours in areas not affected by the trench disturbance, suggesting all seven had been buried within it. Strangely, the undamaged articulated skeletal remains indicated that rather than being laid flat, the men were buried in a sitting position – perhaps at what would have been their work-stations during life.

The animal bones recovered showed butchery marks. Perhaps they were part of a funerary feast, or supplies the crew had brought along for themselves. Interestingly, several decapitated goshawks and a sparrowhawk were also found. These birds of prey would have been used for hunting fresh food for the crew as they travelled along the shoreline. ▶

PHOTO: Jaanus Valt

human and animal bones confirmed a date of about AD 750, the late Pre-Viking Period.

The cable trench had cut through the stern of the boat – Salme I – but a section of the prow was still evident. Most of the wood had rotted away. However, the archaeologists were able to trace the lower section of the boat's original contours by the three rows of rivets that remained.

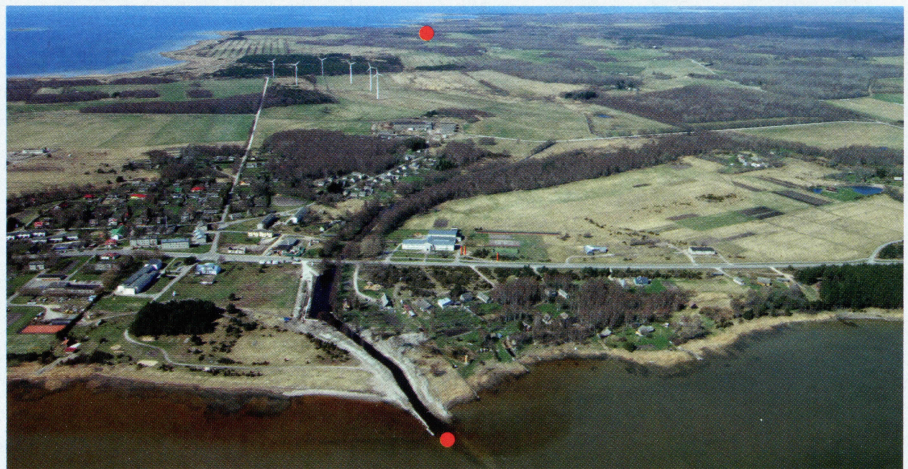
The boat, therefore, was clinker-built – that is, the hull was formed by overlapping planks secured by rivets. It was about 11.5m (38ft) long with a maximum width of about 2m (6ft 6in). Its size and shape suggest it would have been a 12-oar rowing vessel. The rivets are only about 3-4cm (1-1.5in) long, which means the planks would have been very thin. So, Salme I was light, fast, and easy to manoeuvre: almost certainly a military ship.

The skeletal remains of seven individuals were recovered. All seven are male, and all are of impressive stature. Three of the men were more than 30 years old when they died, the others were under 30 years of age. Examination of the osteological and dental evidence showed that this crew enjoyed good health – and only one of them suffered tooth decay.

The prow of the boat points to the north-east, and most of the human remains were

## SALME'S ANCIENT LANDSCAPE

Salme sits on the narrowest part of a strip of land that connects the Sörve (Sworbe) peninsula with the rest of the island of Saaremaa (Ösel). During the Middle Ages, this area was covered by sea, forming a navigable strait between the two islands. Indeed, Salme derives its name from *salme*, which means 'strait'. The remains from both boat burials lie close to the surface, and it is remarkable, therefore, that so much has survived modern interference – including the devastating visit by a Red Army Destruction Brigade, whose action destroyed the local farm in 1941 and who, in 1944, left the area blistered with bomb craters. In ancient times, the Salme strait was the shortest route from the Livonian Bay to the Baltic Sea, via Hiiumaa (Dagö), and from there to Finland or to Gotland. Today, the Salme River, starting in the Raka bog lake, follows the line of this strait. When meltwaters or heavy rain cause the Raka lake to flood, it may run at the same time into both the Livonian Bay in the south and the Baltic Sea in the north.



**ABOVE** Possible location of the 100m-wide (300ft) Salme strait, connecting the Baltic Sea and the Livonian Bay, 1,300 years ago.

PHOTO: Ants Kraut



**LEFT** The remains of some of the warriors found on Salme II, with shield bosses and sword fragments.

**INSET** Salme II: the red arrow points to the dark, rotted outline of the ship's keel, clearly visible beneath the hull. This proves Salme II was a sailing ship. The vessel dates to about AD 750, making this the earliest known example of a ship with sails on this side of the Baltic.

the board contours – about 3.20m (10ft) – indicated immediately that this vessel was considerably larger than the first. The ditch cut for the electrical cable crossed the excavation trench but this, rather fortuitously, exposed an important clue: the dark, rotted outline of the ship's keel beneath the hull. Salme II, then, was a sailing ship.

This ship, Salme II, also carried crew: two well-preserved human skeletons lay on the western side of the hull. Beside them were two shield bosses, several sword fragments, and a complete skeleton of a dog that had been slashed in two.

These individuals had met with a violent end. The humerus of one had been chopped through in three places; the other had two injuries made to the front of his skull by either a sword or an axe.

As excavation continued, it became clear that there were many more skeletons here. This was, in effect, a closely packed multi-layered mass grave: a staggering 33 individuals were eventually revealed, packed four deep. The human remains and grave goods were located in several layers in a very small area in the middle of the boat. As a result, it was often difficult to

## Finding the second ship

In 2010, the team of archaeologists extended their search. The new area took in the yard that belonged to a farm, demolished by a destroyer battalion of the Red Army in the autumn of 1941.

Almost immediately, pieces belonging to two sword hilts were uncovered, along with a scattering of boat rivets and then more finds.

Lying about 15-20cm (6-8in) below the surface, were the contours of a second Vendel-era ship. Like Salme I, it pointed in a north-east/south-west direction. The size of the rivets and the distance between

What is absent can be as significant as what is present: usually horse and dog bones are included in Viking boat burials as prestige possessions of the deceased, yet none were recovered from Salme I. These, men were buried far from home, with only the possessions they carried aboard ship with them during their lifetime.

**BELOW** This humerus, slashed in three places, shows evidence of battle.

**BELOW RIGHT** Sword- or axe-marks on the skull, signs of a violent death.



PHOTOS: Railii Allmäe

**RIGHT** This double-edged sword was discovered upright in the fill of the shell crater, narrowly missed by the electric cable in its yellow protective covering.

**BELOW** This arrowhead, resembling a three-pronged fishing spear, was found in the northern area of the excavation. Such barbed-headed arrows were suitable for fishing or fowling, but also a large clot of burning substance could be fixed between the forks to set the sail of an enemy's ship on fire.

determine which of the find assemblages belonged to which skeletons. This work continues in the laboratory, and the final results will have to wait until further extensive analysis of the finds is completed.

A large calibre shell or bomb, almost certainly courtesy of the Red Army on their return in 1944, had slightly damaged the hull of the boat. But as the crater had filled up again, some bones, boat rivets and other artefacts had fallen into it. Among these finds were four gaming pieces, one made from walrus tusk, as well as fragments of two single-edged swords and a broken double-edged sword. The double-edged sword was, rather curiously, discovered in an upright position directly beneath the yellow-mantled cable.

The dead on Salme II were buried in four layers: those in the bottom layer had been arranged between the ribs of the ship, some facing south-east, some north-west. It appears, therefore, that the orientation of the ship, along the north-east/south-west axis – which, in summer, follows the line of the Milky Way, or 'Souls' Way' – was of more importance symbolically than the orientation of the dead. Most Scandinavian ship burials lie more or less along this axis.

The largest group of finds from Salme II – aside from rivets, of which there were about 1,000 – are the gaming pieces. Two were made from walrus tusk, and 326 from whale bone. Five or six dice, of different materials, were also recovered.

A LARGER 'KING' PIECE HAD BEEN DELIBERATELY PLACED IN THE DEAD MAN'S MOUTH.



Most of the gaming pieces are similar in shape, material, and size to those found in the first burial. However, a set of 11, found around the skull of Skeleton XIV on Salme II, are considerably smaller than the rest. Also, while the gaming 'king' from Salme I was larger than other pieces and was covered with intricate plaited decoration, the 'king' from this assemblage simply had an iron tack on top.

A larger 'king' piece was found in the jaw region of Skeleton XIV, as if deliberately placed in the dead man's mouth. Was this a symbolic act denoting this person's higher status? Certainly, this individual was richly furnished with grave goods that included fragments of a double-edged sword with a ringed hilt of gilt bronze. Furthermore, he was positioned along the central axis of the boat.

Most of the gaming pieces appeared to have been scattered among the skeletons. However, there was a clear assemblage of pieces recovered from between the legs near the pelvis of Skeleton XXX, buried on the bottom of the ship.



## Viking arsenal

All the weapons from the ship date to about AD 750, during the Late Vendel Period. Curiously, there were no axes among the grave goods, and only four spearheads – though both typically played an important role in the weaponry of Scandinavian warriors of that time.

There were more than 40 swords, making up the bulk of the grave goods. At least ten are whole specimens, the rest are fragments. The double-edged swords with their pattern-welded middle sections were clearly very expensive weapons, yet they were all deliberately either broken or folded. And, just as on Salme I, all show signs of fire damage.

At least five swords had remarkable gilt bronze hilts. One particularly splendid pommel is richly decorated with animal motifs and embellished with 25 cut garnets ▶



## A UNIQUE VIKING SITE

Boat and ship burials are found mainly in Scandinavia but they occur also in regions that witnessed Nordic expansion, including England, Germany, Poland, and along the banks and estuaries of the large rivers of Eastern, Central, and Western Europe. However, while such boats were often cremated along with the deceased and their sacrificial animals, at Salme they were not.

The Salme complex is also exceptional in another way: Viking burial ships usually contain one or two dead, typically the elite, as at Sutton Hoo in England, and may include human sacrifice, as with the Oseberg burial in Norway. Yet at Salme the two vessels were used as a mass grave, holding a total of 40 perished warriors: seven from the boat Salme I, and 33 from the ship Salme II.

This site, therefore, is unique not just in Europe, but across the world.

edged swords, that seem to belong to those skeletons placed uppermost. However, some of the single-edged swords were preserved as a whole, and recovered *in situ* with the human remains. What struck the archaeologists was the unusual way in which they had been placed on the dead: with the sword tip towards the head. In several cases, the sword had been placed on the chest with its tip under the jaw.

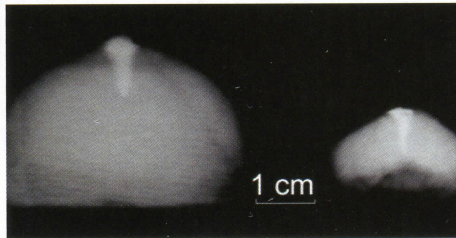
The bodies of the dead men had been covered by a blanket of shields. Twelve deliberately flattened shield bosses were found in the upper layers. Some of the wooden shield handles, however, had survived beneath the bosses. Iron plaques and the tacks used to attach them to the wood of the shield also survived *in situ*, although the wood itself had rotted.

Remaining traces of organic matter – most likely linden (lime tree), a popular choice during this period because of its light weight – suggest that the shields were about 90-110cm (about 3ft-3ft 7in) in diameter. Interestingly, arrowheads were clearly embedded in this organic material.

The team recovered 92 arrowheads. Most were from the upper layers of the burial, and all are of Scandinavian type. The majority are tanged leaf-shaped or lozenge blades, with a smaller number of lozenge-shaped cross-section and socketed narrow blades.▶

(almandines), ten of which survive. The ornamentation of each side of the pommel extends down the back of the hilt to, at one end, a human face with almandine eyes.

Most of the fragments are the broken and usually indented pieces of single-



**ABOVE** The whalebone 'king' piece from Salme I is decorated with a pattern of eight entwined dragons with bulging eyes and gaping mouths.

**ABOVE RIGHT** The 'king' pieces from Salme II are crowned with iron nail.

**RIGHT** A large 'king' piece was found in the mouth of this richly furnished skeleton.

**BELOW** This bronze gilt double-edged sword, *spatha*, broken in three and with a bronze hilt, was one of the first *in situ* finds from the ship Salme II. It came to light near the eastern board of the ship together with a single-edged sword, or *scramasax*, found with Skeleton VI. Both swords were found just beneath the surface layer, in a half-upright position.

In the foreground is a pommel of bronze gilt found with Skeleton XIV, an individual of possibly higher standing than the rest of the dead.

**INSET** The splendidly decorated sword hilt of gilt bronze, belonging to Skeleton XIV, *in situ*. The pommel of gilt bronze (seen far right) has zoomorphic decoration and once had 25 polished almandines. It was discovered with other sword fragments and shield bosses associated with Skeleton XIV.





**ABOVE** The warriors from the top layers of the burial from Salme II were covered with shields, like a linden blanket.

## Sailing to Valhalla

Once the last skeleton had been carefully removed, it was possible to properly examine the ship. Inside the hull, 14 ribs gave support. In the central section, where the dead had been buried, were five rows of rivets. More than 1,000 rivets were recovered from the ship, in four sizes: the most common is 6-7.5cm (2.5-3in) long, the largest – found in the middle section of the ship – measured 14-15cm (6in) long. Contour clamps, used to fix the keelson (the inner keel that connects the floor timbers to the outer keel), were found at the ship's bottom.

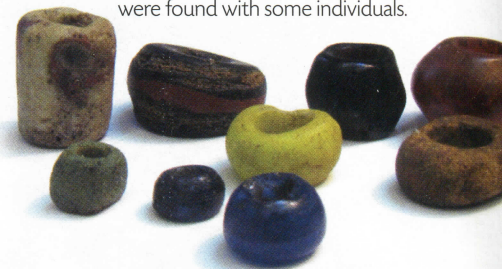
This is proof that this was a sailing ship, built in the clinker style. It was rather larger and sturdier than Salme I, made up of six or seven planks up to 3cm (just over an inch) thick. Evidence of organic material above the ribs of the ship may be what remains of backboards for oarsmen. A ship of this size would have required between seven and ten pairs of oars. Although no oars were found, archaeologists were puzzled by a quantity of large pieces of charred material found over the whole ship. These finds are up to 10cm (4in) long, with a round cross-section. The larger, longitudinally

split pieces were rounded on the surface and seemed to be worked. Could these be what remains of the oars or trundles?

The archaeologists were faced with a final puzzle: unlike typical Scandinavian ship burials, neither of the vessels at Salme had been deliberately buried after the funeral ceremony. The area where the dead were left with their grave goods had been covered with stones and sand, in effect turning the vessels into sarcophagi. Over time, natural marine sediments had built up gradually to eventually cover them over. But when the mourners left, more than 1,250 years ago, both would have been clearly visible, standing alongside each other on the shore.

Was this a deliberate act? Or were these warriors buried in haste before the survivors fled? For now, that mystery remains. ▣

**BELOW** Beads of different materials were found with some individuals.



**SOURCE** Dr Jüri Peets, Senior Researcher, Institute of History, Tallinn University, Estonia.  
Translator: Liis Soon. With special thanks to Loit Joekalda.

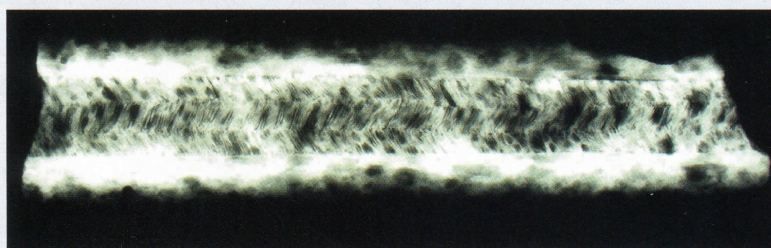


IMAGE: Jüri Peets

**ABOVE** Many of the double-edged swords have elaborate pattern-welded middle parts, of a type that would have belonged to an elite class of warriors.

**RIGHT** On some of the dead, the single-edged swords had been placed on the chest, with the tip towards the skull.

