

Excavation by divers

Principle: With the mixed gas (nitrox) techniques that have become common over the last years the excavation time at depths down to around 30 m has increased significantly. For deeper excavations considerably more expensive diving techniques than scuba are necessary or alternatively the object to be excavated must be brought on land in one or more sections.

Basic features: Excavation of test pits or larger areas under water is a time consuming activity that often will produce large amounts of data that must be registered as well as objects that may need conservation. Important is therefore that the process is well organized.

For Stone Age sites it is important that the precise locations of finds and features observed are registered. As visual control is often significantly reduced in relation to excavation on land, excavation in squares (e.g. 0.5 x 0.5 m) and in reasonably thin layers (e.g. 5 cm) can solve this problem. Leveling with a precision of ± 1 cm can be carried out with an air filled garden hose if this is continuously calibrated for tidal sea level changes.

For excavation of larger areas than test pits it is a good idea to let the divers lie on a platform mounted raised above the bottom to protect the area under excavation.

Excavation is carried out with different types of air lifts. Fine-meshed nets attached to their outlets secure that small items such as fish bones, pieces of charcoal, flint etc. are retained, and can be systematically related to the square units excavated.

Resolution and horizontal precision:

The horizontal and vertical resolution of the data registered during excavation is within a few centimeters for individual registrations and identical with the grid size used for the excavation for objects not registered individually. A precondition is of course that the measuring system employed has been positioned correctly.

Platforms: Ships and boats are natural platforms for excavations. Where excavations are carried out very close to land (in harbors etc.) organizational and technical excavation base can be placed on land.

Advantages:

- Direct human control with the excavation situation – when visibility better than zero
- Better possibility for distinction of worked flint, bone fragments, etc. than from a video images if excavation is carried out by ROVs
- Often better preservation of organic materials than on land
- Direct observation of the stratigraphy is possible without the compression/distortion that will follow from taking the excavation object on land
- Extremely high precision/resolution of data registered
- Small objects (sub-cm range) can be registered and retrieved

Disadvantages:

- Visual control can be reduced or totally obscured
- Difficult working conditions where the technical conditions take more of the investigators attention than on land
- In looser sediments it will be difficult to register vertical sections because they tend to collapse

- Not economical below approximately 30 m where much more expensive diving techniques than scuba must be applied or the object to be excavated must be brought on land in one or more sections

Literature:

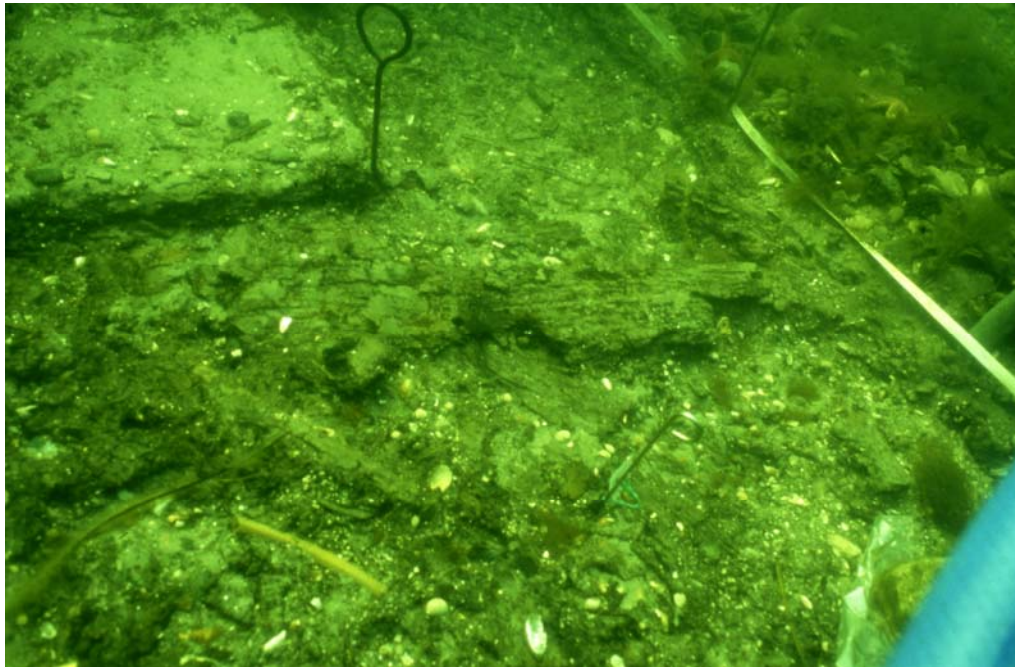
Skaarup, J. and Grøn, O.2004: Møllegabet II. A submerged Mesolithic settlement in southern Denmark. BAR International Series 1328, Oxford.



Divers excavating the Mesolithic pit dwelling at Møllegabet II, Denmark, from a wooden platform positioned above the cultural layer under excavation.



Drwing and levelling with a garden hose at Møllegabet II, Denmark.



Excavating the bark cover of the platform of the Møllegabet dwelling in 0.5 x 0.5 m squares and 5 cm layers.