

## Your Offshore Projects in Safe Hands

Projects involving the seabed carry the risk of encountering unexploded ordnance (UXO) from World War II. In suspect areas it is therefore necessary to perform an UXO survey. T&A carries out offshore surveys from a vessel combining several techniques. Our UXO experts start analyzing the data on board. By combining the results, objects can be located with great accuracy. T&A Survey's own team of UXO experts and certified divers is able to identify and secure UXO on the spot. UXO survey can be combined with archaeological research or the mapping of cables and pipelines.

**N**orth Sea - In order to detect obstacles in the way of planned sand mining activities in the North Sea, T&A mapped the seabed on several locations using Multibeam echo sounder, Side Scan Sonar and Magnetometer technology. The objects could be of archaeological interest or UXO which could constitute a risk during the mining activities. The survey resulted in a list of objects and their GPS positions. The activities could be carried out safely and without causing damage.



**O**osterschelde - In the Dutch Oosterschelde storm surge barrier T&A's divers have approached suspect objects at depths of 40 meters and more. Due to the strong current it was only possible to make a 15 minute dive during the tidal change. Because of these complicating factors and the large distance between the objects, the project required very thorough preparations. Even in stormy weather we managed to complete the project successfully, on time and within budget.

**Y**muiden - Detection in shallow water is often done using a survey boat equipped with several probes on a rack. In deeper waters a so called "Fish" is used, pulled by a survey boat. The disadvantage of this technology is its imprecise positioning and depth measurement. In the seaport of IJmuiden T&A used an AUV (Autonomous Underwater Vehicle) for detection of UXO. The AUV follows the water bottom and is equipped with a magnetometer probe and Side Scan Sonar. Objects that were suspect according to magnetometer results could be excluded based on Side Scan Sonar results.



### T&A Survey

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