COMMUNICATION HUB FOR THE WIND ENERGY INDUSTRY

NETWO

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# ENGLAND REVISITED REGIONAL UPDATE

### MAINTENAN SERVICES VITAL AFTER CARE



**CRANES & LIFTING** RAISING THE BAR

Image: Rope Access Sverige AB, courtesy of Bahco



## OFFSHORE UXO SURVEY AND CLEARANCE OPERATIONS

FEATURE

SPONSOR

UXO survey and clearance operation have become straightforward and standard for many types of offshore work that is being started or conducted in the North or Baltic Seas

During World War I and World War II, huge amounts of ammunition were laid as mine barriers or fired during military operations or dropped by planes in the sea. It is generally accepted that the amount of dumped ammunition (Unexploded Ordnance or "UXO") on the seafloor in the North and Baltic Seas is about 1.6 million tonnes. The largest proportion is supposed to lay within dedicated explosive dumping areas and along the routes to and from those areas. Since a GmbH (SeaTerra) has not completed any UXO clearance operations without encountering an UXO, a closer look was taken at several projects to illustrate the findings...

#### **UXO SURVEY STATISTICS:**

Location	Area surveyed	No. Identified Anomalies	Modelled Metal Mass			
& Year			10-15 kg	15-25kg	25-50 kg	> 50 kg
North Sea 2016	1064 ha	532	23	89	312	108
North Sea 2016	578 ha	289	83	76	67	63
North Sea 2017	417 ha	237	63	84	36	54
North Sea 2017	576 ha	288	46	76	67	99
Baltic Sea 2017	1004 ha	502	113	97	224	68
TOTAL	3639 ha	1848	327	422	554	545

#### **UXO CLEARANCE STATISTICS:**

Location & Year	Inspected Targets	UXO Found	UXO Handed over to EOD Authorities	UXO Detonated in situ
North Sea 2016	532	8	8	0
North Sea 2016	289	10	10	0
North Sea 2017	237	9	0	9
North Sea 2017	288	12	1	11
Baltic Sea 2017/2018	502	44	44	0
TOTAL	1848	83	63	20
Percent	100%	4.5%	3.4%	1.1%

#### **BURIAL DEPTHS OF INSPECTED TARGETS:**

Target Type	TOTAL	< 0.5m	0.5 - 1.0m	1.0 - 1.5m	1.5 - 2.5m	> 2.5m
Investigated Targets	1848	783	512	368	139	46
UXO Targets	81	46	18	9	5	3
Target Type	TOTAL	< 0.5m	0.5 - 1.0m	1.0 - 1.5m	1.5 - 2.5m	> 2.5m
Investigated Targets	1848	42.4%	27.7%	19.9%	7.5%	2.5%
UXO Targets	81	56.8%	22.2%	11.1%	6.2%	3.7%



FEATURE SPONSOR

#### PROJECTS

The projects on which the statistics are based are all located outside of known explosive dumping areas and are 'offshore', i.e. not directly along the coastline or within the rivers or deltas or the Bodden area. Those areas were excluded to avoid creating misleading statistics. Generally, more 'metal scrap' is found in nearshore areas and rivers due to small metal items having fallen overboard.

Not every object we did identify in





### WHAT CAN BE LEARNED FROM THESE NUMBERS?

First of all, about 4-5% of the targets that are identified with magnetometer surveys have been UXOs. This does not sound like much, but for 2016/17 that adds up to about 4,000 UXOs, which were found by all companies reporting to the German 'Zentrale Meldestelle für Munition im Meer'. It should be noted that this number includes nearshore projects with a higher amount of smaller artillery targets.

Regarding the burial depth, most targets (79%) were found within the first metre, but 21% were buried deeper in the sediment. This is of high interest, since many of the detection devices are not able to detect buried objects deeper than 1.5-2.0m. A closer look at the weight of all targets shows that there are no significant differences between the single weight groups, as long as only offshore projects outside of dumping areas are considered. Generally, the closer the work is to the coastline, the more the proportion of smaller targets increases.

#### **SUMMARY**

In summary, about 4-5% of the targets identified with high resolution magnetometer surveys were UXO. About 4% of these UXOs were depth charges, 15% rockets and the remaining 81% were relatively evenly divided between bombs, mines and grenades. 79% of the UXOs were located in the first metre, 11% between 1-1.5m and 10% below 1.5m. Thus, to minimise UXO related

#### **UXO CLEARANCE**

the magnetic data is an UXO and not every UXO is a risk for the offshore operation, but every UXO in the sea constitutes a potential risk for construction works, the environment and the food chain.





risks survey equipment should be able to clearly detect objects below 1.5m.

When does this all end? Looking at the total numbers of targets we cleared, we have only been picking 'crumbs' away from the huge mass of UXO in the sea. Since recent studies are indicating a relation between explosives in the water and the health of marine life (e.g. liver cancer in fish), dumping areas should be monitored more closely and UXO clearance should be considered as a common European task over next decades.

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