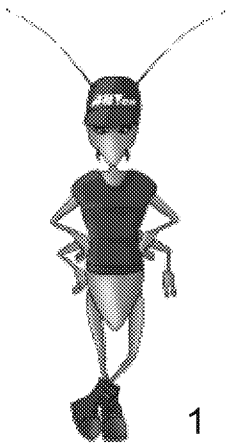
# MIREMAR Conference

## New Methods for the Safe Disposal of Unexploded Ordnances

## in the North- and Baltic Sea

Neumünster, 18. November 2010

Franz Eder, CEO
ANT Applied New Technologies AG





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s cut ahead

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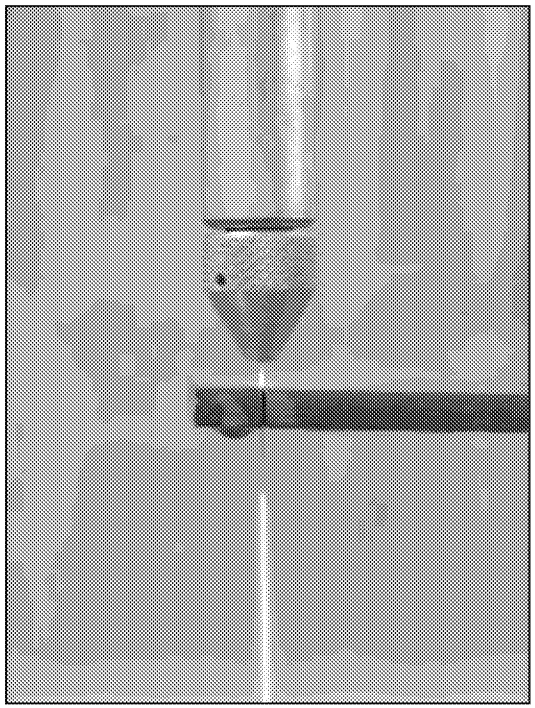


# ANT

# Applied New Technologies AG

The Global Market Leader

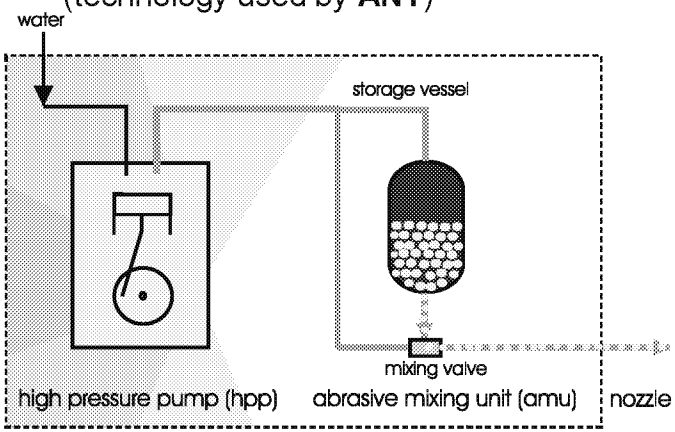
for

Mobile Abrasive Cutting Equipment

(WASS)

# Water Abrasive Suspension System (WASS)

(technology used by **ANT**)



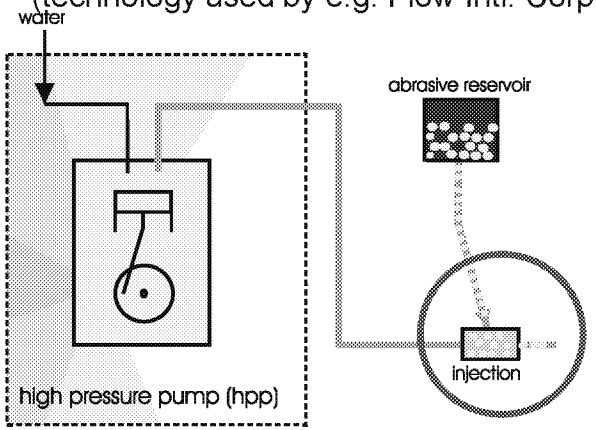

2-phase-system

- water 90 %
- abrasive 10 %

**„dirty water“**

# Water Abrasive Injection System (WAIS)

(technology used by e.g. Flow Intl. Corp. )




3-phase-system

**- air 90 %**
- water 6 %
- abrasive 4 %

**„dirty air“**

# Water Abrasive Suspension System (WASS)

(technology used by **ANT**)

+ no air in the jet
  (safe for explosives!)

+ works under rainy conditions

+ cutting under water

+ Abrasive mixing unit is off site
  (up to 1.000m and more)

+ easy manipulation
  (less strength, 1 hose!)

**EOD system**

# Water Abrasive Injection System (WAIS)

(technology used by e.g. Flow Intl. Corp. )

- Air in the jet
  (not safe for explosives)

- Not reliable under rainy conditions

- No cutting under water

- Abrasive hopper unit is close to UXO (max. 20m)

- extensive manipulation
  (3 times heavier, 2 hoses!)



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# Water Abrasive Suspension (WAS) Cutting Equipment

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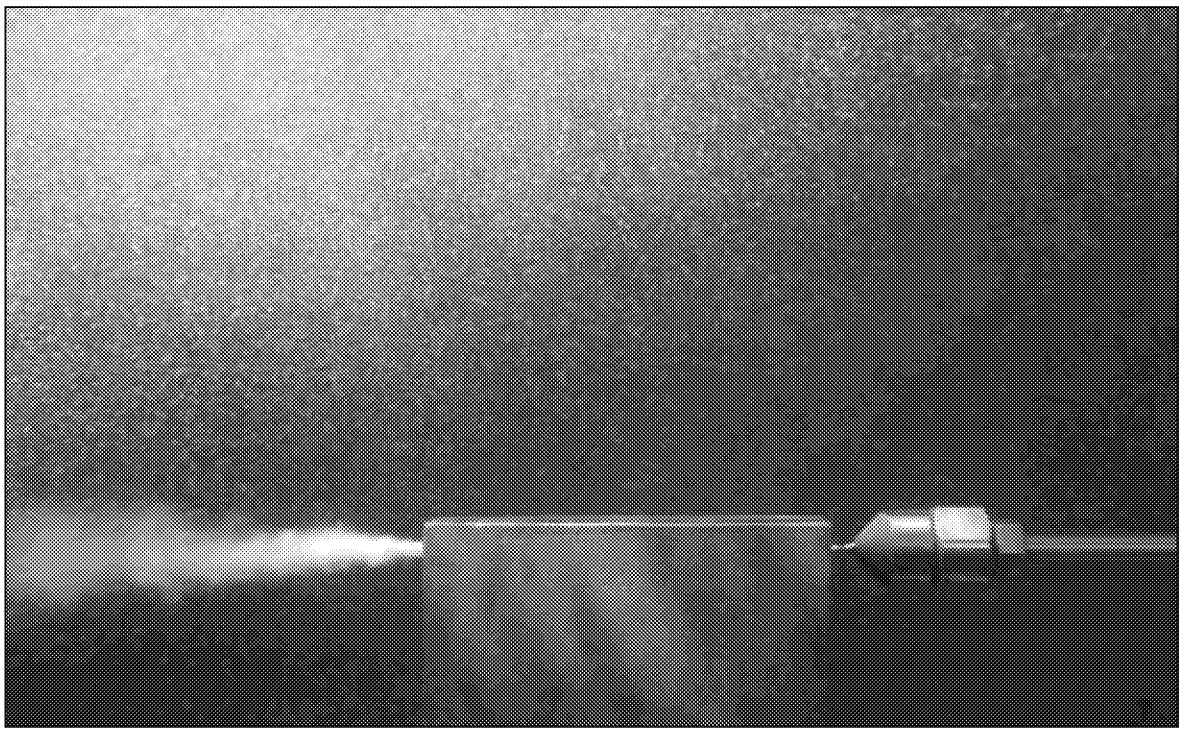
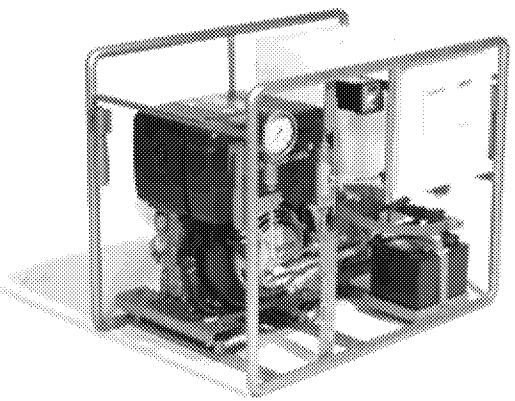
**Cutting under water up to 600 m depth**



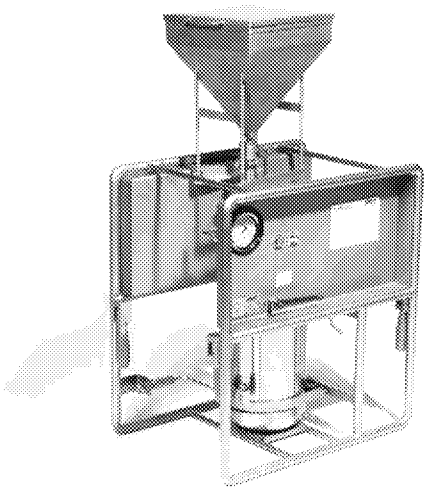
# EOD / IEDD Products

ANT-Products for a remote render safe process

## EOD: MACE

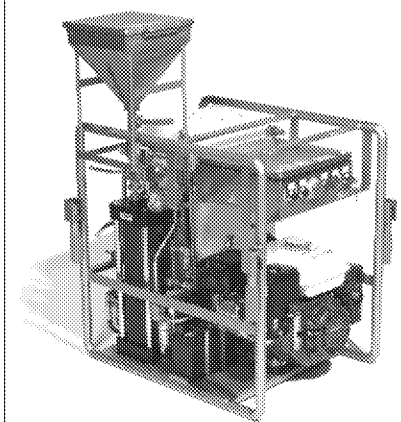


High Pressure Pump



Abrasiv Mixing Unit

## IEDD: mini MACE



Complete system

# Safety through remote operations
## (up to 1000 m distance)

# MACE Applications

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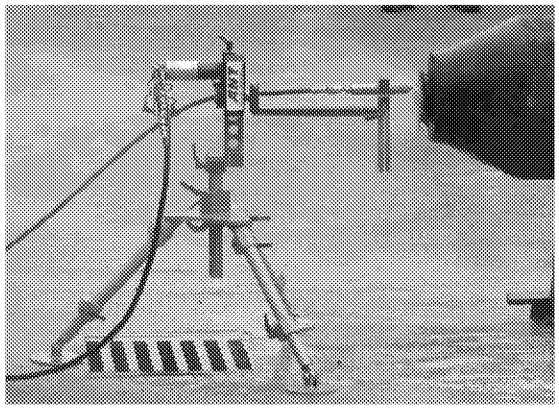
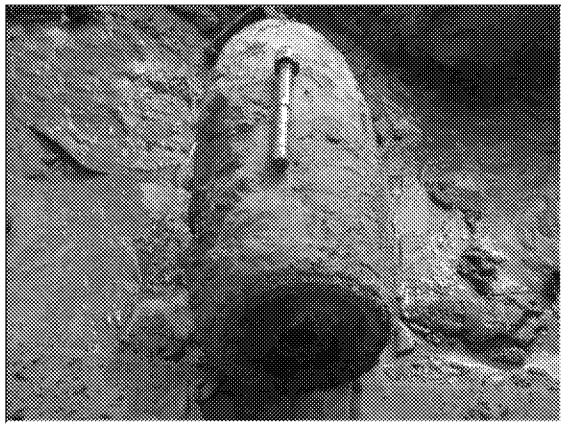
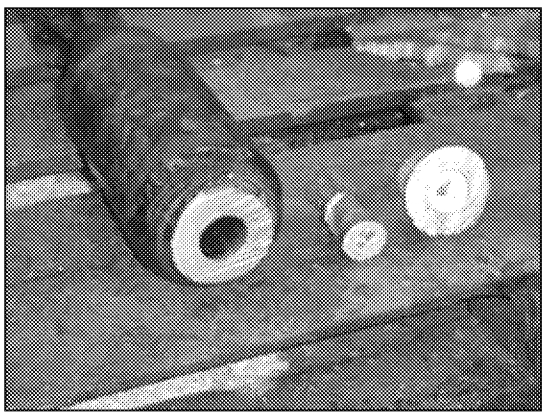


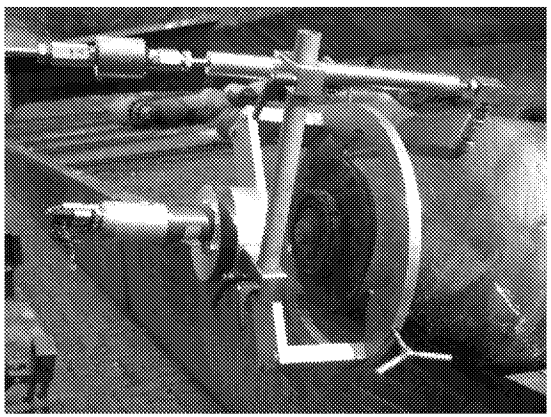
cutting out the fuse



A cut out long delay fuse
(on a Brit. GP 500)



Cut through the fuse of a
phosphor bomb



cut of a tail end (with fuse)

# 2. Problem of dumped ammunition



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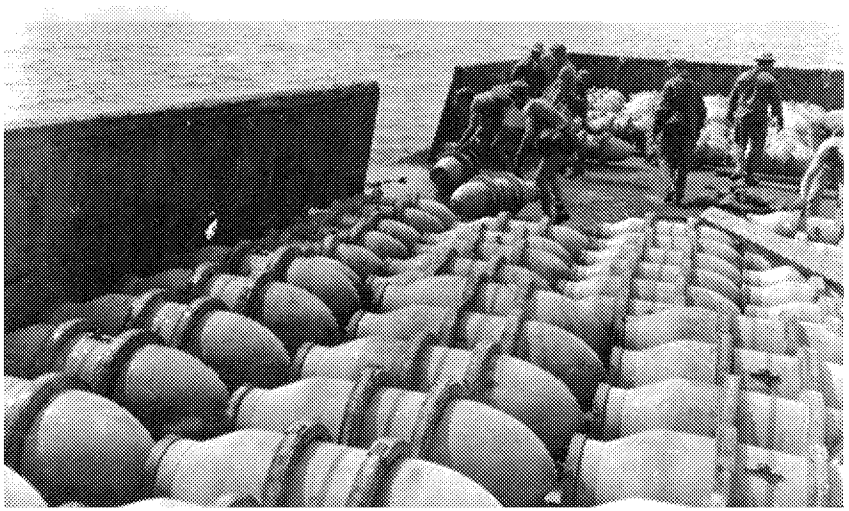
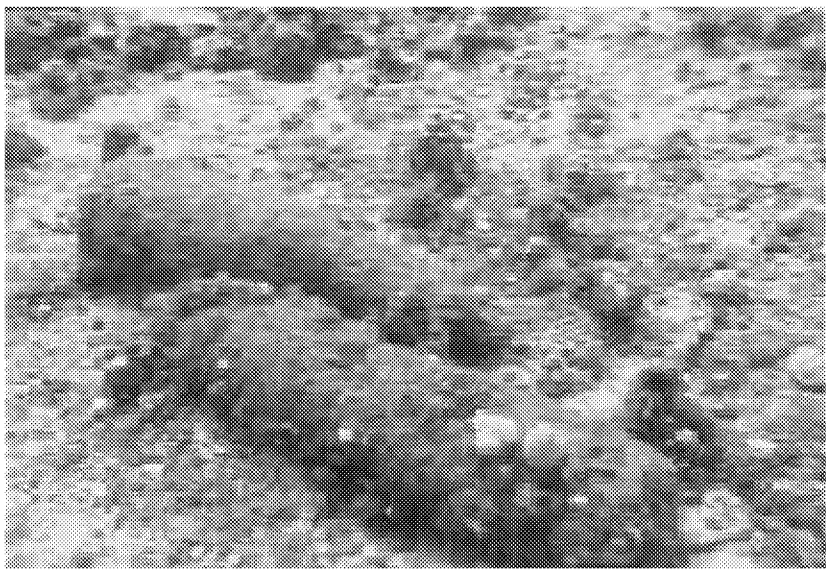
# Far more than 100 dumpsites of unexploded munitions in Europe



# Lethal risk for workers in the fishing industry !

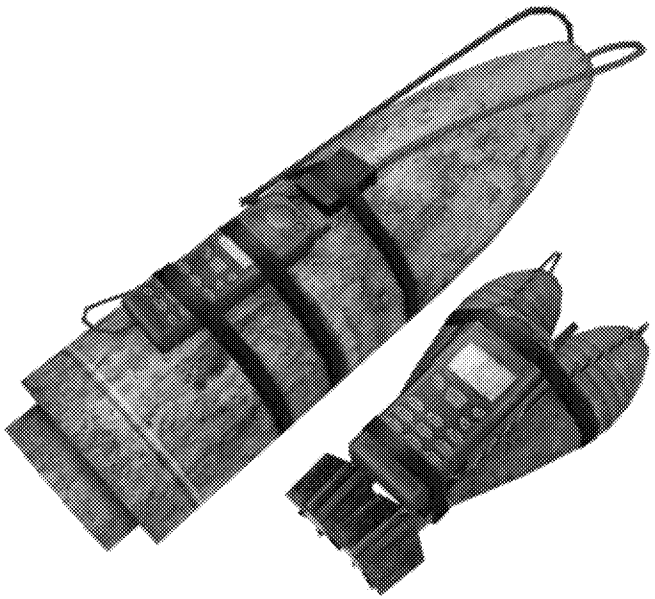
e.g. Three Dutch fisherman killed in April 2005 by II WW bomb

# Growing threat for sea life and our environment !



**corrosion will continue,**
**leakage of toxic agents will increase**

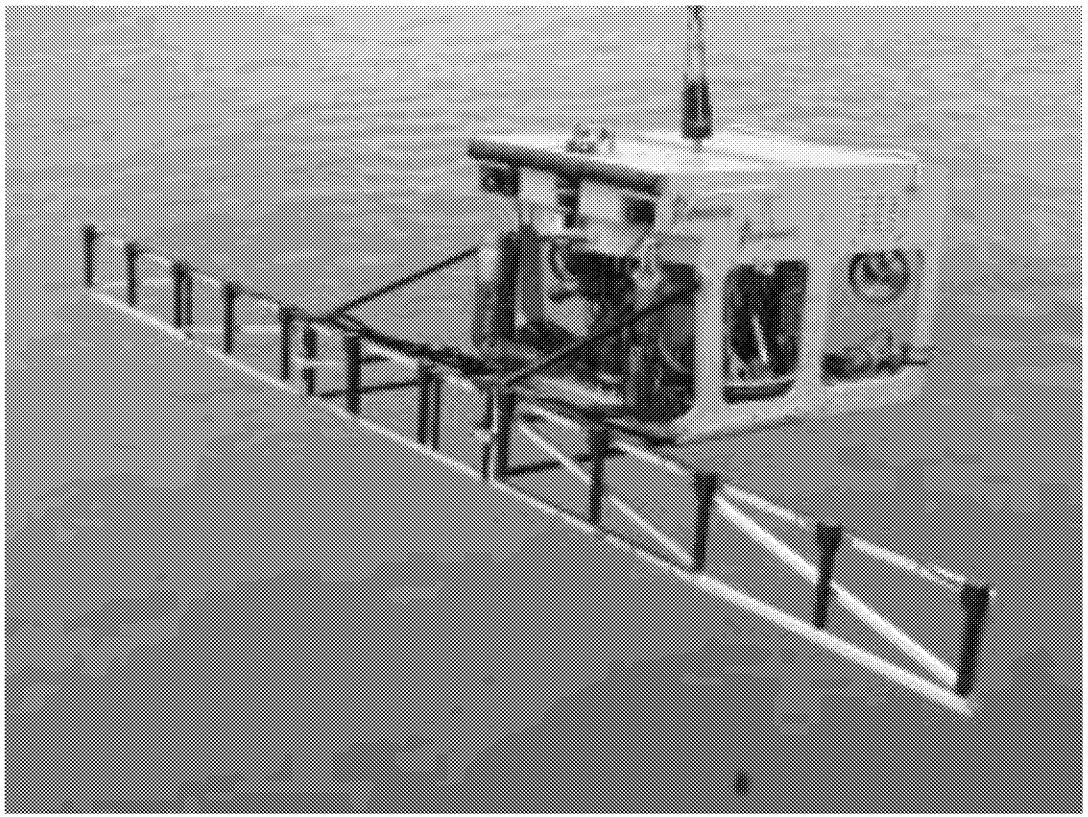
# Potential use
# by terrorists and extremists !



# Easy access because of the
# low water depth (0-30 m) of a lot of dump sites

# 3. Search and survey of munitions

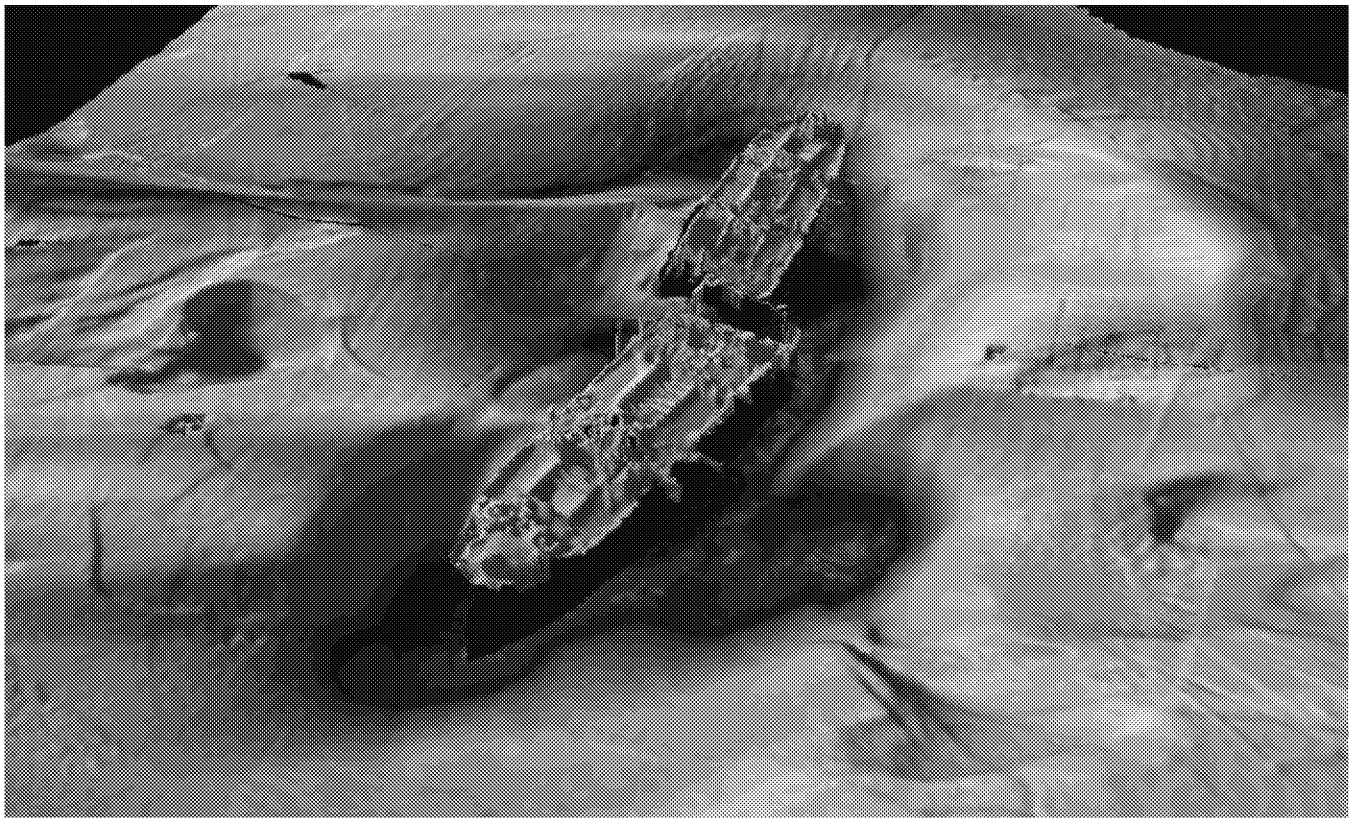
# Survey of unexploded munitions with ROV's



e.g. Comanche ROV from Marin Mätteknik AB, Sveden

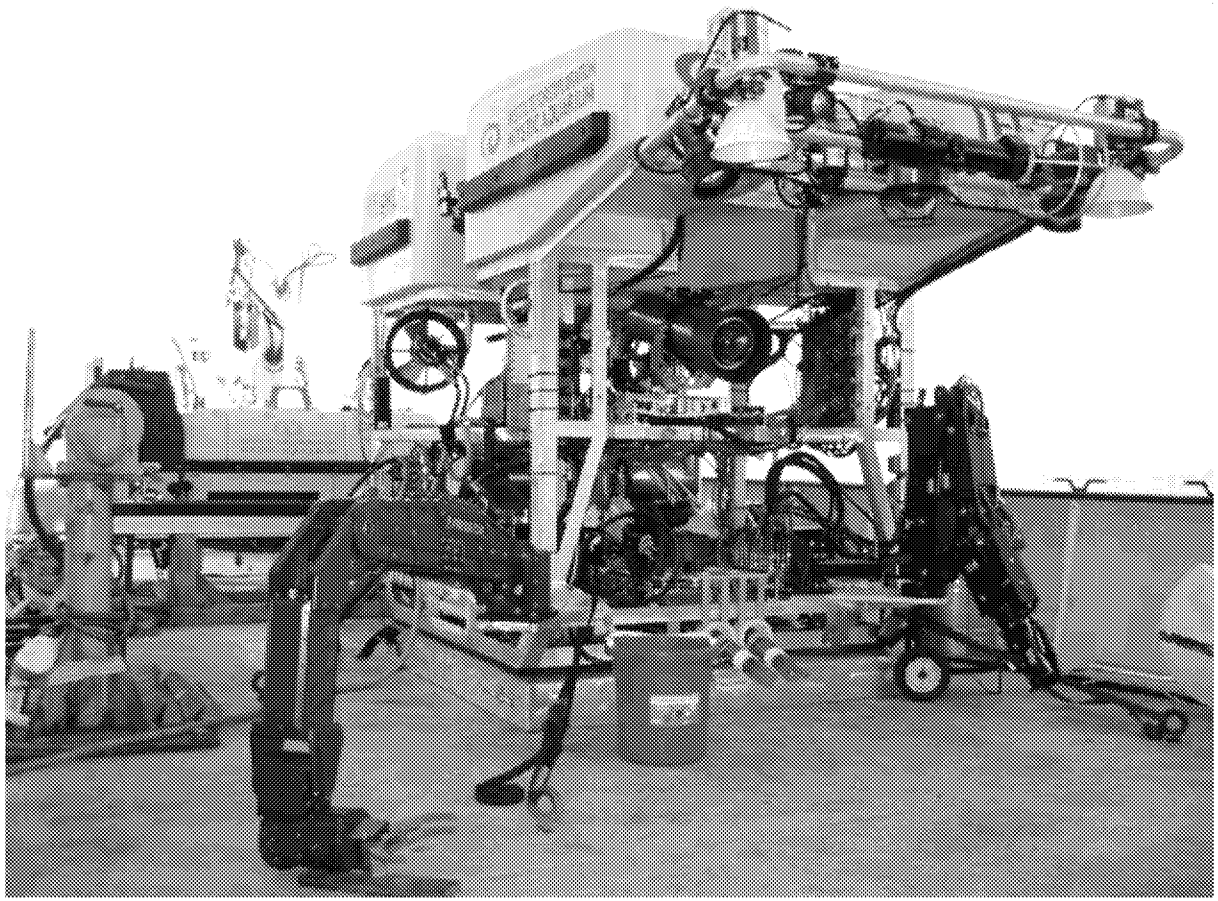
(so far over 2500 km for the North Stream Pipeline Project !)

# Using a combination of various sensoric and acoustic systems



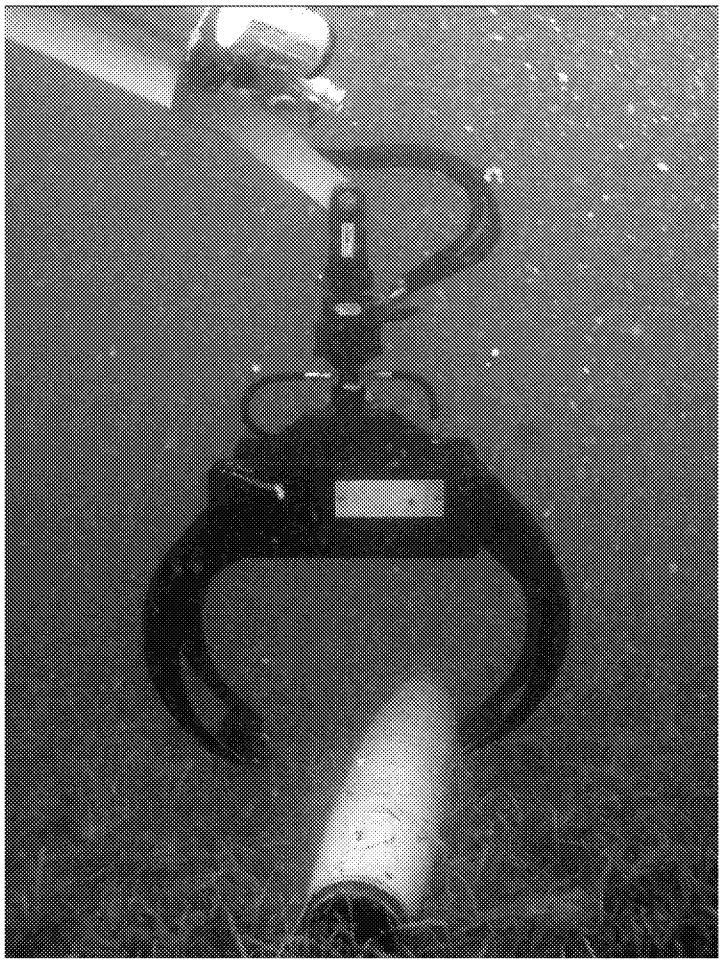
# 4. Separation and Salvage

# Separation and salvage of light munitions with ROV‘s



Using ROV‘s from offshore service companies

# Separation and Salvage of heavy munitions off the sea floor



e.g. with robotics from Underwater Ordinance Recovery Inc.

# 5. Defusing the bombs



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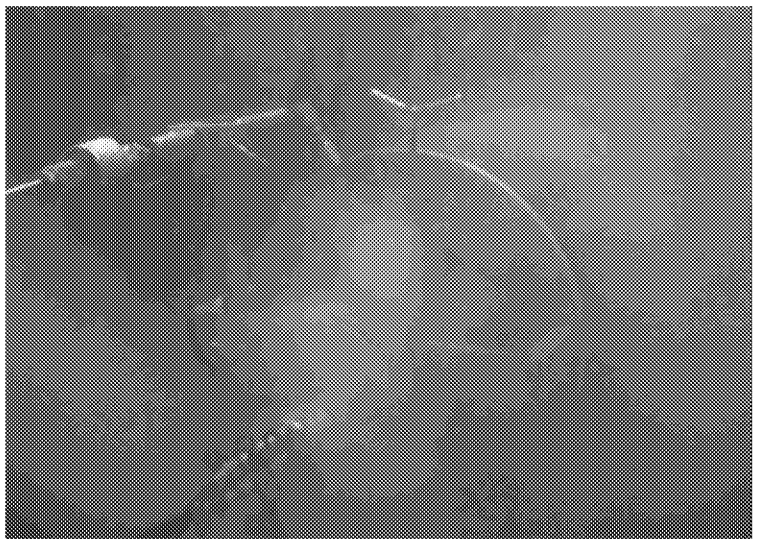
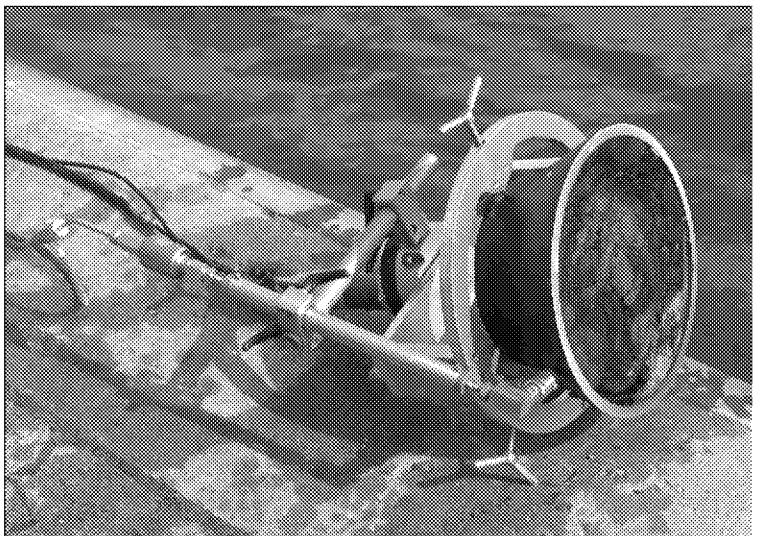
# Defusing the bombs under water with MACE





e.g. cutting off the rear section with the fuse
(Brit. GP 1000 lbs bomb)

# Defusing the bombs on a barge with MACE

**e.g. cutting out a fuse at the screw thread**

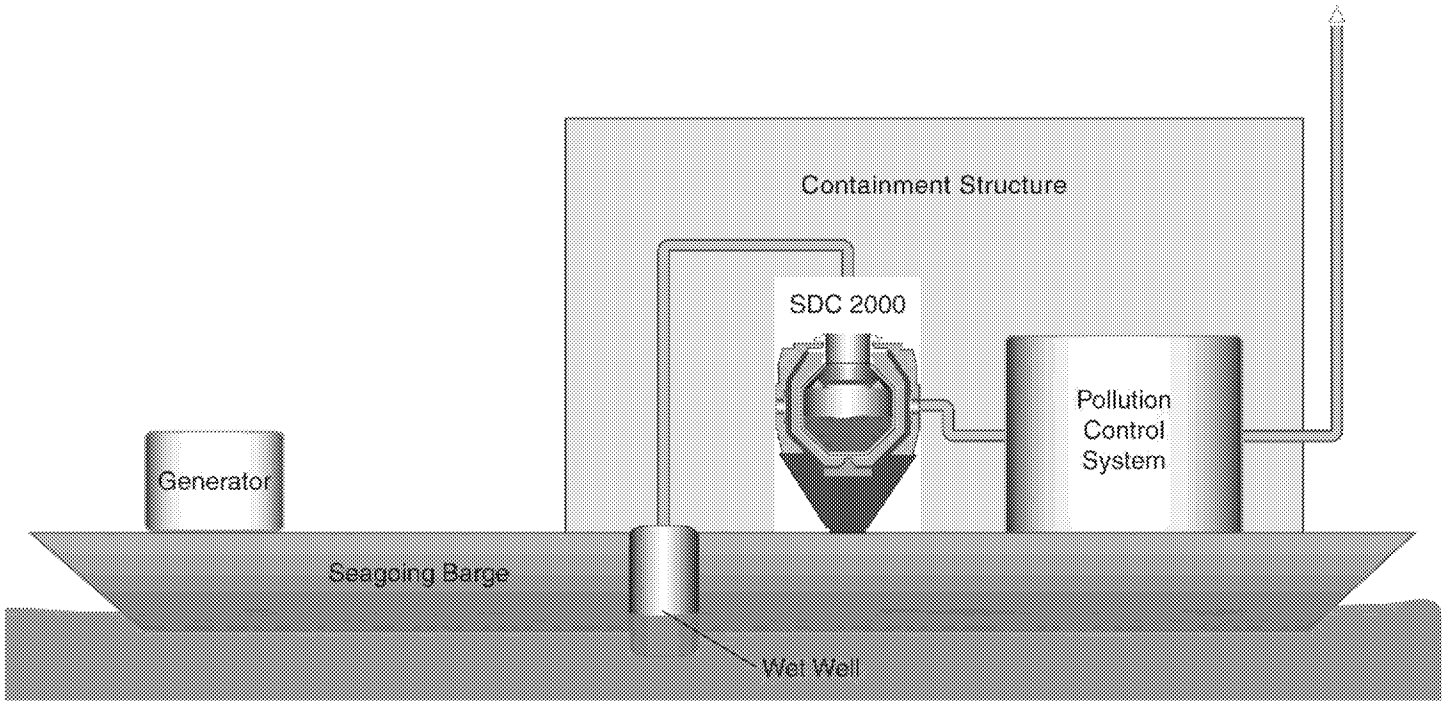
**(US GP 500 bomb)**

# 6. Transport and Destruction

# Offshore on special built barges

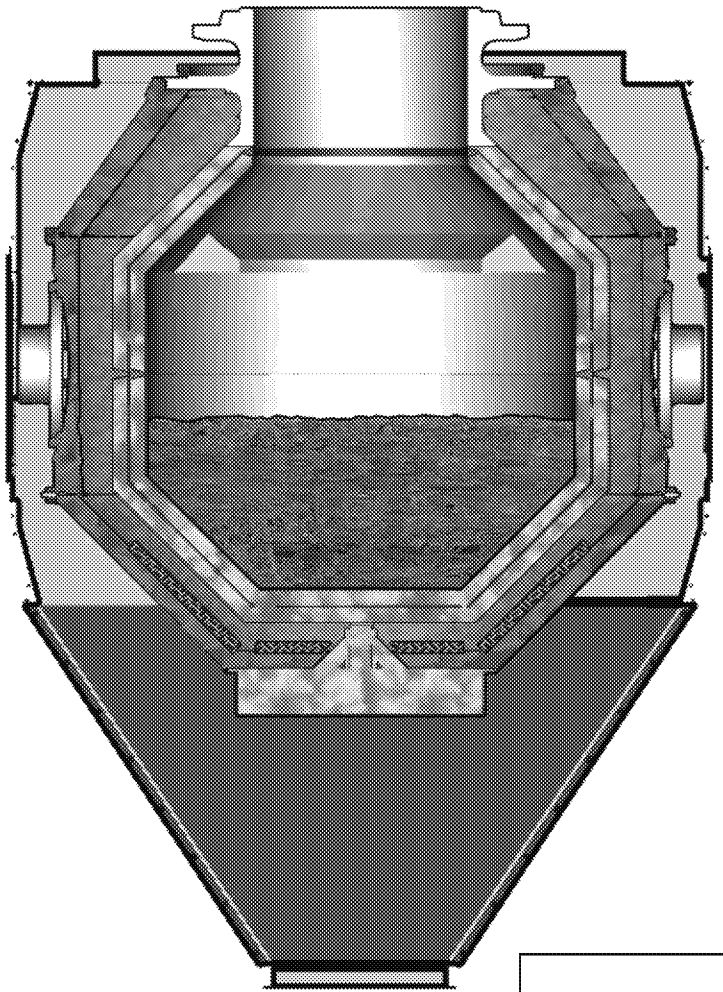
# (Dynasafe Concept)

- Based on adaptation of proven technologies
- Zero handling of munitions after recovery



# Using Dynasafe SDC

# (Static Detonation Chamber)



Outer chamber with heat insulation

Air

Inner chamber

Electrical heating elements

Scrap bed

**www.dynasafe.com**

# Using existing onshore facilities

# e.g. Geka mbH, Munster

transport, storage, demilitarisation and destruction

www.geka-munster.de

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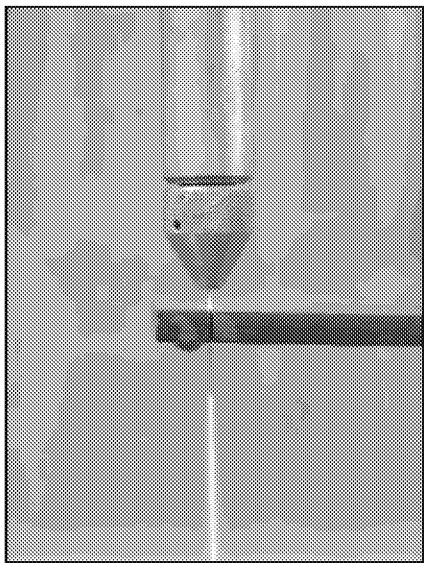
# 7. Resumé – Recovery (avoiding Detonations!)

- Proven technologies are available for recovery
- Companies are ready to start

- Political will is required to fund a reference project
- At least to clean up the hot spots in shallow waters

# Thank you for your attention !

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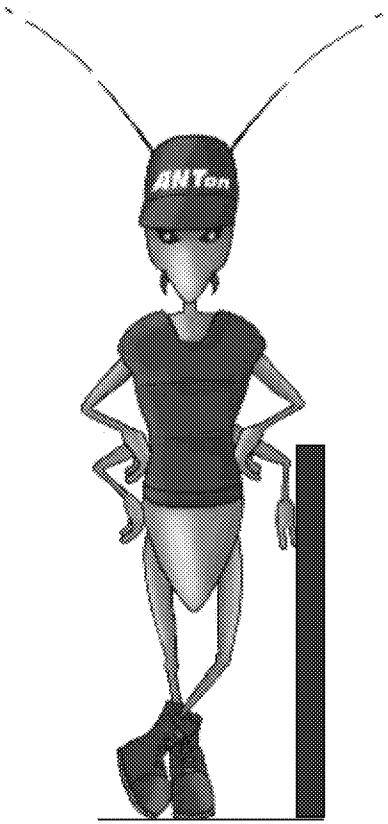



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