



Low Drag, Underwater Acoustic Source for Sea Surface-Based Mine Sweeping

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Problem

- Use of Unmanned Rigid Hull Inflatable Boats (RHIBs) for mine sweeping could have significant benefits
 - Removal of personnel from harm's way
 - Decrease dependence on aircraft assets
 - Reduce operational costs
- Difficulty: RHIBs cannot tow legacy acoustic Mine Countermeasure (MCM) systems
 - High drag, weight & complexity

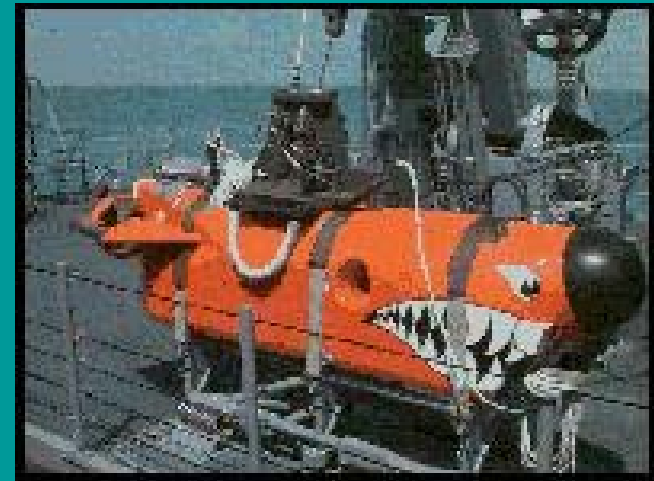
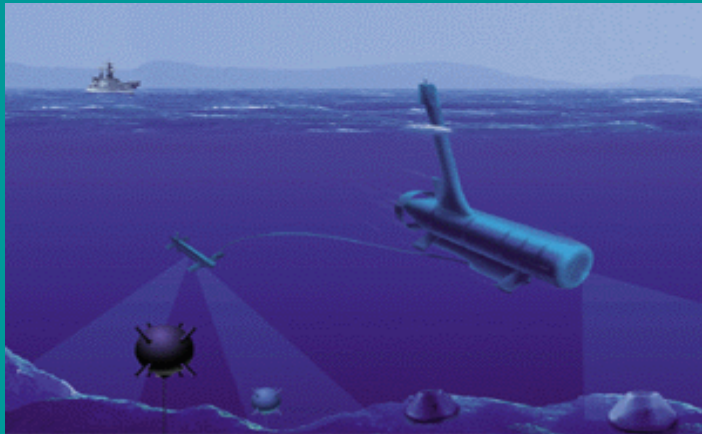
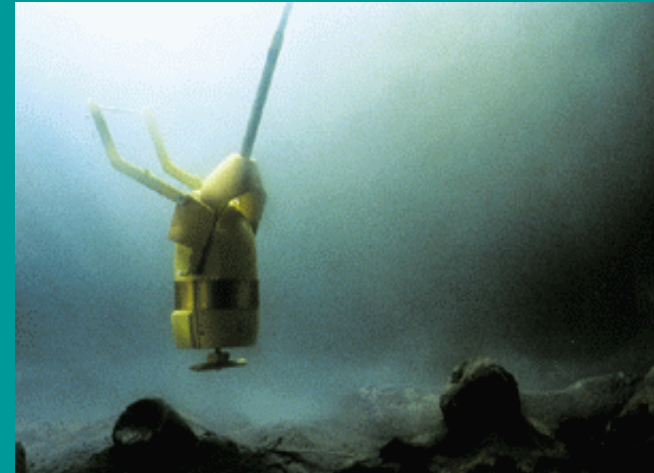
Organizations That Would Benefit

- ONR
- LMW
- PEO Ships - LCS
- PEO Ships – DDG 1000



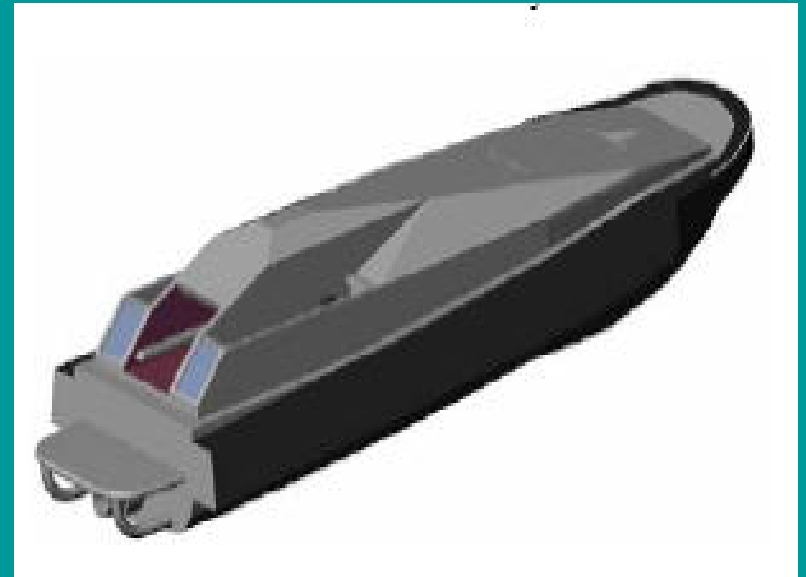
Legacy Systems

- The AN/SQQ-32 is an advanced helicopter and variable-depth mine hunting detection and classification sonar system
- RMS Remote Mine Hunting System - unmanned undersea vehicle
- MNS Mine Neutralization Vehicle – unmanned



Customer Needs

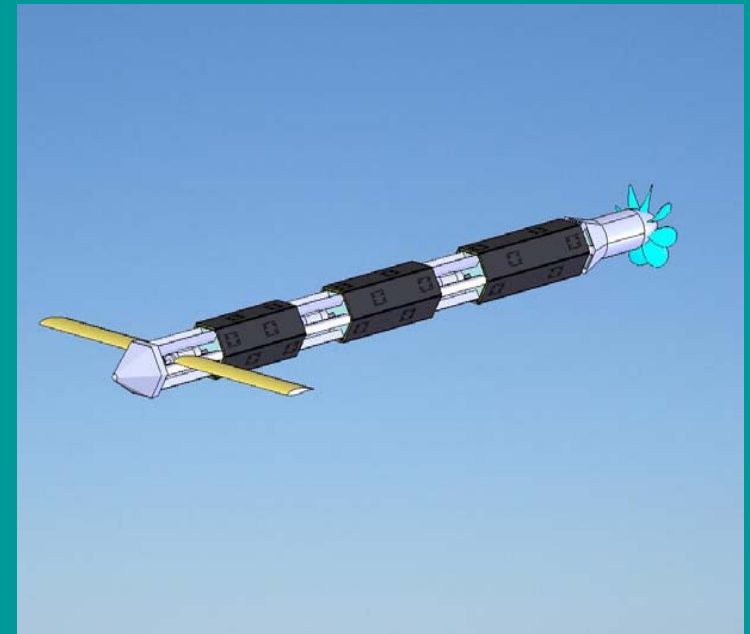
- A low weight, low drag acoustical transducer capable of being towed by an unmanned 11 meter RHIB
- Must meet specific sound pressure levels
- Autonomously launch and retrieve
- Low-cost
- Self powering



Solution

KaZaK Low Drag, Underwater Acoustic Source

- Torpedo shaped transducer – low weight, low drag
- Power generating propeller - self powering
- Self aligning tow cable launch/retrieval system
- Hydrofoils - variable depth
- Variable low frequency adjustments



Cost – Performance

- Low-cost COTS components
- Direct drive operating mechanism
 - Low power requirements
- Shock resistant design
- Low maintenance
 - Use of composites
 - Marine grade materials



Current State of Development

SBIR	Milestone	TRL	Date
Phase II ,YR1	Test article acoustic tank demonstration -Meets Navy radiated sound pressure levels	3	July 2007
Phase II, YR2	Full scale first generation towed prototype for Navy testing	6	July 2008
Option 1	Variable Cross section transducer design and gear reduction system	7	2009
Option 2	Power integration and full scale qualification testing	8	2010

Transition to Fleet

TRL	Milestone	Date	Organizations to be involved
8	Navy defined RHIB requirements/modifications	2009-2010	PEO LMW LCS PEO
9	Transducer/RHIB modifications meet requirements	2009-2010	PEO LMW LCS PEO



Types of Partners Sought

- Navy Primes
 - Integration into MCM system mission modules
 - DDG 1000
 - LCS
 - DDG 51
- Foreign Navies
 - ITAR

Anticipated Role of KaZaK

- Acoustic transducer fabrication/licensing
 - US and International Transducer Patents Pending
- Design and Process licensing
- Service and engineering support
- Product validation
- Training
- Long-term support for quality product development



About the Company



- High performance composite structures
- Large pultruded structures, panels and tubes
- Specializing in large and unusual pultrusions
- Established in 1992 – privately held
- Engineering – Woburn, MA
- Manufacturing – Hudson, NH

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