

Topic: N122-129

Midé Technology Corporation

Retractable Advanced Mooring System (RAMS)

Midé developed a Retractable Advanced Mooring System (RAMS) to minimize maintenance and reduce manpower on current fixtures used by DDG 51 Class Navy ships. RAMS uses high performance, corrosion resistant materials to eliminate routine maintenance. Midé anticipates the Phase II effort to generate a fielded system that improves operation and reduces costs for Navy and other potential commercial applications. Recently, the Navy has placed an emphasis on reducing total ownership costs, especially maintenance costs, and this technology can provide those benefits. Midé Technology Corporation develops, produces and markets high performance products such as HydroActive™ bulkhead shaft seals, portable vibration data loggers, and other smart solutions. Midé's innovative people, systems approach, and customer focus enables delivery of improved systems that reduce maintenance and total life-cycle costs.

Technology Category Alignment:

Satellite Communications (SATCOM)

Robotics/Automated Material Handling Equipment

Shipyards/Shipbuilding

Supply; Storage

Satellite Communications (SATCOM)

Satellite Communications (SATCOM)

Supply; Storage

Supply; Storage

Satellite Communications (SATCOM)

Satellite Communications (SATCOM)

Shipyards/Shipbuilding

Robotics/Automated Material Handling Equipment

Robotics/Automated Material Handling Equipment

Robotics/Automated Material Handling Equipment

Robotics/Automated Material Handling Equipment

Protection, Sustainment, and Warfighter Performance

Medical Chem-Bio Defense

Military Infectious Diseases

Propulsion and Extreme Environments

Fixed Wing Vehicles (includes UAS)

Survivability

Maintainability/Sustainability

Unmanned Ground and Sea Vehicles

Corrosion

Advanced Computing/Software Development

Networks and Communications

Modular/Open/Reconfigurable Architectures

RF Components for sensing, transmission and communication

Electronics Integration

Broadband/Multispectral Components and Systems

Sensors, Electronics and Photonics

Radio Frequency (RF) (non-EW)

Survivability

Broadband/Multispectral Components and Systems

RF Components for sensing, transmission and communication

Radio Frequency (RF) (non-EW)

Networks and Communications

Guidance, Navigation & Control (GN&C) and Data Links
RF Components for sensing, transmission and communication
Networks and Communications
Cognitive/Adaptive Capabilities
Preemptive/Proactive Effects
Broadband/Multispectral Components and Systems
Advanced Computing/Software Development
Networks and Communications
Personalized Assessment, Education, and Training
System Interfaces & Cognitive Processes
Aircraft Propulsion, Power and Thermal
Modeling, Simulation & Test Infrastructure
Rotary Wing Vehicles
Fixed Wing Vehicles (includes UAS)
Fixed Wing Vehicles (includes UAS)
Acoustic, Seismic and Magnetic
Rotary Wing Vehicles
Structures and Protection
Energy storage
Unmanned Ground and Sea Vehicles
Mobility
Power and Energy
Synthesis/Analytics/Decision Tools
Information Collection/Management
Advanced Computing/Software Development
Survivability
Unmanned Ground and Sea Vehicles
Radio Frequency (RF) (non-EW)
Power Generation/Energy Conversion
Energy storage
Power and Energy
Sensors, Electronics and Photonics
Maintainability/Sustainability
Advanced Computing/Software Development
EO/IR Components for sensing, transmission and communication
Microelectronics and Nanoelectronics
Networks and Communications
Mobility
Broadband/Multispectral Components and Systems
Sensors, Electronics and Photonics
Structures and Protection
Electro-Optical/Infrared (EO/IR)
Human/Autonomous System Interaction and Collaboration
Maintainability/Sustainability
System Interfaces & Cognitive Processes
Aircraft Propulsion, Power and Thermal
Power Generation/Energy Conversion

High Energy Lasers (HEL)
Propulsion
Biomedical Informatics / Health Information Systems & Technology
Protection, Sustainment, and Warfighter Performance
Modeling, Simulation & Test Infrastructure
Maintainability/Sustainability
Mobility
Personalized Assessment, Education, and Training
RF Components for sensing, transmission and communication
Broadband/Multispectral Components and Systems
Sensors, Electronics and Photonics
Radio Frequency (RF) (non-EW)
Radio Frequency Weapons (RFW)
Energy storage
Power Generation/Energy Conversion
Thermal Transport and Control
Unmanned Ground and Sea Vehicles
Acoustic, Seismic and Magnetic
RF Components for sensing, transmission and communication
Guidance, Navigation & Control (GN&C) and Data Links
Survivability
High-Speed/Hypersonics
Power Generation/Energy Conversion
Acoustic, Seismic and Magnetic
Radio Frequency Weapons (RFW)
Electronic Materials
Electronics Integration
RF Components for sensing, transmission and communication
Electromechanical conversion
Energy storage
Power Control and Distribution
Power Generation/Energy Conversion
Thermal Transport and Control
EO/IR Components for sensing, transmission and communication
RF Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Fixed Wing Vehicles (includes UAS)
Distributed/Coordinated/Net-Enabled Systems
High-Speed/Hypersonics
Propulsion and Extreme Environments
Energy storage
Ordnance
Human Computer Interfaces (HCI) for Decision Making
Information Collection/Management
Synthesis/Analytics/Decision Tools
EO/IR Components for sensing, transmission and communication
Rotary Wing Vehicles

Protection, Sustainment, and Warfighter Performance
System Interfaces & Cognitive Processes
RF Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Rotary Wing Vehicles
Broadband/Multispectral Components and Systems
Radio Frequency Weapons (RFW)
Maintainability/Sustainability
Propulsion and Extreme Environments
Electro-Optical/Infrared (EO/IR)
Modeling, Simulation & Test Infrastructure
Radio Frequency (RF) (non-EW)
Machine Perception, Reasoning and Intelligence
Assuring Effective Missions
Modular/Open/Reconfigurable Architectures
Personalized Assessment, Education, and Training
Fixed Wing Vehicles (includes UAS)
Machine Perception, Reasoning and Intelligence
System Interfaces & Cognitive Processes
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Fixed Wing Vehicles (includes UAS)
Power Generation/Energy Conversion
Unmanned Ground and Sea Vehicles
Power and Energy
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Ordnance
Aircraft Propulsion, Power and Thermal
Test, Evaluation, Validation, and Verification
Power Generation/Energy Conversion
Mobility
Maintainability/Sustainability
Power Generation/Energy Conversion
Maintainability/Sustainability
Acoustic, Seismic and Magnetic
Test, Evaluation, Validation, and Verification
Maintainability/Sustainability
Corrosion
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Fixed Wing Vehicles (includes UAS)
Networks and Communications
RF Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Rotary Wing Vehicles
Fixed Wing Vehicles (includes UAS)
EO/IR Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Information Collection/Management

Electro-Optical/Infrared (EO/IR)
Aircraft Propulsion, Power and Thermal
Aircraft Propulsion, Power and Thermal
Propulsion and Extreme Environments
Modeling, Simulation & Test Infrastructure
EO/IR Components for sensing, transmission and communication
RF Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Fixed Wing Vehicles (includes UAS)
Distributed/Coordinated/Net-Enabled Systems
Human/Autonomous System Interaction and Collaboration
Machine Perception, Reasoning and Intelligence
Scalable Teaming of Autonomous Systems
Human Computer Interfaces (HCI) for Decision Making
Synthesis/Analytics/Decision Tools
Combat Casualty Care
Military Infectious Diseases
Military Operational Medicine
Readiness
Maintainability/Sustainability
Survivability
Energy storage
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Acoustic, Seismic and Magnetic
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Networks and Communications
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System Interfaces & Cognitive Processes

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Aircraft Propulsion, Power and Thermal
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Maintainability/Sustainability
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Human Aspects of Operations in Military Environments
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Broadband/Multispectral Components and Systems
RF Components for sensing, transmission and communication
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Modeling, Simulation & Test Infrastructure
Mobility
Modularity
Survivability
Unmanned Ground and Sea Vehicles
Radio Frequency Weapons (RFW)
Aircraft Propulsion, Power and Thermal
Power Generation/Energy Conversion
Modeling, Simulation & Test Infrastructure
Propulsion
Biomedical Informatics / Health Information Systems & Technology
Biomedical Informatics / Health Information Systems & Technology
Electro-Optical/Infrared (EO/IR)
High Energy Lasers (HEL)
EO/IR Components for sensing, transmission and communication
Networks and Communications
Sensors, Electronics and Photonics
Electro-Optical/Infrared (EO/IR)
Human Computer Interfaces (HCI) for Decision Making
Information Collection/Management
Synthesis/Analytics/Decision Tools
Human Aspects of Operations in Military Environments
System Interfaces & Cognitive Processes
Clinical & Rehabilitative Medicine
Combat Casualty Care
Military Operational Medicine

Protection, Sustainment, and Warfighter Performance
System Interfaces & Cognitive Processes
Fixed Wing Vehicles (includes UAS)
Information Collection/Management
Personalized Assessment, Education, and Training
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Synthesis/Analytics/Decision Tools
System Interfaces & Cognitive Processes
Electronics Integration
RF Components for sensing, transmission and communication
Sensors, Electronics and Photonics
Acoustic, Seismic and Magnetic
Advanced Computing/Software Development
Advanced Electronic Protection Techniques and Technology
Survivability
Modeling, Simulation & Test Infrastructure
Ordnance
Biomedical Informatics / Health Information Systems & Technology
Protection, Sustainment, and Warfighter Performance
Biomedical Informatics / Health Information Systems & Technology
Survivability
Protection, Sustainment, and Warfighter Performance
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Energy storage
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EO/IR Components for sensing, transmission and communication
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Preemptive/Proactive Effects
Fixed Wing Vehicles (includes UAS)
Personalized Assessment, Education, and Training
Manufacturing Technology for Affordability
Protection, Sustainment, and Warfighter Performance
Protection, Sustainment, and Warfighter Performance
Personalized Assessment, Education, and Training
Broadband/Multispectral Components and Systems
Manufacturing Technology for Affordability
Broadband/Multispectral Components and Systems
Personalized Assessment, Education, and Training
Manufacturing Technology for Affordability
Guidance, Navigation & Control (GN&C) and Data Links
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Fixed Wing Vehicles (includes UAS)
Acoustic, Seismic and Magnetic
Manufacturing Technology for Affordability
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Energy storage
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Acoustic, Seismic and Magnetic
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Survivability

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Networks and Communications
Personalized Assessment, Education, and Training
Networks and Communications

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Modular/Open/Reconfigurable Architectures
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Fixed Wing Vehicles (includes UAS)
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Survivability
Manufacturing Technology for Affordability
Manufacturing Technology for Affordability

Propulsion
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Trust Foundations
Trust Foundations
Distributed/Coordinated/Net-Enabled Systems
Survivability
Agile Operations
Personalized Assessment, Education, and Training
Protection, Sustainment, and Warfighter Performance
Human/Autonomous System Interaction and Collaboration
Human Computer Interfaces (HCI) for Decision Making
Synthesis/Analytics/Decision Tools
Information Collection/Management
Human Aspects of Operations in Military Environments
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Synthesis/Analytics/Decision Tools
Synthesis/Analytics/Decision Tools
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Information Collection/Management
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Aircraft Propulsion, Power and Thermal
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Rotary Wing Vehicles
Fixed Wing Vehicles (includes UAS)
Corrosion
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Trust Foundations
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Maintainability/Sustainability
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Maintainability/Sustainability
Fixed Wing Vehicles (includes UAS)
Aircraft Propulsion, Power and Thermal
High-Speed/Hypersonics
Propulsion
Aircraft Propulsion, Power and Thermal
Electro-Optical/Infrared (EO/IR)
RF Components for sensing, transmission and communication
Networks and Communications
Distributed/Coordinated/Net-Enabled Systems
Radio Frequency (RF) (non-EW)
EO/IR Components for sensing, transmission and communication
Networks and Communications
Sensors, Electronics and Photonics
RF Components for sensing, transmission and communication
Networks and Communications
Distributed/Coordinated/Net-Enabled Systems
Radio Frequency (RF) (non-EW)
EO/IR Components for sensing, transmission and communication
Test, Evaluation, Validation, and Verification
Electro-Optical/Infrared (EO/IR)
Modeling, Simulation & Test Infrastructure
Fixed Wing Vehicles (includes UAS)
Fixed Wing Vehicles (includes UAS)
Structures and Protection
Modeling, Simulation & Test Infrastructure
Networks and Communications
Trust Foundations
Fixed Wing Vehicles (includes UAS)
Test, Evaluation, Validation, and Verification
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Manufacturing Technology for Affordability
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Radio Frequency (RF) (non-EW)
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RF Components for sensing, transmission and communication
Sensors, Electronics and Photonics
Sensors, Electronics and Photonics

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Sensors, Electronics and Photonics
RF Components for sensing, transmission and communication
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Acoustic, Seismic and Magnetic
Power Control and Distribution
Acoustic, Seismic and Magnetic
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Aircraft Propulsion, Power and Thermal
Rotary Wing Vehicles
Aircraft Propulsion, Power and Thermal
Aircraft Propulsion, Power and Thermal
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EO/IR Components for sensing, transmission and communication
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Fixed Wing Vehicles (includes UAS)
Power Generation/Energy Conversion
Rotary Wing Vehicles
Protection, Sustainment, and Warfighter Performance
Energy storage
Power Control and Distribution
Power and Energy
Propulsion and Extreme Environments
Ordnance
Energy storage
Power and Energy
Test, Evaluation, Validation, and Verification
Synthesis/Analytics/Decision Tools

Modular/Open/Reconfigurable Architectures
Collaborative Analysis and Decision-making
Readiness

Structures and Protection

Aircraft Propulsion, Power and Thermal
Corrosion

Propulsion and Extreme Environments
Readiness

Sensors, Electronics and Photonics

Structures and Protection

Electronics Integration

Networks and Communications

None

None

Aircraft Propulsion, Power and Thermal
Fixed Wing Vehicles (includes UAS)

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

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SYSCOM: NAVSEA

Contract: N00024-15-C-4027

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00024-15-C-4027

WHO

SYSCOM: NAVSEA

Sponsoring Program: Team Ships, PMS 400D

Transition Target: DDG 51

TPOC:
(215) 897-1446

Other transition opportunities: Bitt and chock mooring fixtures are widely used onboard both Navy and commercial vessels. Vessels operating helicopters or with similar height-above-the-deck restrictions have the need for a reliable retractable mooring fixture.



Courtesy of U.S. Navy, RAMS II, Topic Number: N122-129

WHAT

Operational Need and Improvement: DDG 51 Class ships require retractable mooring fixtures (bits and chocks) located on the flight deck to prevent obstruction during flight operation. The current systems have frequent issues deploying and retracting as a result of exposure to the highly corrosive seawater environment. The significant corrosion requires frequent maintenance that otherwise results in degradation of system performance. Reduced manpower impacts the prioritization of maintenance tasks and can render the retractable mooring fixtures inoperable. The Navy requires a system with greater corrosion resistance and improved operational reliability.

Specifications Required: A redesigned chock and bitt system needs to fit in the existing envelope on the ship deck. The fixtures must be able to handle the operational loads and survive in the corrosive, seawater environment. Meeting the need for reduced maintenance and increased operational reliability and maintainability in a maritime environment represents the most significant challenge associated with a bitt and chock replacement design solution.

Technology Developed: Midé has developed a retrofit solution to enhance the performance of the existing chock and bitt systems by utilizing improved materials and redesigns of critical components. The improvements reduce maintenance requirements while making the fixtures more robust in order to survive the corrosive operational environment.

Warfighter Value: Midé's design and material selection improves functionality, increases reliability and reduces the potential of the harmful impacts of corrosion. This eliminates frequent maintenance requirements on the chock and bitt fixtures, helping to reduce the manpower requirement for the ship. The improved reliability and availability, in addition to the reduced maintenance and overhaul requirements, will reduce the total ownership cost for the Navy.

WHEN

Contract Number: N00024-15-C-4027 **Ending on:** December 9, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype Development and Testing	Low	Operational Loads Achieved	6	March 2016
Qualification Testing	Med	Pass Tests in Operational Environment	8	June 2017
Ship Study	Med	Successful Operation	9	June 2018

HOW

Projected Business Model: Midé is working with the current manufacturer to improve the design and function of the retractable system, using alternative materials with inherent anti-corrosion properties. Midé has the ability to manufacture some of the components in house and currently plan to partner with the system manufacturer to supply components and license our design.

Company Objectives: Midé Technology Corporation develops, produces and markets high performance products for the military and many industries. Midé's mission is to provide innovative, value-added engineering solutions to our customers. Our innovative people, systems approach, and customer focus provides us with the ability to conceptualize, design and deliver these high performance, intelligent systems and services tailored to our clients' specific needs. Midé has excelled in providing the military with improved systems that reduce maintenance requirements and total life-cycle costs. Midé is seeking other commercial and military platforms applications requiring a similar solution and are continually looking for other opportunities to apply our advanced design solutions with new materials to solve reliability and maintainability needs.

Potential Commercial Applications: Commercial vessels operating helicopters or with height-above-the-deck restrictions have the need for a reliable retractable mooring fixture alternative. A more reliable system would reduce maintenance requirements, system down time, and total life-cycle costs as a benefit to the vessel.