

NAVY Transition Assistance Program

"Approved for public release; distribution is unlimited."

NEED & CUSTOMER REQUIREMENT

Need: Current US Navy emergency pipe patching and plugging procedures require a multitude of different techniques to combat different leak situations. Each pipe rupture scenario requires securing of the leak source as well as the use of highly trained individuals and cumbersome equipment.

Value to the Warfighter: Development of a universal emergency leak arresting and pipe repair kit that is usable by one individual will greatly simplify and expedite the emergency and at-sea pipe patching process.

Operational Gap: More than one person may be required to effectively control and repair the leak in a timely manner. When there are jagged or deformed edges or nonlinear pipe configurations involved, all of the US Navy patch repair kits currently available become ineffective.

Customer Specifications: Capable of immediately stopping leaks in pipes ranging from 0.5 in. - 12 in. in diameter, constructed from a wide variety of metals and composites. Ability to immediately seal all water or petroleum based liquid leaks and steam or gaseous pipe leaks while under pressure. Meet or exceed the pressure and temperature limitations of the current multitude of US Navy pipe repair devices.

Technology Description: PSI has developed a new UV-cured material for in-the-field forming and fabrication of rigid strongbacks. It is a vacuum-sealed UV curing sheet material capable of easy molding into required shapes with a bonded rubber backing on one side for a gasket seal under pressure. The ARIES sheet cures under UV illumination in less than one minute to a mechanically rigid state (tensile strength 23000 psi)

TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Lab demonstration of UV curable leak arresting sheet	3	Low	One man leak arresting	08/01/2008
Procedures for operational use under different scenarios	5	Moderate	Successful demonstration	02/10/2010
Phase II Option - Leak facility testing under operational pressures and leak types	6	Moderate	Successful demonstration w/Navy personnel	12/10/2010
Phase II Option - First Article Testing	7	Moderate	Successful testing at Navy Leak Facility	03/10/2011
Phase II Option - Documentation & Training Materials & Tests	8	Low	Final test in Operational Environment (on ship or at Navy Leak Test Facility)	03/10/2012

Open contract: N00024-09-C-4131 ending 05/10/2010

N07-057 - Physical Sciences Inc.

ARIES Leak Arresting System Phase II

SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: NAVSEA

Transition Target: Aegis New Construction Program, ACAT 1D

Original Sponsoring Program: PEO Ships: PMS 400D

TPOC Phone Number: 215-897-8459



TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications:

Additional applications include modernization for DDG-51 and other Navy and Coast Guard ships, new ship platforms, allied foreign military, and merchant marine. ARIES enables rapid leak arresting of pressurized pipes regardless of pipe size, pipe shape, and leak geometry. Emergency leak repair for private sector industrial applications is an anticipated emerging market.

Business Model:

For military and merchant marine applications, PSI will be the supplier of ARIES leak repair kits. PSI will license the leak repair technology for industrial markets.

Objective:

PSI seeks funding for Phase II options for T&E, and support for transition to new ships under construction and backfit. We also seek funding from additional ship platform program offices to transition ARIES throughout the Fleet.

Company: Physical Sciences Inc.

Contact: Dr. Mark A. Druy

Email: druy@psicorp.com

Phone: (978) 738-8195