Department of the Navy SBIR/STTR Transition Program

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MCSC-PRR-4049

Topic # N142-089
Folding High-G Resistant Patient Litter Follow-On
Physical Sciences Inc.

WHO

SYSCOM: MARCOR

Sponsoring Program: PM Combat Support Systems (CSS), PdM Combat Support Equipment (CSE)

Transition Target: En Route Care System AMAL

TPOC:
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Other transition opportunities:
Defense Health Agency
Transcom - Medical logistics
MMPM (Multi-Modal Patient Movement) - Medical trauma bay in a Conex container

Notes: During the Phase II initial program, we performed centrifuge testing IAW JECETS and MIL-STD-810G. We solicited feedback from Marines and Corpsmen during the Limited Military User Assessment (LMUA) at MCBQ.
We have recurring orders with Special Forces due to the low weight and compact stowed volume, which makes the litter perfect for forward deployments.

FHGRPL undergoing large centrifuge testing IAW MIL-STD-810G to JECETS acceleration loads

Folding High-G Resistant Patient Litter (FHGRPL) during user evaluation at Marine Corps Base Quantico

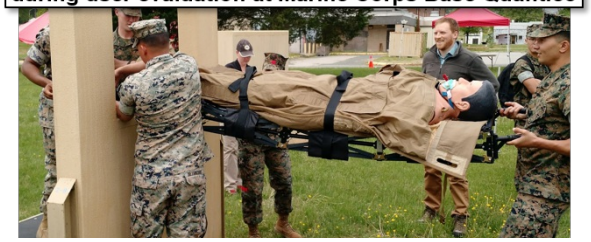

Image courtesy Physical Sciences, Inc, 2019

WHAT

Operational Need and Improvement: The Marine Corps and other service branches need to enhance crew and patient safety during aeromedical transport aboard aircraft such as the MH-53, MV-22, and C-130. PSI's Folding High-G Resistant Patient Litter provides a lighter, stronger litter for casualty evacuation and aeromedical transport. The system is rugged, easy to use and decontaminate.

Specifications Required: Withstand up to 12g load with a combined 400 lb patient plus life support equipment as specified in the Joint En Route Care and Evacuation Test Standard (JECETS)
Deployed dimensions as specified by STANAG 2040 - NATO litter standard
Weight less than 17 lb
Stowed volume less than 1.0 cu. ft.

Technology Developed: PSI has developed a truss-based litter architecture that uses a mass-efficient layout to increase strength while reducing weight and stowed volume. The patented design (US Patent #9,789,016) has been tested to loads up to 12g with a 400 lb patient weight, meeting Joint En Route Care Evacuation Test Standards for aircraft crash rating.

Warfighter Value: The PSI litter is 10% lighter and stows 12% smaller than competitors' litters, increasing allowances for other lifesaving equipment.
Enhances crew safety in the event of an aircraft crash by reducing the likelihood of secondary injuries due to loose equipment.
Easy to deploy and stow, improving response times during medical emergencies

WHEN

Contract Number: M67854-21-C-6514 **Ending on:** January 25, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Static Load Testing	Low	Withstand applied load up to 4800 lb	5	4th QTR FY21
User Testing and Feedback	Med	No damage after use by USMC	5	1st QTR FY22
Centrifuge Testing	Low	Withstand up to 12g with 400lb payload	6	1st QTR FY22
Advanced prototype testing by USMC	Med	Survives use during USMC exercises	7	3rd QTR FY22
Review and approval for Authorized Medical Allowance List	Med	Inclusion on ERCS AMAL (647)	8	2nd QTR FY23

HOW

Projected Business Model: PSI has already demonstrated manufacturing the litter in 10s quantity in our Pilot Assembly Facility. We plan to continue with in-house manufacturing through 100s yearly quantity using our 25,000 sq ft Flexible Manufacturing space. Beyond these quantities, we may work with our Phase IIB subcontract partner HDT to transition volume manufacturing efforts to their purview under license.

Company Objectives: PSI will expand its expeditionary systems business, which already includes the InstantEye sUAS, to address critical warfighter needs. We will leverage our connections to former service members and ongoing sales of litters to special operators in forward deployments to obtain feedback for design improvements. We will use demonstration events such as LMUA (at MCBQ) and medical vendor days at Ft Detrick to showcase the technology and gain traction with end users.

Potential Commercial Applications: Commercial Applications include first responders (police, fire, EMS), oil-and-gas-exploration, and remote operations such as logging and mining. These areas could all benefit from the PSI litter's low weight and stowed volume, along with enhanced air transport safety.

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