

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2016-764

Topic # N142-097

Composite Pallet Rapid Restraint System for TBFDS

San Diego Composites, Inc.

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-261

Transition Target: CH-53K, TBFDS

TPOC:

(301)342-5872

Other transition opportunities:

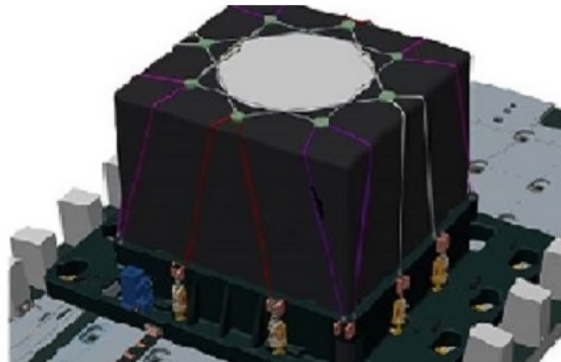
C-130, V-22, CH-53E,
commercial cargo aircraft,
commercial shipping

Notes: TBFDS - Tactical Bulk Fuel
Distribution System

Additional Benefits/Goals:

- TRL/MRL 5 @ 4 Qtr FY2017
- TRL/MRL 6 @ 4 Qtr FY2018

Composite Pallet Rapid Restraint (CPR²) System for CH-53K Helicopter



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WHAT

Operational Need and Improvement:

CH-53K Program Office seeks innovative restraint system for TBFDS that:

- meets all Navy crash survivability standards (20/20/10)
- is lighter and easier to install
- optimizes full capacity of 2,400 gallons of fuel tanks

Specifications Required:

- Survive Forward-Aft Crash Acceleration: 20 g
- Survive Vertical Crash Acceleration: 20 g down, 10 g up
- Survive Lateral Crash Acceleration: 10 g
- Install all 3 tanks in < 1 hr
- Reduce number of personnel needed to install: < 4 personnel
- Reduce weight of Restraint System: 400-500 lbs

Technology Developed:

- Composite pallet able to absorb/dampen crash energy and transfer load to tie-down rings
- CPR2-TBFDS system is pre-assembled for rapid installation
- Load path leverages direct line-of action mechanisms to robust aircraft tie-down rings
- Universal design concept for application to additional platforms

Warfighter Value:

SDC's Composite Pallet Rapid Restraint (CPR2) system:

- Allows crew to fly mission w/o jeopardizing equipment or crew
- Allows TBFDS to operate at maximum capacity
- Allows TBFDS to be transported / moved by one person
- Allows each tank of TBFDS to be installed in approximately 15 minutes
- Exceeds all Navy loading and restraint safety requirements

WHEN

Contract Number: N68335-16-C-0111 **Ending on:** December 24, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Critical/High Risk Mitigated	High	Low risk designs implemented	3	December 2016
Overall Operational/ Structural Design	Med	Design review with PMA-261 buy off	3	April 2017
Component Level Manufacturing and Testing	Med	Validation of predicted safety margins	4	August 2017
Prototype Manufacture and Operational Demonstration	Med	Fully integrated system constructed and assembled with CH-53K cargo handling system	5	December 2017
Prototype Full Scale Structural Test	Med	Fully integrated system tested under critical crash loads	6	December 2018

HOW

Projected Business Model:

SDC will manufacture CPR2 in our state-of-the-art 70,000 sqft. composite manufacturing facility

SDC will assemble CPR2 in our production facility

SDC will procure restraint mechanisms and flexible cage from Davis Aircraft Products

Company Objectives:

Sell CPR2 product directly to the Navy or to Robertson Fuel Tanks, manufacturer of TBFDS

Market CPR2 to various Program Offices such as C-130, V-22, commercial aircraft, etc.

Promote CPR2 to other prime contractors:

- Sikorsky
- Boeing
- Lockheed Martin
- Northrop Grumman
- General Dynamics
- Huntington Ingalls

Potential Commercial Applications:

- Sikorsky Heavy Lift Helicopter Cargo
- Bell Helicopter Cargo
- Boeing Aircraft Cargo
- Lockheed Martin Aircraft
- Commercial cargo carries (aircraft & shipping)

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