**Department of the Navy SBIR/STTR Transition Program**

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NAVAIR JSF17-821

**Topic # N07-040**

Carbureted Fuel Injection System for Augmentor Stability

Creare LLC

**WHO**

**SYSCOM:** NAVAIR

**Sponsoring Program:** Joint Strike Fighter

**Transition Target:** F-35 Lightning II

**TPOC:** (301)995-3995

**Other transition opportunities:**

- F-22 Raptor
- 6th Generation Jet Fighter
- Future Bomber Aircraft
- Cruise Missiles

**Notes:** The image to the right is CFIS Testing in an Augmentor Rig

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**WHAT**

**Operational Need and Improvement:** Augmentors Operate Over a Broad Range of Conditions. Fuel Delivery is Sensitive to Operating Condition.

Suboptimal Fueling leads to Weak or Unstable Combustion.

**Specifications Required:** Develop Flameholder Concepts that Enhance Augmentor Stability. Reduce Blowout for High-Altitude, Low Mach Number Conditions. Minimize Impact on Augmentor Design.

**Technology Developed:** CFIS is a Fueling System that Acts as an Additional Augmentor Fueling Stage. CFIS Injectors Primarily Fuel the Wake of the Flameholder. CFIS Injectors are used to More-Optimally Fuel the Augmentor Over the Flight Envelope.


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**WHEN**

**Contract Number:** N68335-13-C-0392

**Ending on:** April 30, 2018

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Risk Level</th>
<th>Measure of Success</th>
<th>Ending TRL</th>
<th>Date</th>
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<tbody>
<tr>
<td>Feasibility Demonstration</td>
<td>N/A</td>
<td>Academic Rig Initial Demonstration</td>
<td>TRL 4</td>
<td>July 2008</td>
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<tr>
<td>Detailed Sizing and Rig Demo</td>
<td>N/A</td>
<td>Academic Rig Detailed Testing</td>
<td>TRL 5</td>
<td>September 2010</td>
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<td>High-Fidelity Rig Test</td>
<td>N/A</td>
<td>Demonstrable Combustion Stability Enhancement</td>
<td>TRL 6</td>
<td>April 2017</td>
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<td>Engine Test</td>
<td>Med</td>
<td>Demonstrable Combustion Stability Enhancement</td>
<td>TRL 7</td>
<td>June 2018</td>
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<tr>
<td>Flight Test</td>
<td>Med</td>
<td>Demonstrable Combustion Stability Enhancement</td>
<td>TRL 8</td>
<td>January 2020</td>
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</tbody>
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**HOW**

**Projected Business Model:** The CFIS IP has been Patented. CFIS IP has been Licensed to Engine OEM. CFIS will be Manufactured by an Engine OEM Preferred Supplier. CFIS will be Supplied as Part of a New Engine or as a Retrofit Kit.

**Company Objectives:** Creare is an Engineering Research and Development Firm. Creare’s Objective is to Provide Engineering Value to our Clients. Our Objective for CFIS is to Transition the Technology to DoD Customers. Our Forum Objective is to Enhance the Visibility of the CFIS Technology.

**Potential Commercial Applications:** Augmentors are a Military Technology. Augmentors are Generally Not Used Commercially. Commercial Applications Include Commercial Supersonic Aircraft. Private Spaceflight

**Contact:** Dr. Darin Knaus, Engineer
dak@creare.com (603) 640-2355

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