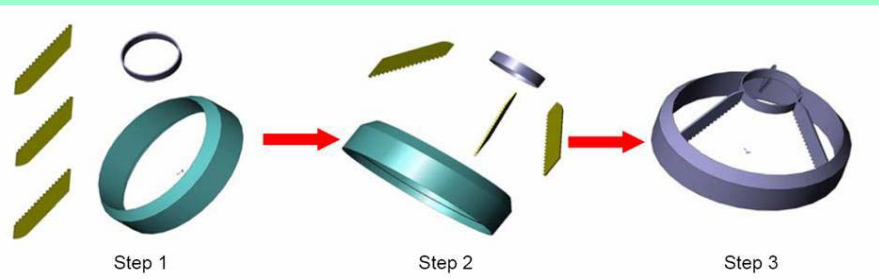


CVC SiC Optical Structure Fabrication/Assembly Research and Development



Key Discriminators:

- Trex will demonstrate the ability to fabricate SiC mirrors and structures that will match or exceed current material performance capabilities by optimizing the bonding and joining technologies required to integrate components. Trex will leverage the following CVC SiC characteristics:
 - Polishability: Important for high performance optics
 - Thermal Stability: Critical for space-based applications
 - Specific Stiffness: Allows for lightweight designs
 - Low Internal Stress: Reduces manufacturing risks & improve dimensional stability

Step 1 – Individual parts are fabricated from engineering documentation
 Step 2 – Assembly processes are performed as a precursor to bonding/joining
 Step 3 – Bonding/joining processes are performed

Problem/Readiness/Champions

Problem being addressed:
 Beryllium alternatives are required to gain improvements in performance in airborne and space-based systems and to avoid toxicity of Beryllium (dust generated in fabrication)

Technology Readiness Level: 4
 Component validation in laboratory environment achieved

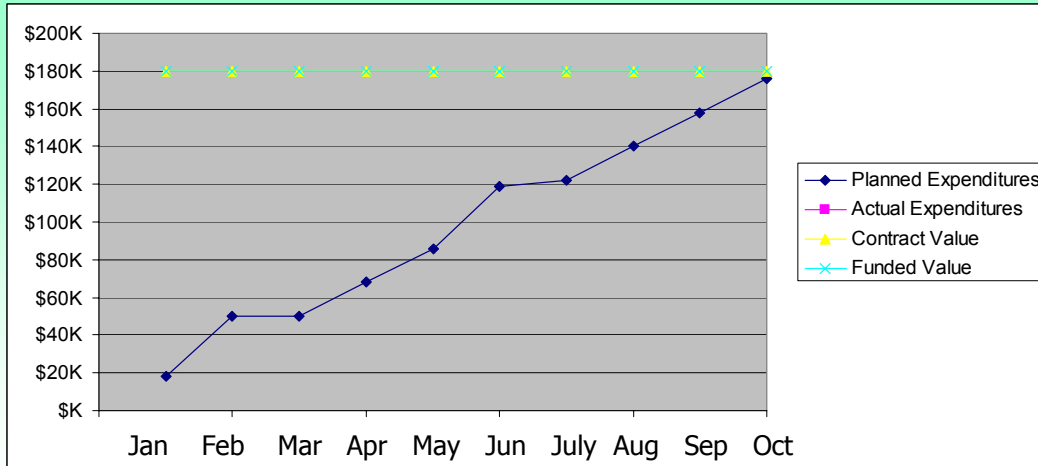
- Champions**
- Missile Defense Agency (MDA)
 - US Army Space & Missile Defense Command (SMDC)
 - Air Force Research Lab (AFRL)
 - National Aeronautics and Space Administration (NASA)
 - Raytheon Missile Systems – Tucson, AZ
 - Boeing SVS – Albuquerque, NM

Milestones/Deliverable/Data/Status

Milestones	Deliverable	ECD	Act
Bonding/joining studies	Monthly Progress Report	3/06	
TechEnterprise participation	Project Presentation	6/06	
Test articles fabricated	Monthly Progress Report	5/06	
Bonding/joining test runs	Monthly Progress Report	6/06	
Strength tests conducted	Test Data Report	7/06	
Mirror support structure designed	Monthly Progress Report	5/06	
Mirror support structure fabricated	Monthly Progress Report	8/06	
Mirror support structure tested	Prototype Secondary Assy	10/06	
Generate final report		10/06	

CVC SiC Optical Structure Fabrication/Assembly Research and Development

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Accomplishments:

- Draft Quad Chart generated

Program Description:

Organization: Trex Enterprises
 Trex Program Manager: Dr. Clifford Tanaka
 Contract Number: 2470-297
 Period of Performance: 1/2/06 to 10/31/06

Summary:

CVC SiC Optical Structure Fabrication/Assembly R&D

Trex will establish capabilities & methodologies for the design and fabrication of lightweight optical structures using CVC SiC. Technically & economically superior alternatives to beryllium for aerospace optics & structures will be explored, and the viability of SiC for other DoD optics & optical structures will be assessed

Status:

- Charge numbers established
- Project planning initiated
- Project kick-off meeting to be scheduled