

◆ Technology Goals and Objectives

- **Mitigate risk**
 - Identify problem areas early
 - Develop alternative designs
 - Demonstrate manufacturing feasibility at subscale level
 - Establish vehicle to evaluate component design fixes during FSD
- **Increase Technology Readiness Level**
 - Demonstrate component designs at subscale level
 - time- and cost-effective
 - Validate design tools
 - Evaluate/demonstrate peripheral technologies
 - valves, sensors for health monitoring, etc.
- **Improve combustion device designs**
 - Use and validate advanced analytical models for more precise prediction of design margins
 - Explore innovative designs
 - Prove scaling methodology
- **Reduce full-scale development time**

- ◆ **Background**
 - **Engine drives vehicle system reliability**
 - **Combustion Devices are major contributor to engine reliability**
 - Preburner design and transient operation
 - Main combustion chamber and injector
 - Nozzle
 - **Space Transportation Architecture Study (STAS) indicated need for development of different engine cycles**
 - Full flow staged combustion (FFSC) cycle is initial testbed focus
 - prominent in STAS results
 - eliminates interpellant seals and oxidizer heat exchanger
 - reduces turbine inlet temperatures
 - Testbed addresses major concerns with FFSC cycle
 - oxidizer-rich preburner
 - high propellant temperatures at main combustion chamber inlet
 - lack of practical experience with cycle
 - **Testbed provides timely information for program decisions**

- ◆ **Status**
 - **Task Plan generated and submitted**

- ◆ **Near Term Plans**
 - **Develop detailed program plan**
 - **Develop alternative designs and design optimization algorithm**
 - **Test initial configuration in '02**
 - **Test alternative configurations in '03**

- ◆ **Point of Contact**
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