

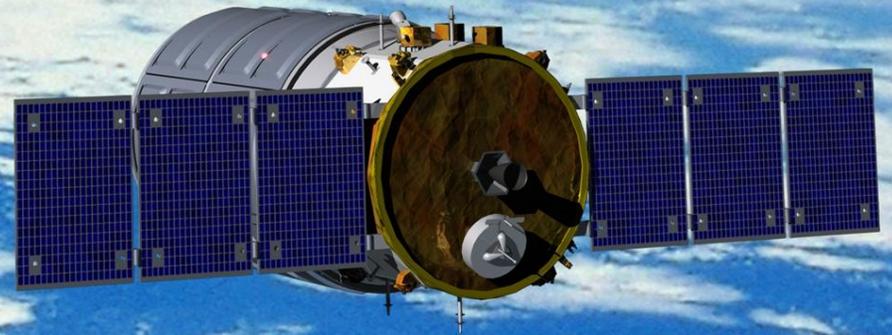


INNOVATION YOU CAN COUNT ON™

Perspectives on Enabling Commercial Spaceflight

Presented to the International On-Orbit
Satellite Servicing Study Workshop

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Spaceflight



COTS/CRS Summary



- **Commercial Orbital Transportation Services (COTS)**
 - **Orbital Selected In February 2008 For a Single 2011 Demonstration Mission**
 - **Safety Review Panel Phase II completed November 2009**
- **Commercial Resupply Services (CRS)**
 - **Operational Service-Phase Follow-on to COTS Demonstration**
 - **Orbital Selection December 2008**
 - **8 Flights Over Period From 2011-2015**
 - **Features two Pressurized Cargo Modules – Standard and Enhanced**

Cygnus Visiting Vehicle



- **The Cygnus vehicle is comprised of two major modules**

- **Service Module**

- Provides all utility services to the cargo modules
- Manages the autonomous rendezvous to the ISS
- Provides required resources to allow the mission to be successfully completed
- Structural interface to the launch vehicle and cargo modules

- **Pressurized Cargo Module**

- Supports NASA Cargo Requiring a Pressurized Environment



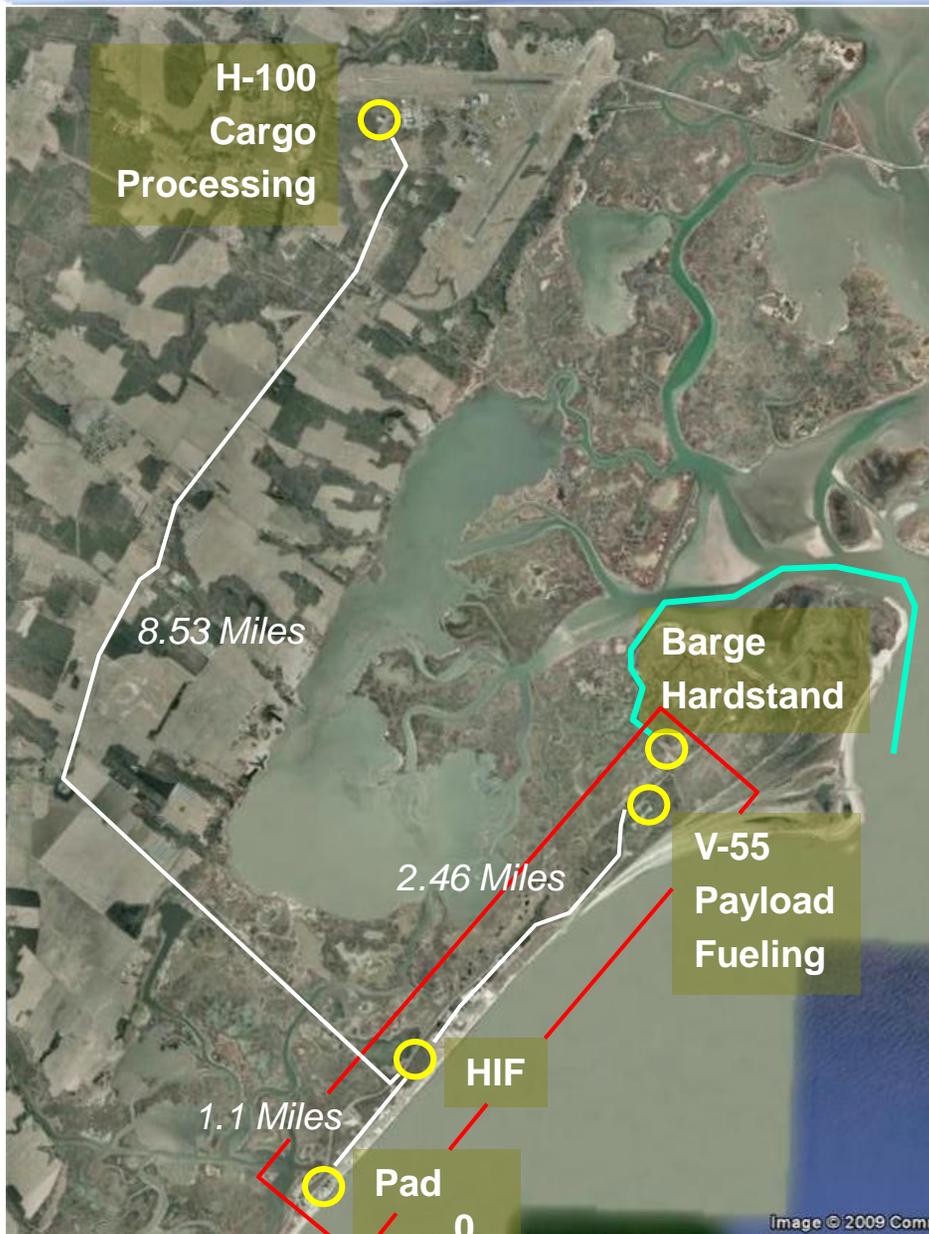
Taurus II System Features



- Incorporates both solid and liquid stages and proven technology to meet mission requirements
- Provides substantial payload performance into a variety of low inclination low-Earth orbits (LEO), sun-synchronous, GEO-transfer and interplanetary orbits
- 3.9 meter fairing accommodates large payloads
- Capable of launching single and multiple payloads
- Compatible with the Western Range at Vandenberg Air Force Base (VAFB), Eastern Range at Cape Canaveral Air Force Station and Wallops Flight Facility (WFF), providing customers with a variety of launch locations and trajectories



Taurus II COTS/CRS Wallops Footprint



Taurus II Launch Site at Wallops Flight Facility



Questions and Discussion

