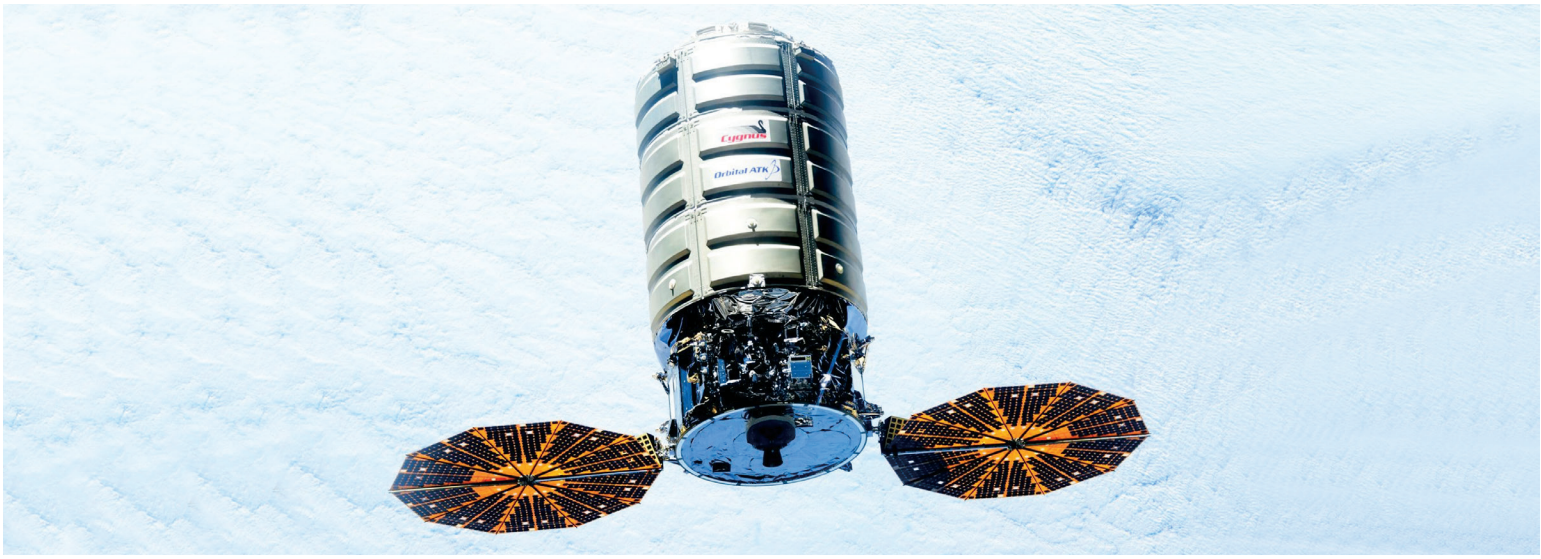
Cygnus™ OA-8 Mission

Cargo Delivery Spacecraft for the International Space Station

FACT SHEET



Overview

The Cygnus spacecraft is a flight proven system, having successfully delivered cargo to the International Space Station on seven previous missions. Cygnus is used to carry crew supplies, spare equipment and scientific experiments to the station.

For the OA-8 mission, Orbital ATK is using the Enhanced Cygnus Pressurized Cargo Module (PCM) to deliver cargo to the space station. The cargo capability of the Enhanced Cygnus, developed by Thales Alenia Space, is more than 3500 kg (7700 lbs) with a total volumetric capacity of 27 cubic meters.

The Service Module utilizes flight proven avionics and communication systems, and incorporates UltraFlex™ solar arrays as well as an optimized propulsion system and structure.

Cygnus will be launched into orbit using Orbital ATK's upgraded Antares 230 launch vehicle from Virginia Space's Mid-Atlantic Regional Spaceport Pad 0A on Wallops Island, Virginia at NASA's Wallops Flight Facility. The Antares 230 vehicle features RD-181 engines which provide increased performance and flexibility to the Orbital ATK cargo delivery service.

Upon arrival to the International Space Station, Cygnus will be unloaded and used for the first time as an extension of the orbiting laboratory for an experiment featuring the SpaceTango facility, TangoLab. TangoLab is a reconfigurable general research facility designed for microgravity research and development. This exercise will demonstrate the ability to expand the station's capabilities for hosting experiments using the Cygnus Module. Cygnus will remain berthed for approximately one month to allow the astronauts on Space Station to perform the transfer of the lab to Cygnus and then back to the station where it will remain. Once Cygnus is unberthed, a NanoRacks deployer will release 14 Cubesats, a record number for the spacecraft. Upon completion of its mission, Cygnus will perform a safe, destructive reentry into Earth's atmosphere over the Pacific Ocean.

FACTS AT A GLANCE

Launch Vehicle: Antares 230

Cargo Spacecraft: Enhanced Cygnus

Ascent Cargo Mass: 3,350 kg (7,385 lb.)

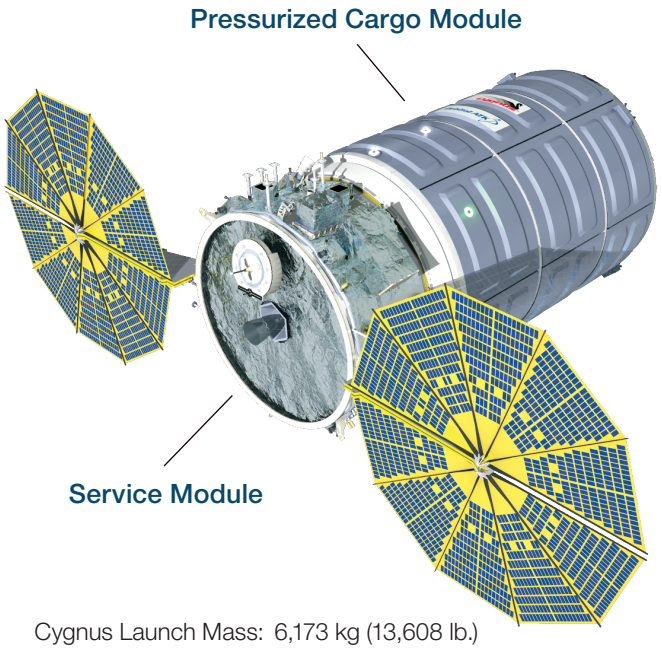
Descent Cargo Mass: Up to 3,350 kg (7,385 lb.)

Launch Site: MARS Pad 0A, Wallops Island, VA

Mission Duration: Up to 90 days berthed

OA-8 Mission

Cygnus Spacecraft



Cygnus Launch Mass:	6,173 kg (13,608 lb.)
Propellant Mass:	800 kg (1,764 lb.)
Ascent Cargo Mass:	3,350 kg (7,385 lb.)
Pressurized Volume:	27 m^3
Height:	6.39 m
Power Generation:	2 fixed wing "UltraFlex™" solar arrays, ZTJ gallium arsenide cells
Descent Cargo Mass:	Up to 3,350 kg (7,385 lb.)
Mission Duration:	2-4 days ascent and phasing Up to 90 days berthed Up to 2 weeks descent and reentry

Antares Launch Vehicle

- Diameter: 3.9 m
- Height: 42.5 m
- Mass: 290,000 - 310,000 kg

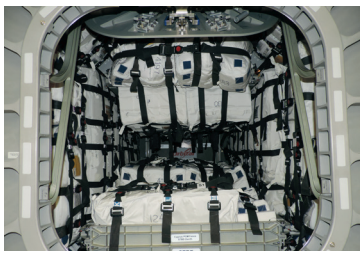
Stage 2

- Orbital ATK CASTOR® 30XL solid motor (CASTOR 120 heritage) with thrust vectoring

Stage 1

- Liquid oxygen/kerosene fueled
- Orbital ATK responsible for system development and integration
- Core tank design and design verification by KB Yuzhnoye (Zenit-derived heritage)
- Core tank production by Yuzhmash
- Two Energomash RD-181 engines each with independent thrust vectoring

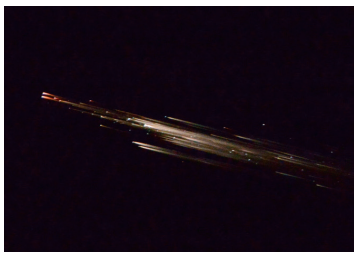
Mission Profile



Cargo is delivered to Wallops Flight Facility and loaded into Cygnus

Cygnus is launched into orbit by Antares from MARS Pad 0A at Wallops Island, VA

Cygnus rendezvous with the ISS and is grappled and berthed by the ISS crew



Destructive reentry into Earth's atmosphere at the end of mission

Cygnus™

Antares™