Orbital
Innovation You Can Count On®

FACT SHEET

Antares™

Medium-Class Space Launch Vehicle

Overview

Designed to provide responsive, low-cost, and reliable access to space, Antares is a two-stage vehicle (with optional third stage) that provides low-Earth orbit (LEO) launch capability for payloads weighing over 5,000 kg. Internally funded by Orbital, Antares completed a risk reduction mission and a demonstration of commercial re-supply services for the International Space Station (ISS) under a NASA Commercial Orbital Transportation Services (COTS) agreement in 2013. Antares currently is under contract for eight Commercial Resupply Missions (CRS) to deliver cargo to the International Space Station, the first of which was completed in early 2014. The Antares launch system utilizes Orbital's proven MACH avionics system and many management approaches, engineering standards, production and test processes common to Orbital's family of highly successful small-class Pegasus®, Taurus®, and Minotaur launch vehicles. These proven launch technologies, along with hardware from one of the world's leading launch vehicle integrators, combine to provide cost-effective access to a variety of orbits for civil, commercial and military medium-class payloads.

Design, manufacturing and testing of Antares is taking place in Dulles, Virginia and Chandler, Arizona.

Key Features

- Incorporates both solid and liquid stages and flight-proven technologies to meet medium-class mission requirements
- Provides substantial payload performance into a variety of low inclination low-Earth and sun-synchronous orbits and interplanetary trajectories
- Streamlined vehicle/payload integration and testing via simplified interfaces reduce time from encapsulation to lift-off
- 3.9 meter fairing accommodates large payloads
- Capable of launching single and multiple payloads
- Initial launch successfully conducted April 21, 2013 from Wallops Flight Facility (WFF), Virginia
- Also compatible with the Western Range at Vandenberg Air Force Base (VAFB), Eastern Range at Cape Canaveral Air Force Station (CCAFS) and the Kodiak Launch Complex (KLC)

QUICK FACTS

Medium-class space launch vehicle utilizes proven systems from other Orbital product lines and Zenit heritage

Over 5,000 kg to low-Earth orbit

Designed to achieve a 95% or greater launch reliability

Key Partners:

Orbital Sciences Corporation
- Prime integrator, systems engineering, avionics, primary structure, testing and software
- Overall Stage 1 development and integration

KB Yuzhnoye/Yuzhmash
- Stage 1 core design, production and verification

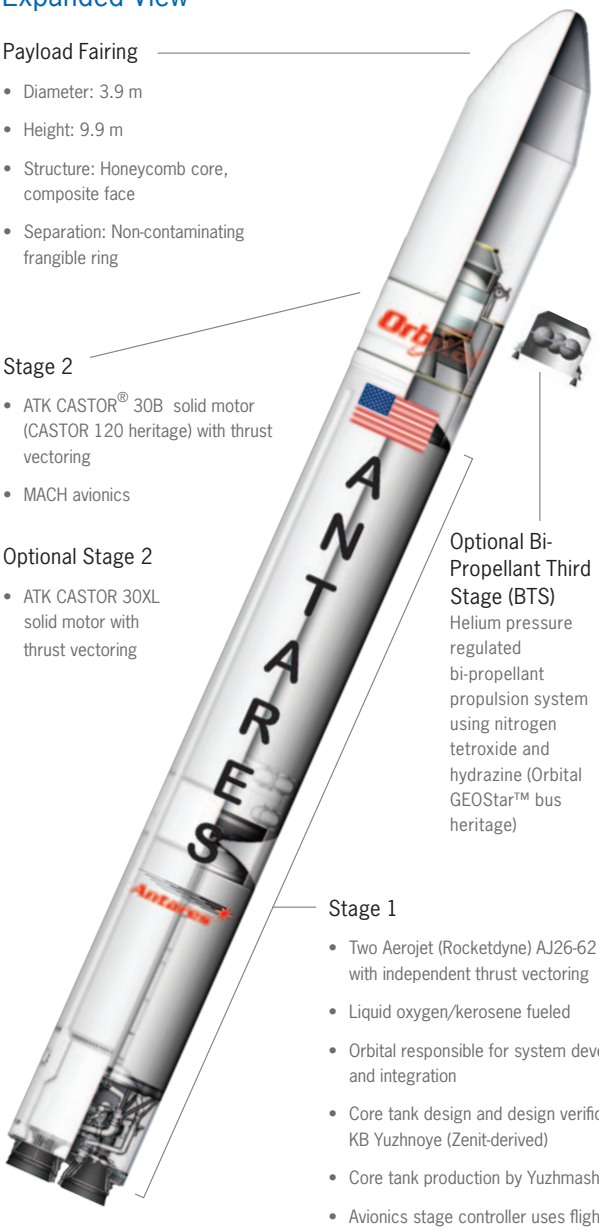
Aerojet (Rocketdyne)
- Stage 1 engines

ATK
- Stage 2 motor

Antares on Pad 0A at the Mid-Atlantic Regional Spaceport in Wallops Island, Virginia

Antares™

Expanded View



Payload Fairing

- Diameter: 3.9 m
- Height: 9.9 m
- Structure: Honeycomb core, composite face
- Separation: Non-contaminating frangible ring

Stage 2

- ATK CASTOR® 30B solid motor (CASTOR 120 heritage) with thrust vectoring
- MACH avionics

Optional Stage 2

- ATK CASTOR 30XL solid motor with thrust vectoring

Optional STAR™ 48-Based Third Stage

- ATK STAR 48BV high energy upper stage solid rocket motor
- Thrust vector guidance and control
- 3-axis stabilized satellite orbit insertion

Optional Bi-Propellant Third Stage (BTS)

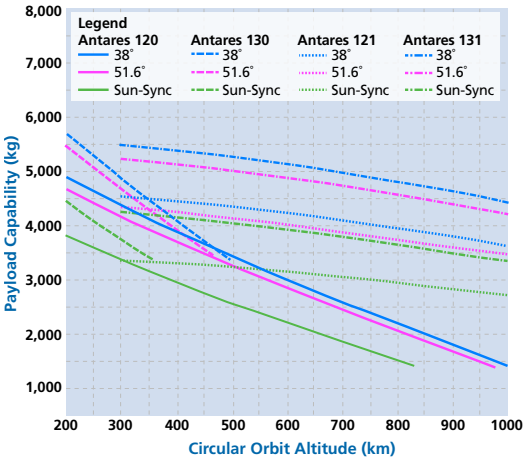
Helium pressure regulated bi-propellant propulsion system using nitrogen tetroxide and hydrazine (Orbital GEOStar™ bus heritage)

Stage 1

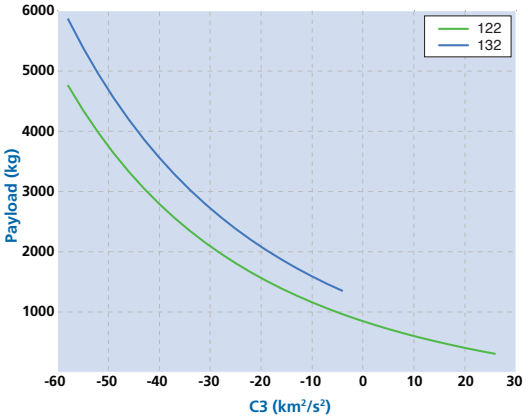
- Two Aerojet (Rocketdyne) AJ26-62 engines with independent thrust vectoring
- Liquid oxygen/kerosene fueled
- Orbital responsible for system development and integration
- Core tank design and design verification by KB Yuzhnoye (Zenit-derived)
- Core tank production by Yuzhmash
- Avionics stage controller uses flight-proven Orbital MACH components

Performance

Circular Low-Earth Orbit Performance



High Energy Performance



Antares Configuration Numbering

First Stage	Second Stage	Third Stage
1–Two AJ26-62 LOX/ Kerosene Fueled Engines	2–CASTOR 30B Solid Motor 3–CASTOR 30XL Solid Motor	0–None 1–Bi-Propellant Third Stage (BTS) 2–STAR 48-Based Third Stage

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