Orbital
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FACT SHEET

Minotaur V

High Energy Space Launch Vehicle

Overview

Minotaur V is a five stage evolutionary version of the Minotaur IV Space Launch Vehicle (SLV) to provide a cost-effective capability to launch U.S. Government-sponsored small spacecraft into high energy trajectories, including Geosynchronous Transfer Orbits (GTO) as well as translunar and beyond.

The Minotaur V concept leverages Orbital's flight proven heritage of the Minotaur family of launch vehicles to create a low-risk, readily-developed system.

The Minotaur V avionics, structures, and fairing are common with the Minotaur IV SLV, with relatively minor changes to create the five stage configuration. Moreover, the avionics and flight software are highly common across all Minotaur family vehicles.

Minotaur V provides cost-effective support of small GEO and lunar missions.

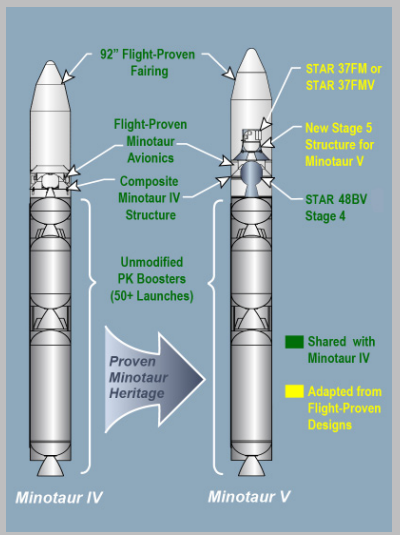
The first three stages of the Minotaur V are former Peacekeeper solid rocket motors with over 50 flights of each stage. The fourth and fifth stages are commercial STAR™ motors. The stage four motor is a STAR™ 48BV configuration. The fifth stage can be either attitude controlled or spinning. For a spin-stabilized upper stage, a STAR™ 37FM is used while a STAR™ 37FMV, with gimballed, flexseal nozzle, is used for 3-axis stabilized control.

The Minotaur family of launch vehicles are provided via the Orbital/Suborbital Program (OSP) managed by the U.S. Air Force Space and Missile Systems Center (SMC), Space Development and Test Directorate (SMC/SD) Launch Systems Division (SMC/SDL) located at Kirtland Air Force Base, New Mexico.

QUICK FACTS

System Features

- Near term cost effective support of high energy trajectory missions
- Straight forward five stage evolution of Minotaur IV SLV
- Extensive use of flight-proven boosters, subsystems, and software
- Inertially-guided or spinning Stage 5 configuration options available
- Portable ground support systems allow multiple spaceport launch capability (California, Florida, Alaska, Mid-Atlantic)
- Mission success ensured by mature systems and processes including Orbital's rigorous mission assurance program, full government insight, and independent assessment

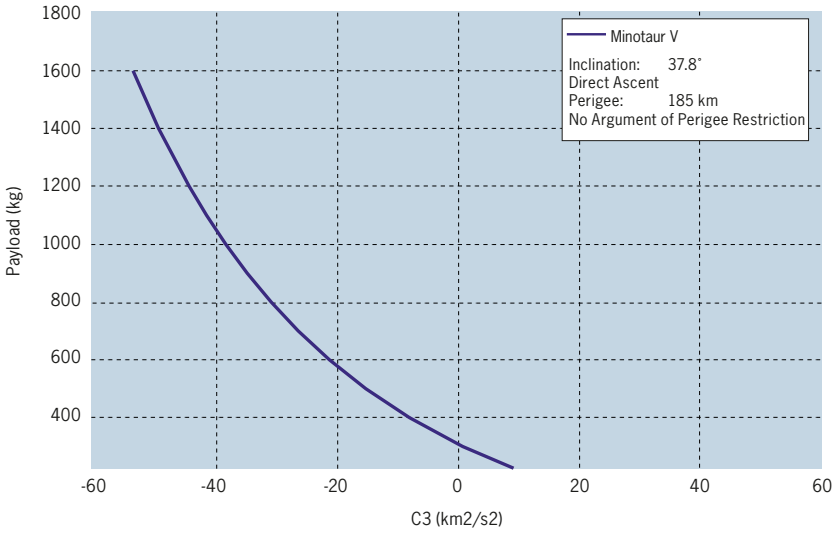


Minotaur V is a low risk direct evolution of Minotaur IV.

Minotaur V

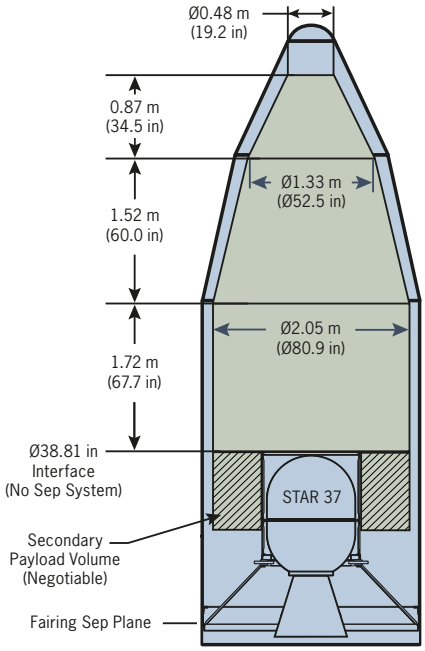
Performance

- Minotaur V has a GTO capability of 532 kg
  - 185 km x 35786 km @ 28.5 degree inclination, 180 AoP
- Minotaur V has a MTO capability at 39 degrees of 650 kg from CCAFS
  - 185 km x 20,200 km at 39 Degree inclination, 180 AoP
- Minotaur V has a MTO capability at 55 degrees of 603 kg from WFF
  - 185 km x 20,200 km at 55 Degrees inclination, no AoP constraint
- Minotaur V has a TLI capability of 342 kg



Payload Accommodations

- Flight proven fairing shared with Minotaur IV
- Attitude controlled or spinning final stage
- Well defined environments from extensive flight data and well characterized upper stages
- ISO 8 (100 k) to ISO 7 (10 k) cleanliness with temperature and humidity control
- Various flight-proven separation systems available, including low shock designs



For technical details or questions please contact Orbital at:

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Copies of the Minotaur User's Guide can be downloaded from:

www.orbital.com

Additional information should be obtained from the USAF OSP Office

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