VULCAN CENTAUR
LAUNCH SYSTEM

Hardware of the Future

02.12.2019

ULA
MISSION SUCCESS... 132 AND COUNTING!

Atlas V

Delta IV

ULSA™
DEVELOPING A NEXT GENERATION ROCKET
VULCAN CENTAUR
VULCAN CENTAUR LAUNCH SYSTEM

**VULCAN CENTAUR LAUNCH SYSTEM**

**INITIAL CAT A/B PROTOTYPE**

**FINAL CAT A/B/C PROTOTYPE**

- **Common Payload Fairing**
  - 51’, 67’ or 70’ (15.5, 20.4 or 21.3 m)

- **Common Centaur**
  - Next Gen RL10
  - Upgraded Centaur

- **Common Booster and GEMs**
  - 5.4 m Booster
  - 0-6 GEM 63XLs
  - BE-4 Main Engine

**Vulcan Centaur: Higher Performance, Lower Cost**

- **Major Investments in Factory Automation**
  - 1.6M square-foot Factory in Alabama

- **State-of-the-Art Manufacturing**
  - 132 Mission Successes

- **State-of-the-Art Test Facilities**

- **Upgraded, Flexible Launch Pads**
  - SLC-41, CCAFS – Florida
  - SLC-3, VAFB – California

- **Upgraded Infrastructure**

- **Vertical Payload Integration**

- **Upgraded, Flexible Launch Pads**

**ULA Know-How: 132 Mission Successes**

- **U.S.-Produced Components**
  - Composites
  - RL10 Upper Stage Engine
  - GEM 63XL Solid Rocket Motors
  - BE-4 Booster Engines
MASSIVE CAPITAL IMPROVEMENTS COMPLETE
UP TO 20 VULCAN VEHICLES PER YEAR

- Universal Weld System (UWS)
- Circumferential Friction Stir Welding (CFSW)
ADVANCED ENGINE & MOTOR DEVELOPMENT

HotFire Test of Additively Manufactured RL10CX Combustion Chamber

Hotfire Test of BE-4 Engine

Hot Fire Testing of GEM 63 SRB

(Image courtesy Northrop Grumman)

(Image courtesy Aerojet Rocketdyne)

(Image courtesy Blue Origin, LLC)
INNOVATIVE DESIGN AND MANUFACTURING
MORE CAPABLE AND COST EFFICIENT HARDWARE
PAD MODIFICATIONS UNDERWAY SUPPORTING FIRST VULCAN FLIGHT IN 2021
MULTI-LAUNCH CAPABILITIES

• Berth-Agnostic Approach
  • Conditioned Upper and Lower Berth
  • Individual Instrument Purges
  • Dual Re-Rad Capability
  • Environments In Line w/ Single Launch Configuration
  • Individual Payload Users Room
  • Manifest Flexibility
POTENTIAL PAYLOAD CONFIGURATIONS

Single Payload Configuration

Multi-Manifest Payload Configuration

Multi-Launch Canister Payload Configuration

LV Interface

Payload

Rideshare

24 U

ABC Payload (Aft End Centaur)

Not to Scale
Vulcan Centaur Provides the World’s Best Value for Launch Services

• Innovation Hardware Solutions Provide Affordable Space Access
• Reliable Launch of Critical Customer Payloads

Leverages Atlas and Delta Experience and Mission Success

• Retains Flight Proven Systems for Optimized Orbital Insertion Accuracy
• Increased Lift Capability and Rideshare Opportunities
• Maintains Unparalleled Mission Success Record

On track for 2021 First Launch!

Vulcan Centaur is the Future of Affordable, Flexible, and Reliable Space Flight