OSIRIS-REx

ASTEROID SAMPLE RETURN MISSION

LOCKHEED MARTIN

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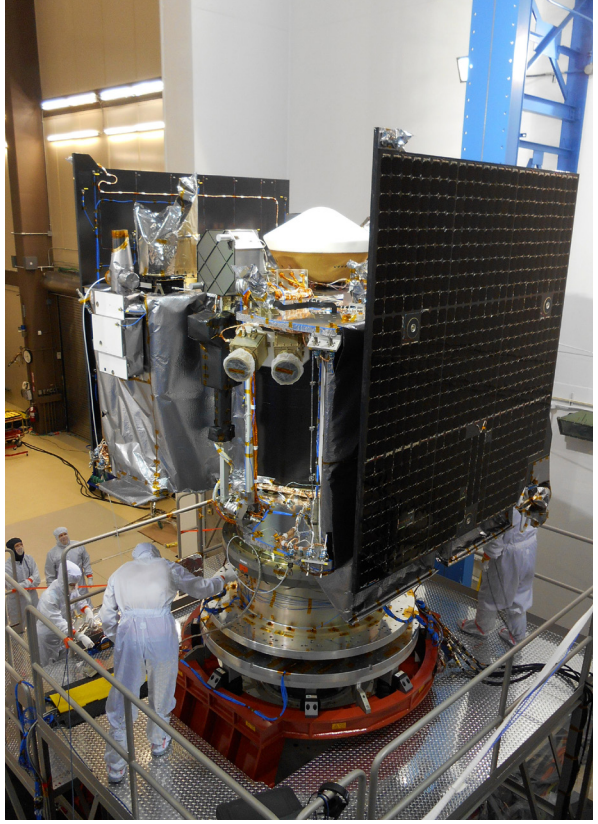
OSIRIS-REx SCIENCE

OSIRIS-REx is a robotic asteroid sample return mission that will study a near-Earth asteroid, Bennu, by globally mapping its properties, chemistry, and mineralogy—ultimately returning a sample of Bennu to Earth.

Led by the University of Arizona and managed by NASA's Goddard Space Flight Center, the OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security—Regolith Explorer) mission will:

- Return a pristine asteroid sample to Earth for analysis
- Determine the texture, chemistry, morphology, and spectral properties at the sampling site
- Map the global properties of the asteroid providing context for the returned sample
- Characterize the Yarkovsky effect of the asteroid
- Compare asteroid properties to ground-based telescope observations



OSIRIS-REx SPACECRAFT

Lockheed Martin designed, built and tested the OSIRIS-REx spacecraft, TAGSAM sampling system, and sample return capsule. Additionally it will provide the mission operations of the spacecraft.

- The OSIRIS-REx spacecraft draws on the heritage of the successful MAVEN Mars mission and the sample return capsule is based on the successful Stardust mission.
- Lockheed Martin built both of NASA's previous robotic sample return missions; Stardust and Genesis
- The TAGSAM sampling system was invented by Lockheed Martin as a unique approach to collect samples from an asteroid or comet without landing.
- OSIRIS-REx launches from Cape Canaveral, Florida in early September 2016, arrives at Bennu in mid-2018 and returns its sample to Earth in late-2023.

INSTRUMENTS TO EXPLORE BENNU:

OCAMS: OSIRIS-REx Camera Suite—Provides long-range acquisition of Bennu, global mapping, sample-site characterization, and sub-millimeter imaging

OLA: OSIRIS-REx Laser Altimeter—Provides ranging data, topographic mapping, and local topographic maps of potential sampling sites

OVIRS: OSIRIS-REx Visible and IR Spectrometer—Provides mineral and organic spectral maps and local spectral information of potential sample sites

OTES: OSIRIS-REx Thermal Emission Spectrometer—Provides mineral and thermal emission spectral maps and local spectral information of potential sampling sites

Spacecraft Telecom: Provides mass and gravity field maps for Bennu via radio science

TAGSAM: Touch-And-Go Sample Acquisition Mechanism—Collect between 60 and 2,000 grams (2.1 – 70 ounces) of material

Learn more at: www.lockheedmartin.com/osirisrex