

Science Objective Summary

Full-Disk Integrated Spectroscopy

- Over one rotation period, OVIRS and OTES will measure the integrated spectral properties of Bennu to detect spectral features with >5% absorption, and OTES will measure the thermally emitted radiation to derive the thermal inertia. PolyCam will collect images for context.
- This week, observations will be optimized for OTES, with OVIRS as a ride-along.
- Observations of spectral variation over time provide information on longitudinal surface variation and allow comparison with telescope data. Bulk thermal inertia data inform the Yarkovsky model and provide a reference point for measurements from specific locations.

Natural Satellite Search

- MapCam and PolyCam will search for the presence of natural satellites (larger than 10 cm in diameter, with albedo greater than 3%) on DOY 314 and 315. NavCam will search for natural satellites from DOY 310 to 316.
- These observations are needed to assess safety.
- If satellites are detected, the asteroid's gravity field can be mapped in detail before arrival, and the dynamical history of Bennu can be better understood.

Daily Phase Function

- On each day from DOY 310 through 313, MapCam will acquire pan, b, v, w, and x images; in addition, dark exposures will be obtained both before and after phase function observations are obtained for each exposure. In total, 50 images will be taken per date.
- These observations contribute to the goal of producing four phase functions of Bennu. They provide information on the asteroid's albedo and the way light is reflected from its surface at different angles.

In addition, OVIRS will perform a solar calibration on DOY 311.