



Jason-3

GLOBAL POSITIONING SYSTEM PAYLOAD (GPSP)

Background

The Global Positioning System Payload (GPSP) onboard Jason-3 will be used to determine the satellite's position. Positional data are then integrated into an orbit determination model to continuously track the satellite's trajectory.

Supplied by NASA, it will be a different receiver but with same basic (blackjack) design as on the Jason-1 and Jason-2 satellites. There are no changes to data processing or products, so the same or better performance as on Jason-2 is expected.

The onboard system consists of two independent receivers operating in cold redundancy, each with an omnidirectional antenna, low-noise amplifier, quartz oscillator, sampling converter, and a baseband digital processor communicating via the bus interface.

Benefits

The GPSP supports precise orbit determination by the DORIS system. It also helps to improve gravity field models and provides data for satellite positioning accurate to about 50 meters and 50 nanoseconds.

Key Measurements

GPSP, previously referred to as TRSR-2 (Turbo Rogue Space Receiver-2), uses the Global Positioning System (GPS) to determine the satellite's position by triangulation in the same way that GPS fixes are obtained on Earth. At least three GPS satellites are needed to establish the satellite's exact position at a given instant. Positional data are then integrated into an orbit determination model to track the satellite's trajectory continuously.

The GPSP receives dual-frequency navigation signals continuously and simultaneously from 16 GPS satellites. It uses these signals to acquire phase measurements accurate to about one millimeter and pseudo-range measurements accurate to about 10 centimeters.

GPSP Instrument-at-a-Glance

Purpose: To determine the satellite's position.

Instrument Contractor:

Supplied by NASA

Website:

<http://www.nesdis.noaa.gov/jason-3/spacecraft.html>