NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MISSION STATUS REPORT

Europa Clipper Mission Status

Quarterly systems review and trajectory analysis for the Jupiter-bound spacecraft.

Presented by: Jet Propulsion Laboratory · **Date:** February 2025

MISSION STATUS REPORT

Mission Overview

The Europa Clipper spacecraft launched successfully on October 14, 2024 aboard a SpaceX Falcon Heavy from Kennedy Space Center Launch Complex 39A. The spacecraft is currently in its interplanetary cruise phase, en route to Jupiter via a Mars gravity assist.

The mission will conduct a detailed survey of Jupiter's moon Europa, investigating whether the icy moon could harbor conditions suitable for life. The spacecraft carries nine science instruments designed to study Europa's ice shell, ocean, composition, and geology.

> **Key Update:** All nine science instruments have completed their initial checkout and calibration sequences. No anomalies detected during commissioning phase.

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Spacecraft Health

All primary systems are operating within nominal parameters. The power subsystem is generating 12% above predicted output due to favorable solar array orientation.

- **Main engine:** 2,000 N bipropellant — nominal
- **Attitude control:** 16x 4.5 N thrusters — all operational
- **Propellant remaining:** 98.2% of total capacity
- **Comms downlink:** 78 kbps (above nominal)
- **Signal margin:** +3.2 dB — healthy

Trajectory Analysis

The spacecraft is on course for its Mars gravity assist on March 1, 2025. Current trajectory analysis shows arrival at Jupiter in April 2030.

Trajectory Parameters (as of 2025-02-01)

Heliocentric distance:	1.42 AU
Velocity (helio):	32.6 km/s
Mars flyby:	2025-03-01
Jupiter orbit insert:	2030-04-11
Europa flybys:	49 planned

Risk Register

Three active risks are being tracked, all rated low or medium severity.

1. **R-015: Solar array degradation** — Monitoring micrometeoroid impact rates during Mars flyby. Mitigation: orientation constraints during closest approach.
2. **R-022: Radiation model uncertainty** — Jupiter radiation belt models being refined with Juno mission data. Mitigation: additional shielding margin built into instrument electronics.
3. **R-031: DSN scheduling conflicts** — Competing demand from Mars Sample Return campaign. Mitigation: backup ground stations at ESA Estrack network.

> **Assessment:** Overall mission risk posture remains low. No schedule or budget impacts anticipated from current risk items.

Next Steps

- Complete TCM-2 maneuver window (March 2025)
- Execute Mars gravity assist flyby (March 1, 2025)
- Begin Jupiter approach science planning workshop (April 2025)
- Conduct annual comprehensive performance review (June 2025)
- Publish updated trajectory and flyby sequence (July 2025)

End of Briefing

Questions and discussion