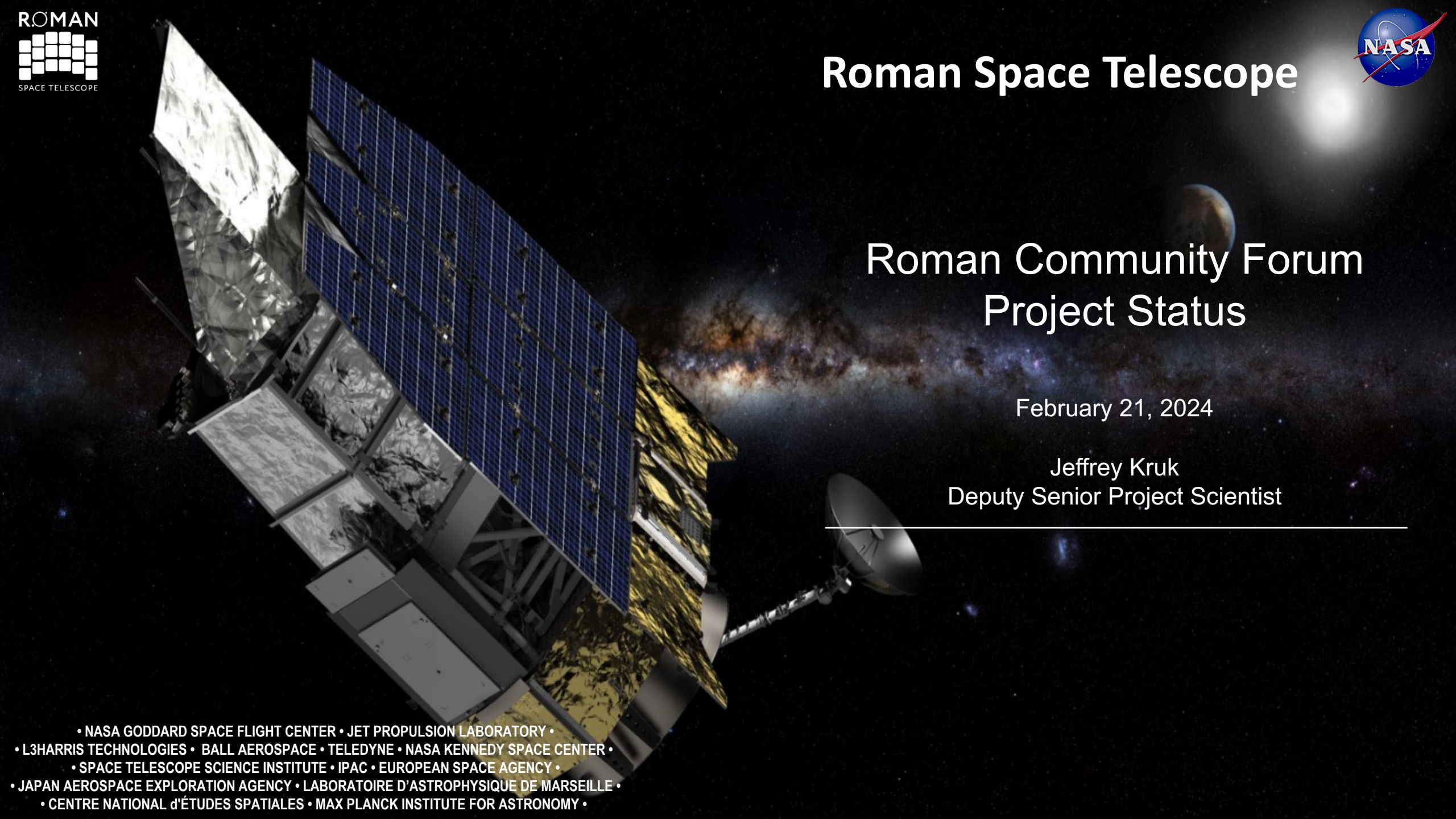

Roman Space Telescope

Roman Community Forum
Project Status

February 21, 2024

Jeffrey Kruk
Deputy Senior Project Scientist

• NASA GODDARD SPACE FLIGHT CENTER • JET PROPULSION LABORATORY •
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Executive Summary

- **Major element fabrication complete, testing in progress:**
  - Wide Field Instrument: First TVAC complete, vibration test complete, 2nd TVAC starts next month
    - Delivery to GSFC early August
  - Coronagraph: Vibration test complete, TVAC starting next month
    - Delivery to GSFC mid-May
  - Telescope: assembly-level vibe tests done; optical alignment in progress
    - Delivery to GSFC late July or early August
  - Instrument Carrier: already at GSFC, being prepared for payload integration
  - Spacecraft: remaining piece, CDH; to be delivered soon
    - S/C I&T complete mid June
- **These elements to be integrated over August/September**
  - Combined testing to begin October.
- **Remaining elements are being assembled**
  - Outer Barrel Assembly, Solar Array/Sunshield, Deployable Aperture Cover, Launch Loads/Vibration Isolation System
  - Will be integrated Q3 2025

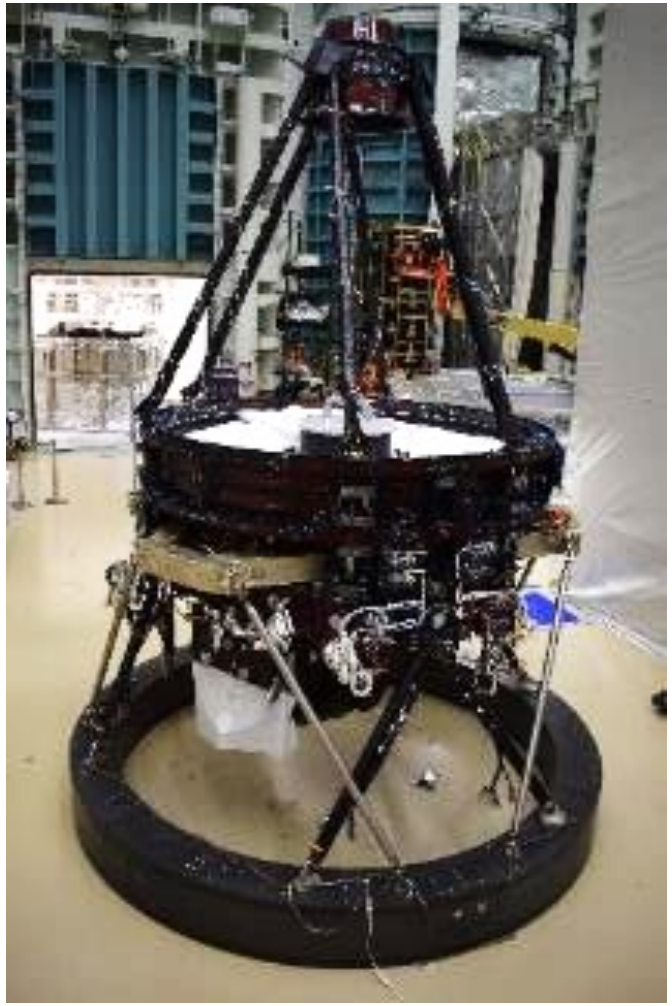
See next talk!

Wide-Field Instrument

- **Sample of TVAC 1 results:**
  - All tests passed
  - Metrology obtained for alignment to telescope at payload integration.
  - A few thermal conductance paths greater than expectations, addressed in rework following test
  - Better-than-required FPA temperature of 89K achieved (new baseline – original was 95K)
  - Thermal stray light leak found; fixed with new baffles added to filters, prism, and grism.
  - Approach to calibrating filter bandpass to <0.1% verified, will be applied to all elements in TVAC 2.

WFI being moved into TVAC chamber

Telescope



Imaging Optics Assembly Ready for Final Alignment

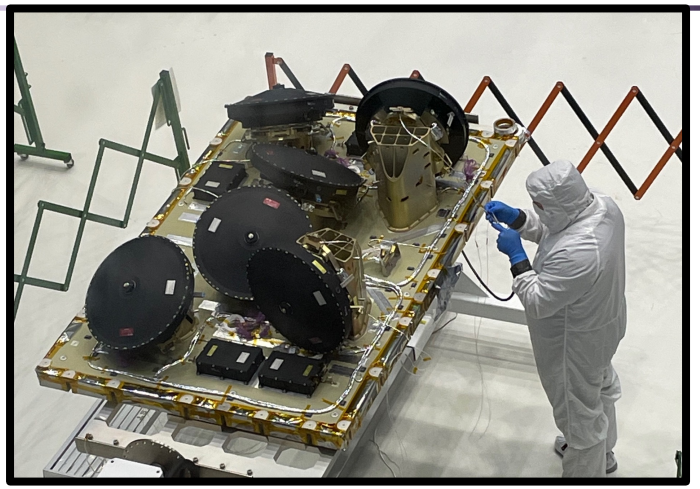
IOA being moved into Chamber IIIB for Alignment

Alignment measurements in progress. Expect final placement of remaining optics later this week.

Once data are processed we will provide updated PSF models.

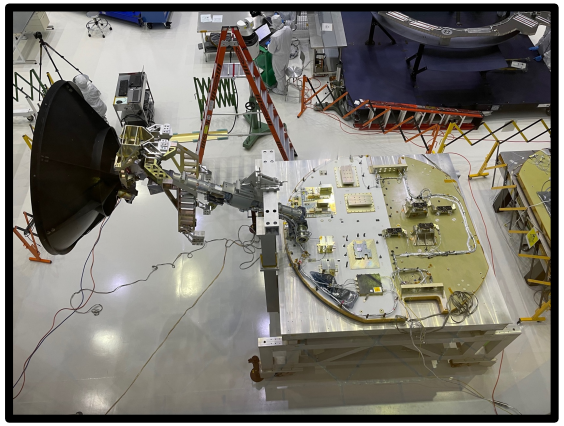
Uncertainties will remain regarding 1-g release, launch shifts, etc; will be incorporated in model based on 95% worst-case monte carlo.

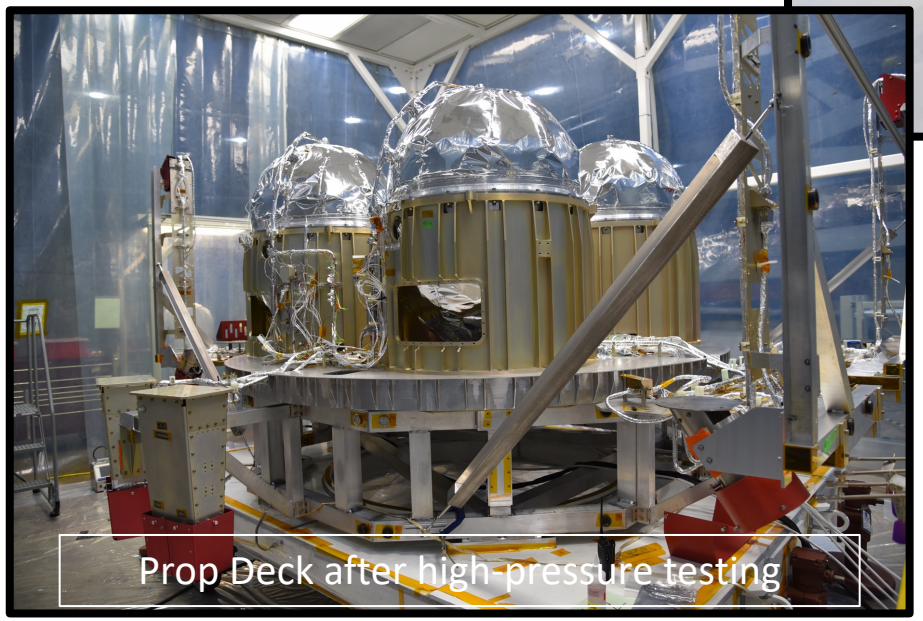
Spacecraft



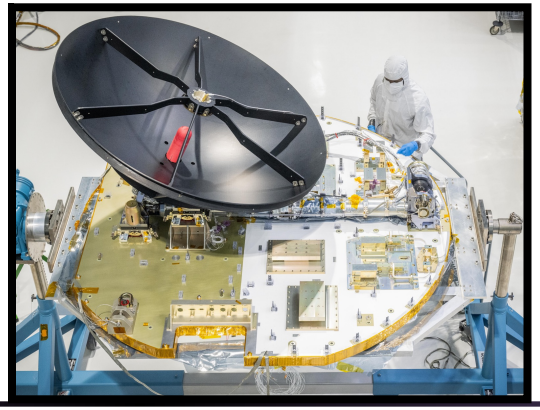
Reaction Wheel Assembly Panel

Comm Panel w/HGAS stowed & deployed



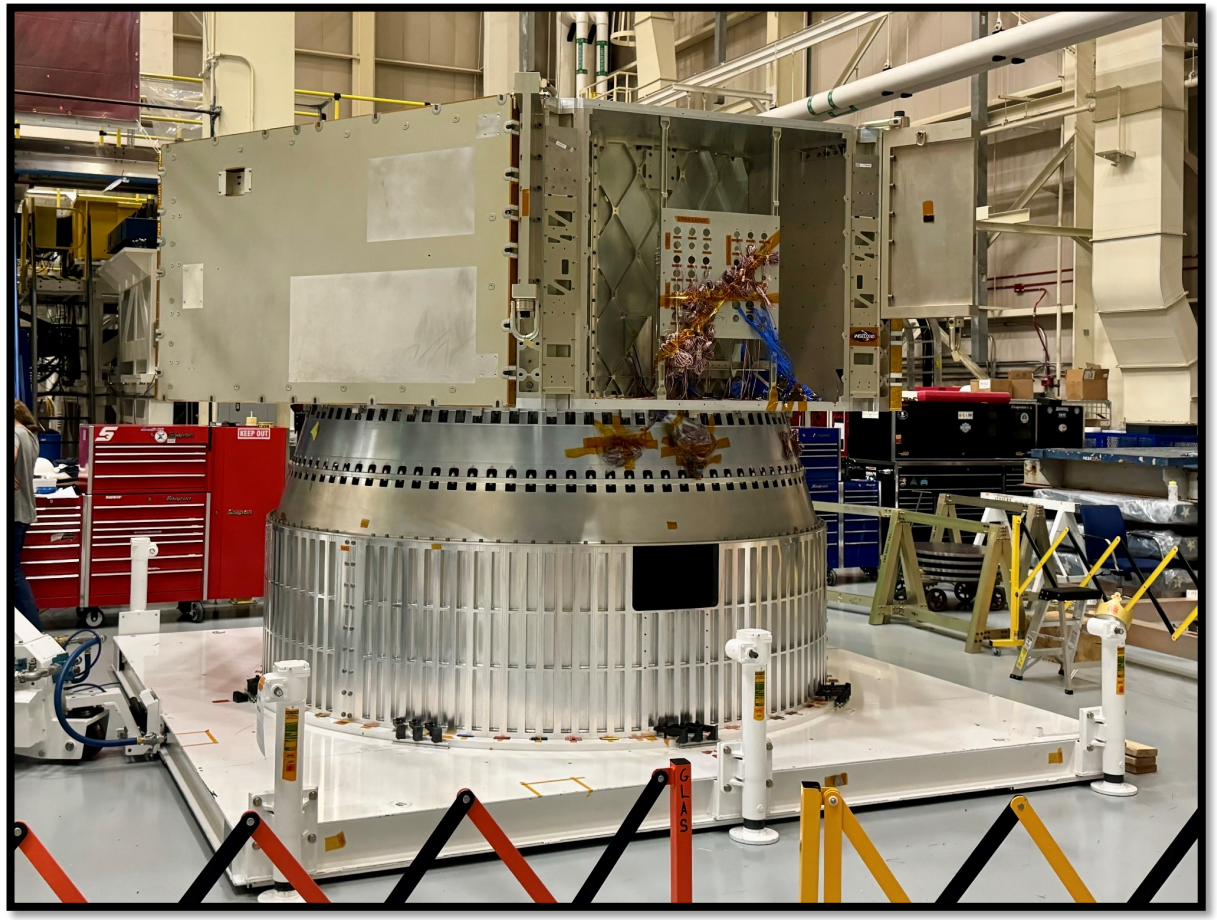


Prop Deck after high-pressure testing



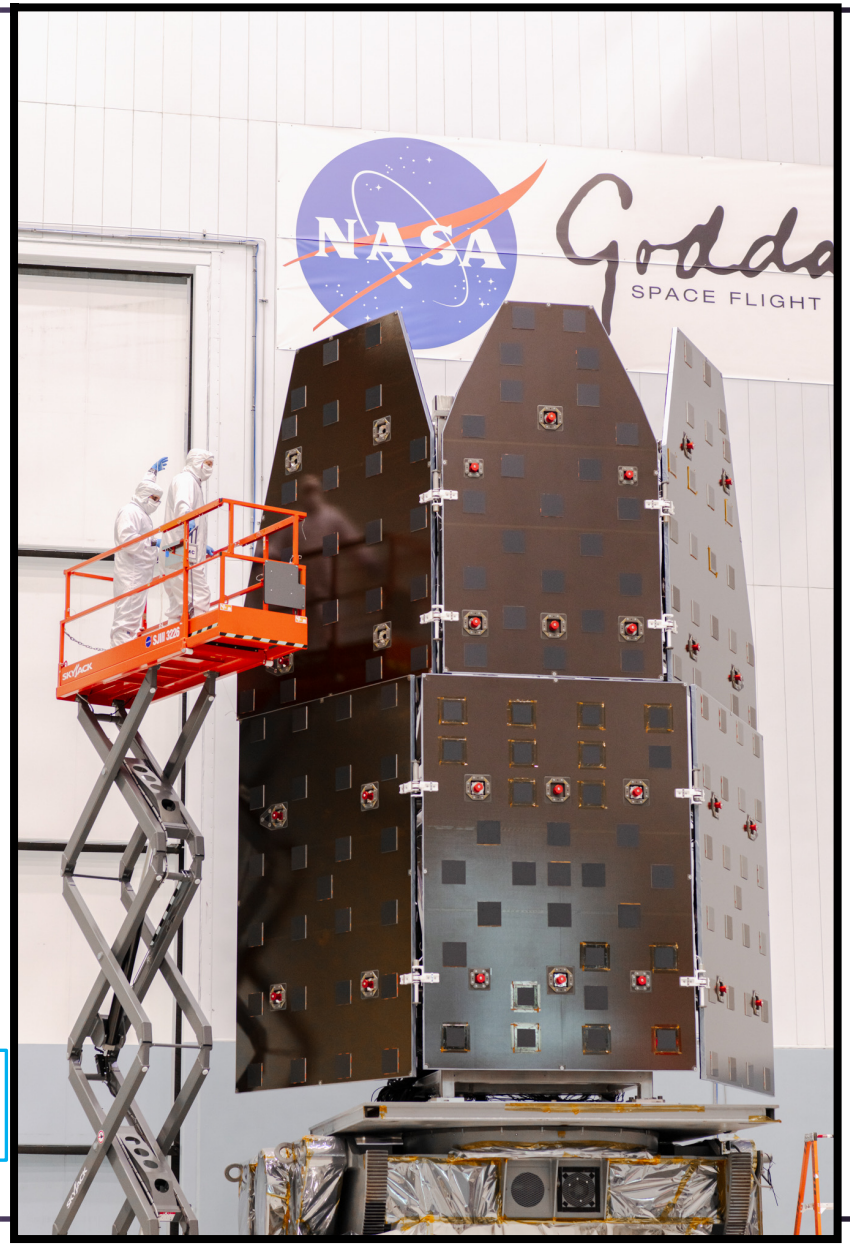
Spacecraft structural verification unit

Used for qualification testing, integration pathfinder

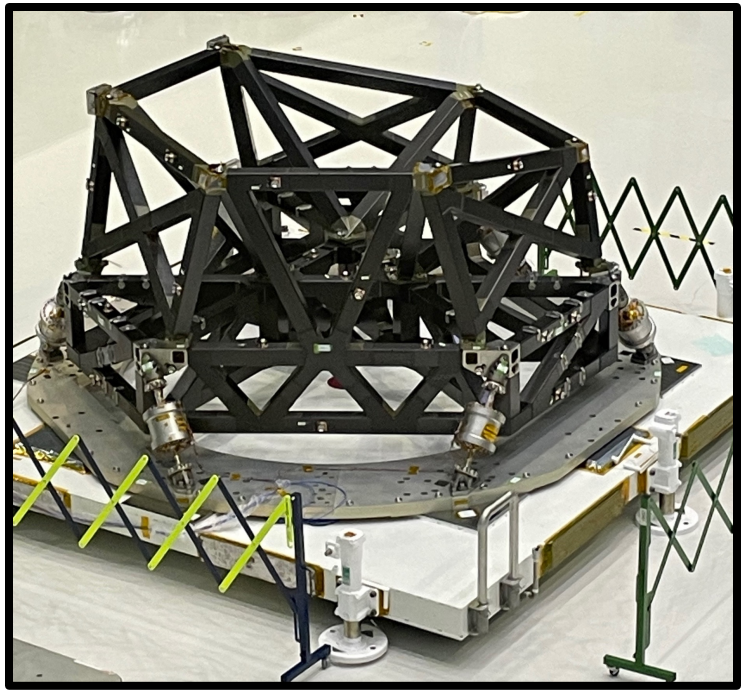


SVU mated to payload adapter simulator

Deployable Aperture Cover (DAC)



Deployment Testing of Surrogate Solar Array / Sunshield (SASS) panels



Instrument Carrier(IC)

Performance updates

- **No change to predictions for exposure times**
  - Throughput still as predicted
  - System wavefront error still within allocated budgets
  - Models will be updated after WFI TVAC 2 data analysis and final OTA wavefront measurements
- **Slew and settle time estimates have improved**
  - Moment of inertia has dropped ~5%, expected to improve further as real mass measurements come in
  - Thermal performance data on RWA system shows we can operate at full torque (had previously baselined half torque).
  - Net gains on reference survey durations:
    - HLWAS: 25 days against allocation of 486 (~5%)
    - GBTDS: easily achieve 8 fields in 15 minutes against allocation of 7, close to doing 9 fields
    - HLTDS: save 2 hours per visit against allocation of 30 (~7%)
  - Won’t know true performance until commissioning, but trends are in right direction.

THE ROMAN PROJECT REMAINS ON TRACK FOR LAUNCH IN FALL 2026