



VIPER

Rover Flight Build and Environmental
Test Status

Daniel Andrews, PM
NASA, Ames Research Center

IAC 2024, Session A3.2A – Moon Exploration, Part 1
Oct 15, 2024

A Busy Year for VIPER...

- Since last year's IAC presentation, the VIPER team has been very busy
- VIPER is fully built and completed all environmental tests.
- VIPER will shortly be ready for integration with a lunar delivery system
- The VIPER team stands ready to support rover integration and operations of this complex mission

The VIPER Rover Build...



VIPER cameras
and
communications
mast being
installed

The VIPER Rover Build...



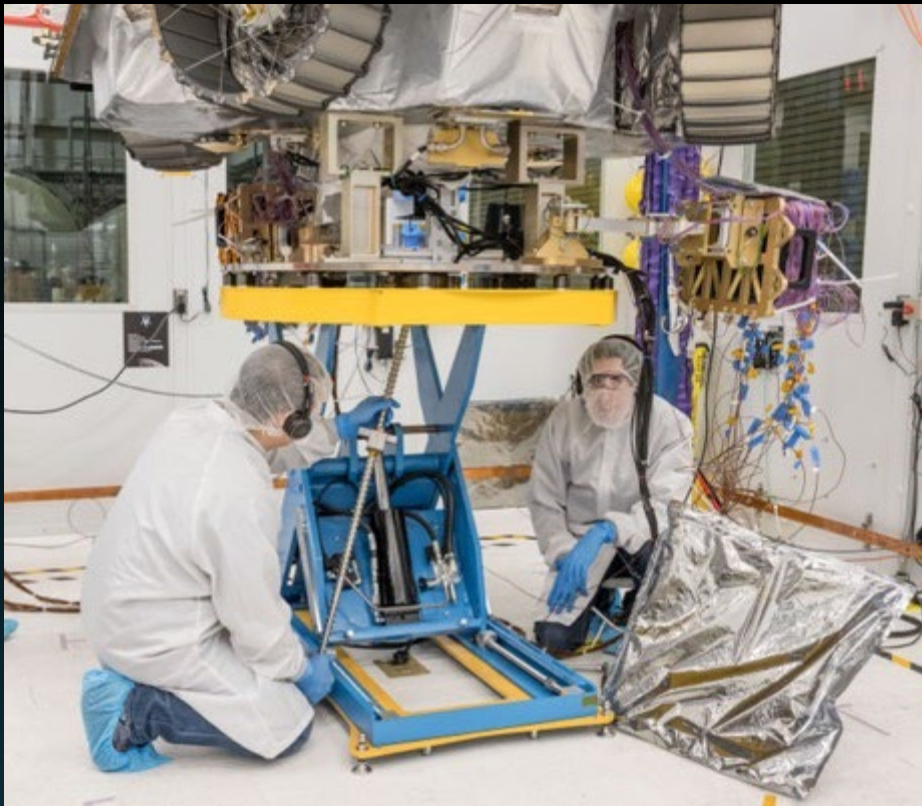
VIPER Multi-Layer Insulation (MLI) getting custom-wrapped

The VIPER Rover Build...



VIPER Solar Arrays
installation

The VIPER Rover Build...



VIPER TRIDENT
Drill auger final
installation

The VIPER Rover Build...



VIPER Wheel
installation
ceremony



The VIPER Rover Build...



VIPER Rover
Release
Mechanism
installation

The VIPER Rover Build...

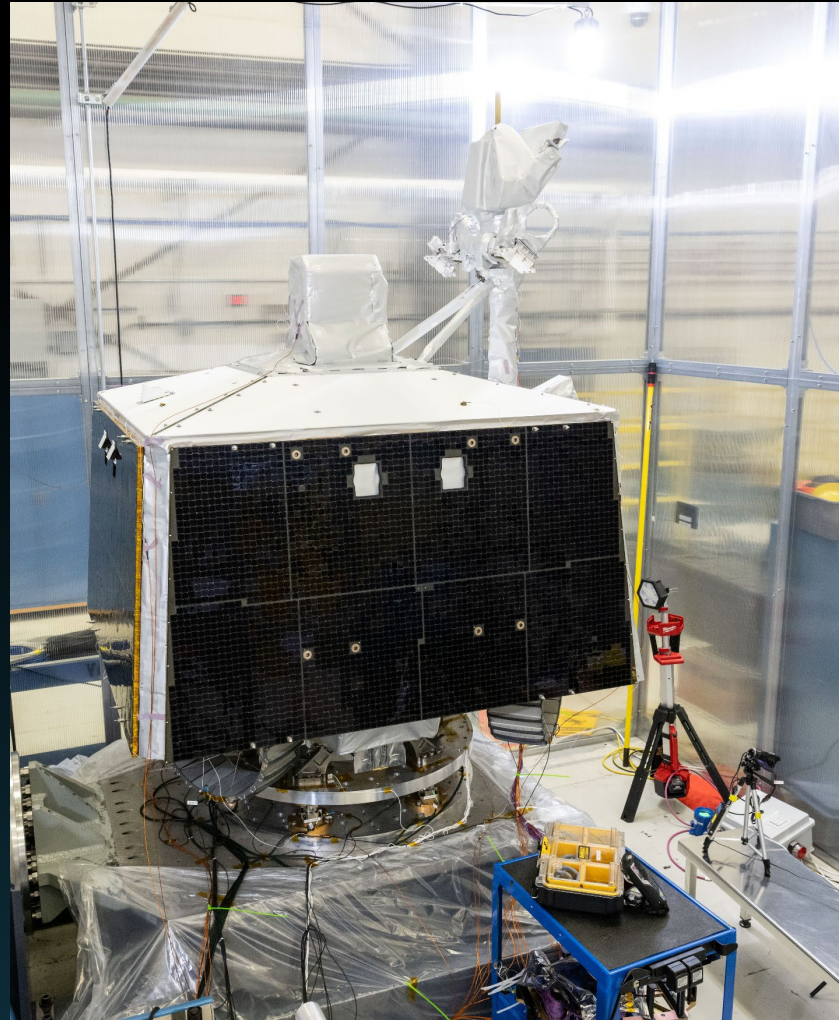


Rover Build Complete: 6/4/2024

- 192 Integration Steps
- 464 components/subassemblies

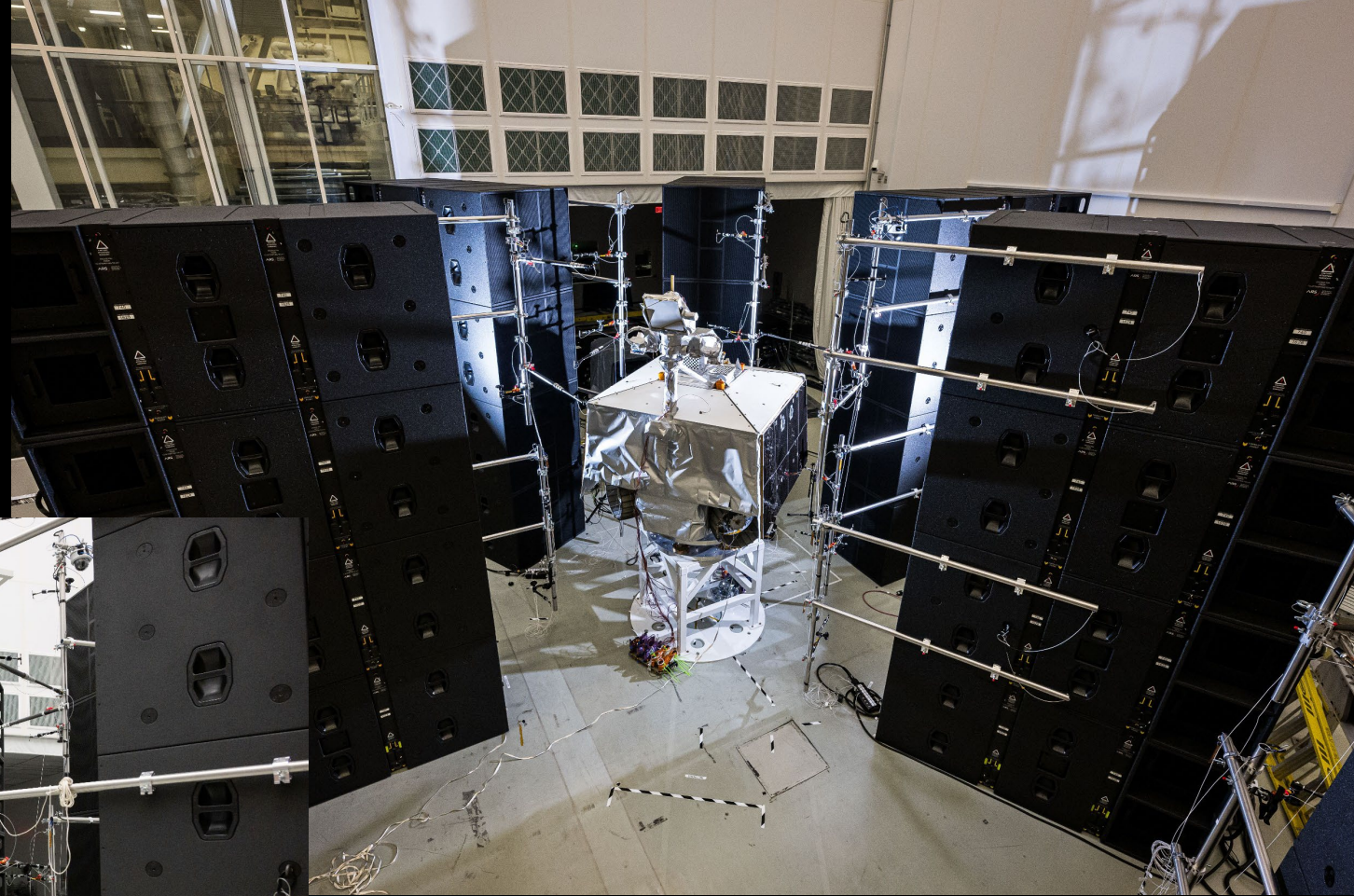
VIPER Rover Environmental Testing

VIPER Random-
vibe and Sine-vibe
Testing



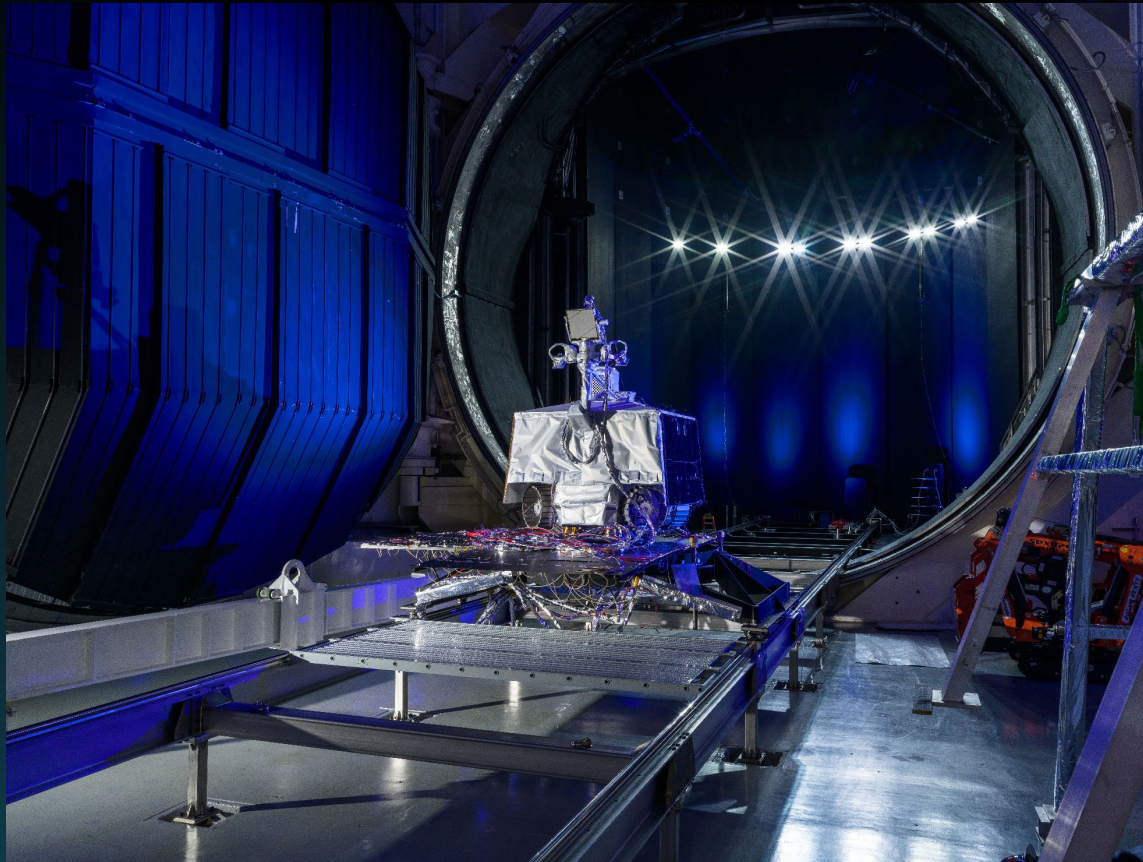
VIPER Rover Environmental Testing

VIPER Acoustic Testing



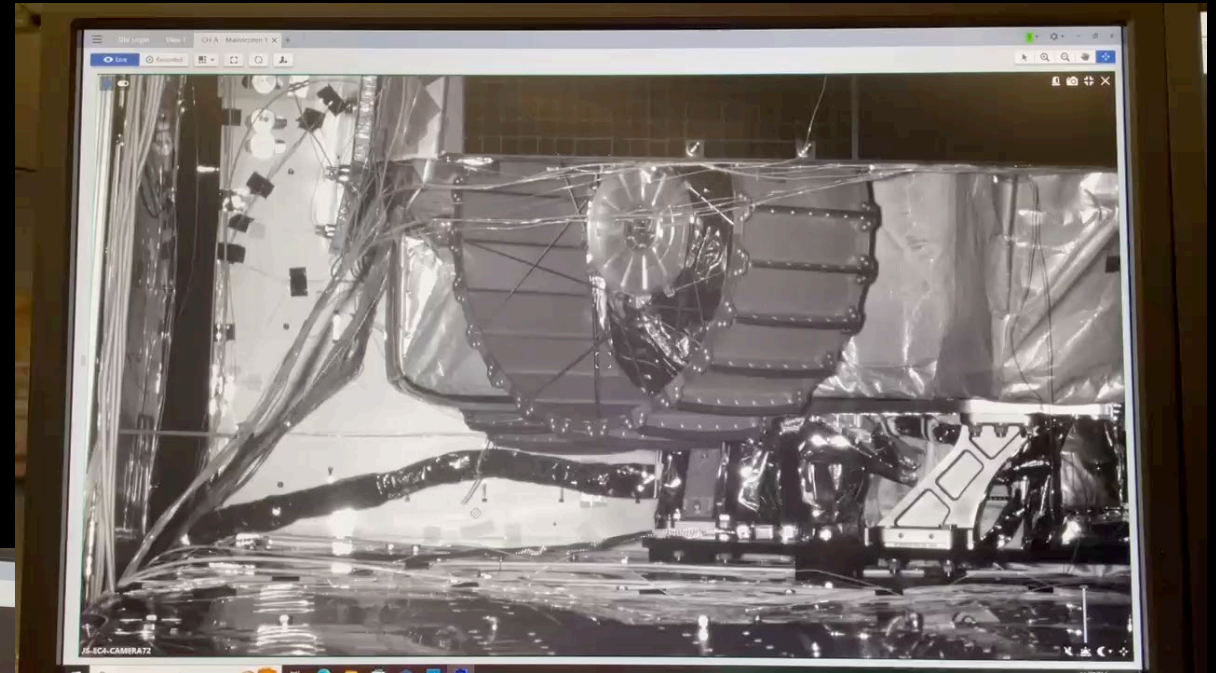
VIPER Rover Environmental Testing

VIPER Thermal
Vacuum (TVAC)
Testing

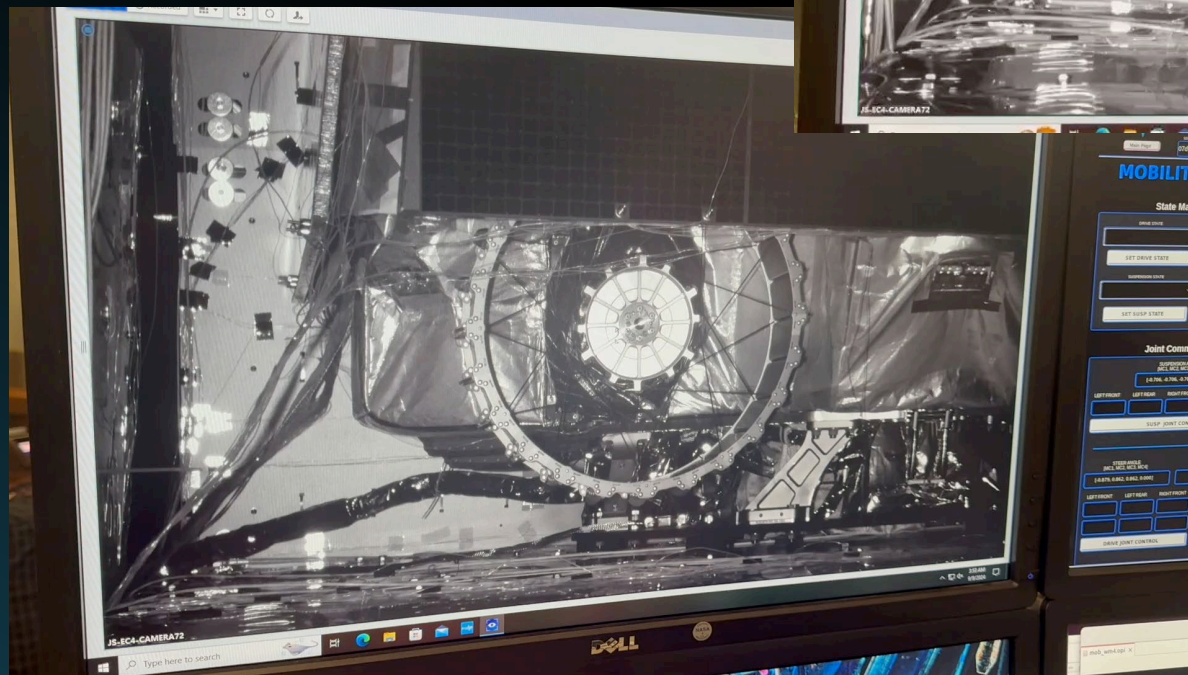


VIPER Rover Environmental Testing

VIPER Thermal Vacuum (TVAC) Testing: Mobility System Activation at 15 °K (-258 °C)



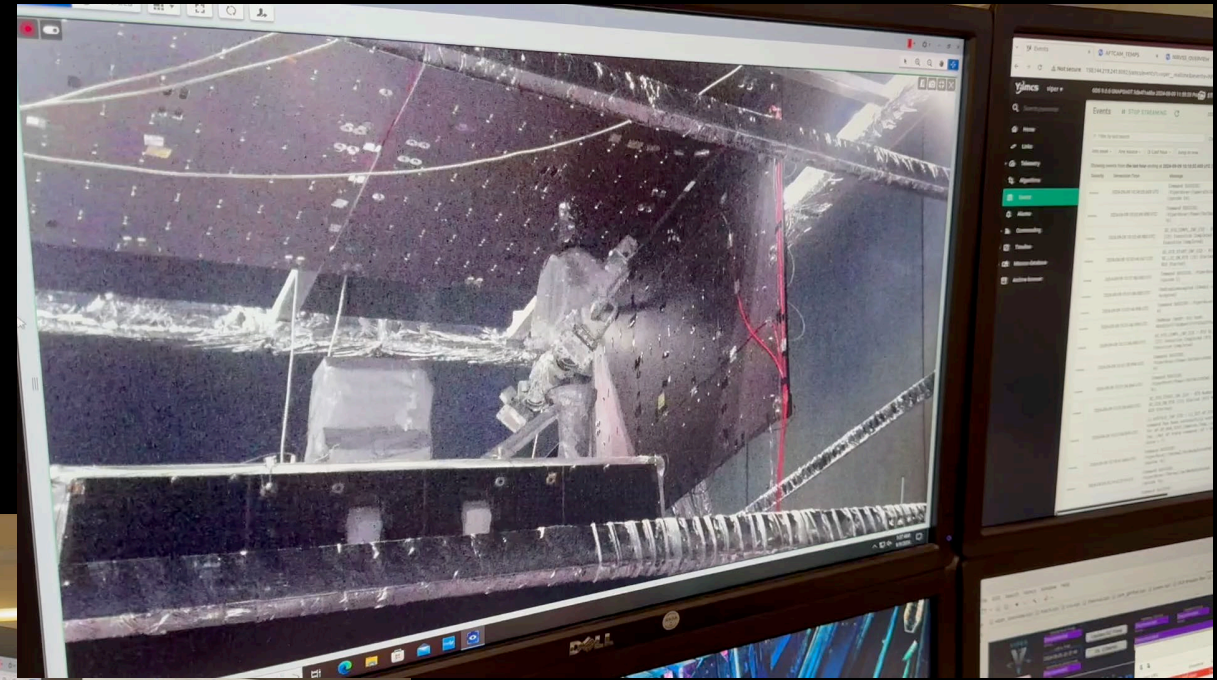
Suspension Motion



Propulsion Motion

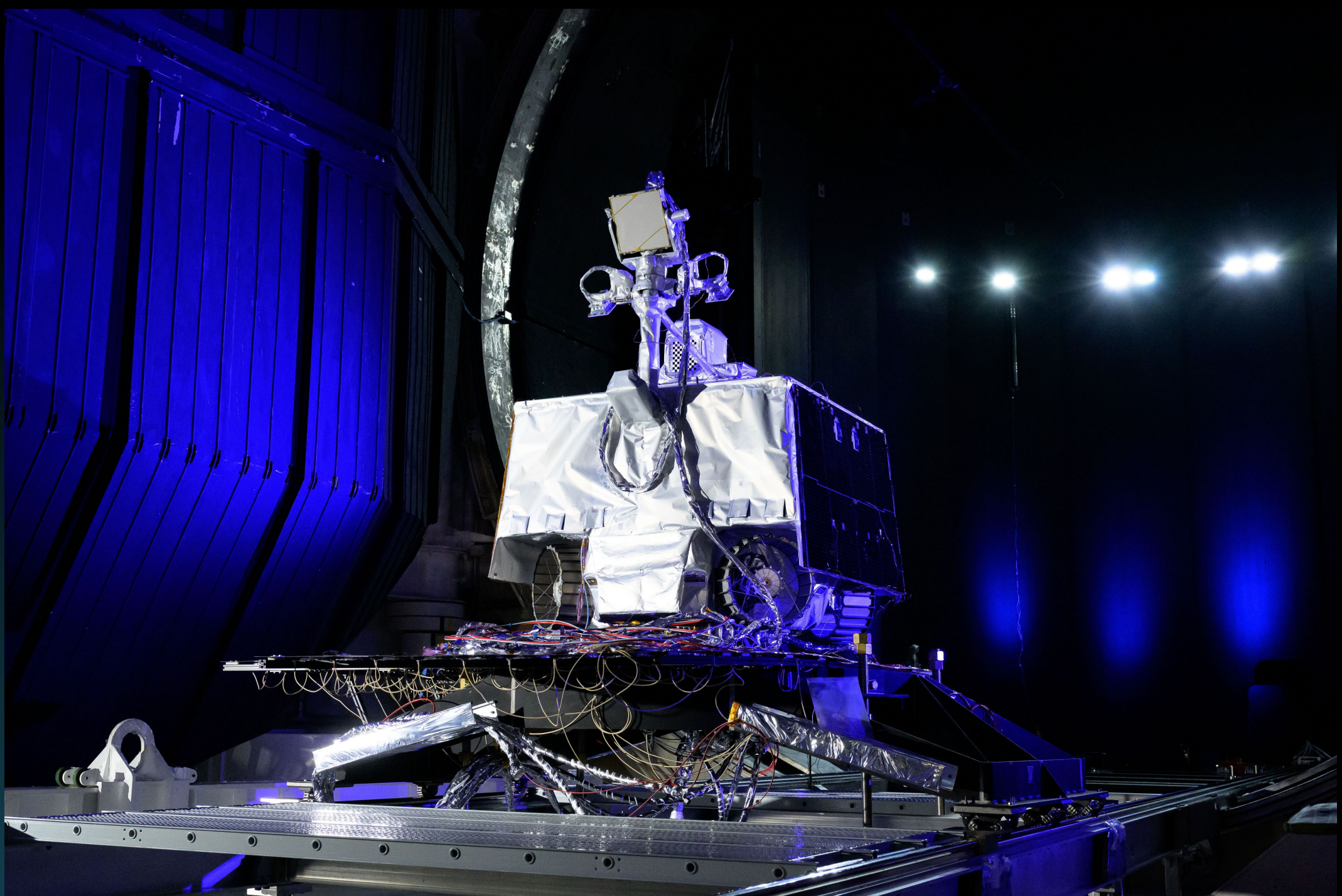
VIPER Rover Environmental Testing

VIPER Thermal Vacuum (TVAC) Testing: Pan/Tilt and Lights Activation at 15 °K (-258 °C)



Navigation Imaging Lights Activation

Navigation tilt operation



VIPER Programmatic Status

- In Jan-2024, VIPER's lunar delivery plans changed
 - NASA-HQ decided VIPER would no longer fly on Astrobotic Griffin Mission One
 - Uncertainty in VIPER's lunar delivery led the Agency to conclude the VIPER project
- VIPER development status:
 - ✓ 2024-06-04: Completed Rover build (100%)
 - ✓ 2024-07-05: Completed Vibration testing and post-test checkout (launch environments)
 - ✓ 2024-07-23: Completed Acoustic testing and post-test checkout (launch environments)
 - ✓ 2024-09-16: Completed Thermal Vacuum (TVAC) testing (Lunar environments)
 - ✓ 2024-09: VIPER Ops team completed 700 hours in team test and training, having completed multiple runs of 6 out-of 7 Engineering sims required for Lunar surface operations. All Ground software features and procedures are ready
 - 2025-02: VIPER rover in long-term storage awaiting mission arrangements
- NASA-HQ seeking Lunar mission alternatives for VIPER:
 - ✓ 2024-08-09: NASA-HQ releases Request For Information (RFI) for VIPER mission
 - ✓ 2024-09-02: VIPER RFI responses due from industry
 - 2024-10-xx: NASA-HQ determines forward plan for VIPER
- NASA-HQ is assessing the RFI responses for merit of the mission's proposed objectives, feasibility of the proposed mission, and expected NASA contributions

Thank You!

