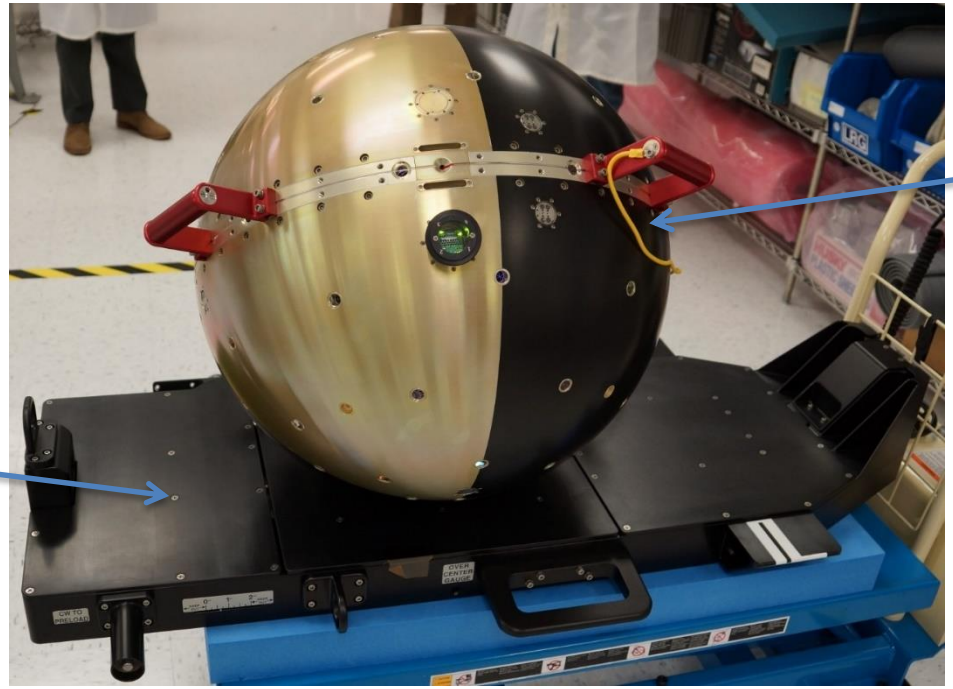
Update on Progress of SSIKLOPS (Space Station Integrated Kinetic Launcher for Orbital Payload Systems) - Cyclops



AIAA Small Satellite Conference

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Presenter: D. Newswander (NASA JSC)

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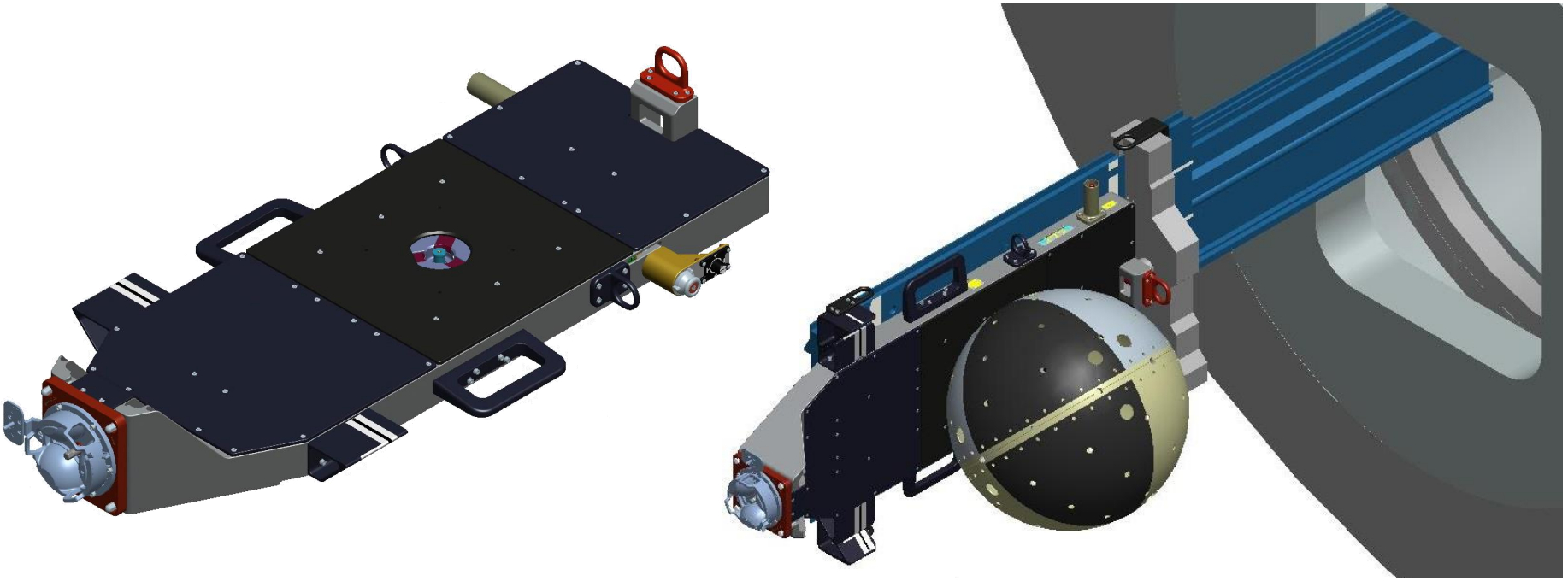


VISION

CAPABILITY

- Access to space for satellites in the 50-100kg class is a challenge for the small satellite community.
- Rideshare opportunities are limited and costly, and the satellite must adhere to the primary payload's schedule / launch needs.
- Launching as an auxiliary payload on an Expendable Launch Vehicle presents many technical, envir., and logistical challenges.
- Cyclops provides small satellites the infrastructure to be deployed from the ISS into orbit with minimal technical, envir., logistical, and cost challenges.

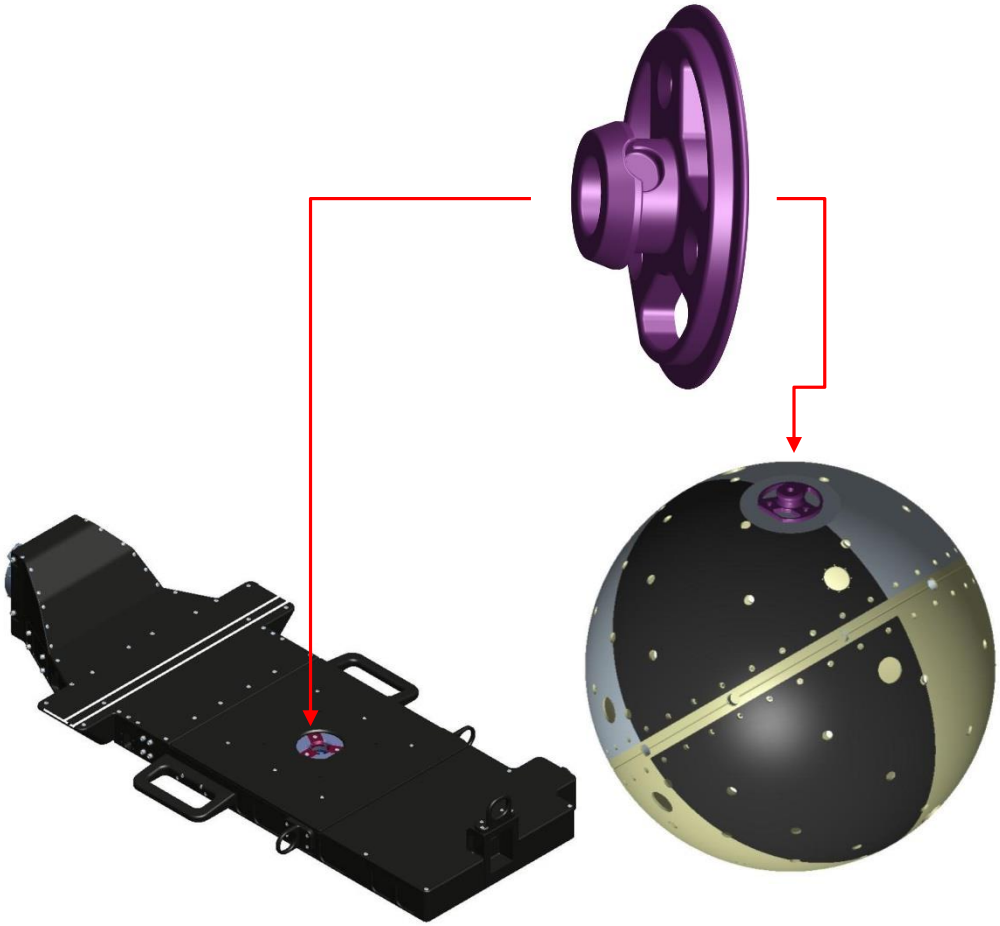
CYCLOPS



- Cyclops interfaces with the JEM Airlock Slide Table, the ISS Robotic Arms, and the deployable satellites.
- Will deploy satellites up to 100 kg in size contingent upon satellites meeting all ISS safety requirements.

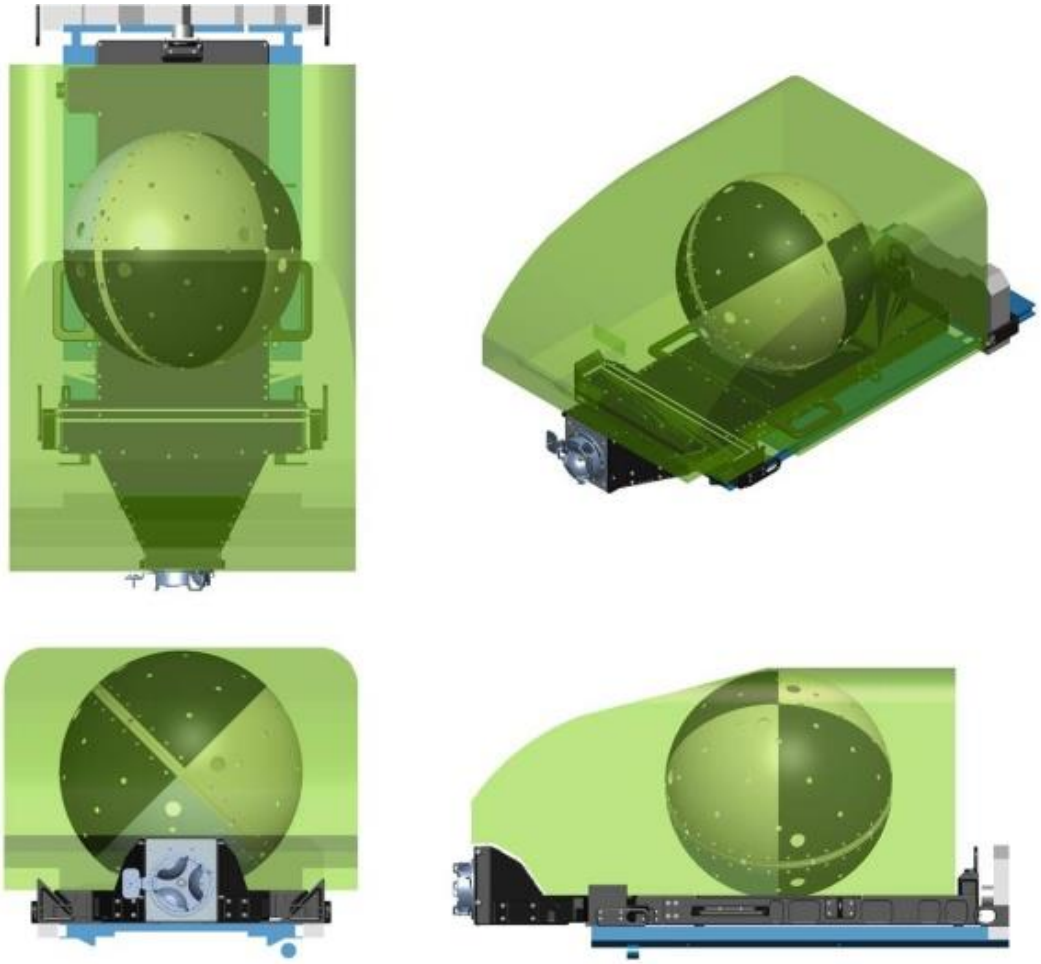
SATELLITE INTERFACE (1/3)

- The interface between Cyclops and its deployable satellite is called the Experiment Attachment Fixture (EAF).
- The EAF attaches to the bottom of the satellite and interfaces with the Cyclops' grapple system.



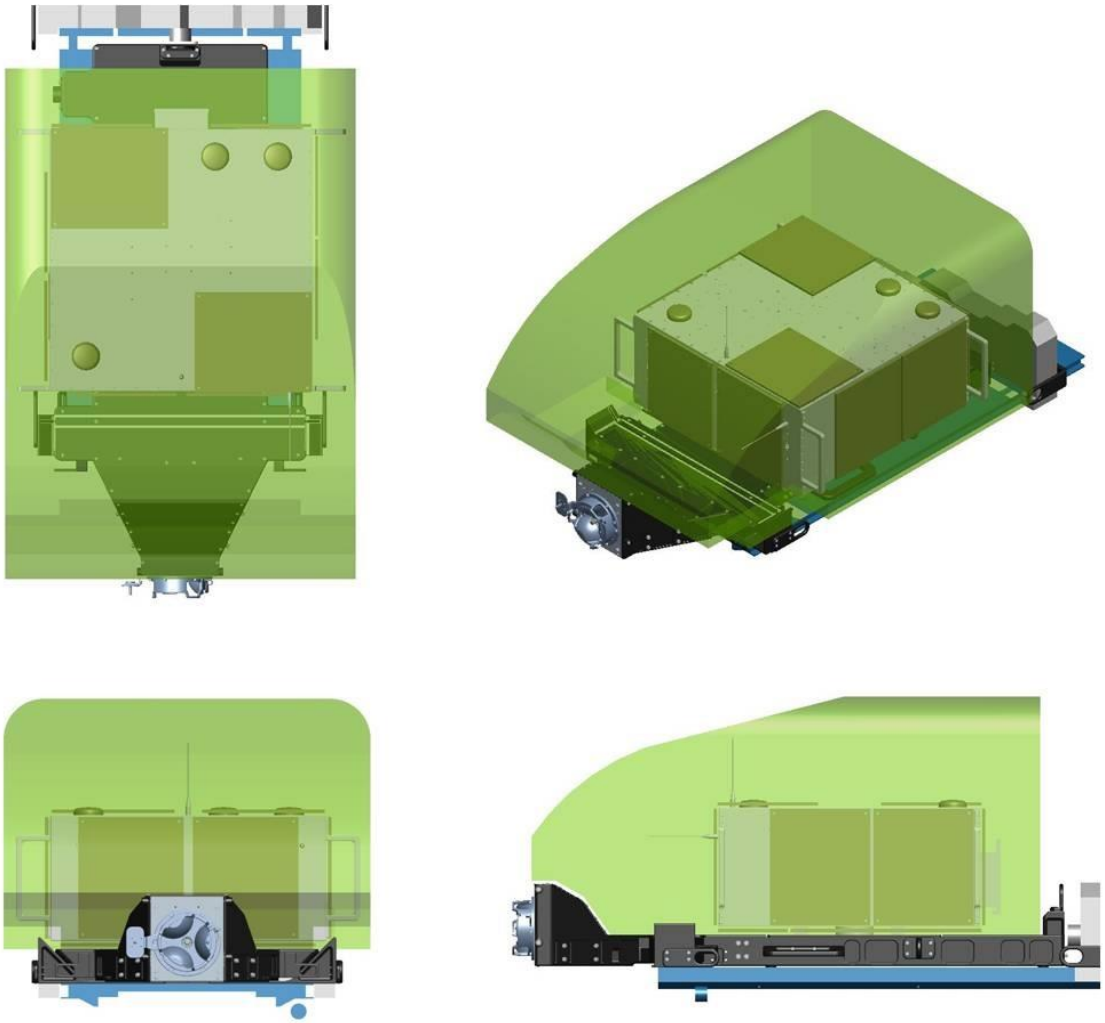
SpinSat with EAF and Cyclops

SATELLITE INTERFACE (2/3)



SpinSat in Cyclops Envelope

SATELLITE INTERFACE (3/3)

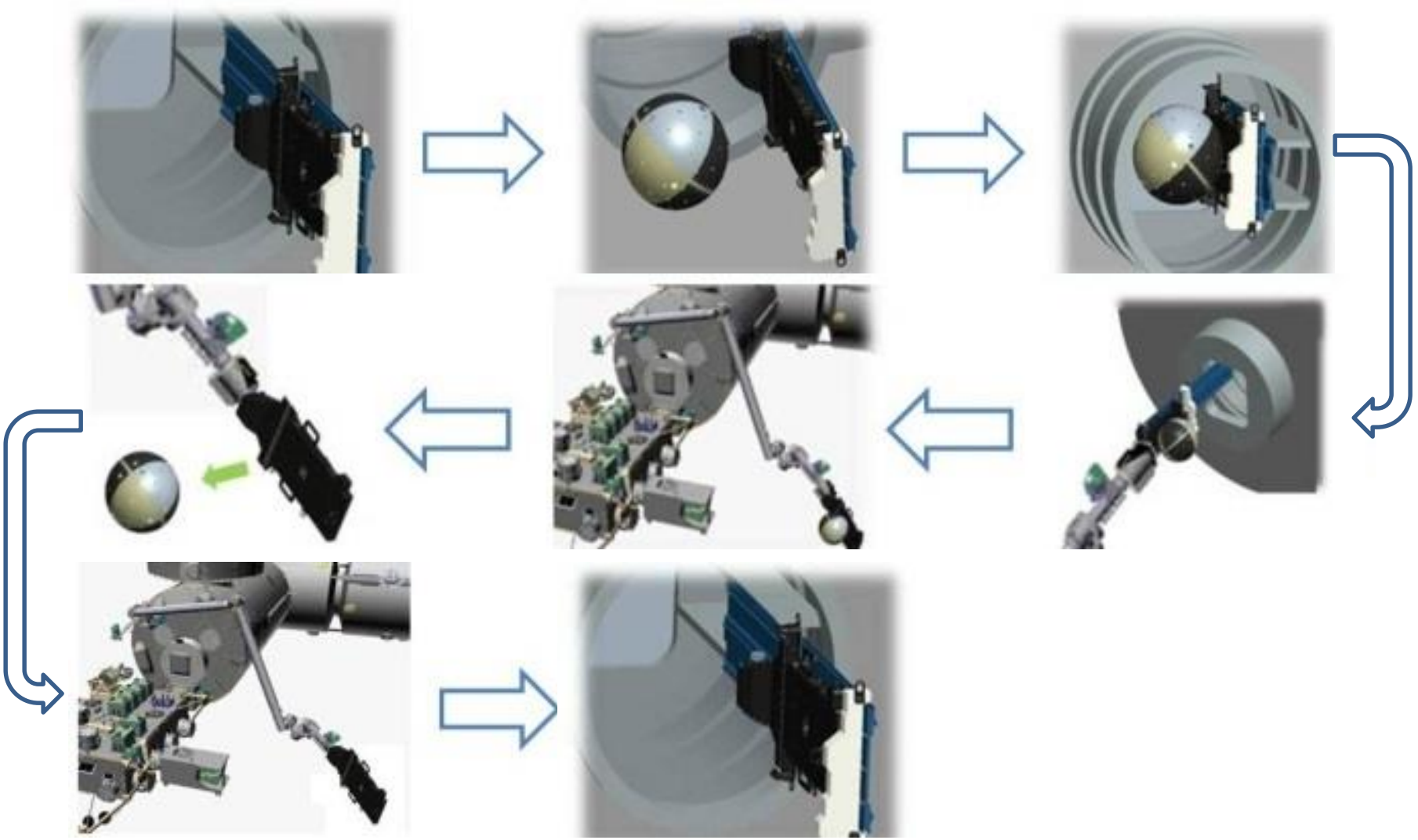


LoneStar in Cyclops Envelope

CONCEPT OF OPERATIONS (1/2)

- Cyclops and its deployable satellites will be launched onboard one of NASA's ISS resupply vehicles in a controlled pressurized, soft stowed environment.
- Cyclops and its deployable satellites will be stowed onboard the ISS.
- Cyclops with its deployable satellite will be processed through the ISS JEM Airlock and transferred to the deploy position by one of the ISS robotic arms.
- Cyclops will deploy its deployable satellite with assistance from one of the ISS robotic arms.
- Cyclops will be returned inside the ISS for future use.

CONCEPT OF OPERATIONS (2/2)

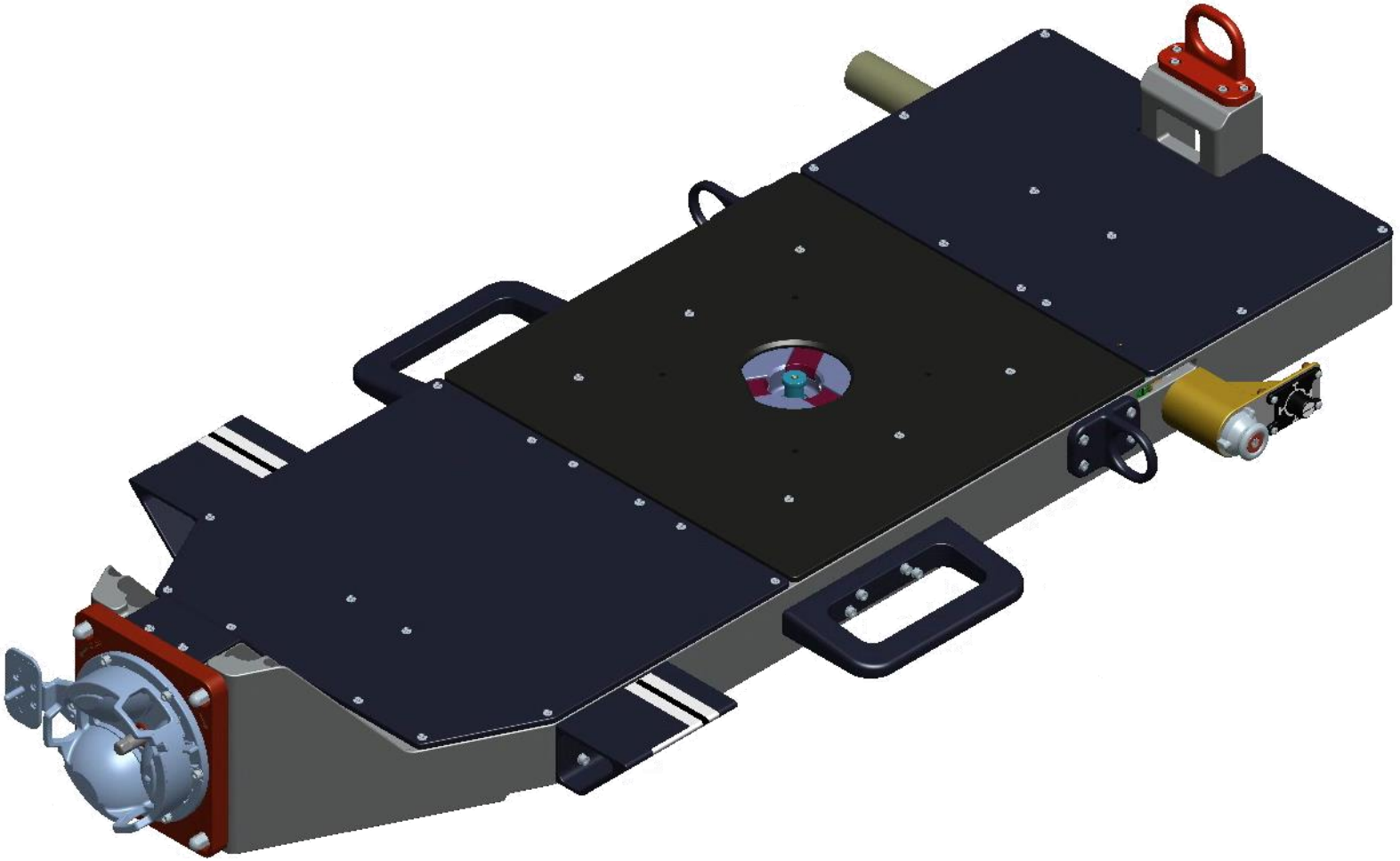




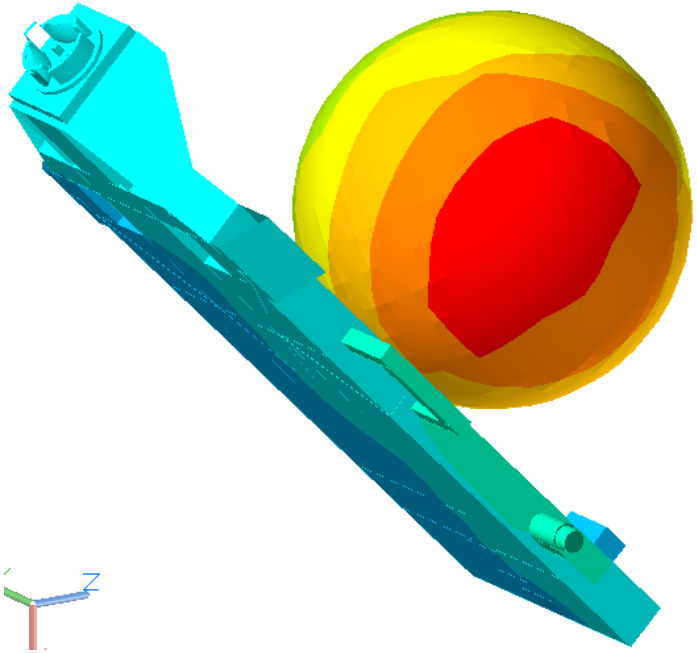


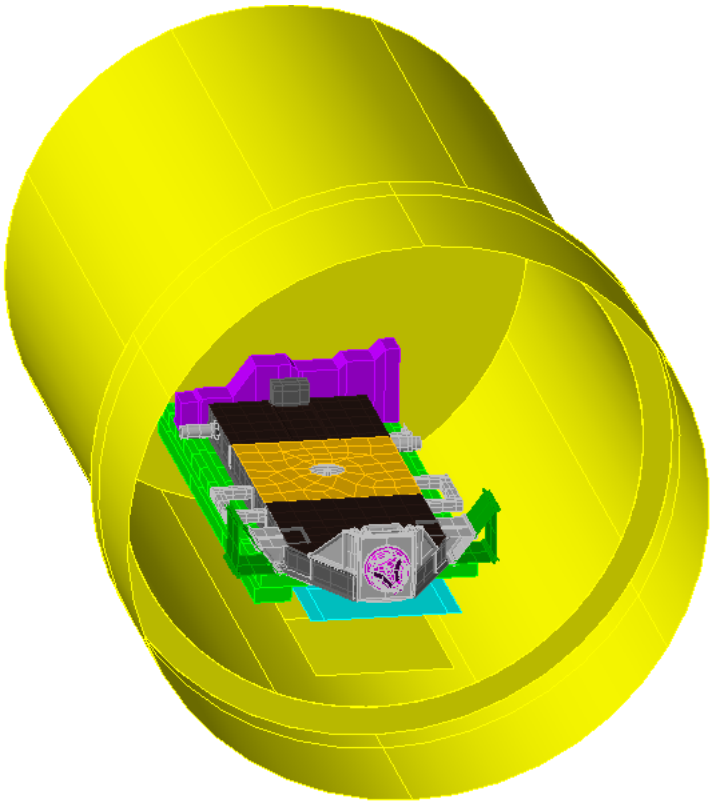
CREATION

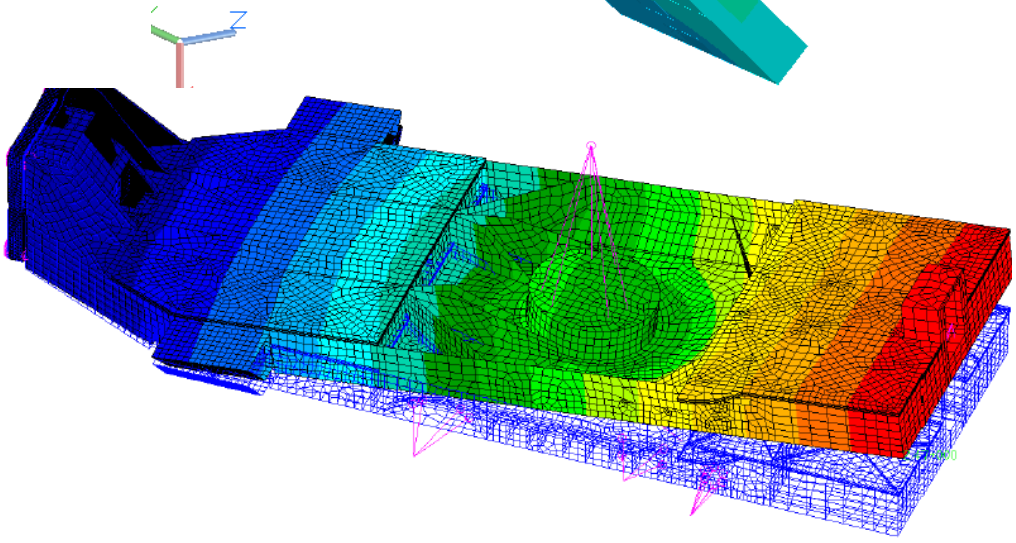
DESIGNED/ANALYZED (1/2)



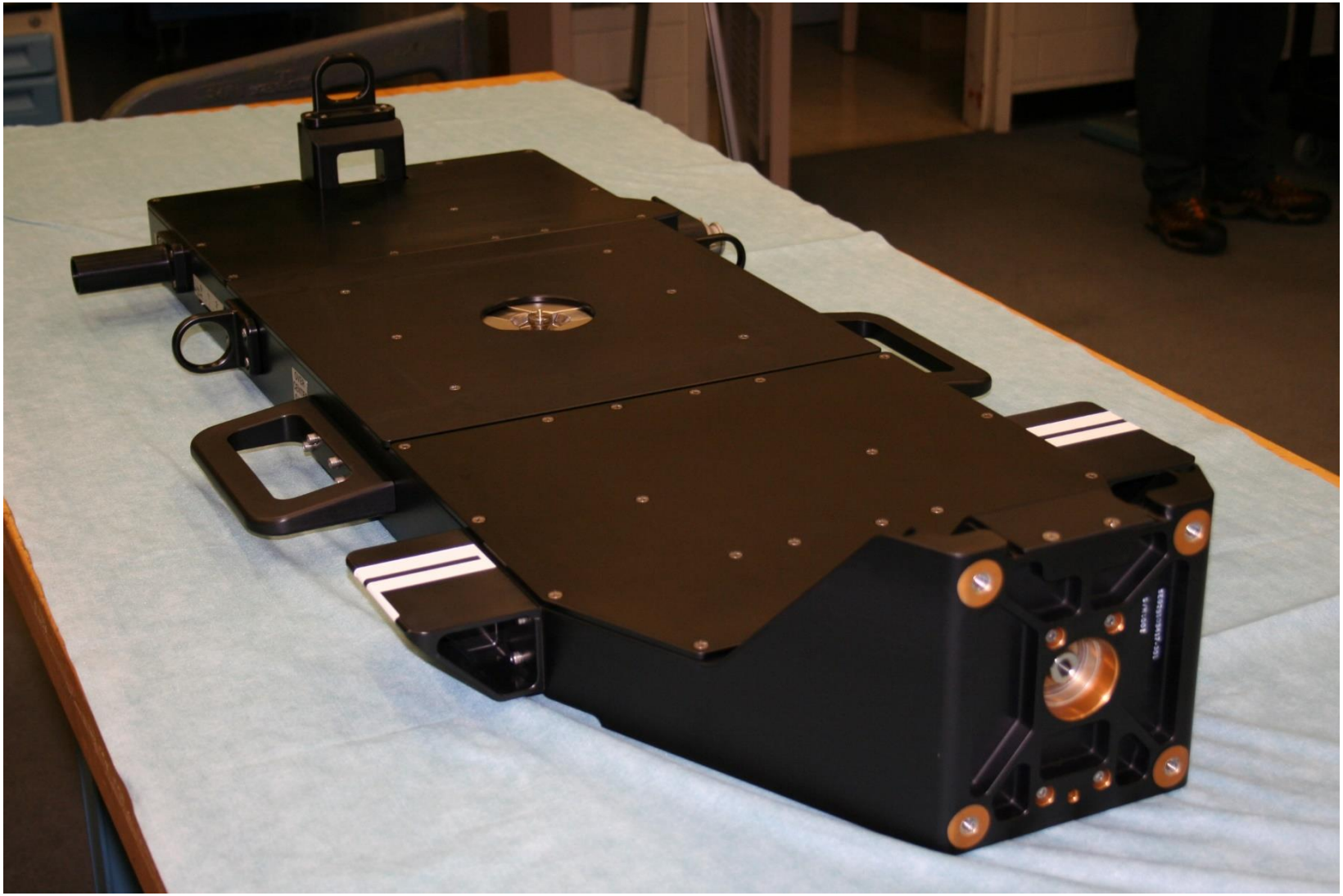
DESIGNED/ANALYZED (2/2)







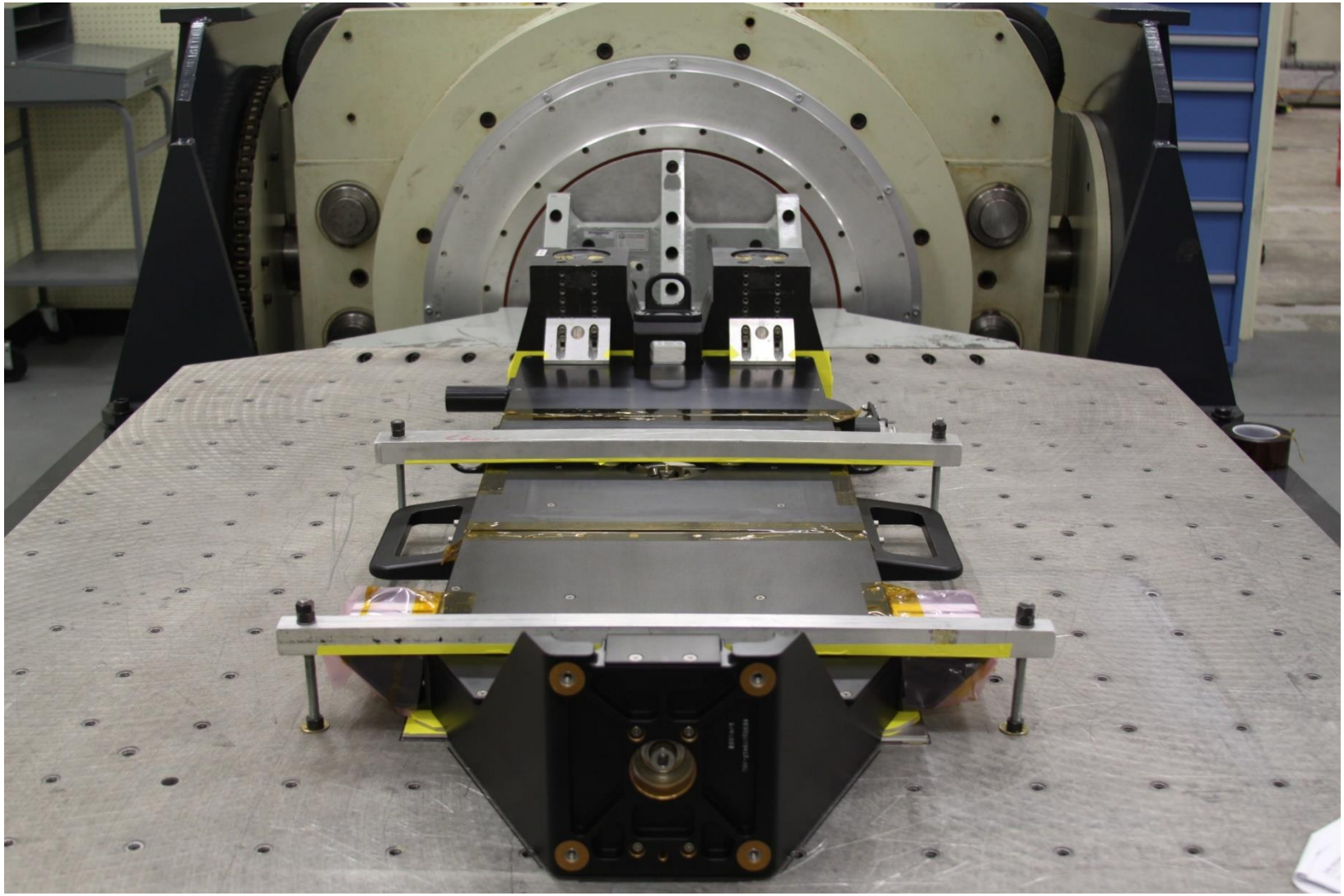
FABRICATED



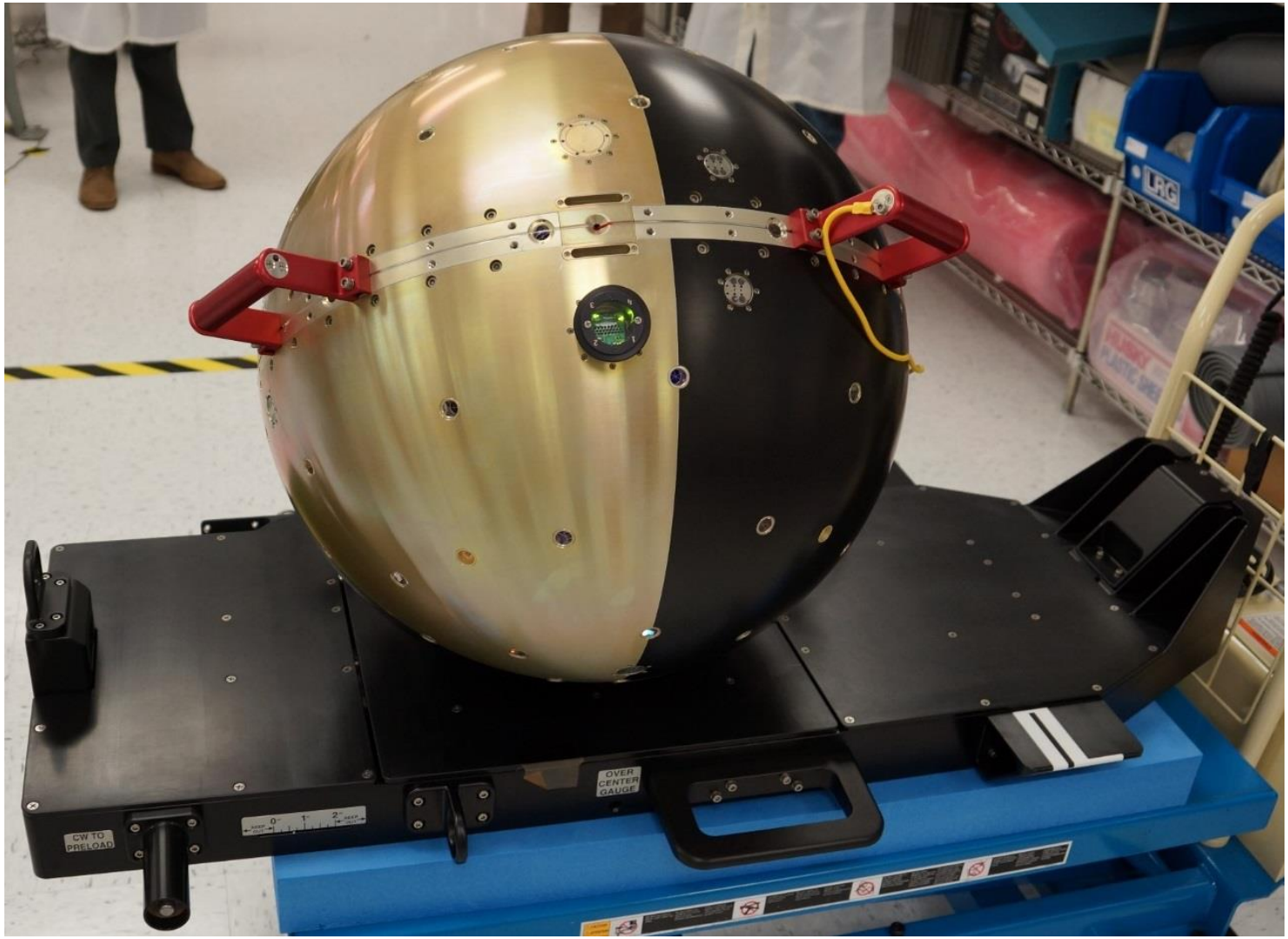
TESTED/CERTIFIED (1/2)



TESTED/CERTIFIED (2/2)



INTEGRATED







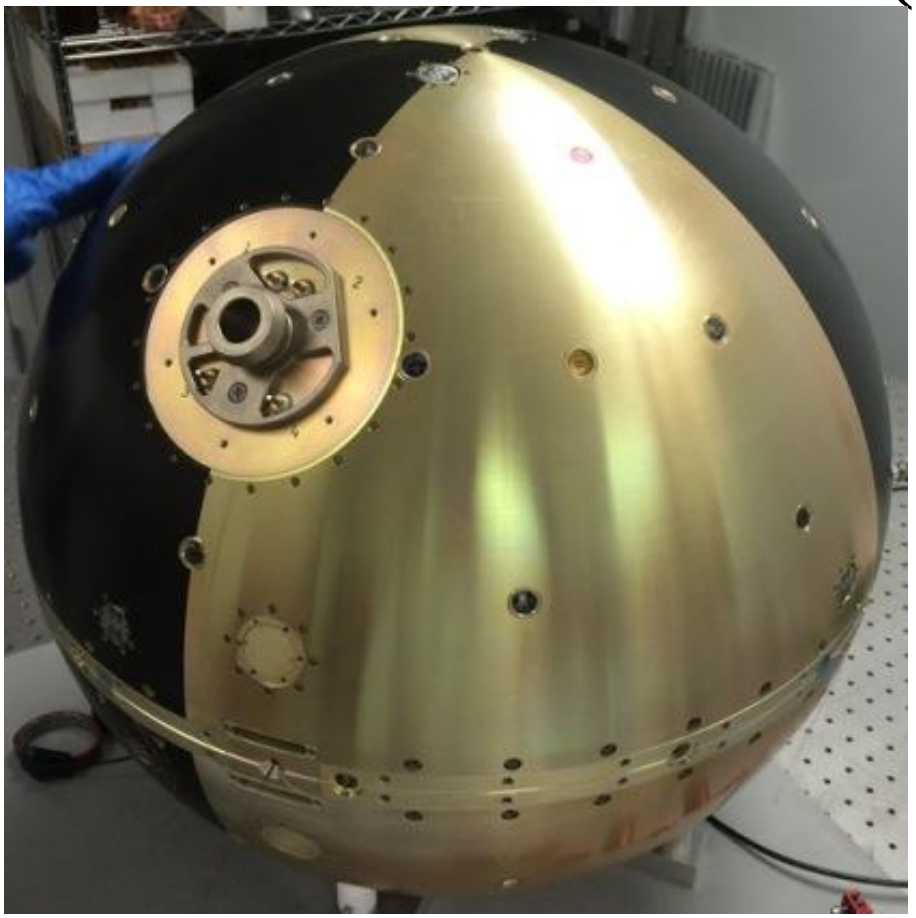
UTILIZATION

LAUNCH



SpaceX 4
9/12/2014!

SPINSAT DEPLOYMENT (1/2)



- SpinSat (55.9 cm dia; 52kg): Naval Research Laboratory electronically-controlled Solid Propellant thruster, atmospheric neutral density experiment.

SPINSAT DEPLOYMENT (2/2)



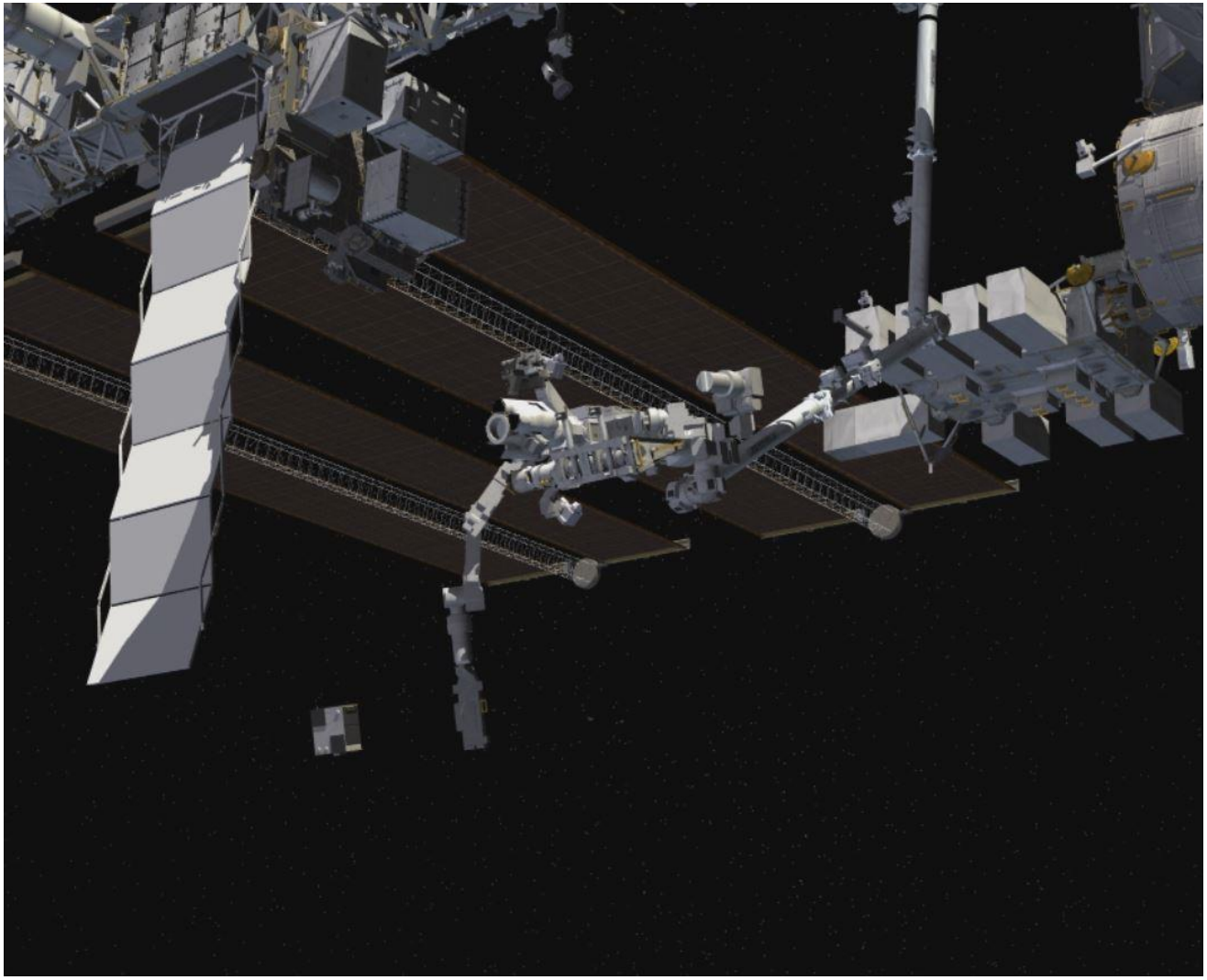
Oct 2014!

LONESTAR DEPLOYMENT (1/2)



- LONESTAR-2 (64 cm x 64 cm, 31 cm; 50kg): joint NASA, Texas A&M Univ., and Univ. of Texas at Austin autonomous rendezvous and docking experiment.

LONESTAR DEPLOYMENT (2/2)



Jan 2015!

FUTURE UTILIZERS



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