



NORTHROP GRUMMAN

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EXELIS

ATK
ALLIANT TECHNOLOGIES

JWST Pathfinder Status

Gary Matthews, JWST AI&T Program Director

November 2014



General Pathfinder Status



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■ Telescope Integration Activities

- Optical Telescope Element (OTE) and OTE/ISIM (OTIS) integration will occur at GSFC in the large SSDIF clean room
- All OTE Optical Ground Support Equipment (OGSE) has been completed and was used for Pathfinder integration operations

■ Pathfinder Optical Integration

- The Primary Mirror Backplane Support Structure (PMBSS) was delivered to GFSC for mirror integration in July 2014
- Both Primary Mirror Segment Assemblies (PMSA) have been installed and electrically verified
- The Secondary Mirror Assembly (SMA) has also been aligned and electrically verified
- Additional thermal diodes and other Pathfinder specific hardware is being completed
- Delivery of the Pathfinder to JSC for cryo testing is scheduled for January 2015

■ Optical Telescope Element (OTE) Integration

- Optical integration of the flight OTE scheduled for Fall 2015



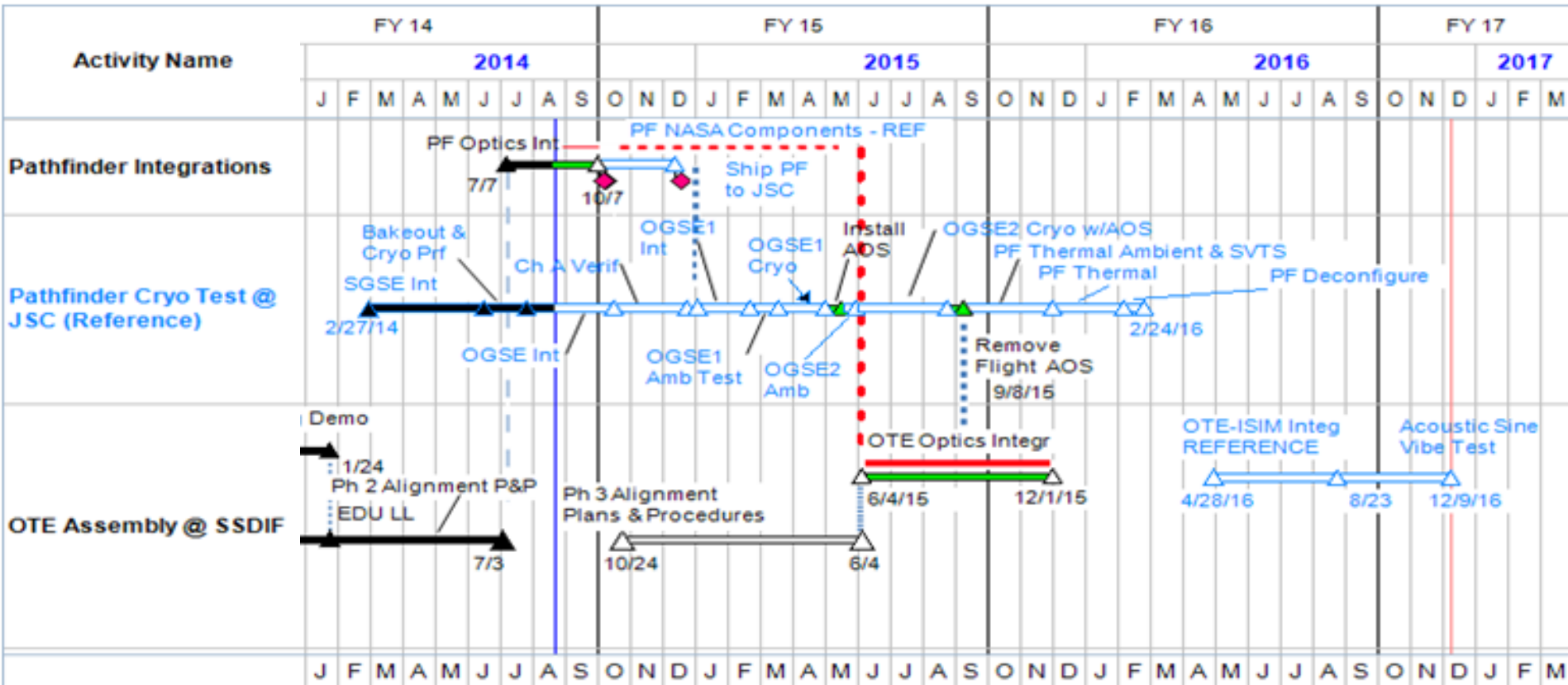
Schedule Overview



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Pathfinder Delivery to the SSDIF



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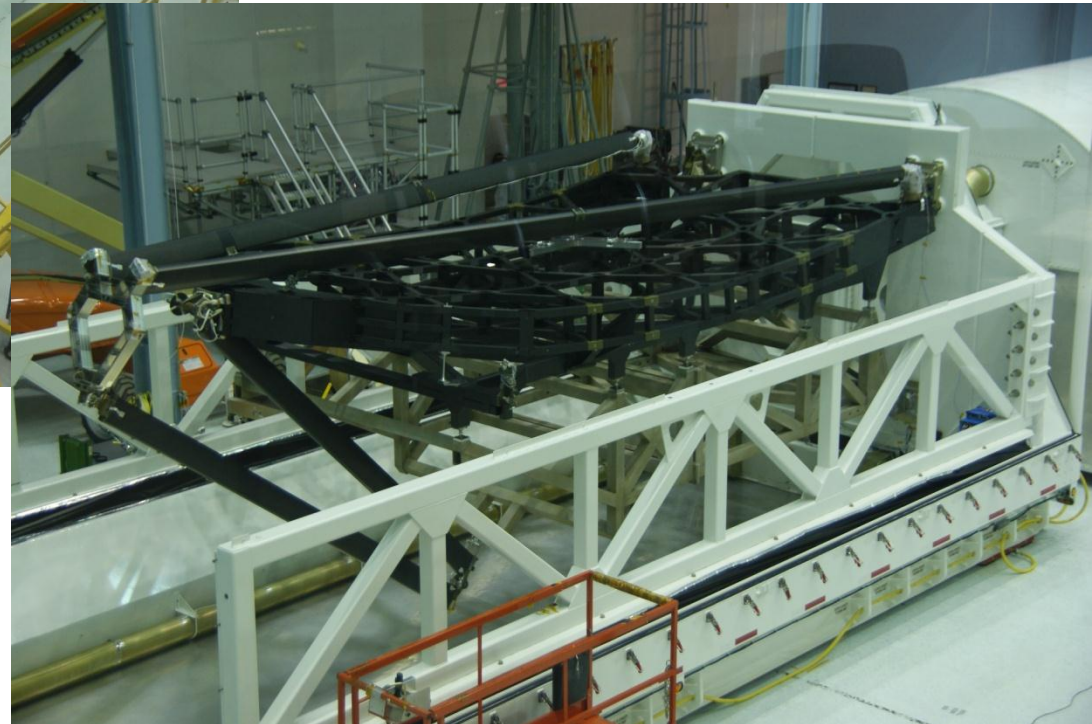
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STTARS Shipping container
in the SSDIF Clean Room



Unbagged Pathfinder
Structure





Pathfinder on Optical Bench



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SMSS Walkout

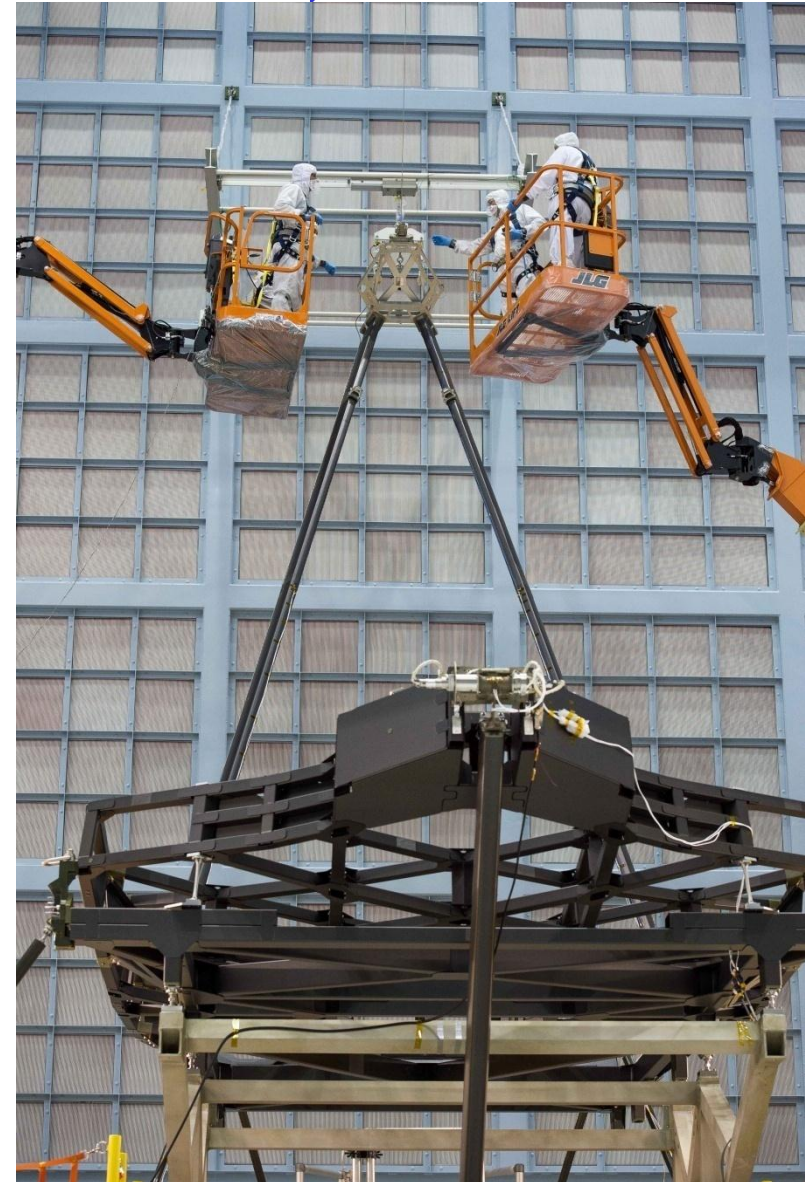


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With the single strut release, SMSS walked out and overdeployed against the HEPA filter wall.

Ready for PMSA mirror integration



PMSA Integration



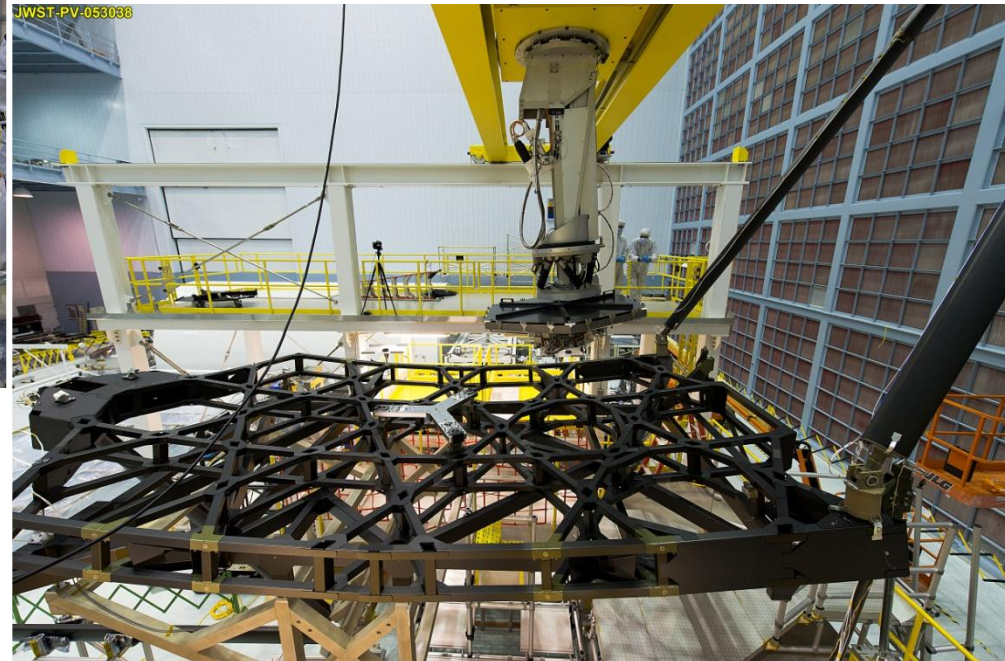
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EDU Mirror integrated on the PAIF and being moved over the Pathfinder structure



Note protective covers on the mirror elements



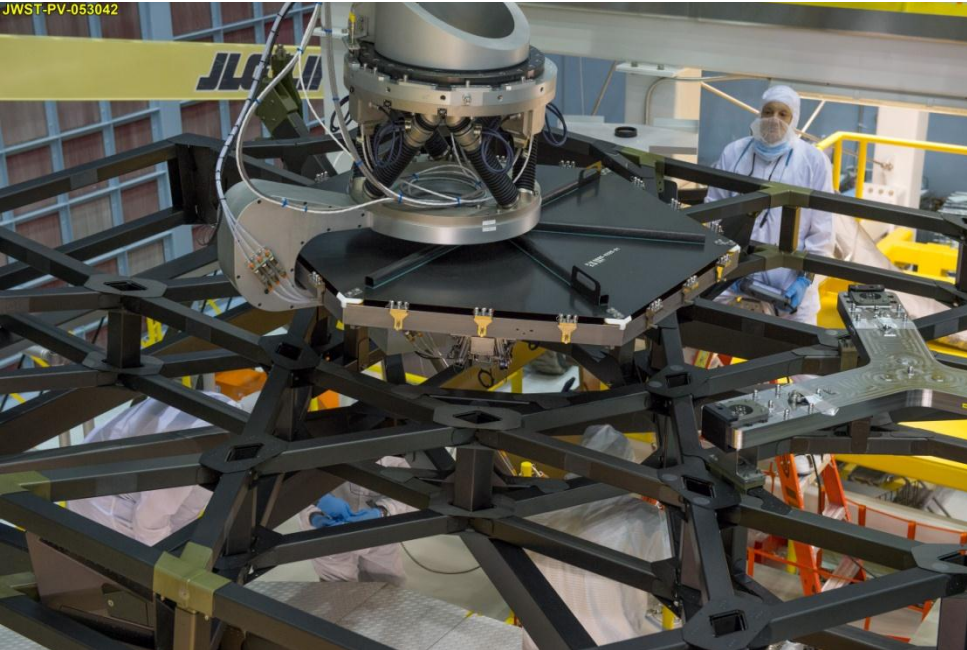
PMSA Alignment



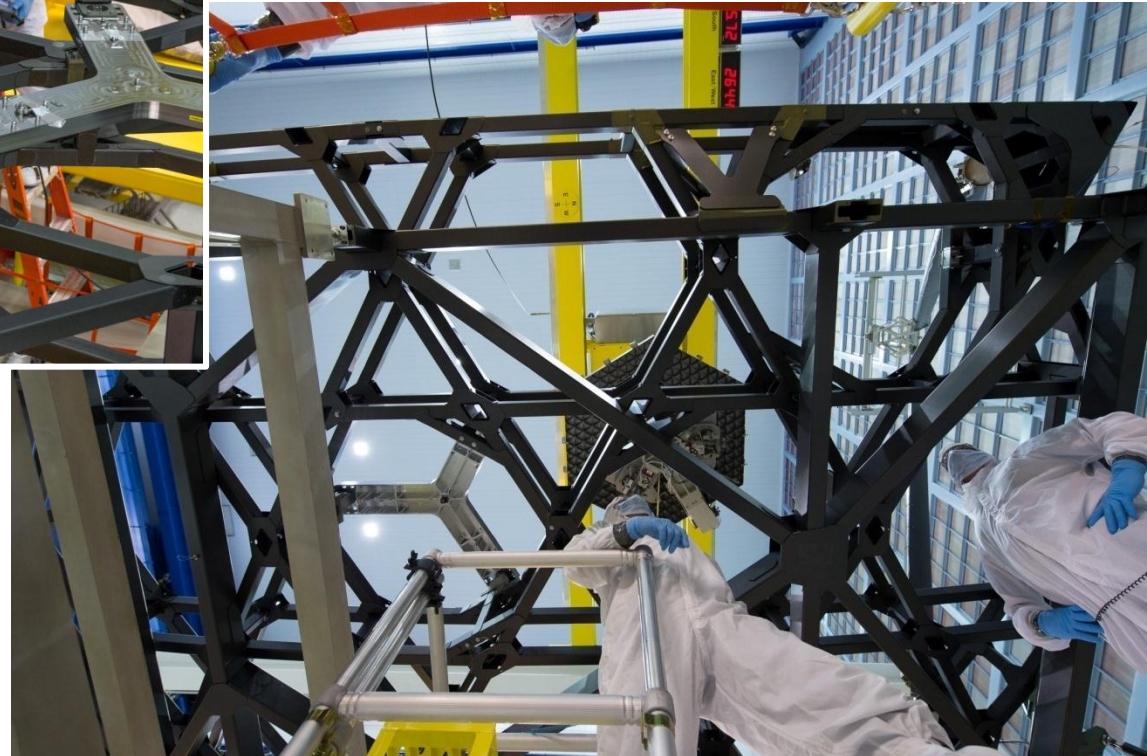
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PAIF with EDU mirror segment during alignment





EDU Mirror Aligned



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PMSA Installation Complete

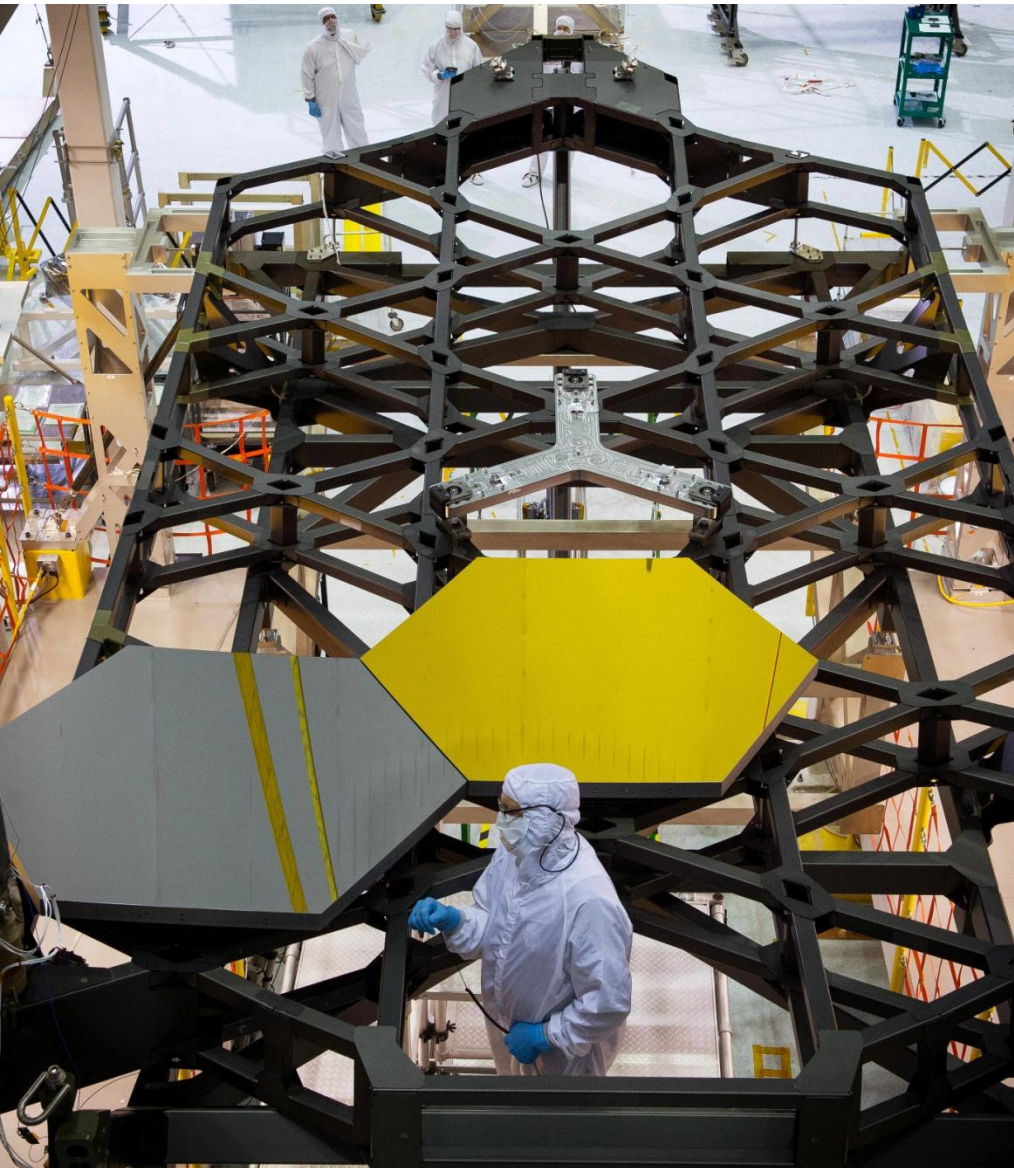


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Both PMSA's (the coated EDU and the uncoated, flight spare C7) have been installed into the Pathfinder.

Mirror Covers removed



Installed PMSA Inspection

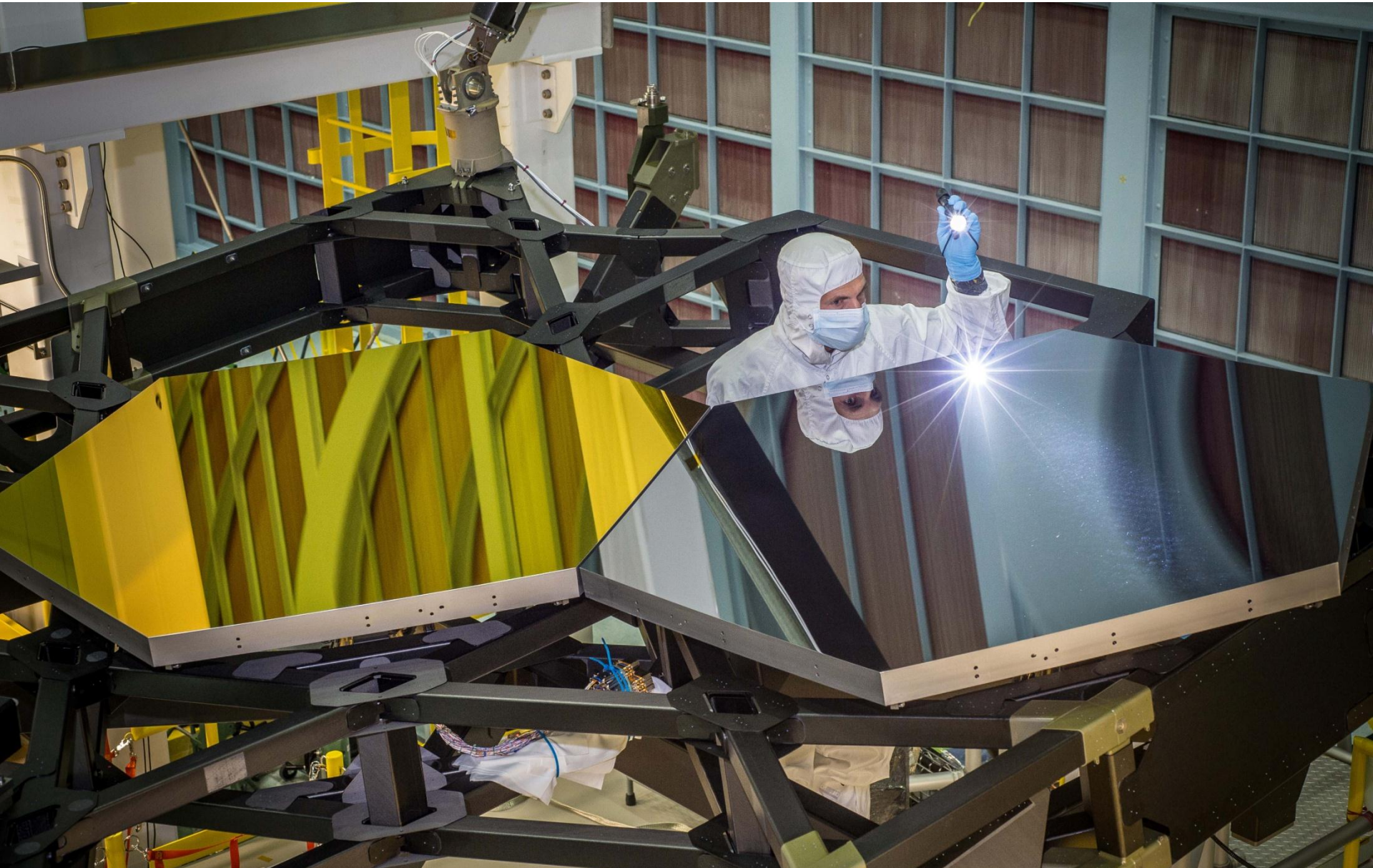


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Secondary Mirror Installation



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SMA Alignment



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Final Alignment of the SMA



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Interface Liquid Shim Application



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SMA Installed



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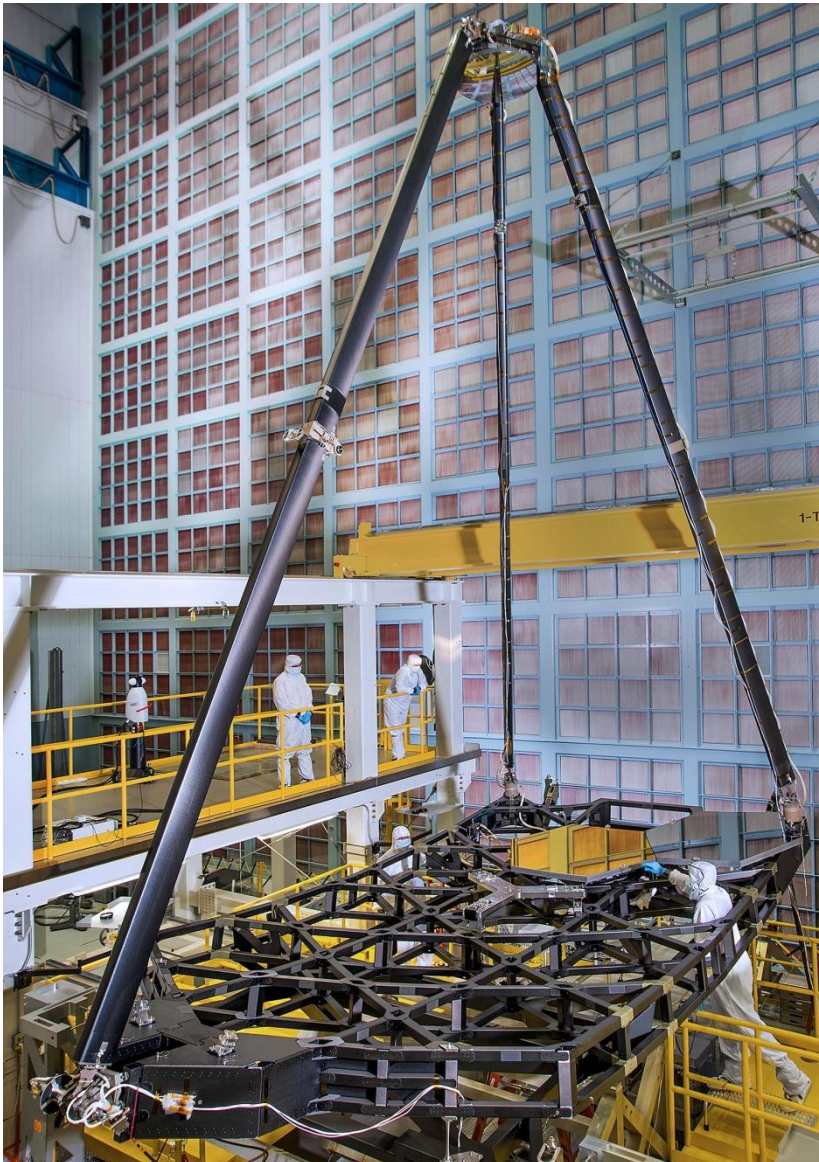
Fully Deployed SMSS



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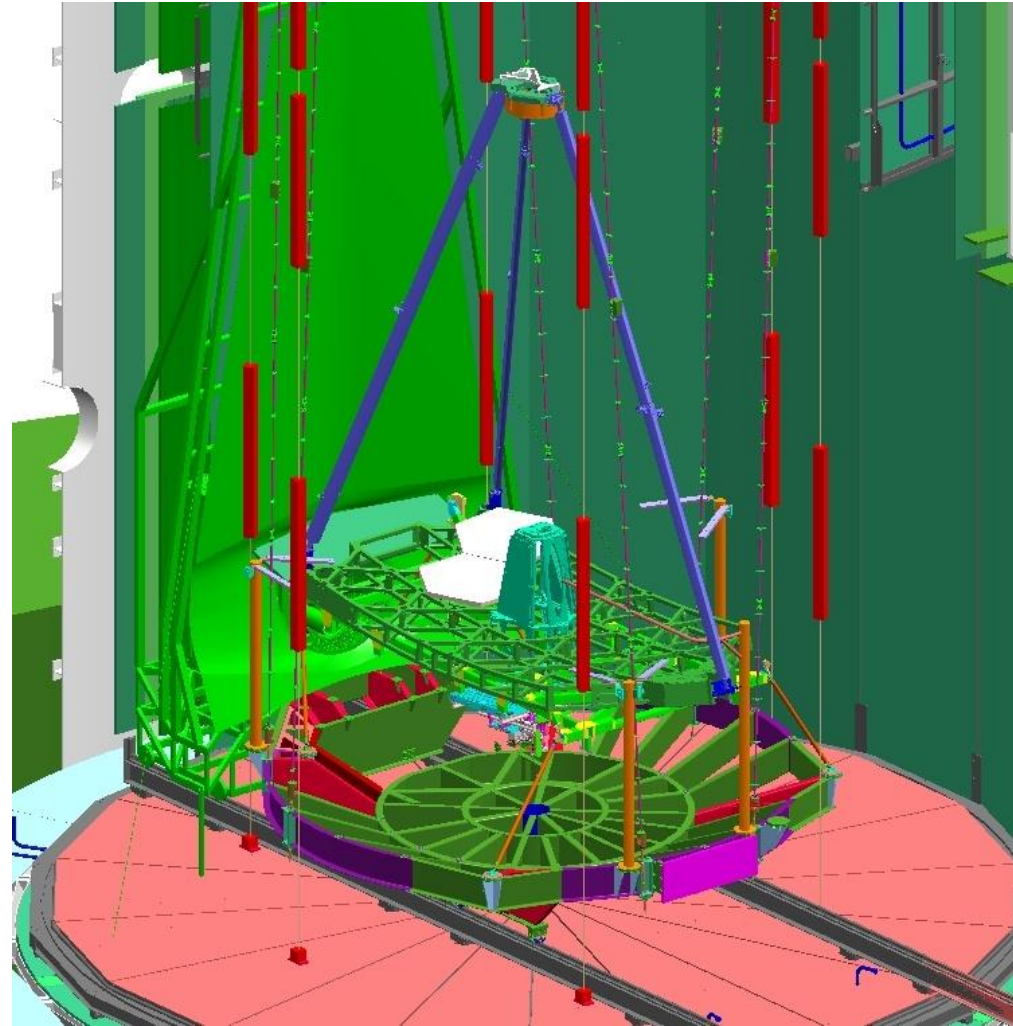
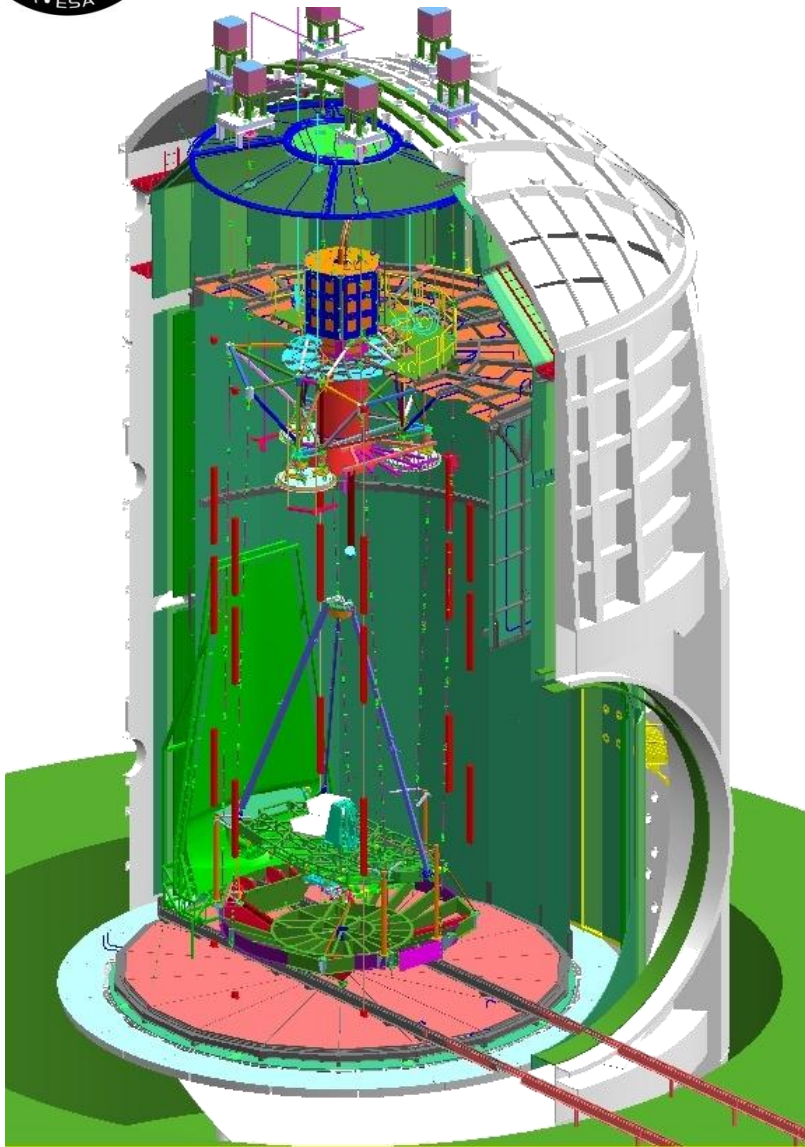
JSC Test Configuration



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Pathfinder in the cryo test configuration



Summary



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- **Pathfinder mirror integration has been completed**
- **Final tasks being completed**
 - Thermal diodes
 - Piston sensors
- **Many lessons learned that will be incorporated into the OGSE and the processes and procedures being developed for the flight OTE**
 - The previous demonstrations and the Pathfinder build continue to build confidence and refine the flight processes
- **Pathfinder has been very important and enables the flight program**
 - Provides critical experience in preparation for the critical path flight program
 - Well worth the investment by the program