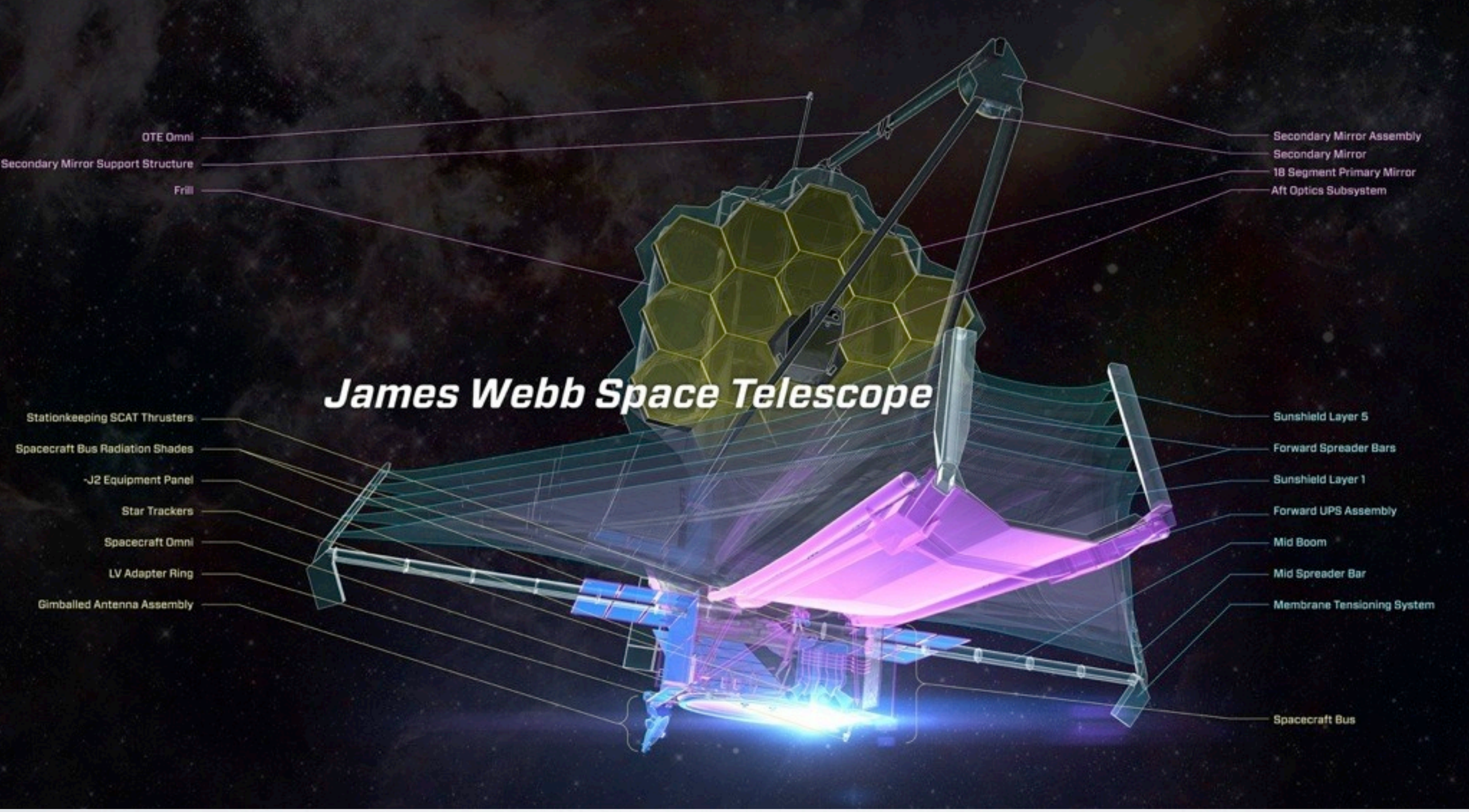


March 27, 2013

Eric P. Smith
JWST Program Office

SIMPLIFIED SCHEDULE

2012												2013												2014												2015												2016												2017												2018											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

OTE = Optical Telescope Element
OTIS = Optical Telescope + ISIM

k months of project funded critical path (mission pacing) schedule reserve

Spacecraft

Spacecraft Component Development

Spacecraft Fabrication and Assembly

Spacecraft panels to I&T

Spacecraft I & T

Spacecraft Structure to I&T

Sunshield Des. & Development

Flight Sunshield Fabrication, Assembly and Test

I & T

Observ I&T

4

Science Instruments

ISIM Integration

ISIM Cryo Testing & Detector Changeout

OTIS

3

Telescope

Segment Gear Motor replacement

OTE

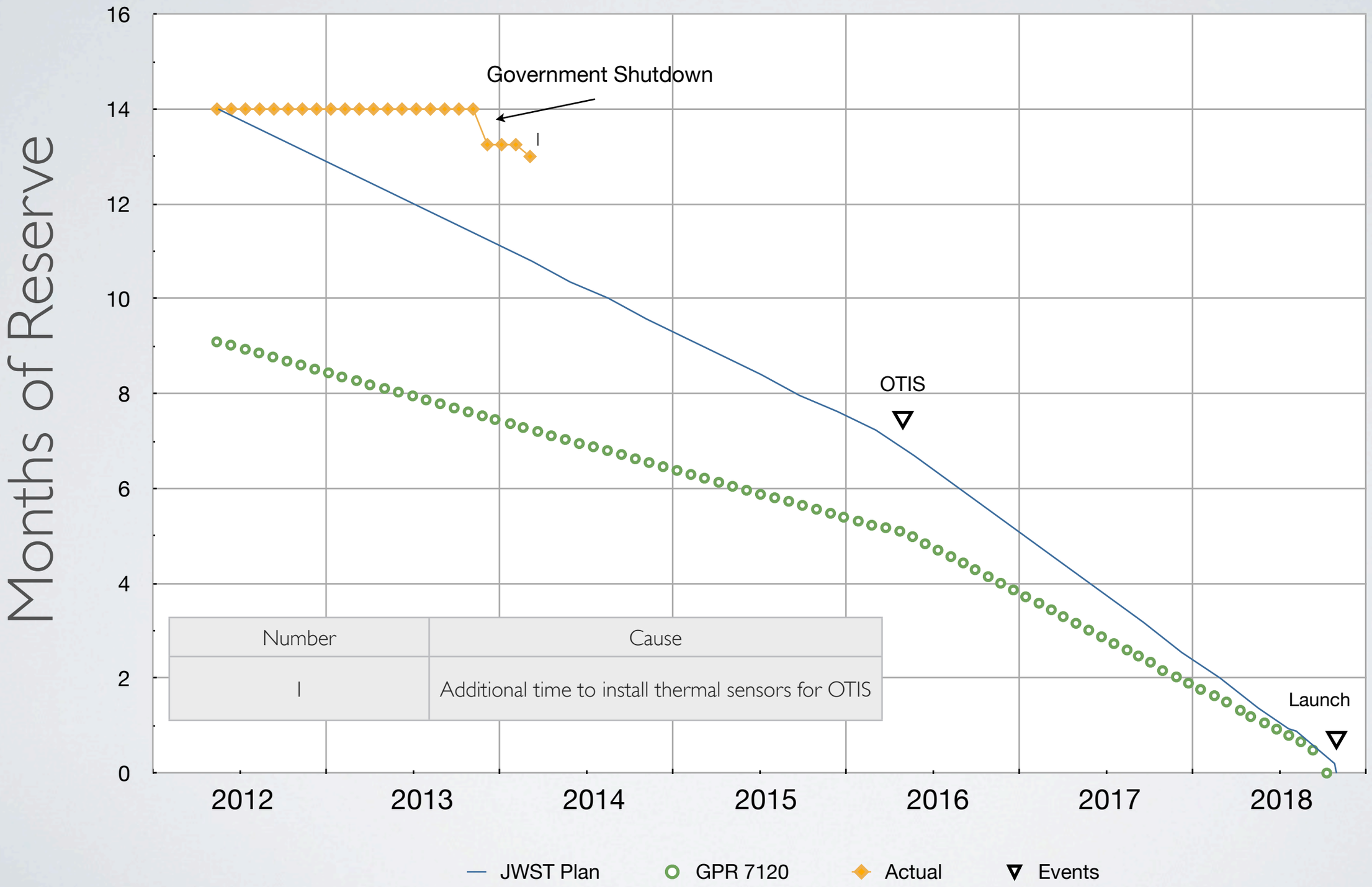
6

Optical Telescope Element Fabrication and Testing

Faded areas are completed

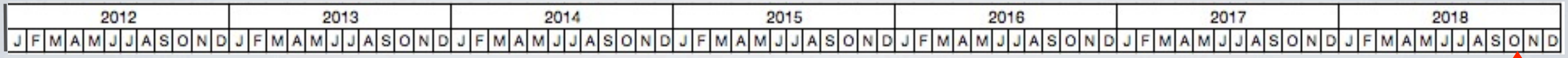
- Northrop-Grumman
- Goddard Space Flight Center
- Ball Aerospace
- ATK
- Johnson Space Center
- Guiana Space Center

FUNDED SCHEDULE RESERVE



Number	Cause
1	Additional time to install thermal sensors for OTIS

SIMPLIFIED SCHEDULE



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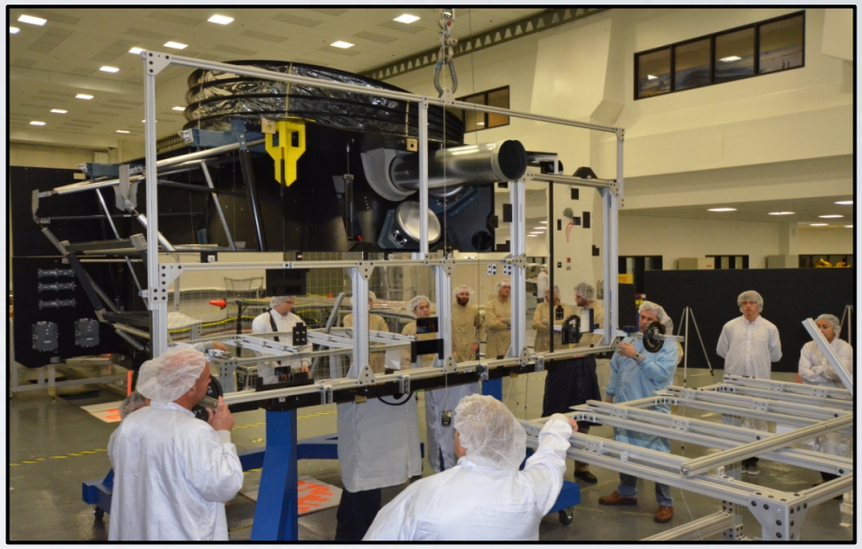
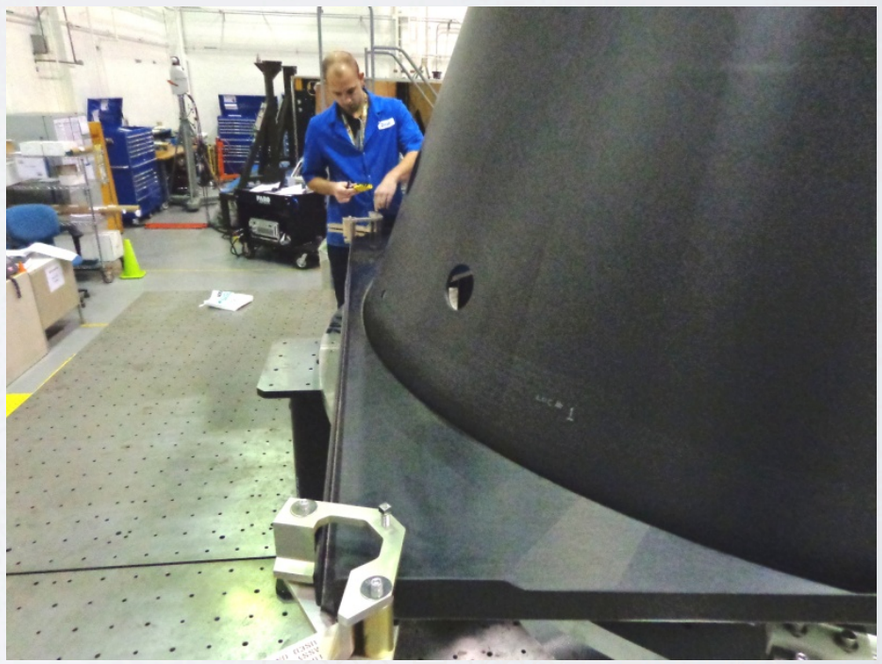
SPACECRAFT

- Spacecraft CDR passed in January (final major design review, only 15 RFAs, most requests for information)
- >97% of Observatory, by mass, now built, in fabrication, or ready for fabrication



Panel integration demonstration on spacecraft mock-up

Flight Hardware



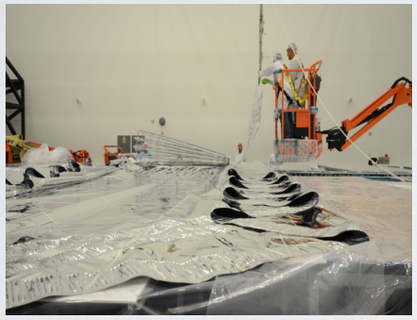
Panel Fit Check on Cone

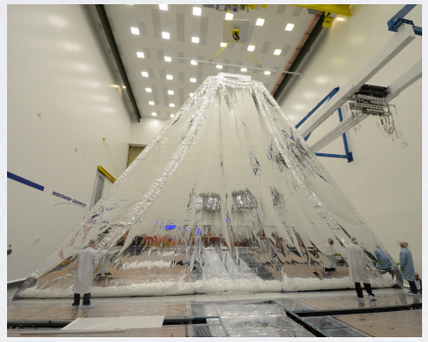
SPACECRAFT: SUNSHIELD

All full-scale engineering layers complete, folding, deployment testing happening now

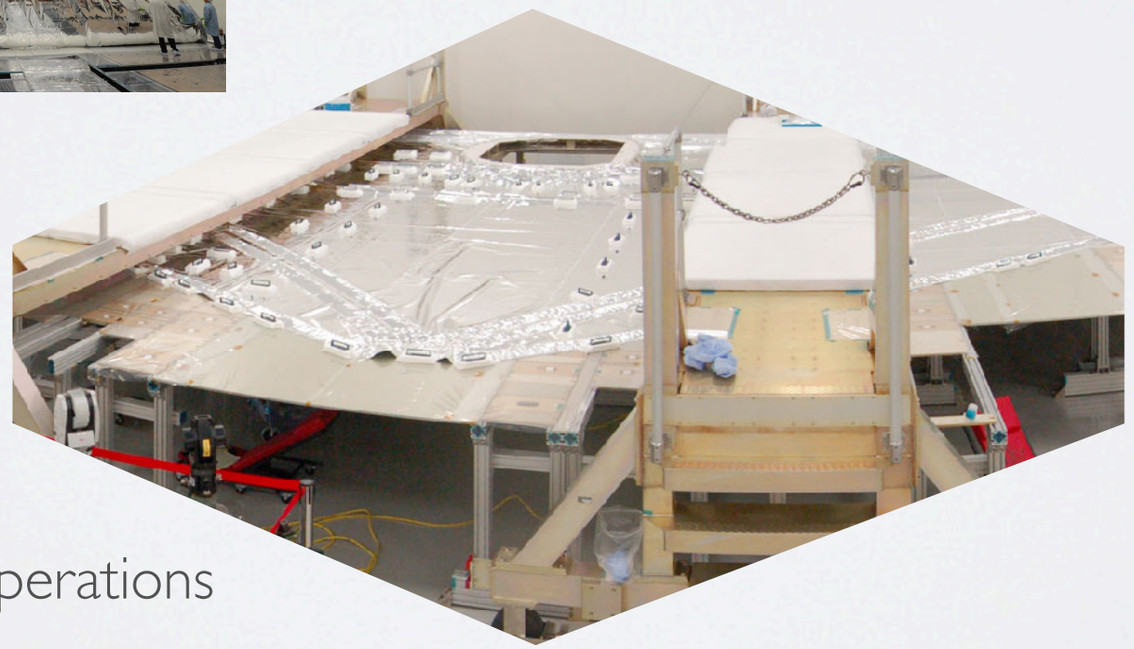
Flight Sunshield manufacturing underway

Stringing Operations



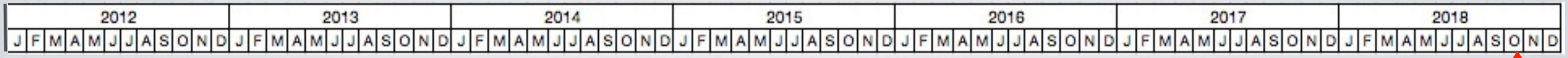


Folding: Engineering layers 1-5



Hole tool operations

SIMPLIFIED SCHEDULE



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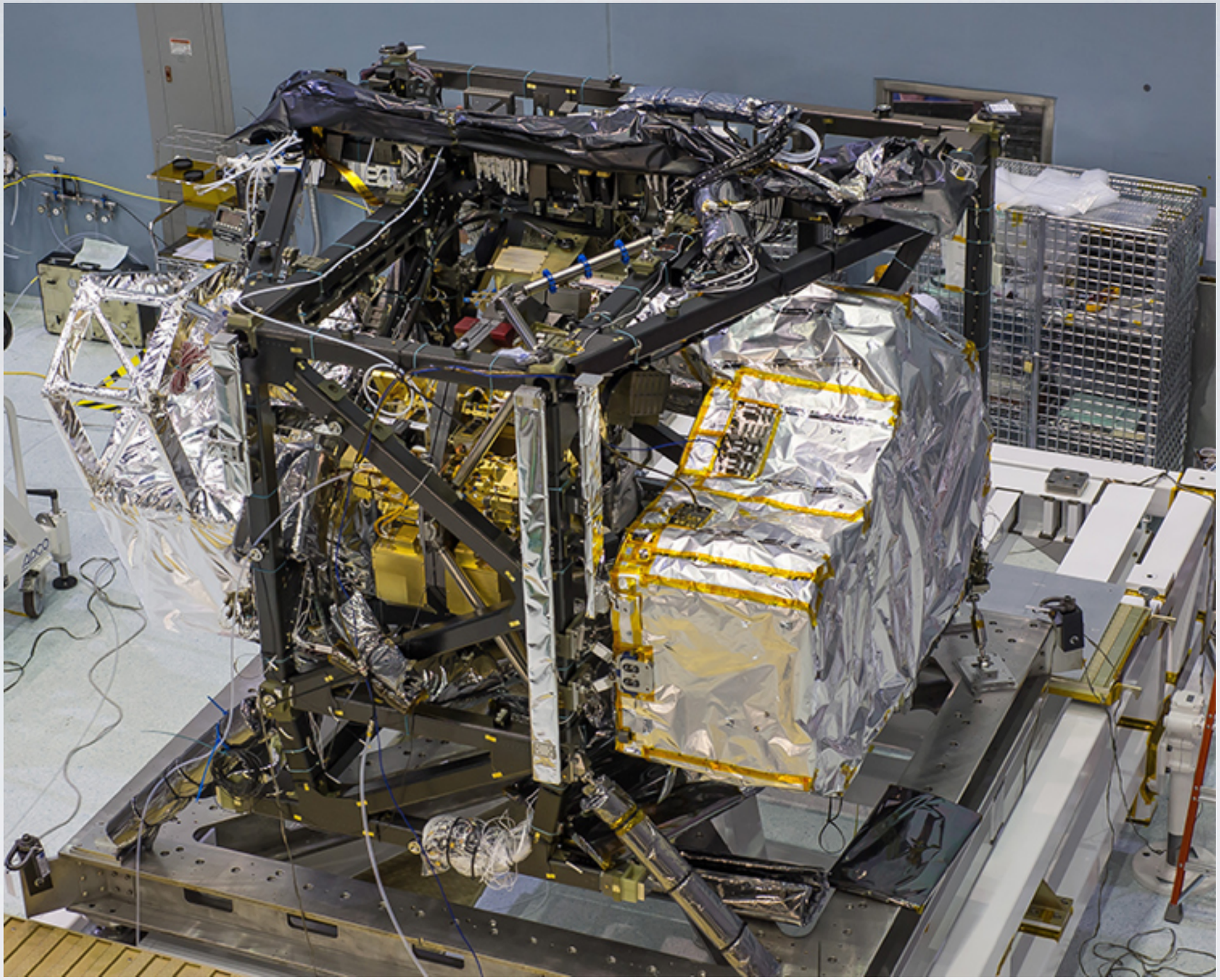
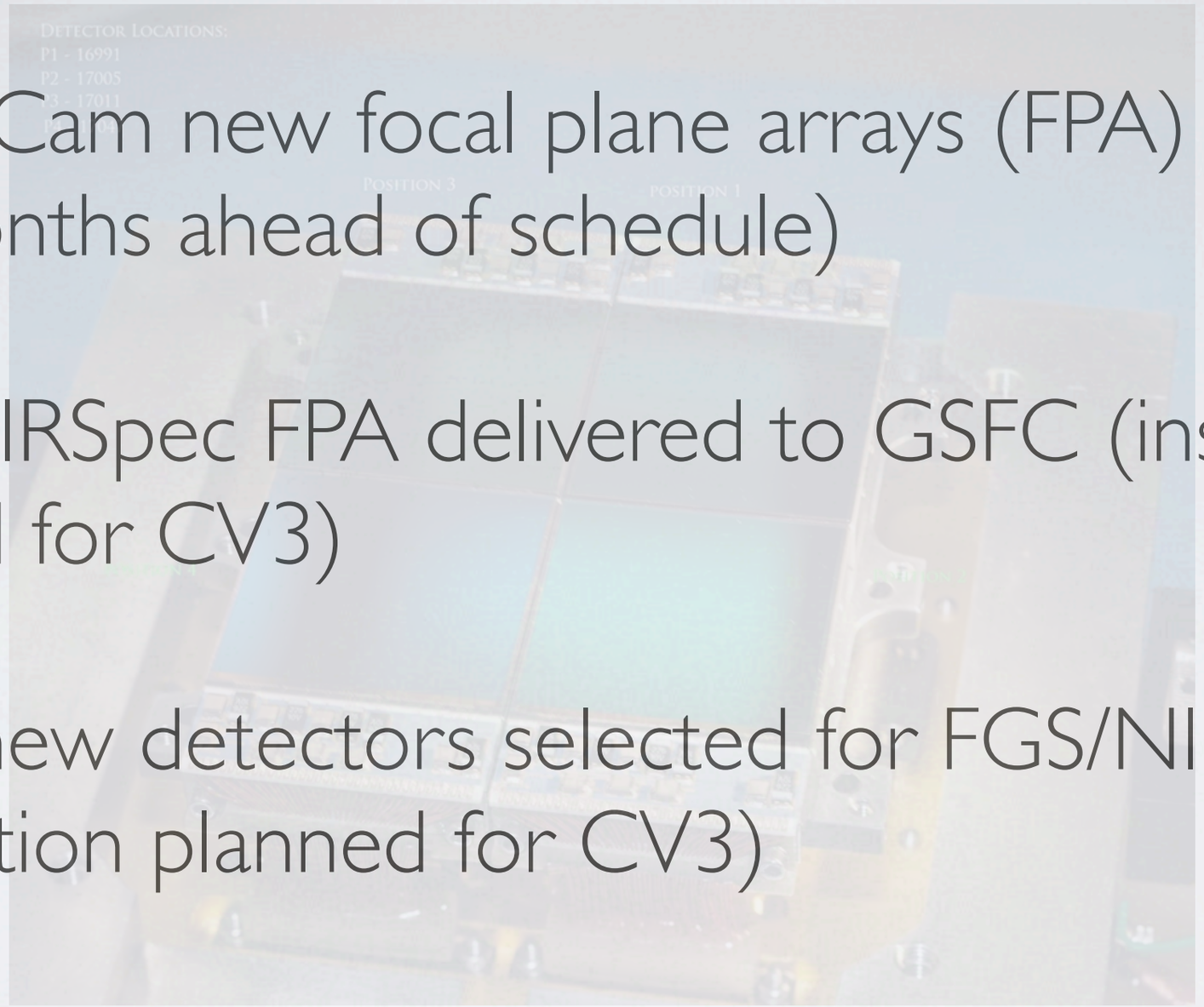


ISIM! 25-MARCH-2014

REPLACEMENT DETECTORS



All NIRCam new focal plane arrays (FPA) installed (~9 months ahead of schedule)

New NIRSpec FPA delivered to GSFC (installation planned for CV3)

2 of 4 new detectors selected for FGS/NIRISS (installation planned for CV3)

All new detectors meet or exceed their requirements

ISIM TESTING

2013

MIRI FGS
Cryo-Vac
Test # 1

Tests procedures, MIRI, FGS/NIRISS performance

Swap NIRCam detectors

2014

Install NIRCam, NIRSpec

MIRI FGS
Cryo-Vac
Test # 2
NIRCam NIRSpec

Test verifies NIRCam & NIRISS, ISIM pre-vibration measurement baseline

Swap out remaining NIR detectors

2015

Vibration Test

Acoustics Test

Electromag. Tests

MIRI FGS
Cryo-Vac
Test # 3
NIRCam NIRSpec

Measures post-vibration ISIM performance

= Ambient Temperature Metrology

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TELESCOPE: OPTICS

18 segments, secondary and spares at GSFC

TELESCOPE: BACKPLANE

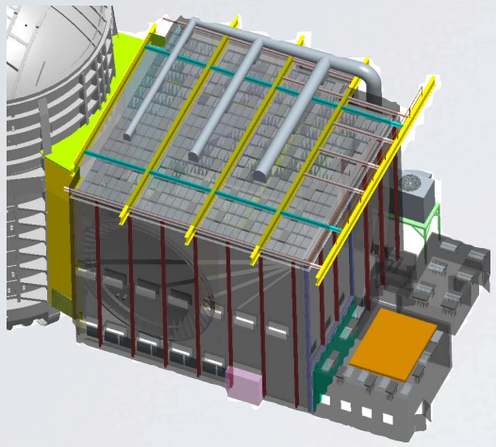
Backplane Center Section & Backplane Support Fixture at NGAS for Static Loads Testing
Completed Wing backplanes being tested at ATK, Secondary Mirror Mount delivered to NGAS

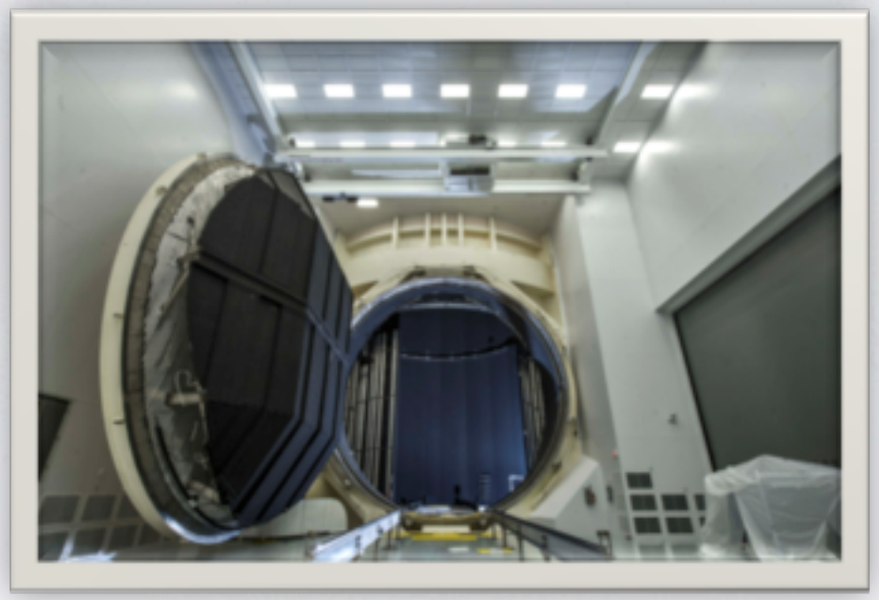
TELESCOPE PATHFINDER

- Center Section Pathfinder
- Assembled at NGAS
  - Used for mirror assembly practice @ GSFC and ground support equipment testing during OTIS

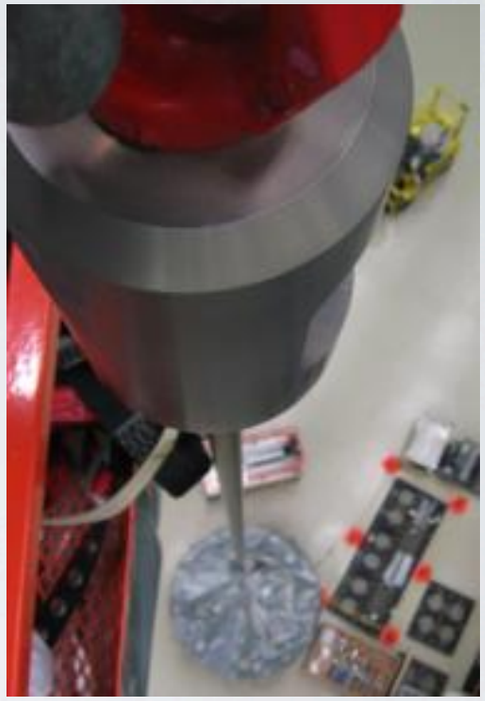
OTIS TESTING

- Chamber A modifications complete, cleanroom complete, testing hardware arriving at JSC





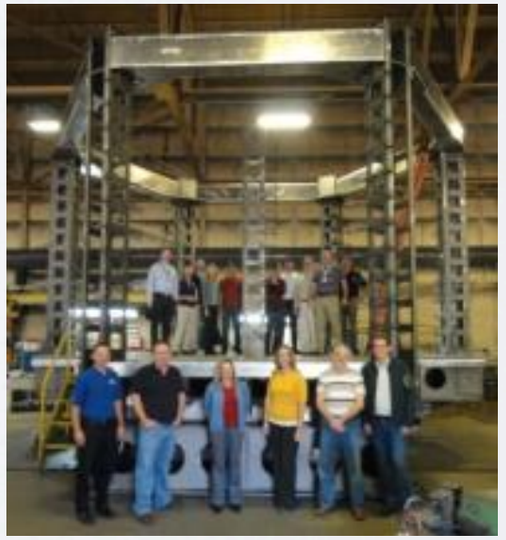
Rails into Chamber A from clean room



Load Testing of Rod Assy. At Exelis

Painted USF and ready for chamber install

Painted HOSS and ready for chamber install



NASA visit to ACU during final fabrication effort

MILESTONE PERFORMANCE

	Total Milestones	Total Milestones Completed	Number Completed Early	Number Completed Late	Deferred to Next Year
FY2011	21	21	6	3	0
FY2012	37	34	16	2	3
FY2013	41	38	20	5	3
FY2014	36	15	7	11*	4

*Late milestones have been completed one or more months late or are forecast to complete one or more months late within the fiscal year. Six Government shutdown-related delayed milestones are included in this tally.

PROGRAM WATCH LIST

- Low FY14 unencumbered Unallocated Future Expenses (UFE)
- MIRI Cryocooler (schedule, technical, cost)
- 3/4" Non Explosive Actuator, Star Tracker Assembly and Spacecraft Radiator. All issues know prior to spacecraft CDR that will require work this year.
- Mid-infrared stray light
- Resolution of FGS-ISIM communications issue from CV#1

YEARLY THEMES

- 2013: Instrument Integration: The Science instruments will be finished and begin their testing as an integrated science payload

- 2014: Manufacturing the Spacecraft: Construction will commence on the spacecraft that will carry the science instruments and the telescope

- 2015: Assembling the Mirror: The mirror segments, secondary mirror and aft optics will all be assembled into the telescope

- 2016: Observatory Assembly: The three main components of the observatory will be completed (instruments, telescope, spacecraft)

- 2017: Observatory Testing: The three main components of the observatory will be tested and readied for assembly (instruments, telescope, spacecraft) into a single unit

- 2018: Kourou Countdown: All parts of the observatory will be brought together, tested and readied for launch in Kourou, French Guiana

SUMMARY

- Project continuing Integration and Test activities
- Technical progress continues to be significant
  - Instruments delivered, completed flight mirrors at GSFC, sunshield flight build started, spacecraft component manufacturing begun
- Project is performing within the budget, to schedule, with same amount of schedule reserve held since 2011.
- FY14 is the peak funding year with many critical activities