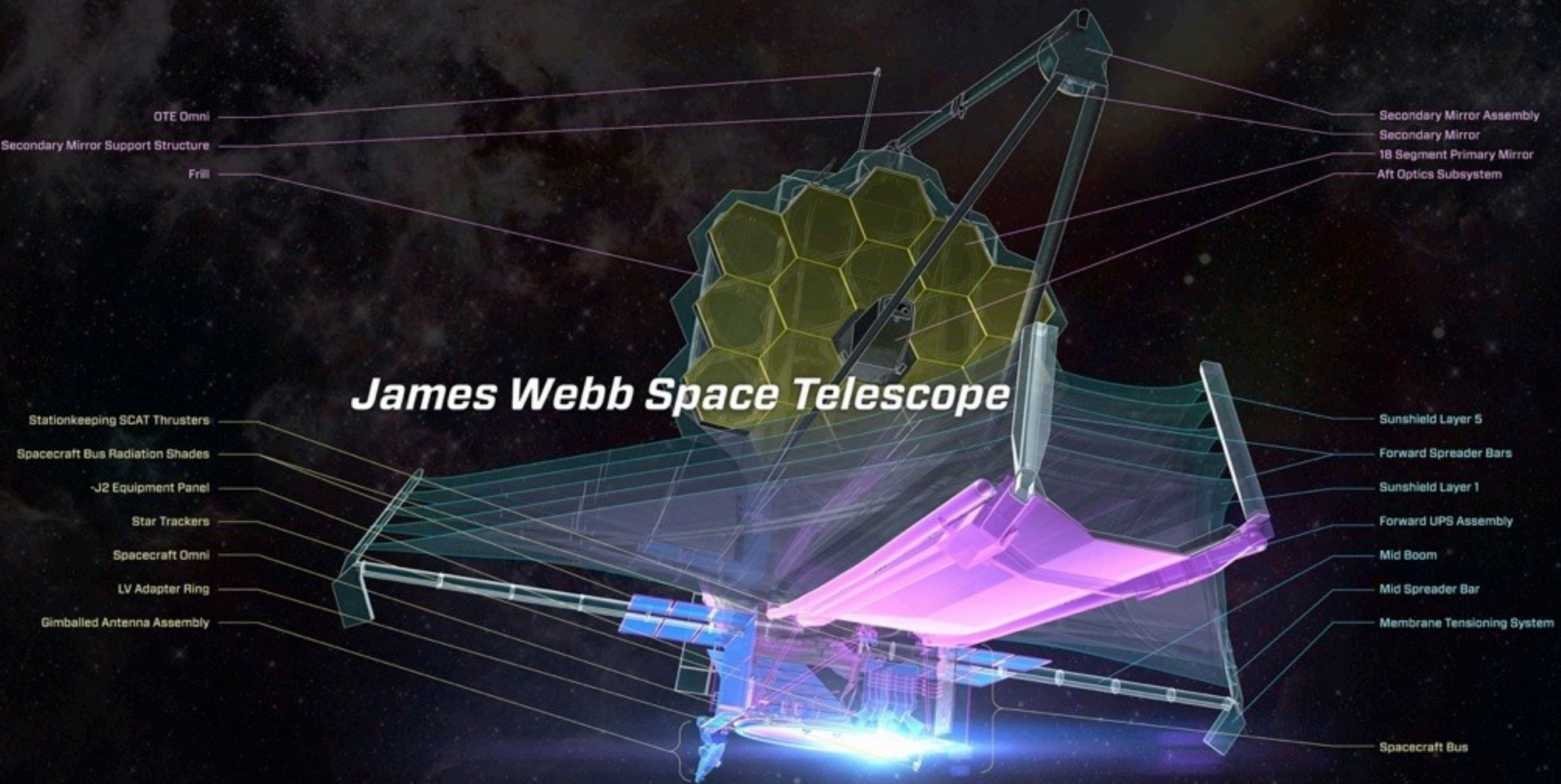




November 4, 2013

Eric P. Smith
JWST Program Office

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

SIMPLIFIED SCHEDULE

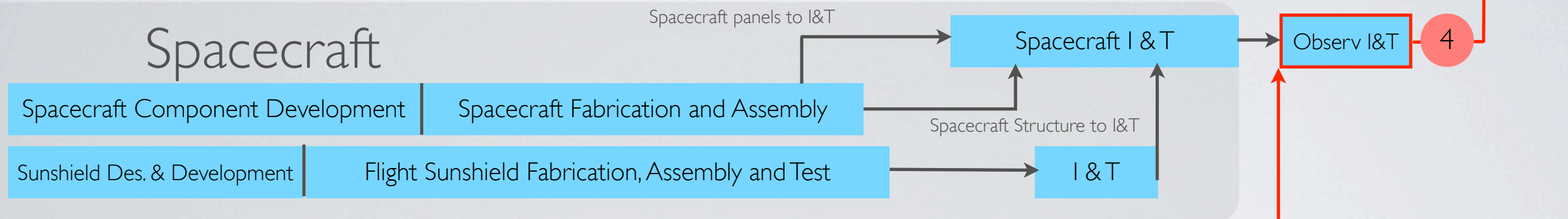
2012												2013												2014												2015												2016												2017												2018											
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

OTE = Optical Telescope Element

OTIS = Optical Telescope + ISIM

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

Spacecraft



ISIM Integration

ISIM Cryo Testing & Detector Changeout

OTIS

3

Science Instruments

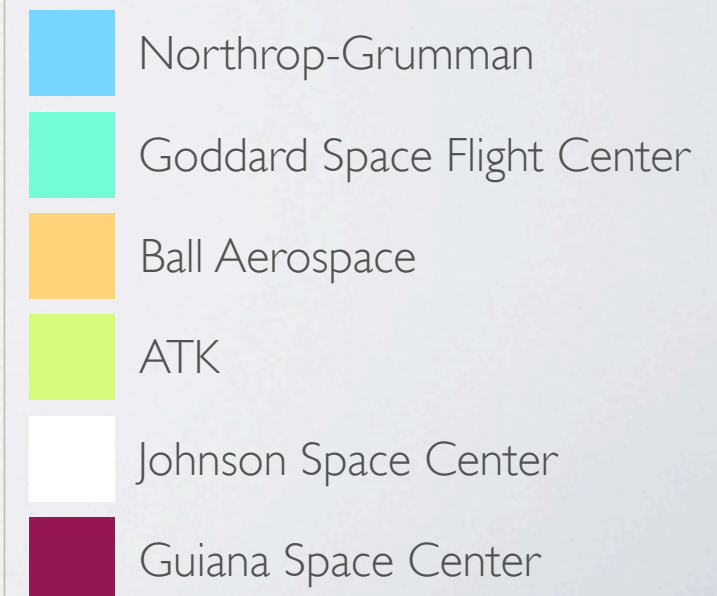
Segment Gear Motor replacement

OTE

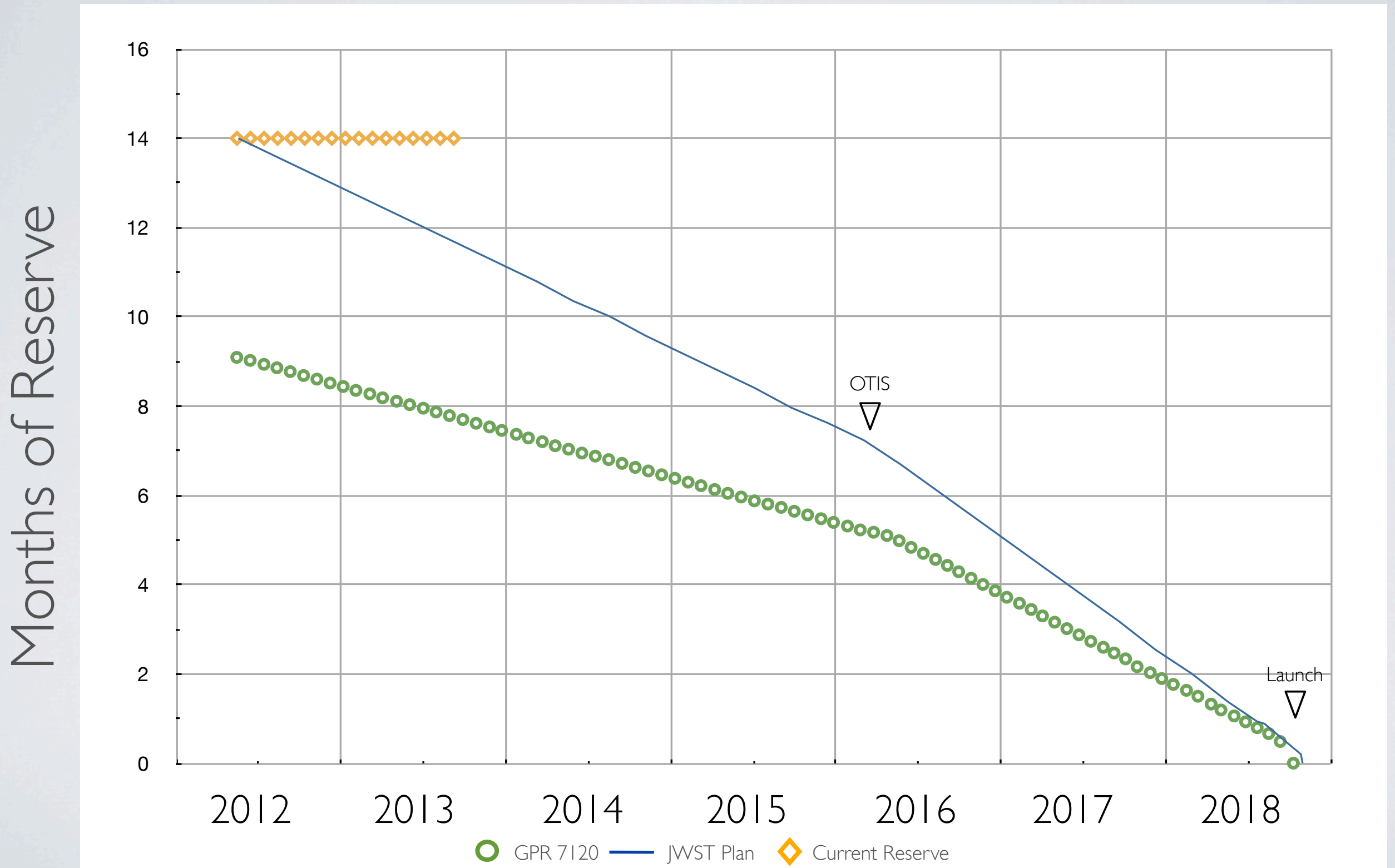
7

Optical Telescope Element Fabrication and Testing

Telescope



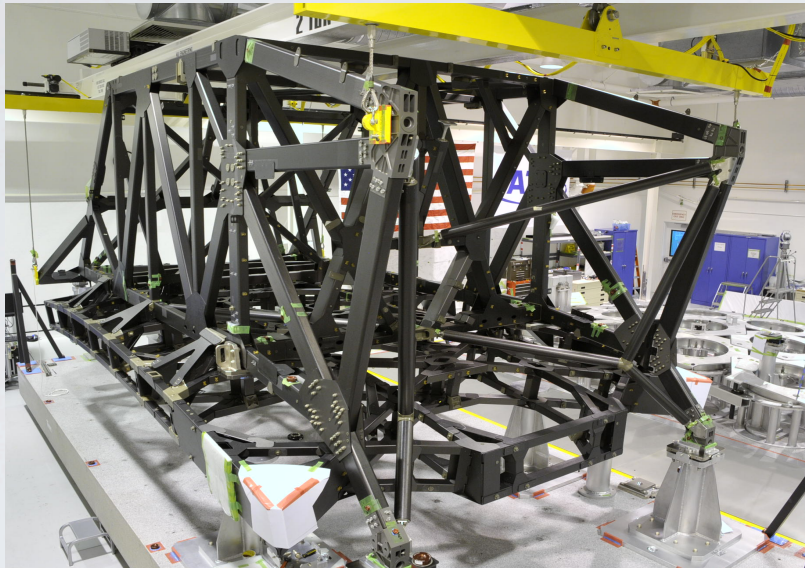
FUNDED SCHEDULE RESERVE



TELESCOPE: OPTICS

- All optics are complete (primary segments, secondary, tertiary and fine steering mirrors).
- 15 flight primary mirrors and the flight secondary mirror are at GSFC in storage.
- All spares at GSFC in storage (secondary, 3 primary spares).
- Gear motor refurbishment is ~94% complete, going smoothly.
- All mirrors will be in storage at GSFC by end of the year (needed in 2015).

TELESCOPE: BACKPLANE



Wings at XRCF

Wings are complete



BSF/CS in the XRCF

Backplane Support Fixture (BSF)
& Center Section (CS) assembled

*BSF/CS completes cryo testing
tomorrow*

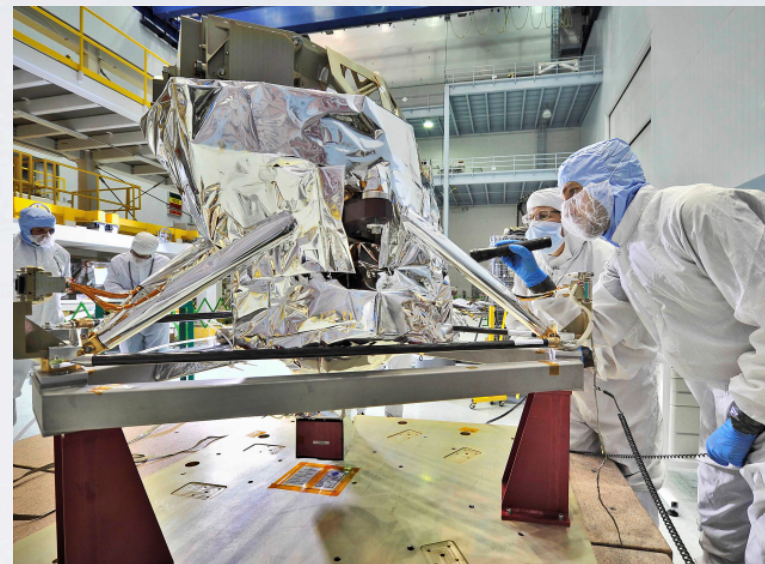
Critical path

SCIENCE INSTRUMENTS

All instruments at GSFC!



NIRCam



MIRI



FGS/NIRISS



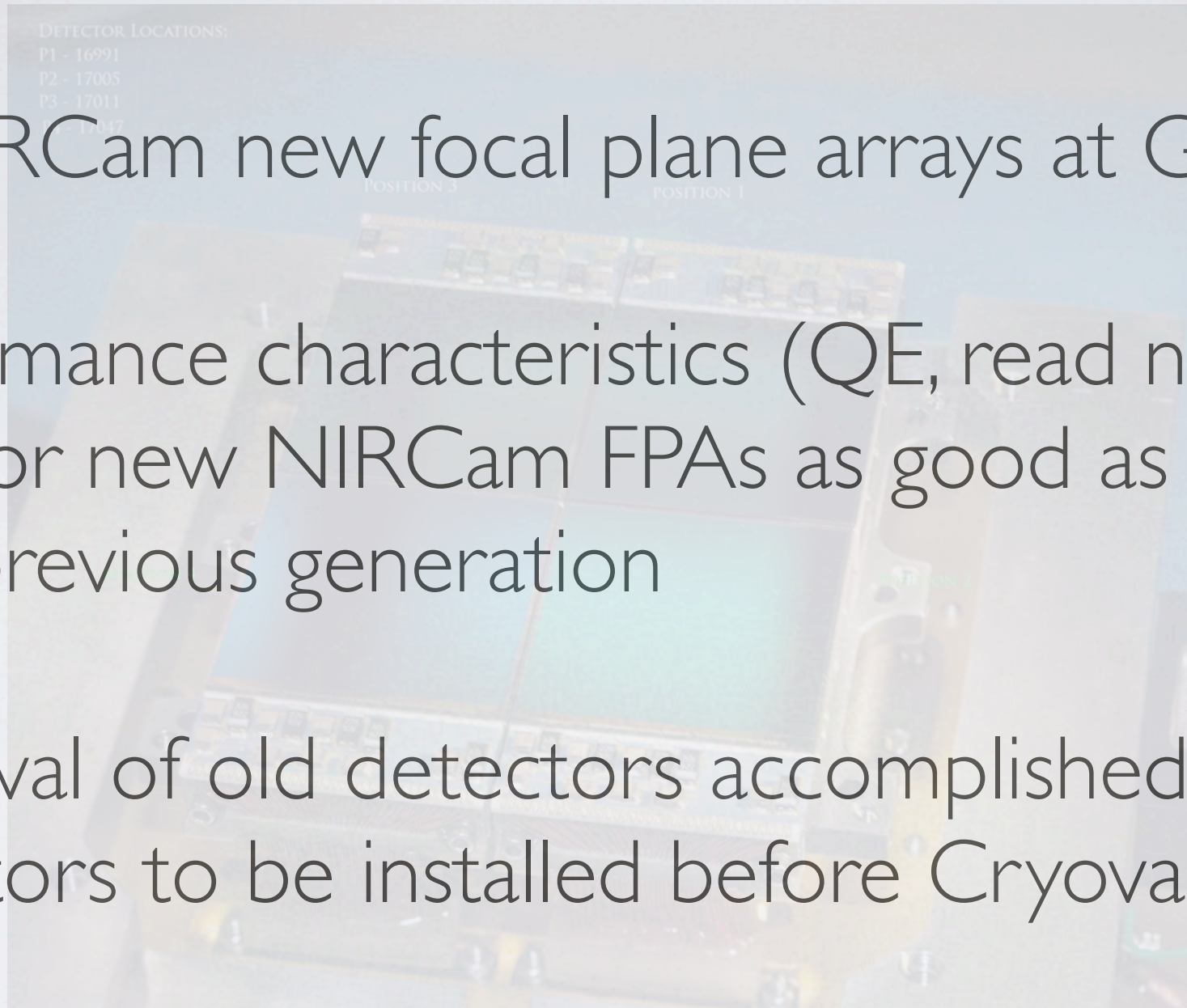
NIRSpec

REPLACEMENT DETECTORS

All NIRCams new focal plane arrays at GSFC

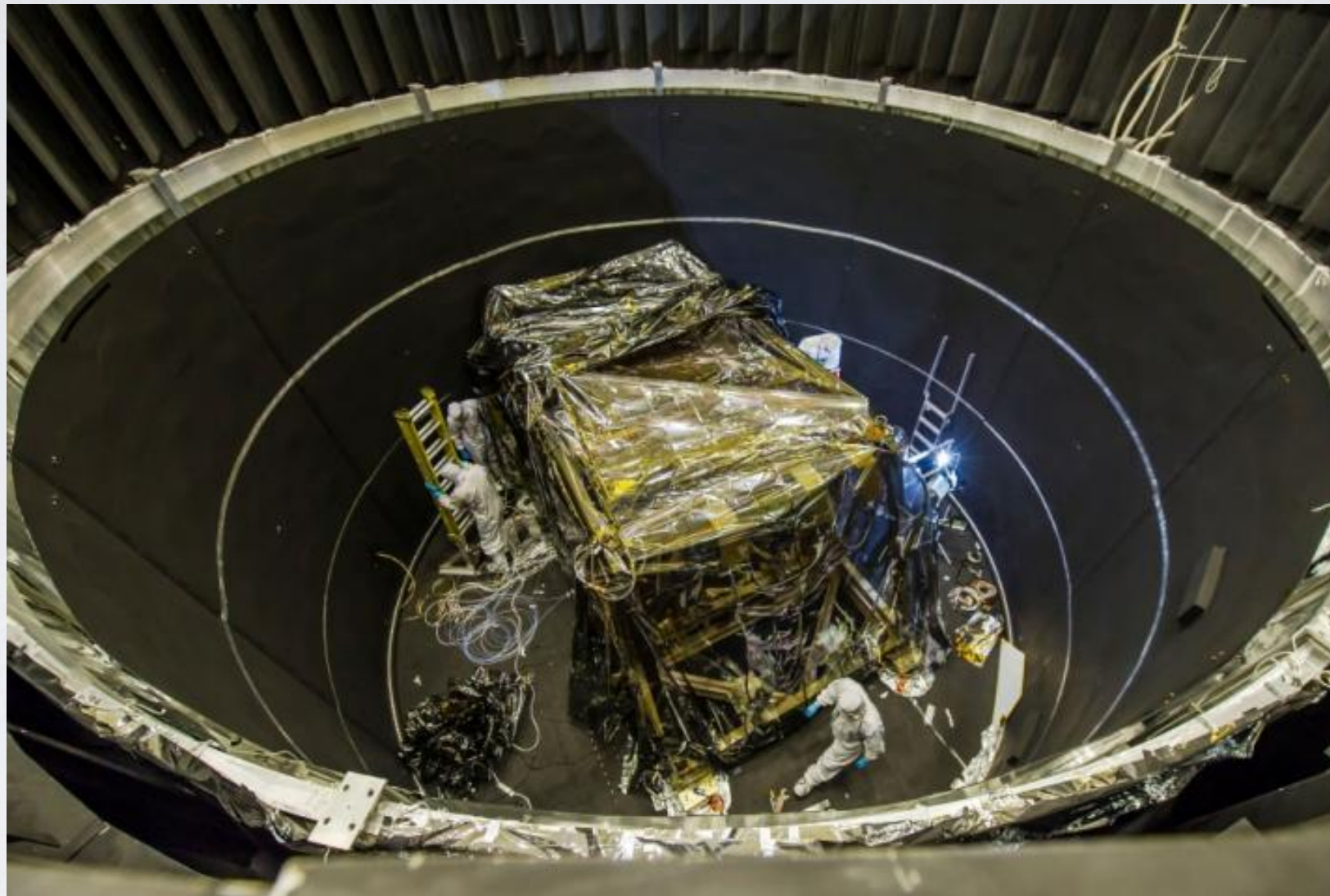
Performance characteristics (QE, read noise, etc.) for new NIRCams FPAs as good as or better than previous generation

Removal of old detectors accomplished. New detectors to be installed before Cryovac test #2



With the recent delivery of new NIRSspec sensor chip assemblies Teledyne has now completed all NIRCams and NIRSspec deliveries. FGS detectors to be delivered November through January

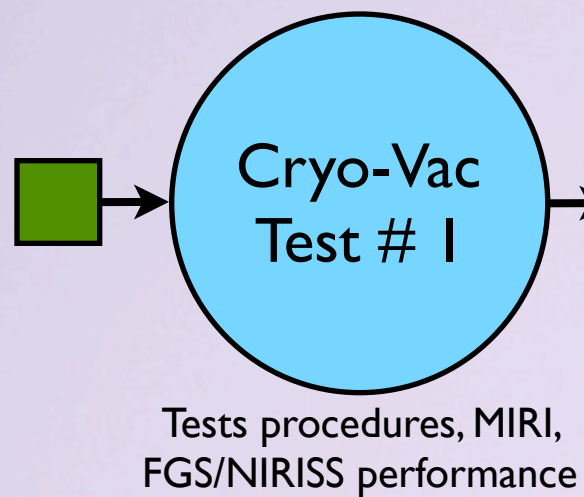
ISIM CRYO-VAC (CV) TEST #1



Test Goal: *Maximize the likelihood that the subsequent ISIM verification tests, CV2 and CV3, will run effectively and efficiently.*

ISIM TESTING

2013

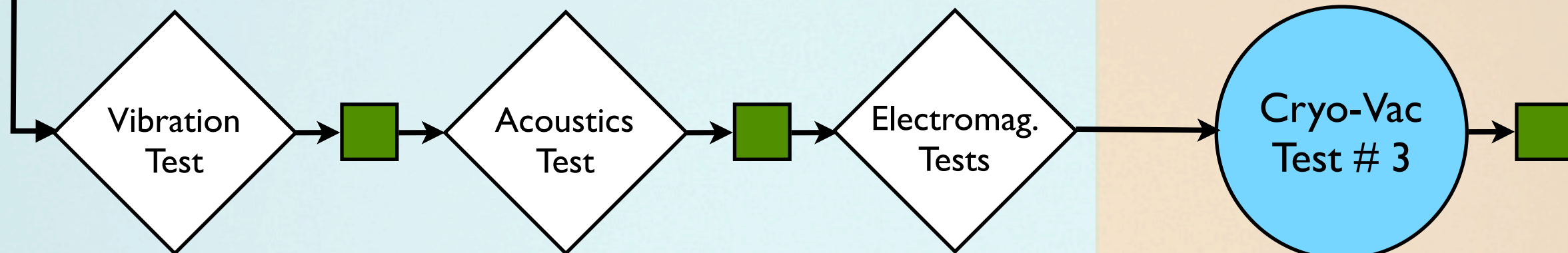


2014

Test verifies NIRCams & NIRISS, 1st time al flight instruments tested as a unit

2015

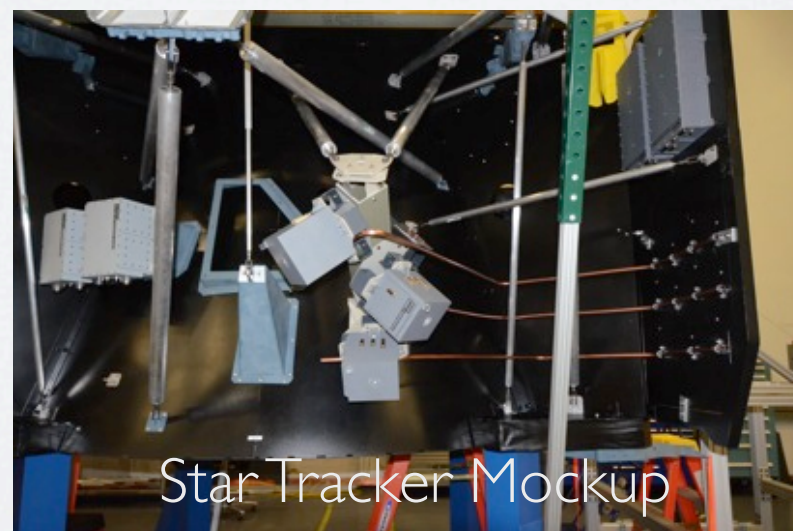
Measures post-vibration ISIM performance



=

Ambient Temperature Metrology

Completing reviews leading to spacecraft Critical Design Review

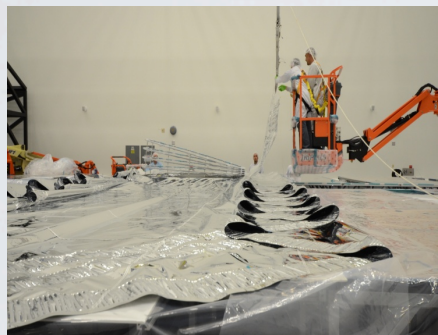


SPACECRAFT: SUNSHIELD

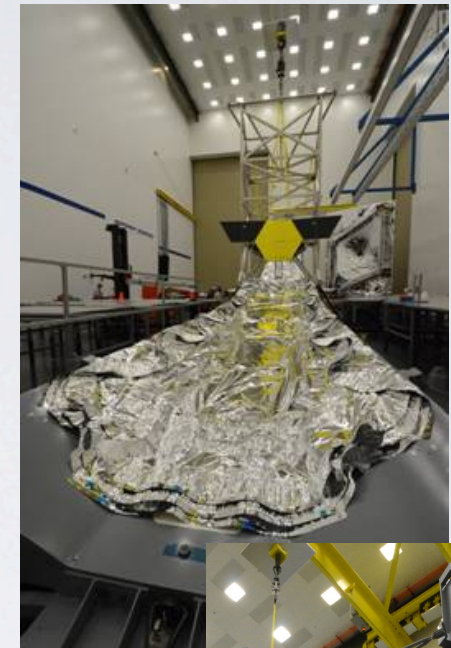
All engineering layers complete

Flight Manufacturing Readiness
Reviews underway

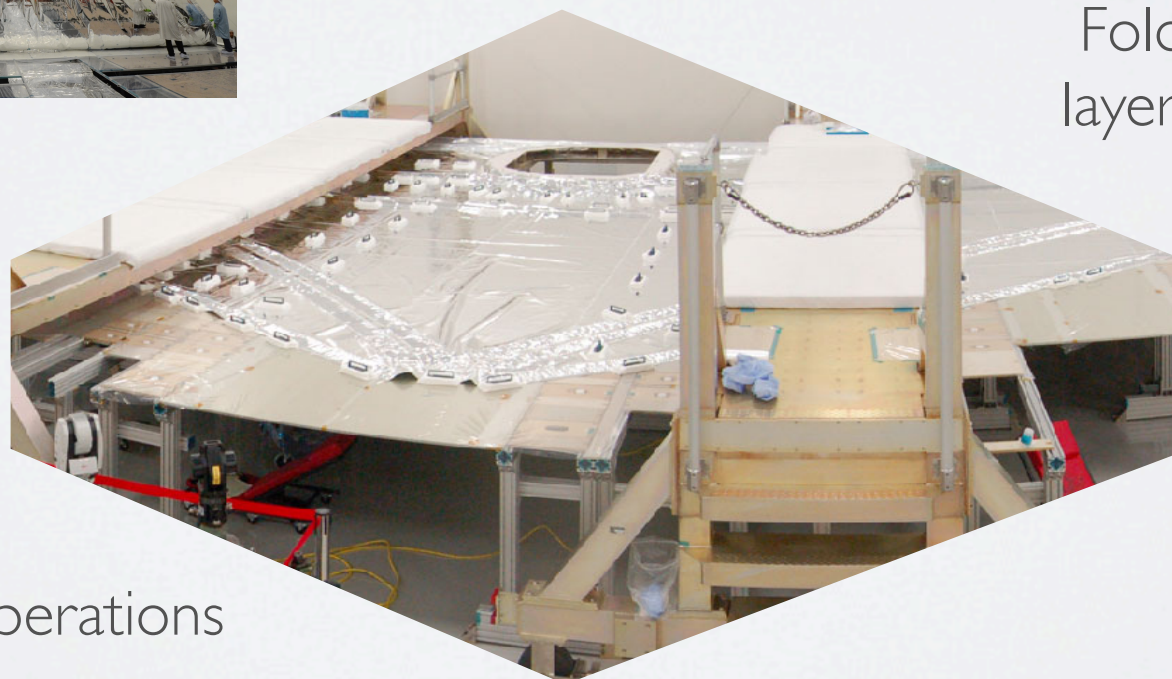
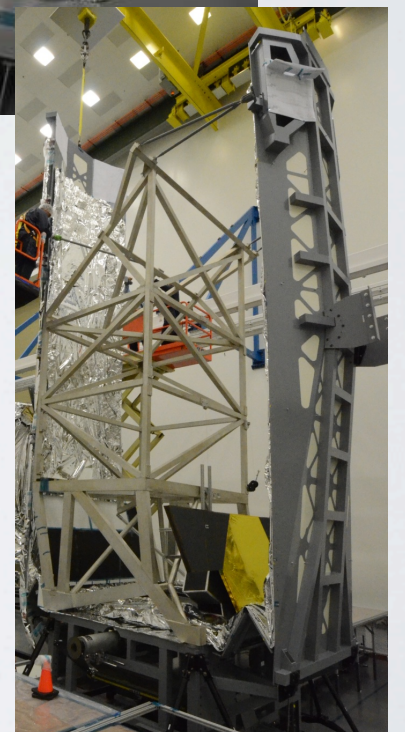
Stringing Operations



Template Layer 3



Folding:
layers 3-5



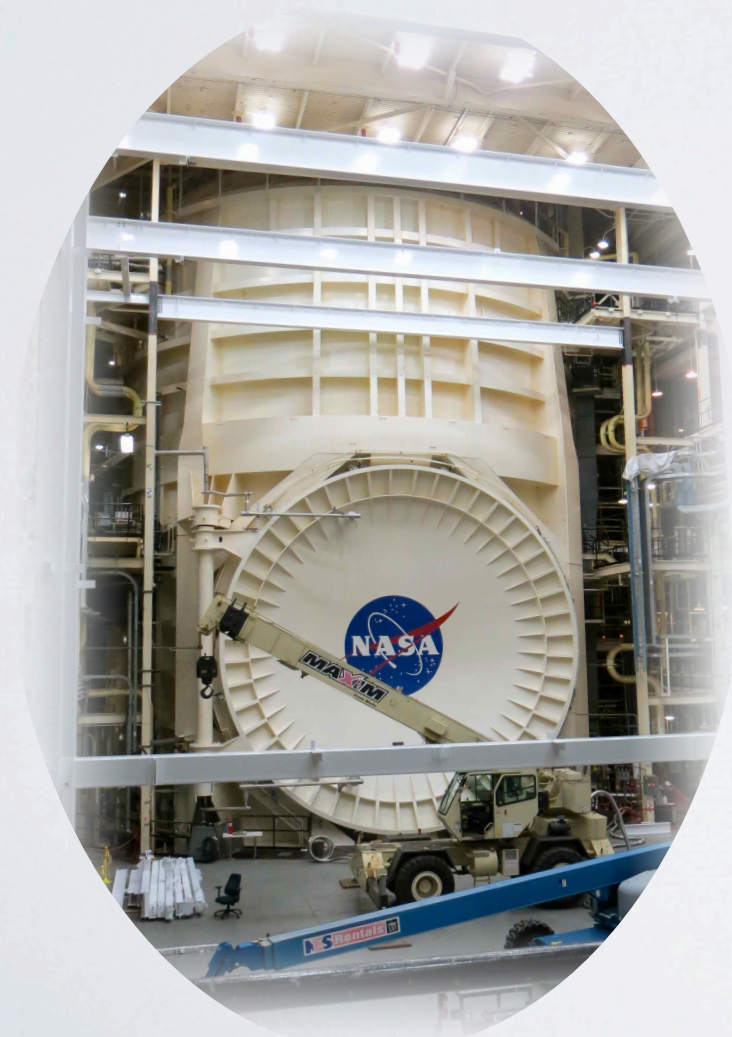
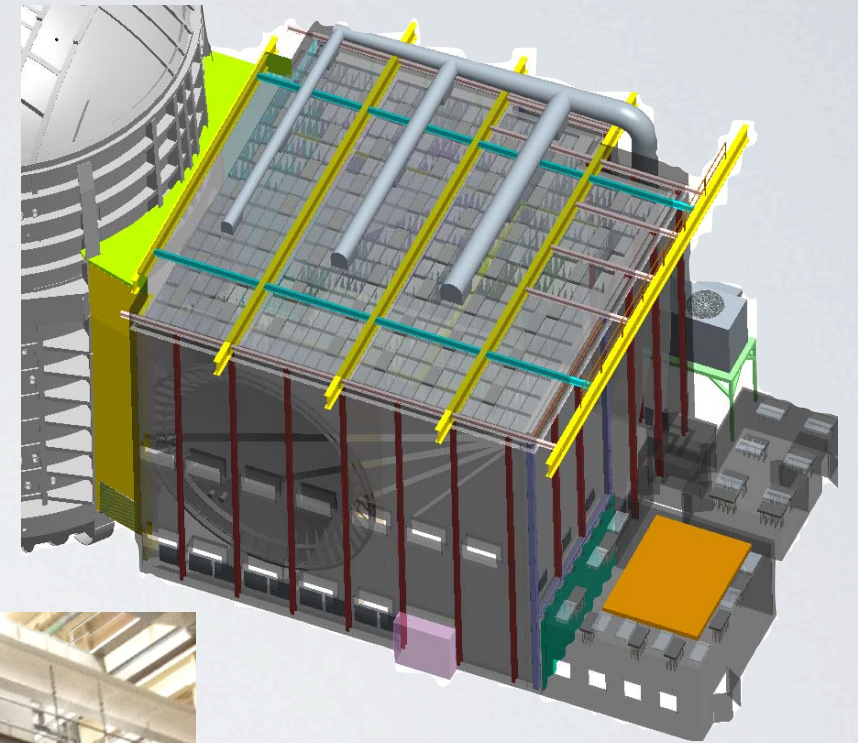
Hole tool operations

GROUND SYSTEM

- Primary emphasis is on preparations for, and support of ISIM I&T
 - Operations Scripts Subsystem (OSS) successfully commanded MIRI flight hardware in January 2013 during MIRI ambient testing
 - Archiving of data from instrument testing in progress at STScI
 - STScI contributing test engineers, operations products (onboard scripts, project reference databases) and data analysis
- Secondary emphasis is on development and review of operations threads in preparation for upcoming spacecraft CDR
 - NGAS, STScI, NASA working cooperatively to ensure spacecraft design meets operations needs
 - Nine operations threads reviewed to date, three threads remaining

OTIS TESTING

- Chamber A modifications complete
- *Clean Room scheduled to complete this year*



MILESTONE PERFORMANCE

- Since the September 2011 replan JWST reports high-level milestones monthly to numerous stakeholders

	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	0	0	0	0

NEAR TERM FOCUS AREAS

Update on items from last CAA presentation

Issue

Trend

Comment

• Cryocooler Schedule and Technical Issues	↔	Cryo valve issue resolved, compressor schedule not improving
• ISIM Test Flow	↑	CV#1 went well, plans for other testing remain on schedule
• NIRCam Straylight and Schedule		NIRCam delivered, straylight fixed
• NIRSpec Micro-shutter Fabrication	↔	New shutter fabrication works for previous problem, but second new array had too many failed closed
• Mass Margin Recovery		Mass margin currently sufficient
• Observatory Stray Light and Frill	↔	One MIR straylight matter fixed, working another currently
• Sunshield Material Edge Waviness and Shape		Engineering Layers complete, 2 of 3 MRRs for flight Sunshield completed

PROGRAM WATCH LIST

- Low FY14 unencumbered Unallocated Future Expenses (UFE)
- Project-held UFE consumption rate
- *Definitization of Northrop-Grumman contract modification*
- Cryocooler (schedule, technical, cost)
- 3/4" Non Explosive Actuator used to release the telescope from stowed position on top of the spacecraft currently not meeting the shock requirement
- Mid-infrared stray light

SUMMARY

- Project has started Integration and Test activities
- Technical progress continues to be significant
 - Instruments are either delivered or in ISIM Integration & Test phase, completed flight mirrors are arriving at GSFC
- Project is performing within the budget, to schedule
- FY14 is the peak funding year with many critical activities

