Agenda

- Mission Status
- Schedule
OTIS STATUS
OTIS I&T @ NGAS Flow Diagram

- Receive HCROF from JSC
  - Unload and transfer to clean room

- STTARS Ops at NG Space Park
  - Transfer from LAX
  - Remove STTARS lid and tent frame

- Transfer OTIS to the HCROF
  - List OTIS to ROF
  - Transfer ISIM purge
  - Remove STTARS from facility

- Early Risk Reduction Activities
  - Unwrap DTA harnesses
  - DTA LT measurements
  - IEC Lockout Instl.

- OTIS Functional Tests (+V2 up)
  - OTIS Safe to Mate
  - ISIM SFT
  - OTE SFT

- OTIS EGSE from JSC
  - SCSim2A
  - EM ADU
  - MITS
  - EM ICII

- OTIS EGSE Checkout
  - Setup & post ship tests
  - Rack certifications

- SCE leaves clean room

- IEC Configuration
  - IEC Baffle and MLI Instl
  - IEC V2 Conformal Shield and Vents

- Aft Deployable ISIM Radiator (ADIR) +V2 Deployment

- Install 2 AOS Particle Dampers

- OBS Electrical Risk Reduction Tests (ADIR, ADSS)
  - Plenum Loop test
  - OTIS to SMSS MLI Instl. (GSE Hex, WOF)

- OCS Get Ahead & Risk Reduction Tasks
  - PMSA Inspection, Install HTSA MLI

- SCE Return to M8

- SCE Safe-to-Mate for SMSS Deployment

- 4/23/18
  - Particle Damper and SMSS MTMD Installation
    - SMSS MTMD and PD instl
    - AOS PD instl
    - SMSS MLI instl.

- 4/9/18
  - Receive EGSE from JSC

- 4/6/18
  - IEC Configuration

- 3/8/18
  - Early Risk Reduction Activities

- 10/29/18
  - OTIS Software Update Validation Tests (SUVT)

- 6/26/18
  - Sunshield Bipod Installation

- 6/12/19
  - SCE Safe-to-Mate NET

- 6/19
  - SCE Return to M8

- 6/6/19
  - OBS Get Ahead & Risk Reduction Tasks

- 4/22/19
  - OBS Return to M8

- 11/30/18
  - +V3 CG Checkout

- 10/24/18
  - SCE leaves the M8 cleanroom

- 7/13/19
  - Secondary Mirror Support Structure Deployment

- 7/26/19
  - Install Pie Pan and Hub

- 7/29/19
  - OTIS Flow prior to OBS I&T Complete

- 7/29/19
  - OTIS Flow prior to OBS I&T Complete

- 7/29/19
  - OTIS Flow prior to OBS I&T Complete

- All Completed
Deployed the Aft Deployable ISIM Radiator

Successfully completed planned risk reduction
  - FGS ES Open Loop Test, Software Update Verification Test, etc.
  - First Observatory side by side electrical test

Completed Primary Mirror Cleaning

Pre-Observatory I&T cryo cooler preps completed

Additional DTA protective MGSE is in development as a result Overhead Deployment System checkout findings
ADIR Post Environmental Deployment Test Video
Aft Optics System Particle Damper Installation

JWST engineers inspect the Aft Optics System (AOS) during particle damper installation
JWST engineers inspect the Frill and Primary Mirror Closeouts in the M8 cleanroom at Northrop Grumman
OTIS in the M8 Cleanroom at NGAS

OTIS Operations in the M8 Cleanroom at NGAS
OTIS Installation into Contamination Tent
SCE STATUS
SCE Acoustic Re-Test at Acceptance Levels

- Following SCE Proto Flight (PF) Acoustic Test, several SS Membrane Cover Assembly (MCA) batten fasteners were noted to be loose, during subsequent SCE transport
  - SCE acoustic test performed Apr. 23 – 25 2018
  - MCA batten fasteners released due to inadequate thread engagement

- MCA design change (fastener engagement, addition of bumpers) and disassembly of hardware prompted SCE Acoustic Re-Test to verify workmanship, provide unbroken sequence of launch environments

- Re-Test Performed Oct. 26 – 28 2018

- SCE Acoustic Re-Test was successful
Environmental Testing Successfully Completed

- Successfully completed all SCE Sine Vibration Testing

- Excellent team work and execution performance as test progressed
  - Vibe Team (both NGAS and NASA personnel) worked through the shutdown and only had 4 days off between mid-December and early February
    - 24 vibe runs in 48 days – Z axis
    - 11 vibe runs in 9 days – X axis
    - 13 vibe runs in 8 days – Y axis
    - Vibe runs include signature runs

- Successfully completed SCE Thermal Vacuum test
  - Thermal test results looked very good
  - Hot and Cold Comprehensive System Tests (CSTs) demonstrated predicted performance
SCE Move to Large Acoustic Test Facility
SCE Moved to Vibe Area and Contamination Cover Removal In Process
SCE Vibe Table Testing
SCE Move Back To Highbay
OTIS & SCE Happily Back Together In Cleanroom
Observatory Status

- **June**
  - Moved SCE back to M8
  - Completed AFT Flap release and walk-out
  - Completed AFT UPS Bipod release and deployment
  - Demonstrated a partial panel opening option for CTP and TWTA removal on Spacecraft mock-up

- **July**
  - Completed FWD UPS BiPod Release and Deployment
  - Released ¼” NEAs and Removed OTE Simulator – End of “SCE” I&T/Start of “OBS” I&T
  - Completed SMSS Launch Lock Release and Two Deployment Cycles
  - Started Bipod Installation on OTIS
August
- Bipods successfully installed on OTIS
- Performed single cable pull testing
- Finished installation of DTA hub and pie pan
- FWD and AFT MCA covers released
  - Actuated remaining 84 MRDs on FWD and AFT MCAs
OTIS Installed!
OBS I&T Integration Flow

As of: 8/29/19

OTIS/SCE Integration
8/5/19 – 9/12/19

SCE Post-Environmental Deployments
9/12/19 – 2/6/20

OBS Pre-Environmental Deployment
2/6/20 – 4/18/20

OBS Environmental Test
4/18/20 – 5/28/20

OBS Post-Environmental Deployment
5/29/20 – 10/6/20

OBS Final Build
10/6/20 – 10/28/20
GROUND SYSTEM AND OPERATIONS
Science and Operations Center (S&OC) and Operations Preparations

- **S&OC Status**
  - All Observatory control, science planning and science data processing operational systems are on schedule
  - S&OC subsystems have been and will continue to be used to support integration and test

- **Testing and Exercises**
  - Continuing to conduct S&OC interface testing over operational networks
  - Maintaining operational proficiency with Launch Communications exercise #3 (LCOMM3) on September 11, which simulates the day of launch communications between and among the MOC, bMOC, DSN, TDRS and ESA’s Malindi ground station
  - Completed Normal Operations Exercise #5, #6 practicing station keeping, momentum unloads and other OSS-driven activities

- **Commissioning**
  - Coordinating contingency response ops concepts with Commissioning Manager and Mission Systems Engineering
  - Aligning the commissioning timeline to the latest thermal analysis; expected completion end of 2019

**Operations Product Development Status**

- **ISIM flight product status:**
  - 458 real-time command procedures and 244 standard operating procedures needed for flight
    - 18 products remain for flight certification
      - 2 NIRCam, 11 OSS, 5 Cryocooler

- **SC / OTE flight product status:**
  - 279 real-time command procedures needed for flight and 185 standard operating procedures
    - 18 products remain for flight certification
      - 1 ops concepts change, 3 require EMTB, 14 new for Mission Systems Engineering

- **Deployment flight product status**
  - 187 real-time command procedures needed for flight
    - Testbed/simulator certification is complete; flight certification will finish up during Observatory I&T

- **OSS flight product status:**
  - 806 scripts are required
    - Testbed/simulators certification is complete; flight certification will finish up during GSEG-3
Recent Rehearsals

- Science Instrument Rehearsal #2 – May 13-18 (~137 people)
  - Familiarized MIRI and NIRSpec instrument teams with flight operations
  - Promoted interactions with other mission teams
  - Exercised data processing and interaction of the SI teams with the optics team
  - Exercised SOC pipeline handling of changes including the product management within and between SOC subsystems
  - Exercised one anomaly per instrument; practiced anomaly resolution process with the ANCO (Anomaly Coordinator)

- Mirror Deployment Exercise #1 – June 11-12 (~75 people)
  - Executed mirror deployments in flight-like manner
  - Executed flight procedures with light delays
  - Executed deployments with DSN station handovers and team shift handovers
SCHEDULE
JWST Schedule

Status as of: 8/31/19

82 days of Critical Path Reserve

Primary Critical Path – 82 days
Secondary Critical Path – 141.0 days
Reserve

141d
CLOSING REMARKS
Great Progress Continues To Be Made

Still Have Challenges and Complex Operations Ahead