Test Team

24/7 Support from STScI for Science leader and Quicklook data analysis.

Scientists:
- Howard Bushouse (ICAL lead)
- Neill Reid (ICAL Project Scientist)
- Sylvia Baggett
- Wayne Baggett
- Tom Brown
- George Hartig
- Olivia Lupie
- Massimo Robberto

QuickLook Operators:
- Rosa Diaz-Miller
- Inge Heyer
- Bryan Hilbert
- Jessica Kim
- Marin Richardson
- Jeff Stys
- Misty Cracraft*
- Helene McLaughlin*
- Kevin Lindsay* (new Hires)

Operations Support:
- Mike Robinson
- Tom Wheeler
SES Test Configuration

Randy Kimble and Howard Bushouse during final instrument inspection

NOTE: exact placement of assembly on VIS table is not final
WFC3 Thermal Vacuum Test #1

• WFC3 has successfully completed it’s first System Level Thermal Vacuum test
  – Thermal vac test ran from August 28 until 10/20 (plan was 10/6)
  – Test focused on characterization of:
    • Optical performance and stability
    • Science performance of Infrared Channel (first real look at this)
    • Thermal performance of WFC3 (subject to gravity effects on heat pipes)
  – Test obtained
    • ~14,000 images (datasets)
    • Thermal and power profile information
• We have demonstrated that both the WFC3 Instrument and Team are functioning well
Positive Accomplishments

- WFC3 operations in realistic environment demonstrated
  - Instrument ops and flight software were excellent
  - Power margins are good
  - Thermal performance generally as expected
    - Good margin (3 degrees) on IR detector temperature
    - To limits of testing in gravity, heat pipes performing well
  - UVIS channel nominal performance (mostly same as ambient)
  - IR channel’s first operation
    - Backgrounds better than expected from subsystem tests
      - Meet specs except perhaps at longest wavelengths (G141, F160W)
    - Image quality at or near specification
    - Filter ghosts/artifacts within specification
    - Detector noise and dark current as expected
Issues Discovered

• Confirmed pre-existing issues:
  – UVIS filter ghosts and CCD crosstalk both unchanged
• New science issues:
  – IR detector crosstalk
  – IR detector baffling (outside field bright source)
  – IR grisms badly out of focus (understood as 90deg rotation)
  – G141 and F160W have higher than expected backgrounds
  – IR channel throughput analysis uncertain (10-20% deficit)
  – IR detector thermal control outside of specification
  – IR detector alignment transfer to instrument unsatisfactory
  – Image drift during thermal slews
    • Better than ACS before repair
    • Not to spec and probably not to current ACS level
  – Features in flat fields in F218W have grown (filter related)
  – Calibration system illumination patterns unacceptable (UVIS and IR)
Path Forward

• WFC3 moved from SES chamber back to cleanroom
  – 2 weeks residual work on CASTLE alignment testing
  – Ambient check on alignments after WFC3 and CASTLE return to cleanroom

• Working schedule for compatibility with Robot Mission
  – Significant work to fix open liens (e.g. electronics redundancy)
  – On-going efforts to build improved filters for UVIS
  – Exploring replacement IR detector (2 prototypes delivered)
  – Schedule driver is probably HST gyros (June 2006)
  – System Level Thermal Vacuum Test #2 in October 2006