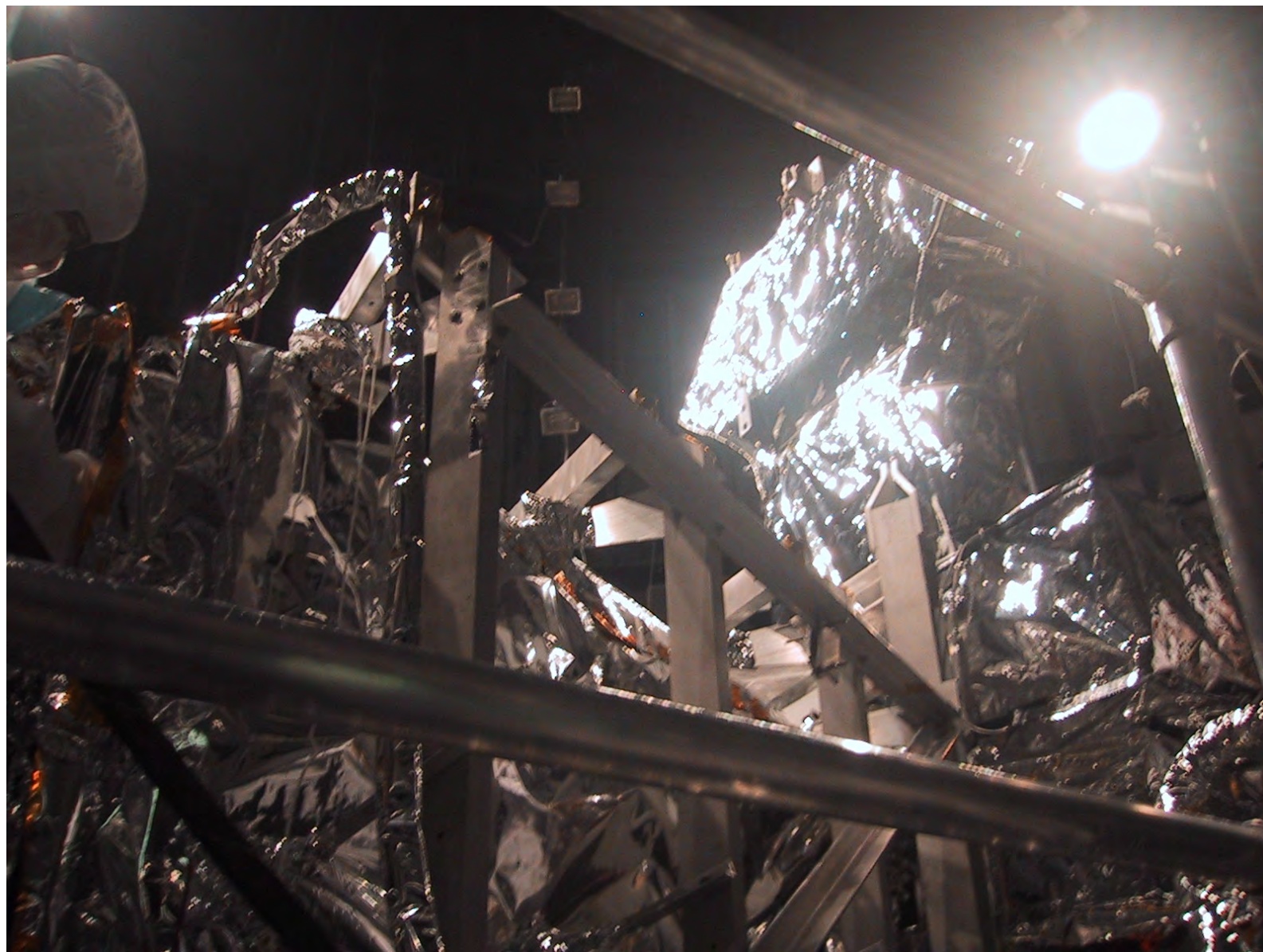




WFC3 STUC

18 November 2004





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:

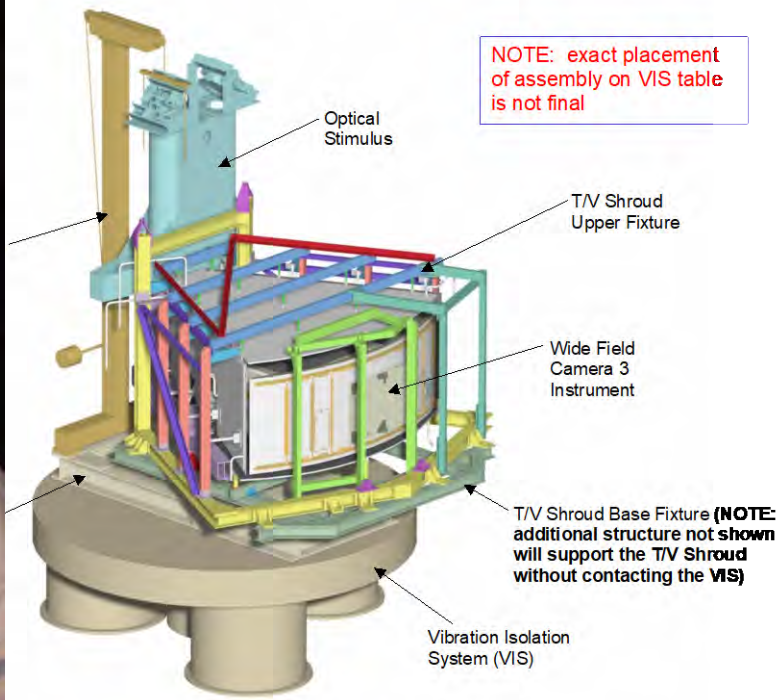
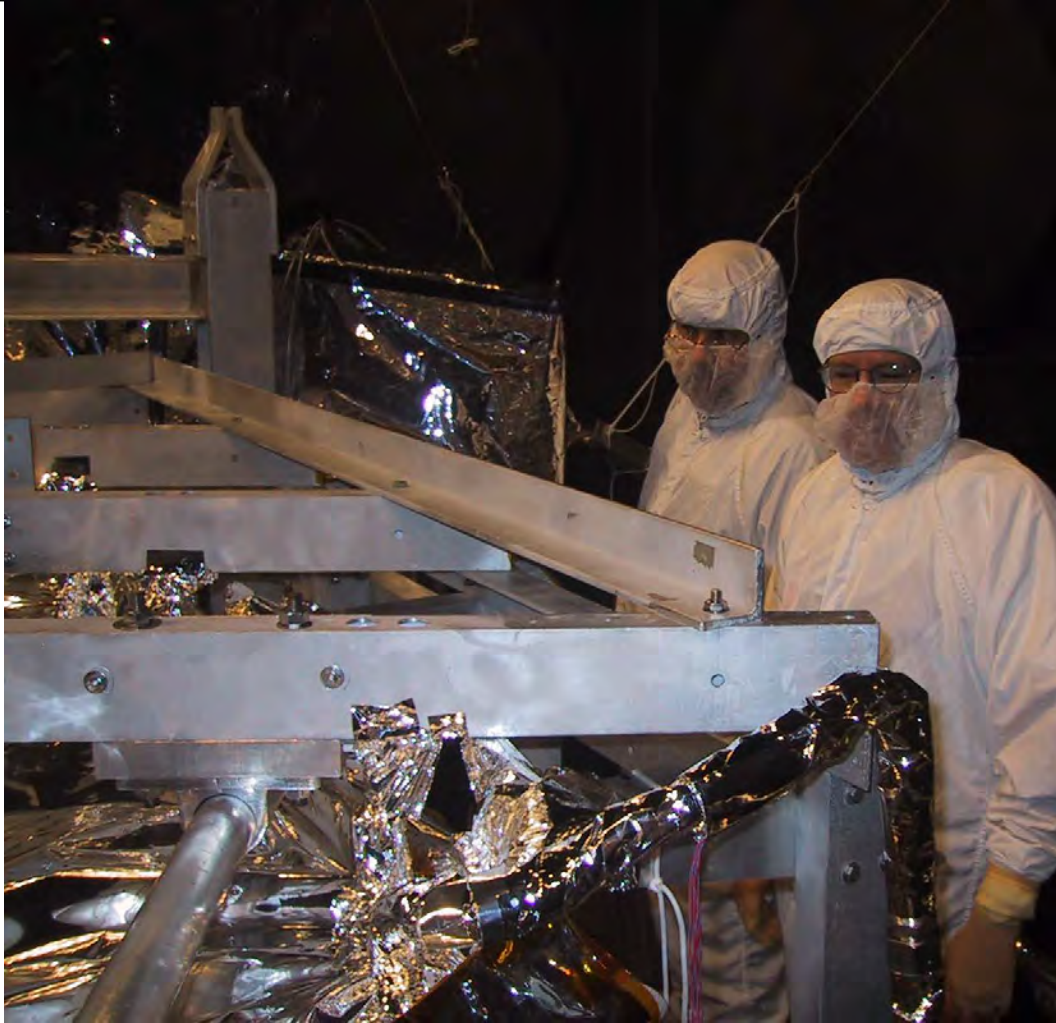
- Rosa Diaz-Miller
- Inge Heyer
- Bryan Hilbert
- Jessica Kim
- Marin Richardson
- Jeff Stys
- Misty Cracraft*
- Helene McLaughlin*
- Kevin Lindsay* (new Hires)

Operations Support:

Mike Robinson
Tom Wheeler



SES Test Configuration



Randy Kimble and Howard Bushouse during final instrument inspection



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