

Updated Information for WFC3 Phase 2 Proposal Development

GO's preparing Cycle 17 Phase 2 Proposals using WFC3 should be aware of the following developments since the publication of the WFC3 Instrument Handbook in December 2007. These capture new information about the instrument derived from ground testing and various enhancements to the operational systems.

1. The UVIS quantum yield (Handbook Sections 5.4.2 and 6.9.5) has been measured at both the instrument level and in the GSFC Detector Characterization Lab to be much smaller than predicted (and is consistent with zero). This implies a higher near UV quantum efficiency than previously expected. The WFC3 Exposure Time Calculator has been modified to reflect these measurements. See ISR WFC3 2008-11.

2. The UVIS near UV (200-260 nm) throughput measurements during obtained System Level Thermal Vacuum testing has a significant calibration uncertainty (about 30%). It is possible, but not certain, that this uncertainty will be reduced by recalibration of the test equipment during July. The ETC reflects a more conservative (lower) estimate of the UV throughput. Observers with bright sources that would exceed 60% of the detector full well are requested to indicate such cases via comment.

3. Observers are reminded that the IR detector has significant image persistence (Handbook Sections 7.9.4 and D.2). While no restrictions are being placed on the observation of bright sources with the IR channel, observers should (1) be aware that subsequent images may be impacted by residual images from saturated sources, (2) indicate via comments to STScI those exposures which will badly ($>10^7$ electrons/pixel) saturate, understand that some risk is being accepted in proceeding without restrictions.

4. The UVIS detector window has a number of "droplet" features on its exterior surface that modulate the flat field by $\sim 0.5\%$ and more significantly degrade the utility of internal flat field images. These were unfortunately discovered after the final assembly of the instrument. Extensive testing indicates that these features should be stable following the deployment of WFC3 and should not exhibit large changes from their appearance in ground calibration. The "non-FIX" aperture locations will be shifted during SMOV to avoid placing point sources on the most prominent droplet features. See ISR WFC3 2008-10 for more details.

5. The throughput of the F775W filter was incorrectly measured at the component level. The ETC has been corrected to reflect its measured performance during system level testing. This increases the throughput of this filter by $\sim 15\%$ and places it in family with the other broad band filters of similar construction. See ISR WFC3 2008-08.

6. The UVIS shutter induces a small amount of vibration into the WFC3 instrument optics. This occurs typically for about 200 msec following the opening of the shutter. As a consequence, the PSF of exposures shorter than about 10 seconds is slightly degraded. Total flux is well conserved but the energy in the peak pixel is decreased by 5 to 15

percent in 1 second exposures. Observers obtaining PSF reference stars are strongly encouraged to select sources permitting exposure times greater than 10 seconds. It is difficult to predict with absolute certainty the amplitude of this effect in zero-G so programs dependent upon the exact structure and repeatability of the PSF in short (<10 second) exposure should so indicate via comments. An ISR will be forthcoming.

7. If your observation is comprised of more than two exposures per target visibility interval, dumping those exposures from the WFC3 buffer could prevent further exposures until the dump is complete. This circumstance is likely to arise for sets of short UVIS exposures. To efficiently utilize the allocation of orbits for programs comprising short exposures, the observer may need to plan exposures in order to enable parallel dumping of the WFC3 buffer, or to minimize the time for serial dumps of the buffer. The description of the rules for management of buffer dumps that was presented in the Instrument Handbook 10.3.1 contains errors. The corrected section, with some examples, is presented on the Cycle 17 Announcements page in an entry dated March 03, 2008, <http://www.stsci.edu/hst/proposing/docs/cycle17announce> .

8. The positions of UVIS and UVIS-FIX apertures have been set and a new aperture, UVIS-CENTER has been added. The default target position in the UVIS and UVIS-FIX apertures is approximately 10 arcseconds above the inter-chip gap. That location for the UVIS-CENTER aperture is at the center of the field of view, which will ease planning of mosaics. Details are presented in the Phase 2 Proposal Instructions, section 14.2.

9. We have revised the suite of convenience patterns designed to dither and mosaic WFC3 exposures. The patterns and their rationale are presented in Section 8.4.4 of the Phase II Proposal Instructions at <http://www.stsci.edu/hst/programs/hst/proposing/docs/p2pi.html>. More detailed information will be given in an up-coming WFC3 Instrument Science Report. Additional recommendations for dither strategies will be presented there and posted to the WFC3 User Forum, linked to the Shortcuts at <http://www.stsci.edu/hst/wfc3>.

10. Instrument Handbook figures 7.2 and 7.3 (IR filter throughputs) were initially released with incorrect versions. Correct versions were installed on 10 Jan 2008 (see http://www.stsci.edu/hst/wfc3/documents/handbook/ihb_errata.html).