



WFC3 IR Detector Status



Presentation to the Space Telescope User Committee

April 20, 2006

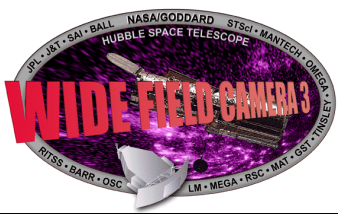
Massimo Robberto



Historic recap



- FPA #64 has been installed in flight build Nr. 2.
 - Successfully passed Fall 2004 Thermal Vacuum campaign
 - ready to flight
- The WFC3 project has discovered radiation induced glow from high energy particles on CdZnTe substrates
 - increase of background may reduce sensitivity
- Solution: remove CdZnTe substrate (thinning)
 - Eliminates radiation induced glow
 - Possible increase of QE at shorter wavelengths
 - Visible window open down to 0.4micron

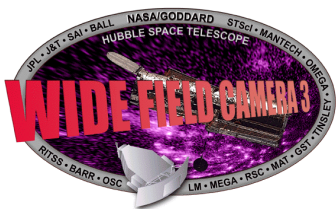


New Lot Growth at RSC



In Fall 2005 Rockwell has fabricated two new lots of detectors for WFC3, with substrate removed.

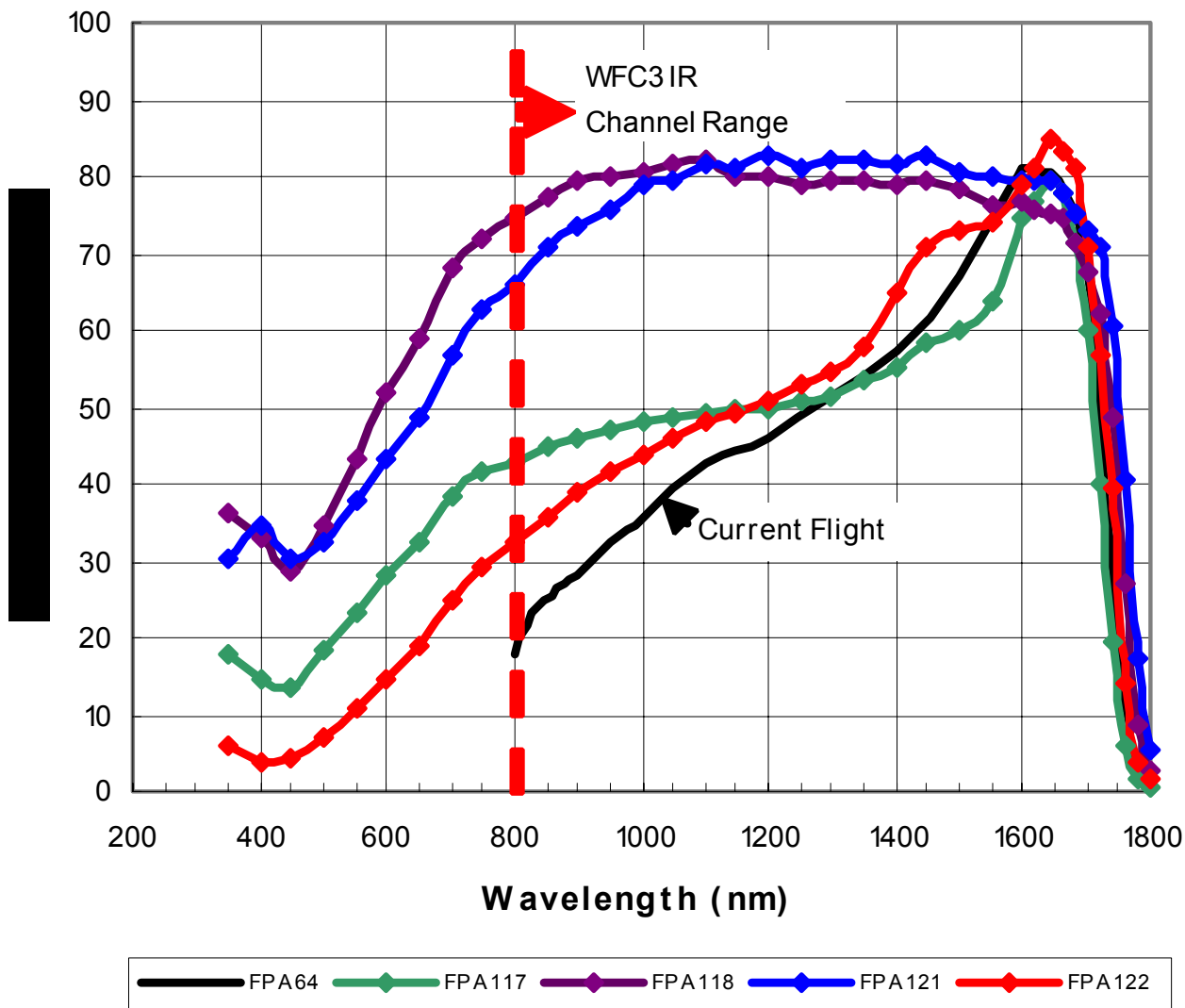
- ✓ Radiation tests have confirmed that removal of the CdZnTe substrate **eliminates** the radiation induced background
- ✓ Substrate removal has resulted in **improved quantum efficiency** over earlier devices.
- ✓ **Sensitivity is extended into the visible** wavelength range.



QE For Flight Candidates



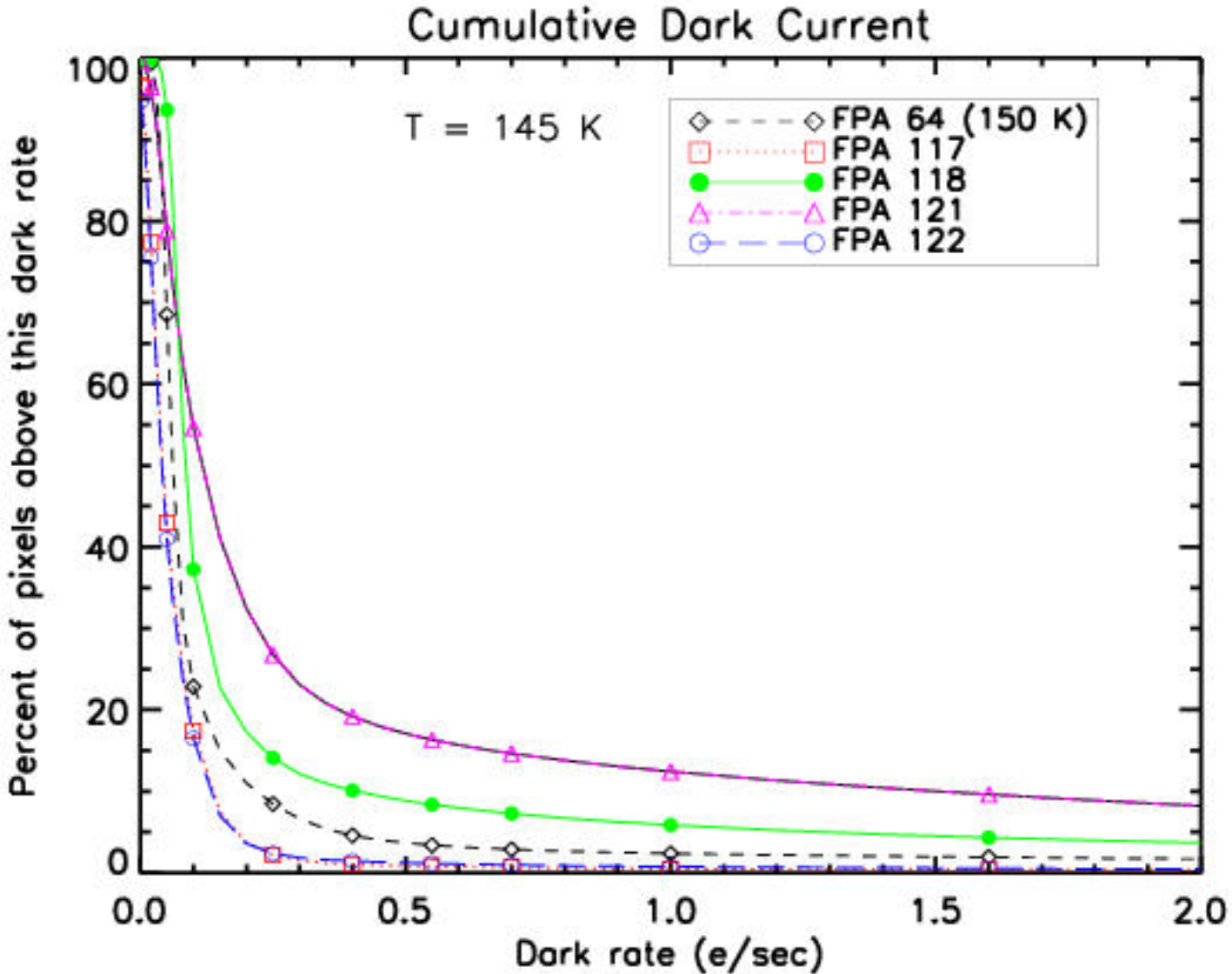
QE of New WFC3 Devices



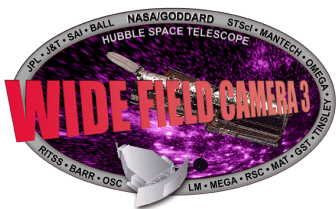
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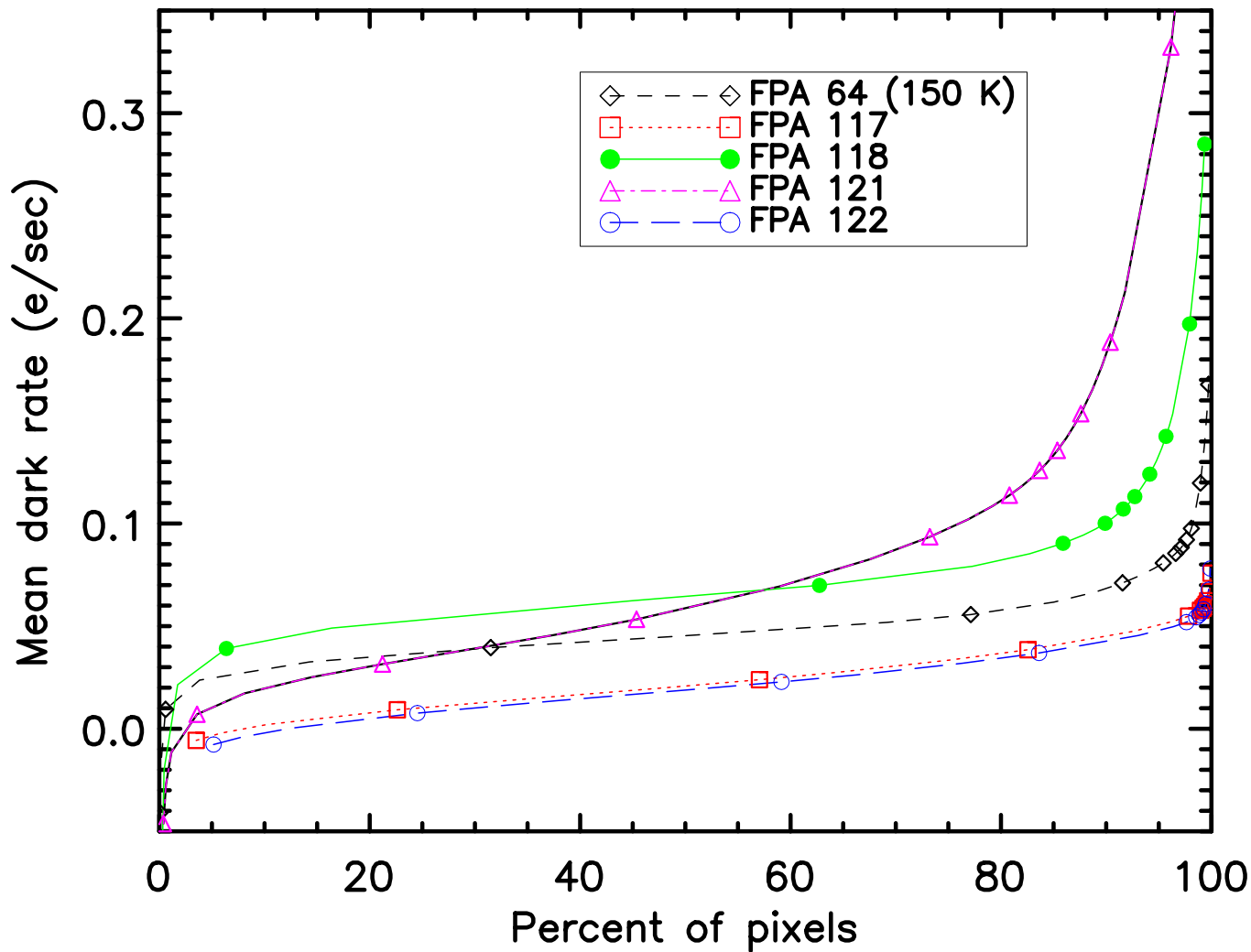
Dark Current



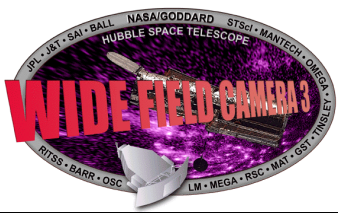
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Cumulative Mean Dark Rates



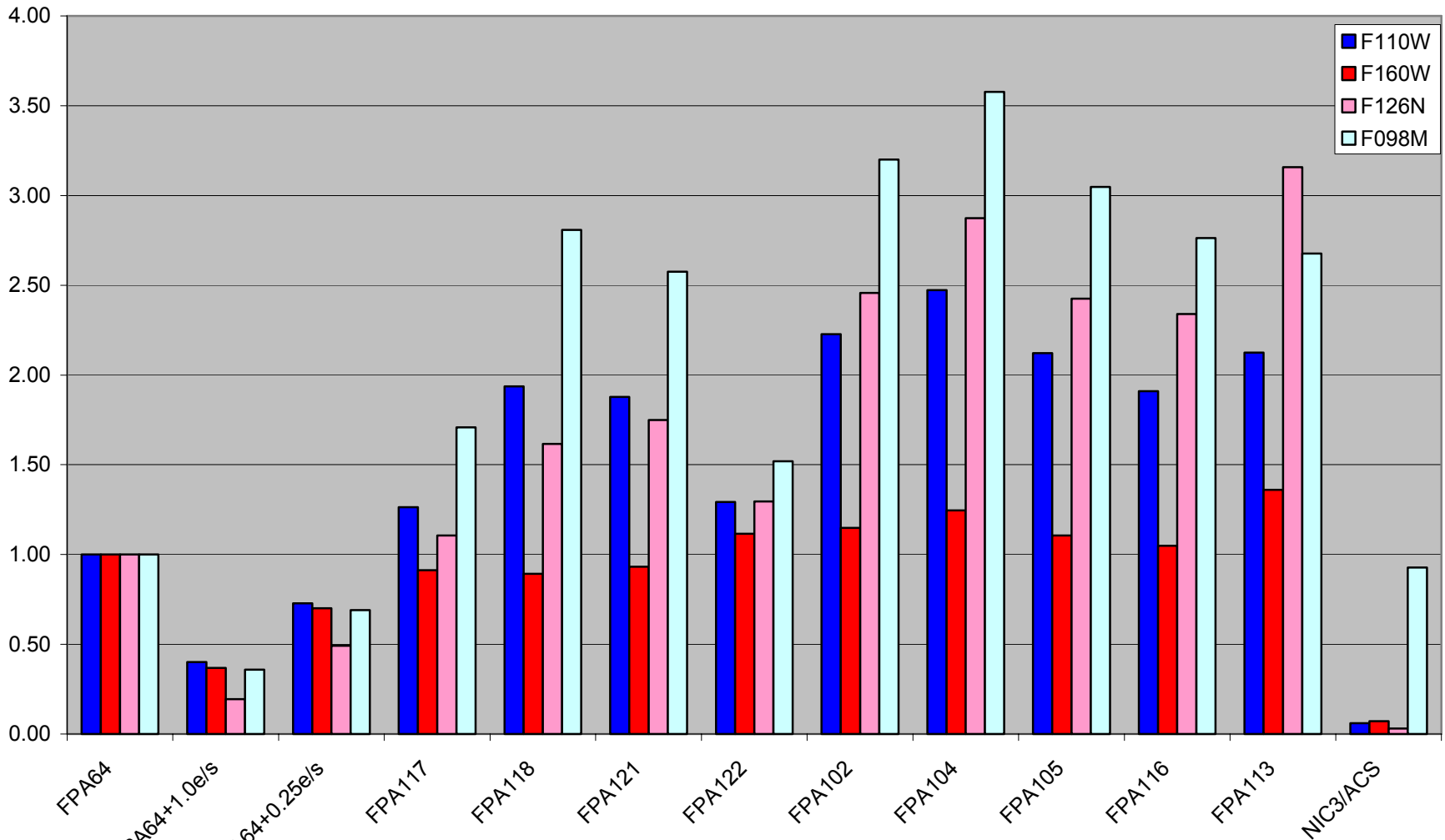
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Performance Metrics For Flight Candidate Devices



**Discovery Efficiency relative to FPA64
Point sources - Average zodi - 2400s**



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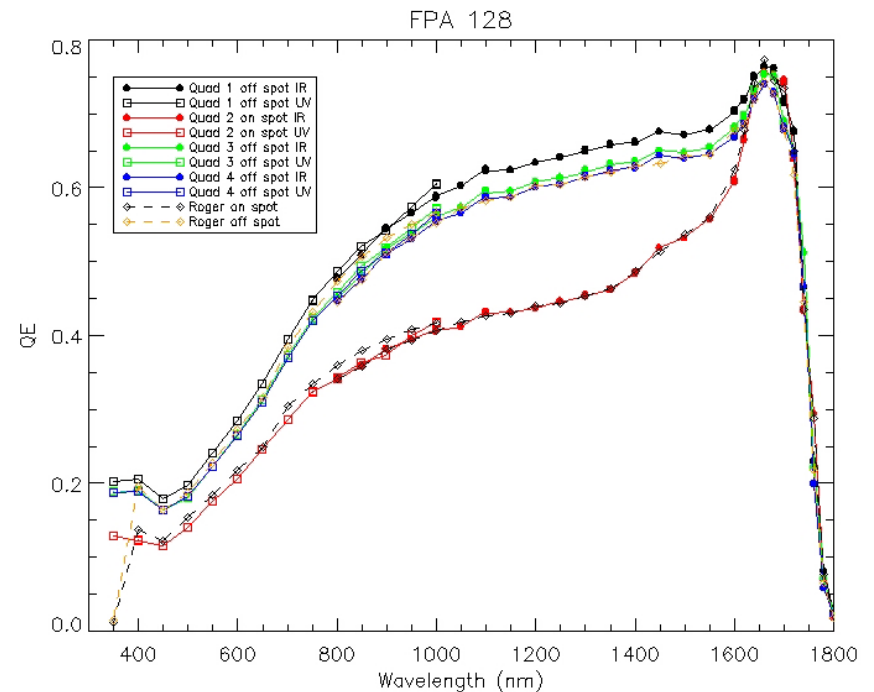
More new Detectors



- RSC is producing eight more devices from the Lot 1 and 2 residual assets and from the recently completed lot 3. These detectors are

- ✓ Thinned,
- ✓ new BCS design,
- ✓ correct torque.

delivered to the project:
FPA 128, FPA 129



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