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Barr Optical Filters aboard NASA's Hubble Servicing Mission

Barr Associates, Inc. of Westford, MA supplied the majority of the optical filters in NASA's Wide Field Camera 3 (WFC3) recently installed on the Hubble Space Telescope during the fourth Hubble servicing mission (SM4). The filters are used to select specific wavelengths (colors) of light while imaging astronomical objects such as planets, stars, nebulae and galaxies. By analysis of these wavelengths, scientists can determine a range of characteristics such as red shift, which is an indication of the rate of expansion of the universe and chemical (elemental) composition of matter in space. WFC3 adds new capabilities to Hubble with its infrared channel and improved detectors and filters for the ultraviolet and visible spectral ranges. After check-out and calibration during the summer it is expected that WFC 3 will be delivering new images in the September time frame.

The shuttle Atlantis astronaut crew has successfully installed two new Hubble instruments – WFC 3 and COS and repaired two others – Advanced Camera for Surveys (ACS) and Space Telescope Imaging Spectrograph (STIS) as well as replaced and repaired several electronic and electrical systems. The crew also removed Wide Field Planetary Camera II (WFPC II) and the COSTAR optical corrector.

Barr supplied most of the 48 filters for WFPC II that had been installed during the First Servicing Mission in December, 1993 and is now replaced by WFC 3. WFPC II and ACS have been the work-horse imagers for the Hubble over the past 16 years. Barr provided approximately 32 filters for ACS which was installed during the SM3B servicing mission in March 2002. Barr also provided several ultraviolet filters for the STIS instrument installed during SM2 in 1997. It is safe to say that most Hubble images published by NASA are taken through Barr filters.

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At one point it was doubtful that WFC 3 would ever be installed as Servicing Mission 4 had been cancelled, only to be later re-instated by NASA. Since the Shuttle will soon be retired, no further Hubble servicing missions are planned.

Barr has been supporting ground-based and space-based science and astronomy for over 35 years by providing the highest performance and most robust optical filters at reasonable cost. Details of these activities may be obtained by contacting Tom Mooney at Barr (tmooney@barrassociates.com).

Barr Associates, Inc., based in Westford, MA is a leading supplier of precision, thin-film optical coatings and interference filters used in a wide variety of applications including Defense, Clinical-, Medical-, and Life Science-Instrumentation, Detector, Infrared, Space & Aerospace, and Astronomy.



Wide Field Camera 3 at NASA Goddard Space Flight Center

Photo Credit: NASA

WFC 3 partners and contractors:

<http://wfc3.gsfc.nasa.gov/wfc3-team/partners.php>

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Decals: Courtesy NASA

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