Summary: 19 April 1996 - 22 May 1996

- Instrument: Nominal operation
- Acquisition: 40 successful (27 ACQ/BIN and 16 ACQ/PEAK); 3 failures
  - Proposal 6007: the target coordinates were off by 6 arcsec.
  - Proposal 6096: under investigation, may be a problem with the estimated brightness.
  - Proposal 5921: under investigation, may be a problem with the target coordinates.
- Pointing: 63.7% within 1″
- Executed programs: 25 GO/GTO programs 5 Calibration programs

- Publications and Communications:
  - FOS Cycle-6 Calibration Plan
  - Pre-COSTAR and Post-COSTAR Observed Point Spread Functions for the FOS
- Other: ~20 CS Reviews completed.

Pre-COSTAR and Post-COSTAR Observed Point Spread Functions for the FOS

- The in-flight observed PSFs and LSFs for both FOS detectors are important to determine if two objects are spatially resolved by the FOS in an FOS ACQ image or to determine if a spectral line is resolved by the FOS.
- The white light observed pre-COSTAR and post-COSTAR Point Spread Function (PSFs) and the Line Spread Functions (LSFs) for both the blue and red FOS detectors are determined.
- These observed PSFs represent the FOS instrumental PSF convolved with the diode for each detector.
- The electronic versions of the PSFs and LSFs can be accessed via the FOS instrument page on the WWW.

Determination of the PSFs

- Multiple observations of a star were correctly aligned and combined to form the PSFs. The pixel sizes in the PSFs vary for the Pre and Post-COSTAR data since the image mode observations were done with different optional parameters.
- Each pixel in the image mode observation is $0.092'' \times 0.289''$ for the FOS blue detector and $0.089'' \times 0.286''$ for the FOS red detector.
- Each pixel in the image mode observation corresponds to $0.076'' \times 0.079''$ pixel for the FOS blue detector, and $0.076'' \times 0.081''$ pixel for the FOS red detector.
- Unlike the pre-COSTAR data, the post-COSTAR data has nearly square pixels and similar sampling of the PSF in both the FOS X and Y axes.

Determination of the LSFs

- The observed LSFs are computed from the PSFs determined above, and are therefore greatly affected by the size of the pixels in the PSF.
- Any aperture smaller than the 1.0″ aperture will be sampled only by 1- 5 pixels in the both the X and Y direction. This sampling is too sparse to correctly determine the LSFs for the smaller apertures. Therefore, we have computed observed white light LSFs only for the 4.3″ and 1.0″ apertures.
- A comparison of the pre-COSTAR 4.3″ and 1.0″ aperture LSFs with the model determined LSFs shows that the red detector LSFs are very similar, but the blue detector 4.3″ aperture LSFs wings are underestimated by the models. This is because of the strong dependence of the pre-COSTAR PSF on optical telescope assembly focus changes.
- Color dependence of the LSFs is small, therefore the white light LSFs can be used for any grating.