3.5 TARGETS

The various subsystem calibration tests required a variety of targets to be used in conjunction with the WAC Collimator, the WAC Fecker Collimator, or the NAC Collimator. Shown below are the descriptions of the targets, as well as images of some of the targets (where a visual is thought to help clarify the description) either imaged directly or as imaged through one of the cameras.

3.5.1 FOCUS TARGET

Test Purpose : The Focus Target was uses for Focus and Modulation Transfer Function (MTF) tests.

Target Description : Repeating columns of vertical and horizontal bars and opaque squares on a transparent background, with a transparent, encircled cross-hare for centralization.

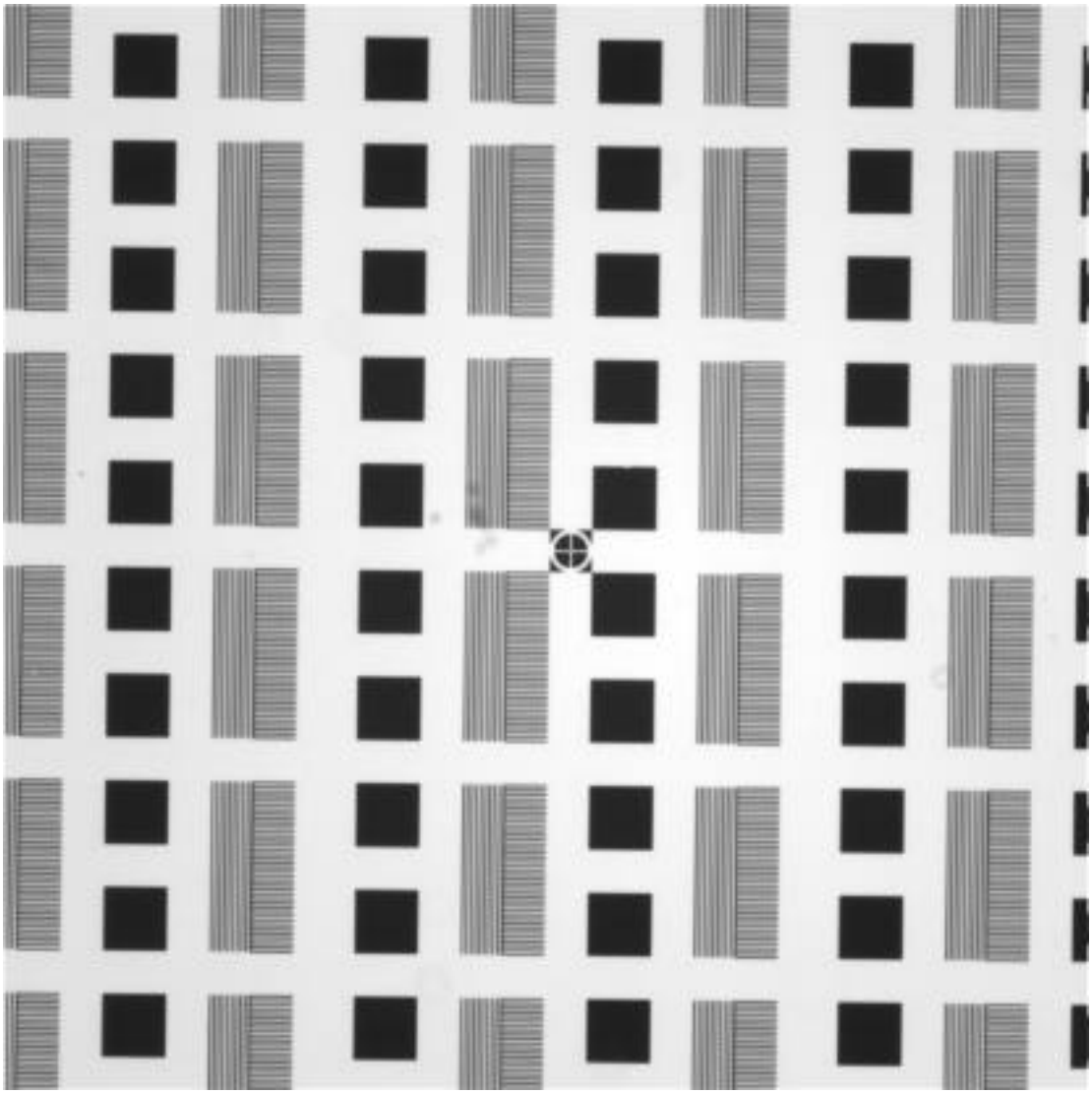

Figure 3.5.1-1 - Focus Target as Imaged through the NAC

3.5.2 POLARIZATION TARGET

Test Purpose : The Polarization Target was used for the purpose of verifying the orientation of the polarizer filters.

Target Description : Knife edge target : half opaque, half polarized with the polarization axis perpendicular to the knife edge (see Figure 3.5.2-1). The target was manually rotated in a stage scribed with the degree of orientation.

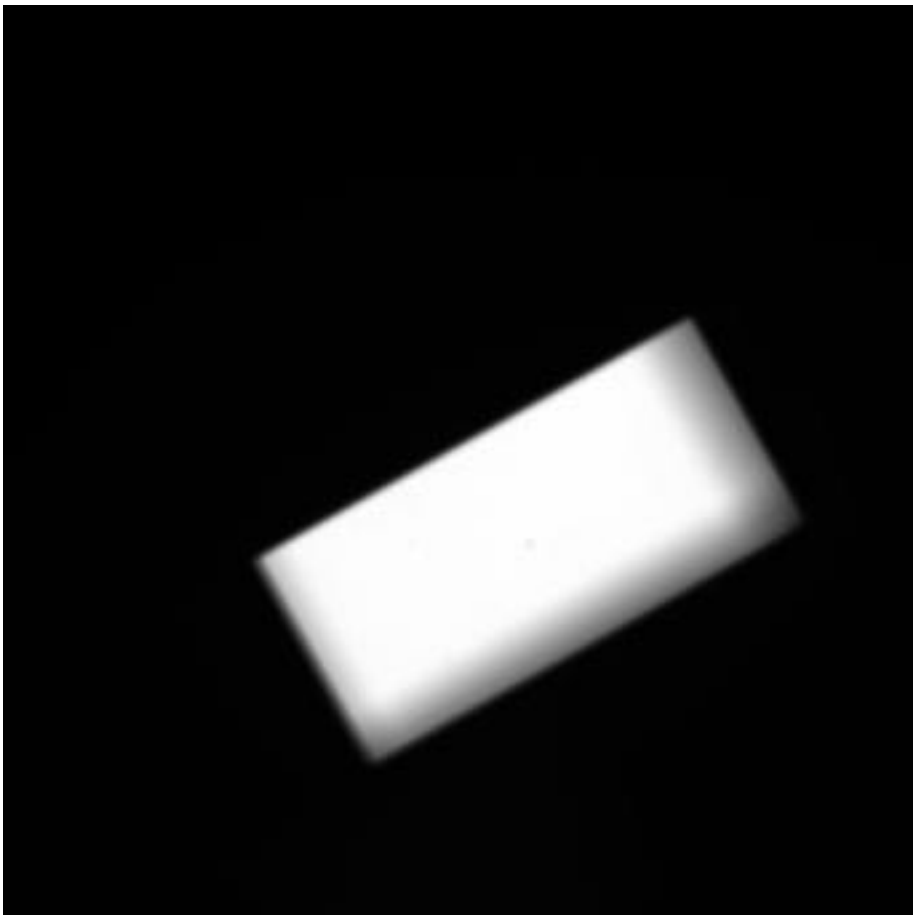

Figure 3.5.2-1 - Polarization Target as Imaged through the WAC

3.5.3 PINHOLE - 9 MICRON

Test Purpose : The 9 Micron Pinhole Target was used for the “single point” Point Response Function (PRF) tests.

Target Description : Centralized, transparent, single 9-micron pinhole in opaque background.

3.5.4 PINHOLE - 5 MICRON

Test Purpose : The 5 Micron Pinhole Target was used for the Prescription Retrieval Tests.

Target Description : Centralized single 5-micron pinhole in opaque background.

3.5.5 PINHOLE GRID - NAC

Test Purpose : NAC Pinhole Grid Target was used for the Point Response Function (PRF) calibration tests.

Target Description : Opaque substrate with a 41 x 41 array of 9 micron transparent pinholes, with one 20 micron transparent pinhole at the center of the grid. Distance between pinhole centers was 0.303 mm.

3.5.6 PINHOLE GRID - WAC

Test Purpose : WAC PRF Pinhole Grid Target

Target Description : Opaque substrate with a centralized 6 x 6 array of 20 micron transparent pinholes (see Figure 3.5.6-1).

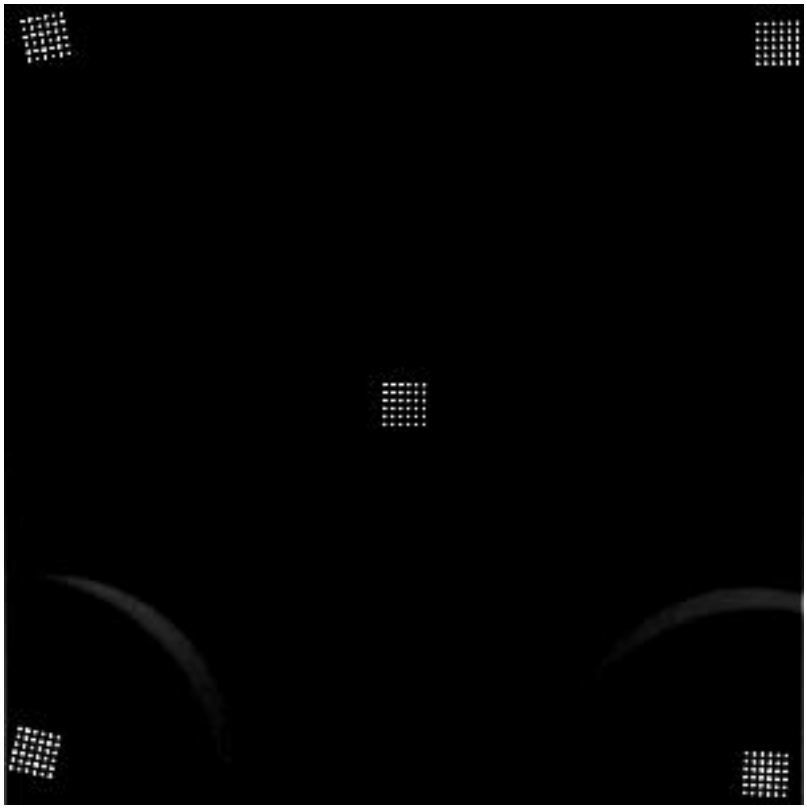

Figure 3.5.6-1 - WAC Pinhole Grid Target as Imaged through the WAC

3.5.7 MTF VERTICAL - WAC

Test Purpose : The WAC Vertical Modulation Transfer Function (MTF) Target was used for MTF calibration testing.

Target Description : Centralized rectangular knife edge (long edge vertical) with four 500 micron pinholes for centralization (see Figure 3.5.7-1).

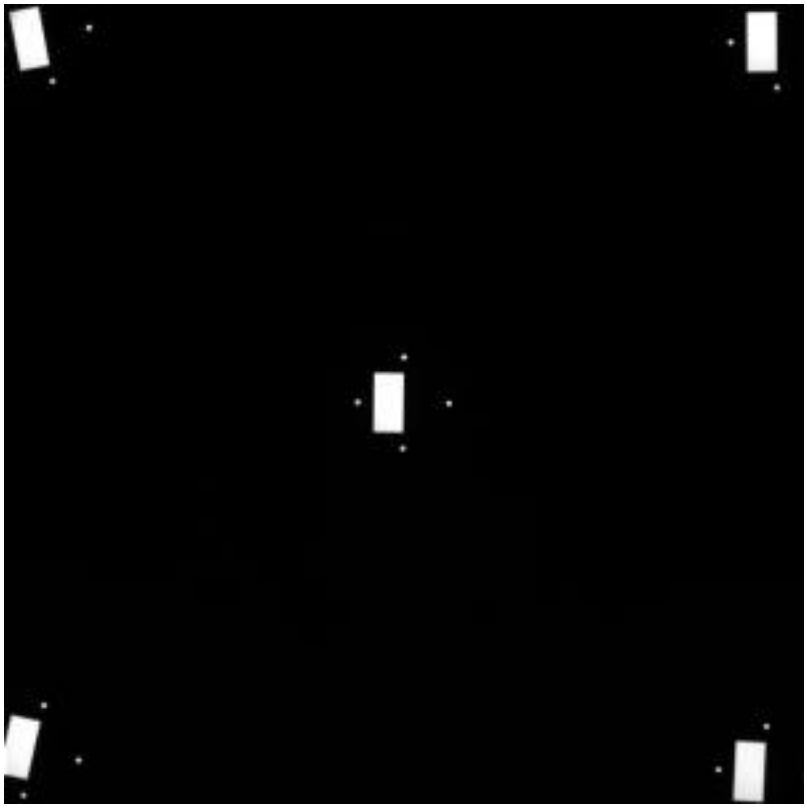

Figure 3.5.7-1 - MTF Vertical Target as Imaged through the WAC

3.5.8 MTF HORIZONTAL - WAC

Test Purpose : The WAC Horizontal Modulation Transfer Function (MTF) Target was used for MTF calibration testing in conjunction with the WAC Collimator.

Target Description : Centralized rectangular knife edge (long edge horizontal) with four 500 micron pinholes for centralization.

3.5.9 NAVIGATION 1 (DISK)

Test Purpose : The Navigation 1 (disk) target was used for navigation calibration testing.

Target Description : The target was made up of two transparent disks (one large, one small) placed on an opaque background. Five 6x6 transparent pinhole grids were placed at various locations in the opaque background of the target.

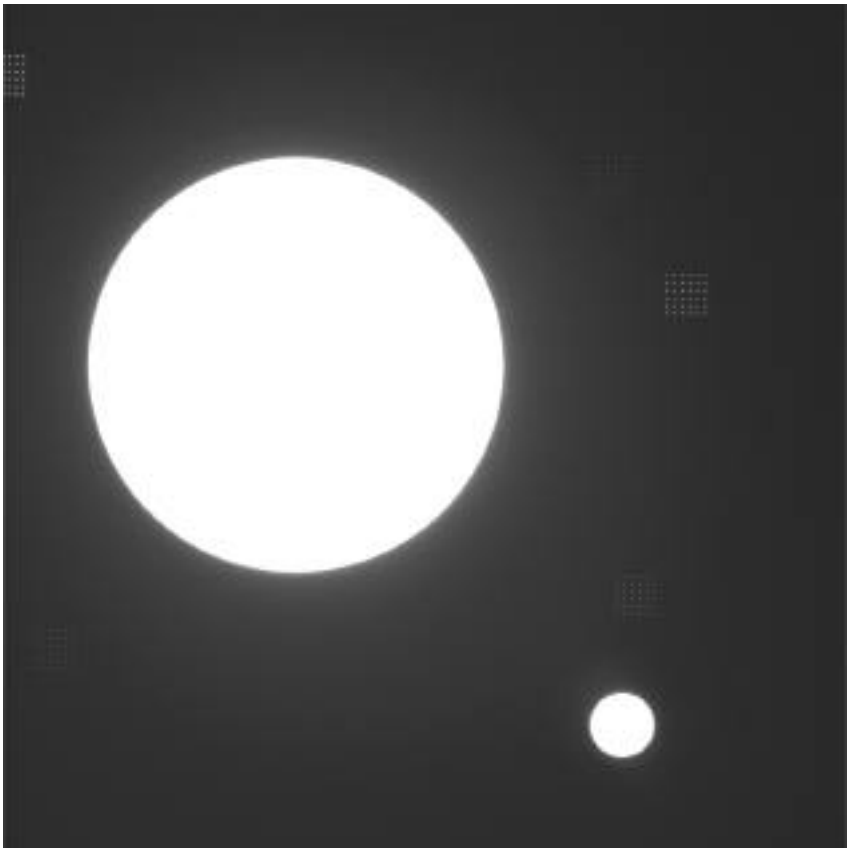

Figure 3.5.9-1 - Navigation 1 Target (Disk) as Imaged through the NAC

3.5.10 NAVIGATION 2 (CRESCENT)

Test Purpose : The Navigation 2 (crescent) target was used for navigation calibration testing.

Target Description : The target was made up of a two transparent crescents (one large , one small) placed on an opaque background. Five 6x6 transparent pinhole grids were placed at various locations in the opaque background of the target (not visible in Figure 3.5.10-1).

Figure 3.5.10-1 - Navigation 2 Target (Crescent) as Imaged through the WAC

3.5.11 DISTORTION GRID

Test Purpose : The Distortion Grid target was used to test distortion in the WAC camera.

Target Description : The target consisted of a 20 x 20 square grid made up of chrome lines on a clear background. The lines are 80 microns thick, 38.100 mm in length, with 1.905 mm between centers. Three 0.2 mm dots were placed at the center of the target for finding the center and direction of the grid.

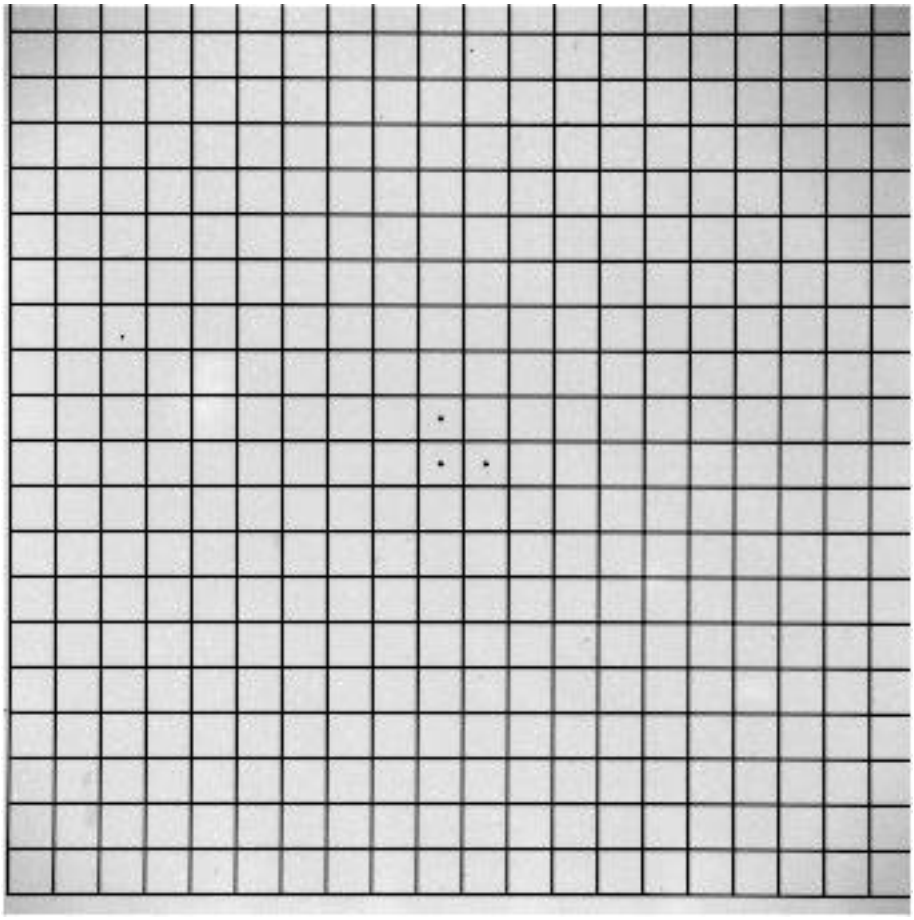

Figure 3.5.11-1 - Distortion Target as Imaged through the WAC

3.5.12 DYNAMIC RAMP

Test Purpose : The Dynamic Ramp was used for the analog-to-digital converter bit weighting tests.

Target Description : The Dynamic Ramp Target (Figure 3.5.12-1) provided a linear ramp of evenly distributed DN (Figure 3.5.2-1). The moveable linear shutter blade opens at a constant rate. This blade is connected to a DC motor by a screw with a dovetail slide to maintain mechanical integrity and stability during operation. The Dynamic Ramp was packaged to fit directly into the collimator target holder.

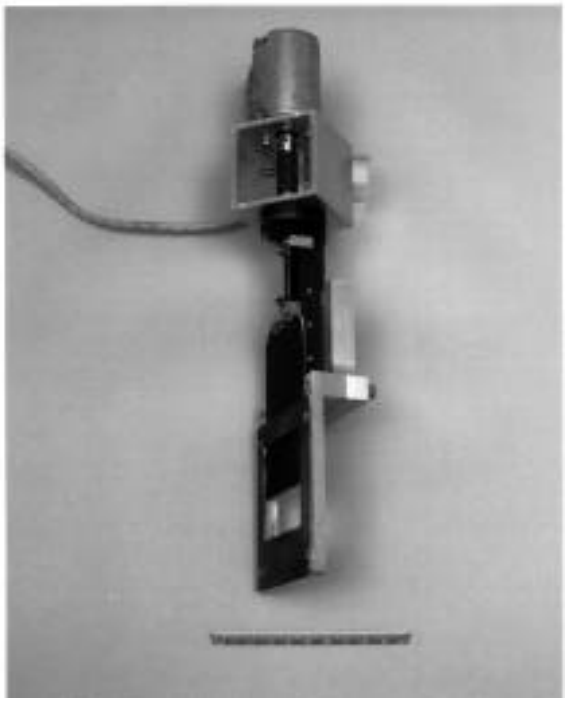

Figure 3.5.12-1 - Dynamic Ramp Target

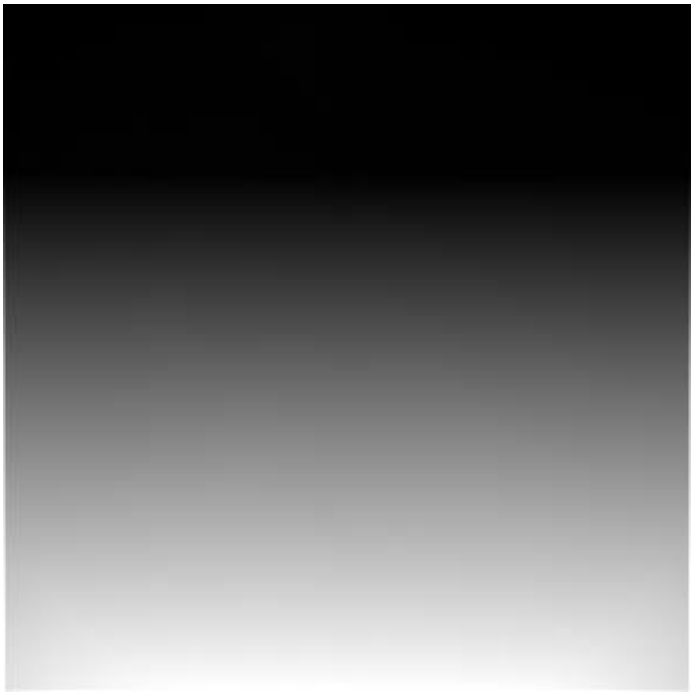

Figure 3.5.12-2 - Dynamic Ramp as Imaged through the WAC

3.5.13 BUSY TARGET

Test Purpose : The Busy Target was used for Lossy Compression testing.

Target Description : The Busy Target was made up from a corrected moon image (Figure 3.5.13-1) taken by the Galileo Solid-State Imaging (SSI) camera during its second Earth encounter (press release 50912). The image of the moon encompasses the majority of the target.

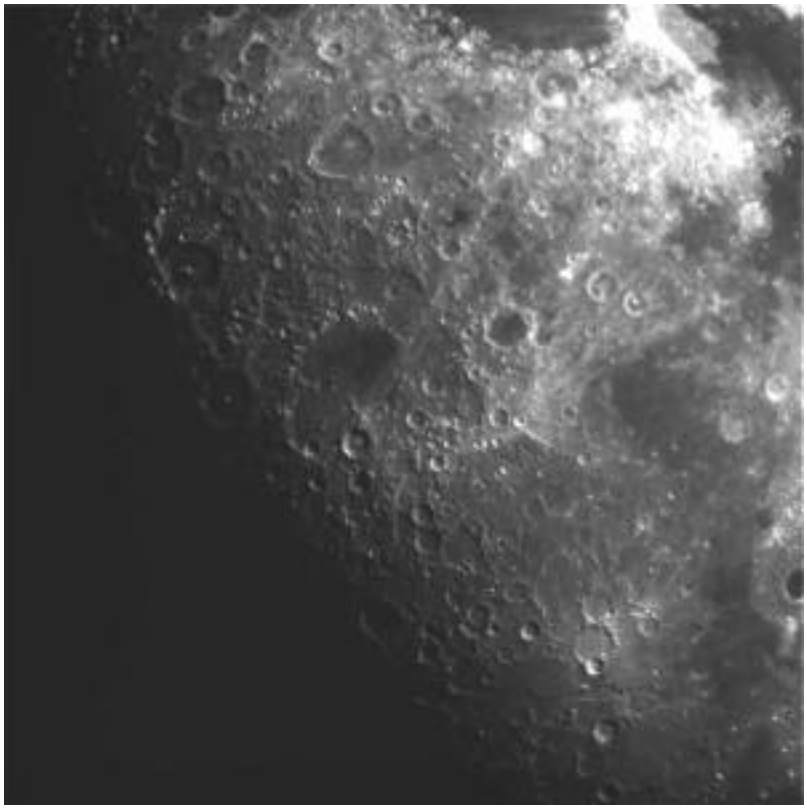

Figure 3.5.13-1 - Busy Target (Used for Lossy Compression Calibration Testing)

3.5.14 ATMOSPHERE TARGET

Test Purpose : The Atmosphere Target was used for Lossy Compression testing.

Target Description : The Atmosphere Target was made from a corrected image of Saturn taken by the Voyager 1 SSI Narrow-angle camera (green filter), FDS count 34909.55.

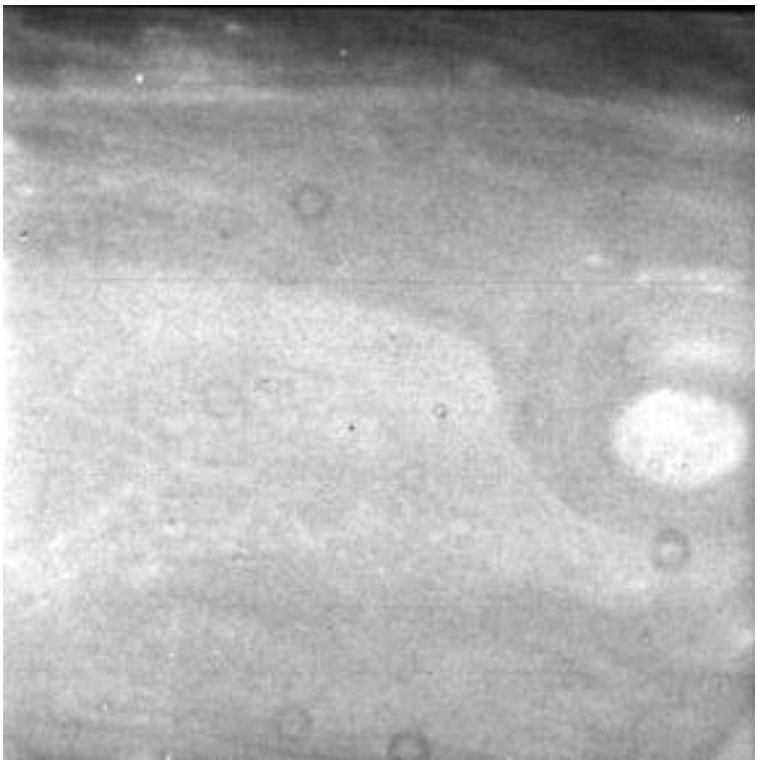

Figure 3.5.14-1 - Atmosphere Target (Used for Lossy Compression Calibration Testing)

3.5.15 BUSY / BLACK SKY TARGET

Test Purpose : The Busy / Black Sky Target was used for Lossy Compression testing.

Target Description : The Busy / Black Sky Target was comprised of a centralized satellite (approximatley covering 11 % of the the target) on a black background. The small satellite image was a corrected Voyager 2 SSI Narrow-angle image of Tethys (clear filter), FDS count 44003.57.

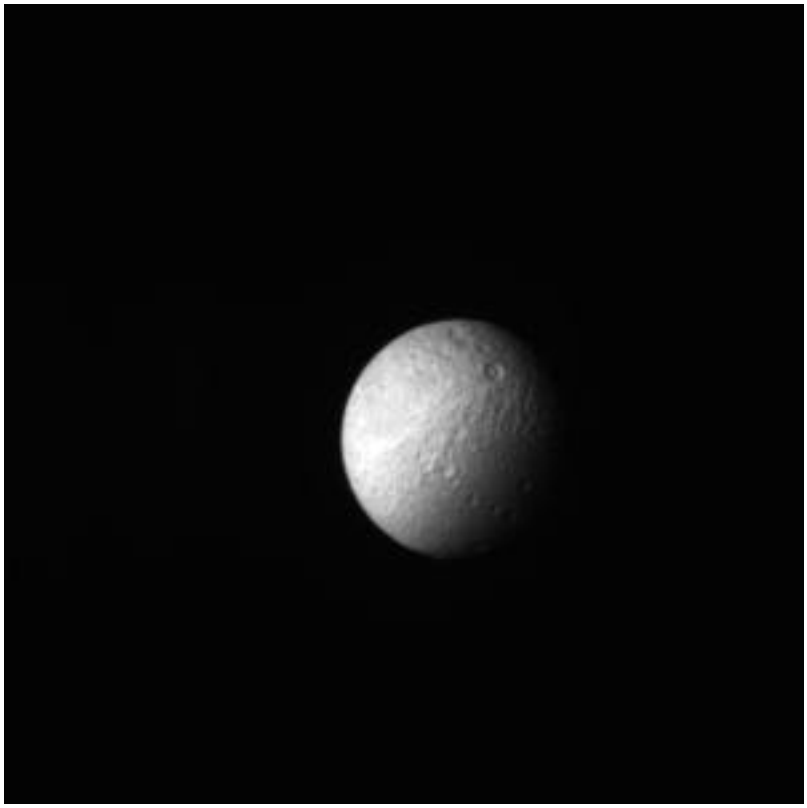

Figure 3.5.15-1 - Busy/Black SkyTarget (Used for Lossy Compression Calibration Testing)