Availability of the LWR Camera in Its New Configuration

At the last Three Agency meeting (October 1985), the Three Agencies agreed to the final reconfiguration of the LWR camera with a reduced UVC voltage of -4.5 kv; its previous setting was -5.0 kv. The LWR is now available to Guest Observers with no operational restrictions; however it can be used only at the reduced UVC voltage.

In the last year and a half, the LWR has been available only on a limited basis for Guest Observer programs due to the appearance and growth of a flare in the Ultraviolet Converter (UVC). Limits were imposed on the total accumulated exposure time, with approval required for use of the camera. All of these restrictions have now been lifted. Guest Observers may request use of the LWR from the Resident Astronomer on shift. Only the lowered UVC voltage configuration will be available; thus the sensitivity of the camera will be a factor of 1.37 less than for the earlier configuration. Exposure times must be adjusted accordingly. As in the past, the observer requesting use of the backup long-wavelength camera (the LWR) is expected to absorb the extra overhead of turning the cameras on and off. This may be about 45 minutes, but the overhead can often be hidden during other activities such as maneuvering to the next target.

Careful analyses have been performed of the camera performance at the lower UVC voltage. The sensitivity of the camera is reduced by a factor of 1.37 from its original configuration (Harris, this newsletter). This change in gain appears to be uniform across the entire camera faceplate, except for some small deviations of a few per cent at the extreme edges. This effect was noted by Harris in his analysis of high dispersion stellar spectra. Imhoff (this newsletter) showed that the current LWR ITF performance is unaffected by the change in UVC voltage.

It will be important for researchers to take into account the change in the camera sensitivity when computing absolute fluxes in the new configuration. Using a given exposure time and the current sensitivity function, the resulting absolute fluxes should be multiplied by a factor of 1.37.

One may determine the LWR UVC setting for a given image by examination of the "round robin" event status in the image header (Figure 1). The UVC setting used for a given exposure may be found in the round robin event line which begins "FIN ". This line is written by the EXPFIN procedure normally run at the end of an exposure. The four numbers on this line are the camera number (1 = LWP, 2 = LWR, 3 = SWP, 4 = SWR), exposure time (seconds) and the SEC and UVC voltages (raw telemetry units). For LWR UVC settings of -5.0 and -4.5 kilovolts, the raw telemetry values are 109 and 98, respectively. Locating the information is this way may not be convenient, so a modification of record 0 to accomodate the UVC voltage is planned.

The reconfiguration of the camera is the result of the development of a discharge in the UVC portion of the camera, first noted about two years ago. This discharge, or "flare", produces a bright spot at the bottom of LWR images. The flare was initially rather faint, visible only in several hour exposures. Its brightness has grown steadily. Its intensity is now roughly 4 to 6 DN/min, producing a visible bright spot in exposures of only a few minutes duration.

The flare is not visible when the UVC is operated at the lower voltage. It is expected that, as the flare grows, it will eventually reappear as a bright spot in the LWR at the lower UVC voltage. However this is not expected to occur for several years.

Catherine L. Imhoff
31 October 1985

Figure 1: Location of the UVC Setting in the Image Header

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                                  00010001076807 68   1 1 022117412   #101      1 C
    99*    8*1MAY*1   *    *    *    0*    *    *    * * * * * *        *  2 C
160%CALUV•LWP17412,,,05MC1S,02:26:03                                           3 C
840502,GPREP,MAXG,LBREAD,PHCAL,,AMSTEKER                                       4 C
99,N/A,,16•9                                                                   5 C
BASELINE FINAL TUVF=42                                                         6 C
                                                                               7 C
                                                                               8 C
                                                                               9 C
84122023224* 9   * 218 *MPSPRC4A*002516 FINAL UVF TEMP= 37                  * 10 C
014942 STOP 2 TFL00D(1)              *002526 READPREP 2 IMAGE 17408         * 11 C
015116 FXP0BC 2 0 22    MAXG TF1    *002552 SCAN READLB SS 1 G3 58          * 12 C
015140 FIN 2 T 21 S 98 U 109         *002601 X 56 Y 72 G1 99 HT 106         * 13 C
015213 READPREP 2 IMAGE 17411        *004551 TIM,FES2R0M                    * 14 C
015241 SCAN READLB SS 1 G1 58        *004916 GOE TRACK X -15  Y -219        * 15 C
015252 X 56 Y 72 G1 99 HT 106        *004930 TIM,LWRR0M                     * 16 C
021527 STOP 2 CALUV                  *004952 UVITF 2  •120000E 03           * 17 C
022604 FXP0BC 2 5 1    MAXG UVF      *005004 STOP 2 CALUV                   * 18 C
023227 READ 2 IMAGE 17412            *005648 FXP0BC 2 3 45    MAXG UVF      * 19 C
023253 SCAN READLB SS 1 G3 58        *010035 FIN 2 T 225 S 98 U 109         * 20 C
023304 X 56 Y 72 G1 99 HT 106        *010042 FINAL UVF TEMP= 41             * 21 C
023247                               *010053 READPREP 2 IMAGE 17409         * 22 C
023303                               *010120 SCAN READLB SS 1 G3 58         * 23 C
235729 FIN 2 T 112 S 98 U 109        *010130 X 56 Y 72 G1 99 HT 106         * 24 C
235737 FINAL UVF TEMP= 39            *012122 UVITF 2  •600000E 02           * 25 C
235748 READPREP 2 IMAGE 17407        *012137 STOP 2 CALUV                   * 26 C
235811 SCAN READLB SS 1 G3 58        *012724 FXP0BC 2 1 53    MAXG UVF      * 27 C
235823 X 56 Y 72 G1 99 HT 106        *012919 FIN 2 T 112 S 98 U 109         * 28 C
001807 UVITF 2  •200000E 02          *012930 FINAL UVF TEMP= 39             * 29 C
001822 STOP 2 CALUV                  *012938 READPREP 2 IMAGE 17410         * 30 C
002429 FXP0BC 2 0 37   MAXG UVF      *013006 SCAN READLB SS 1 G3 58         * 31 C
002506 FIN 2 T 37 S 98 U 109         *013018 X 56 Y 72 G1 99 HT 106         * 32 C
                                                                              33 C
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LWR UVC = -5.0 kv ↗

LWR UVC = -4.5 kv →

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002728 FXP0BC 2 1 53   MAXG UVF
002918 FIN 2 T 112 S 98 U 98
002936 FINAL UVF TEMP= 39
002949 READPREP 2 IMAGE 17426
003016 SCAN READLB SS 1 G3 58
003029 X 56 Y 72 G1 99 HT 106
005153 STOP 2 TFL00D(1)
005328 FXP0BC 2 0 22   MAXG TF1
005359 FIN 2 T 21 S 98 U 98
005443 READPREP 2 IMAGE 17427
005509 SCAN READLB SS 1 G3 58
005523 X 56 Y 72 G1 99 HT 106
011451 UVITF 2 TSTART 35
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