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July 1975

Scientific Data Analysis Guide for THE HIGH ALTITUDE OBSERVATORY WHITE LIGHT CORONAGRAPH EXPERIMENT FOR THE APOLLO TELESCOPE MOUNT

Prepared Under Contract NAS5-3950 for
The National Space Science Data Center,
Goddard Space Flight Center

ATM-SKYLAB

HAO S-052

PREFACE

This document was prepared by the High Altitude Observatory Experiment Team for the Skylab - Apollo Telescope Mount S-052 White Light Coronagraph Experiment with contributions for the engineering and housekeeping data from Ball Brothers Research Corporation. Its only intended use is to assist the National Space Science Data Center in disseminating the scientific data from the S-052 experiment. It is not, nor was it intended to be, an exhaustive discussion of the experiment, the Skylab mission, or the data.

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I. EXPERIMENTAL PARAMETERS

A. Hardware Design

1. Introduction

The High Altitude Observatory experiment S-052 on the Skylab Apollo Telescope Mount was an externally occulted white light coronagraph. The experiment hardware design will be described below in sufficient detail to permit film data recipients to perform scientific data analysis. It is assumed that recipients will have procured spacecraft, mission operations, and other solar experiment data required to complement the S-052 data analysis.

The equipment for the WLCE comprises an externally occulted coronagraph (Fig. 1); the design is dictated by the need to reduce the instrumentally scattered light to levels on the order of 10^{-10} $B_{\odot}$, where $B_{\odot}$ is the mean solar radiance. Section I-B-5 presents the stray light measurements from the flight data. The optics housing contains the Lyot section of the coronagraph (Fig. 2), the function of which is as follows: Light incident upon the primary objective, O_1, is brought to a focus and occulted by an internal disk, D_4. The infinity focus plane is refocused on the film plane by the second objective, O_2. Light diffracted by the primary objective aperture is blocked by focusing on the aperture of O_2. This is accomplished by the field lens, F_1. The remaining instrumental stray light has its origin in scattered (surface and internal) at the primary objective, and this component is substantially reduced (about 10^{-4}) through the use of a series of three external occulting disks which shield the primary objective lens from

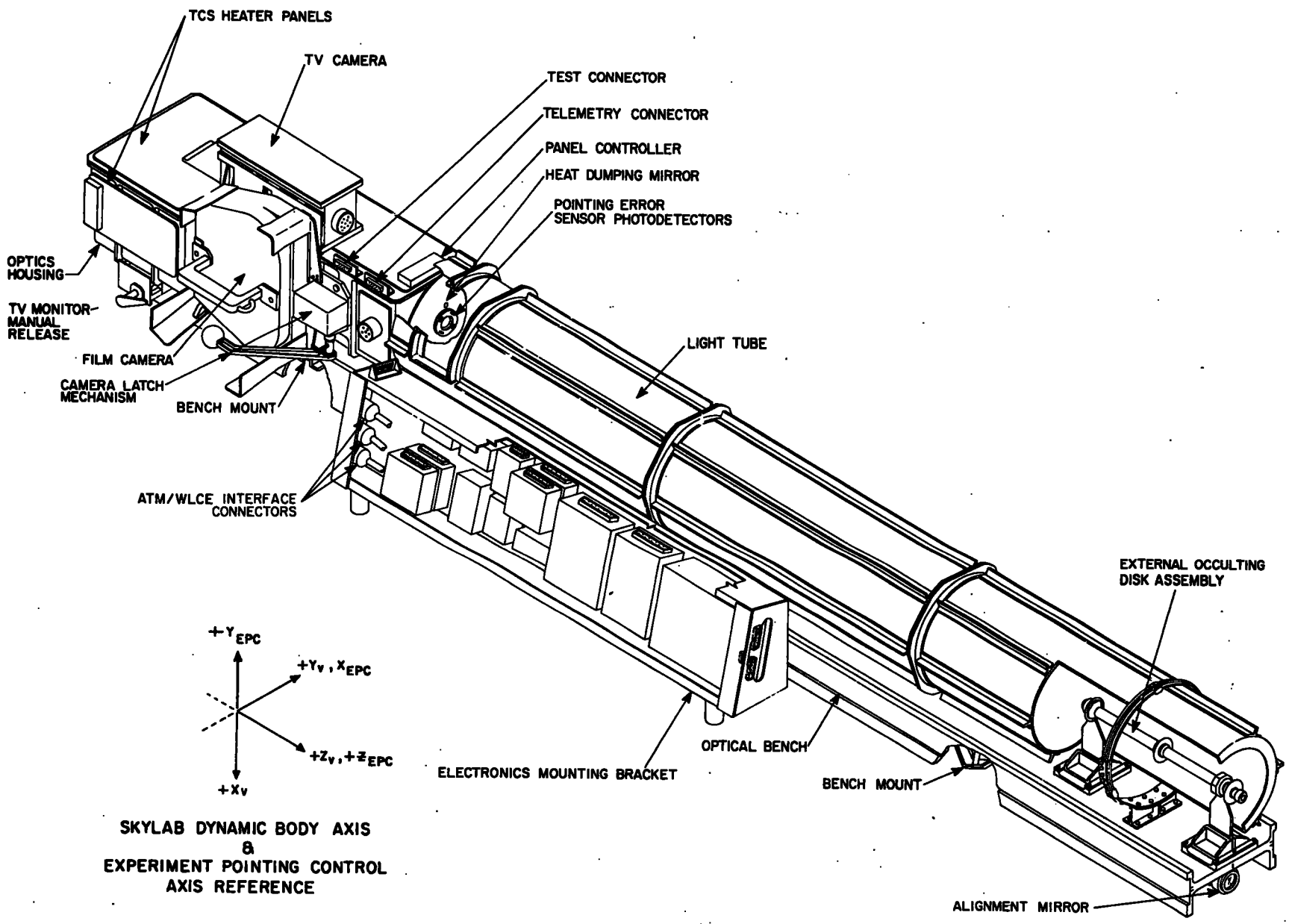

TCS HEATER PANELS
TV CAMERA
TEST CONNECTOR
TELEMETRY CONNECTOR
PANEL CONTROLLER
HEAT DUMPING MIRROR
POINTING ERROR SENSOR PHOTODETECTORS
OPTICS HOUSING
TV MONITOR-MANUAL RELEASE
FILM CAMERA
CAMERA LATCH MECHANISM
BENCH MOUNT
LIGHT TUBE
ATM/WLCE INTERFACE CONNECTORS
EXTERNAL OCCULTING DISK ASSEMBLY
+Y EPC
+Yv , XEPC
+Zv , +ZEPC
+Xv
ELECTRONICS MOUNTING BRACKET
OPTICAL BENCH
BENCH MOUNT
ALIGNMENT MIRROR
SKYLAB DYNAMIC BODY AXIS
&
EXPERIMENT POINTING CONTROL
AXIS REFERENCE

Figure 1

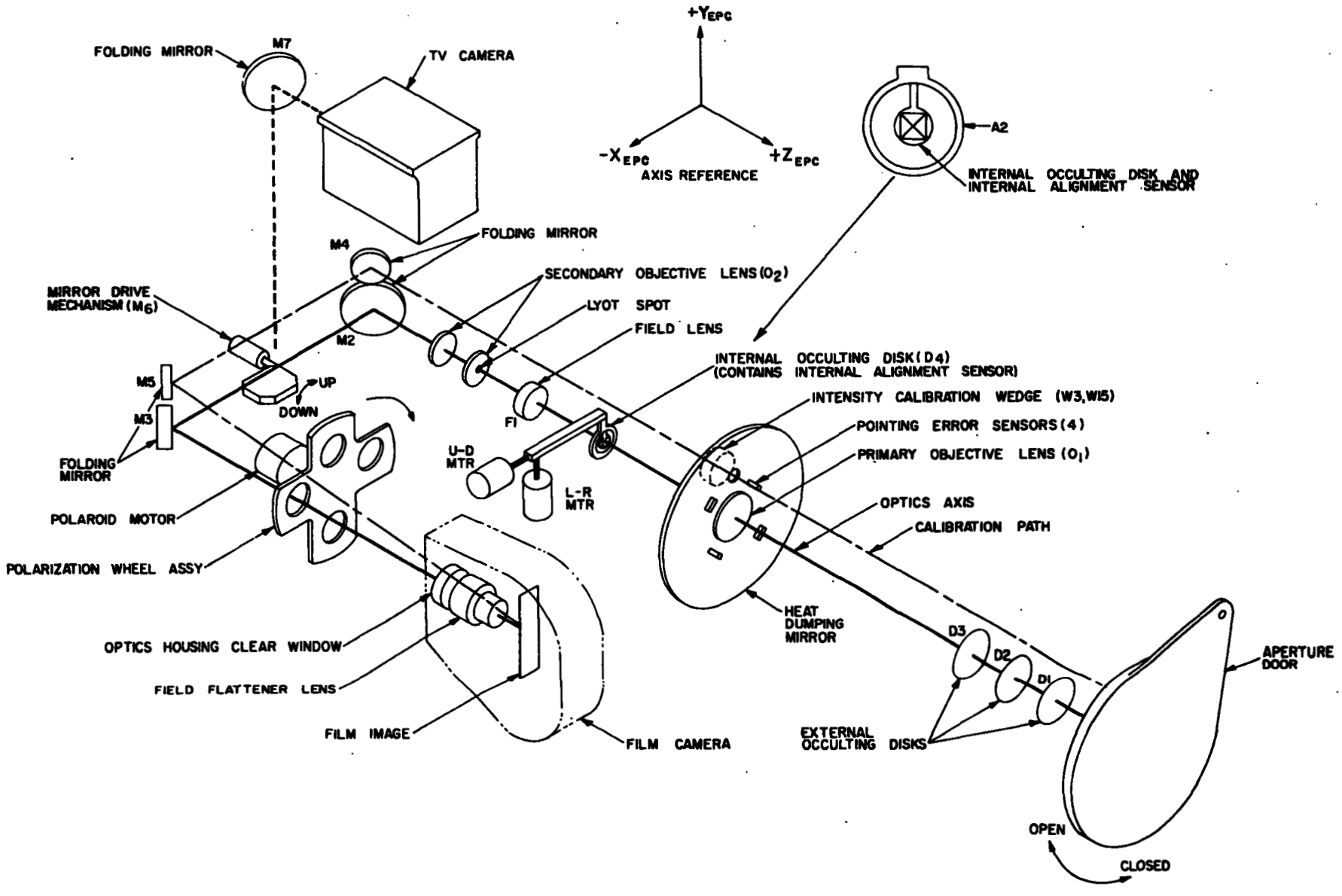

FOLDING MIRROR
M7
TV CAMERA
+Y EPC
-X EPC
+Z EPC
AXIS REFERENCE
A2
INTERNAL OCCULTING DISK AND INTERNAL ALIGNMENT SENSOR
M4
FOLDING MIRROR
SECONDARY OBJECTIVE LENS (O2)
MIRROR DRIVE MECHANISM (M6)
LYOT SPOT
FIELD LENS
M2
INTERNAL OCCULTING DISK (D4) (CONTAINS INTERNAL ALIGNMENT SENSOR)
M5
UP
DOWN
INTENSITY CALIBRATION WEDGE (W3, W15)
M3
F1
POINTING ERROR SENSORS (4)
U-D MTR
PRIMARY OBJECTIVE LENS (O1)
FOLDING MIRROR
L-R MTR
OPTICS AXIS
POLAROID MOTOR
CALIBRATION PATH
POLARIZATION WHEEL ASSY
HEAT DUMPING MIRROR
D3
D2
D1
APERTURE DOOR
OPTICS HOUSING CLEAR WINDOW
FIELD FLATTENER LENS
FILM IMAGE
FILM CAMERA
EXTERNAL OCCULTING DISKS
OPEN
CLOSED

Figure 2

APERTURE SIZES

A_0 - 20.0 (7.874) DIA. ENTRANCE APERTURE
A_1 - 3.2 (1.260) DIA.
A_2 - 1.98 (0.779) DIA.
A_3 - 1.65 (0.654) DIA.
A_4 - 0.46 (0.181) DIA.
A_5 - 0.545 (0.215) - DIA.
A_6 - $\frac{0.9982 (0.388)}{1.0008 (0.394)}$ DIA.

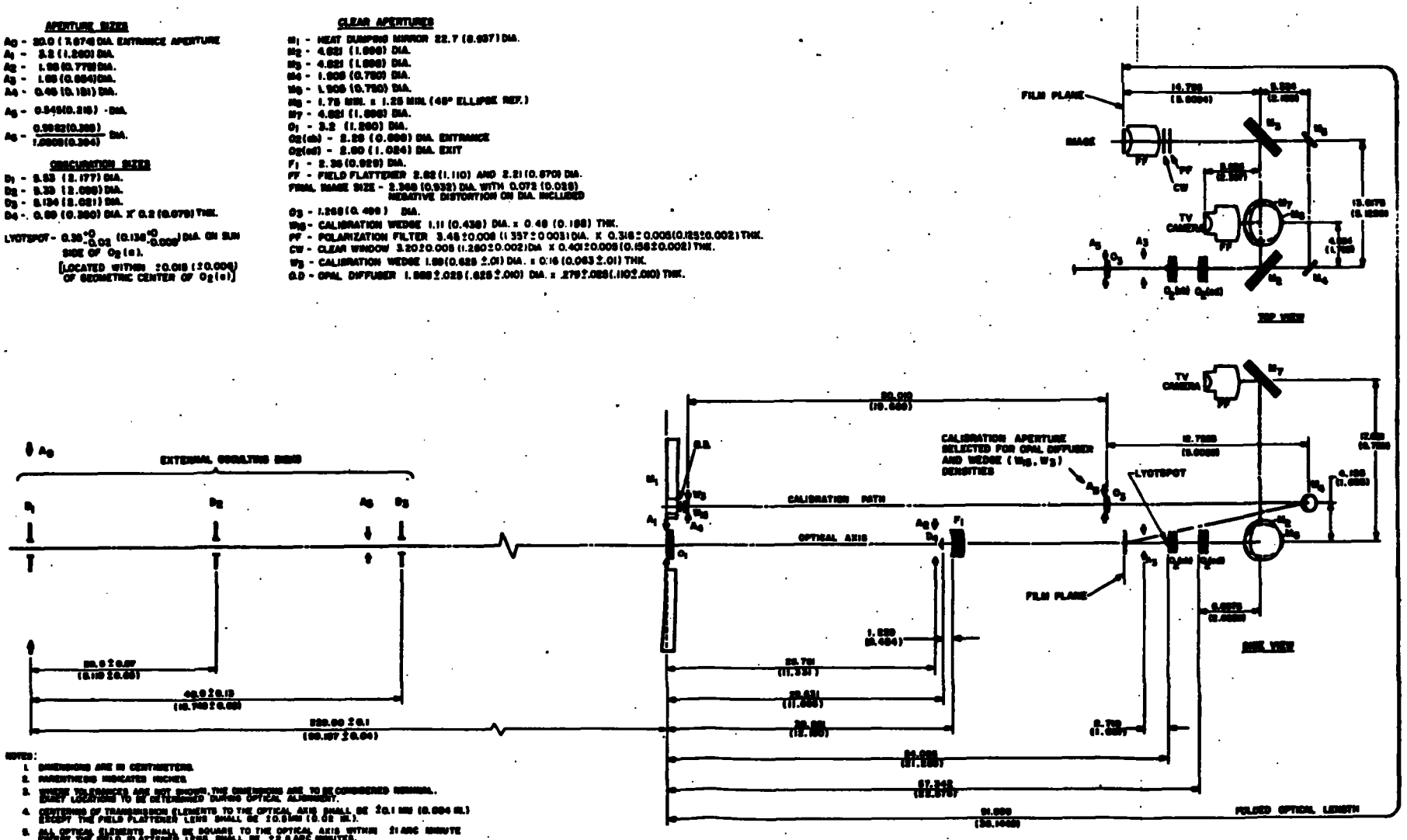
OBSCURATION SIZES

D_1 - 5.53 (2.177) DIA.
D_2 - 5.33 (2.098) DIA.
D_3 - 5.134 (2.021) DIA.
D_4 - 0.89 (0.350) DIA. X 0.2 (0.079) THK.

LYOTSPOT - $0.35^{+0}_{-0.02}$ ($0.138^{+0}_{-0.008}$) DIA. ON SUN SIDE OF O_2 (a).
[LOCATED WITHIN ±0.015 (±0.006) OF GEOMETRIC CENTER OF O_2 (a)]

CLEAR APERTURES

M_1 - HEAT DUMPING MIRROR 22.7 (8.937) DIA.
M_2 - 4.821 (1.898) DIA.
M_3 - 4.821 (1.898) DIA.
M_4 - 1.909 (0.750) DIA.
M_5 - 1.909 (0.750) DIA.
M_6 - 1.75 MIN. x 1.25 MIN. (45° ELLIPSE REF.)
M_7 - 4.821 (1.898) DIA.
O_1 - 3.2 (1.260) DIA.
O_2(ab) - 2.29 (0.898) DIA. ENTRANCE
O_2(ad) - 2.60 (1.024) DIA. EXIT
F_1 - 2.36 (0.929) DIA.
FF - FIELD FLATTENER 2.82 (1.110) AND 2.21 (0.870) DIA.
FINAL IMAGE SIZE - 2.368 (0.932) DIA. WITH 0.072 (0.028) NEGATIVE DISTORTION ON DIA. INCLUDED
O_3 - 1.268 (0.499) DIA.
W_{15} - CALIBRATION WEDGE 1.11 (0.438) DIA. x 0.48 (0.188) THK.
PF - POLARIZATION FILTER 3.45 ±0.008 (1.357 ±0.003) DIA. X 0.318 ±0.005 (0.125 ±0.002) THK.
CW - CLEAR WINDOW 3.20 ±0.005 (1.260 ±0.002) DIA X 0.401 ±0.005 (0.158 ±0.002) THK.
W_3 - CALIBRATION WEDGE 1.59 (0.625 ±.01) DIA. x 0.16 (0.063 ±.01) THK.
O.D - OPAL DIFFUSER 1.588 ±.025 (.625 ±.010) DIA. x .279 ±.025 (.110 ±.010) THK.



NOTES:
1. DIMENSIONS ARE IN CENTIMETERS.
2. PARENTHESIS INDICATES INCHES.
3. WHERE TOLERANCES ARE NOT SHOWN, THE DIMENSIONS ARE TO BE CONSIDERED NOMINAL. EXACT LOCATIONS TO BE DETERMINED DURING OPTICAL ALIGNMENT.
4. CENTERING OF TRANSMISSION ELEMENTS TO THE OPTICAL AXIS SHALL BE ±0.1 MM (0.004 IN.) EXCEPT THE FIELD FLATTENER LENS SHALL BE ±0.5 MM (0.02 IN.).
5. ALL OPTICAL ELEMENTS SHALL BE SQUARE TO THE OPTICAL AXIS WITHIN ±1 ARC MINUTE EXCEPT THE FIELD FLATTENER LENS SHALL BE ±2.8 ARC MINUTES.
6. FINE FOCUSING OF THE SYSTEM MAY BE PERFORMED BY MOVING O_2 ±2 MM ALONG THE OPTICAL AXIS.
7. THE CALIBRATION WEDGES SHALL BE CENTERED IN THE FILM PLANE TO WITHIN ±0.2 mm AS SEEN THROUGH THE FIELD FLATTENER LENS.

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Figure 3

direct sunlight. The stray light incident upon the primary objective is thrice diffracted around the edges of the external occulting disks. The external occulting disk assembly and the optics housing are affixed to an optical bench mounted on the ATM spar. The space between the front of the optics housing and the external disk assembly is enclosed in a light-baffle tube, and the experiment camera is located on the side of the optics housing. To prevent thermal imbalance, a heat-dumping mirror on the front of the optics housing forms a low quality solar image between the external occulting disks and the light tube to reflect solar heat back into space. The film camera contains a 750 ft. roll of Kodak Special Film 026-02, a Panatomic-X type emulsion with improved reciprocity characteristics. Sections I-B-2 and I-B-3 discuss film processing and the final calibration. The net angular resolution of the coronagraph-film combination has been measured to be 8.2 arc sec - corresponding to a distance of about 6000 km in the corona. A solar disk-illuminated step wedge, calibrated relative to the intensity of the mean solar disk over the range 10^{-8} $B_{\odot}$ to 10^{-10} $B_{\odot}$, is imaged on each picture frame by a supplementary optical system. A television system provides backup capabilities for some of the automatic experiment systems and for improving the quality of the data through direct observations.

The TV system utilizes a low-light-level camera at the image plane and presents a coronal image to the observer at the monitor. Section I-A-2 below will provide detailed information on

the optical design and polaroid filter orientation. Section I-A-3 defines the operational capabilities of the experiment for gathering the coronal data. The primary source of housekeeping data is the diode matrix exposed on each frame of data. Instructions for reading the diode matrix are provided in Section I-A-4.

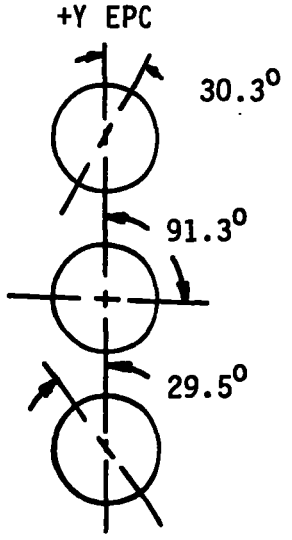
2. Optical Design

The major elements of the optical design of the White Light Coronagraph are the occulting elements, the pointing system, the optical elements, polaroid filters and the intensity calibration components. See Figure 3 for the optics layout.

Three external occulting disks (D_1, D_2 and D_3) mounted forward of the optics housing occult the solar disk and inner corona to 1.5 solar radii and block light diffraction. The distance between D_1 and O_1 is approximately 90.1 inches. A pointing error system consisting of four sensors mounted around O_1 sense the location of the external occulting disk shadow on O_1 and provide error signals to the astronaut. Although optically centered in ground test, a bias existed during orbital operations, see Section II-B-2. Attempts were made to overcome the bias during the mission and data users must therefore always factor pointing into their data reduction. The internal occulting disk (D_4) is mounted just forward of the field lens (F_1) and blocks diffraction from D_3. It is servo controlled to provide final adjustment capability for any internal misalignment between the primary objective lens (O_1) and the last external occulting disk (D_3). While the response of the servo system was linear over a

± 17 arc minute range, a dead band did exist whereby the error had to be greater than 7 arc seconds before the disk would move. It is therefore possible to have relatively large changes in the position of D_4 between closely time spaced pictures, and of course a corresponding change in both vignetting and stray light. Also, because the pointing did have a bias, see Section II-B-2, and was not always stable, the movement of D_4 must be included in all data reduction. The sizes of the optical elements and their corresponding apertures are defined in Figure 3. A lyot spot mounted on the forward surface of the secondary objective lens (O_2) blocks the multiple reflected image of D_3 from O_1. A polarization wheel assembly is placed in front of the field flattener lens. The wheel has one clear aperture and three polaroid apertures with polarization planes displaced approximately 120° from each other. The four wheel position locations are oriented as follows:

Wheel Position No.	Polaroid Axis Orientation with Respect to the EPC +Y Axis
WPC--Clear Aperture	None
WP2--Polaroid Aperture 1	30.3°
WP3--Polaroid Aperture 2	91.3°
WP4--Polaroid Aperture 2	29.5°



An auxillary optical system images a calibration wedge in the center of the occulting disk of each frame, see Figure 3. The 19 step wedge is calibrated in terms of the brightness of the mean solar disk before the mission, and the steps range from 10^{-8} $B_{\odot}$ to 10^{-10} $B_{\odot}$ in brightness. A full description of the final film calibration will be found in Section I-B-3.

3. Operational Capabilities

The White Light Coronagraph recorded film data in four separate operating modes. The standard patrol mode was the basic mode used for synoptic data accumulation. This mode provided three different exposure durations (9, 27 and 3 seconds) at the four different polaroid wheel positions, expending 12 frames for a duration of 5.5 minutes. The exposure durations and polaroid wheel positions were automatically sequenced and the mode was automatically terminated when the 12 exposures were completed. The extended standard patrol mode was identical to the standard patrol mode except the sequence duration was 16.2 minutes, thus repeating the standard patrol mode three times. The extended standard patrol mode automatically terminated after 16.2 minutes of data taking expending 36 frames. The continuous patrol mode took one exposure every 27.5 seconds sequencing through 9, 27 and 3 second exposures with the polaroid wheel locked in the clear position. The mode was manually terminated by the astronaut operator or by ground command. The fast scan mode took pictures at the maximum rate

possible, expending 72 frames in 16.2 minutes. Film exposures were sequenced through 27, 3 and 9 second exposures with 0.5 seconds between exposures and with the polaroid wheel locked in the clear position. The fast scan mode was automatically terminated after 16.2 minutes of data taking. Finally, it should be noted that the experiment was operable, through telemetry commands, in a limited fashion without an astronaut-observer. Both the standard patrol and fast scan modes of operation were initiated during unmanned and unattended phases of the mission, greatly extending the value of the synoptic observational program. Schematics illustrating the camera shutter operation and other characteristics of the mode operations are presented in Figure 4.

4. Film Format

Each frame contains an image of the solar corona and the occulting disks with out-of-focus occulting disk pylon, intensity calibration pattern, four fiducial marks and the diode matrix array. The film format characteristics and orientation are presented in Figure 5. A diode matrix array (6 columns by 12 rows) is printed on the film for each exposed data frame (see Figure 5). From the array, information about experiment operating mode, polaroid wheel position, WLC sun center pointing (PES) and instrument internal alignment (IAS), spacecraft roll (Gamma RR) and time of day (GMT) can be obtained. The format of the information presented in the diode matrix array and a typical example for reading the array is

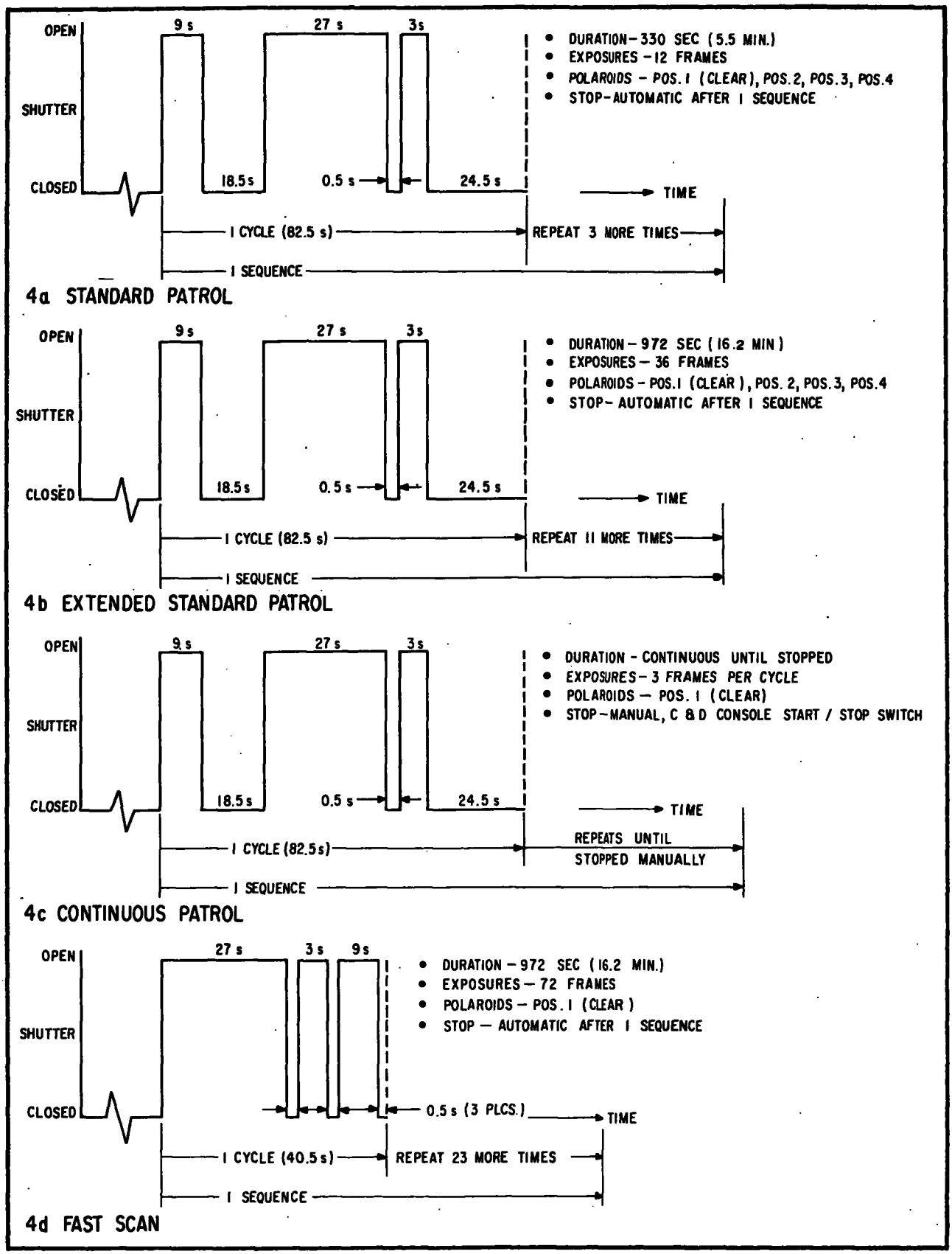

OPEN
SHUTTER
CLOSED
9 s
27 s
3s
18.5s
0.5 s
24.5 s
TIME
I CYCLE (82.5 s)
REPEAT 3 MORE TIMES
I SEQUENCE
• DURATION-330 SEC (5.5 MIN.)
• EXPOSURES -12 FRAMES
• POLAROIDS - POS.1 (CLEAR), POS.2, POS.3, POS.4
• STOP-AUTOMATIC AFTER I SEQUENCE
4a STANDARD PATROL
OPEN
SHUTTER
CLOSED
9s
27 s
3s
18.5s
0.5 s
24.5 s
TIME
I CYCLE (82.5 s)
REPEAT 11 MORE TIMES
I SEQUENCE
• DURATION - 972 SEC (16.2 MIN)
• EXPOSURES - 36 FRAMES
• POLAROIDS - POS.1 (CLEAR), POS. 2, POS.3, POS.4
• STOP- AUTOMATIC AFTER I SEQUENCE
4b EXTENDED STANDARD PATROL
OPEN
SHUTTER
CLOSED
9 s
27 s
3s
18.5s
0.5 s
24.5 s
TIME
I CYCLE (82.5s)
REPEATS UNTIL
STOPPED MANUALLY
I SEQUENCE
• DURATION - CONTINUOUS UNTIL STOPPED
• EXPOSURES - 3 FRAMES PER CYCLE
• POLAROIDS — POS. 1 (CLEAR)
• STOP-MANUAL, C & D CONSOLE START / STOP SWITCH
4c CONTINUOUS PATROL
OPEN
SHUTTER
CLOSED
27 s
3 s
9s
0.5 s (3 PLCS.)
TIME
I CYCLE (40.5 s)
REPEAT 23 MORE TIMES
I SEQUENCE
• DURATION - 972 SEC (16.2 MIN.)
• EXPOSURES - 72 FRAMES
• POLAROIDS - POS. I (CLEAR)
• STOP — AUTOMATIC AFTER I SEQUENCE
4d FAST SCAN

Figure 4

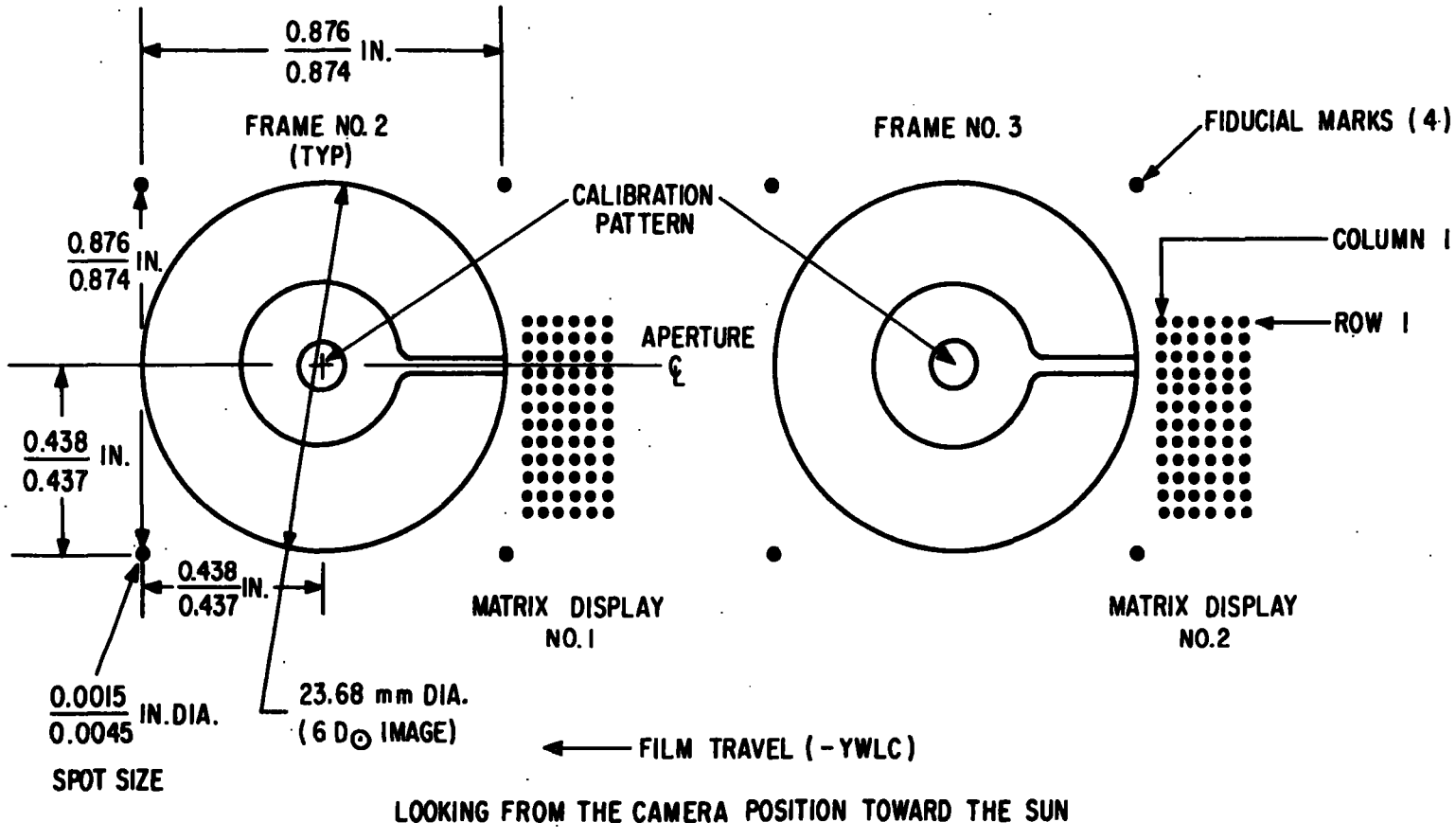
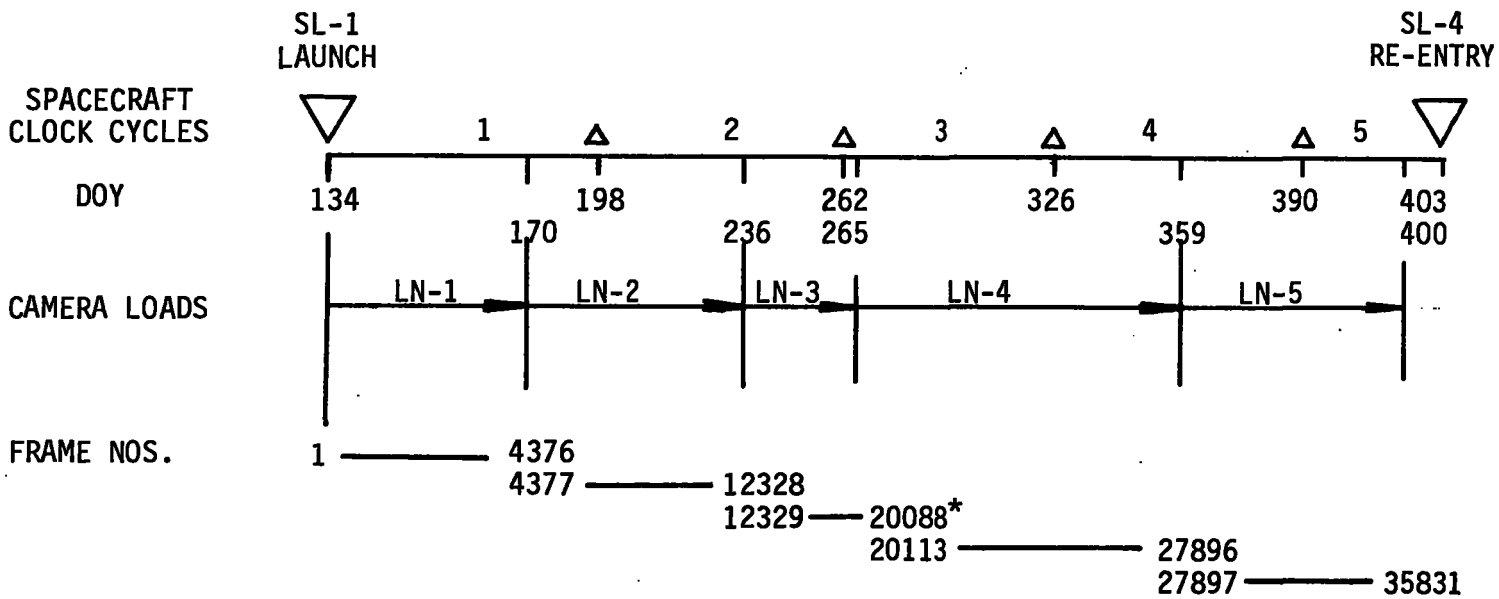

0.876/0.874 IN.
FRAME NO. 2 (TYP)
FRAME NO. 3
FIDUCIAL MARKS (4)
CALIBRATION PATTERN
COLUMN I
ROW I
0.876/0.874 IN.
APERTURE ℄
0.438/0.437 IN.
0.438/0.437 IN.
MATRIX DISPLAY NO. I
MATRIX DISPLAY NO. 2
0.0015/0.0045 IN. DIA.
SPOT SIZE
23.68 mm DIA. (6 D⊙ IMAGE)
FILM TRAVEL (-YWLC)
LOOKING FROM THE CAMERA POSITION TOWARD THE SUN

Figure 5

presented in Figures 6 and 7. Each of the parameters in the diode matrix array is discussed below:

a. Day of Year (DOY) and Greenwich Mean Time (GMT) - In determining the DOY from the diode matrix printout, it is necessary to recall that the duration of the Skylab spacecraft clock was only 64 days, thus the precise cycle of the spacecraft clock must be correlated with the WLC data frame. This information can be obtained from Figure 8 which presents a correlation between WLC camera load number, spacecraft clock cycle and day of year. Simply add this determination to the sum of the "ON" time of day T^D bits (i.e., T^{2D}, T^{4D}, T^{8D}, T^{16D} and T^{32D}). To determine GMT, sum the "ON" time of day hour (T^H), minute (T^M) and second (T^S) bits. The value for DOY and GMT is presented in Figure 7 for a typical S-052 diode matrix printout.



*Frames 20089 thru 20112 were utilized for exposure tests.

Figure 8

COLUMNS

Rows	1	2	3	4	5	6
1	ID	MODE	EXP #1	EXP #2	WHL POS 1	WHL POS 2
2	A^{1}	A^{2}	A^{4}	A^{8}	A^{16}	A^{32}
3	A^{64}	A^{128}	$T^{1/4S}$	$T^{1/2S}$	T^{1S}	T^{2S}
4	T^{4S}	T^{8S}	T^{1M}	T^{32S}	T^{16S}	T^{2M}
5	B^{1}	B^{2}	B^{4}	B^{8}	B^{16}	B^{32}
6	B^{64}	B^{128}	T^{4M}	T^{8M}	T^{16M}	T^{32M}
7	T^{1H}	T^{2H}	T^{4H}	T^{8H}	T^{16H}	T^{1D}
8	C^{1}	C^{2}	C^{4}	C^{8}	C^{16}	C^{32}
9	C^{64}	C^{128}	T^{2D}	T^{4D}	T^{8D}	T^{16D}
10	T^{32D}	$R^{21.09\ \widehat{Min}}$	$R^{42.19\ \widehat{Min}}$	$R^{84.38\ \widehat{Min}}$	$R^{168.75\ \widehat{Min}}$	$R^{337.5\ \widehat{Min}}$
11	D^{1}	D^{2}	D^{4}	D^{8}	D^{16}	D^{32}
12	D^{64}	D^{128}	$R^{675.0\ \widehat{Min}}$	$R^{1350\ \widehat{Min}}$	$R^{2700\ \widehat{Min}}$	R^{Sign}

Figure 6

Legend

ID BIT: ON during all WLC film camera operation.

MODE BIT:
ON - FAST SCAN
OFF - STANDARD, EXTENDED STANDARD OR CONTINUOUS

EXPOSURE BITS	#1	#2
3 Sec	ON	OFF
9 Sec	OFF	ON
27 Sec	ON	ON
Invalid	OFF	ON

WHEEL POS BITS	#1	#2
WPC	OFF	OFF
WP2	OFF	ON
WP3	ON	ON
WP4	ON	OFF

A BITS: PES (C_A)

D BITS: PES (C_D)

B BITS: IAS (HOR) (C_B)

C BITS: IAS (VER) (C_C)

T^D BITS: TOD

T^H, T^M, T^S BITS: GMT

R BITS: SPACECRAFT ROLL
SIGN - OFF + ON -

COLUMNS

ROWS	1	2	3	4	5	6
1	●	o	o	●	o	●
2	●	o	●	●	o	●
3	●	o	o	●	o	●
4	●	●	●	●	o	●
5	o	o	●	o	●	●
6	●	o	●	●	o	o
7	o	o	o	●	o	o
8	●	o	o	o	●	●
9	●	o	●	o	o	o
10	o	o	o	o	●	●
11	o	o	●	o	●	●
12	●	o	●	o	o	●

DOY/GMT(1) 264 / 08HR: 15MIN: 46.5SEC

ROLL (GAMMA RR)(2) -4218.75 ARC-MIN

MODE(3) STANDARD OR EXTENDED STANDARD

EXPOSURE 27 SECONDS

WHEEL POSITION WP2

PES (C_A)(4) +12 ARC-SEC (RIGHT)

PES (C_D)(4) +20 ARC-SEC (UP)

IAS (HOR) (C_B)(5) -3 ARC-SEC (LEFT)

IAS (VER) (C_C)(5) -12 ARC-SEC (DOWN)

Legend

● - ON or 1

o - OFF or 0

NOTES:

(1) See discussion, paragraph C.1 for determining the day of year (DOY) and Greenwich mean time (GMT).

(2) See discussion, paragraph C.2 for determining spacecraft roll.

(3) See discussion, paragraph C.3 for determining mode of operation.

(4) See discussion, paragraph C.4 for determining PES error.

(5) See discussion, paragraph C.5 for determining IAS error.

Figure 7

b. Spacecraft Roll (Gamma RR) - From the diode matrix, spacecraft roll can be determined to within 21.09 arc-minutes for any of four quadrants (i.e., I, 0° to 90°; II, 90° to 180°; III -90° to -180°; and IV, 0° to -90°.

Positive Roll Angle: If the roll angle is positive as determined by the roll sign bit (OFF), simply add the angle weights of all the "ON" bits for quadrant I, and add 5400 arc-minutes to this sum for quadrant II.

Negative Roll Angle: If the roll angle is negative as determined by the roll sign bit (ON), simply add the angle weights of all the "ON" bits and subtract from 5400 arc-minutes for quadrant IV, and subtract from 10,800 arc-minutes for quadrant III.

The specific quadrant for which Gamma RR is located is best determined from the MDRS data as recorded in the operations log book, see Section III-A-2. In general, the information recorded for Gamma RR in the log book may suffice for most investigations, however, if roll data verification is required, then Gamma RR determination from the diode matrix may be desired. For a discussion on the variation of spacecraft roll determination from the various references sources, see paragraph II-B-2, Gamma RR calculations. Gamma RR for a typical S-052 diode matrix printout is presented in Figure 7.

c. Mode - As indicated in the legend of Figure 6, the operating mode is determined to be either Fast Scan (Mode bit "ON") or, Standard, Extended Standard or Continuous (Mode bit "OFF"). Of course, if the polaroid wheel is cycling, then the Continuous mode

is eliminated and if the frame count exceeds 12 the Standard mode is eleiminated. (see Figures 4a, 4b and 4c)

d. Pointing Error Sensor (PES) - Determining the WLC PES error readout is somewhat complicated since the four pointing error sensors are located at 45 degrees with the coronagraph axis reference system and it is necessary to process the offset error signals through a coordinate conversion system to determine the offset pointing errors. Figure 9 presents a nomograph for conversion of PES diode matrix data, namely the binary A and D bits, to corresponding horizontal and vertical pointing errors in arc-seconds. Scales I and II on the left-hand side of Figure 9 provide a convenient means of converting from the 8-digit binary presentation of the film to decimal counts. In Scale II, the binary number is presented in a format similar to its presentation on the film: the equivalent decimal number is read to the left on Scale I. Use of the nomograph is best described with an example. Using the matrix presentation of Figure 7, the C_A counts in binary form are 10110110 (first digit is lease significant): entering Scale II of Figure 9 with this binary form number, point A is established at the decimal number 109 on Scale I. The C_D counts in binary form are 00101110: entering Scale II with this number, its decimal equivalent is read at D on Scale I as 116. Entering Scale V with 116 establishes point D_H. A straight line through A and D_H intersects Scale II at +12: the horizontal pointing error ε_H is +12 arc-seconds (right). Entering Scale VI with 116 established point D_V. A straight line through A

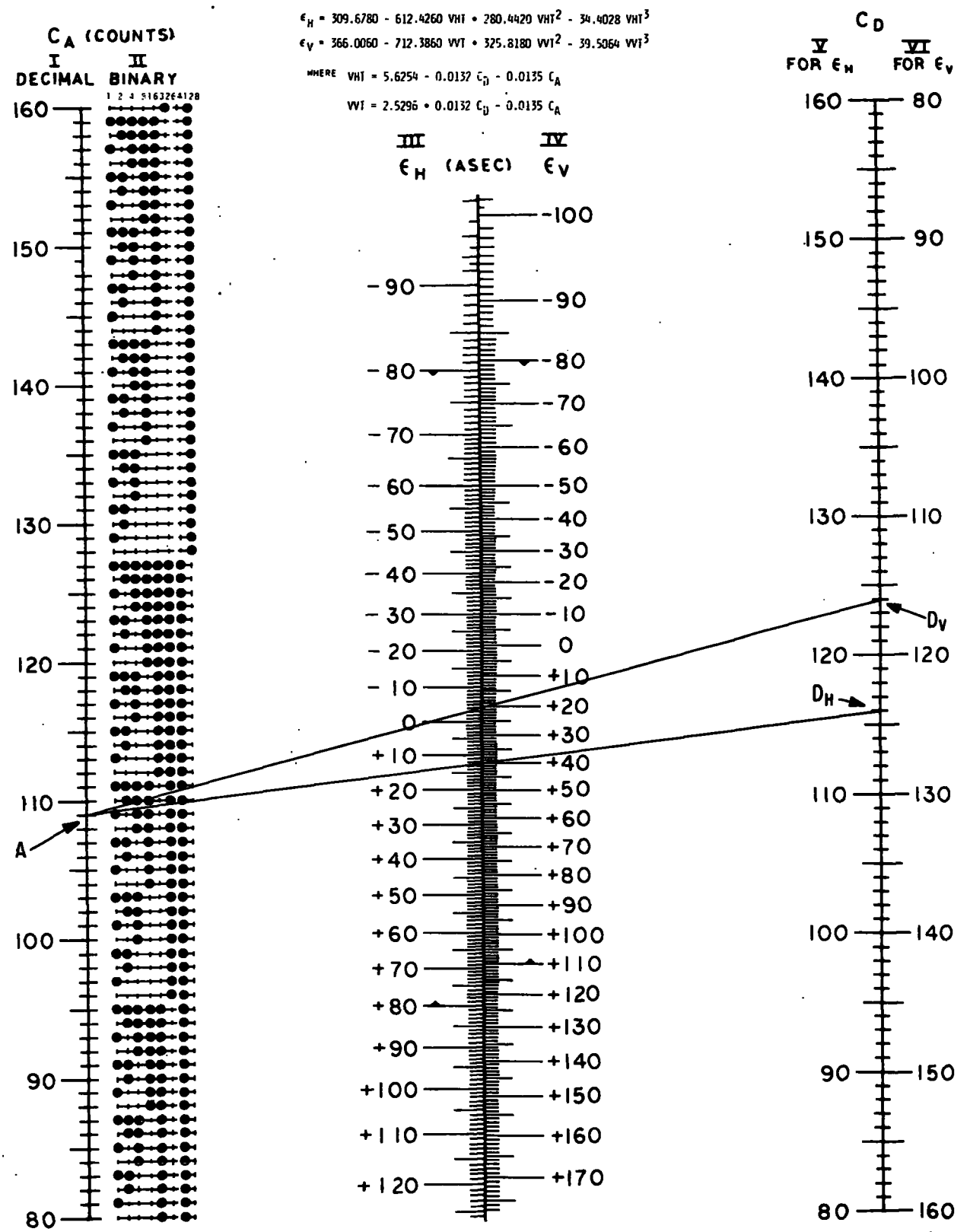

ϵ_H = 309.6780 - 612.4260 VHT + 280.4420 VHT^2 - 34.4028 VHT^3
ϵ_V = 366.0060 - 712.3860 VVT + 325.8180 VVT^2 - 39.5064 VVT^3
WHERE VHT = 5.6254 - 0.0132 C_D - 0.0135 C_A
VVT = 2.5296 + 0.0132 C_D - 0.0135 C_A
C_A (COUNTS)
I DECIMAL
II BINARY
III ϵ_H (ASEC)
IV ϵ_V
C_D
V FOR ϵ_H
VI FOR ϵ_V
A
D_V
D_H

Figure 9

and D_V intersects Scale IV at +20: the vertical pointing error ε_V is +20 arc-seconds (up).

If desired, the C_A and C_D counts can be converted to decimal separately without the use of Scale II, (i.e., $C_A = 1 + 4 + 8 + 32 + 64 = 109$). Entering the nomograph with Decimal C_A and C_D counts on Scales I, V and VI as above to obtain points A, D_H and D_V, and hence ε_H and ε_V.

e. Internal Alignment Error Sensor (IAS) - Determining the WLC IAS error readout is more straight forward than that of the pointing error sensor. Table 1 presents data for conversion of IAS diode matrix data, namely the binary B and C bits as shown in Figure 7, to corresponding horizontal and vertical internal alignment errors in arc-seconds. Since there is no coordinate conversion, the data in the table can be listed versus a single argument, C_B counts for horizontal error (δ_H) and C_C counts for vertical error (δ_V). Column I of Table 1 presents C_B or C_C in decimal form, and Column II presents them in eight digit binary form similar to the diode matrix format. The corresponding δ_H and δ_V values are presented in Columns III and IV, respectively. For an example, use the binary B and C bit diode presentation of Figure 7. Entering the table through Column II with the B binary bit number 00101110, the horizontal internal alignment error, δ_H of -3 arc-seconds (left) is read in Column III. Similarly, entering Column II with the C binary number 10001110, the vertical internal alignment error, δ_V, of -12 arc-seconds (down) is read in Column IV. If it is more

Table 1

DIODE MATRIX READOUT TO IAS ALIGNMENT TABLE

I DECIMAL	II BINARY (lsb)	III (C_B or C_C) (ASEC)	IV (δ_H, δ_V) (ASEC)	I DECIMAL	II BINARY (lsb)	III (C_B or C_C) (ASEC)	IV (δ_H, δ_V) (ASEC)	I DECIMAL	II BINARY (lsb)	III (C_B or C_C) (ASEC)	IV (δ_H, δ_V) (ASEC)	I DECIMAL	II BINARY (lsb)	III (C_B or C_C) (ASEC)	IV (δ_H, δ_V) (ASEC)
80	00001010	-85	-77	100	00100110	-41	-44	120	00011110	6	6	140	00110001	50	60
81	10001010	-83	-76	101	10100110	-38	-42	121	10011110	8	9	141	10110001	52	63
82	01001010	-81	-75	102	01100110	-36	-40	122	01011110	11	11	142	01110001	54	65
83	11001010	-79	-74	103	11100110	-34	-38	123	11011110	13	14	143	11110001	56	68
84	00101010	-76	-73	104	00010110	-31	-35	124	00111110	15	17	144	00001001	58	70
85	10101010	-74	-71	105	10010110	-29	-33	125	10111110	18	20	145	10001001	59	72
86	01101010	-72	-70	106	01010110	-27	-30	126	01111110	20	23	146	01001001	61	75
87	11101010	-70	-69	107	11010110	-24	-28	127	11111110	22	25	147	11001001	63	77
88	00011010	-68	-67	108	00110110	-22	-25	128	00000001	24	28	148	00101001	65	79
89	10011010	-66	-66	109	10110110	-19	-23	129	10000001	27	31	149	10101001	66	81
90	01011010	-64	-64	110	01110110	-17	-20	130	01000001	29	34	150	01101001	68	83
91	11011010	-61	-62	111	11110110	-15	-18	131	11000001	31	36	151	11101001	70	85
92	00111010	-59	-61	112	00001110	-12	-15	132	00100001	33	39	152	00011001	71	87
93	10111010	-57	-59	113	10001110	-10	-12	133	10100001	35	42	153	10011001	73	89
94	01111010	-55	-57	114	01001110	-7	-10	134	01100001	38	45	154	01011001	74	91
95	11111010	-52	-55	115	11001110	-5	-7	135	11100001	40	47	155	11011001	76	93
96	00000110	-50	-53	116	00101110	-3	-4	136	00010001	42	50	156	00111001	77	95
97	10000110	-48	-51	117	10101110	0	-1	137	10010001	44	52	157	10111001	78	97
98	01000110	-46	-49	118	01101110	1	0	138	01010001	46	55	158	01111001	80	98
99	11000110	-43	-47	119	11101110	4	3	139	11010001	48	58	159	11111001	81	100

convenient, the horizontal and vertical binary bit numbers could be converted to decimal equivalents of 116 and 113, respectively, in which case the table is entered through Column I, δ_H and δ_V being read in Columns III and IV, respectively as before.

B. Experiment Results and Data Use

1. Introduction

The format of the results from the coronagraph has been described in Part A. In this section, we summarize the necessary experiment parameters and characteristics of the results, including calibration, so as to permit the user to extract information from the data supplied the NSSDC.

The total radiance, B_{total}, recorded on the film can be expressed as

$$B_{total} = V\ V_{K+F} + B_{stray}$$

where B_{K+F} is the radiance of the K and F coronal components, B_{stray} is the radiance of the instrumentally induced stray light, and V is the instrument vignetting function (see Section I-B-4), describing the variation of the coronagraph obscuration produced by the external and internal occulting disks and stops.

The specification of the coronal component requires then, the measurement of the recorded radiance, employing conventional techniques of photographic photometry; the subtraction of the stray light, and the specification of the vignetting function V. The separation of the electron and dust scattered components of the coronal

light is accomplished by well-known techniques and will not be discussed herein.

This section provides the necessary information to permit the reduction procedures to be carried out, and material to enable assessment of the accumulated errors resulting from these procedures. Section I-B-2 summarizes the characteristics of the experiment flight film (Eastman 026-02) and the copy film being supplied the NSSDC (Eastman SO-355), and the processing procedures employed with each film. Section I-B-3 includes information on the photomatic calibration of the experimental results - the role of the calibration step wedge imaged on each frame, its pre-flight calibration and flight appearance, and instructions to be carefully followed when users scan the wedge.

The results of pre-flight measurements of the vignetting function, V, are summarized in Section I-B-4. It is noted therein, that the pre-flight measurements should specify accurately the function V over the range 2.5 to 5 $R_\odot$ from sun center; at heights outside that range additional analyses utilizing ground base and airborne observations of the 30 June 1973 total eclipse were required. The analysis using the ground based eclipse observations is summarized at the conclusion of Section I-B-4. Airborne eclipse results will be analyzed at a later date. Finally, Section I-B-5 summarizes the determination of the instrumental stray light, B_{stray}, for the case of the most common pointing of the coronagraph - the "compromise pointing" (see Section II-B-2).

2. Films and Processing

a. 026-02 - The Flight Film

Each flight camera contained a 750 foot roll of 026-02 film. This film was manufactured specially for the white light coronagraph experiment by the Eastman Kodak Company. It is a 3400 (Pan-X) type emulsion on a 2 mil estar base. It was designed for minimal reciprocity losses at exposure times up to 30 seconds. Reciprocity curves for the film are shown in Figure 10, spectral sensitivity curves in Figure 11, and an MTF curve in Figure 12. Because the film MTF is comparable to the optical transfer function of the optics at all frequencies, the film is one of the limiting factors in determining instrumental resolving power. Further, as can be seen in Figure 13 the instrumental spectral bandpass is limited at long wavelengths by the spectral response of the films, whereas at short wavelengths the optics transmission is the limiting factor.

A program was initiated at the Aerospace Corporation two years before launch to study and develop procedures for the processing of the 026-02 flight film. This program included a series of tests to determine the optimum chemistry in which to develop the film. The final developer chemistry actually used is detailed in Table 2. It was chosen because it produced the best combination of increased film sensitivity, decreased fog, and high gamma without compromising the MTF of the film.

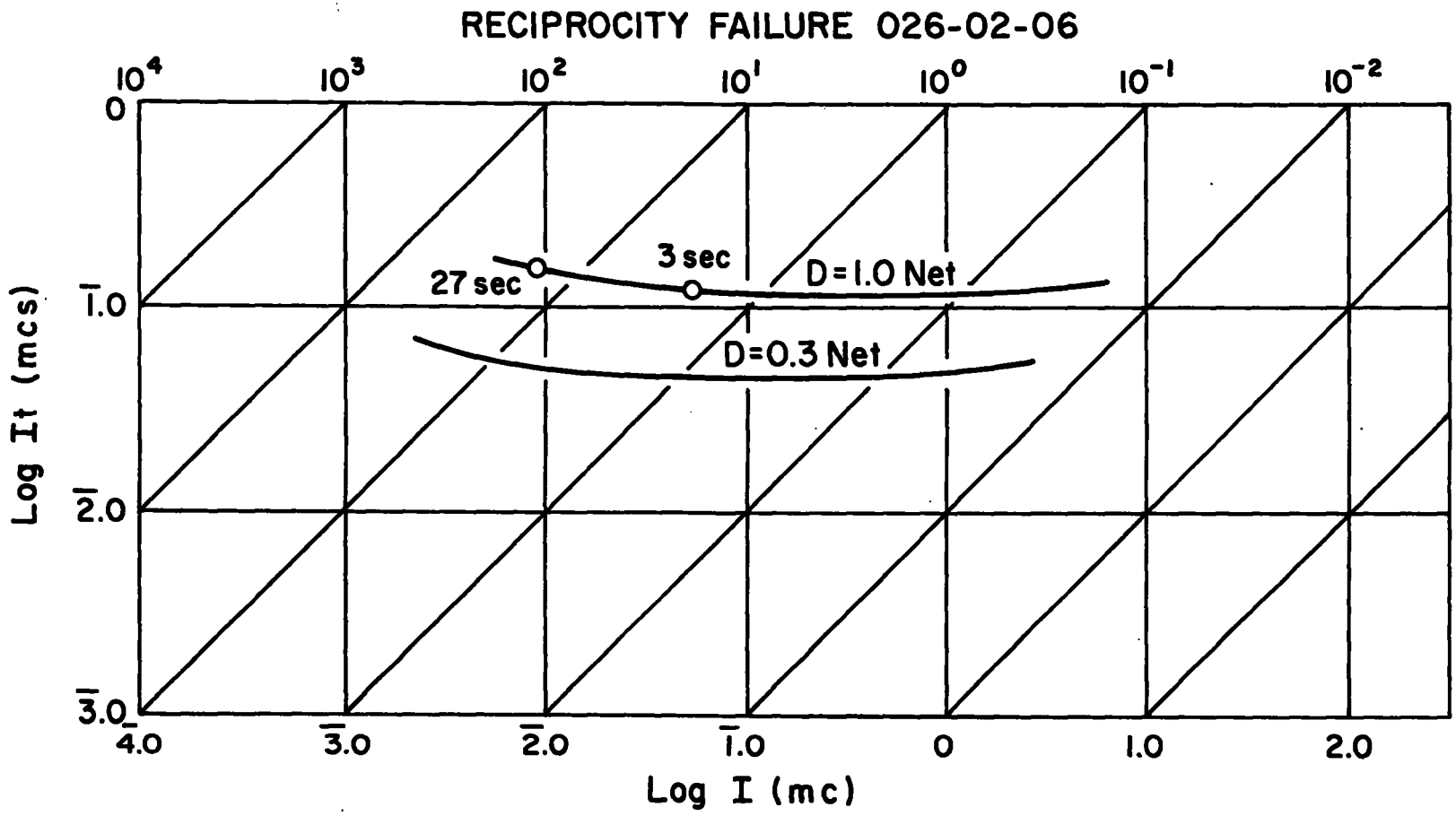

RECIPROCITY FAILURE 026-02-06
10^4
10^3
10^2
10^1
10^0
10^{-1}
10^{-2}
0
$\bar{1}.0$
$\bar{2}.0$
$\bar{3}.0$
Log It (mcs)
27 sec
3 sec
D=1.0 Net
D=0.3 Net
$\bar{4}.0$
$\bar{3}.0$
$\bar{2}.0$
$\bar{1}.0$
0
1.0
2.0
Log I (mc)

Figure 10

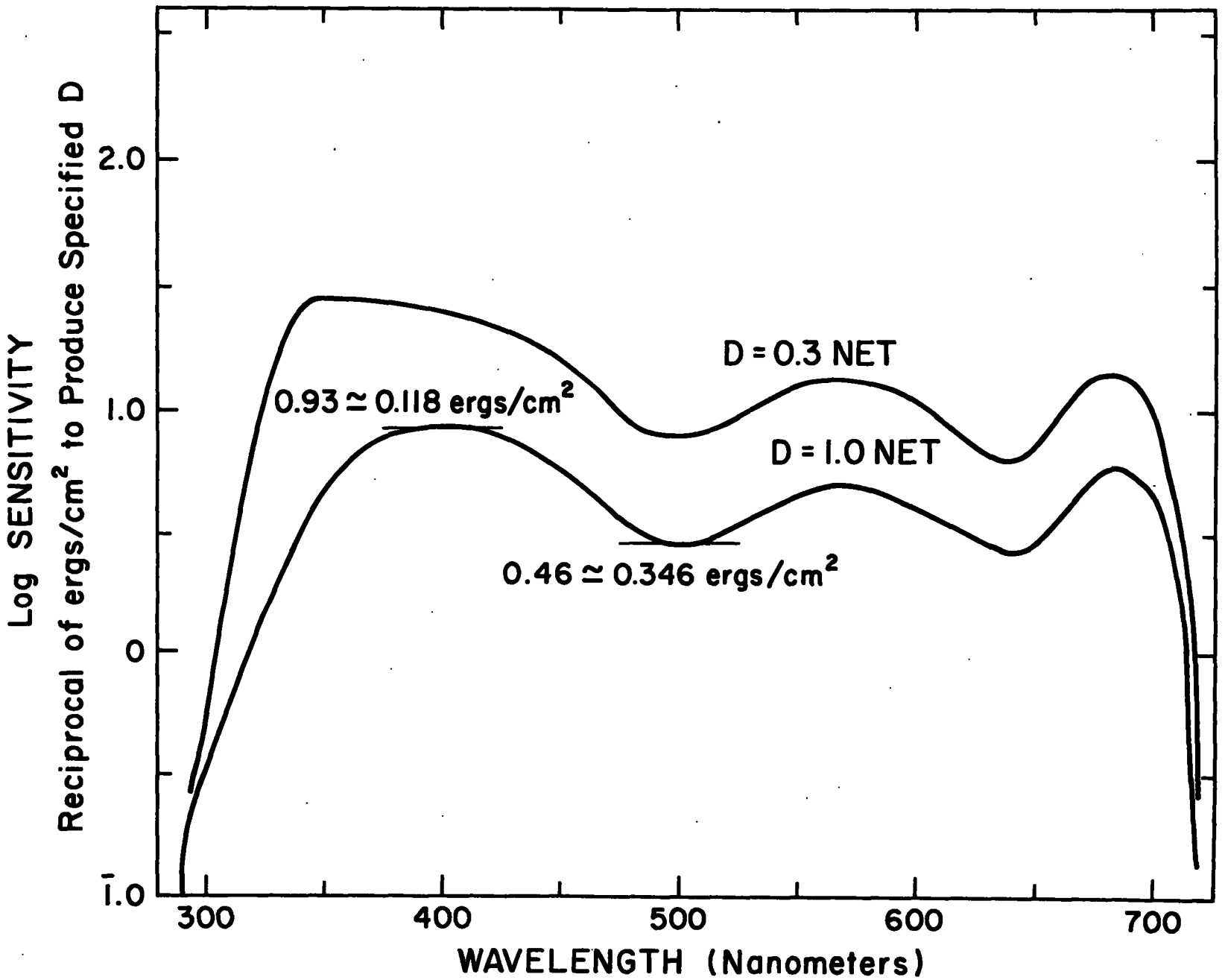

Log SENSITIVITY
Reciprocal of ergs/cm² to Produce Specified D
2.0
1.0
0
$\bar{1}$.0
300
400
500
600
700
WAVELENGTH (Nanometers)
D = 0.3 NET
D = 1.0 NET
0.93 ≃ 0.118 ergs/cm²
0.46 ≃ 0.346 ergs/cm²

Figure 11

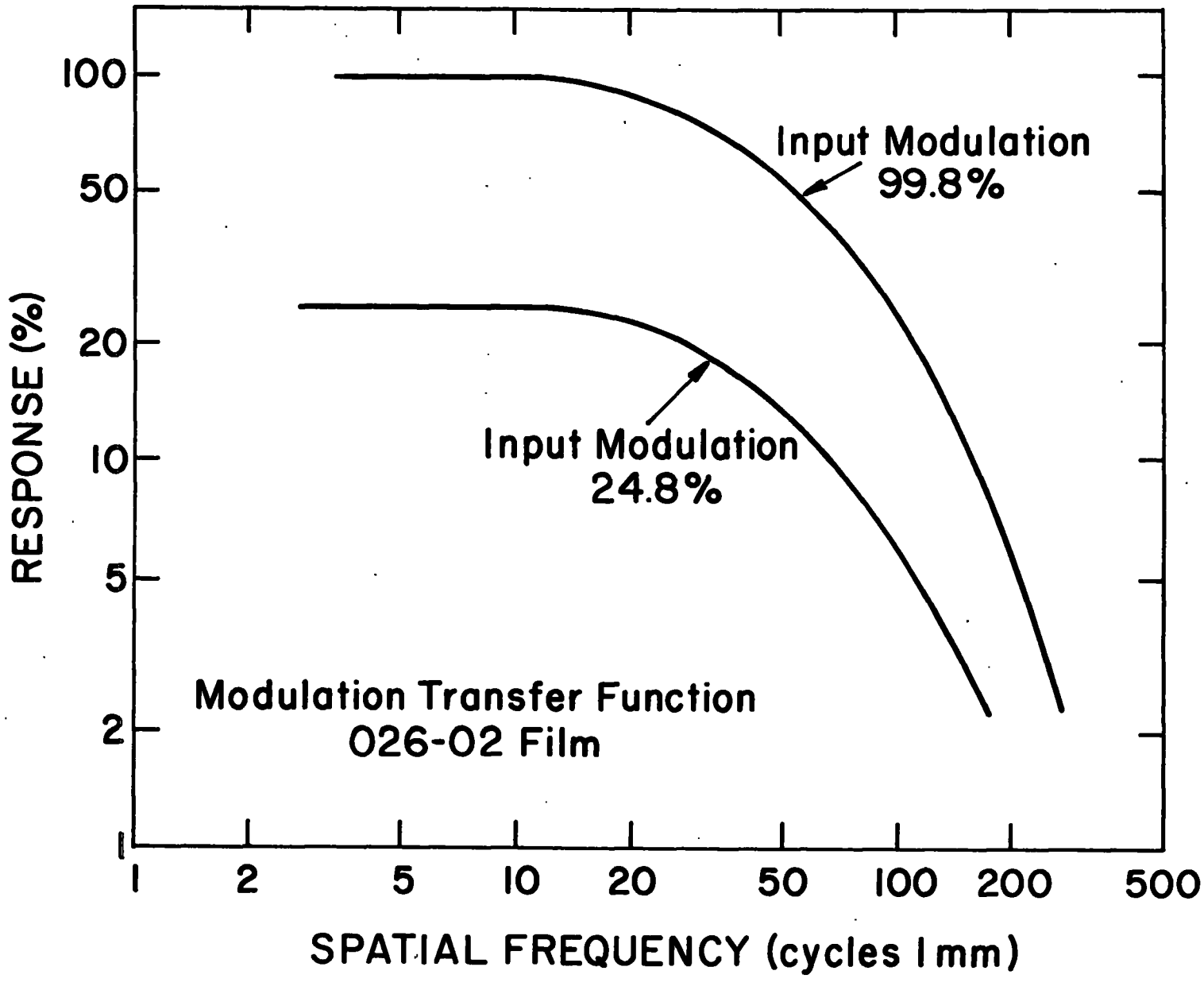

RESPONSE (%)
100
50
20
10
5
2
1
Input Modulation
99.8%
Input Modulation
24.8%
Modulation Transfer Function
026-02 Film
1
2
5
10
20
50
100
200
500
SPATIAL FREQUENCY (cycles I mm)

Figure 12

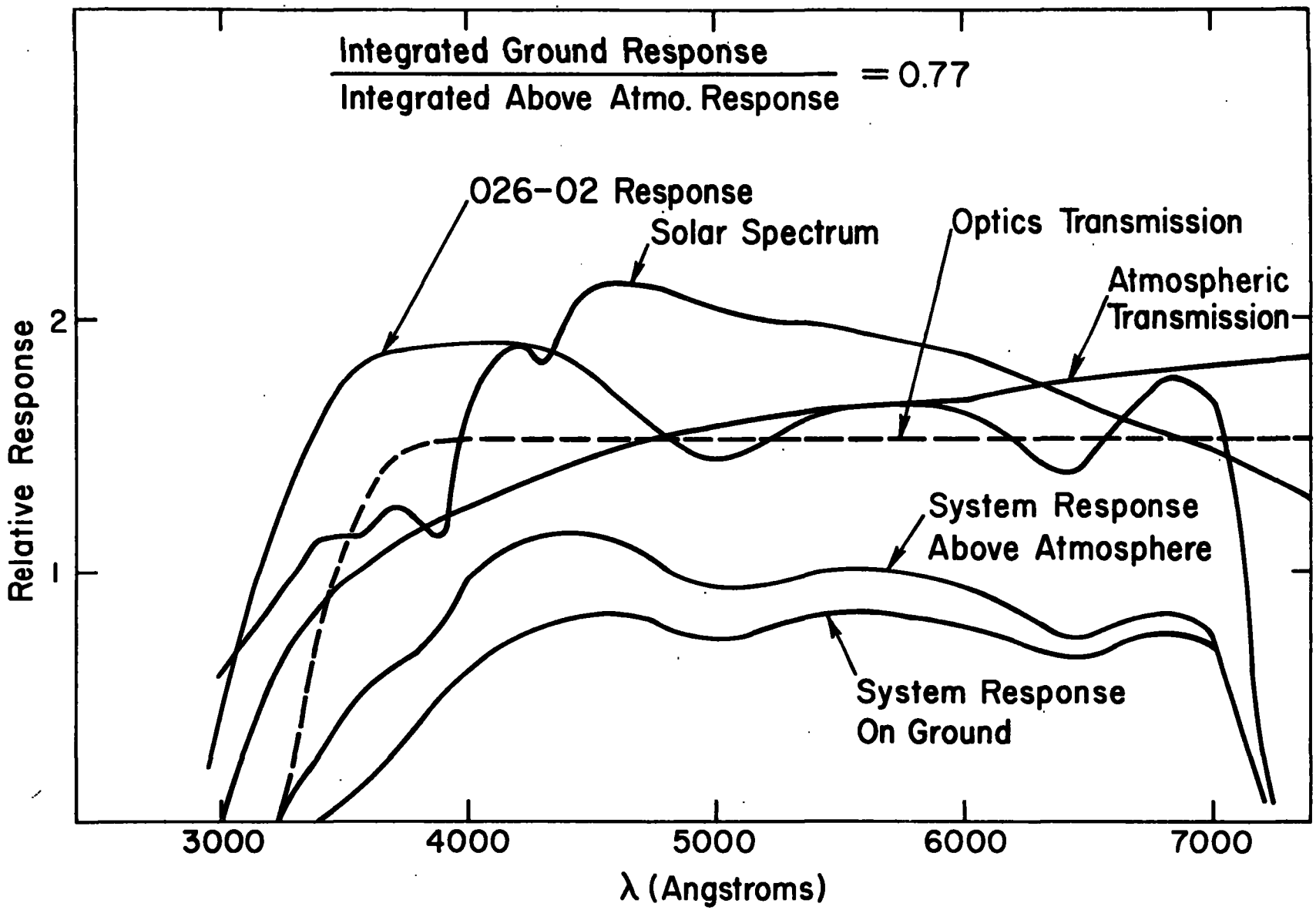

Integrated Ground Response
Integrated Above Atmo. Response
= 0.77
026-02 Response
Solar Spectrum
Optics Transmission
Atmospheric Transmission
System Response Above Atmosphere
System Response On Ground
Relative Response
2
1
3000
4000
5000
6000
7000
λ (Angstroms)

Figure 13

TABLE 2

026-02 Developer Chemistry

Questex	1 gram
Metol	2 gram
Potassium Sulfite	90 gram
Hydroquinone	20 gram
Potassium Carbonate	50 gram
Potassium Bromide	2 gram
0.1% Potassium Iodide	9 mil
Water to make	1 liter

Replenisher

Metol	2 gram
Potassium Sulfite	90 gram
Hydroquinone	20 gram
Potassium Carbonate	50 gram
Water to make	1 liter

Fixer

Ansco Sur-Fix

Except for test strips which were removed from the heads and tails of the flight rolls, the flight film was processed at the Aerospace Corporation in a Fulton continuous processing machine. Development, fixing, wash, etc. times as well as replenishment rates are documented in Table 3. All flight rolls were developed in an identical fashion except that the rinse water between the developer and the fixer was replaced by Kodak stop bath SB-5 for rolls 4 and 5. This change was made to prevent reticulation of the emulsion gel, a troublesome problem for rolls 1, 2, and 3. A paper by Poland and Gosling (1975) discusses the reticulation problem and its cure.

A series of tests were conducted to establish the uniformity of processing both across and along a 750 foot roll of the 026-02 film. These tests indicated that the processing was uniform to within .02 in diffuse density at all points on the film. Standard tests were also conducted to assure that the film was developed, fixed, and washed adequately for archival storage. Representative characteristic curves for the 026-02 film are displayed in Figure 14.

A study was performed after the end of the Skylab mission to establish how well the 026-02 film survived its long exposure to the space environment. The results of this study are contained in a paper by Gosling and Avant (1975). To summarize that study: the film survived prolonged exposure to the space environment in hermetically sealed cameras with only slight deleterious effects. After 270 days in orbit, radiation fog amounted to a density of 0.2 above the nominal base plus fog, the loss in relative log exposure at a density of 0.6 above base plus fog was .08, and the grain noise increased by about ten percent.

TABLE 3

026-02 Processing Data

Development time	8 minutes
Replenishment rate	24 ml/min
Temperature	70°F
Stop bath time	30 sec
Fixer	3 minutes

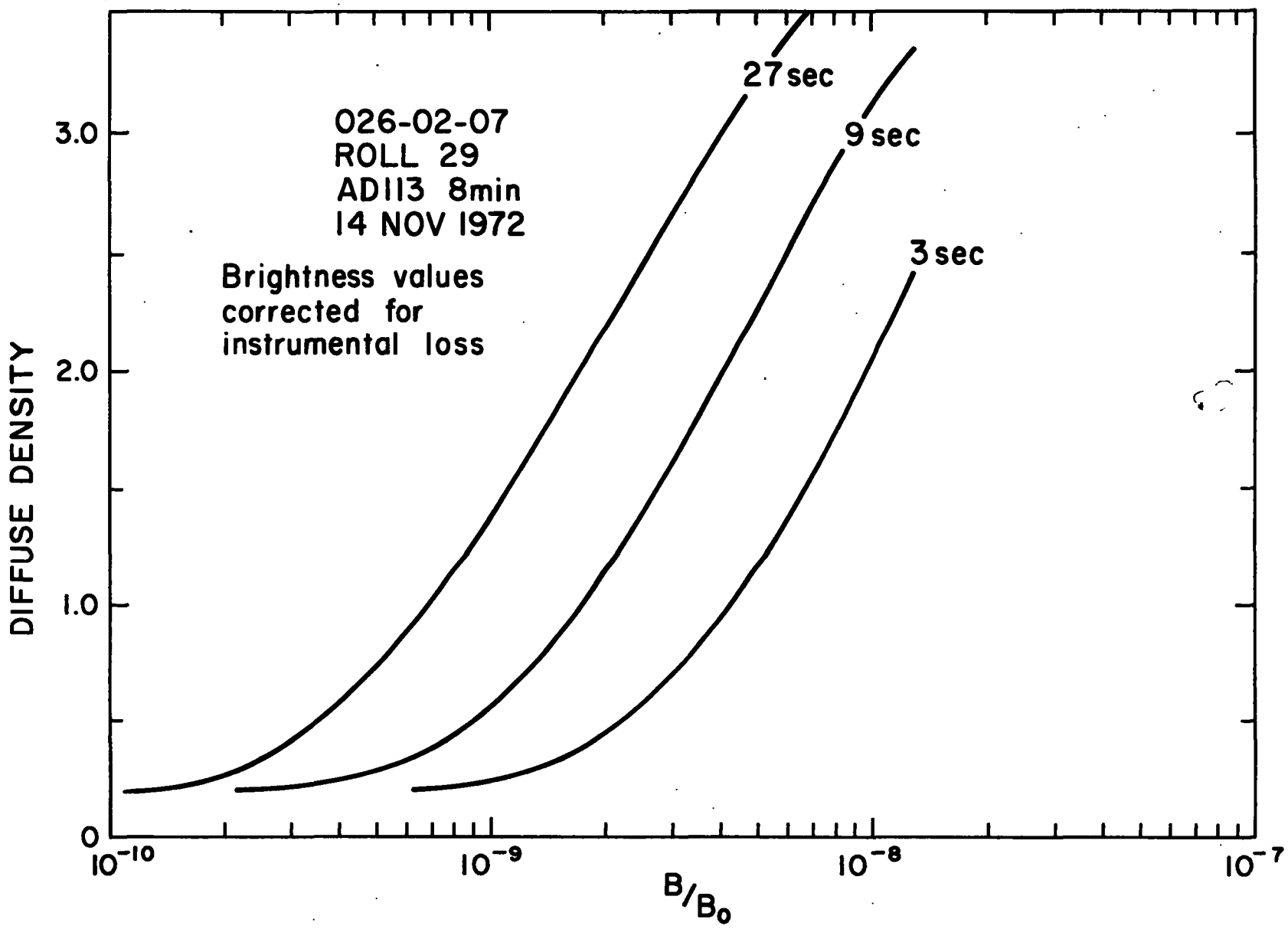

026-02-07
ROLL 29
AD113 8min
14 NOV 1972
Brightness values
corrected for
instrumental loss
27 sec
9 sec
3 sec
DIFFUSE DENSITY
3.0
2.0
1.0
0
10^{-10}
10^{-9}
10^{-8}
10^{-7}
B/B_0

Figure 14

b. SO-355

One of the films used for copying the flight film is Eastman Kodak SO-355, a gamma 1 negative film. It is this film that is being supplied to the NSSDC. The MTF curve for the 355 film is shown in Figure 15; comparison with Figure 12 shows that little detail is lost in copying the flight original onto the 355 film. The copies were made by contact printing with HAO's editor-printer machine. For any particular roll of copy film the exposure was optimized for either the 9 sec clear or the 27 sec clear exposure on the original 026-02. (The film being supplied to the NSSDC is optimized for the 9 sec clear.) The films were processed at Aerospace Corporation in their Fulton continuous processor. Development times and chemistry are provided in Table 4.

Selected frames of an optimized 9 sec clear 355 copy of load 1 were digitized with the HAO microdensitometer. Characteristic curves for these frames as determined from the flight calibration wedge are shown in Figures 16 & 17. These curves exhibit negative slopes because the polarity of the image is reversed from that of the original. Specular density is the quantity plotted on the vertical axis because that is the quantity determined by a scanning microdensitometer. (By way of comparison, the densities plotted in Figure 14 are diffuse density as measured with a Macbeth densitometer.) The specular density measured is a function of the focal ratio of the densitometer; therefore, other microdensitometers will measure other specular densities for these same frames. That is, the characteristic curves shown in Figure 16 & 17 should not be used other than as examples of the type of curves obtained from the 355 film.

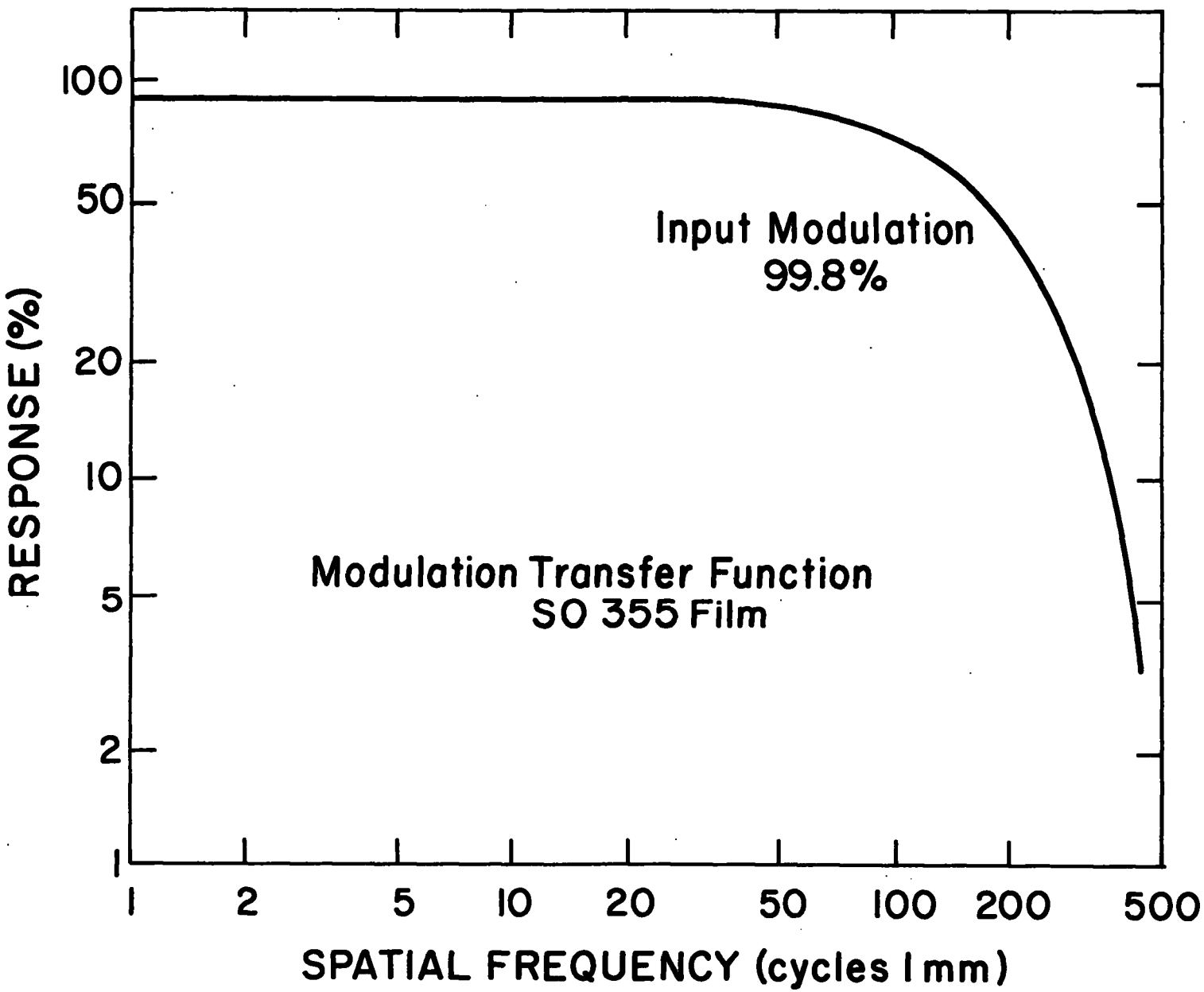

Input Modulation
99.8%
Modulation Transfer Function
SO 355 Film
RESPONSE (%)
100
50
20
10
5
2
1
1
2
5
10
20
50
100
200
500
SPATIAL FREQUENCY (cycles I mm)

Figure 15

TABLE 4

S0355 Processing Data

Developer	Kodak D-19
Replenisher	Kodak D-19R
Temperature	$70^{o}F$
Development Time	2½ minutes
Replenishment Rate	60 Ml/min
Stop Water	30 seconds
Fixer - Ansco Sur-fix	3 minutes

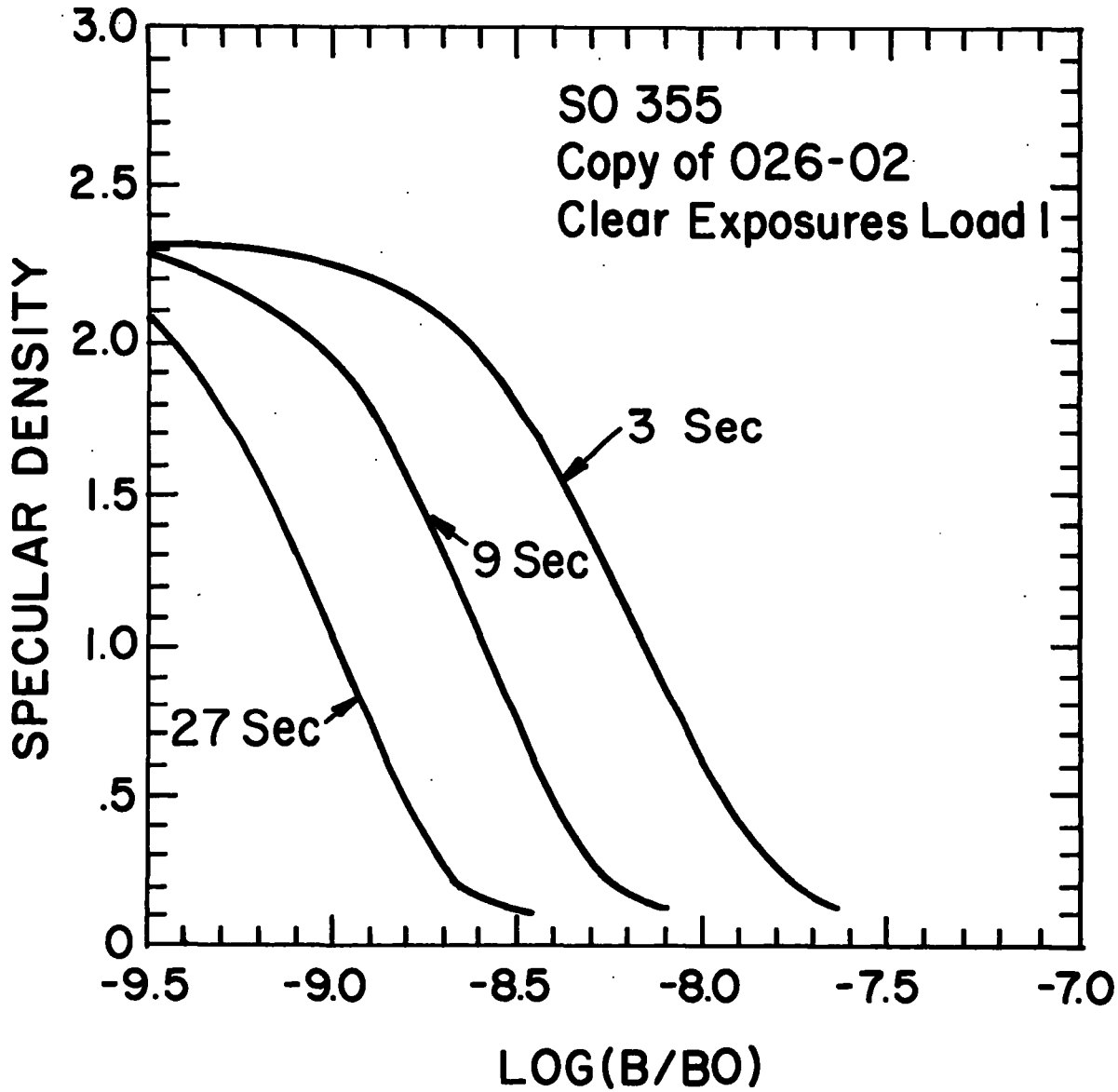

SO 355
Copy of 026-02
Clear Exposures Load I
3 Sec
9 Sec
27 Sec
SPECULAR DENSITY
3.0
2.5
2.0
1.5
1.0
.5
0
-9.5
-9.0
-8.5
-8.0
-7.5
-7.0
LOG(B/BO)

Figure 16

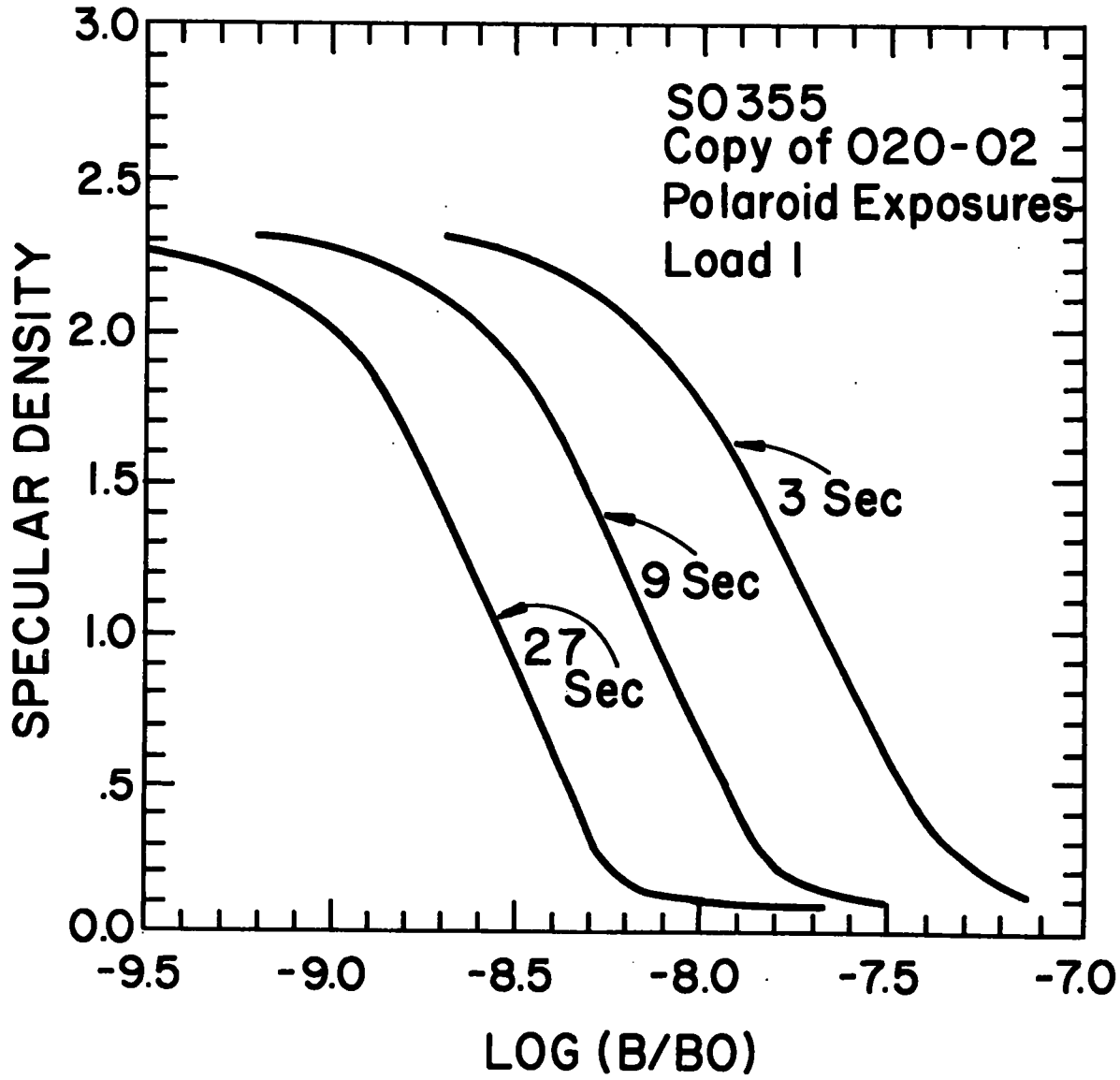

SO355
Copy of 020-02
Polaroid Exposures
Load I
3 Sec
9 Sec
27 Sec
SPECULAR DENSITY
3.0
2.5
2.0
1.5
1.0
.5
0.0
-9.5
-9.0
-8.5
-8.0
-7.5
-7.0
LOG (B/BO)

Figure 17

A problem arising from using this film is that it can copy only a density range of 2.0 on the linear part of its D Log E curve, while the original flight film covers a density range of 4.0. The intensity range covered by the clear exposures on the flight originals extend from approximately 3×10^{-10} $B_\odot$ on the toe of the 27 sec exposure up to 1.6×10^{-8} $B_\odot$ at a density of 3.0 on the 3 sec exposure. The D Log E curves for the 026-02 film for the 3, 9, and 27 sec exposures are shown in Figure 18. Since the copy film has an input density range of 2.0, only part of the intensity range of a given exposure on the original can be reproduced on the copy. To reproduce as much of the total information as possible from all exposures, the copies were exposed such that the maximum amount of relevant information, or intensity range, was copied. The density range copied is indicated on Figure 18 by the horizontal lines; that is, densities on the original between .25 and 2.15. These correspond to the intensity ranges of: 3.0×10^{-10} $B_\odot$ to 1.6×10^{-9} on the 27 sec exposures; 1.6×10^{-9} $B_\odot$ to 5×10^{-9} $B_\odot$ on the 9 sec exposure; and 3×10^{-9} $B_\odot$ to 5×10^{-9} $B_\odot$ on the 3 sec exposures. For images brighter than 1.6×10^{-8} $B_\odot$, one would have to use the original flight film, but so far no such brightness has been found. Thus, by combining the copies of the 3, 9, and 27 sec exposures, we are able to study the entire intensity range from 3.0×10^{-10} $B_\odot$ to 1.6×10^{-8} $B_\odot$ at the film plane. It should be noted that the instrument vignetting increases this range in the corona by a factor of approximately 100 and it should also be noted that these numbers apply only to the Load 1 copy. For other loads they will be slightly different due to the copying process.

¿ 1.6×10^{-8}

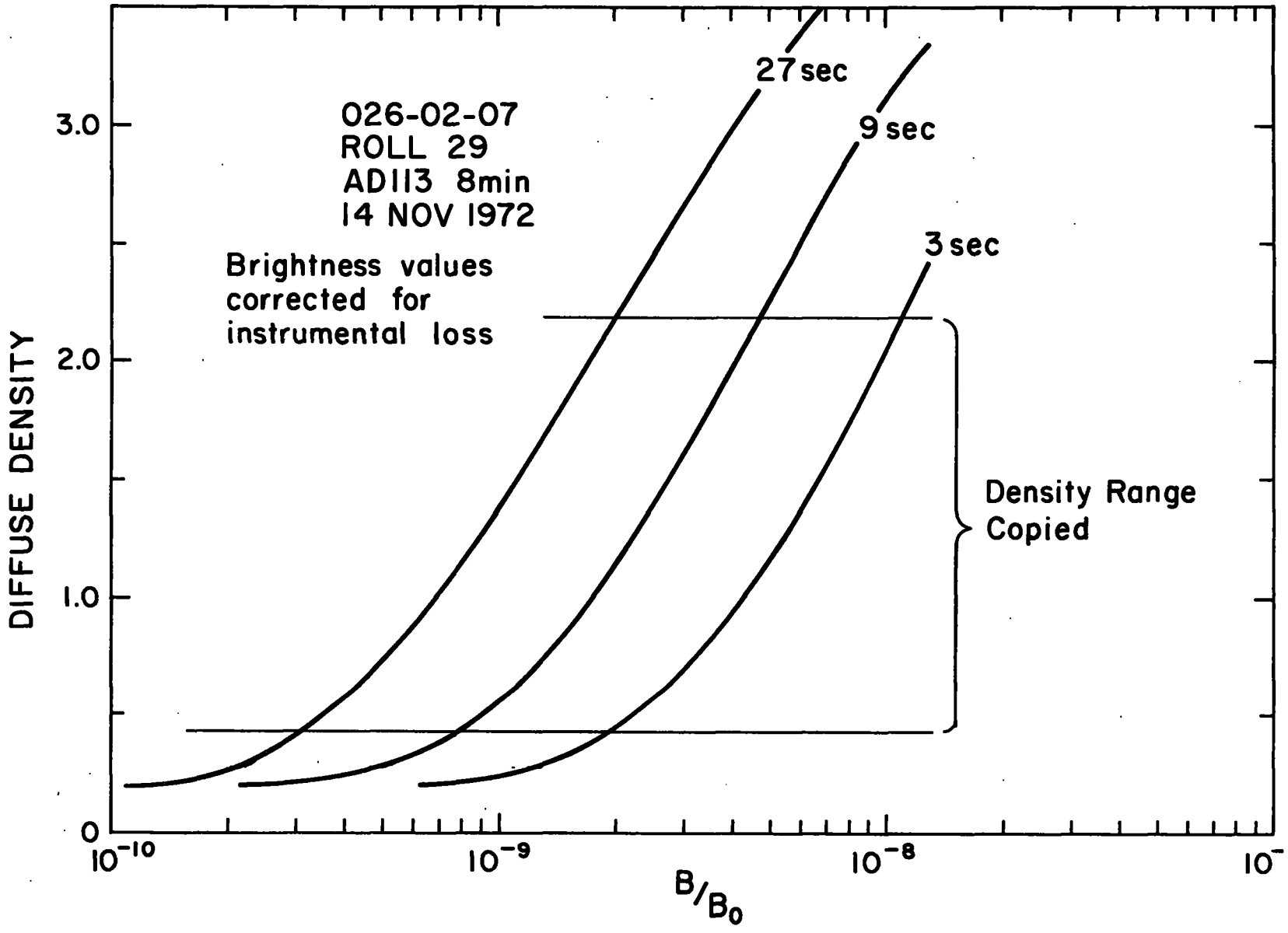

026-02-07
ROLL 29
AD113 8min
14 NOV 1972
Brightness values
corrected for
instrumental loss
27 sec
9 sec
3 sec
Density Range
Copied
DIFFUSE DENSITY
3.0
2.0
1.0
0
10^{-10}
10^{-9}
10^{-8}
10^{-}
B/B_0

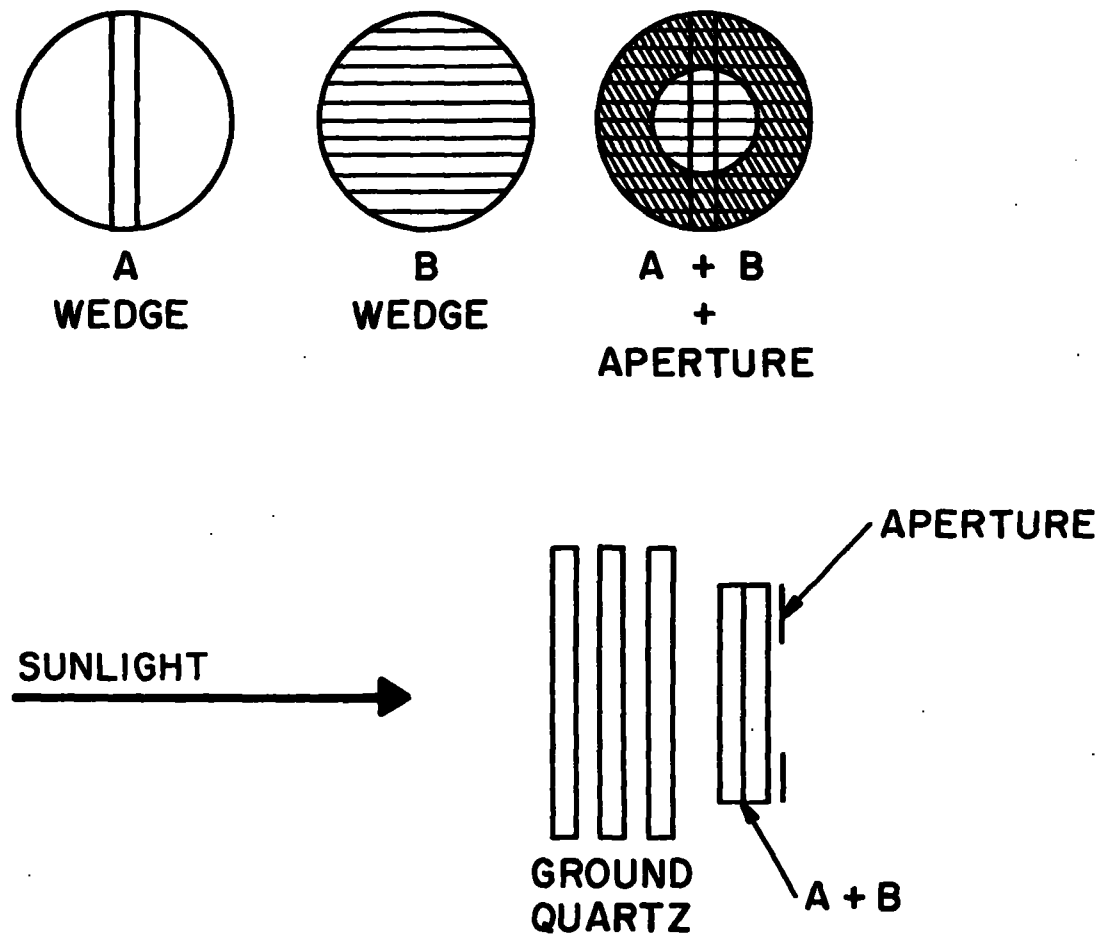
Figure 18

3. Photometric Calibration

a. The Calibration Wedge

Calibration for the experiment is provided by a step wedge which is imaged on the center of each frame of film. The step wedge (Figure 19) consists of a sandwich of two pieces of fused quartz upon which have been deposited metallic inconel steps of varying transmission. The two pieces of quartz are held together with the metallic surfaces in contact. The step wedge is illuminated by a series of three pieces of ground quartz which are, in turn, illuminated by direct sunlight through a hole in the heat dumping mirror. The pieces of ground quartz serve to attenuate the solar beam and provide a diffuse illumination of the wedge. A lens in the calibration tube forms an image of the wedge at the film plane. Light rays from the wedge traverse a completely separate optical system from that of the coronal image until the two images merge before the polaroid wheel and camera field flattener lens, and film plane (see Figure 3).

At the film plane, the wedge is imaged in the area shadowed by the internal occulting disk (D_4). The image of the wedge is surrounded by three very faint, out-of-focus images of apertures contained in the calibration path. These faint aperture images make a negligible contribution to the brightness of the steps on the wedge and are contained within the shadow of the occulting disk. The brightness of the wedge image is controlled by the attenuation provided by the pieces of ground quartz (see Figure 19) and by the size of the aperture at the lens in the calibration optics path. Both of these were adjusted permanently prior to launch so as to achieve a wedge image of the desired brightness level.



WLC Calibration Wedge Schematic

Figure 19

b. Pre-Flight Calibration of the Wedge

Calibration of the wedge was achieved through a series of exposure tests at BBRC in February 1971 just prior to final shipment of the flight instrument to MSFC. The procedure was as follows. A roll of Eastman-Kodak 026-02 film (the same emulsion as used in flight) was loaded into one of the flight backup cameras and then mounted on the coronagraph. The polaroid wheel was rotated to the clear position. Sunlight was reflected into the experiment room via a coelostat on a bright, cloudless day. The main axis of the coronagraph was tilted slightly relative to the solar beam so that neither the objective lens (O_1 in Fig. 3) nor the calibration wedge assembly were shadowed by the external occulting disk assembly (D_1- D_3 in Figure 3). The intensity of the solar beam at the instrument aperture was monitored with a photocell which was calibrated relative to the solar intensity at the top of the earth's atmosphere. In this way, the attenuation of the solar beam by the atmosphere and coelostat could be determined as a function of time. A series of modified opals (Elmore et al. 1970), used as fundamental standards at the High Altitude Observatory, were then placed directly in front of the objective lens. The opals have been calibrated in terms of a 32 arc min source and have surface brightnesses ranging from 1.71×10^{-10} up to 1.17×10^{-7} that of the illuminating source. For each opal a series of pictures were taken at exposure times ranging from 1½ to 1.80 sec. The exposed film containing images of the flight calibration wedge and opals was hand-developed in D-19 in as uniform a manner as possible. A sample image from these exposures is shown in Figure 20.

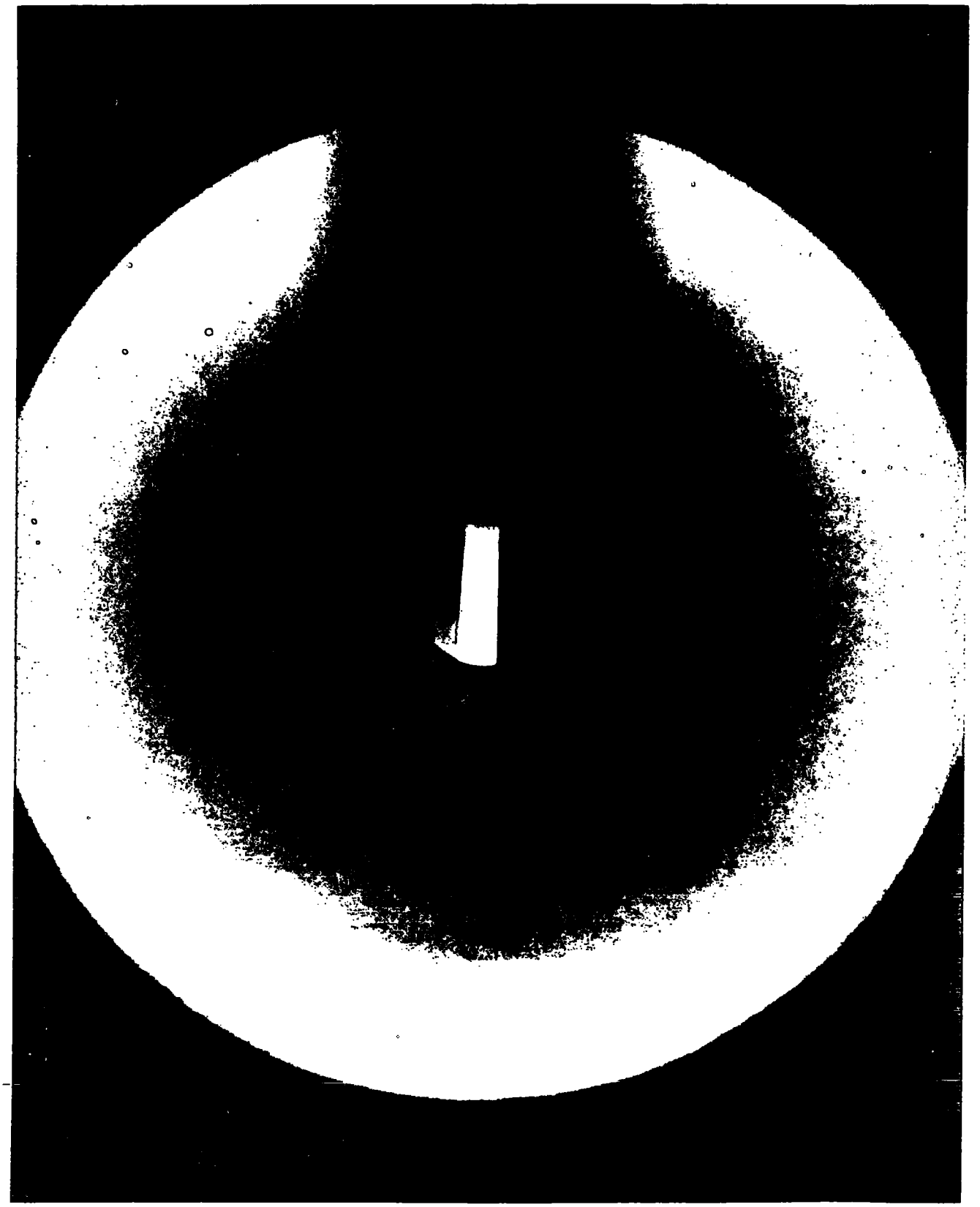


Figure 20

c. Wedge Non-Uniformities and Camera Fiducials

An undesirable feature of the calibration wedge steps is their non-uniform brightnesses. These non-uniformities arise from several sources but are caused for the most part by scattering in the ojbective lens in the optical calibration path. The non-uniformities are sufficiently large that care must be taken to insure that the wedge steps are always scanned in the same locations. Positional offsets as small as 100 microns can lead to considerable errors. At HAO, scans of the wedge steps are always referenced in position to the fiducial marks located at the four corners of each frame. If we define an orthogonal coordinate system such that the origin is located at fiducial A (Figure 21), with the x-axis along line AB and x positive towards B, then the positions (x,y) at which the flight wedge steps are calibrated are indicated in Table 5.

The fiducials are imprinted on the film by a set of fiber optic arrays located internally to each camera. Thus their locations relative to the coronal image and flight wedge image vary from camera to camera. Shifts in these locations were determined by measuring the offset between fiducial A and pinhole imperfections in the wedge image for each camera. These shifts of fiducial A relative to the wedge image are listed in Table 6. Because of the non-uniformities of the flight wedge it is necessary to correct for these shifts when scanning the flight wedges so that the correct area on each wedge is used.

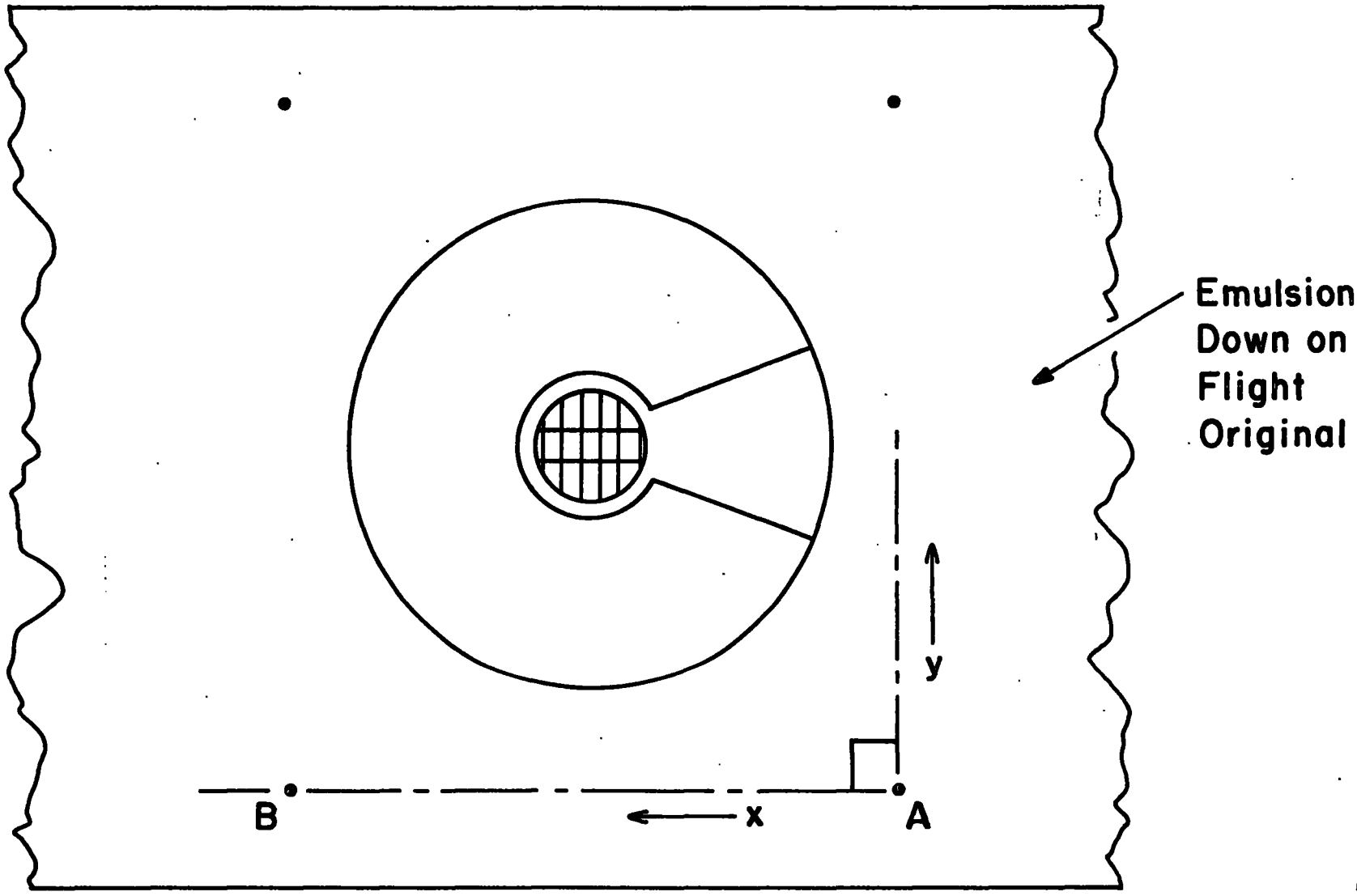


Figure 21

TABLE 5

Positions Relative to Fiducial A on Pre-Flight Calibration Where Wedge Step Brightnesses are Determined

STEP	x Start (microns)	x Stop (microns)	y (microns)
1	12559	12254	11150
2	12059	11679	↑
3	11462	11090	
4	10877	10449	
5	10266	9903	↓
6	9693	9280	11150
9	12008	11584	11950
10	11355	10964	↑
11	10746	10375	
12	10144	9799	↓
13	9590	9384	11950
15	12173	11770	10350
16	11591	11172	↑
17	10883	10541	
18	10338	9997	↓
19	9775	9333	10350

TABLE 6

Fiducial A Offsets Relative to Pre-Flight Calibration Camera

CAMERA	Offset ($\Delta x, \Delta y$) (microns)*
Load 1	(68, 47)
Load 2	(49, 100)
Load 3	(66, 109)
Load 4	(4, 78)
Load 5	(58, 172)

*All these offsets are positive. That is, in all cases fiducial A is closer to the flight wedge than it was for the pre-flight calibration camera.

The above images were digitized with the HAO microdensitometer using a 50 micron slit. Density values for the opal images were obtained near the outer edge of the field where there is negligible vignetting by the internal occulting disk assembly. Characteristic curves for the 026-02 film were generated using these measured density values and the known brightness of the opals and are shown in Figure 22. The measured density values for the calibration wedge steps were tabulated by exposure. Even though care was taken to insure that the wedge images were scanned in an identical fashion, differences exist in the measured density of a step for images with the same exposure. The origin of these differences is unknown, but it is suspected that non-uniform transmission of the coelostat and non-uniform development might be the cause. From these tabulated values of density, a best value was selected and plotted on the characteristic curves generated from the opal measurements. The range of measured densities for each step are indicated by the vertical bars in Figure 22. The corresponding uncertainties in brightness inferred from the curves are indicated by the horizontal bars in the figure. As would be expected, these uncertainties are largest near the toes of the characteristic curves. More accurate values for the step brightnesses can be obtained by taking advantage of the fact that step brightness is independent of exposure time. The values of brightness and the uncertainties listed in Table 7 were obtained by combining the data from the various exposures, and represent our best estimate for the step values. A schematic of the flight wedge and the best estimates of step brightnesses are shown in Figure 23.

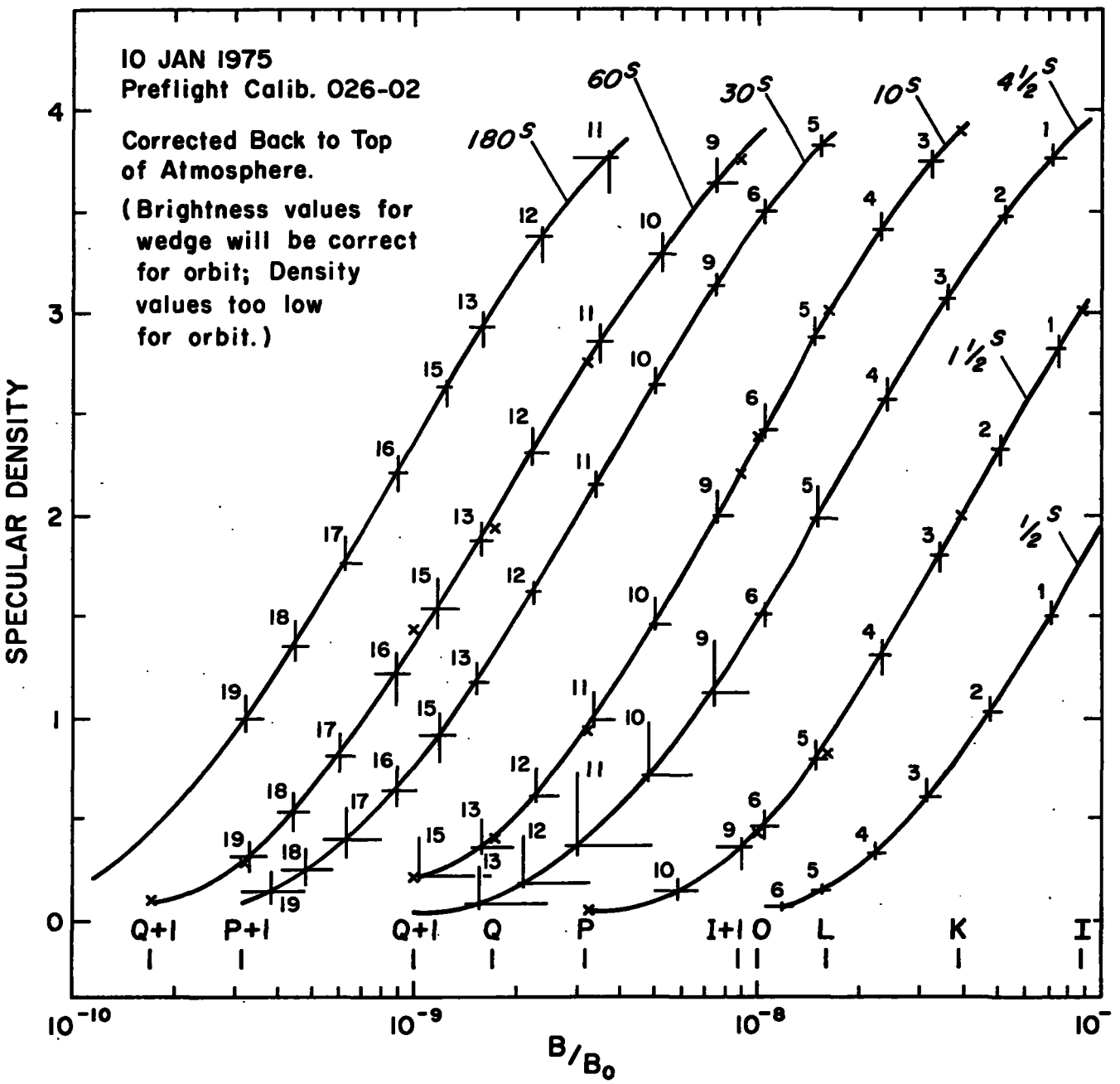

10 JAN 1975
Preflight Calib. 026-02
Corrected Back to Top of Atmosphere.
(Brightness values for wedge will be correct for orbit; Density values too low for orbit.)
180s
60s
30s
10s
4½s
1½s
½s
SPECULAR DENSITY
B/B0
Q+1
P+1
Q+1
Q
P
I+1
O
L
K
I

Figure 22

TABLE 7

Pre-Flight Calibration of Flight Wedge

STEP	BEST VALUE ($\times B_\odot$)	UNCERTAINTY LIMITS
1	7.2×10^{-8}	$(6.9/7.5) \times 10^{-8}$
2	5.2	(4.8/5.4)
3	3.4	(3.2/3.5)
4	2.3	(2.2/2.4)
5	1.52	(1.45/1.60)
6	1.04×10^{-8}	$(1.00/1.10) \times 10^{-8}$
9	7.5×10^{-9}	$(7.1/7.9) \times 10^{-9}$
10	5.0	(4.8/5.3)
11	3.4	(3.2/3.6)
12	2.22	(2.10/2.35)
13	1.55	(1.45/1.65)
15	1.18×10^{-9}	$(1.10/1.30) \times 10^{-9}$
16	8.9×10^{-10}	$(8.2/9.6) \times 10^{-10}$
17	6.1	(5.5/6.7)
18	4.5	(4.0/4.9)
19	3.2	$(3.0/3.6) \times 10^{-10}$

Note that steps 7, 8, 14 are not calibrated. $B_\odot$ is the mean integrated surface brightness of the solar disk as observed with the f/13.7 coronagraph.

ATM FLIGHT WEDGE WITH CALIBRATED STEP VALUES ($B/B_{\odot}$)

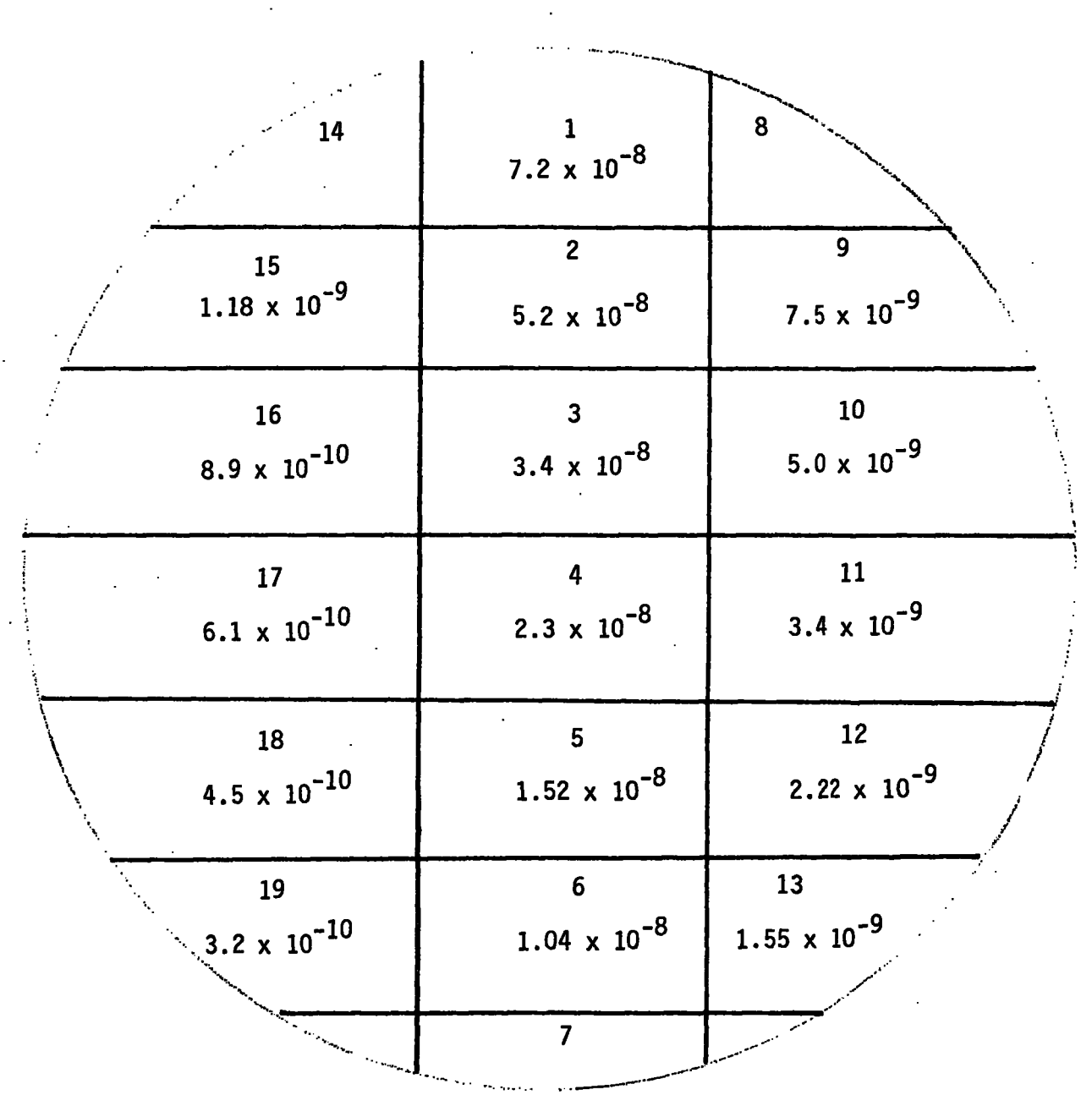


Figure 23

d. ATM Sensitometer Box

In addition to the flight wedge, sensitometric information from the flight film is available from sensitometric wedges imaged at the beginning and end of each flight roll from the ATM Sensitometer Box. This instrument is described by Gosling and Pizzo (1970) and Pizzo and Gosling (1972) and consists essentially of a monitored light source, a step wedge, and an imaging lens. It has been calibrated relative to the mean brightness of the solar disk for an f/13.7 optical system with no internal light losses. The primary function of the sensitometer boxes (there were two identical ones constructed) was the monitoring of films provided by Eastman Kodak.

Approximately 1/2 year before the launch of Skylab, one of the sensitometer boxes (Box 1) was designated as a fixed, non-traveling calibration source, and the other was designated as a traveling box (it subsequently travelled to Los Angeles, Houston, Cape Kennedy, and BBRC). This latter box was subject, therefore, to shifts in the internal calibration which could be monitored by comparison with the non-travelling box 1. For the most part, frequent comparisons of the two boxes showed that Box 2 remained stable even though it travelled extensively. However, Box 2 was damaged in a car accident in late August 1973 and its calibration compromised. About the same time, the bulb blew out on Box 1. The net effect of these mishaps is that the post-flight sensitometry on camera loads 2, 3, 4, 5, and the pre-flight sensitometry on load 5, all of which were done with Box 2 after it was damaged, is of questionable accuracy and utility.

The calibration for Box 2 prior to the August 1973 accident is given in Table 8.

TABLE 8

Calibration for ATM Sensitometer Box 2
(November 1972 - August 1973)

STEP	$B/B_{\odot}$ *
1	1.02×10^{-8}
2	7.25×10^{-9}
3	4.90
4	3.24
5	2.24
6	1.41×10^{-9}
7	9.12×10^{-10}
8	5.89
9	4.27
10	2.77
11	1.86
12	1.23×10^{-10}
13	8.65×10^{-11}
14	6.16
15	4.78

*These are for an f/13.7 system with no internal losses.

e. Intensity Transformation Using the Copy Film

In this section the techniques used in transforming from density on the copy film to intensity at the film plane are disucssed. We assume that the intensity value for each step of the flight calibration wedge is known from the pre-flight calibration.

Since each one-half of a film load (approximately 4,000 frames) was copied separately, each one-half load is treated separately. To minimize the effects of noise in the data and to be able to reduce uncertainties in the polarization reduction, we have adopted a technique of hand-drawing a D Log E curve for each exposure time of each one-half load. The intensity of each step was assumed to remain constant throughout the mission. Thus, all differences between half loads were attributed to changes in the fog level of the film and to the copying process. We assume that the curves do not change through a one-half load. Plots of many characteristic curves through each half load have shown that this is a good assumption. Sample curves for the 3, 9, and 27 sec clear exposures for camera load 1 are shown in Figure 16.

The curves used to fit the measured points were obtained by comparing many frames of the same exposure, including the polaroid exposures, within a half load. The polaroid filters were considered to have no effect other than decreasing the intensity transmitted through the optical system. This decrease in intensity is compensated for by multiplying each intensity by the transmission for the polaroid being used. In Table 9 we present the transmission determined for each polaroid. The trans-

TABLE 9

Polaroid Transmissions

Polaroid	Transmission
1	.36
2	.39
3	.355

mission was determined by measuring the shift needed to make the clear and polaroid curves coincide. By using several frames, each step was more reliably determined and by using the polaroids a finer grid of points with which to fit a curve was obtained (see Figure 24).

In this way, a zero order curve was generated for each half load. These curves are contained in the section Original Standard Curves of the calibration notebook maintained at High Altitude Observatory.

Since there is an overlap in the intensity range covered by the 3 and 9 sec exposures and the 9 and 27 sec exposures, it is possible to check for consistency by comparing regions of overlap. An example of this procedure is shown in Figure 25 where we plot the intensity of a point as determined from the 9 sec exposure versus the intensity of that point as determined from the 27 sec exposure. Any deviation from a 45 degree line are due to errors in the D Log E curves. Errors in the slope of the D Log E curve found in this way were corrected yielding a first order curve for each half load.

For any given frame, the characteristic curve is used to obtain the density to intensity transformation. In order to correct for changes in microdensitometer zero setting, the measured density for each step in the wedge is compared to a standard for that step of the same exposure in the appropriate half load. The difference between the measured and standard densities determined the shift in density that is applied to the characterisitic curve for that exposure and half load such

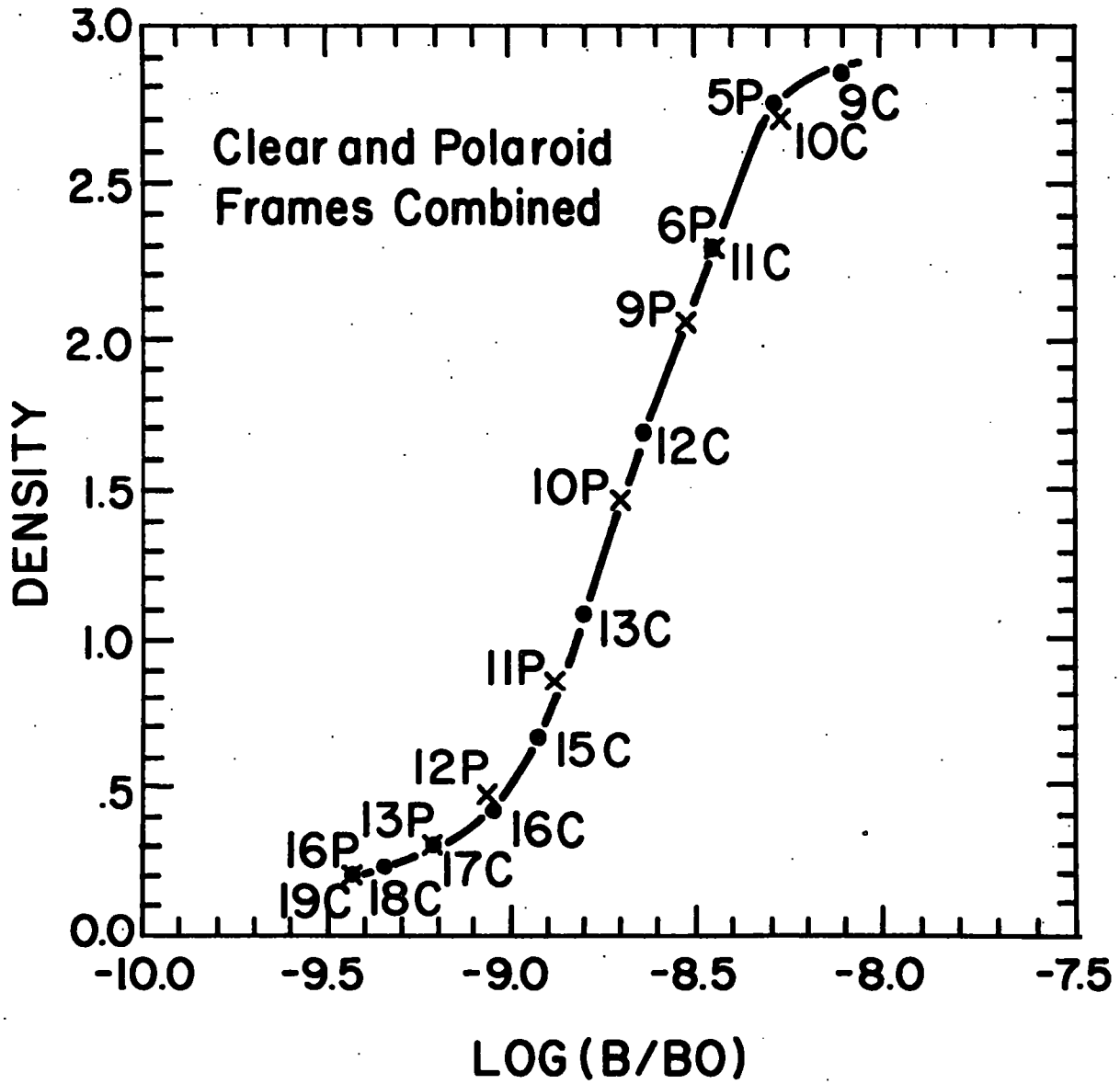

Clear and Polaroid
Frames Combined
DENSITY
LOG (B/BO)
3.0
2.5
2.0
1.5
1.0
.5
0.0
-10.0
-9.5
-9.0
-8.5
-8.0
-7.5
5P
9C
10C
6P
11C
9P
12C
10P
13C
11P
15C
12P
16C
13P
17C
16P
18C
19C

Figure 24

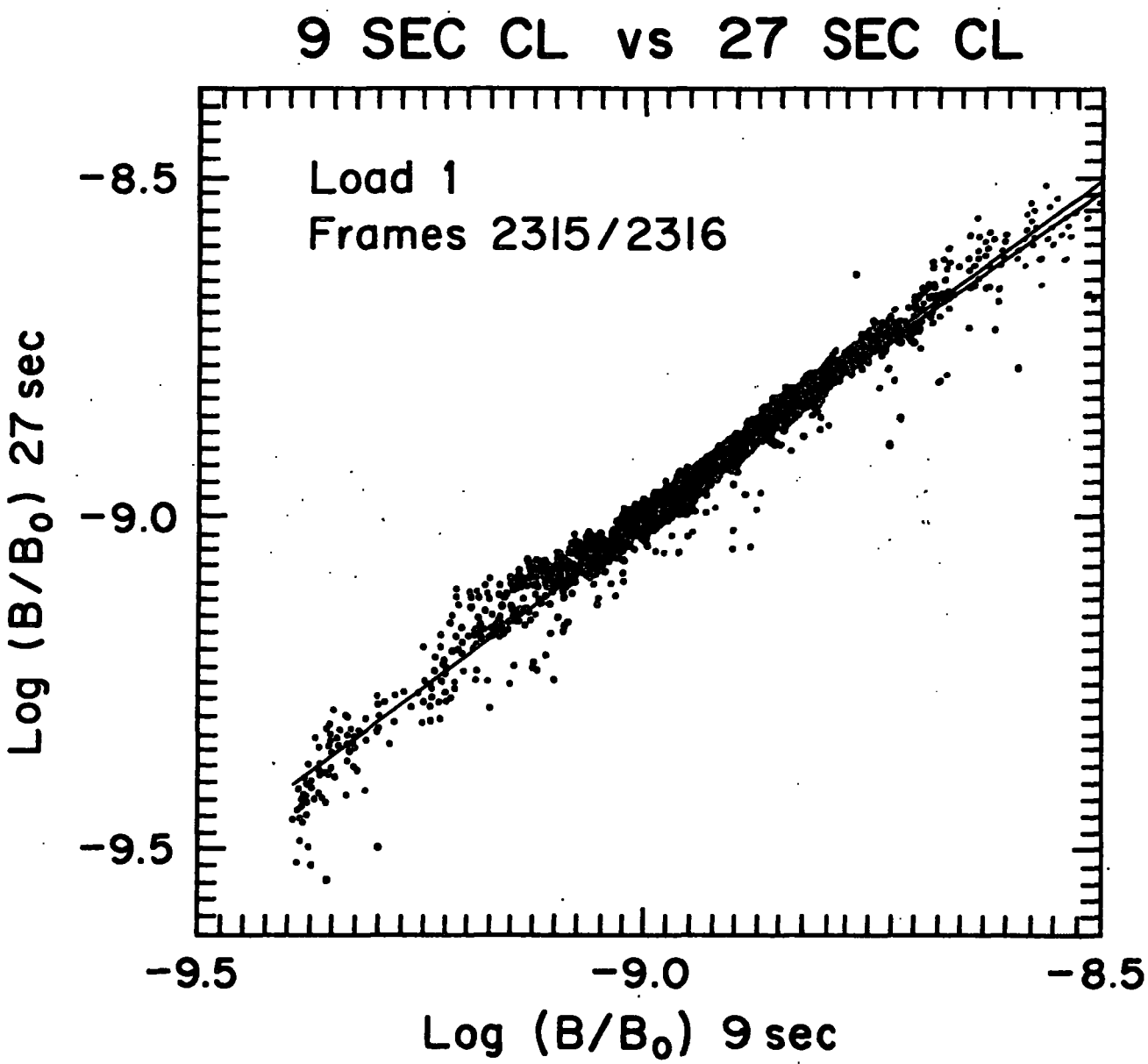

9 SEC CL vs 27 SEC CL
Load 1
Frames 2315/2316
-8.5
-9.0
-9.5
Log (B/B0) 27 sec
-9.5
-9.0
-8.5
Log (B/B0) 9 sec

Figure 25

that the appropriate transformation from density to intensity is obtained.

With this process completed, a consistency check was made along half loads and across loads by comparing the intensity in the F-corona as a function of time. It is assumed that the F-corona does not change significantly with time. By measuring the F-corona above the pole through load 1, it was found that the variation from day to day was less than ±5 percent. In going across half loads, it was found that load 4 required some modification to fit within the maximum ±8 percent deviation seen in the other loads. The apparent changes measured in the F-corona are shown in Table 10. Using this technique we have achieved a relative photometric accuracy, as a function of time through the data, of ±8 percent.

TABLE 10

Change in F-Corona on 026-02 Film

$R/R_{\odot}$	Load 1-2 Δ Log E	Load 2-3 Δ Log E	Load 3-4 Δ Log E	Load 4-5 Δ Log E
3.5	.01	0	.02	0
4.0	.03	0	.01	0
4.5	.03	0	.01	0
5.0	.03	0	.04	0
5.5	.02	.01	.02	0

4. Instrument Vignetting Function

The ATM white light coronagraph utilizes a set of external occulting disks to shield the primary objective from direct solar disk radiation. This results in an attenuation of the instrument transmission as a function of the angle from the instrument optical axis of the incoming radiation. The function describing the variation of transmission over the instrument field of view is termed the vignetting function.

The origin of the vignetting is simply explained as the geometrical shadowing of the primary objective by the occulting disk assembly as viewed from the object plane. More precisely, it is the combined effect of the aperture (A_3) and internal occulting disk D_4 that determines the vignetting. The inner (closer to the solar limb) limit of incoming radiation as viewed from the object plane is set by the sizes of D_4 and A_3. A larger D_4 results in an increased inner vignetting. In the same sense a smaller A_3 also results in an increased inner vignetting. The fraction of the incoming radiation not blocked by the internal occulting disk, D_4, and passed by aperture A_3, varies for different points in the field of view and is a direct measure of the vignetting function.

Pre-flight Measurements

Measurements of the vignetting function were made prior to flight on Skylab. The detailed experimental and data reduction procedures and results are given in the next section. This analysis results in the determination of V, the vignetting function (Fig. 26; Table 11), as a function of radius in the field of view (averaged over all azimuthal

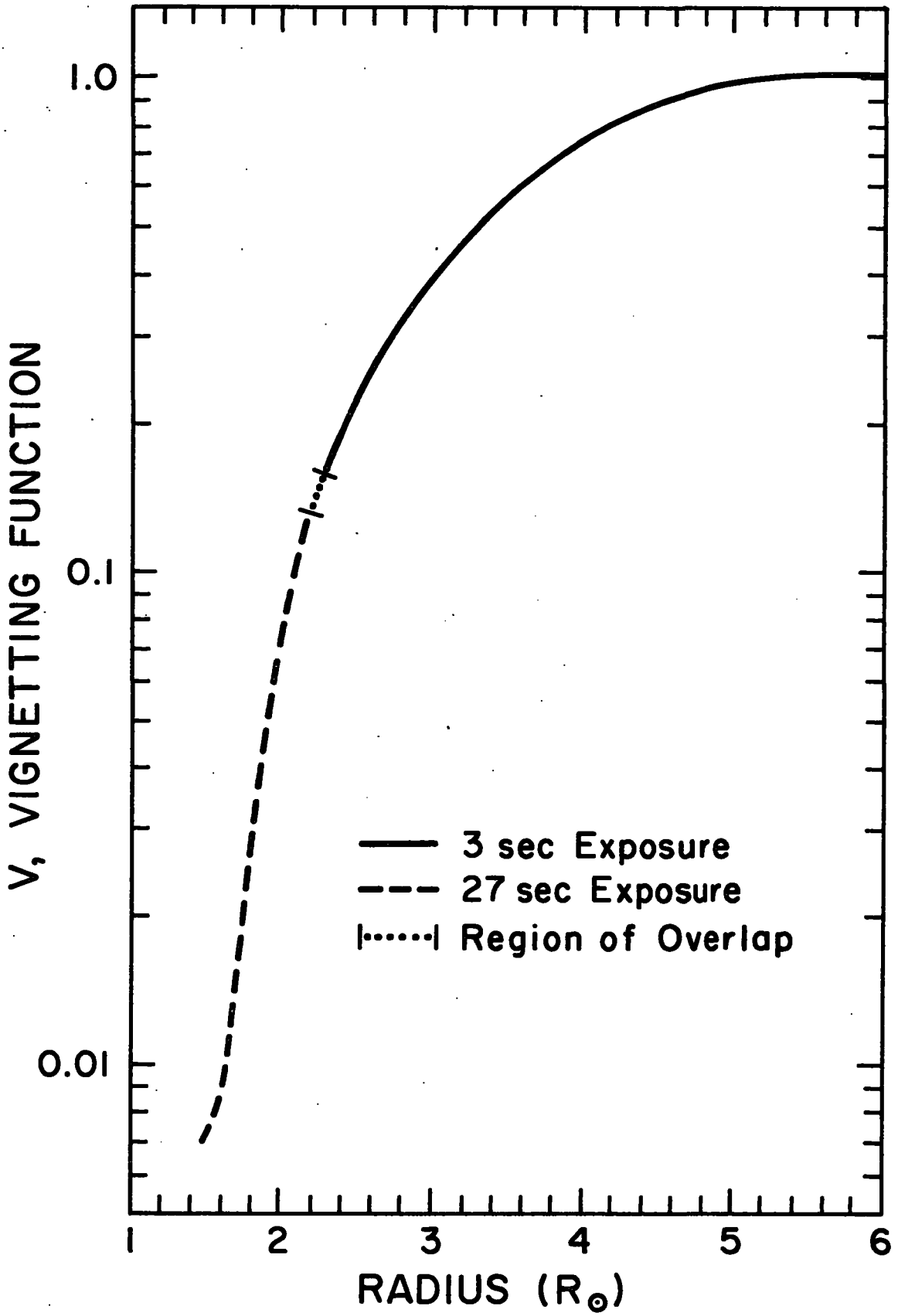

1.0
0.1
0.01
V, VIGNETTING FUNCTION
1
2
3
4
5
6
RADIUS ($R_\odot$)
3 sec Exposure
27 sec Exposure
Region of Overlap

Figure 26

TABLE 11

PRE-FLIGHT VIGNETTING FUNCTION

R/R_o	V	R/R_o	V
2.5	0.218	3.8	0.668
2.6	0.251	3.9	0.705
2.7	0.286	4.0	0.739
2.8	0.323	4.1	0.769
2.9	0.358	4.2	0.802
3.0	0.394	4.3	0.829
3.1	0.424	4.4	0.855
3.2	0.458	4.5	0.883
3.3	0.490	4.6	0.901
3.4	0.523	4.7	0.926
3.5	0.559	4.8	0.945
3.6	0.596	4.9	0.954
3.7	0.631	5.0	0.964

angles). For example, the vignetting function at 2.0, 4.0, and 6.0 solar radii (R) is 0.074, 0.739, and 1.000 corresponding to 7.4, 73.9, and 100 percent transmission, respectively.

The standard deviation of the calculated vignetting values at a particular radius averaged 3.5 percent with a maximum deviation of 12 percent at any particular angle (Fig. 27).

The pre-flight measurements were carried out before final modifications to the camera field flattener aperture were implemented. The introduction of this aperture should have modified the vignetting characteristics of the instrument in the outer region of the field ($\gtrsim 5\ R_\odot$); indeed, visual inspection of the frames exposed during flight shows an apparent attenuation in transmission at the outer edge of the field. Further analysis of the flight film to determine the flight vignetting function is in progress, and will be supplied to the NSSDC as separate Technical Notes as they become available.

The measurements employed in this study were obtained from exposures made on 16 February 1971. The flight version of the ATM coronagraph was mounted in the HAO clean tunnel, with the aperture A_0 covered with several layers of Keuffel and Esser albalene drawing paper. The beam from the simulated solar source in the tunnel illuminated the paper, approximating a diffuse uniform source as viewed from the objective lens of the coronagraph. A series of exposures on Eastman Kodak 026-02 film was made, with the total intensity roughly controlled by varying the number of layers of paper at A_0. Exposures of 1,3,9, and 27 sec duration were made; similar duration exposures on the same film strip were then made with the HAO sensitometer box (cf., Pizzo and Gosling,

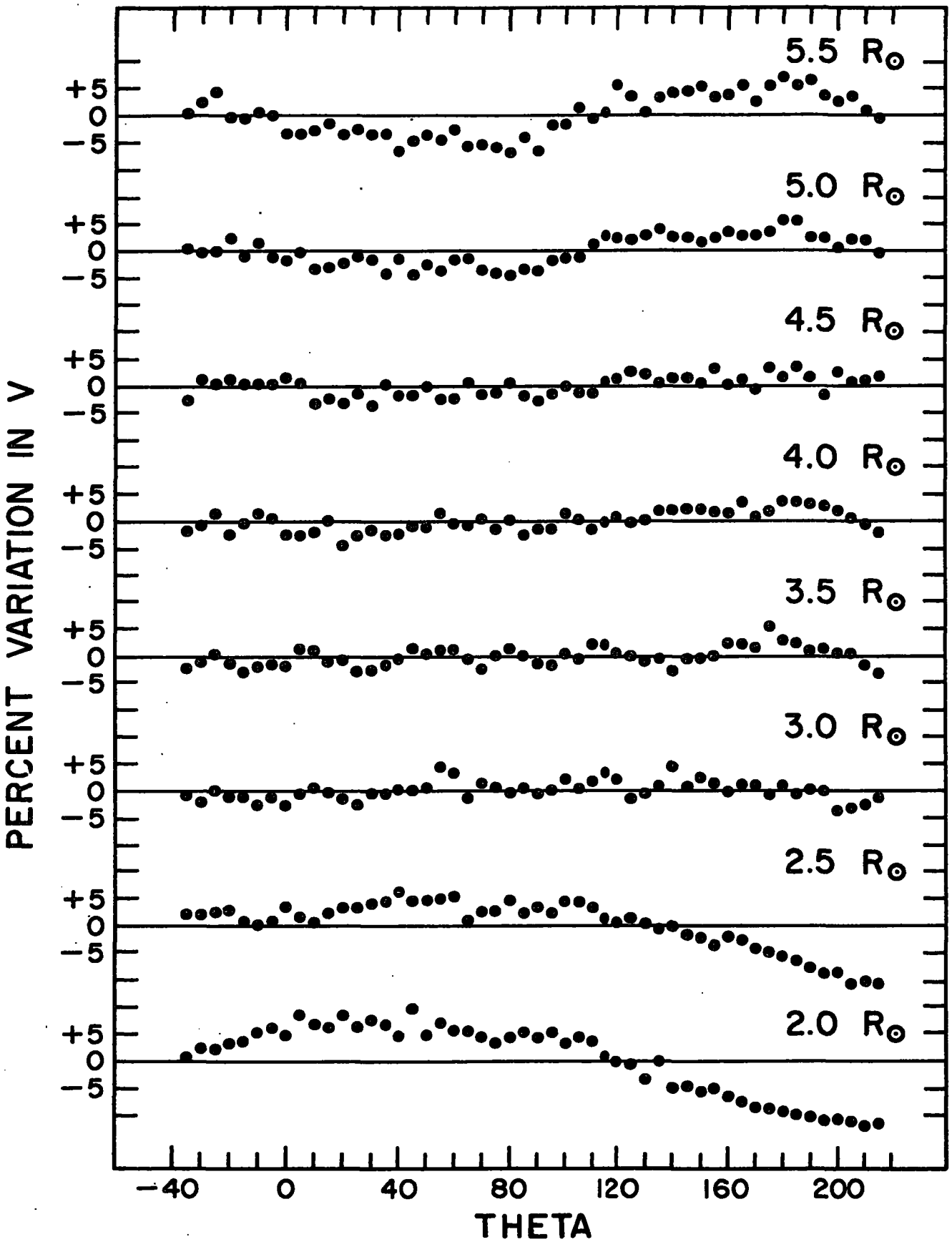

5.5 R⊙
5.0 R⊙
4.5 R⊙
4.0 R⊙
3.5 R⊙
3.0 R⊙
2.5 R⊙
2.0 R⊙
+5
0
−5
PERCENT VARIATION IN V
−40
0
40
80
120
160
200
THETA

Figure 27

AAS Photo Bulletin #1, 19, 1972 and Section I-B-3).

Thus, there was present on each film strip both images of known radiance, encompassing the range 1.03×10^{-8} $B_{\odot}$ to 6.50×10^{-11} $B_{\odot}$, and images of the object - the approximately uniform field - altered by the coronagraph vignetting. The film strips were process in D-19 by hand.

The sensitometer box images permitted the construction of D-Log E curves for each exposure. The actual intensity of the vignetted image could then be specified over the entire field of the instrument once the density was know.

Preliminary densitometry of the exposures on the film strip was carried out by J. Gosling at HAO in February 1971. The HAO Boller-Chivens densitometer was used to scan across the center of the three sec exposure and corresponding sensitometric wedge. The density was then related to radiance using the constructed three sec D-Log E curve and a preliminary pre-flight vignetting function was computed.

The present study was initiated to extend the above work in accuracy and in detail. The exposures on the film strip were rastered on the HAO PDS microdensitometer with a 50 μm entrance slit. A line of scan of the sensitometric wedge was used to construct the D-Log E curve for each exposure. Figure 28 shows the D-Log-E curve for the 3 and 27 sec exposures. A straight line fit to the linear portion of the curves resulted in the expression

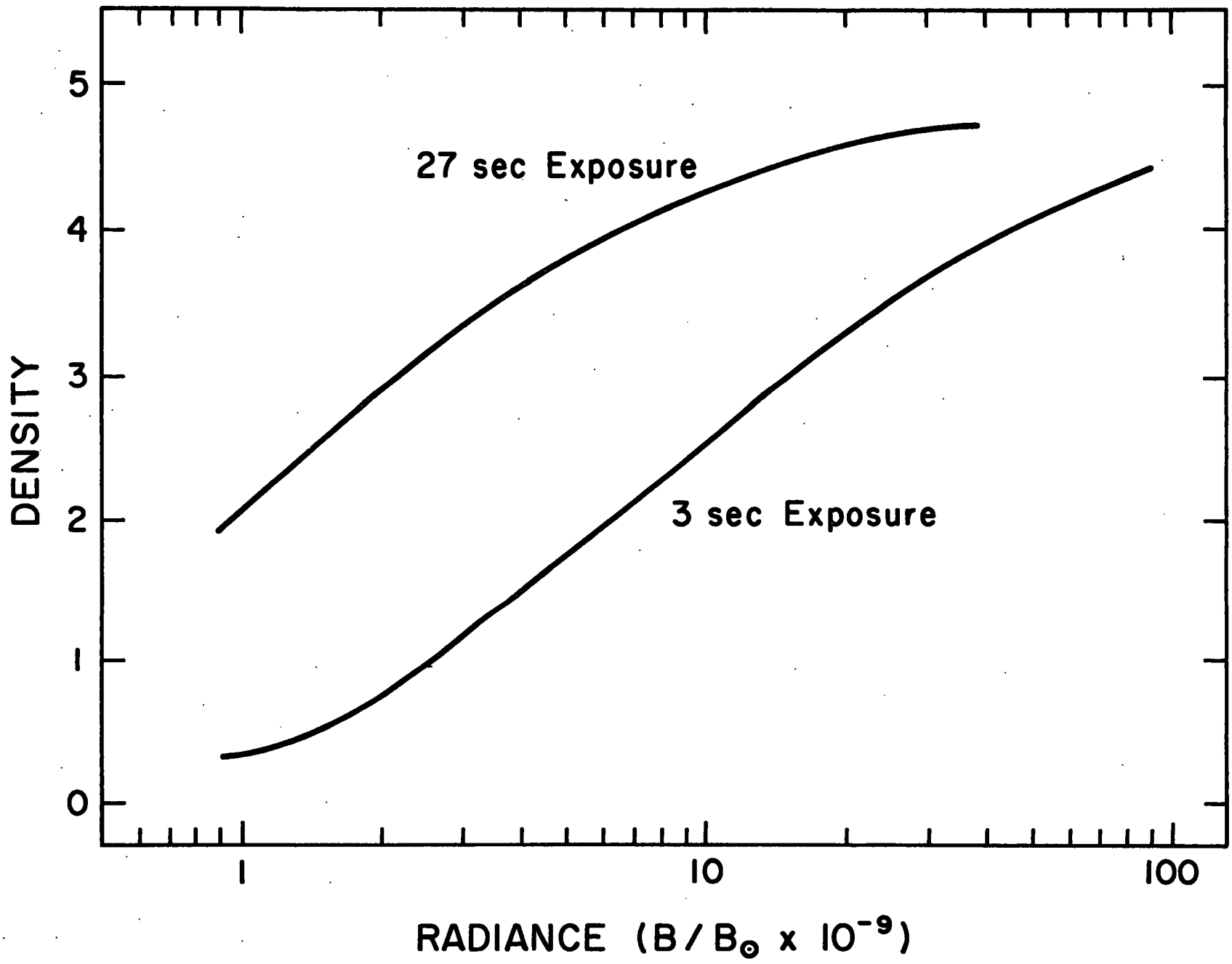

DENSITY
5
4
3
2
1
0
27 sec Exposure
3 sec Exposure
1
10
100
RADIANCE (B / B⊙ x 10⁻⁹)

Figure 28

$$\text{Log } R = (D-B)/M$$

where

R = radiance
D = density
B = linear fit y-intercept
M = linear fit slope

with

B = 23.603, M = 2.6354 for 3 sec exposure

and

B = 26.859, M = 2.7543 for 27 sec exposure.

The density measured at a particular radius was converted to intensity using the appropriate linear fit expressions incorporated into the computer program.

The 27 sec exposure provided radiance data points from 1.5 to 2.3 $R_\odot$ (corresponding to measured densities of 0.7 and 3.5), while the 3 sec exposure was used for data from 2.2 to 6.0 $R_\odot$ (corresponding to measured densities of 0.9 to 3.2). To insure that the two data sets joined smoothly, the overlap points at 2.2 and 2.3 $R_\odot$ were used to generate a linear relation between the 3 sec and 27 sec data. Thus, the data below 2.2 $R_\odot$ was shifted using the expression:

$$R\ (27 \text{ sec shifted}) = M\ R(27 \text{ sec}) - B$$

where M = 0.898 and B = -0.154. The 27 sec data at the small radii values must be regarded as a best guess, since the error involved in the curve shifting cannot be accurately estimated.

The vignetting function at a particular field point (usually expressed in terms of the solar radius) is calculated as the ratio of the radiance at that radius and the radiance where the vignetting

function is 1. Since at the outer edge of the field of view the measured radiance asymptotically approached a constant radiance, the vignetting there was assumed to no longer attenuate the incoming radiation; hence, the vignetting function was set to 1. The derived vignetting function is given in Table 11 and shown in Figure 26.

The vignetting function was assumed azimuthally symmetric about the instrument optical axis (angle variable about the axis is theta). To verify that the appropriate vignetting center was used, theta scans were run on the data at several radii and the percent deviation from the mean recorded.

The center chosen was varied until the deviations in a theta scan were minimized. Figure 27 shows the result for the center with minimized variations in the vignetting function versus azimuthal theta angle. (The center of the pre-flight film strip frames, measured from the lower right fiducial, emulsion side up, pylon to the right, is $x = 12150$ μm, $y = 12400$ μm). The theta region omitted represents the occultation by the pylon support. The standard deviation of the percent variation averaged 3.5 percent and the maximum variation was 12 percent.

Note that the residual azimuthal asymmetry shown in Figure 27 does not appear random. Three effects could cause this variation: 1) non-uniform illumination of the albalene in the experimental setup; 2) non-uniform processing of the film strip; and 3) azimuthal asymmetry introduced by optical misalignment. It seems evident that the measured variation in vignetting at constant radius is caused by a combination of effects (1) and (2), since an instrumental misalignment would show a characteristic variation in vignetting at a particular theta

angle that would persist at a different radii. Figure 27 shows variation curves that change markedly from the inner to outer field and this is inconsistent with the simple geometrical optics phenomenon taking place.

The preliminary pre-flight vignetting function determined in February 1971 is, on the average, about six percent higher than that reported in this memorandum. Another determination of the vignetting using the PDS microdensitometer, was made by D. Wilson in 1974. He derived a vignetting function essentially from one line scan. The present study continued this work in examining any possible azimuthal asymmetry in the vignetting function. Two results lead us to conclude that this instrument azimuthal asymmetry in vignetting is negligible: 1) the Wilson study and the present result differed by only three percent; and 2) the average standard deviation of the vignetting function at a particular radius over all angles, was 3.5 percent.

The error in the pre-flight vignetting function is difficult to determine. The estimated error of the vignetting function is at least the same as the standard deviation of the set of measurements in a theta scan (3.5 percent). This neglects possible errors in the D-Log E conversion but includes microdensitometer and random processing errors. A reasonable estimate of the total error is, at most, ten percent in the range from 2.5 $R_\odot$ to 6 $R_\odot$. The error for the region below 2.5 $R_\odot$ cannot be estimated.

Finally, it is important to note again that the instrument camera as flown on Skylab was modified at the field stop aperture after preflight tests were done. A difference between these results and the

flight vignetting is indeed expected. The flight film data shows a marked decrease in transmission at the outer edge of the field when inspected visually. At present, it is believed that the pre-flight measurements summarized herein represent an accurate determination of the vignetting function encountered in flight over the range from ~2.5 $R_\odot$ to ~5 $R_\odot$; a more precise determination of the function within 2.5 $R_\odot$ and outside 5 $R_\odot$ is determined from comparisons of ATM coronagraph results and ground and airborne eclipse measurements on 30 June 1973 (see following).

Ground-based Eclipse Measurements

The most accurate determination of in-flight vignetting was carried out by comparing ground-based coronal photographs of the 30 June 1973 eclipse with nearly simultaneous WLC observations. A direct comparison of total intensities served only to confirm the general character of pre-flight vignetting due to interference from stray light in the coronagraph and sky background in the ground-based observations. A comparison of the polarization brightness products, which is relatively insensitive to the unpolarized stray light and sky background showed a significant deviation in the inner corona (less than 2.5 $R_\odot$).

The total solar eclipse of 30 June 1973 was observed from the ground by the HAO coronal camera at a site near Loiyengalani, Kenya. Both a clear filter and three polaroid filters oriented 60° apart were used to determine the linear polarization of the unvignetted corona out to 4 $R_\odot$ from sun center. Following Newkirk, Dupree and Schmahl (1970), Lilliquist found a sky background Stokes vector of ($1.2 \cdot 10^{-9}$, $-8 \cdot 10^{-11}$, $2 \cdot 10^{-1}$,0.). Using this correction, he calculated the polarization brightness for comparison with the coronagraph data.

The coronagraph vignetting function is then, except for an overall cross calibration factor, simply the ratio of coronagraph pB to the unvignetted coronal camera pB from identical coronal locations.

In order to make a reliable determination of radial vignetting, the following procedure was employed. A radial vignetting curve in steps of .02 $R_\odot$ was calculated at position angles corresponding to regions of high pB. These curves were then averaged in two ways. First a straight mean curve was calculated. Since the apparent angular vignetting variation was similar at different radii, a second curve was calculated by applying a multiplicative shift to each single curve, determined by ratioing to standard curve, and then averaging. The two average curves thus obtained were identical, but the lower standard deviations obtained with the second method better represent true uncertainties.

The mean vignetting curve thus far obtained still contains a multiplicative factor relating the <u>absolute</u> calibrations of the coronagraph and coronal camera. By comparing this curve with the pre-flight vignetting curve between 2.5 and 3.5 $R_\odot$ a region where both are reliable, the coronal camera intensities were found to be .73± .02 of the coronagraph intensities. Table 2 lists the final vignetting function and standard deviations calculated from the coronal camera comparison. Figure 29 compares the pre-flight and coronal camera vignetting functions. Note the excellent agreement between 2.5 and 3.5 $R_\odot$, and the differences below 2.5 $R_\odot$, where the pre-flight vignetting was least reliable.

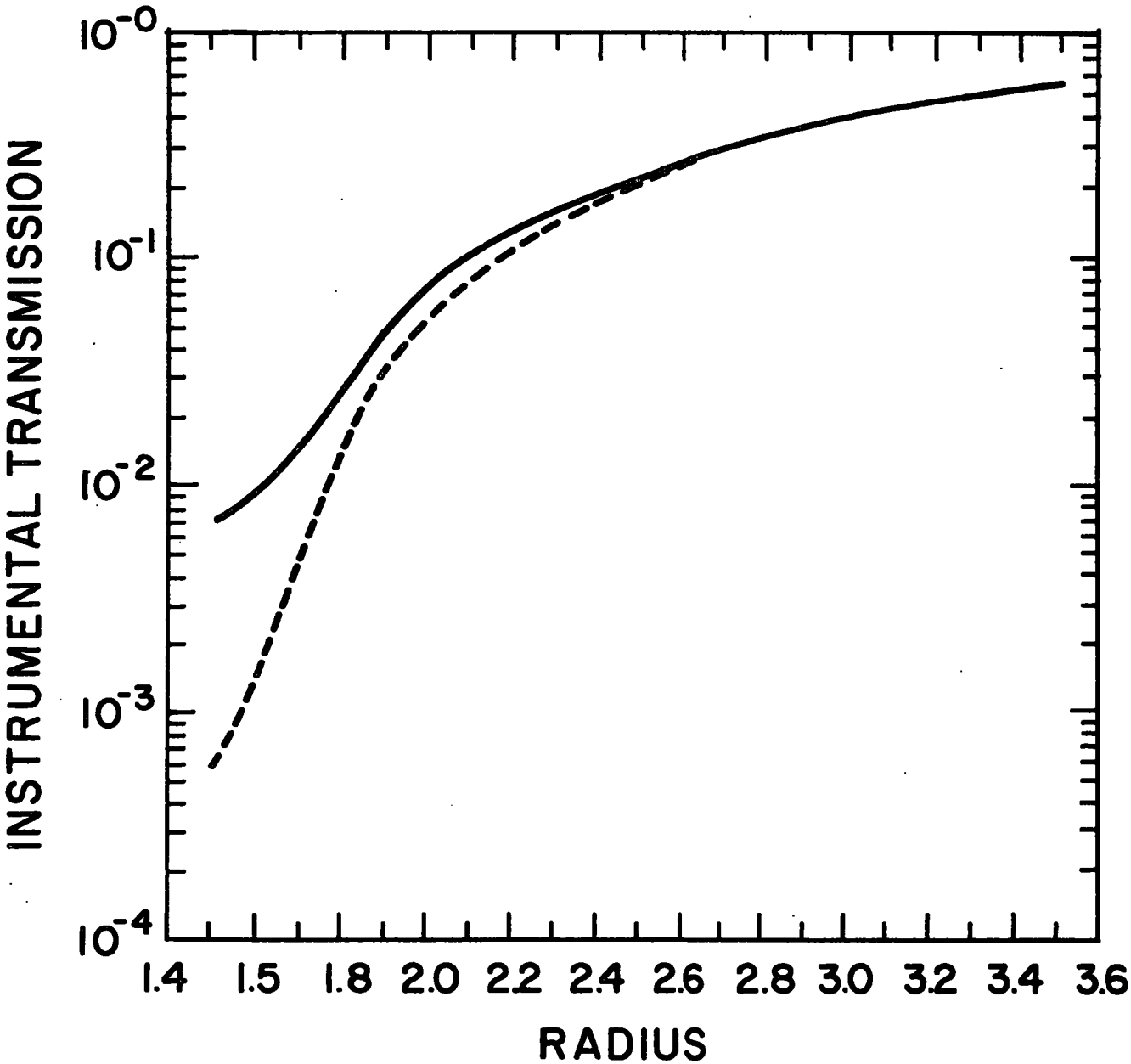

INSTRUMENTAL TRANSMISSION
10^-0
10^-1
10^-2
10^-3
10^-4
1.4
1.5
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
RADIUS

Figure 29

The mean vignetting function obtained from the coronal camera comparison below 3.5 $R_\odot$ and the pre-flight values from 3.5 to ~5 $R_\odot$ form the final vignetting curve over this range of heights. This curve and the polarization reduction of the last section provide the means of obtaining the coronal polarization brightness within the coronagraph field of view. Thes pB values may then be used in the reconstruction of coronal election densities.

5. Stray Light

The measurement of the instrumental scattered light utilized film data from near the time of the annular eclipse of the sun, December 24, 1973. Thirty-one frames of three fast scans taken during the eclipse were rastered on the HAO PDS microdensitometer with a 50 μm entrance aperture. The frame were chosen such that the moon was imaged at different radii in subsequent frames (as a result of the changing Skylab, moon, and sun orbital positions). A specially dodged 27 sec exposure which emphasized lunar features was used to identify various regions on the moon by comparison with a lunar atlas (Alter, 1964).

Let a region A be chosen on the moon for which the normal albedo is known (the importance of this will soon be apparent). The radiance measured when region A is at radius r in the field of view is:

$$R(r,A) = V(r)\, L(A) + S(r)$$

where

$R(r,A)$ = measured radiance at position r for region A

$V(r)$ = vignetting function

$L(A)$ - radiance of lunar region A

$S(r)$ = scattered light.

This procedure can be repeated for another region B, and then the measured radiance plotted. A comparison of the results for the two regions shows that from about 4 to 6 $R_\odot$ the radiance levels are offset by approximately a constant amount. This difference can be examined at every radius r:

$$R(r,A) - R(r,B) = V(r)\,\big(L(A) - L(B)\big)\ ;$$

and one can calculate a $\Delta L(AB) = L(A) - L(B)$ since $V(r)$ is known. A

knowledge of the contrast of the lunar regions, where contrast = $C(AB) = L(A)/L(B)$, then permits one to find $L(A)$ and $L(B)$ as follows:

$$L(A) = \left(C(AB)/\ C(AB) - 1\right)\ \Delta L(AB)$$
$$L(B) = \left(C(AB) - 1\right)\ \Delta L(AB)\ .$$

The lunar contrast of two features is taken to be the ratio of the normal albedos for those regions. The normal albedo is defined (Hapke, 1971), as the ratio at zero phase angle of the brightness of an area, tilted at an arbitrary angle to the direction of the incident rays, to the brightness of a Lambert disk subtending the same solid angle as the area of interest but oriented perpendicularly to the direction of the sun. The normal albedo for over a hundred regions on the moon has been tabulated (Asaad and Mikhail, 1974).

Once the contrast $C(AB)$ and radiance difference $\Delta L(AB)$ is measured, it is a simple matter to derive the scattered light $S(r)$, as shown in Figure 30.

The character of the scattered light is seen to be a smooth function with a maximum ($\sim 1.6 \times 10^{-9}\ B_{\odot}$) at the inner limit of the field of view and, in the region from 4 to 6 $R_{\odot}$, a roughly constant level of $4 \times 10^{-10}\ B_{\odot}$. The outer level is approximately a factor of 2 to 4 decreased from the coronal contribution.

The method is based on several assumptions:

1. The scattered light is a function only of radius in the field (azimuthal symmetry over the limited range of angle examined is a good approximation for the purpose of this study;

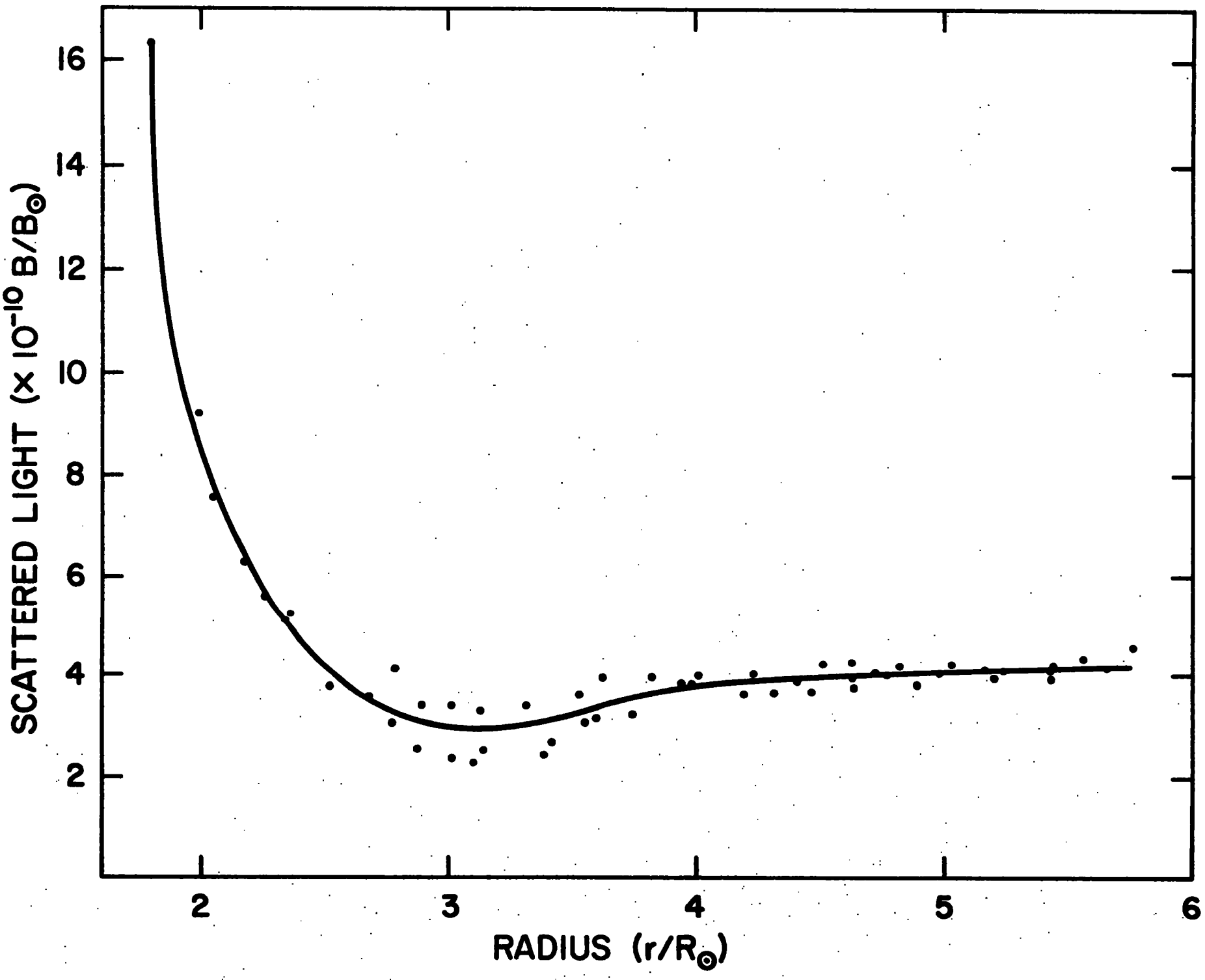

SCATTERED LIGHT ($\times 10^{-10}$ B/B$_\odot$)
16
14
12
10
8
6
4
2
2
3
4
5
6
RADIUS (r/R$_\odot$)

Figure 30

2. The scattered light is assumed unvignetted;
3. The normal albedo at zero phase angle (full moon, for which the data is available) is equal to, within a multiplicative constant, the normal albedo at 180 degree phase angle (new moon or solar eclipse).

The analysis of lunar features during solar eclipse to determine scattered light is not unique. Two alternative ways were looked at and a cursory analysis indicated a similar result to that in the present study. One method assumed that the scattered light is constant in the outer field, then a derivative of the measured radiance gives

$$\frac{dR(r,A)}{dr} = \left(\frac{dV(r)}{dr}\right) L(A)$$

and L(A) is solved for directly. The drawback to this method is that the scatter in data points (Fig. 30) puts a rather large uncertainty on the derivative and, hence, also on the desired lunar radiance.

The other method relies on making a measurement of two different lunar features at the same radius, r_1:

$$R(r_1,A)=V(r_1)\ L(A) + S(r_1)$$

$$R(r_1,B)=V(r_1)\ L(B) + S(r_1)$$

which when combined give

$$S(r_1) = \Big(C(AB)\ R(r_1,B) - R(r_1,A)\Big) / \Big(C(A_1B) - 1\Big)$$

where C(AB) = L(A)/L(B). The advantage of the vignetting function dropping out is offset by the paucity of points where two features are

measured exactly at the same position in the field.

Finally, it is to be emphasized that a detailed subtraction of the stray light can only follow from examination of the actual contribution of stray light at position angles in question. These preliminary results are applicable for position angles in range 20-50 degrees and 106-114 degrees (measured eastward from the instrument pylon) and apply only for the so-called "compromise" coronagraph pointing (Section A).

II. EXPERIMENT OPERATION AND PERFORMANCE

A. Experiment Operational Philosophies

1. Introduction

This section covers the philosophies which governed the operation of the white light coronagraph experiment from the scientific point of view; there is included a discussion of the way in which the film supply was expended during the manned and unmanned mission portions. This discussion includes presentation of the pattern of the coronagraph observations, and histories of observations. Next, there is discussed the coronagraph participation in the program of joint observation (JOP) - the coordinated program involving the execution of experiment operations in studying specific problems of solar physics. Finally, because a substantial effort was made to observe coronal transient phenomena during the mission, a detailed listing of the transients actually observed, with correlative solar activity, is included in Section II-A-4.

2. The Expenditure of Coronagraph Film

The intent of this section is to enable investigators to wisely choose particular sets of coronagraph data applicable to their problems. Therefore, in this section we give a visual presentation of the pattern of the coronagraph's routine observations of the corona; additionally, we give tabular histories of observations of scattering in the terrestrial atmosphere, of cometary observations, and of stellar observations.

The Joint Observing Programs (JOPs) and Building Blocks (BBs)

which were defined before the Skylab mission (and which are described in Section II-A-3 of this report) served to indicate - to the mission planners and to the astronauts - the sort of experiment operations which would be desired by the scientists. In only a few cases were the programs specified in the JOPs run to completion, because of demands upon astronaut time, hardware malfunctions, changing solar conditions, etc. In some cases, more observations were acquired but were of different nature than specified in the JOP. For these reasons, this section presents the actual history of the coronagraph's observations with little or no reference as to how these observations were planned.

The coronagraph observations readily divide into what might be called routine observations and special programs. In the routine category we find the usual modes of coronagraph operation (standard, continuous, extended standard, fast scan) with the usual target, the solar corona. Observations of scattering in the terrestrial atmosphere, observations of Comet Kohoutek (1973f), and stellar observations comprise the special programs.

a. Routine Observations

Several coronagraph operating modes and combinations of modes can be thought of as allowing distinctly different types of data manipulation. For example, a standard patrol permits polarization to be determined, but a continuous patrol contains photographs more suitable for averaging to reduce grain noise. Similarly, a fast scan gives very high time resolution, whereas a quickie (=just three frames of a continuous patrol) gives a snapshot, and a BB-1 (two standard patrols with 90° roll between them plus, perhaps, some frames of continuous

patrol) affords the opportunity to see, and determine the polarization over the entire corona. The times and types of these modes of routine observations are presented in Figure 31 for the coronagraph's 227 days of operation. This figure is drawn from, and further details may be found in, the Operations Log books supplied in Section II-4-2 of this report for each camera load. Gaps in temporal coverage are due to equipment malfunction in the coronagraph (10 to 19 June) or in the spacecraft.

The pattern of coronagraph observations is obvious from Figure 31. During the manned missions, a concerted effort was made to obtain a BB-1 observation approximately every 12 hours on a regular basis. Figure 31 allows the success of this effort to be judged. When the ATM control panel was unattended, technical difficulties often prevented as frequent coronagraph operation as was possible when the instrument was directly operated by an astronaut. The experiment was typically unattended by an astronaut from about 0300 to 1300 UT each day, depending upon the times of satellite sunrises and sunsets that day. During the first unmanned period between manned mission, we attempted to obtain coronagraph observations twice each day and during the second unmanned period we attempted to regularly obtain three per day. A sudden burst of coronagraph observations during either manned or unmanned periods often indicates the suspected presence of a coronal transient. The preliminary list of coronal transients included in Section II-A-4 may be checked to confirm the presence of a transient at these times.

In this report we have not included detailed information

on the correlation of coronagraph observations with other ATM experiments' observations. The reader is referred to the ATM Mission Operations Log prepared by Ball Brothers Reasearch Corporation and furnished by them to the NSSDC. This log has an entry for the start of each mode of each experiment, along with the target of the observation. In addition, the daily summary of ATM operations as executed (building block by building block, with experiment deletions noted), may be useful although it is not provided with this report. Almost always, the daily "synoptic", of BB-1, observations were performed simultaneously by the coronagraph, the ASE and MSFC/Aerospace x-ray telescopes, and the NRL slitless spectroheliograph, and (on a 5 x 5 arc min^2 area at the center of the sun) the HCO scanning spectrometer. No such rule of thumb is possible for the remainder of the observations shown in Figure 26, although there is a fairly high probability that each coronagraph observation shown is accompanied by x-ray observations of the lower corona.

b. Special Programs

i. Abundance of Terrestrial Aerosols

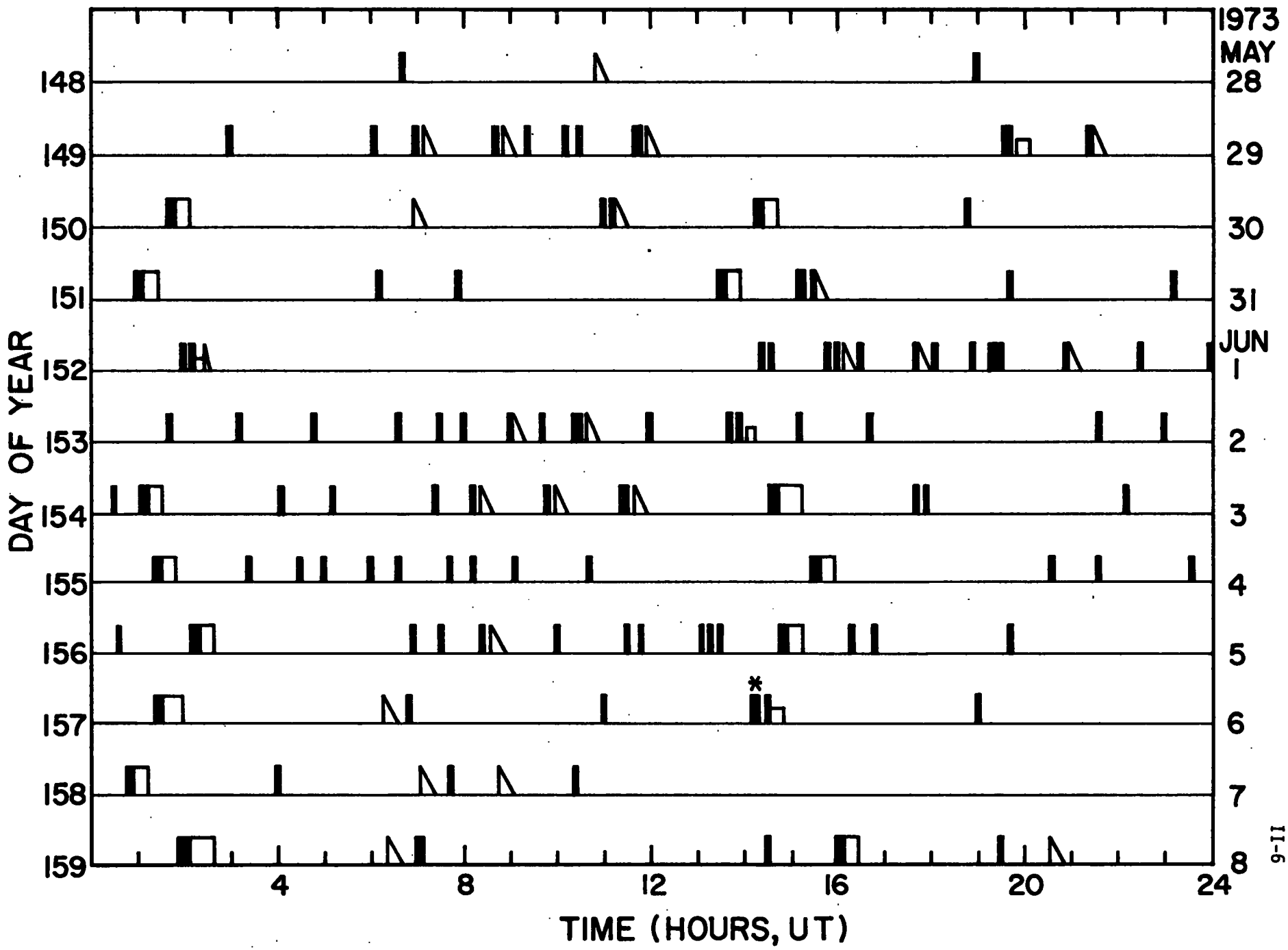
During each 93 minute orbit of Skylab there was an apparent sunrise and sunset at the satellite. That is, the line-of-sight from the satellite to the sun rose through, was above, then sank through Earth's atmosphere. Coronagraph observations during the sunrise portion of the orbit were not possible, but observations during the sunset portion permit, in principle, a measurement of the abundance of aerosols in the upper atmosphere which scatter sunlight into the coronagraph. At this writing, no analysis of these data has been

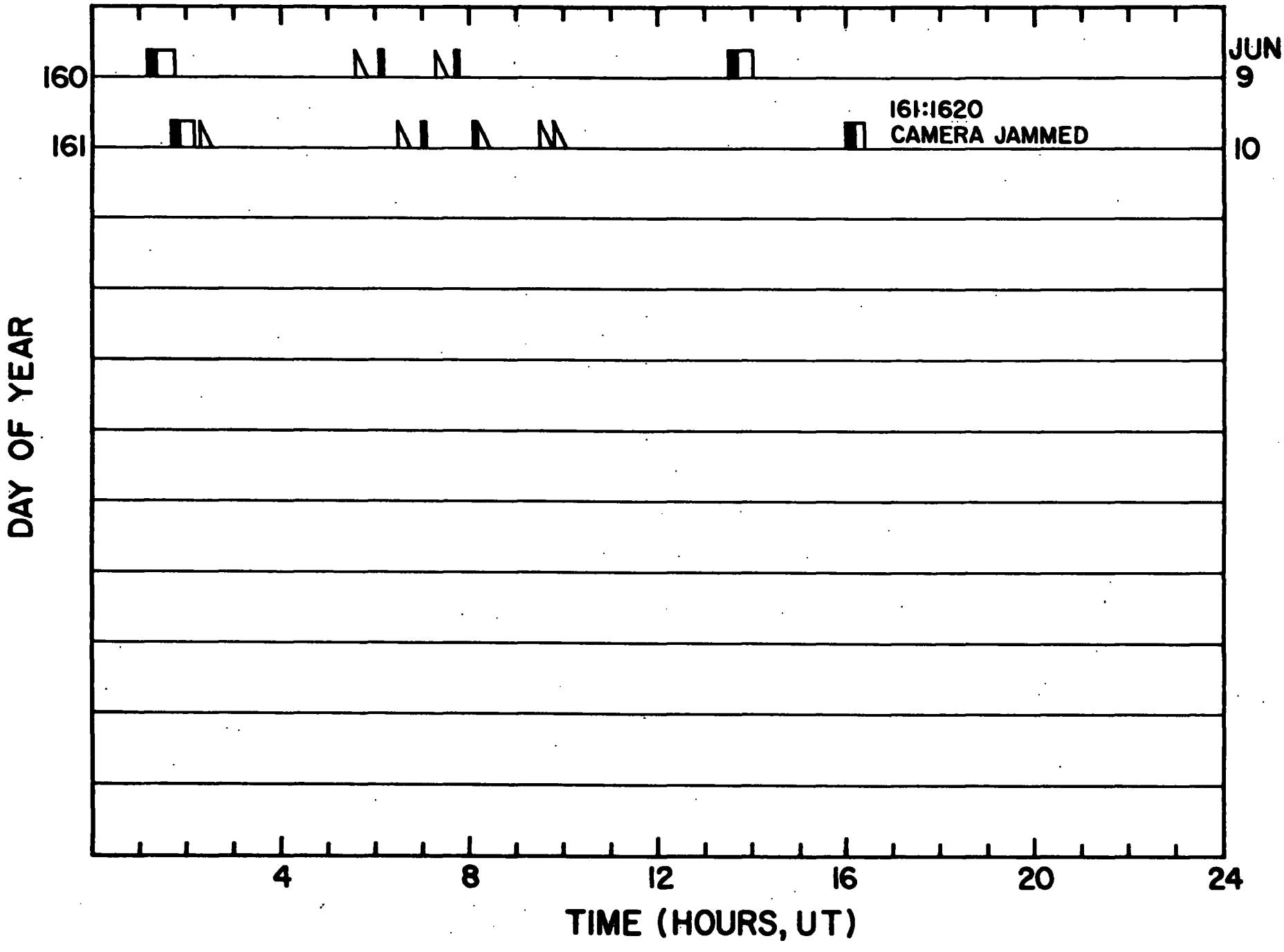
KEY

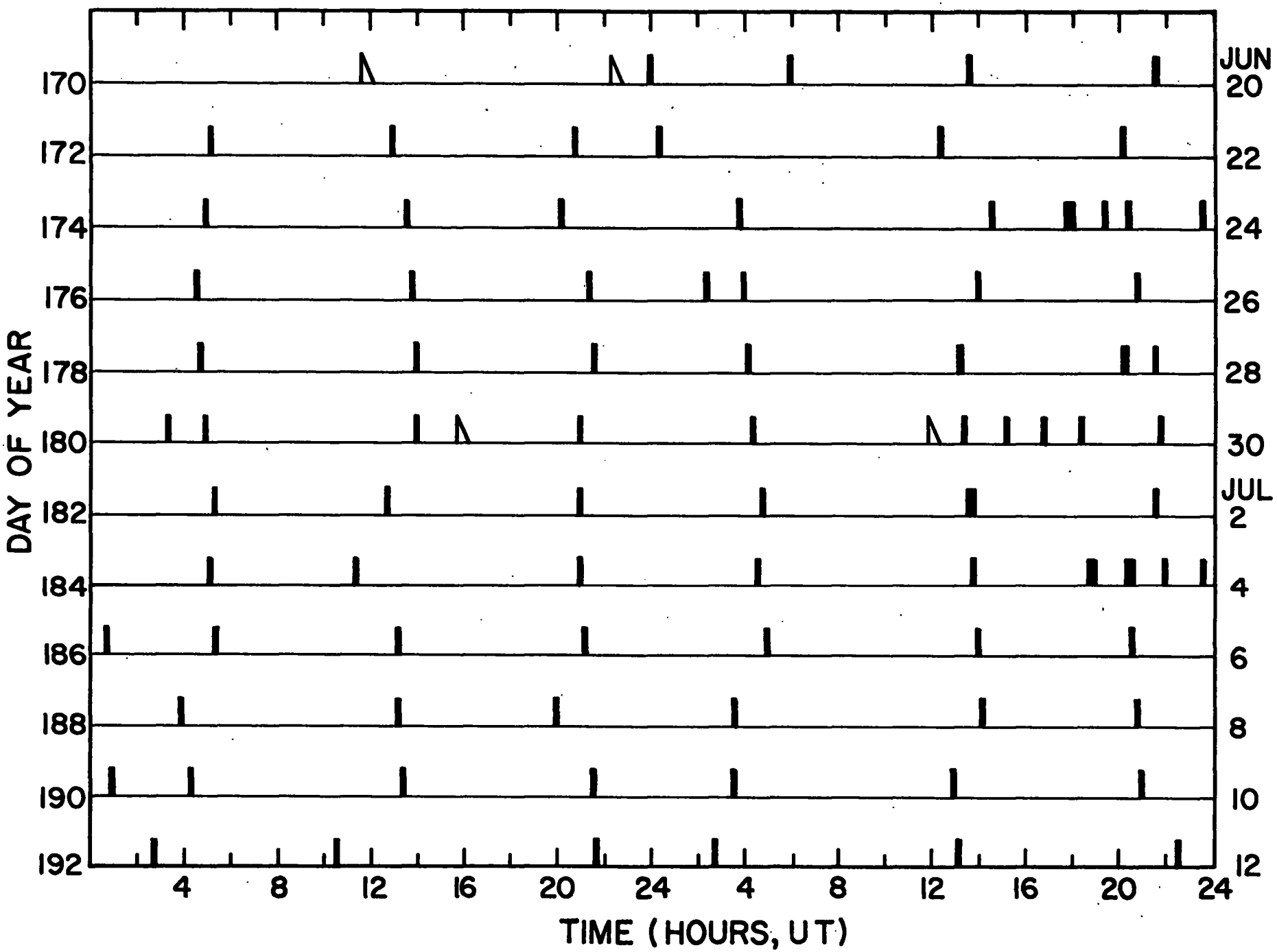
MODE

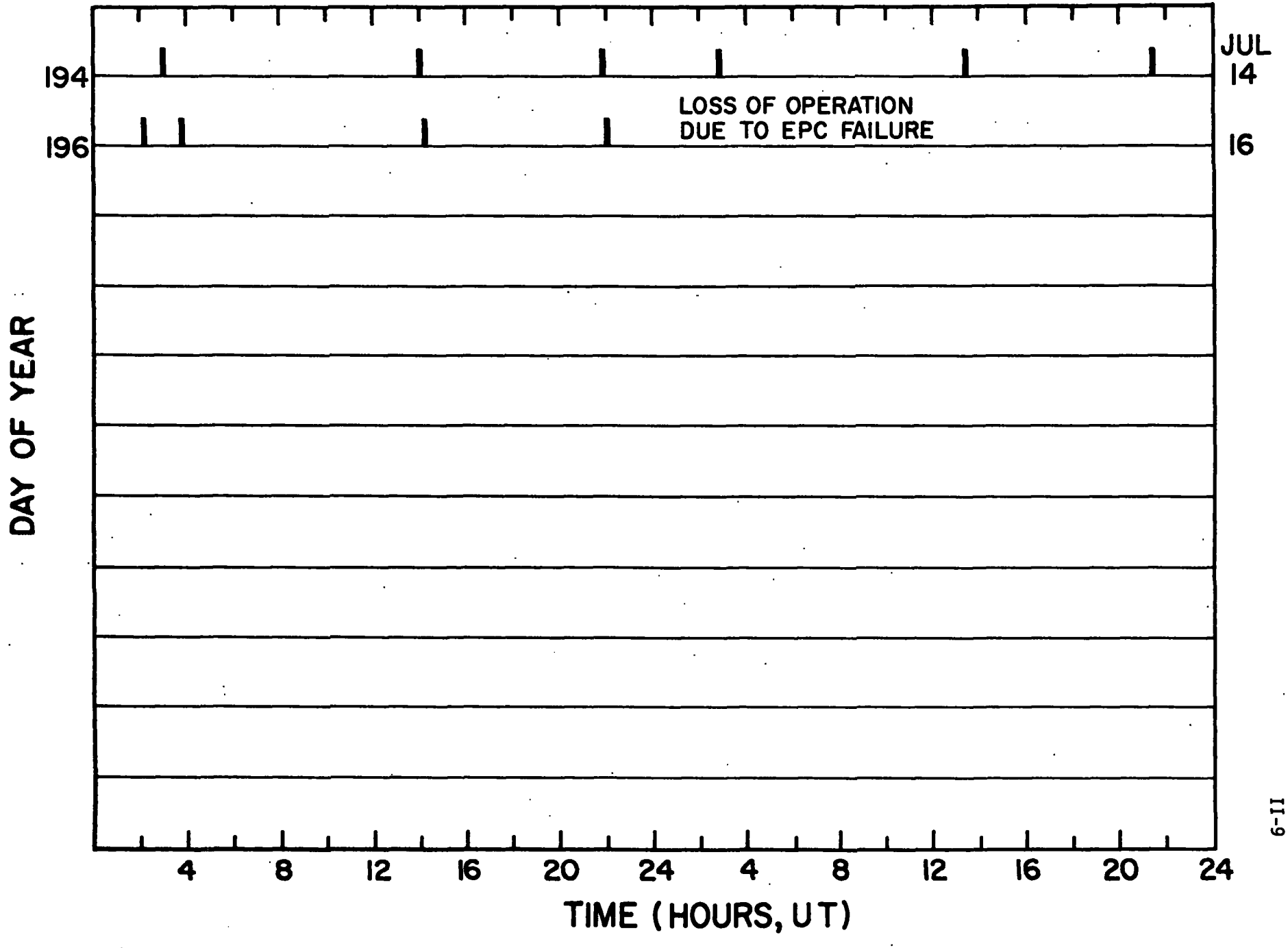
STANDARD	▮
CONTINUOUS	▫
BB-I (STD, (ROLL), STD, CONT)	◧
FAST SCAN	◺
STD-QUICKIE (3 FRAMES LONG) OR CONT (3 FRAMES LONG)	↑
THERE IS A ROLL OF 90° BETWEEN THESE TWO STD's	*

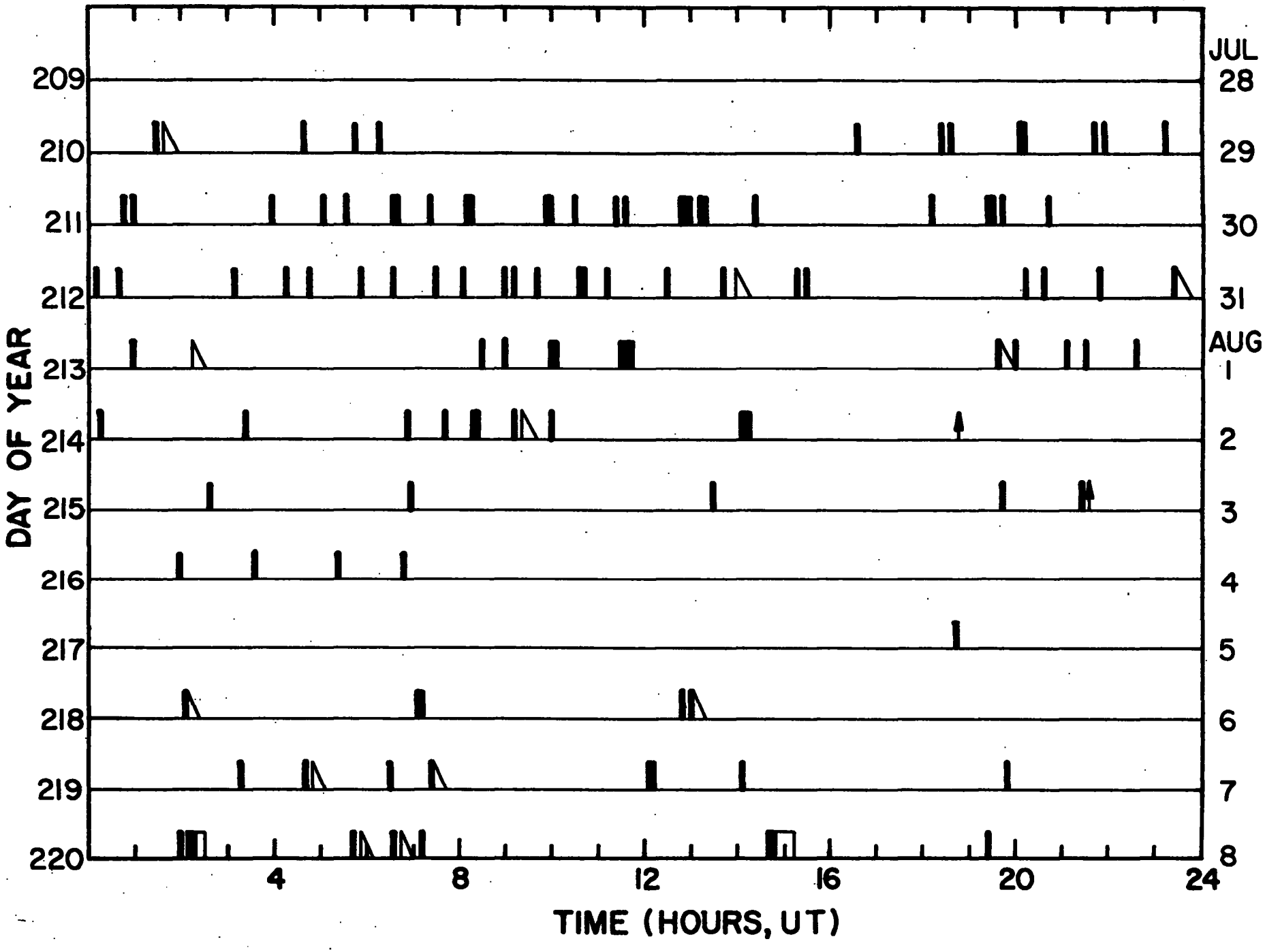
Figure 31

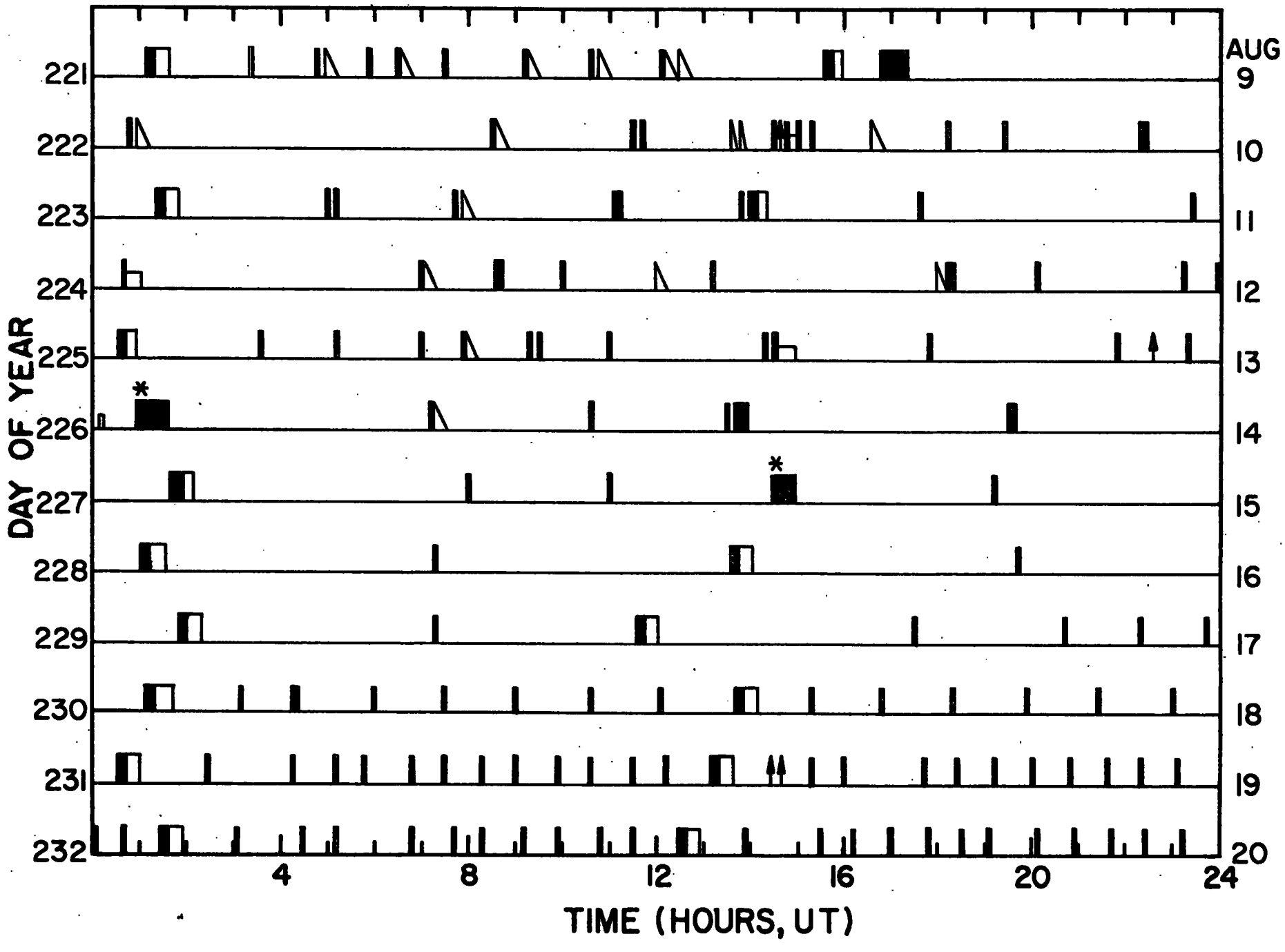

1973
MAY
28
29
30
31
JUN
1
2
3
4
5
6
7
8
148
149
150
151
152
153
154
155
156
157
158
159
DAY OF YEAR
*
4
8
12
16
20
24
TIME (HOURS, UT)


160
161
JUN
9
10
161:1620
CAMERA JAMMED
DAY OF YEAR
4
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
170
172
174
176
178
180
182
184
186
188
190
192
JUN
20
22
24
26
28
30
JUL
2
4
6
8
10
12
4
8
12
16
20
24
4
8
12
16
20
24
TIME (HOURS, UT)


JUL
194
14
LOSS OF OPERATION
DUE TO EPC FAILURE
196
16
DAY OF YEAR
4
8
12
16
20
24
4
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
209
210
211
212
213
214
215
216
217
218
219
220
JUL
28
29
30
31
AUG
1
2
3
4
5
6
7
8
4
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
221
222
223
224
225
226
227
228
229
230
231
232
AUG
9
10
11
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13
14
15
16
17
18
19
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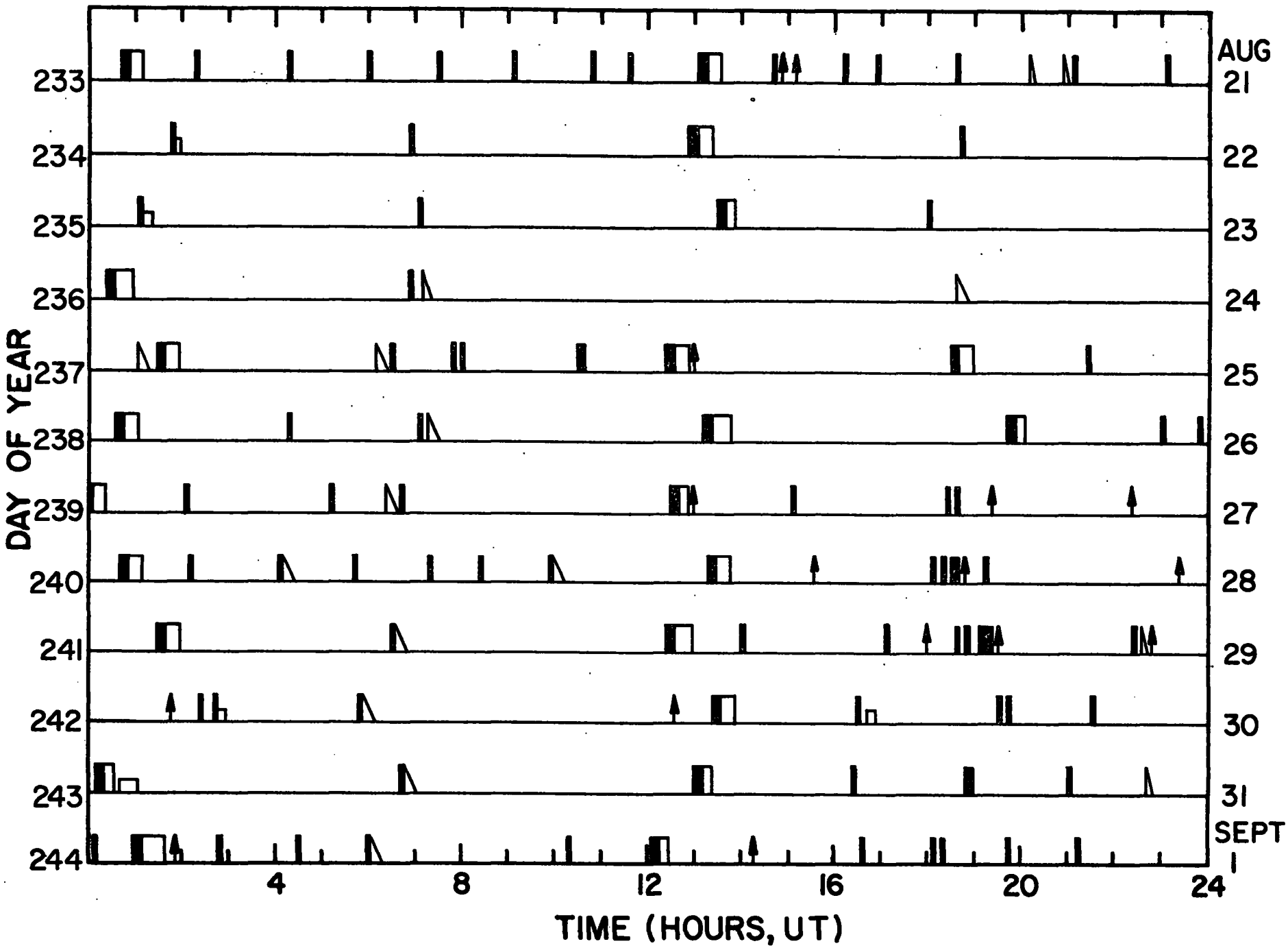
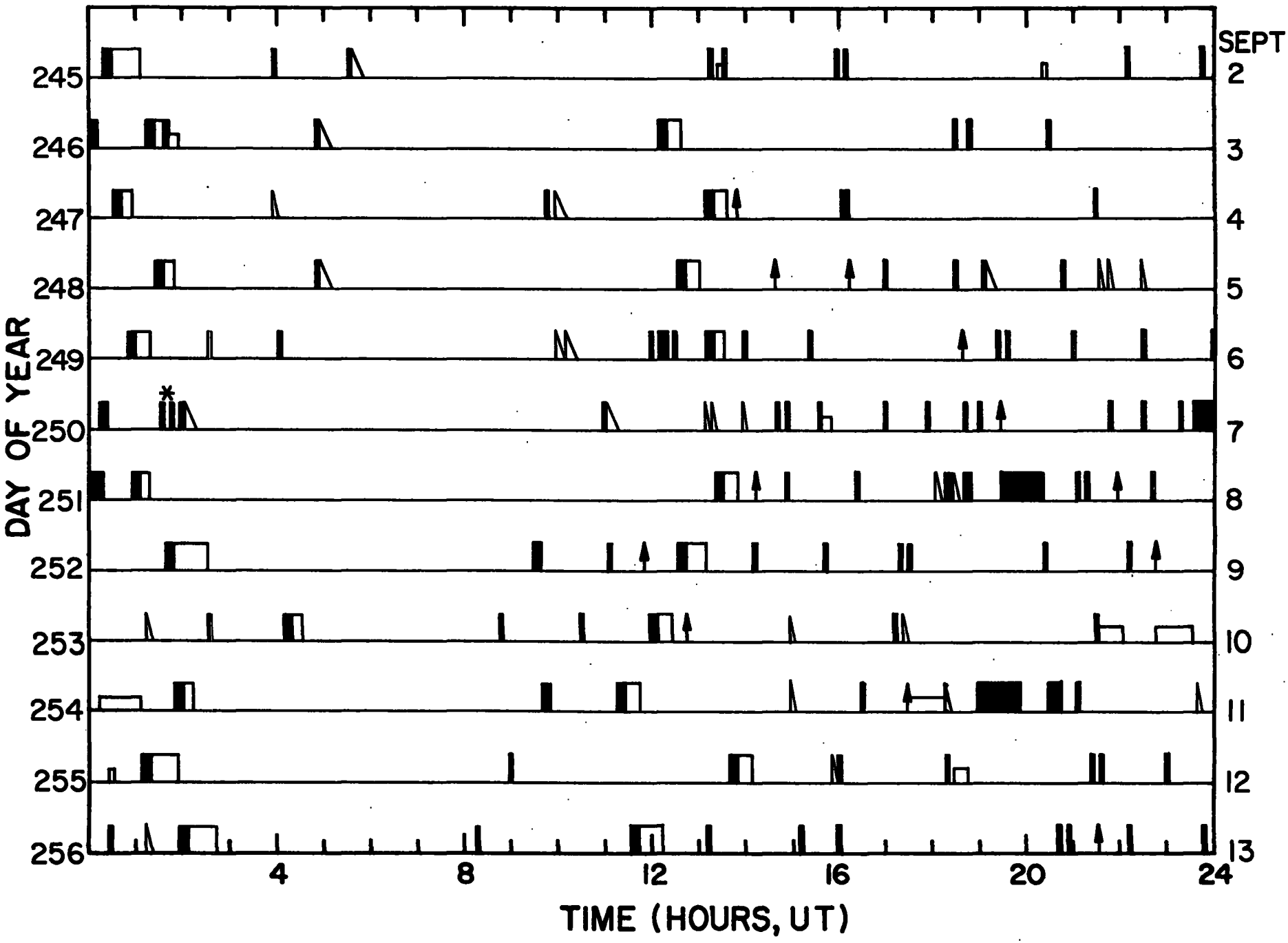
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
233
234
235
236
237
238
239
240
241
242
243
244
AUG
21
22
23
24
25
26
27
28
29
30
31
SEPT
1
4
8
12
16
20
24
TIME (HOURS, UT)


SEPT
245
246
247
248
249
250
251
252
253
254
255
256
2
3
4
5
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9
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13
DAY OF YEAR
4
8
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16
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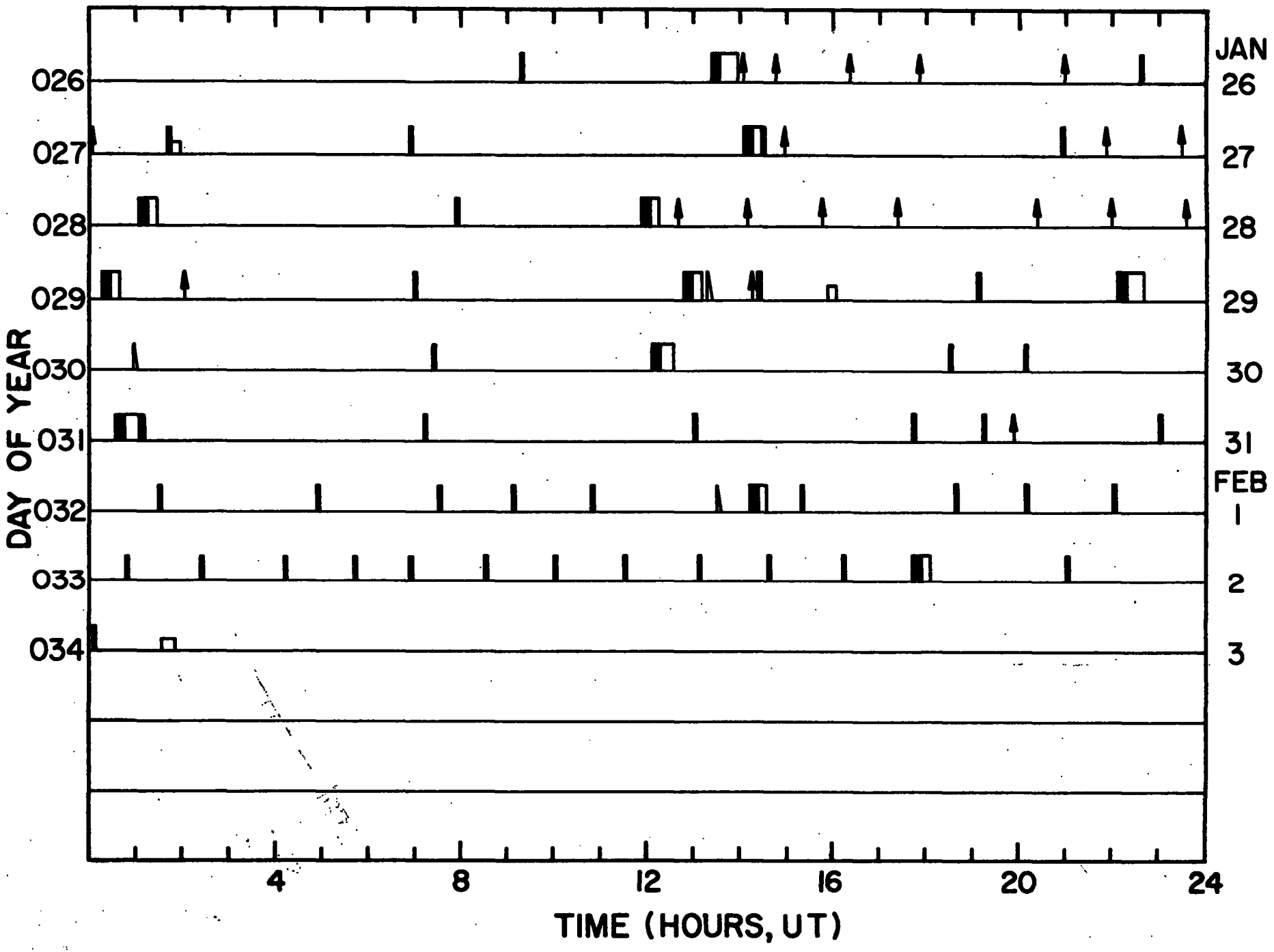
24
TIME (HOURS, UT)


DAY OF YEAR
026
027
028
029
030
031
032
033
034
JAN
26
27
28
29
30
31
FEB
1
2
3
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8
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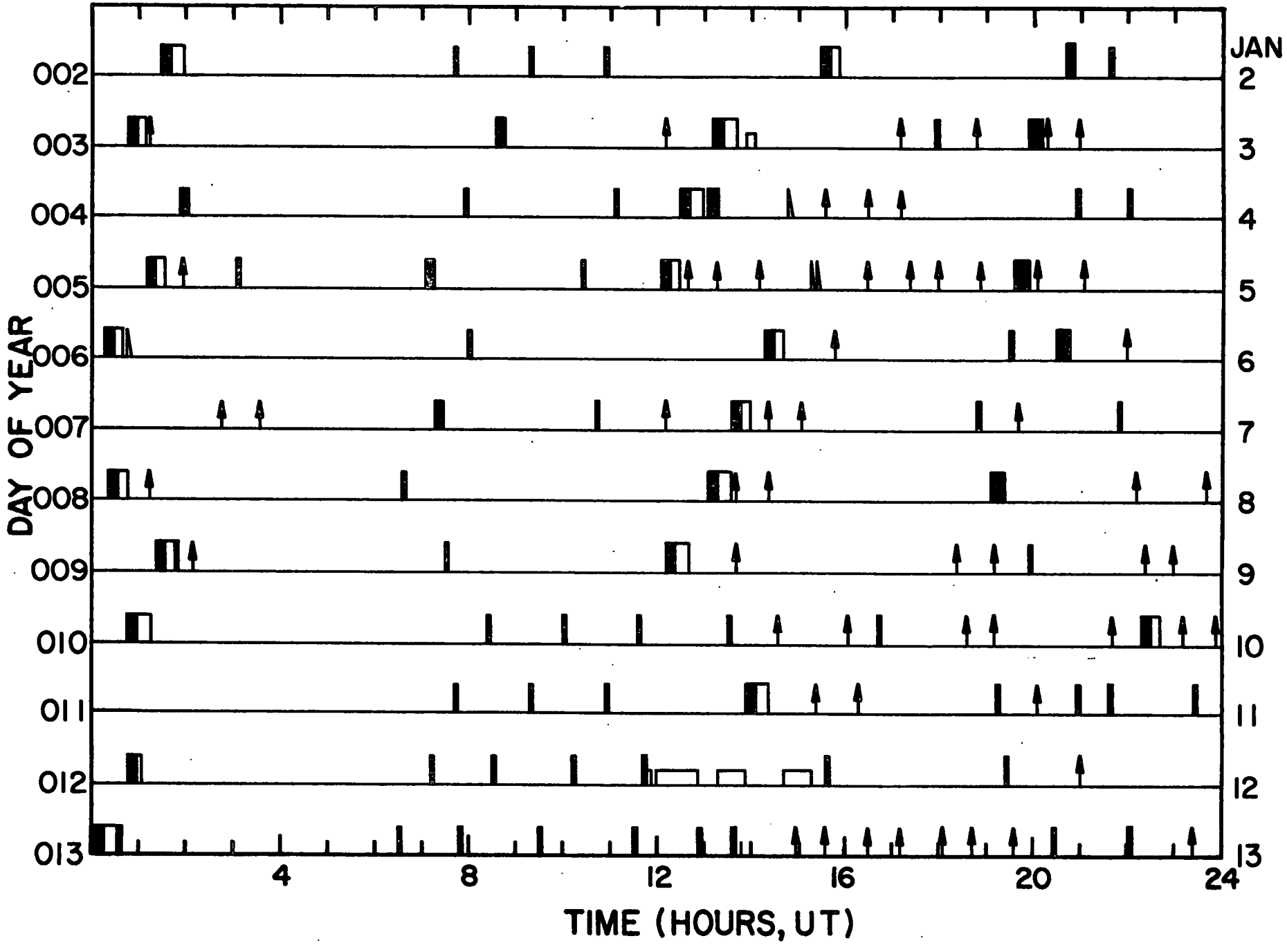
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
002
003
004
005
006
007
008
009
010
011
012
013
JAN
2
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4
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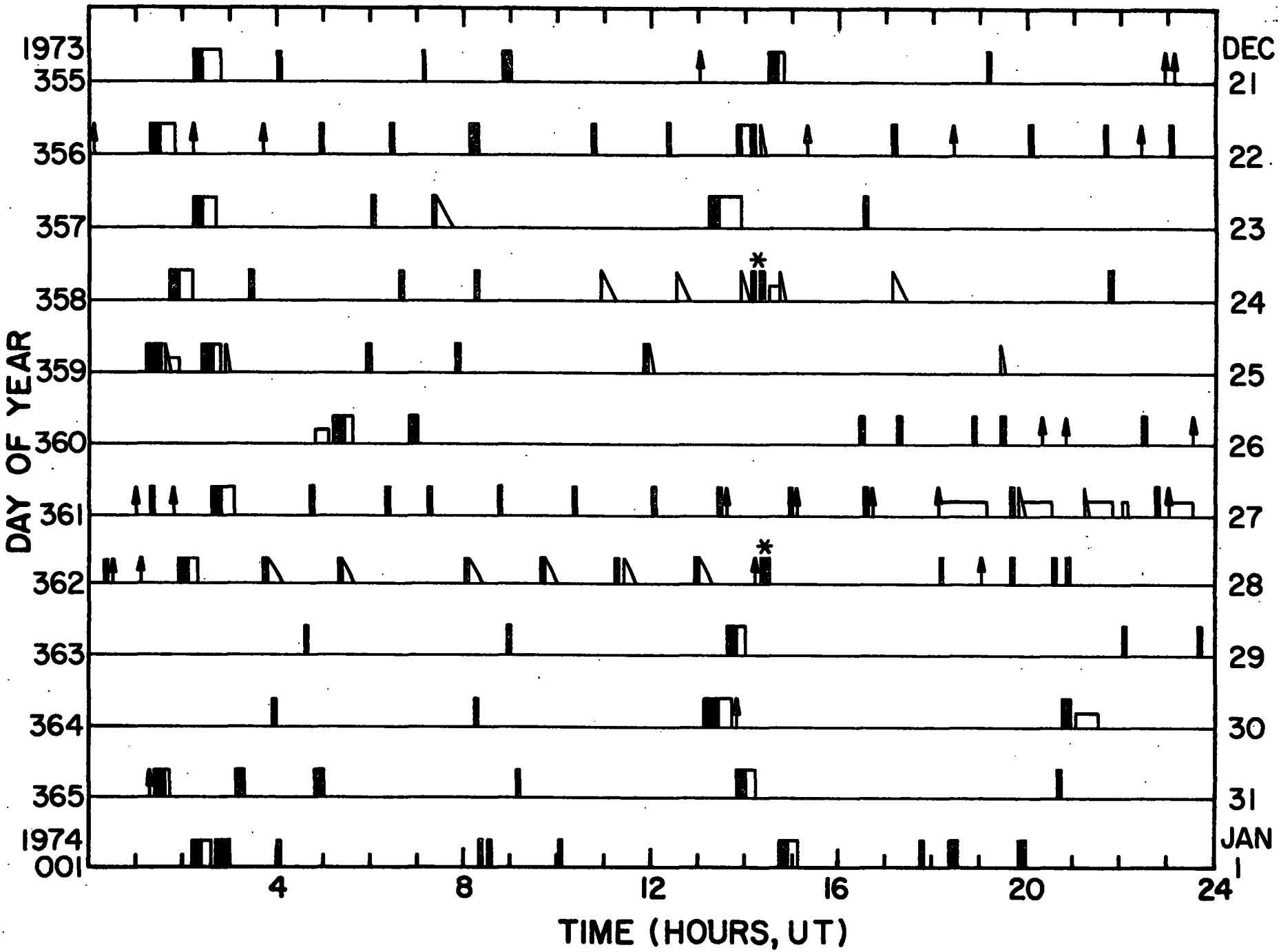
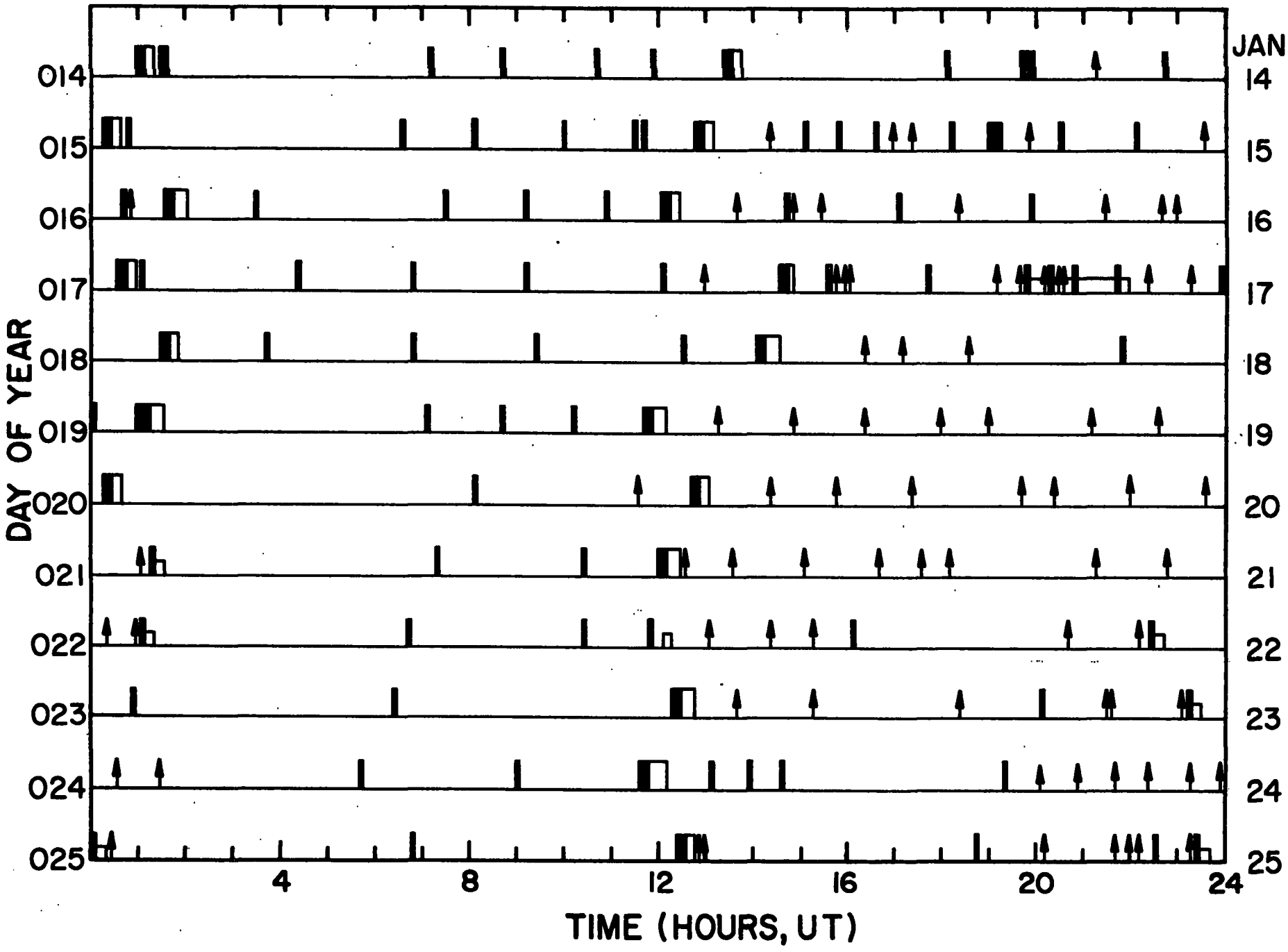
12
16
20
24
TIME (HOURS, UT)


1973
355
356
357
358
359
360
361
362
363
364
365
1974
001
DAY OF YEAR
DEC
21
22
23
24
25
26
27
28
29
30
31
JAN
1
4
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
014
015
016
017
018
019
020
021
022
023
024
025
JAN
14
15
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16
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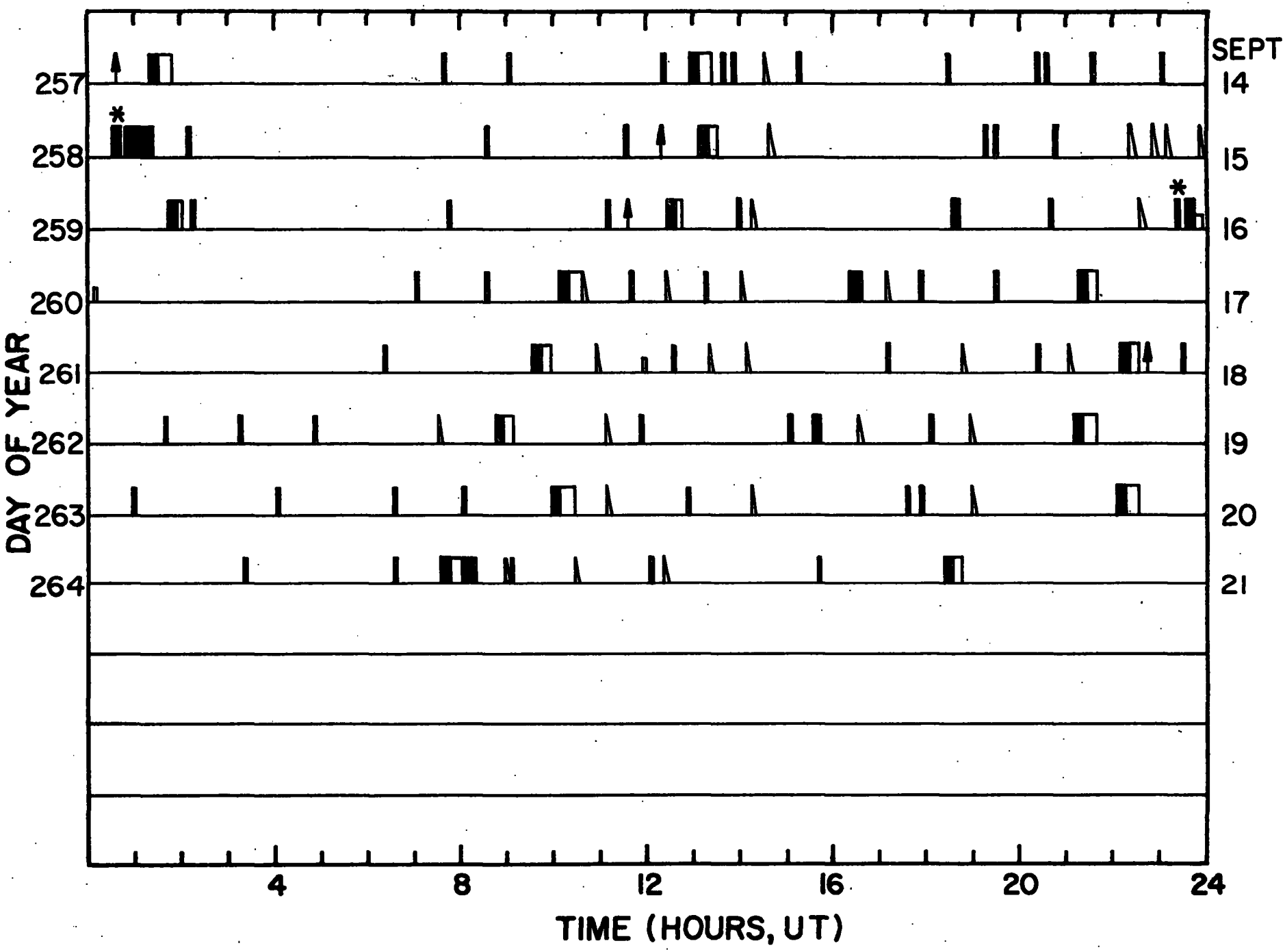
24
TIME (HOURS, UT)


DAY OF YEAR
257
258
259
260
261
262
263
264
SEPT
14
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17
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19
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21
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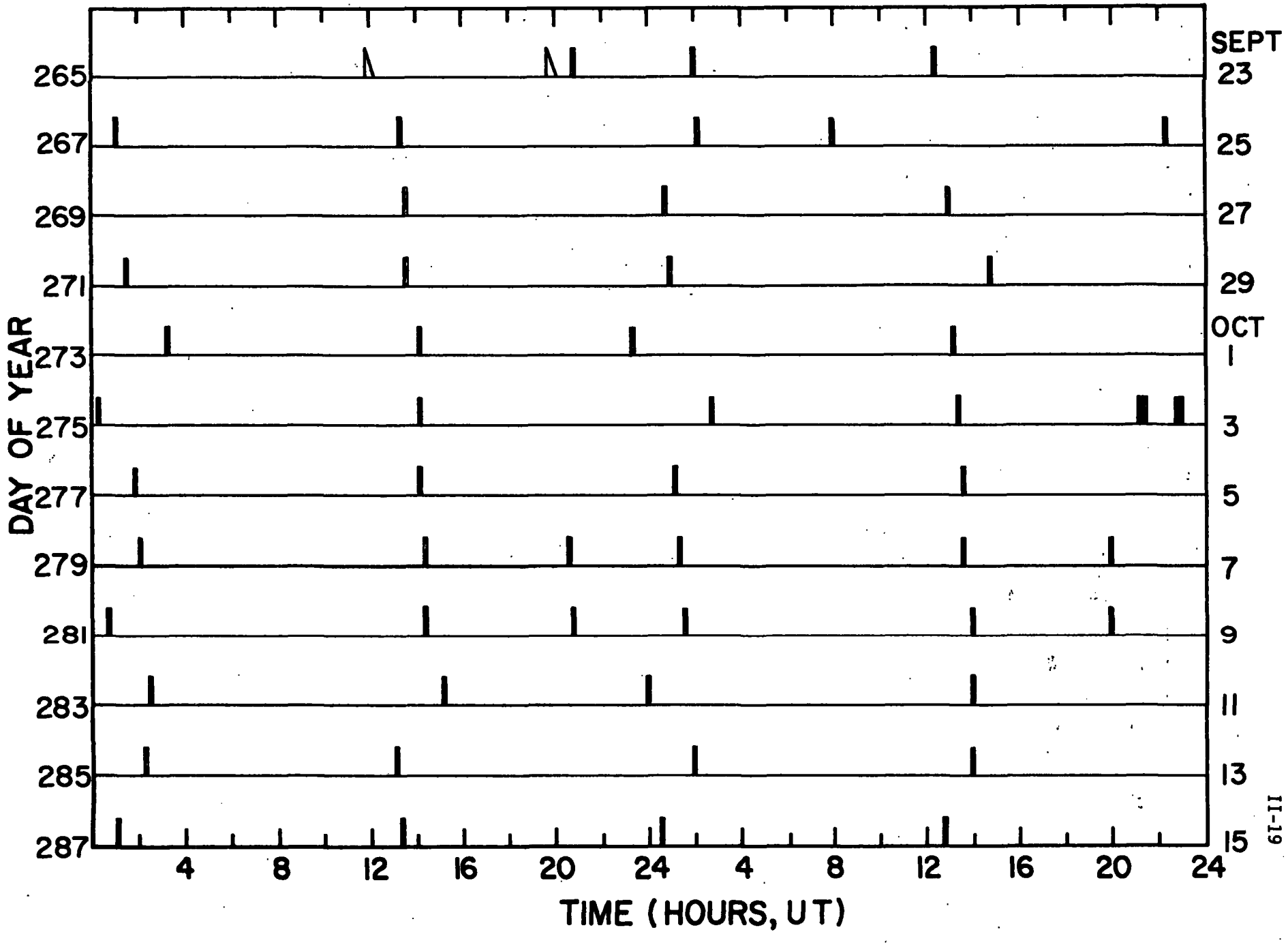
8
12
16
20
24
TIME (HOURS, UT)


DAY OF YEAR
265
267
269
271
273
275
277
279
281
283
285
287
SEPT
23
25
27
29
OCT
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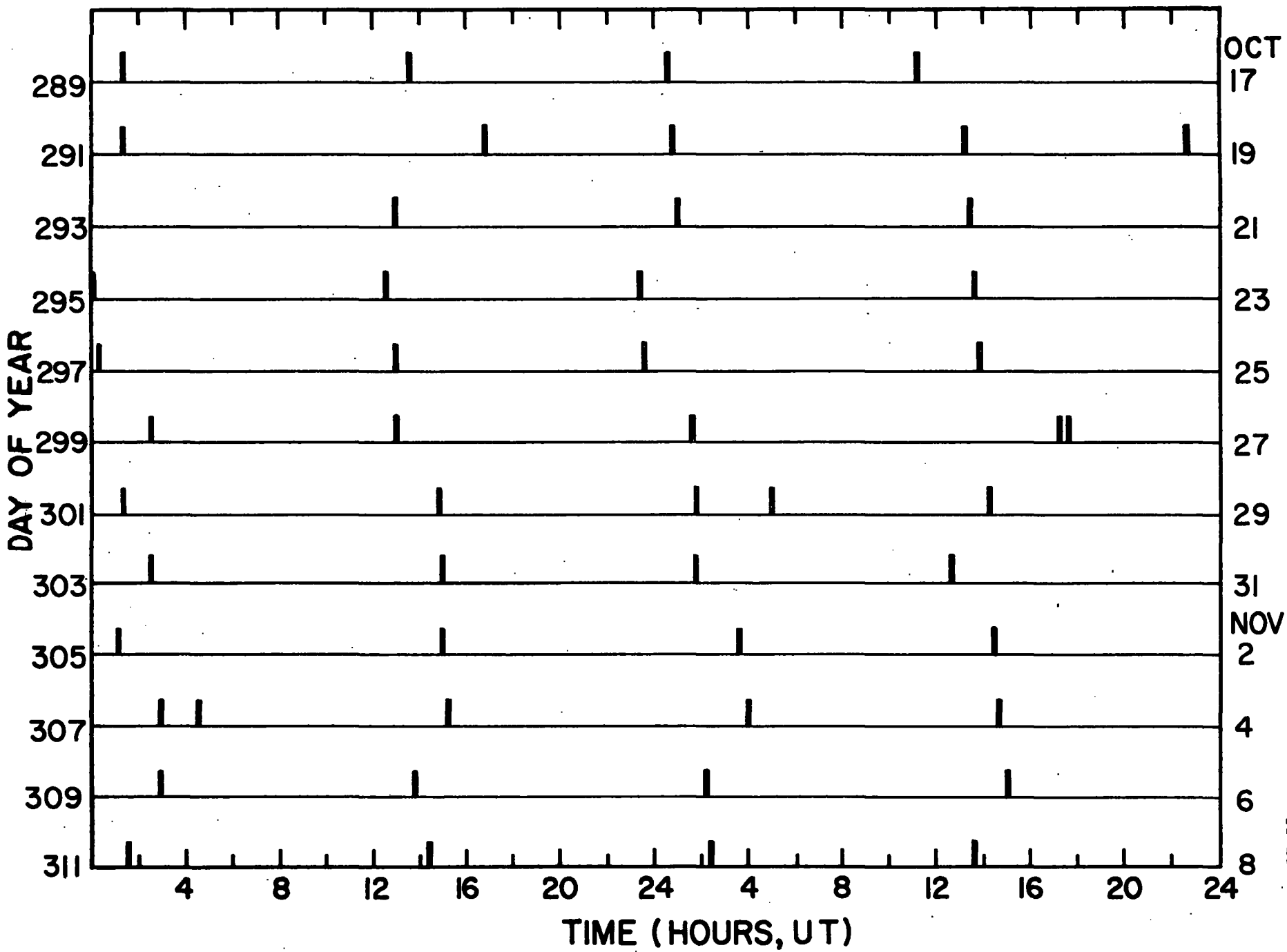
24
TIME (HOURS, UT)


DAY OF YEAR
289
291
293
295
297
299
301
303
305
307
309
311
OCT
17
19
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23
25
27
29
31
NOV
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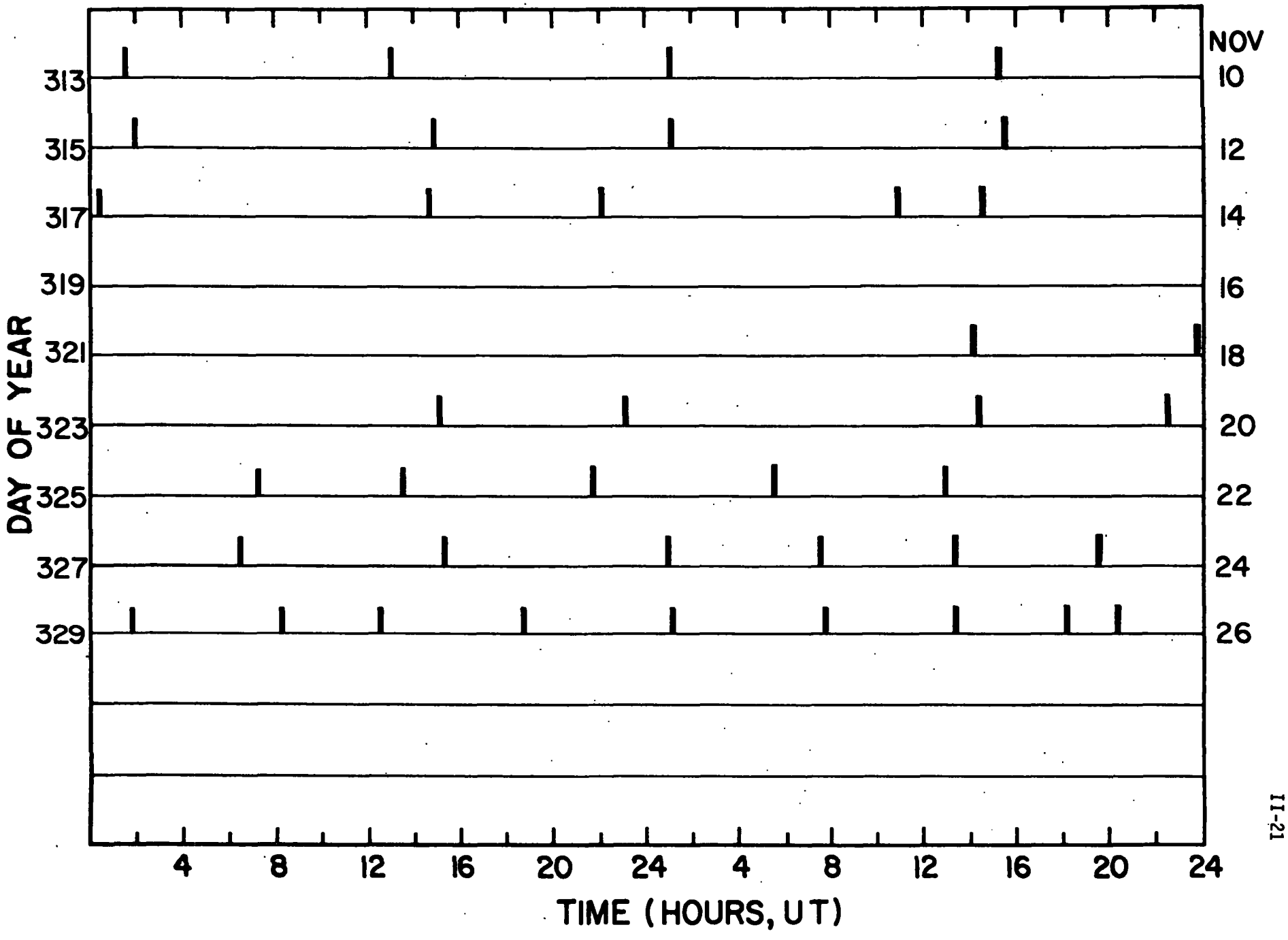
24
TIME (HOURS, UT)


DAY OF YEAR
313
315
317
319
321
323
325
327
329
NOV
10
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18
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22
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12
16
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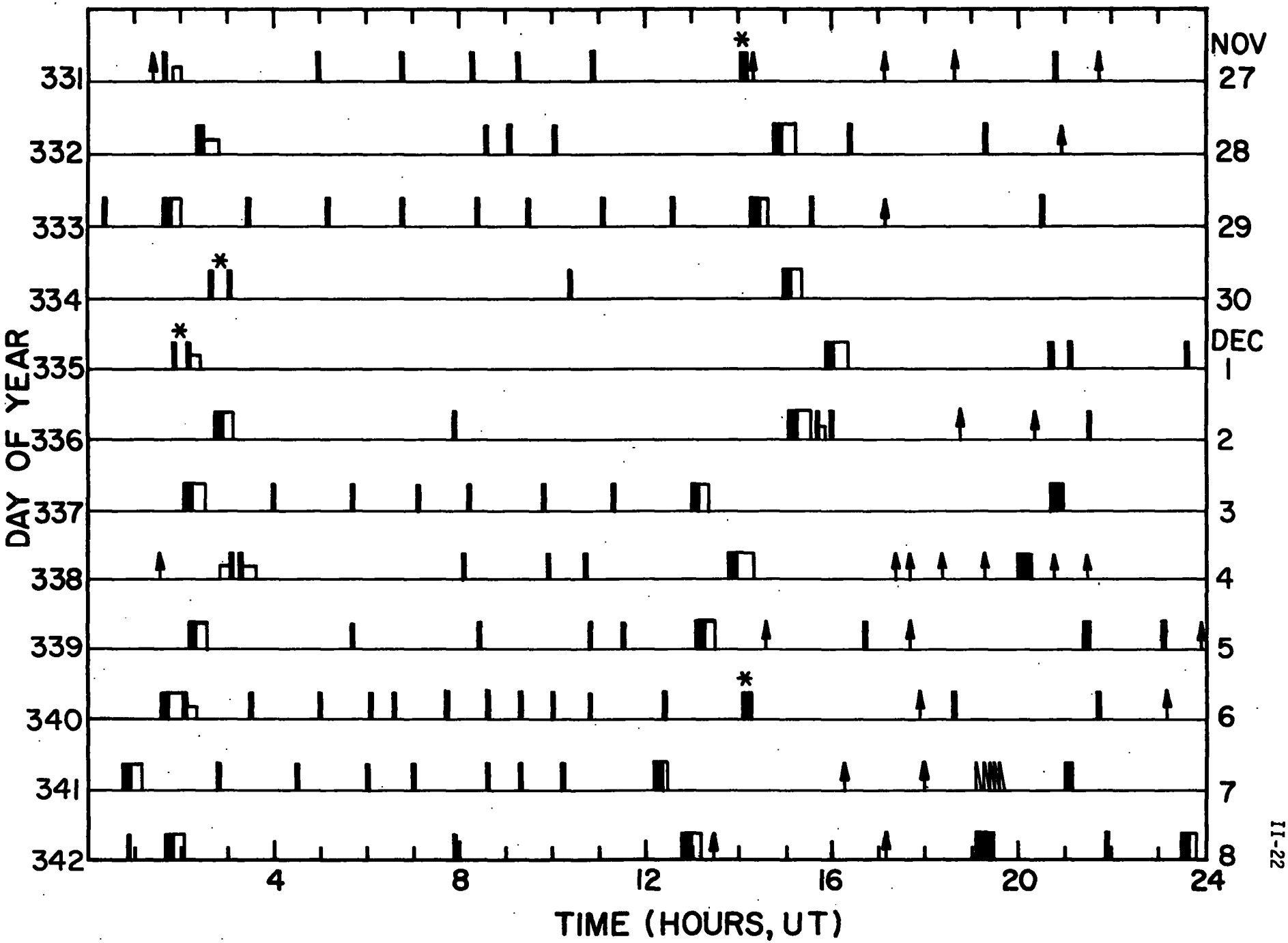
24
TIME (HOURS, UT)


DAY OF YEAR
331
332
333
334
335
336
337
338
339
340
341
342
NOV
27
28
29
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DEC
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12
16
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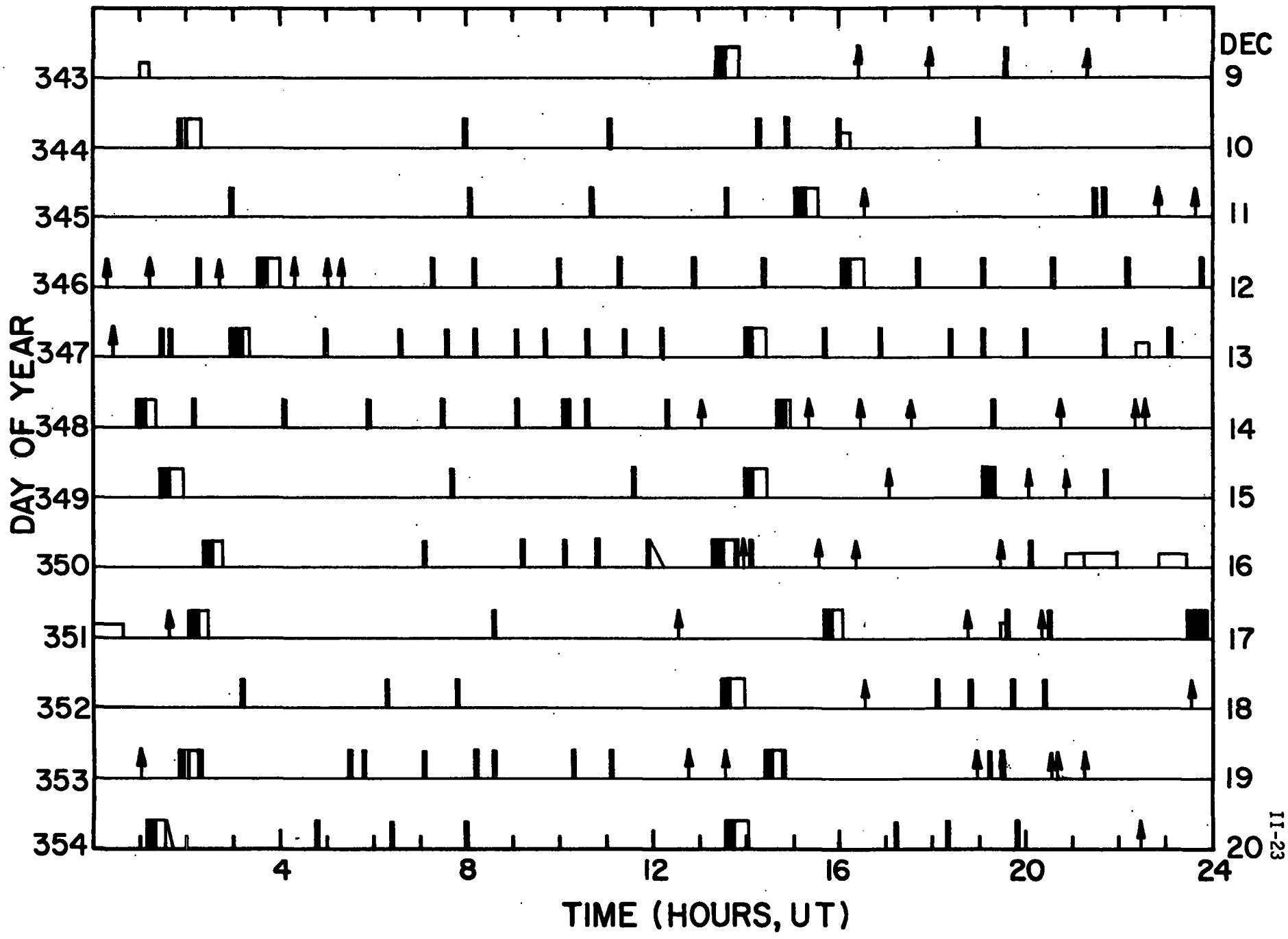
24
TIME (HOURS, UT)


DAY OF YEAR
343
344
345
346
347
348
349
350
351
352
353
354
DEC
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15
16
17
18
19
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16
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24
TIME (HOURS, UT)

performed, and their usefulness is not proven. Several complications render difficult the analysis of these data: the orbital motion of the satellite and the length of the shortest coronagraph exposure ensure that radiation arising from any one height in the atmosphere is spread over a large fraction of each photograph and is overlapped with smeared radiation from other heights; the geometry of the observation is difficult to reconstruct - typically, the line-of-sight moved downward and sideways simultaneously during a series of observations such that the atmosphere over a large area is sampled. Table 12 is a listing of the atmospheric observations obtained by the coronagraph.

ii. Observations of Comet Kohoutek (1973f)

By happy coincidence, a comet elected to appear near the sun during the last manned mission. Although not designed to observe comets, the coronagraph and spacecraft could be and were pressed into that service. The coronagraph observed the comet in two operating modes. The first mode was used when the elongation between the comet and the sun exceeded approximately five degrees. This mode was out of the ordinary in that the attitude of the entire Skylab was adjusted (sometimes through large angles) so as to point the coronagraph near the comet. Pictures of the comet were obtained, as were pictures of the surrounding star fields when the ATM was pointed directly at the coment for the benefit of the scanning spectrometer and the XUV spectrograph. Coronagraph observations obtained in this mode suffer from: 1) the lack of a calibration wedge imaged on the film, 2) more sunlight scattered within the instrument as compared to sun-pointed observations, and 3) an occasional lack of spacecraft pointing stability. Table 13

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TABLE 12

OBSERVATIONS OF THE TERRESTRIAL ATMOSPHERE

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
1	634/635	30 May 1973	150/0653	27-3	Double exposure - saturated
	636/637	30 May	150/0708	3-9	Double exposure - saturated
	862	31 May	151/0750	3	A
	863	31 May		9	B
2	7901	8 Aug 1973	220/0549	27	A
	7902	8 Aug		3	A
	7903	8 Aug		9	50% saturated
	7904	8 Aug		27	50% saturated
	8041	8 Aug	220/1507	27	A (barely)
	8044	8 Aug	220/1508	27	Saturated
	8287	9 Aug	221/0640	9	Small cresent of scattered light
	8288	9 Aug		27	Saturated
	8289	9 Aug		3	A
	8290	9 Aug		9	Saturated
	12215	23 Aug	235/1357	27	Possible JOP-7 or contamination scattering

NOTE: 1. The last exposure in a series may have been truncated by the closing of the telescope's outer door.

2. Key to remarks: A - Upper Atmosphere Visible
B - Horizon Barely Visible
C - Horizon Visible

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
3	12628	25 Aug 1973	237/1300	27	A
	12629	25 Aug		3	A
	12900	26 Aug	238/2004	27	A
	12901	26 Aug		3	A
	12902	26 Aug		9	C
	13134	27 Aug	239/1509	27	Polaroid #3, A (barely)
	13135	27 Aug		3	Polaroid #3, A (barely)
	13161	27 Aug	239/1923	27	A
	13162	27 Aug		3	A
	13163	27 Aug		9	C
	13165	27 Aug	239/2230	27	A
	13166	27 Aug		3	A
	13167	27 Aug		9	B
	13475	28 Aug	240/1534	27	A
	13476	28 Aug		3	A
	13477	28 Aug		9	C
	13524	28 Aug	240/1841	27	A
	13525	28 Aug		3	A
	13526	28 Aug		9	C
	13540	28 Aug	240/2321	27	A
	13541	28 Aug		3	A
	13542	28 Aug		9	B
	13738	29 Aug	241/1759	27	A
	13739	29 Aug		3	A

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
3	13740	29 Aug 1973	241/1801	9	A
	13802	29 Aug	241/1932	27	A
	13803	29 Aug		3	A
	13804	29 Aug		9	C
	13822	29 Aug	241/2239	27	A
	13823	29 Aug		3	A
	13824	29 Aug		9	C
	13826	30 Aug	242/0145	27	A
	13827	30 Aug		3	A
	13828	30 Aug		9	Beautiful picture of broken clouds on the horizon.
	13954	30 Aug	242/0249	27	A
	13955	30 Aug		3	A
	13956	30 Aug		9	C
	14156	31 Aug	243/0103	27	A
	14157	31 Aug		3	A
	14158	31 Aug		9	B
	14431	1 Sept	244/0154	27	A (barely)
	14432	1 Sept		3	A (barely)
	14433	1 Sept		9	A
	14673	1 Sept	244/1420	27	A (barely)
	14674	1 Sept		3	A (barely)
	15411	4 Sept	247/1347	27	A (barely)
	15412	4 Sept		3	A (barely)
	15413	4 Sept		9	C

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
3	15627	5 Sept 1973	248/1438	27	A
	15628	5 Sept		3	A
	15630	5 Sept	248/1611	27	A (barely)
	15631	5 Sept		3	A (barely)
	15632	5 Sept		9	A
	15945	6 Sept	249/1226	27	Polaroid #3, A
	15946	6 Sept		3	Polaroid #3, A
	16020	6 Sept	249/1835	27	A (barely)
	16021	6 Sept		3	A (barely)
	16022	6 Sept		9	Partially saturated.
	16425	7 Sept	250/1927	27	A
	16426	7 Sept		3	A
	16637	8 Sept	251/1405	27	A (barely)
	16638	8 Sept		3	A (barely)
	16639	8 Sept		9	Partially saturated
	16899	8 Sept	251/2152	27	Saturated
	16900	8 Sept		3	Partially saturated
	17007	9 Sept	252/0232	27	Partially saturated
	17008	9 Sept		3	Partially saturated
	17046	9 Sept	252/1150	27	A (barely)
	17047	9 Sept		3	A (barely)
	17048	9 Sept		9	Partially saturated
	17164	9 Sept	252/2243	27	A
	17165	9 Sept		3	A
	17166	9 Sept		9	B

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
3	17338	10 Sept 1973	253/1242	27	A (barely)
	17339	10 Sept		3	A
	17340	10 Sept		9	Partially saturated
	17889	11 Sept	254/1813	27	A (barely)
	17890	11 Sept		3	A (barely)
	17891	11 Sept		9	Partially saturated
	17995	11 Sept	254/1946	27	Polaroid #3, A
	17996	11 Sept		3	Polaroid #3, A
	18057	12 Sept	255/0026	27	A
	18058	12 Sept		3	A
	18523	13 Sept	256/2053	3	Polaroid #4, A (barely)
	18526	13 Sept	256/2130	3	A (barely)
	18527	13 Sept		9	A
	18553	14 Sept	257/0036	27	A (barely)
	18554	14 Sept		3	A (barely)
	18555	14 Sept		9	Partially saturated - Polaroid #2
	18911	15 Sept	258/1221	27	A
	18912	15 Sept		3	A
	18913	15 Sept		9	75% saturated
	19075	16 Sept	259/1140	27	A
	19076	16 Sept		3	A
	19077	16 Sept		9	Saturated but horizon visible
	19199	17 Sept	260/0006	27	A
	19200	17 Sept		3	Partially saturated
	19201	17 Sept		9	Saturated but horizon visible

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
3	19446	18 Sept 1973	261/1151	27	Saturated
	19447	18 Sept		3	A
	19448	18 Sept		9	Partially saturated but horizon visible
	19541	18 Sept	261/2244	27	Saturated
	19542	18 Sept		3	A
	20013	21 Sept	264/0816	27	Partially saturated
	20014	21 Sept		3	A
4	25654	16 Dec	350/2248	27	Saturated plus large contanimation
	26243	19 Dec	353/1333	27	A
	26244	19 Dec		3	A
	26653	21 Dec	355/2304	9	A
	26654	21 Dec		27	Saturated
	26697	22 Dec	356/0211	9	A
	26698	22 Dec		27	A
	26861	22 Dec	356/2223	9	A
	27735	25 Dec	359/0141	27	Saturated
	27736	25 Dec		3	A
5	28557	27 Dec	361/2204	9	A
	29744		Matrix smeared		50% saturated
	30561	3 Jan 1974	003/1713	9	A
	30574	3 Jan	003/1846	9	A
	30611	3 Jan	003/2020	9	Partially saturated
	30613	3 Jan	003/2059	9	Partially saturated
	30614	3 Jan		9	A

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
5	30844	5 Jan 1974	005/0151	9	Partially saturated
	31318	8 Jan	008/0121	9	A
	32912	15 Jan	015/1701	9	A
	32913	15 Jan		9	A
	32914	15 Jan		9	A
	32915	15 Jan		9	A
	33012	16 Jan	016/0050	9	A
	33013	16 Jan		9	A
	33014	16 Jan		9	A
	33015	16 Jan		9	A
	33172	16 Jan	016/1453	9	Partially saturated
	33173	16 Jan		9	A
	33174	16 Jan	016/1454	9	Saturated
	33175	16 Jan		9	A
	33176	16 Jan		9	Saturated
	33177	16 Jan		9	A
	33178	16 Jan		9	Saturated
	33179	16 Jan		9	A
	33213	16 Jan	016/2241	9	Horizon appears visible
	33214	16 Jan		9	Horizon appears visible
	33215	16 Jan		9	Horizon appears visible
	33216	16 Jan		9	Horizon appears visible
	33371	17 Jan	017/1546	9	C
	33372	17 Jan		9	A (barely)
	33373	17 Jan		9	Horizon may be visible
	33374	17 Jan		9	A

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
5	33375	17 Jan 1974	017/1548	9	Partially saturated; part of horizon visible
	33376	17 Jan		9	A
	33377	17 Jan		9	75% saturated
	33378	17 Jan		9	A
	33379	17 Jan		9	Saturated
	33380	17 Jan		9	A
	33381	17 Jan		9	Saturated
	33382	17 Jan		9	Horizon may be visible
	33383	17 Jan		9	Saturated
	33384	17 Jan		9	Horizon may be visible
	33385	17 Jan		9	Saturated
	33386	17 Jan		9	A
	33497	17 Jan	017/2027	27	Saturated
	33498	17 Jan		9	75% saturated
	33499	17 Jan		9	A
	33500	27 Jan		9	75% saturated
	33501	17 Jan		9	A
	33502	17 Jan		9	75% saturated
	33503	17 Jan		9	A
	33504	17 Jan		9	Saturated
	33505	17 Jan		9	A
	33506	17 Jan		9	Saturated
	33507	17 Jan		9	A
	33508	17 Jan		9	Saturated
	33509	17 Jan		9	A

LOAD No.	FRAME No.	DATE	START TIME DOY/TIME (UT)	SEC EXPOSURE	REMARKS
5	33510	17 Jan 1974	017/2031	9	Saturated
	33511	17 Jan		9	A
	33512	17 Jan		9	Saturated
	33513	17 Jan		9	A
	33514	17 Jan		9	Saturated
	33515	17 Jan		9	A
	33516	17 Jan		9	Saturated
	33517	17 Jan		9	A
	33518	17 Jan		9	Saturated
	33519	17 Jan		9	A
	33520	17 Jan		9	75% saturated
	33521	17 Jan		9	A
	33522	17 Jan		9	75% saturated
	33523	17 Jan	017/2034	9	A

is a listing of the comet observations in this mode. The second mode of comet observations was used when the comet's elongation was less than approximately two degrees. In this mode, the coronagraph was pointed at the center of the sun, as usual, and frequent (at least each 90 minutes) photographs were taken as the comet crossed the field of view. These observations spanned the interval 0237 UT 27 December to 0542 UT 28 December 1973.

iii. Stellar Observations

On two occasions during the Skylab missions, the entire spacecraft was turned so that the x-ray and EUV ATM instruments could attempt to observe celestial sources other than the sun or Comet Kohoutek (1973f). Because Skylab was not designed for this type of operation, some uncertainty existed about the accuracy and stability of the pointing during these observations, just as for the similar comet observations. For these reasons, the interested experimenters requested coronagraph observations of the star fields surrounding the object of interest. Knowing the relative pointing offsets between instruments, post mission analysis of the pointing achieved during the observation could then be carried out. Observations of this sort were performed 0906-0917 UT on 20 September 1973 and ~1331 UT on 1 February 1974. Stars to visual magnitude 7.0, and perhaps fainter, are visible in the outer field, although the coronagraph vignetting reduces the visibility of faint stars closer to the occulting disk.

TABLE 13

COMETARY OBSERVATIONS

oad #4 Frame Number	No. of Exposures	Date	Time DOY/U.T.	Approximate Elongation Angle	Mode	Pointing Away From Sun Center	REMARKS
26284 to 26299	16	19 Dec '73 19 Dec '73	353/1617 to 353/1624		S,F	X	
26618	1	21 Dec	355/1531	14.8	S	X	
27084 to 27099	37	23 Dec	357/1911 to 357/1925	10.2	S,F	X	Comet at edge of occulting disk scattered light in FOV
27123 to 27136	15;~2 each obs		357/1933 to 357/1959 @5m or 10m		F	X	Moon in FOV
27138 to 27157		23 Dec '73	357/2049 to 357/2131 @5m or 10m				
27587	12	24 Dec	358/1932	7.9	S	X	Mercury & comet in FOV
27603	39		358/1839		F		Mercury & Comet in FOV
27642 to 27650	10;~2 each obs		358/1904 to 358/1921 @ 4m		F		
27652 to 27677	27;~2 each obs	24 Dec '73	358/2008 to 358/2054 @5m or 10m		F		Some Very Short Exposures

Load #5	FRAME NUMBER	No. OF EXPOSURES	DATE	TIME DOY/UT	APPROXIMATE ELONGATION ANGLE	MODE	POINTING	ROLL	REMARKS
	28095	12	27 Dec '73	361/0237	1.6	S		0000	Comet at edge of FOV
	28107	12		361/0247		S		-5402	Comet at edge of FOV
	28119	15		361/0255		C		-5402	Comet at edge of FOV
	28134	12		361/0440		S		-5519	Comet completely in FOV
	28146	12		361/0616		S		-5350	
	28158	12		361/0710		S		-5409	
	28170	12		361/0845		S		-5404	
	28182	12		361/1019		S		-5415	
	28194	12		361/1202		S		-5376	
	28206	12		361/1326	0.6	S		-5400	
	28218	3		361/1333		C		-5400	Short Exposures
	28221	12		361/1456		S		-5398	
	28233	3		361/1502		C		-5398	Short Exposures
	28236	12		361/1630		S		-5400	
	28248	3		361/1636		C		-5400	Short Exposures
	28251	3		361/1805		C		-5400	Short Exposures
	28254	23		361/1805		C		-5400	
	28277	85		361/1817		C		-5400	
	28362	12		361/1937		S		-5401	
	28374	2		361/1945		F		-5401	Short Exposure
	28376	31		361/1946		F,C		-5401	
	28407	57	27 Dec '73	361/2003		C		-5401	

FRAME NUMBER	NO. OF EXPOSURES	DATE	TIME DOY/UT	APPROXIMATE ELONGATION ANGLE	MODE	POINTING	ROLL	REMARKS
28464	3	27 Dec '73	361/2111		F		-5401	
28467	81		361/2113		C		-5516	
28548	10		361/2159	0.9	C		-5517	Corona leaves FOV, tail still visible
28558	3		361/2242		S		-5400	
28570	3		361/2258		C		-5400	
28573	65	27 Dec '73	361/2258		C		-5400	
28638	12	28 Dec '73	362/0017	1.2			-5389	
28650	3		362/0024		C		-5389	
28653	13		362/0025		C		-5389	
28666	3		362/0108		C		-5631	
28669	12		362/0153		S		-0005	
28687	12		362/0200		S		-5403	
29603	15		362/0209		C		-5401	Comet at edge of FOV
28708	12		362/0342		S		-5388	Only tail of comet Visible
						Perihelion 1019 UT		
29290	12		362/2340	4.2	S	X		
29302	3		362/2346		C			
29305	23	28 Dec '73	362/2349		C			
29419	12	30 Dec '73	364/0203		S	X		Comet at edge of Occulting Disk
29431	3		364/0208		F			Comet at edge of Occulting Disk
29434	22	30 Dec '73	364/0210	7.3	F			Comet at edge of Occulting Disk

FRAME NUMBER	NO. OF EXPOSURES	DATE	TIME DOY/UT	APPROXIMATE ELONGATION ANGLE	MODE	POINTING	REMARKS
29456	15	30 Dec '73	364/0225		F		Comet May be Behind Occulting Disk
29461	10; 2 each obs		364/0230		F		" " "
29547	69		364/1347		C,F	X	Comet behind Occulting Disk
29616	27		364/1739		S,C		Comet Visible
29748	16; 2 each obs		364/2227 to 364/2344 @5m	9.5	F	X	Comet at edge of Occulting Disk
29764	35	30 Dec '73	364/2344		F		Comet is not visible
29948	3	31 Dec '73	365/1548		C	X	Comet visible at edge of Occulting Disk
29951	12		365/1829		S		Comet visible at edge of Occulting Disk
29963	3		365/1848		F		Short Exposure - Comet Not Visible
29966	44	31 Dec '73	365/1848	11.4	F		Comet Visible at Edge of Occulting Disk
30244	12	01 Jan '74	001/2230		S	X	Comet Faintly Visible at Edge of Occulting Disk
30256	15		001/2239		C	X	"
30271	3	01 Jan '74	001/2245		C		Comet not Visible
30615	41	03 Jan '74	003/2110		S,C	X	Comet not Visible
31147	13	06 Jan '74	006/2336		C,F	X	Venus Visible, Comet May be too Dim to See

3. Coronagraph Participation in the Joint Observing Programs

The Joint Observing Programs (JOPs) were developed to coordinate the observations of the individual ATM experiments. Each program (JOP) was designed to study a specific problem in solar physics with the relevant ATM instruments nearly simultaneously obtaining data on a particular object or phenomena. A list of JOPs (by number) and their objectives is presented in Table 14.

To facilitate manual operations of the ATM instruments by the astronauts and to maximize the observing time for all experiments, a set of fundamental instrument operations were created. These "building blocks" (an example is given in Figure 32) schematically displayed various combinations of instructions -- consisting primarily of the modes, exposure time and starting times of all ATM instruments. Each instrument's operation in a given building block was tailored to obtain a particular type of observation. Some building blocks stressed temporal resolution while others concentrated on spectral and spatial studies of various solar features. These building blocks were then combined to provide the necessary data to properly study the objectives of an individual JOP.

The description of the JOPs presented here are biased towards the white light coronagraph's participation. This information has been compiled from three different NASA documents, and each of the three missions had its own set of documentation. The first document, "The Mission Requirement Document" (MRD), is a NASA translation of the

TABLE 14

JOP	BRIEF DESCRIPTION
1	Chromospheric Network and its Coronal Extension
2	Active Regions
3	Flares
4	Prominences and Filaments
5	Limb Profile Studies
6	Synoptic Observations
7	Atmospheric Extinction
8	Coronal Transients
9	Solar Wind
10	Lunar Libration Clouds
11	Chromospheric Oscillations and Heating
12	Instrument Calibrations
13	Night-Sky Objects
14	Solar Eclipse
15	Coronal Holes
16	Disk Transients
17	Coronal Bright Points
18	Comet Kohoutek
19	Coronal Alfvén Waves
20	Rapidly Changing Coronal Structures
21	Time Variations in Coronal Structures
22	Radio Source Occultation by the Corona
23	Transit of Mercury
24	Latitude Variation of Chromospheric Structure
25	Extended Mapping by Small Field of View - Spectro-heliometer
26	Coronal Structures on the Limb
27	Mapping of Differential Velocity Fields

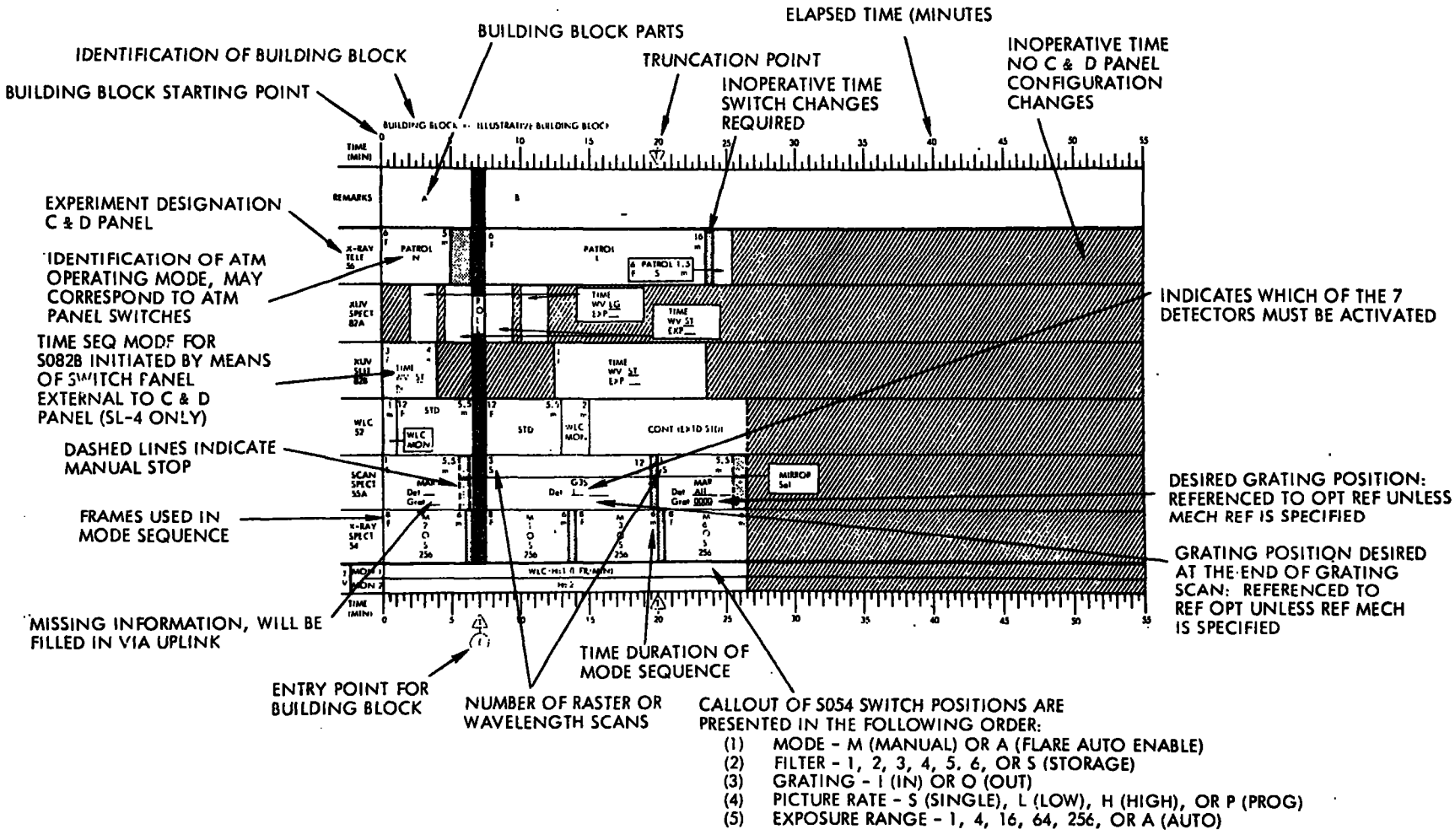

ELAPSED TIME (MINUTES
BUILDING BLOCK PARTS
IDENTIFICATION OF BUILDING BLOCK
TRUNCATION POINT
INOPERATIVE TIME NO C & D PANEL CONFIGURATION CHANGES
BUILDING BLOCK STARTING POINT
INOPERATIVE TIME SWITCH CHANGES REQUIRED
EXPERIMENT DESIGNATION C & D PANEL
IDENTIFICATION OF ATM OPERATING MODE, MAY CORRESPOND TO ATM PANEL SWITCHES
INDICATES WHICH OF THE 7 DETECTORS MUST BE ACTIVATED
TIME SEQ MODE FOR S082B INITIATED BY MEANS OF SWITCH PANEL EXTERNAL TO C & D PANEL (SL-4 ONLY)
DASHED LINES INDICATE MANUAL STOP
DESIRED GRATING POSITION: REFERENCED TO OPT REF UNLESS MECH REF IS SPECIFIED
FRAMES USED IN MODE SEQUENCE
GRATING POSITION DESIRED AT THE END OF GRATING SCAN: REFERENCED TO REF OPT UNLESS REF MECH IS SPECIFIED
MISSING INFORMATION, WILL BE FILLED IN VIA UPLINK
TIME DURATION OF MODE SEQUENCE
ENTRY POINT FOR BUILDING BLOCK
NUMBER OF RASTER OR WAVELENGTH SCANS
CALLOUT OF S054 SWITCH POSITIONS ARE PRESENTED IN THE FOLLOWING ORDER:
(1) MODE - M (MANUAL) OR A (FLARE AUTO ENABLE)
(2) FILTER - 1, 2, 3, 4, 5, 6, OR S (STORAGE)
(3) GRATING - I (IN) OR O (OUT)
(4) PICTURE RATE - S (SINGLE), L (LOW), H (HIGH), OR P (PROG)
(5) EXPOSURE RANGE - 1, 4, 16, 64, 256, OR A (AUTO)

Figure 32

ATM experimenters' desire to obtain data for a particular scientific study. It does not contain any scientific justification for the observations but merely lists the amount of observing time required to fulfill particular tasks and specifies how the task is to be accomplished. While this document was intended for NASA use during the Skylab period, there is a good summary of the building blocks at the end of this document.

The astronauts used the NASA document entitled "ATM JOP Summary Sheets" to carry out the specific solar observations. These sheets consisted of pertinent building blocks and a brief set of instructions on the operations of an individual building block or sequence of building blocks. Again, by necessity, the verbage is terse and contains many acronyms.

The third document is the "ATM Experiments Reference Book" and probably the most scientifically useful. This document was used by the crew in orbit to refresh their memories concerning the scientific objectives of any individual JOP. It also contains a description of all the ATM experiments, and a description of acronyms and short-hand expressions commonly used in the document. For an individual JOP, this document contains a brief description of the scientific objectives, some background on the purpose of the particular observation, instructions on how to point the ATM telescopes to obtain the most useful data on an individual solar feature, the type of data each instrument needed to obtain and how that data would be used to advance the knowledge of solar physics.

As mentioned before, each of the three missions had its own set of documents. As a result of the data obtained from previous missions, the JOPs were modified and, in some cases, new JOPs were created to enhance the scientific return and to study newfound solar phenomena. Some JOPs were created or omitted from one mission to the next because they delt with targets of opportunity, i.e., observations of the Comet Kohoutek and the Transit of Mercury. Similarly, the building blocks evolved during the three missions. Exposure times were altered to optimize the quality of the data and modes were changed to better capture dynamic solar phenomena. Changes were made even during the manned missions - mainly to overcome an instrumental failure or to conserve film near the end of the mission. In fact, most changes consisted of omitting the operation of an instrument from a building block due to limitations of film.

Because the coronagraph was constrained to point at the center of the sun (for solar observations), the data can essentially be used for any pertinent solar oriented JOP. For example, data obtained on a prominence (JOP-4) can also be used in a synoptic study (JOP-6) or a study of an active region on the limb (JOP-2). Thus, the study of a particular solar feature or phenomena using the coronagraph data is dependent only on the frequency of polarized and unpolarized observations. The actual expenditure of coronagraph film is discussed in Section II-A-2 of this report.

Each JOP will now be discussed in turn, with the greatest emphasis placed on those JOPs where the white light coronagraph data can

be used to best advantage. The following description will reflect the scientific objectives of the final Skylab mission. Normally, the coronagraph participation in a particular JOP did not change throughout the Skylab mission. Exceptions will be noted in the text.

JOP-1: Chromospheric Network and its Coronal Extension

Because the chromospheric network extends only a few arc sec above the limb, the white light coronagraph did not participate in this particular JOP.

JOP-2: Active Regions

While the coronagraph did not specifically participate in this JOP, the study of the active regions on the limb above 1.5 $R_\odot$ from sun center may be conducted from the observations obtained in the synoptic program (JOP-6).

JOP-3: Flares

Coronagraphic observations of flares was limited to those events occurring near the solar limb. The objective of this program was to detect the coronal manifestations of flares. It was found that most flares do not disrupt the corona above 1.5 $R_\odot$ from sun center. In fact, we recorded only 11 flare-associated events during the entire nine-month Skylab period. The best way to use the coronagraphic data in the study of flares is to examine frames obtained near the time of the flare rather than just using coronagraphic observations obtained during JOP-3.

JOP-4: Prominences and Filaments

In addition to the information obtained on prominences from the regular periodic study of the solar corona from the synoptic program, (JOP-6), the coronagraph also participated in studies of individual prominences. For this purpose, either a single standard patrol to obtain polarization information or several standard patrols obtained back-to-back to obtain better statistics on the polarization information, was used to document the structure of the corona above the prominence.

JOP-5: Limb Profile Studies

Because this JOP was designed to study the chromosphere, the white light coronagraph did not participate.

JOP-6: Synoptic Observations of the Sun

This JOP was designed to provide a long series of consistent observations of the sun, all taken in a uniform manner. The wide field of view instruments, including the coronagraph, followed the evolution of active regions and coronal structures as they transited from the east limb passage to the west limb passage. The coronagraph obtained data at least every 12 hours (except for several short periods due to EVA's, a camera malfunction, and ATM pointing control malfunctions) for the entire Skylab period which consisted of nine solar rotations. Table 15 contains a list of gaps in this 12-hour observation sequence. During the manned missions, the frequency of coronagraphic observations normally increased to at least once every six hours. This JOP was the most important program to the coronagraph because it provided the

TABLE 15

Missing Synoptic Observations (12^h period)

DATE	DOY	INTERRUPTION TIME
10-20 June	161-170	9½ days
16-28 July	196-209	13 days
4-5 August	216-217	35 hours
24-25 August	236-237	18 hours
22-23 September	264-265	26 hours
15-19 November	318-322	4 days
23-24 November	326-327	18 hours
25-26 December	359-360	17 hours

data base for the temporal study of the corona.

JOP-7: Atmospheric Extinction

During periods of spacecraft sunrise and sunset, the earth's atmosphere appeared in the coronagraph's field of view. Observations taken during these time periods should yield information on the distribution of haze and dust particles in the earth's atmosphere. A more complete description of this program and a list of the observations can be found in the Section II-A-2.

JOP-8: Coronal Transients

The coronal transient program was developed to investigate variations in the corona which occur on time scales of seconds to hours. This program was initiated if either the crew saw variations in the corona in the television monitor of the coronagraph or the ground-based personnel suspected the presence of a coronal transient as inferred from dynamic solar activity. This latter category included such diverse phenomena as surges, sprays, eruptive prominences, and radio bursts. Not all coronal transients observed by the coronagraph were obtained by observations in the JOP. A list of over 100 transients presently identified in the coronagraph data is included in Section II-A-4. This supplemental list contains the date, time, position angle, frame number (which include the transient), pertinent solar activity and a brief verbal description of each transient. Results from initial study of these transients as a group can be found in Gosling et al. (1974) and Munro et al. (1974); the analysis

of individual events have been published by Gosling et al (1975) and Hildner et al. (1975).

JOP-9: Solar Wind

This program was designed to observe and record the expansion of the corona (the solar wind) on a time scale commensurate with the expected passage of material from the base of the corona out to 6.0 $R_\odot$. Once during each mission, coronagraphic data was obtained every hour and a half for periods of 45-90 consecutive hours. Occasionally the observational sequence was interrupted but nowhere was there a gap without observations longer than three hours. Scheduled JOP-9 observations were obtained on 31 May through 2 June (DOY 152-154). 17-21 August (DOY 229-233), and 12-14 December (DOY 346-348). In addition to these periods there were several other instances where observations were taken that are suitable to study the solar wind or the evolution of the corona on a time scale of hours. These times are 29-31 July (DOY 210-212), 26-28 December (DOY 360-362), and 25-27 January (DOY 025-027). We have made cursory study of the JOP-9 observations but do not find any outward moving inhomogeneities in the corona suitable to determine the velocity of the solar wind close to the sun. This by no means rules out the possibility of detection of the solar wind via a method other than moving inhomogeneities in the corona. As stated before, this data can be used to study the corona on a time scale of hours in addition to its primary purpose of determining the velocity of the solar wind close to the sun.

JOP-10: Lunar Libration Clouds

At a few specific times during the mission, the Legrange points L_4 and L_5 of the earth-moon system passed through the coronagraph's field of view. This provided the opportunity to examine the forward scattered radiation from material presumably accumulated in these libration regions. Observations were obtained during the period 24-26 June (L_4), 4-5 July (L_5), and 18-19 December (L_4). Pictures taken during these times have been analyzed for possible enhancements in the brightness of the background. No brightness enhancement attributable to possible librations clouds could be found. The results of this study can be found in Munro et al. (1975).

JOP-11: Chromospheric Oscillations and Heating

Obviously the coronagraphic observations are not pertinent to this particular study; however, when the study was performed at the center of the sun, observations were obtained by the coronagraph as a supplement to the synoptic program of JOP-6.

JOP-12: Instrumental Calibrations

There were two different types of in-flight coronagraphic calibrations. The first calibration sequence consisted of putting a number of identical frames of the corona on both the beginning and end of each film roll. These frames were separated from the original flight film and processed separately to insure that the developing chemistry and processing were within specified tolerances. The second type of calibration sequence involved the moon. Twice during the Skylab mission the new moon entered the white light coronagraph's field of view, thus,

occulting the corona. Because the luminosity of the new moon is well known from earth-based measurements, the measured brightness of the new moon supplies information about the instrumental stray light. It is also possible to check any gradual deterioration of the optics of the instrument by comparing the brightness of the new moon at the June and December eclipses. In addition, the sharp edge of the moon silhouetted against a portion of the corona will be used to determine the resolution of the instrument at various positions within the field of view.

JOP-13: Night-Sky Objects

The coronagraph's role in this particular study was limited to photographing the star field surrounding the x-ray object. It was hoped that this star field would provide accurate pointing information. But unfortunately, no bright stars were photographed by the coronagraph during these observations. A more complete description of this program and a list of observations can be found in Section II-A-2.

JOP-14: Solar Eclipse

There were two solar eclipses during the Skylab period. A total solar eclipse on 30 June 1973 and an annular eclipse on 24 December 1973. Observations taken during the June eclipse complement those obtained from ground-based instruments, and provide a unique cross-calibration for future studies using ground-based data. This data will also be used for instrument calibration (see JOP-12).

JOP-15: Coronal Holes

Because of the very nature of coronal holes, the coronagraph normally obtained a number of pictures taken consecutively when studying a particular hole at the limb. It is hoped that an average of these multiple photographs will enhance the signal-to-noise ratio of these extremely faint regions, so that one can adequately study coronal holes far from the solar limb.

JOP-16: Disk Transients

This JOP was added during the second manned mission; but since it was never performed, it was then deleted from the third mission and was incorporated into JOP-8 on Coronal Transients.

JOP-17: Coronal Bright Points

Because coronal bright points are essentially surface phenomena, the coronagraph did not participate in this particular study.

JOP-18: Comet Kohoutek

The coronagraph obtained a variety of different types of observations of the comet. During a 22-hour period centered around the time of the comet's minimum elongation (which occurred on 27 December 1973) the coronagraph obtained pictures of the comet and the solar corona simultaneously at least every hour and one-half. For other times between 19 December and 7 January when the comet was not within the field of view of the coronagraph when it was pointed at the center of the sun, the entire spacecraft was maneuvered in order to photograph the comet. These pictures, therefore, contain only the comet and not

the solar corona. The coronagraph was also used in a supportive role to photograph star fields around the comet in order to provide pointing information for other ATM instruments observing the comet. See Section II-A-2 for additional information and a Table of the actual observations.

JOP-19: Coronal Alfvén Waves

It is theoretically possible to observe Alfvén waves moving outward from the sun within the coronagraph's field of view. In order to detect the possible periods, amplitudes, density fluctuations, and wave speeds, the coronagraph was operated continuously for the entire daylight portion of three orbits, (i.e., covering a span of approximately 4½ hours). This program was run on 16 December. Other observational sequences, especially those taken during coronal transients, may be used to search for the effects of Alfvén waves in the corona.

JOP-20: Rapidly Changing Coronal Structures

This particular program was designed to study the corona on a time scale of 45-90 minutes and normally lasted about 12 hours. This program was carried out when solar activity on the limb warranted such observations (e.g., active prominences, a series of Type III radio bursts, or rapid evolving active regions).

JOP-21: Time Variations in Coronal Structures

This program complements the previous JOPs in that it studies the evolution of the corona for features near central meridian passage.

Although coronagraphic observations cannot be directly used to complement other ATM observations in this program, the data obtained here supplements the synoptic program of JOP-6.

JOP-22: Radio Source Occultation by the Corona

Between 5 and 11 October 1973 radio sources 3C237 and 3C279 were occulted by the solar corona. Radio scintillation observations of these sources were also obtained during this time period. Coronal electron densities derived from these separate observations will act as a cross-calibration of both methods.

JOP-23: Transit of Mercury

The coronagraph did not participate in this program.

JOP-24: Latitude Variation of Chromospheric Structure

Because of the nature of this program, the coronagraph did not participate in this study.

JOP-25: Extended Mapping by Small Field of View Spectroheliometer

The coronagraph did not participate in this program.

JOP-26: Coronal Structures on the Limb

The objective of this program was to study the morphological relationships between coronal features seen in the coronagraph and the lower structures observed in the XUV and X-ray wavelengths. The data was obtained such that the three-dimensional temperature and density structure of features such as coronal streamers, rays, cavities, and condensation can be investigated. By using the coronagraph's television capability, this program was only run on isolated coronal features

at the limb. Hence, difficulties associated with other coronal features along the line of sight could be minimized.

JOP-27: Mapping of Differential Velocity Fields

The coronagraph did not participate in this program.

4. Coronal Transient List

Following is a preliminary list of coronal transients which occurred during the Skylab mission. For each event listed the following information is given: Day of Year (DOY) and the date, the time (GMT) at which we first observed the event, time of our last previous observations, its position in degrees from solar north (the E-limb at the equator is 90°) and a description of what the event looked like on the first frame.

In addition to the above information, we have reviewed several sources in an attempt to relate these transients with other indicators of solar activity. The time and type of solar activity are listed. In describing particular events or in the listing of an observatory, NOAA abbreviations are used and can be found in the Solar-Geophysical Data, Descriptive Text, February 1974. The sources used are as follows:

1. NOAA "Blue Books" which are a compilation of all solar related events that were received in the ATM Science Room at Johnson Space Center during the Skylab mission by the NOAA network.
2. Solar-Geophysical Data (Prompt Reports) - for one month earlier events:
   a. Solar flares of numerical importance 1 or greater.
   b. Selected fixed-frequence radio occurrences.

   For two months earlier events:
   a. Radio spectral observations.
3. Preliminary report and forecast of solar geophysical data.

a. X-ray flare information.

Additional information under Radio Spectral Coverage gives the time (GMT) at which observatories with radio sweep frequency equipment were on and the name of the observatory.

Under ATM-WLC Coverage the time (GMT) and the operating mode are given for which the Apollo Telescope Mount - white light coronagraph was on near the time of each particular event.

S	standard mode
F	fast scan mode
C	continuous mode
Ext. S	extended standard
S(2)	two standard modes were run in succession

Finally, note that the numbers following WLC operating refer to our (S-052) frame numbers.

DOY: 154 DATE: 03 June 1973

Time first observed: 1430 Time of last previous observation: 1149

Position: 315°

Description: Split ray event.

TIME	TYPE OF ACTIVITY
	No Reported Activity

RADIO SPECTRAL COVERAGE

0912-2411	SGMR
1231-2400	HARV
1130-2400	BOUL

ATM-WLC COVERAGE

154/1133-1149	F	#2148-2219
154/1430-1436	S	2220-2231
154/1446-1452	S	2232-2243
154/1457-1508	C	2244-2266
154/1734-1740	S	2267-2278
154/1744-1750	S	2279-2290

DOY: 160 DATE: 9 June 1973

Time first observed: 0719 to Time of last previous observation: 0614

Position: 250°

Description: Very faint loop at 4.5 R_o

TIME	TYPE OF ACTIVITY	UNIT
0550-2104	260 MHz Burst Max at 1134, 30 F.U., HIRA	

RADIO SPECTRAL COVERAGE

0-0731	CULG
0337-1710	WEIS

ATM-WLC COVERAGE

160/0608-0614	S	#3745-3756
160/0719-0735	F	orb3757-3828
160/0747-0753	S	orb3829-3840

DOY: 161 DATE: 10 June 1973

Time first observed: 0150 Time of last previous observation: 160/1404

Position: 80°

Description: Bright turbulent transient confined to streamer out to 4 R

TIME	TYPE OF ACTIVITY
000-0622	Radio, Type I N,W CULG
004-0649	Radio, Type III N,W CULG
0020.5-0027	Radio, Type II W CULG
0051.5-0057	606 MHz Burst, 17.4 F.U., MANI
0052.5-0058	1415 MHz Burst, 5.1 F.U., MANI
0054-0056	100 MHz Burst, 90 F.U., HIRA
0055-0140	Spray, IMP I (N15E90) BOUL
0059-0108	Radio, Type II, IMP I, CULG
0109-0117	<C1 X-Ray Flare, Max 0112 (S17E48)
0150-150.5	Radio, Type IIIG, IMP 2, CULG
0150.7-0151.0	Radio Type III, IMP 1, BOUL

RADIO SPECTRAL COVERAGE

000-0731	CULG
000-0230	BOUL

ATM-WLC COVERAGE

160/1354-1404	C	#3865-3886
161/0150-0212	S(2),C	#3887-3937
161/0219-0235	F	3938-4009
161/0630-0646	F	4010-4081

DOY: 161 DATE: 10 June 1973

Time first observed: 0929 Time of last previous observation: 0828

Position: 80°

Description: Large intense nested loops at 3 R

TIME	TYPE OF ACTIVITY
0428-0744	Eruptive Prominence, (N06-20, E90)
0741	Spray Type Surge (E-Limb) CYI
0815-0900	Eruptive Prominence, Large (N20E90) out to .45 R
0839.5-0928	29 MHz Burst UPIC
0845.5-0854.5	Radio, Type II, IMP 2, WEIS
0848-0851	23 MHz Burst, 40,000 F.U., POTS
0853.8-0854.3	221MHz Burst, 26 F.U., ABST
0857-1005	C2 X-Ray Flare, Max 0859 (N10E90)
0930	Bright Surge (N10E90) out to 0.2 R
0948.5-0949.5	29 MHz UPIC
0948.6-0949.6	23 MHz 2000 F.U. POTS
0949-0950	221 MHz, ABST

RADIO SPECTRAL COVERAGE

0337-1908	WEIS
0911-2415	SGMR
1331-2400	HARV
1130-2400	BOUL

ATM-WLC COVERAGE

161/0812-0828	F	#4106-4177
161/0929-0945	F	4178-4249
161/0945-1001	F	4250-4321
161/1600-1606	S	4322-4333

DOY: 170 DATE: 19 June 1973

Time first observed: 2357 Time of last previous observation: 2226

Position: 270°

Description: Loops out to 3.0 R

TIME	TYPE OF ACTIVITY
	Active filament 147 (S08E55) NOTE: E-limb activity no W-limb activity
171/0023	Radio, Type III, IMP 1, BOUL
171/0043-0143	Radio, Type I, IMP 1, HARV

RADIO SPECTRAL COVERAGE

170/2032-171/0728	CULG
170/1130-171/0230	BOUL
170/1219-171/0145	HARV

ATM-WLC COVERAGE

170/2210-2226	F	#4377-4448
170/2357-171/0003	S	4449-4460
171/0546-0551	S	4461-4472

DOY: 175 DATE: 24 June 1973

Time first observed: 1916 Time of last previous observation: 1754

Position: 260°

Description: Loop structure out to 2.5 R

TIME	TYPE OF ACTIVITY
1500-1735	Active Prominence, Reported by Mauna Loa (S05W90)

RADIO SPECTRAL COVERAGE

1216-2400	HARV
1130-2400	BOUL
0911-2420	SGMR

ATM-WLC COVERAGE

175/1749-1754	S	#4641-4652
175/1916-1921	S	4653-4664
175/2015-2021	S	4665-4676
175/2327-2332	S	4677-4688
176/0431-0436	S	4689-4700

DOY: 177 DATE: 26 June 1973

Time first observed: 0212 Time of last previous observation: 176/2121

Position: 110°

Description: This transient is not that spectacular, very subtle changes.

TIME	TYPE OF ACTIVITY
0010	Radio, Type III, IMP 1, BOUL
0019-0506	Radio, Type I, IMP 1, CULG
0127-0245	C9 X-Ray Flare, Max 0139 (S06W25) (Wrong Limb)
0135-0415	Radio, Type IV, IMP 2, CULG
0136-0145	Radio, Type IV, IMP 3, HARV
0137-0142	Radio, Type III G, V, IMP 2, CULG
0139-0143	Radio, Type II (Dekameter), IMP 2, BOUL
0155	Prominence, lifting off. Reported by Mauna Loa Obs. (N15W90)
0210	2000 MHz Burst, 6 F.U., TYKW
0210	9400 MHz Burst, 11 F.U., TYKW
0216-0259	-N Flare, Max 0139 (S06W28) (Wrong Limb) TEHR
0228	1000 MHz Burst, 1 F.U., TYKW

RADIO SPECTRAL COVERAGE

000-0734	CULG
000-0230	BOUL
000-0146	HARV

ATM-WLC COVERAGE

176/2116-2121	S	#4713-4724
177/0212-0218	S	4725-4736
177/0348-0354	S	4737-4748

DOY: 179 DATE: 28 June 1973

Time first observed: 1955 Time of last previous observation: 1310

Position: 90°

Description: Diffuse loop at 3 R

TIME	TYPE OF ACTIVITY
1844-1915	2B Flare, Max 1848 (N12E90), BOUL
1844-1915	C6 X-Ray Flare, Max 1848 (N12E90)
1905-1910	M7 X-Ray Flare, Max 1906 (S06W68) (Wrong Limb)
1915	Surge on limb reported by Mauna Loa Obs.
1945	7000 MHz Burst 177 F.U. SAOP
1952-1954	Radio, Type III G, IMP 1, BOUL

RADIO SPECTRAL COVERAGE

1217-2400	HARV
1130-2400	BOUL
0913-2420	SGMR

ATM-WLC COVERAGE

179/1304-1310	S	#4821-4832
179/1955-2000	S	4833-4844
179/2002-2004	S	4845-4849
179/2125-2130	S	4850-4861

DOY: 180 DATE: 29 June 1973

Time first observed: 0454 Time of last previous observation: 0321

Position: 75°

Description: Diffuse and narrow loop, some restructuring on the W-Limb also.

TIME	TYPE OF ACTIVITY
0324-0336	C6, X-Ray Flare, Max 0326 (N10E90)
0343	Active Prominence (N12E90)

RADIO SPECTRAL COVERAGE

000-0735	CULG
0343-1919	WEIS

ATM-WLC COVERAGE

180/0315-0321	S	#4862-4873
180/0454-0459	S	4874-4885
180/1358-1403	S	4886-4897

"POSSIBLE CORONAL TRANSIENT"

DOY: 180 **DATE:** 29 June 1973

Time first observed: 0315 **Time of last previous observation:** 179/2131

Position: 90°

Description: Drastic changes of eastern streamers consistent with occurence of transient

TIME	TYPE OF ACTIVITY
179/2315	Eruptive Prominence, In Progress (N05-30; E90) material extended to 0.08 R
179/2321 - 180/0003	B Flare (S14W44)
0140 - 0142	Radio, Type III G, IMP1, HARV
0144.5-0151	Radio, Type III GG, IMP2, CULG
0145-0210	N Flare (S13W48)
0146.1 - 0147.5	Radio, Type III G, IMP2, BOUL
0153 - 0158	Radio, Type IV, IMP1, CULG
0217-0218	N Flare (S12W45)
0319	Small Loop Prominence (N11E85) Rising to 0.05 R visible to 0352 GMT

RADIO SPECTRAL COVERAGE

000-0735	CULG
000-0146	HARV
000-0230	BOUL

WLC COVERAGE

179/2125-2131	S	#4850-4861
180/0315-0321	S	4862-4873
180/0454-0500	S	4874-4885
180/1358-1404	S	4886-4897

DOY: 180 DATE: 29 June 1973

Time first observed: 2044 Time of last previous observation: 1553

Position: 100°

Description: Very subtle changes at 3.5 R. Thought to be the aftermath of a transient.

TIME	TYPE OF ACTIVITY
1508.6 - 1508.7	Radio, Type III, IMP 1, BOUL
1513 - 1518	Radio, Type III GG, V, IMP 3, HARV
1513 - 1526	-B Flare, Max 1517 (S08E74) followed by bright surge on the disk, spray type activity. Material out to 0.25 R
1517	Small Flares, were observed which ejected material southward over the limb. Most material returned to the chromosphere along the trajectory.
1518	Active Prominence, along with bright surge (S07E72)
1521 - 1524.6	Radio, Type II, IMP 2, BOUL
1526.1- 1526.7	Radio, Type III, IMP 1, BOUL
1910.8- 1915	Radio, Type II, IMP 3, HARV

RADIO SPECTRAL COVERAGE

0343-1919	WEIS
0913-1556	SGMR
1216-2400	HARV
1130-2400	BOUL

WLC COVERAGE

180/1537-1553	F	#4898-4969
180/2044-2050	S	4970-4981

DOY: 183 DATE: 2 July 1973

Time first observed: 1341 Time of last previous observation: 1331

Position: 250°

Description: Bright knots at 2.0 R

TIME	TYPE OF ACTIVITY
1245	Prominence lifted off (F97), Began as a surge, Top of loop broke and material ejected at 1500 km/s
1349	Active Prominence (S16W90)
1357-1403	Radio, Type III G, IMP 1, BOUL

RADIO SPECTRAL COVERAGE

0735-1846	WEIS
1130-2400	BOUL
0915-2420	SGMR

ATM-WLC COVERAGE

183/1326-1331	S	#5174-5185
183/1341-1346	S	5186-5197
183/2141-2147	S	5198-5209

"POSSIBLE CORONAL TRANSIENT"

DOY: 185 **DATE:** 04 July 1973

Time first observed: 0425 **Time of last previous observation:** 185/2103

Position: 250°

Description: Appearance of sharp ray possibly caused by transient

TIME	TYPE OF ACTIVITY
0142-0144	Radio, Type III GG, IMP 2, HARV
0143-0200	Bright Surge, on the Disk (N13E17)
0201.5-0227.5	Fixed Frequency Radio Burst, 100-9400 MHz
0202-0238	-B Flare, Max 0215 (S08E13)
0205.6-0211.9	Radio, Type II, IMP 3, BOUL
0236-0710	Radio, Type CONT and Type I Noise Storm, CULG

ALL ACTIVITY ON OPPOSITE LIMB

RADIO SPECTRAL COVERAGE

000-0230	BOUL
0236-0735	CULG

WLC COVERAGE

184/2057-2103	S	#5234-5245
185/0425-0431	S	5246-5257
185/1337-1343	S	5258-5269

DOY: 185 DATE: 4 July 1973

Time first observed: 2324 Time of last previous observation: 2202

Position: 90°

Description: Bright loop at 2.5 R

TIME	TYPE OF ACTIVITY
2117-2354	Radio, Type III S, IMP 1, CULG
2249	Subflare N (S07E03) In Progress

RADIO SPECTRAL COVERAGE

1130-2400	BOUL
1216-186/0147	HARV
2036-186/0736	CULG

ATM-WLC COVERAGE

185/2157-2202	S	#5316-5327
185/2324-2330	S	5328-5339
186/0032-0037	S	5340-5351
186/0518-0524	S	5352-5363
186/1307-1312	S	5364-5374

"POSSIBLE CORONAL TRANSIENT"

DOY: 189 DATE: 8 July 1973

Time first observed: 2033 Time of last previous observation: 1406

Position: 260°

Description: Change in streamer structure possibly associated with transient

TIME	TYPE OF ACTIVITY
1600	Wispy Prominence, on SW limb remains slightly active
1819-1835	Sub-faint flare, Max 1825 (S06W53)
1822.8-1834.2	Radio, Type II, IMP 1, BOUL
1827.8-1836.1	Radio, Type II, IMP 1, BOUL
1840	Active Dark Filament (N16E20)

RADIO SPECTRAL COVERAGE

0918-2418	SGMR
1130-2400	BOUL
1600-1915	WEIS

WLC COVERAGE

189/1400-1406	S	#5472-5483
189/2033-2039	S	5484-5495

DOY: 193 DATE: 12 July 1973

Time first observed: 1305 Time of last previous observation: 0236

Position: 100°

Description: Small surge behind bright streamer

TIME	TYPE OF ACTIVITY
1104	Active Dark Filament (N17E20)
1236	Bright Surge on West limb (N11W90)
?	Filament at N44E12 is gone, BOUL
1304	Active Prominence W-Limb

RADIO SPECTRAL COVERAGE

0355-1909	WEIS
0921-2416	SGMR
1231-2400	HARV
1130-2400	BOUL

ATM-WLC COVERAGE

193/0231-0236	S	#5616-5627
193/1305-1311	S	5628-5639
193/2220-2226	S	5640-5651

DOY: 210 DATE: 29 July 1973

Time first observed: 1632 Time of last previous observation: 0619

Position: 90^{0}

Description: Diffuse narrow loop, very hard to see

TIME	TYPE OF ACTIVITY
1000	Active Surge Region (N14E90) NOTE: 6 hours earlier than event.
1321-1348	Radio, Type II, IMP 2, HARV NOTE: 3 hours earlier
1321.1-1400.0	Radio, Type IV, IMP 3, BOUL
1321.1-1330	Radio, Type II, IMP 3, BOUL
1400-1900	Radio, Type IV, IMP 1, BOUL
1445-1935	Radio, Type I S, IMP 1, BOUL
1530-1630	2N Flare (N13E46) Followed disappearance of filament, LOCA

RADIO SPECTRAL COVERAGE

1200-2400	BOUL
0936-2402	SGMR
1231-2400	HARV

ATM-WLC COVERAGE

210/0613-0619	S	#5895-5906
210/1632-1638	S	5907-5918
210/1820-1826	S	5919-5930

DOY: 211 DATE: 30 July 1973

Time first observed: 1806 Time of last previous observation: 1422

Position: 100°

Description: Very small diffuse condensation at 4 R

TIME	TYPE OF ACTIVITY
1615	Arch Filament System (S05E12)

RADIO SPECTRAL COVERAGE

0833-1837	WEIS
0931-2401	SGMR
1200-2400	BOUL
1246-2156	HARV

ATM-WLC COVERAGE

211/1417-1422	S	#6243-6254
211/1806-1821	S	6255-6266
211/1916-1928	S(2)	6267-6290
211/1941-1946	S	6291-6303
211/2033-2039	S	6304-6314

DOY: 215 DATE: 3 August 1973

Time first observed: 0236 Time of last previous observation: 214/1844

Position: 80°

Description: Loop at 3 R

TIME	TYPE OF ACTIVITY
0216,0245	Active Dark Filament (S09E63)

RADIO SPECTRAL COVERAGE

000-0738	CULG
000-0230	BOUL

ATM-WLC COVERAGE

214/1842-1844	S	#7227-7229
215/0236-0242	S	7230-7241
215/0655-0700	S	7242-7253

DOY: 218 DATE: 6 August 1973

Time first observed: 0702 Time of last previous observation: 0224

Position: 80°

Description: Very diffuse brightening

TIME	TYPE OF ACTIVITY
0625-0711	1N Flare, Max 0631 (N07W05)
0627-0644	M1 X-Ray Flare, Max 0629 (N06W06)
0642-0736	1B Flare, Max 0642 (N07W05)

RADIO SPECTRAL COVERAGE

000-0737	CULG
0440-1509	WEIS

ATM-WLC COVERAGE

218/0207-0224	F	#7363-7434
218/0702-0713	S(2)	7435-7446

DOY: 221 DATE: 9 August 1973

Time first observed: 1530 Time of last previous observation: 1242

Position: 280°

Description: Diffuse loop at 2.5 R

TIME	TYPE OF ACTIVITY
1400	Disappearing Filament (N13E90) Wrong Limb
1413	4995 MHz Noise Storm
1415-1427	Sub-Faint Flare, Max 1418 (N06W48)
1542-1605	M1 X-Ray Flare, Max 1547 (N07W51)
1545.3-1545.8	2800 MHz Burst
1550	2695 and 8800 MHz Burst
1551-1600	Sub-Normal Flare, Max 1553 (N08W49)

RADIO SPECTRAL COVERAGE

1246-2400	HARV
1200-2400	BOUL
0948-2349	SGMR

ATM-WLC COVERAGE

221/1225-1242	F	#8561-8632
221/1530-1536	S	8633-8644
221/1541-1550	S,C	8645-8665

DOY: 222 DATE: 10 August 1973

Time first observed: 0821 Time of last previous observation: 0108

Position: 280°

Description: Looks like tail end of loop

TIME	TYPE OF ACTIVITY
0330-0624	Radio, Type IS, IMP 1, CULG
0500	Continuous Surges from AR 84 (N02W90)
0654	Radio, Type III B,W, CULG
0659	Radio, Type III B, CULG
0720	Radio, Type III B,W, CULG

RADIO SPECTRAL COVERAGE

0437-1825	WEIS
000-0738	CULG
0949-2348	SGMR

ATM-WLC COVERAGE

222/0052-0108	F	#8726-8797
222/0821-0843	S,F	8798-8881
222/1126-1132	S	8882-8893

DOY: 222 DATE: 10 August 1974

Time first observed: 1331 Time of last previous observation: 1145

Position: 280°

Description: Bright loop at 2 R (The Garriott Event)

TIME	TYPE OF ACTIVITY
1240-1319	Bright Surge and Eruptive Prominence (N02W90)

RADIO SPECTRAL COVERAGE

0437-1825	WEIS
1246-2400	HARV
1200-2400	BOUL
0949-2348	SGMR

ATM-WLC COVERAGE

222/1139-1145	S	#8894-8905
222/1331-1344	F	8906-8960
222/1424-1430	S	8961-8972
222/1432-1447	S(3)	8973-9007
222/1450-1503	S(2)	9008-9031
222/1512-1518	S	9032-9043
222/1633-1649	F	9044-9115
222/1809-1825	S	9116-9127
222/1917-1926	S	9128-9139
222/2212-2218	S	9140-9151
222/2220-2226	S	9152-9163
223/0117-0123	S	9164-9175
223/0126-0144	S,C	9176-9213
223/0458-0504	S	9214-9225
223/0506-0512	S	9226-9237

DOY: 224 DATE: 12 August 1973

Time first observed: 1152 Time of last previous observation: 1003

Position: 290°

Description: Bright knots at 2.5 R, diffuse loops at 5 R

Very fast moving transient.

TIME	TYPE OF ACTIVITY
1158.9-1209.1	Radio, Type III G, IMP 1, SAGM
1250	Active Surge
1610	Eruptive Prominence 4+ hours after event (N35W90)

RADIO SPECTRAL COVERAGE

0443-1331	WEIS
0951-2400	HARV
1200-2400	BOUL

ATM-WLC COVERAGE

224/0957-1003	S	#9603-9614
224/1152-1208	F	9615-9686
224/1303-1309	S	9687-9698
224/1757-1815	F,Ext. S	9699-9738
224/1959-2005	S	9739-9750
224/2304-2310	S	9751-9762
224/2355-225/0001	S	9763-9774

DOY: 225 DATE: 13 August 1973

Time first observed: 0655 Time of last previous observation: 0615

Position: 315°

Description: Bright loop at 3 R

TIME	TYPE OF ACTIVITY
0613.5-0616.5	Radio, Type III G, V, IMP 1, CULG
0616-0631	Radio, Type II HB, IMP 1, CULG
0618-0628	Radio, Type III GG, V, IMP 2, CULG
0650	Eruptive Prominence out to .18 R (N26E90) Wrong Limb

RADIO SPECTRAL COVERAGE

000-0737	CULG

ATM-WLC COVERAGE

225/0609-0615	S	#9848-9859
225/0655-0701	S	9860-9871
225/0746-0818	S,F	9872-9955
225/0914-0920	S	9956-9967
225/0923-0929	S	9968-9979

DOY: 225 DATE: 13 August 1973

Time first observed: 1424 Time of last previous observation: 1420

Position: 315°

Description: Narrow diffuse loop at 5 R

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

0715-1825	WEIS
0952-2343	SGMR
1200-2400	BOUL
1245-2400	HARV

ATM-WLC COVERAGE

225/1414-1420	S	# 9992-10003
225/1424-1437	S,C	10004-10043
225/1446-1447	C	10044-10047

DOY: 225 DATE: 13 August 1973

Time first observed: 2137 Time of last previous observation: 1749

Position: 260°

Description: Diffuse loop at 3.5 R

TIME	TYPE OF ACTIVITY
1740	Eruptive Prominence (S25W90)
1830	Active Prominence (S20W90)
2131-2155	C1 X-Ray Flare, Max 2146 (S09W90)

RADIO SPECTRAL COVERAGE

0952-2343	SGMR
1200-2400	BOUL
1245-2400	HARV
2037-2400	CULG

ATM-WLC COVERAGE

225/1743-1749	S	#10048-10059
225/2137-2143	S	10060-10071
225/2233-2235	S	10072-10075
225/2315-2321	S	10076-10087
226/0006-0012	C	10088-10091
226/0050-0056	S	10092-10103
226/0059-0105	S	10104-10115

DOY: 233 DATE: 21 August 1973

Time first observed: 1441 Time of last previous observation: 1334

Position: 50°

Description: Large bright loop at 2.5 R

TIME	TYPE OF ACTIVITY
1319	Eruptive Prominence (N13E90)
1325-1600	2800 MHz Burst, 2.2 F.U., OTTA
1344-1433	1F Flare, Max 1407 (N12E90)
1440-1650	Radio, CONT Dekameter, IMP 2, HARV
1441.5-1734.0	Radio, Type IV, IMP 3, BOUL
1825.0-1919	Radio, Type IV, IMP 1, BOUL

RADIO SPECTRAL COVERAGE

1200-2400	BOUL
1300-2400	HARV
1600-2332	SGMR

ATM-WLC COVERAGE

233/1326-1334	C	#11930-11948
233/1441-1447	S	11949-11960
233/1450-1452	S	11961-11964
233/1511-1512	S	11965-11966
233/1615-1621	S	11967-11978
233/1653-1659	S	11979-11990
233/1835-1841	S	11991-12002

DOY: 238 DATE: 26 August 1973

Time first observed: 2302 Time of last previous observation: 2006

Position: 70° + 280°

Description: Large, slow moving loop at 2 R on E-limb and restructuring of streamer on W-limb, the Lousma Event.

TIME	TYPE OF ACTIVITY
1757	Hedgerow Prominence, Large, slowly evolving hedgerow prominence reported throughout the evening by Mauno Loa at .14 R (N20E90)
2254	Radio, Type III B,W, CULG

RADIO SPECTRAL COVERAGE

1006-2324	SGMR
1230-2400	BOUL
1633-2400	HARV
2034-2400	CULG

ATM-WLC COVERAGE

238/2004-2006	C	#12899-12902
238/2302-2308	S	12903-12914
238/2349-2355	S	12915-12926
239/0003-0009	S	12927-12938
239/0011-0022	C	12939-12962
239/0206-0212	S	12963-12974
239/0512-0518	S	12975-12986
239/0622-0644	F,S	12987-13070
239/1227-1233	S	13071-13082
239/1235-1241	S	13083-13094
239/1243-1256	C	13095-13122

DOY: 249 DATE: 6 Sept. 1973

Time first observed: 0957 Time of last previous observation: 0405

Position: 120°

Description: Big, faint loop at 2.5 R

TIME	TYPE OF ACTIVITY
0911.5-0913.5	2695 MHz Burst, 6 F.U., CRON
0912.5-0915	2695 MHz Butst, 6 F.U., CANR
0912.5-0915	4995 MHz Burst, 12 F.U., CANR
0912-0930	1B Flare, Max 0915 (N05W90) NOTE: W-limb
0915-1010	X1 X-Ray Flare, Max 0922 (West Limb)
0950	Surge (N05W90)

RADIO SPECTRAL COVERAGE

0521-1045 WEIS

ATM-WLC COVERAGE

249/0359-0405	S	#15792-15803
249/0957-1003	F	15804-15828
249/1006-1023	F	15829-15900
249/1155-1201	S	15901-15912
249/1208-1224	Ext. S, S	15913-15946
249/1304-1310	S	15947-15958
249/1312-1318	S	15959-15970
249/1320-1342	C	15971-15991
249/1350-1357	Ext. S	15992-16006
249/1511-1517	S	16007-16018
249/1835-1837	C	16019-16022
249/1919-1925	S	16023-16034
249/1930-1936	S	16635-16046

DOY: 250 DATE: 7 Sept. 1973

Time first observed: 2312 Time of last previous observation: 2234

Position: 270°

Description: Loop at 3 R

TIME	TYPE OF ACTIVITY
2035-2400	Radio, Type I N, IMP 1, CULG
2201-2225	Radio, Type I N, Decimeter, IMP 1, HARV
2226-2233	<C1 X-Ray Flare, Max 2227 (S10W80)
2230-2243	Eruptive Prominence, out to 0.2 R at (N18W90)
2249.5-2257	2695 MHz Burst, 6 F.U., BOUL
2250-2300	2695 MHz Burst, 3 F.U., PENT
2250-2256	C2 X-Ray Flare, Max 2254 (S18W50)
2250-2256	C2 X-Ray Flare, Max 2254 (N24W58)
2319.8-2319.9	Radio, Type III, Dekametric, IMP 1, BOUL
2339.8-2340.3	Radio, Type III, Dekametric, IMP 1, BOUL

RADIO SPECTRAL COVERAGE

1230-2400	BOUL
2035-2400	CULG
1300-2400	HARV

ATM-WLC COVERAGE

250/2228-2234	Ext. S	#16439-16451
250/2312-2318	S	16452-16463
250/2328-2345	Ext. S	16464-16499
250/2347-2354	Ext. S	16500-16515
250/2357-251/0008	Ext.S,	16516-16538
251/0049-0055	S	16539-16550
251/0057-0103	S	16551-16562
251/0106-0117	C	16563-16585
251/1315-1321	S	16586-16597
251/1324-1330	S	16598-16609
251/1333-1345	C	16610-16635

DOY: 250 DATE: 7 Sept. 1973

Time first observed: 1306 Time of last previous observation: 1118

Position: 210°-310°

Description: Complete chaos on W-limb - possibly back end of loop structure.

TIME	TYPE OF ACTIVITY
1008-1537	Radio, Type I N, IMP 1, WEIS
1130-1142	2B Flare, Max. 1142 (S18W46) Confirmed by 10 observatories; Rated 3B - SN
1139-1300	X1 X-Ray Flare, Max 1142 (S18W46)
1207-1215	Radio, Type IV, IMP 2, SGMR
1215.1-1351	Radio, CONT, IMP 2, SGMR
1220-1222	Radio, Type II, IMP 2, WEIS
1222-1532	2800 MHz, 11 F.U., OTTA
1235.0-1400	Radio, Type IV, IMP 2, BOUL

RADIO SPECTRAL COVERAGE

0522-1720	WEIS
1018-2302	SGMR
1230-2400	BOUL

ATM-WLC COVERAGE

250/1102-1118	F	#16230-16301
250/1306-1314	F	16302-16330
250/1354-1355	F	16331-16334
250/1434-1447	S(4)	16335-16360
250/1530-1539	S,C	16361-16375
250/1658-1704	S	16376-16387
250/1746-1752	S	16388-16399
250/1835-1841	S	16400-16411
250/1851-1857	S	16412-16423
250/1926-1928	C	16424-16426
250/2141-2147	S	16427-16438

DOY: 251 DATE: 8 Sept. 1973

Time first observed: 1758 Time of last previous observation: 1626

Position: 300°

Description: Very fast, narrow loop at 2 R

TIME	TYPE OF ACTIVITY
1720.5-1725	Radio, Type II, IMP 2, HARV
1740-1746	<C1 X-Ray Flare, Max 1742 (N20W72)
1758.5-1758.8	Radio, Type III, IMP 1, BOUL
1818-1831	<C1 X-Ray Flare, Max 1818 (N25W73)
1829-1900	K-Coronameter transient, reported by Mauna Loa Obs. Weak and narrow coronal transient between 6' & 12' above limb at N40W90
1830-1840	<C1 X-Ray Flare, Max 1831 (N17W37)

RADIO SPECTRAL COVERAGE

1020-2301	SGMR
1300-2400	HARV
1230-2400	BOUL

ATM-WLC COVERAGE

251/1620-1626	S	#16652-16663
251/1758-1831	F, Ext. S, F, S. Ext. S	16664-16743
251/1833-1839	Ext. S	16744-16757
251/1841-1847	S	16758-16765
251/1926-2017	Ext. S (3)	16766-16873
251/2100-2106	S	16874-16885
251/2115-2122	S	16886-16897
251/2151-2152	C	16898-16900
251/2236-2242	S	16901-16912
252/0139-0145	S	16913-16924
252/0148-0154	S	16925-16936

DOY: 253 DATE: 10 Sept. 1973

Time first observed: 0408 Time of last previous observation: 0236

Position: 250°

Description: Streamer blow-out

TIME	TYPE OF ACTIVITY
0022.5 - 0538.5	Radio, Type I N, IMP 1, CULG
0101	Active Prominence (S23W90)
0242	Eruptive Prominence
0255-0315	SB Flare, Max 0259 (S10W42), PALE
0256-0323	1N Flare, Max 0301 (S10W42), MANI
0300-0310	SB Flare, Max 0300 (S18W43), TEHR
0300-0310	SB Flare, Max 0300 (S09W39), TEHR

RADIO SPECTRAL COVERAGE

000-0730	CULG

ATM-WLC COVERAGE

253/0232-0236	Ext. S	#17192-17199
253/0408-0414	S	17200-17211
253/0416-0422	S	17212-17223
253/0428-0439	C	17224-17245
253/0843-0849	S	17246-17257

DOY: 254 DATE: 11 Sept. 1973

Time first observed: 0936 Time of last previous observation: 0214

Position: 290°

Description: Streamer blow-out

TIME	TYPE OF ACTIVITY
0654-0729	Subnormal Flare, Max 0659 (S12W56), ATHN
0701.5-0721	Radio, Type II H, IMP 2, CULG
0702.8-0705.7	Radio, Type II, IMP 1, WEIS
0724-0738	Sub-Faint Flare, Max 0729 (S12W40)

RADIO SPECTRAL COVERAGE

000-0743	CULG
0531-1318	WEIS

ATM-WLC COVERAGE

254/0205-0214	C	#17682-17699
254/0936-0949	S(2)	17700-17723
254/1115-1121	S	17724-17735
254/1124-1130	S	17736-17747
254/1138-1143	C	17748-17758
254/1455-1456	F	17759-17762
254/1621 (1 fr)	S	17763
254/1623-1629	S	17764-17775
254/1721-1722	S	17776-17778

DOY: 254 DATE: 11 Sept. 1973

Time first observed: 1744 Time of last previous observation: 1743

Position: 300°

Description: Very fast loop at 2 R (crew detected)

TIME	TYPE OF ACTIVITY
1540-2017	Active Prominence (N28W90)
1745-2241	Radio, Type IN, IMP 1, HARV

RADIO SPECTRAL COVERAGE

1023-2256	SGMR
1230-2345	BOUL
1322-1716	WEIS
1300-2400	HARV

ATM-WLC COVERAGE

254/1722-1808	C	#17779-17878
254/1809-1814	F,C	17879-17891
254/1852-1908	Ext. S	17892-17927
254/1916-1947	Ext. S(2)	17928-17996
254/2025 (1 Fr)	S	17997
254/2026-2042	Ext. S	17998-18033
254/2201-2207	S	18034-18045

DOY: 256 DATE: 13 Sept. 1973

Time first observed: 0811 Time of last previous observation: 0243

Position: 300°

Description: Looks like rear end of loop structure

TIME	TYPE OF ACTIVITY
0646-0800	<C1 X-Ray Flare, Max 0647 (S12W66)

RADIO SPECTRAL COVERAGE

0534-1018	WEIS

ATM-WLC COVERAGE

256/0217-0143	C	#18359-18394
256/0811-0817	S	18395-18406
256-1131-1137	S	18407-18418

DOY: 256 DATE: 13 Sept. 1973

Time first observed: 1131 Time of last previous observation: 0817

Position: 300°

Description: Very fast, narrow loop at 4 R

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

1021-1708	WEIS
1025-2253	SGMR

ATM-WLC COVERAGE

256/0811-0817	S	#18395-18406
256/1131-1137	S	18407-18418
256/1142-1148	S	18419-18430
256/1152-1207	C	18431-18463
256/1305-1321	S	18464-18475

DOY: 258 DATE: 15 Sept. 1973

Time first observed: 0032 Time of last previous observation: 257/2306

Position: 280°

Description: Very fast loop out to 4 R

TIME	TYPE OF ACTIVITY
257/2338-258/0049	Radio, Type IV, IMP 2, BOUL
258/000 -0441	Radio, Type I, IMP 1, CULG

RADIO SPECTRAL COVERAGE

257/1230-258/0130	BOUL
257/2028-258/0727	CULG
257/1301-258/0033	HARV

ATM-WLC COVERAGE

257/2301-2306	S	#18765-18776
258/0032-0038	S	18777-18788
258/0041-0047	S	18789-18800
258/0050-0123	Ext. S(2)	18801-18872
258/0205-0211	S	18873-18884
258/0830-0836	S	18885-18896

DOY: 259 DATE: 16 Sept. 1973

Time first observed: 0139 Time of last previous observation: 258/2352

Position: 270°

Description: Diffuse, bright loop at 2.5 R. Also streamer rearrangement of E-Limb

TIME	TYPE OF ACTIVITY
0026.5-0028	2695 MHz Burst, 4 F.U., BOUL
0133-0405	Active Prominence (S30E90)
0158-0400	Active Prominence (S19W90)

RADIO SPECTRAL COVERAGE

000-0130	BOUL
000-0727	CULG

ATM-WLC COVERAGE

258/2352-2353	F	#19007-19010
259/0139-0158	S, S, C	19011-19045
259/0213-0214	F	19046-19049
259/0743-0749	S	19050-19061
259/1109-1115	S	19062-19073
259/1139-1141	C	19074-19077
259/1224-1237	S(2)	19078-19101
259/1239-1244	C	19102-19112
259/1354-1400	S	19113-19124
259/1412-1413	F	19125-19128
259/1832-1838	S	19129-19140
259/1842-1848	S	19141-19152
259/2138-2139	F	19153-19157
259/2228-2229	F	19158-19161
259/2317-2323	S	19162-19173
259/2327-2333	S	19174-19185
259/2337 (1 Fr)	S	19186
259/2337-2342	C'	19187-19197

DOY: 260 DATE: 17 Sept. 1973

Time first observed: 1619 Time of last previous observation: 1402

Position: 240-290°

Description: The "Bean"transient with spectacular curved rays

TIME	TYPE OF ACTIVITY
1516.5-1519.7	Radio, Type II, IMP 1, BOUL
1517-1521	Radio, Type II, IMP 2, HARV

RADIO SPECTRAL COVERAGE

0537-1610	WEIS
1028-2247	SGMR
1230-2400	BOUL
1318-2400	HARV

ATM-WLC COVERAGE

260/1402-1403	F	#19289-19292
260/1619-1645	Ext. S	19293-19328
260/1703-1704	F	19329-19332
260/1750-1756	S	19333-19344
260/1926-1932	S	19345-19356
260/2112-2125	S(2)	19357-19380
260/2127-2132	C	19381-19391
261/0619-0625	S	19392-19403

DOY: 265 DATE: 22 Sept. 1973

Time first observed: 1951 Time of last previous observation: 1152

Position: 90

Description: Small twisting of streamer

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

1034-2238	SGMR
1230-2400	BOUL
1317-2400	HARV

ATM-WLC COVERAGE

265/1149-1152	F	#20101-20112
265/1942-1958	F	20113-20184
266/0153-0159	S	20185-20196

DOY: 267 DATE: 24 Sept. 1973

Time first observed: 0108 Time of last previous observation: 266/1223

Position: 90

Description: Complete change in streamer structure

TIME	TYPE OF ACTIVITY
266/2355-2355.5	Radio, Type III G,W-CULG

RADIO SPECTRAL COVERAGE

2025-0724	CULG
000-0100	BOUL

ATM-WLC COVERAGE

266/1217-1223	S	#20209-20220
267/0108-0116	S	20221-20232

DOY: 268 DATE: 25 Sept. 1973

Time first observed: 0201 Time of last previous observation: 267/1313

Position: 90

Description: End of transient, front loop at edge of FOV

TIME	TYPE OF ACTIVITY
0030	Radio, Type III B,W CULG
0034-0132	C1 x-ray flare, max 0053 (N25E72)
0034-0132	1N flare, max 0053 (N29E73) PALE
0046.5-0047	Radio, Type III G, IMP 1, CULG
0049.5	Radio, Type III G, CULG
0054-0055.5	Radio, Type III G,U, IMP 2, CULG
0058.5-0221	Radio, Type III, N,W CULG
0101.5-0326.5	Radio, Type I, IMP 1, CULG
0158.5-202	2695 MHz burst, 5.0 F.U., CRON

RADIO SPECTRAL COVERAGE

0000-0723	CULG
0000-0100	BOUL

ATM-WLC COVERAGE

267/1307-1313	S	#20233-20244
268/0201-0207	S	20245-20256
268/0744-0750	S	20257-20268

DOY: 272 DATE: 29 Sept. 1973

Time first observed: 1432 Time of last previous observation: 0054

Position: 90

Description: Looks like an enlarged helmet streamer, blown out by #20366 (273/0307).

TIME	TYPE OF ACTIVITY
1405-1520	2800 MHz burst, max 1420, 2.4 F.U. OTTA

RADIO SPECTRAL COVERAGE

0557-1518	WEIS
1042-2224	SGMR
1300-2400	BOUL
1317-2400	HARV

ATM-WLC COVERAGE

272/0048-0054	S	#20341-20352
272/1432-1438	S	20353-20364
273/0307-0313	S	20365-20376

DOY: 275 DATE: 2 October 1973

Time first observed: 1405 Time of last previous observation: 0014

Position: 90

Description: Transient goes out diffuse streamer, leaving it very intense.

TIME	TYPE OF ACTIVITY
1225-1242	C3 x-ray flare, max 1228 (S13E05)
1225-1242	SB flare, max 1228 (S13E05)
1225-1258	2800 MHz burst, max 1225, 4.0 F.U.
1256-1400	Active surge region (N10W85)

RADIO SPECTRAL COVERAGE

0603-1628	WEIS
1045-2219	SGMR
1300-2400	BOUL
1316-2400	HARV

ATM-WLC COVERAGE

275/0008-0014	S	#20408-20419
275/1405-1411	S	20420-20431
276/0233-0239	S	20432-20443
276/1312-1318	S	20444-20455

DOY: 277 DATE: 4 October 1974

Time first observed: 1406 Time of last previous observation: 0154

Position: 90

Description: Transient along streamer, very diffuse but restructuring of E-Limb obvious.

TIME	TYPE OF ACTIVITY
1033-1234	C1 x-ray flare, max 1033 (S11W44)
1129.8-1139.0	Radio, Type II, IMP 1 WEIS
1134.3-1142.1	Radio, Type V (Dekameter) IMP 1 SGMR
1324-1335	SN Flare, max 1326 (S16W19) ATHN
1325-1346	Dark surge on the disk (S16W19) ATHN
1403-1441	Dark surge on the disk (S16W20) ATHN
1452-1525	C1 x-ray flare, max 1509 (S14W16)

RADIO SPECTRAL COVERAGE

0604-1629	WEIS
1048-2215	SGMR
1300-2400	BOUL
1317-2400	HARV

ATM-WLC COVERAGE

277/0148-0154	S	#20504-20515
277/1406-1412	S	20516-20527
278/0105-0111	S	20528-20539

DOY: 278 DATE: 5 October 1973

Time first observed: 0105 Time of last previous observation: 277/1412

Position: 290

Description: Broadening of northern-most streamer, complete fan by #20541 (1323).

TIME	TYPE OF ACTIVITY
277/2347-2353.5	2695 MHz Burst, Max 2350, 4.0 F.U., CRON
0018-0715	C1 x-ray flare, Max 0341 (S14W58)
0245-0351	SN Flare, Max 0341 (S14W58)
0300-0445	C1 x-ray Flare, Max 0300 (S13W53)

RADIO SPECTRAL COVERAGE

0059-0130	CULG
1317-0011	HARV

ATM-WLC COVERAGE

277/1406-1412	S	#20516-20527
278/0105-0111	S	20528-20539
278/1323-1329	S	20540-20551

DOY: 282 DATE: 9 October 1973

Time first observed: 0123 Time of last previous observation: 281/2044

Position: 90

Description: Small loop (fairly faint) out to 3 R_o.

TIME	TYPE OF ACTIVITY
0039	Radio, Type III B,W CULG
0054	Radio, Type III B,W CULG
0057-0109	Active Surge Region (N14W82) PALE; Wrong Limb
0101-0104	Radio, Type III G,V, IMP 1, CULG

RADIO SPECTRAL COVERAGE

1300-0030	BOUL
1317-0009	HARV
2020-0720	CULG

ATM-WLC COVERAGE

281/2038-2044	S	#20649-20660
282/0123-0129	S	20661-20672
282/1341-1347	S	20673-20684

DOY: 283 DATE: 10 October 1973

Time first observed: 1259 Time of last previous observation: 0233

Position: 280

Description: Aftermath of transient, which has already left the FOV, is visible.

TIME	TYPE OF ACTIVITY
1217-1330	Active Prominence (N21W90) RAMEY

RADIO SPECTRAL COVERAGE

0619-1453	WEIS
1054-2205	SGMR

ATM-WLC COVERAGE

283/0227-0233	S	#20697-20708
283/1259-1305	S	20709-20720
283/2355-284/0001	S	20721-20732

DOY: 284 DATE: 11 October 1973

Time first observed: 1343 Time of last previous observation: 0001

Position: 270

Description: Some condensation at 3.5 $R_\odot$, very diffuse.

TIME	TYPE OF ACTIVITY
1230-1600	Active Prominence (S15W90) RAMEY
1331.0-1331.2	Radio, Type III (Dekameter) IMP 1, SGMR

RADIO SPECTRAL COVERAGE

0620-1433	WEIS
1300-2400	BOUL
1331-2400	HARV
1056-2204	SGMR

ATM-WLC COVERAGE

283/2355-284/0001	S	#20721-20732
284/1343-1349	S	20733-20744
285/0229-0235	S	20745-20756

DOY: 288 DATE: 15 October 1973

Time first observed: 0025 Time of last previous observation: 287/1316

Position: 280

Description: Narrow ray appears, very diffuse by #20830 (1231)

TIME	TYPE OF ACTIVITY
287/2319-2322	SF Flare, max 2319 (S10W36) PALE

RADIO SPECTRAL COVERAGE

000-0718	CULG

ATM-WLC COVERAGE

287/1310-1316	S	#20805-20816
288/0025-0031	S	20817-20828
288/1231-1237	S	20829-20840

DOY: 291 DATE: 18 October 1973

Time first observed: 1637 Time of last previous observation: 0124

Position: 80

Description: Condensation at 3 R_o, dissipated by #20914 (292/0035)

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

0705-1605	WEIS
1104-2152	SGMR
1300-2400	BOUL
1331-2352	HARV

ATM-WLC COVERAGE

291/0118-0124	S	#20889-20900
291/1637-1643	S	20901-20912
292/0035-0041	S	20913-20924

DOY: 294 DATE: 21 October 1973

Time first observed: 0054 Time of last previous observation: 293/1405

Position: 90

Description: Diffuse loops out to 4.0 R_o.

TIME	TYPE OF ACTIVITY
293/2306-2306.5	Radio, Type III G,W CULG
294/0004-0034	Active Surge Region (S12E90) PALE

RADIO SPECTRAL COVERAGE

1300-0030	BOUL
2018-0717	CULG

ATM-WLC COVERAGE

293/1359-1405	S	#20949-20960
294/0054-0100	S	20961-20972
294/1313-1319	S	20973-20984

DOY: 295 DATE: 22 October 1973

Time first observed: 0001 Time of last previous observation: 294/1319

Position: 90

Description: Faint loops out to 3.0 $R_\odot$, more obvious at #20998 (1230). Moving very slowly.

TIME	TYPE OF ACTIVITY
294/2213.5	Radio, Type III B,W CULG
294/2335-2345	SF Flare, max 2334 (S14E84) PALE

RADIO SPECTRAL COVERAGE

2020-0101	CULG
1300-2400	BOUL

ATM-WLC COVERAGE

294/1313-1319	S	#20973-20984
295/0001-0007	S	20985-20996
295/1230-1236	S	20997-21008
295/2315-2321	S	21009-21020
296/1324-1330	S	21021-21032

DOY: 295 DATE: 22 October 1973

Time first observed: 2315 Time of last previous observation: 1236

Position: 270

Description: Void between two streamers completely filled in with a fan structure.

TIME	TYPE OF ACTIVITY
2118-	Radio, Type III, B,U, IMP 1 CULG
2225-0529	Active Filament System (S13E67) MANILA; Wrong limb

RADIO SPECTRAL COVERAGE

1330-2347	HARV
1500-2400	BOUL
2255-2400	BULG

ATM-WLC COVERAGE

295/1230-1236	S	#20997-21009
295/2315-2321	S	21010-21021
296/1324-1330	S	21022-21033

DOY: 300 DATE: 27 October 1973

Time first observed: 1659 Time of last previous observation: 1349

Position: 80

Description: Bright loop to 5 R_o, still obvious at #21142 (1725).

TIME	TYPE OF ACTIVITY
1517.1-1517.3	Radio, Type III, IMP 1, HARV
1540.5-1738	2695 MHz Burst, max 1602, 69 F.U., CANR
1543-1851	M3 x-ray Flare, max 1636 (N20E55)
1547-1730	2B Flare, max 1606 (N18E54) RAMEY
1548-1600	Bright surge on the disk, out to 0.1 R_o (N22E59) RAMEY
1550-1600	Radio, Type I (Decimeter), IMP 1, HARV
1554-1559	Radio, Type III GG,RS (Decimeter) IMP 3, BOUL
1554-1608	Radio, Type IV (Decimeter) IMP 3, HARV
1600.0-1602.4	Radio, Type III G, IMP 1, HARV
1601-1623	Radio, Type II, IMP 3, BOUL
1605.0-1605.8	Radio, Type III (Dekameter), IMP 1, SGMR
1605-1713	Radio, Type I, S, IMP 1, SGMR
1608-1630	Radio, Type IV P (Decimeter) IMP 3, HARV
1642-1714	Radio, Type IV N (Decimeter) IMP 3, HARV

RADIO SPECTRAL COVERAGE

1330-2400	BOUL
1330-2342	HARV
1115-2139	SGMR

ATM-WLC COVERAGE

300/1343-1349	S	#21117-21128
300/1659-1705	S	21129-21140
300/1725-1729	S	21141-21149
301/0109-0115	S	21150-21161

DOY: 306 DATE: 2 Nov 1973

Time first observed: 0324 Time of last previous observation: 305/1501

Position: 270

Description: Very subtle restructuring of rays.

TIME	TYPE OF ACTIVITY
0000-0332	Radio, Type IS, IMP 1, CULG
0241-0505	Active Filament System (S10W22)

RADIO SPECTRAL COVERAGE

0000-0716	CULG

ATM-WLC COVERAGE

305/1455-1501	S	#21270-21281
306/0324-0330	S	21282-21293
306/1410-1416	S	21294-21305

DOY: 307 DATE: 3 November 1973

Time first observed: 0107 Time of last previous observation: 306/1416

Position: 270

Description: Complete blow out of W-limb.

TIME	TYPE OF ACTIVITY
0011.5 - 0035.3	2695 MHz Burst, 250 F.U., MANI
0012-0018	Radio, Type III G, V, IMP 2, CULG
0012-0101	2N Flare, Max 0034, (S18W85)
0013-0015	Radio, UNCLF, IMP 2, CULG
0014-0100	X1 X-Ray Flare (S13W82)
0014-0255	Loop Prominence System (S14W90)
0015-0045	Radio, Type II, H, IMP 2, CULG
0020-0050	Radio, Type IV, IMP 1, CULG

RADIO SPECTRAL COVERAGE

0000-0715	CULG

ATM/WLC COVERAGE

306/1410-1416	S	#21294-21305
307/0107-0113	S	21306-21317
307/0253-0259	S	21318-21329

DOY: 309 DATE: 5 Nov. 1973

Time first observed: 0248 Time of last previous observation: 308/1428

Position: 90 & 220

Description: Small transient on E-limb near pylon, also a transient causing a split ray on W-limb.

TIME	TYPE OF ACTIVITY
0044.5	Radio, Type III G,W, CULG
0048-0101	Dark surge on disk (S04W17) MANILA

RADIO SPECTRAL COVERAGE

0000-0716 CULG

ATM-WLC COVERAGE

308/1422-1428	S	#21366-21377
309/0248-0254	S	21378-21389
309/1335-1341	S	21390-21401
310/0205-0211	S	21402-21413

DOY: 310 DATE: 6 Nov. 1973

Time first observed: 1450 Time of last previous observation: 0211

Position: 280

Description: Large helmet streamer blows out and appears as a fan.

TIME	TYPE OF ACTIVITY
0900-1300	Eruptive Prominence (S17E90); Wrong Limb

RADIO SPECTRAL COVERAGE

0651-1525	WEIS
1128-2126	SGMR
1330-2400	BOUL
1345-2335	HARV

ATM-WLC COVERAGE

310/0205-0211	S	#21402-21413
310/1450-1456	S	21414-21425
311/0120-0126	S	21426-21437

DOY: 317 DATE: 13 Nov. 1973

Time first observed: 0012 Time of last previous observation: 316/1515

Position: 270

Description: A considerable amount of restructuring

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

316/1330-2400	BOUL
316/1436-2333	HARV
316/2016-317/0716	CULG

ATM-WLC COVERAGE

316/1509-1515	S	#21558-21569
317/0012-0018	S	21570-21581
317/1431-1437	S	21582-21593

DOY: 330 DATE: 26 Nov. 1973

Time first observed: 0052 Time of last previous observation: 329/1835

Position: 70 & 270

Description: Transient going out Northeast streamer very slowly. Also, transient moving out helmet streamer at 3 R_o. Blown out by 1257 U.T.

TIME	TYPE OF ACTIVITY
329/2236-2237	Radio, Type III GG,U, IMP 1, CULG
330/0000-0728	Radio, Type III N, IMP 1, CULG
0000-0728	Radio, Type IS, IMP 1, CULG
0001-0015	Dark surge on disk (S05E19)
0001-0555	Active filament system (N06W06)
0007-0400	Active dark filament (S11W28) IMP 1
0024-0033	Bright surge on disk (S10E18)
0025.5-0030	Radio, Type III G,U, IMP 2, CULG
0032-0046	Dark surge on disk (S09E18)

RADIO SPECTRAL COVERAGE

329/2019-330/0728	CULG
329/1401-2332	HARV
329/1400-2400	BOUL

ATM-WLC COVERAGE

329/1829-1835	S	#21870-21881
330/0052-0058	S	21882-21893
330/0725-0731	S	21894-21905
330/1257-1303	S	21906-21917
330/1746-1752	S	21918-21929
330/2000-2006	S	21930-21941
331/0124-0126	S	21942-21944

DOY: 333 DATE: 29 Nov. 1973

Time first observed: 0145 Time of last previous observation: 0141

Position: 270

Description: First appearance of a very diffuse loop near edge of FOV between two sharp rays.

TIME	TYPE OF ACTIVITY
0000-0720	Radio, Type I S,W, CULG
0103-0115	Active filament system (S09W40)

RADIO SPECTRAL COVERAGE

0000-0720	CULG

ATM-WLC COVERAGE

333/0017-0023	S	#22255-22266
333/0136-0141	S	22267-22278
333/0145-0151	S	22279-22290
333/0153-0200	C	22291-22305
333/0324-0330	S	22306-22317
333/0504-0510	S	22318-22329
333/0643-0649	S	22330-22341

DOY: 334 DATE: 30 November 1973

Time first observed: 1017 Time of last previous observation: 0741

Position: 90

Description: Loops at 2.5 R_o, doesn't really blow, just sneaks out the streamer.

TIME	TYPE OF ACTIVITY
0906-0953	SN Flare, Max 0924 (S13W33) Wrong limb, MONT
0907-0919	C3 x-ray flare (S14W31)
0913-0918	2695 MHz burst max at 0917, 10 F.U., CRON
1006-1115	Active surge region (S15W90)

RADIO SPECTRAL COVERAGE

No coverage.

ATM-WLC COVERAGE

334/0735-0741	S	#22484-22495
334/1017-1023	S	22496-22507
334/1454-1500	S	22508-22519
334/1502-1508	S	22520-22531
334/1513-1520	S	22532-22543

DOY: 337 DATE: 3 December 1973

Time first observed: 0356 Time of last previous observation: 0220

Position: 270

Description: Either the growth of a helmet streamer or a small transinet - too fast for rotational effects.

TIME	TYPE OF ACTIVITY
0205-0219	C2 x-ray flare, Max 0207 (S14W68)
0338-0346	C3 x-ray flare, Max 0338 (S13W67)

RADIO SPECTRAL COVERAGE

0000-0721	CULG

ATM-WLC COVERAGE

337/0213-0220	C	#22831-22845
337/0356-0408	S	22846-22857
337/0534-0540	S	22858-22869
337/0703-0709	S	22870-22881
337/0809-0815	S	22882-22893
337/0944-0950	S	22894-22905

DOY: 339 DATE: 5 December 1974

Time first observed: 1040 Time of last previous observation: 0824

Position: 90

Description: Small surge moving up northern most streamer.

TIME	TYPE OF ACTIVITY
0936.5-0939	2695 MHz burst, 7 F.U., CRON

RADIO SPECTRAL COVERAGE

0735-1009	WEIS
1049-1520	WEIS

ATM-WLC COVERAGE

339/0818-0824	S	#23263-23274
339/1040-1045	S	23275-23284
339/1125-1131	S	23285-23296
339/1259-1305	S	23297-23308
339/1307-1313	S	23309-23320
339/1315-1322	C	23321-23335
339/1429-1430	C	23336-23338
339/1638-1644	S	23339-23350
339/1736-1737	C	23351-23353
339/2118-2123	S	23354-23362

DOY: 341 DATE: 7 December 1973

Time first observed: 1612 Time of last previous observation: 1225

Position: 270

Description: Very, very diffuse loop at 4 R_o.

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

1212-2105	SGMR
1400-2330	BOUL
1402-2335	HARV

ATM-WLC COVERAGE

341/1223-1225	C	#23789-23791
341/1612-1613	C	23792-23794
341/1755-1756	C	23795-23797

DOY: 341 DATE: 7 December 1973

Time first observed: 2103 Time of last previous observation: 2100

Position: 270

Description: Diffuse transient, may be associated with earlier transient (1612) in same region

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

1212-2105	SGMR
1400-1330	BOUL
1402-2335	HARV
2024-2400	CULG

ATM-WLC COVERAGE

341/2054-2100	S	#23816-23827
341/2103-2110	ExtS	23828-23841
342/0049-0054	S	23842-23851

DOY: 342 DATE: 8 December 1973

Time first observed: 1910 Time of last previous observation: 1907

Position: 95-100

Description: Brightening, doesn't appear to blow out.

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

1205-2105	SGMR
1400-2330	BOUL
1402-2335	HARV

ATM-WLC COVERAGE

342/1901-1907	S	#23948-23959
342/1910-1926	Ext.S	23960-23995
342/2151-2157	S	23996-24007
342/2319-2325	S	24008-24019

DOY: 343 DATE: 9 December 1973

Time first observed: 0749 Time of last previous observation: 0100

Position: 90°

Description: Considerable restructuring on E-limb; bright thin rays present.

TIME	TYPE OF ACTIVITY
0553-0645	Active Dark filament (N04E58), IMP 1, ATHENS

RADIO SPECTRAL COVERAGE

0000-0721	CULG

ATM-WLC COVERAGE

343/0058-0100	C	#24047-24051
343/0749-0755	S	24052-24063
343/1321-1327	S	24064-24075

DOY: 344 DATE: 10 December 1973

Time first observed: 0758 Time of last previous observation: 0219

Position: 270

Description: Appearance of several sharp rays.

TIME	TYPE OF ACTIVITY
0643-0644	Radio, Type III G,W, CULG
0707-0708	Radio, Type III G,W, CULG

RADIO SPECTRAL COVERAGE

0000-0725	CULG
0748-0953	WEIS

ATM-WLC COVERAGE

344/0212-0219	C	#24155-24169
344/0757-0763	S	24170-24181
344/1104-1110	S	24182-24193

DOY: 346 DATE: 12 December 1973

Time first observed: 0020 Time of last previous observation: 345/2339

Position: 105

Description: Large transient passing through existing helmet streamer - very spectacular.

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

345/1400-2330	BOUL
345/1401-2336	HARV
345/2025-346/0725	CULG

ATM-WLC COVERAGE

345/2338-2339	C	#24374-24376
346/0020-0021	C	24377-24379
346/0110-0111	C	24380-24382
346/0212-0218	S	24383-24394
346/0245-0246	C	24395-24397
346/0329-0335	S	24398-24409
346/0337-0343	S	24410-24421
346/0351-0358	C	24422-24436
346/0417-0418	C	24437-24439
346/0459-0500	C	24440-24442
346/0520-0521	C	24443-24445
346/0713-0719	S	24446-24457

DOY: 346 DATE: 12 December 1973

Time first observed: 1114 Time of last previous observation: 0958

Position: 75-90

Description: Beautiful loop on E-limb (MacDonald's arches) at 3 R_o.

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

No coverage

ATM-WLC COVERAGE

346/0952-0958	S	#24470-24481
346/1114-1120	S	24482-24493
346/1247-1252	S	24494-24505
346/1419-1425	S	24506-24517

DOY: 348 DATE: 15 December 1974

Time first observed: 0859 Time of last previous observation: 0730

Position: 100

Description: Slowly moving transient along streamer.

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

No coverage

ATM-WLC COVERAGE

348/0724-0730	S	#24994-25005
348/0859-0905	S	25006-25017
348/1002-1008	S	25018-25029
348/1008-1014	S	25030-25041
348/1032-1038	S	25042-25053
348/1212-1218	S	25054-25065
348/1303-1304	C	25066-25067
348/1413-1419	S	25068-25079

DOY: 349 DATE: 15 December 1973

Time first observed: 1355 Time of last previous observation: 1137

Position: 130

Description: Sharp ray appears.

TIME	TYPE OF ACTIVITY
1130-1210	<C1 x-ray flare, Max 1134 (S12E80)
1140-1300	Active prominence region (S13E90), IMP 2

RADIO SPECTRAL COVERAGE

1133-1322	WEIS
1211-2106	SGMR

ATM-WLC COVERAGE

349/1132-1137	S	#25176-25186
349/1355-1401	S	25187-25198
349/1403-1409	S	25199-25210
349/1415-1422	C	25211-25225

DOY: 350 DATE: 16 December 1973

Time first observed: 1148 Time of last previous observation: 1050

Position: 110

Description: Large loop structure transient starting at 2 R_o.

TIME	TYPE OF ACTIVITY
0938-1006	1N Flare, Max 0948 (S18E85)
1035-1126	<C1 X-ray Flare, Max 1039 (S17E82)
1108.5-1122	2695 MHz Burst, 10 F.U., CANR
1110-1145	Bright Surge on Disk (S15E82) RAMEY
1110-1152	C5 X-ray Flare, Max 1110 (S17E82)
1114-1120	Spray (S16E82) CANR
1116-1127	Bright Surge on Disk (S18E80) RAMEY

RADIO SPECTRAL COVERAGE

1020-1500 WEIS

ATM-WLC COVERAGE

350/1044-1050	S	#25364-25375
350/1148-1153	S	25376-25387
350/1153-1210	F	25388-25459
350/1310-1316	S	25460-25471
350/1321-1327	S	25472-25483
350/1332-1339	C	25484-25498
350/1343-1349	S	25499-25510
350/1354-1356	C	25511-25515

DOY: 350 DATE: 16 December 1973

Time first observed: 2303 Time of last previous observation: 2302

Position: 130

Description: Interesting split ray, persists for 2-3 hours.

TIME	TYPE OF ACTIVITY
2144-2207	M1 X-ray Flare, Max 2146 (S18E76)

RADIO SPECTRAL COVERAGE

1416-2337	HARV
1400-2400	BOUL
2115-2400	CULG

ATM-WLC COVERAGE

350/2248-2318	C	#25655-25722
351/0001-0031	C	25723-25790
351/0134-0135	C	25791-25793
351/0159-0205	S	25794-25805

DOY: 351 DATE: 17 December 1973

Time first observed: 0829 Time of last previous observation: 0214

Position: 265

Description: Bright transient moving along west streamer.

TIME	TYPE OF ACTIVITY
0742-0753	C3 X-ray Flare, (S19E71) Wrong Limb

RADIO SPECTRAL COVERAGE

0754-0930 WEIS

ATM-WLC COVERAGE

351/0217-0214	C	#25818-25832
351/0829-0834	S	25833-25844
351/1536-1541	S	25845-25856
351/1545-1551	S	25857-25868
351/1552-1559	C	25869-25883
351/1842-1843	C	25884-25886

DOY: 351 DATE: 17 December 1973

Time first observed: 1536 Time of last previous observation: 0834

Position: 90

Description: Very diffuse loops at 3 R_o, very slow moving.

TIME	TYPE OF ACTIVITY
1450-1635	2800 MHz Burst, 1.4 F.U., OTTA
1521-1546	Bright Surge on Disk (S17E67) RAMEY

RADIO SPECTRAL COVERAGE

1426-1500	WEIS
1211-2106	SGMR
1400-2400	BOUL
1416-2337	HARV

ATM-WLC COVERAGE

351/0829-0834	S	#25833-25844
351/1536-1541	S	25845-25856
351/1545-1551	S	25857-25868
351/1552-1559	C	25869-25883
351/1842-1843	C	25884-25886
351/1924-1928	C	25887-25896
351/1928-1934	S	25897-25908
351/2016-2017	C	25909-25912
351/2020-2026	S	25913-25924

DOY: 353 DATE: 19 December 1973

Time first observed: 0700 Time of last previous observation: 0630

Position: 80

Description: Spectacular transient with loop structure at 2.5 R_o going out existing streamer.

TIME	TYPE OF ACTIVITY
0516-0517	Radio, Type III G, IMP 1, CULG
0533.5-0535	Radio, Type III G,U, IMP 2, CULG
0654-0656	Radio, Type III GG, V, IMP 2, CULG
0656-0657.5	Radio, Type III G, IMP 1, CULG

RADIO SPECTRAL COVERAGE

0000-0728	CULG

ATM-WLC COVERAGE

353/0624-0630	S	#26167-26178
353/0700-0706	S	26179-26190
353/0805-0811	S	26191-26202
353/0833-0839	S	26203-26214
353/1014-1020	S	26215-26226
353/1103-1109	S	26227-26238
353/1241-1242	C	26239-26241
353/1332-1333	C	26242-26244
353/1417-1423	S	26245-26256

DOY: 357 DATE: 23 December 1973

Time first observed: 1628 Time of last previous observation: 1412

Position: 255

Description: Small brightening moving along streamer.

TIME	TYPE OF ACTIVITY
1416-1423	<C1 x-ray flare, Max 1423 (S16W40)
1418-1543	Radio, Type IN, IMP 1, HARV
1450-1452	Radio, Type III GG, IMP 1, HARV
1451-1511	2800 MHz Burst, 2.0 F.U., OTTA
1515-1525	2800 MHz Burst, 1.0 F.U., OTTA
1515-1545	Dark surge on disk (N03W14)
1526-1528	Radio, Type III G, IMP 3, HARV
1600-1613	2800 MHz Burst, 1.0 F.U., OTTA
1608-1610	Radio, Type III GG, IMP 2, HARV

RADIO SPECTRAL COVERAGE

1216-2109	SGMR
1400-2400	BOUL
1416-2340	HARV

ATM-WLC COVERAGE

357/1335-1412	C	#27033-27071
357/1628-1634	S	27072-27083
357/1911-2131	Comet observations (not sun CTR)	
358/0143-0149	S	27159-27170
358/0153-0159	S	27171-27182

DOY: 359 DATE: 25 December 1973

Time first observed: 0746 Time of last previous observation: 0559

Position: 250

Description: Growing streamer 4.5 R_o to 5.5 R_o.

TIME	TYPE OF ACTIVITY
0535	Radio, Type III B, IMP 1, CULG
0713-0714	Radio, Type III G, IMP 1, CULG
0732.5-0737	2695 MHz Burst, 4 F.U., CRON

RADIO SPECTRAL COVERAGE

0220-0731	CULG

ATM-WLC COVERAGE

359/0553-0559	S	#27789-27800
359/0746-0752	S	27801-27812
359/1148-1154	S	27813-27824

DOY: 361 DATE: 27 December 1973

Time first observed: 0119 Time of last previous observation: 0059

Position: 270

Description: Bright tongue appears in streamer out to 3 R_o. Moving very slowly, if at all.

TIME	TYPE OF ACTIVITY
360/2331-2341	< C1 X-ray Flare, Max 2333 (S17W62)
0000-0735	Radio, Type III N, IMP 1, CULG
0035-0054	Bright Surge on Disk (S22W71)
0042-0042.5	Radio, Type III G, IMP 1, CULG

RADIO SPECTRAL COVERAGE

0000-0638 CULG

ATM-WLC COVERAGE

361/0058-0059	C	#28077-28079
361/0119-0125	S	28080-28091
361/0149-0151	C	28092-28094
361/0237-0243	S	28095-28106

DOY: 001 DATE: 1 January 1974

Time first observed: 0213 Time of last previous observation: 365/2039

Position: 230

Description: Ray narrow at base diverges upward.

TIME	TYPE OF ACTIVITY
	NO ACTIVITY REPORTED

RADIO SPECTRAL COVERAGE

0000-0735	CULG

ATM-WLC COVERAGE

365/2033-2039	S	#30010-30021
001/0213-0219	S	30022-30033
001/0220-0226	S	30034-30045

DOY: 002 DATE: 2 January 1974

Time first observed: 0131 Time of last previous observation: 001/2002

Position: 230

Description: Ray narrow at base diverges upward.

TIME	TYPE OF ACTIVITY
0112.5-0114.5	Radio, Type III G,V, IMP 1,'CULG

RADIO SPECTRAL COVERAGE

0000-0735	CULG

ATM-WLC COVERAGE

001/1956-2002	S	#30232-30243
Comet Observations (not sun-centered)		
002/0131-0137	S	30274-30285
002/0140-0146	S	30286-30297
002/0148-0200	C	30298-30318
002/0743-0749	S	30319-30330

DOY: 002 DATE: 2 January 1974

Time first observed: 0743 Time of last previous observation: 0200

Position: 90

Description: Large streamer increases in intensity

TIME	TYPE OF ACTIVITY
0705-0900	Active Dark Filament, IMP 1, (S18E06)

RADIO SPECTRAL COVERAGE

0000-0735	CULG

ATM-WLC COVERAGE

002/0148-0200	C	#30298-30318
002/0743/0749	S	30319-30330
002/0916-0922	S	30331-30342
002/1056-1102	S	30343-30354
002/1528-1534	S	30355-30366

DOY: 003 DATE: 3 January 1974

Time first observed: 0048 Time of last previous observation: 002/2148

Position: 225

Description: Clouds of diffuse material in SW.

TIME	TYPE OF ACTIVITY
0045-0125	Active Prominence Region, IMP 1, (N26E90) (Wrong limb)

RADIO SPECTRAL COVERAGE

002/1416-2348	HARV
002/1430-2400	BOUL
002/2036-003/0736	CULG

ATM-WLC COVERAGE

002/2142-2148	S	#30418-30429
003/0048-0054	S	30430-30441
003/0057-0103	S	30442-30453
003/0103-0110	C	30454-30468
003/0137-0138	C	30469-30471
003-0834-0840	S	30472-30483

DOY: 003 DATE: 3 January 1974

Time first observed: 1314 Time of last previous observation: 1211

Position: 75

Description: Appearance of sharp ray, very diffuse within an hour.

TIME	TYPE OF ACTIVITY
1130-1215	Eruptive Prominence (N08W90)' (wrong limb)

RADIO SPECTRAL COVERAGE

0810-1447	WEIS
1218-2117	SGMR

ATM-WLC COVERAGE

003/1210-1211	C	#30496-30498
003/1314-1320	S	30499-30510
003/1324-1330	S	30511-30522

DOY: 005 DATE: 5 January 1974

Time first observed: 0715 Time of last previous observation: 0714

Position: 100

Description: Very subtle changes, diffuse loops visible.

TIME	TYPE OF ACTIVITY
0543.5-0551	Radio, UNCLF,

RADIO SPECTRAL COVERAGE

0000-0737	CULG

ATM-WLC COVERAGE

005/0709-0715	S	#30857-30868
005/0715-0721	S	30869-30880
005/1021-1027	S	30881-30891

DOY: 010 DATE: 10 January 1974

Time first observed: 1138 Time of last previous observation: 1006

Position: 90

Description: Narrow transient at 3.5 R_o, moving fast.

TIME	TYPE OF ACTIVITY
0930-0934	SN Flare, Max 0934 (S17E88)
0935-0955	Spray (S20E90)
0935-1015	Loop Prominence System (S16E90)
0938-1005	Bright Surge on Disk (S18E85)
1108-1110	2695 MHz Burst, 3.0 F.U., CANR

RADIO SPECTRAL COVERAGE

0734-1520	WEIS

ATM-WLC COVERAGE

010/1000-1006	S	#31597-31608
010/ 1138-1144	S	31609-31620
010/ 1330-1336	S	31621-31632

DOY: 012 DATE: 12 January 1974

Time first observed: 1144 Time of last previous observation: 1019

Position: 120

Description: Large transient moving out streams at 4.0 R_o.

TIME	TYPE OF ACTIVITY
1015.3-1016.3	Radio, Type III G, WEIS
1028-1032	2695 MHz Burst, 65.0 F.U., CANR
1028-1045	1N Flare, Max 1033 (S19E80)
1029.7-1032.2	Radio, Type III GG, WEIS
1032.2-1032.6	Radio, Type III G, WEIS
1108.6-1108.8	Radio, Type III G, WEIS

RADIO SPECTRAL COVERAGE

0755-1520	WEIS

ATM-WLC COVERAGE

012/1013-1019	S	#31909-31920
1144-1150	S	31921-31932
1151-1157	C	31922-31945
1157-1208	C	31946-31974
1201-1247	C	31975-32062

DOY: 012 DATE: 12 January 1974

Time first observed: 1927 Time of last previous observation: 1540

Position: 95

Description: Some restructuring in streamer, new ray forms at 2100 UT (out to 4 $R_\odot$).

TIME	TYPE OF ACTIVITY
1819-1821	Radio, Type III G,U, V, IMP 3, HARV
1837-1838	Radio, Type III G, IMP 2, HARV
1837-1839.5	2800 MHz Burst, 2.6 F.U., OTTA
2052.5-2054	2800 MHz Burst, 6.4 F.U., OTTA
2052.5-2055.5	Radio, Type III GG; U, V, IMP 3, CULG

RADIO SPECTRAL COVERAGE

1217-2127	SGMR
1416-2353	HARV
1430-2400	BOUL
2040-2400	CULG

ATM-WLC COVERAGE

012/1534-1540	S	#32275-32286
012/1927-1932	S	32287-32298
012/2100-2101	C	32299-32301
013/0006-0012	S	32302-32313

DOY: 013 DATE: 13 January 1974

Time first observed: 0928 Time of last previous observation: 0756

Position: 75

Description: Restructuring of existing streamer, large indentation in streamer at 3 R_o.

TIME	TYPE OF ACTIVITY
0727-0734	Radio, Type III G,W
0900-1300	Active Surge Region (S13E87)

RADIO SPECTRAL COVERAGE

0000-0743	CULG
0745-1520	WEIS

ATM-WLC COVERAGE

013/0750-0756	S	#32365-32376
013/0928-0934	S	32377-32388
013/1126-1132	S	32389-32400
013/1258-1304	S	32401-32412
013/1406-1412	S	32413-32424

DOY: 015 DATE: 15 January 1974

Time first observed: 0636 Time of last previous observation: 0056

Position: 100

Description: A decrease in intensity, or a void, occurs between two streamers.

TIME	TYPE OF ACTIVITY
0534.5-0537	Radio, Type III GG,U,V, IMP 2, CULG
0541-0543	Radio, Type III G,U, IMP 1, CULG
0552-0741	Radio, Type IS, IMP 1, CULG
0619-0628	Eruptive Prominence (N10W90)(Wrong Limb)
0619-0633	Spray (N08W90)

RADIO SPECTRAL COVERAGE

0349-0741	CULG

ATM-WLC COVERAGE

015/0050-0056	S	#32760-32771
015/0636-0642	S	32772-32783
015/0805-0811	S	32784-32795

DOY: 015 DATE: 15 January 1974

Time first observed: 1132 Time of last previous observation: 1004

Position: 270

Description: Large bright loops at 2.5 and 3.0 R_o moving very rapidly.

TIME	TYPE OF ACTIVITY
0951.5-0954	2695 MHz Burst, 3.0 F.U., CANR
1028-1241	Active Prominence Region (N10W90)
1047-1307	2695 MHz Burst, 4.1 F.U., CANR
1050-1124	1N Flare, Max 1056 (N07W88)
1052-1130	Eruptive Prominence (N07W90)

RADIO SPECTRAL COVERAGE

No Coverage

ATM-WLC COVERAGE

015/0958-1004	S	#32796-32807
015/1132-1138	S	32808-32819
015/1146-1152	S	32820-32831
015/1246-1252	S	32832-32843
015/1257	S	32844
015/1257-1303	S	32845-32856
015/1304-1311	C	32857-32873

DOY: 016 DATE: 16 January 1974

Time first observed: 0730 Time of last previous observation: 0601

Position: 280

Description: Very rapidly moving transient at edge of FOV.

TIME	TYPE OF ACTIVITY
0000-0732	Radio, Type IS, IMP 1, CULG
0000-0732	Radio, Type III S, IMP 1, CULG
0628-0900	Active Surge Region (N07W90)
0629-0632.5	2695 MHz Burst, 6 F.U., CRON
0636-0655	Radio, Type II H, IMP 1, CULG
0706-0707	Radio, UNCLF, IMP 1, CULG
0730-0745	Active Prominence Region (N06W90)

RADIO SPECTRAL COVERAGE

0000-0732	CULG

ATM-WLC COVERAGE

016/0555-0601	S	#33067-33078
016/0730-0736	S	33079-33090
016/0915-0921	S	33091-33102

DOY: 016 DATE: 16 January 1974

Time first observed: 1054 Time of last previous observation: 0921

Position: 275

Description: Some restructuring of streamers.

TIME	TYPE OF ACTIVITY
0932-1005	< C1 X-ray Flare, Max 0942 (N13W42)

RADIO SPECTRAL COVERAGE

No Coverage

ATM-WLC COVERAGE

016/0915-0921	S	#33091-33102
016/1054-1100	S	33103-33114
016/1207-1213	S	33115-33126
016/1216-1222	S	33127-33138

DOY: 017 DATE: 17 January 1974

Time first observed: 1943 Time of last previous observation: 1916

Position: 280

Description: Transient with diffuse loops at 2.5 R_o and bright tongue at 2.0 R_o.

TIME	TYPE OF ACTIVITY
1515-1805	Radio, CONT, IMP 1, BOUL
1701-1926	Radio, Type III N, IMP 1, HARV
1925-1936	Spray (N03W90)
1925-1945	Eruptive Prominence (N07W90)
1931-1948	Radio, Type II, IMP 1, HARV
1933.4-1935.7	Radio, Type III, IMP 2, BOUL
1936.7-1948.5	Radio, Type II, IMP 2, BOUL

RADIO SPECTRAL COVERAGE

1215-2133	SGMR
1400-2400	BOUL
1416-2355	HARV

ATM-WLC COVERAGE

017/1915-1916	C	#33402-33404
017/1943	S	33405
017/1943-2026	C,S,C S,C	33406-33497
017/2028-2034	C	33498-33523
017/2038-2056	C,S	33524-33560
017/2058-2153	C,S,C	33561-33677
017/2224-2226	C	33678-33682
017/2317-2318	C	33683-33685

DOY: 018 DATE: 18 January 1974

Time first observed: 1227 Time of last previous observation: 0931

Position: 80

Description: Very narrow ray suddenly becomes divergent.

TIME	TYPE OF ACTIVITY
1100-1300	Active Filament System (S14E22)
1115-1300	Active Filament System (S13W46)

RADIO SPECTRAL COVERAGE

0740-1343	WEIS
1214-2134	SGMR

ATM-WLC COVERAGE

018/0925-0931	S	#33761-33772
018/1227-1233	S	33773-33784
018/1404-1410	S	33785-33796

DOY: 019 DATE: 19 January 1974

Time first observed: 1758 Time of last previous observation: 1627

Position: 275

Description: Narrow streamer becomes more intense and rays on either side vanish.

TIME	TYPE OF ACTIVITY
1647-1651	< C1 X-ray Flare, Max 1647 (S18W19)
1721-1722	Radio, Type III G,U, IMP 1, HARV
1731-1733	2695 MHz Burst, 5.0 F.U., CANR
1730-1741	< C1 X-ray Flare, Max 1734 (N06W19)

RADIO SPECTRAL COVERAGE

1213-2135	SGMR
1400-2400	BOUL
1416-2357	HARV

ATM-WLC COVERAGE

019/1626-1627	C	#33985-33987
019/1758-1759	C	33988-33990
019/1932-1933	C	33991-33994

DOY: 021 DATE: 21 January 1974

Time first observed: 0720 Time of last previous observation: 0133

Position: 255

Description: Large transient moves out helmet streamer, very spectacular.

TIME	TYPE OF ACTIVITY
0711.5	Radio, Type III B, IMP 1, CULG

RADIO SPECTRAL COVERAGE

0000-0743	CULG

ATM-WLC COVERAGE

021/0126-0133	C	#34127-34141
021/0720-0726	S	34142-34153
021/1027-1033	S	34154-34165
021/1202-1209	S	34166-34177
021/1211-1217	S	34178-34189
021/1222-1229	C	34190-34204
021/1234-1235	C	34205-34207
021/1335-1336	C	34208-34210
021/1507-1508	C	34211-34213

DOY: 022 DATE: 22 January 1974

Time first observed: 1151 Time of last previous observation: 1032

Position: 275

Description: Appearance of faint ray, becomes diffuse in several hours.

TIME	TYPE OF ACTIVITY
1100-1116	C1 X-ray Flare, Max 1106 (N07W57)

RADIO SPECTRAL COVERAGE

0738-1531 WEIS

ATM-WLC COVERAGE

022/1026-1032	S	#34272-34283
022/1151-1157	S	34284-34295
022/1204-1211	C	34296-34310
022/1307-1308	C	34311-34313
022/1426-1427	C	34314-34316

DOY: 024 DATE: 24 January 1974

Time first observed: 1202 Time of last previous observation: 1155

Position: 230

Description: Restructuring of streamer causing curved rays.

TIME	TYPE OF ACTIVITY
1032-1300	Active Surge Region (N07W90)

RADIO SPECTRAL COVERAGE

1210-2141	SGMR

ATM-WLC COVERAGE

024/1149-1155	S	#34530-34541
024/1202-1209	C	34542-34556
024/1309-1315	S	34557-34568

DOY: 025 DATE: 25 January 1974

Time first observed: 0647 Time of last previous observation: 0027

Position: 250

Description: SW streamer increase in intensity possible aftermath of transient

TIME	TYPE OF ACTIVITY
0412-0423	Active Surge Region (N04W90)

RADIO SPECTRAL COVERAGE

0000-0745	CULG

ATM-WLC COVERAGE

025/0026-0027	C	#34653-34655
025/0647-0653	S	34656-34667
025/1222-1228	S	34668-34679

DOY: 025 DATE: 25 January 1974

Time first observed: 1222 Time of last previous observation: 0653

Position: 90

Description: Slight bulge in streamer at 3 R_o.

TIME	TYPE OF ACTIVITY
1125-1245	Active Prominence Region (S12W90) (Wrong Limb)
1141-1220	Active Surge Region (S17W85) (Wrong Limb)

RADIO SPECTRAL COVERAGE

0808-1325	WEIS

ATM-WLC COVERAGE

025/0647-0653	S	#34656-34667
025/1222-1228	S	34668-34679
025/1230-1236	S	34680-34691
025/1237-1245	C	34692-34708
025/1259-1300	C	34712-34714
025/1841-1846	S	34715-34726

DOY: 025 DATE: 25 January 1974

Time first observed: 1841 Time of last previous observation: 1300

Position: 310

Description: Restructuring in streamer may be caused by transient.

TIME	TYPE OF ACTIVITY
025/1735-026/0304	Active Prominence Region (S22W90)
025/1845-026/0302	Active Prominence Region (S30W90)

RADIO SPECTRAL COVERAGE

1209-2143	SGMR
1400-2400	BOUL
1404-2400	HARV

ATM-WLC COVERAGE

025/1259-1300	C	#34712-34714
025/1841-1846	S	34715-34726
025/2012-2013	C	34727-34729
025/2142-2143	C	34730

DOY: 030 DATE: 30 January 1974

Time first observed: 1232 Time of last previous observation: 1231

Position: 120

Description: Verily visible transient at 2 R_o.

TIME	TYPE OF ACTIVITY
	No Activity Reported

RADIO SPECTRAL COVERAGE

0736-1546	WEIS
1204-2149	SGMR

ATM-WLC COVERAGE

030/1227-1233	C	#35294-35308
030/1830-1836	S	35309-35320
030/2006-2012	S	35321-35332

B. Experiment Performance

1. Introduction

Several experiment and spacecraft problems occurred during the Skylab mission, some resulted in degraded data and others had little or no effect on experiment operations. All anomalies concerning the S-052 experiment are discussed below, and any corrections to housekeeping data are presented as required.

One spacecraft problem that has continuing effect on data analysis is the lack of precise spacecraft roll information. An addendum to this report is the BBRC report on measurements of spacecraft roll from stars in the S-052 field of view. For analysis of coronal data, measurement of star positions remains the optimum source of roll information.

2. Experiment Anomalies

a. Operate Light - On DOY 150 and DOY 151, the crew reported that the S-052 operate light went off for short periods. This condition repeated periodically during the first camera load. The cause of these anomalies was not determined, and except for continued discrepancy between ground accounting of frames remaining and the crew's on-board frames remaining count, there was no significant impact determined for instrument operation.

b. Partial Frame Advances - Approximately 100 partial frame advances were observed near the beginning of the developed film for each of the first two film camera loads. This resulted in the overlapping of approximately 0.5 percent of the frames exposed.

During post flight analysis a thorough examination was made of camera load 1 including measurement of clutch torques. All conditions examined were found to be within specification. The cause of this anomaly was not determined, however, partial frame advances were consistent with the blinking operate light mentioned above.

c. Pointing Error System Bias - When the Skylab 2 crew began operations with the S-052 instrument, a discrepancy existed between Sun-center pointing as observed on the C&D console TV monitor versus the PES readouts. With the S-052 instrument boresighted on Sun-Center using the TV monitor, the PES readings averaged 14 arc-seconds up and 62 arc-seconds right. This bias was relatively constant throughout the Skylab mission. In order to reduce diffracted light, it was necessary to point the S-052 instrument, as accurately as possible, to Sun-Center. However, as shown in Figure 33 an offset of 14 arc-seconds up and 62 arc-seconds right would trigger the 20 arc-second discriminator in the PES, which automatically prevents operation of the instrument in any mode. It was possible to override the 20 arc-second discriminator to permit instrument operation, but this would also override the 5 arc-minute discriminator, thus eliminating protection against instrument damage from excessive ATM mispointing with the S-052 thermal shield door open. Therefore, a compromise was effected by pointing the instrument to 8 arc-seconds up and 16 arc-seconds right, as indicated by the C&D console PES crosspointer display. This provided instrument pointing as near as possible to Sun-Center without triggering the 20 arc-second discriminator; and this pointing position is referred to as "compromise pointing".

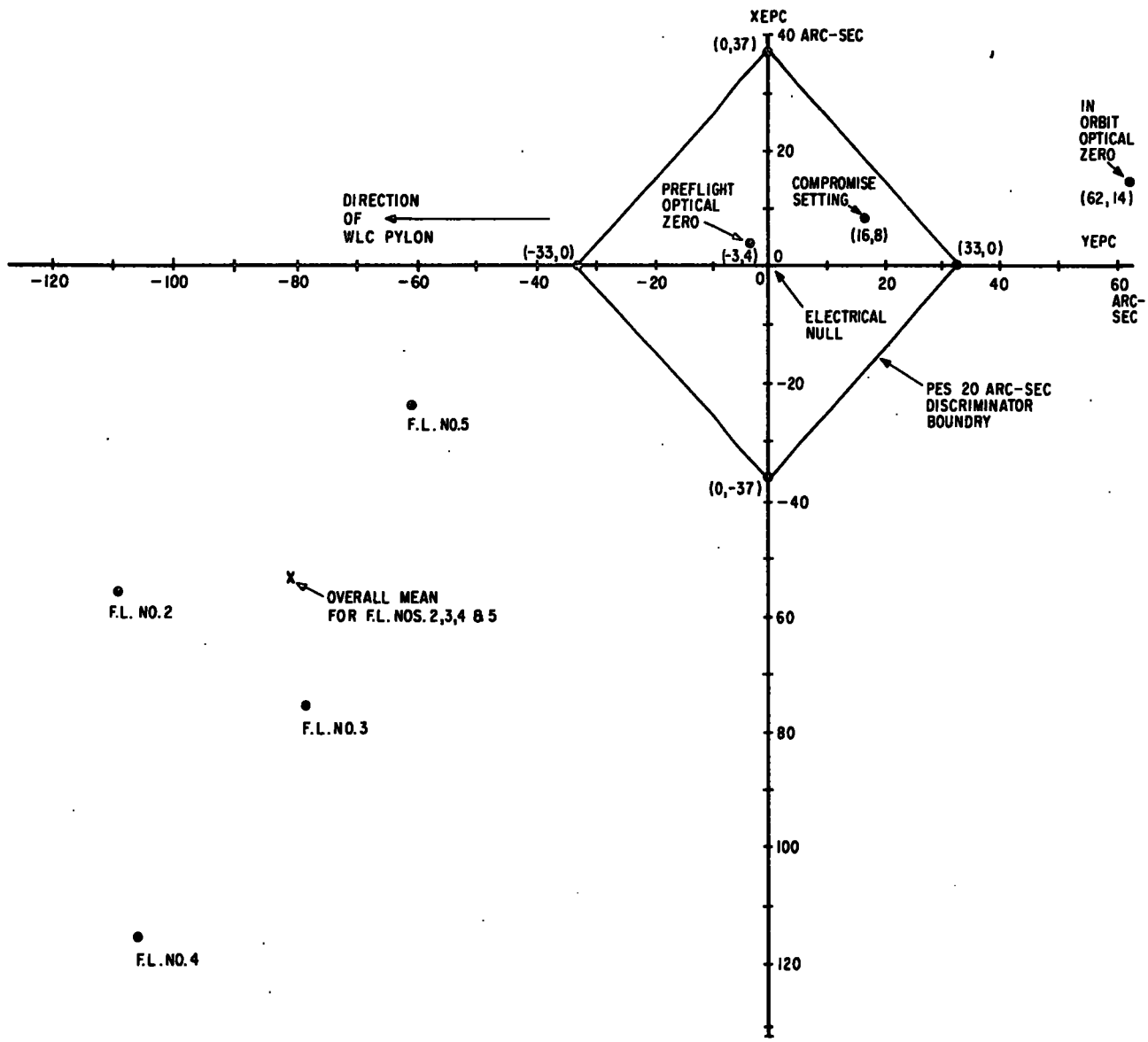

XEPC
(0,37)
40 ARC-SEC
IN
ORBIT
OPTICAL
ZERO
(62,14)
20
COMPROMISE
SETTING
PREFLIGHT
OPTICAL
ZERO
(16,8)
DIRECTION
OF
WLC PYLON
(-33,0)
(-3,4)
0
(33,0)
YEPC
-120
-100
-80
-60
-40
-20
0
20
40
60
ARC-
SEC
ELECTRICAL
NULL
-20
PES 20 ARC-SEC
DISCRIMINATOR
BOUNDRY
F.L. NO.5
(0,-37)
-40
OVERALL MEAN
FOR F.L. NOS. 2,3,4 & 5
F.L. NO. 2
60
F.L. NO. 3
80
100
F.L. NO. 4
120

Figure 33

A discussion of stray light resulting from the mispointing is found in Section I-B-5. Post mission analysis as determined from the Gamma RR calculations yielded more precise values for the WLC Sun-Center pointing offset. WLC pointing offset values determined for each camera load are presented below in Table 16 and illustrated in Figure 32.

Table 16

SUN CENTER LOCATION VS FILM LOAD NUMBER

Film Load	Mean (arc-sec) Y	Mean (arc-sec) X	Standard-Deviation (arc-sec) ±oy	Standard-Deviation (arc-sec) ±ox
2	-109.9	- 57.0	47.31	36.19
3	- 78.4	76.7	21.33	22.28
4	-105.5	-116.2	54.26	46.03
5	- 60.7	- 22.3	46.37	29.86
Overall Mean	- 80.2	- 54.8	—	—

<u>S-052 Camera Jam and Torn Film</u> - On DOY 161 an unusual rate of temperature inside the film camera (load No. 1) was observed. The rate of rise was comparable to that derived by computer simulation for a stalled film-transport motor. Malfunction procedures confirmed that the film transport motor was stalled, and no further film camera operation was possible until the camera was replaced by EVA on DOY 170. Coronal observations were performed using TV downlink minimizing the loss of scientific data. After return of the Skylab 2 film camera to Earth, the exposed and unexposed film reels were carefully removed without disturbing the jammed portion of the film. The film was torn

completely out of the transport mechanism, and was wound onto the takeup reel.

d. S-052 Occulting Disk Contamination - On DOY 164 and DOY 238, contamination was noted on the S-052 instrument occulting disk. This was observed by the crew and verified by downlink TV. The effect of the contamination was seen as crescent of light, tangent to the occulted area. During EVA on DOY 170 and DOY 265, the crew brushed the occulting disk area, and the contamination was removed.

e. Gamma RR Calculations - There are three available sources of roll position data:

i. The WLC Diode Matrix imprinted for every film frame;

ii. The Mission Data Retrieval System (MDRS); and

iii. The Mission Operation Log (MOL).

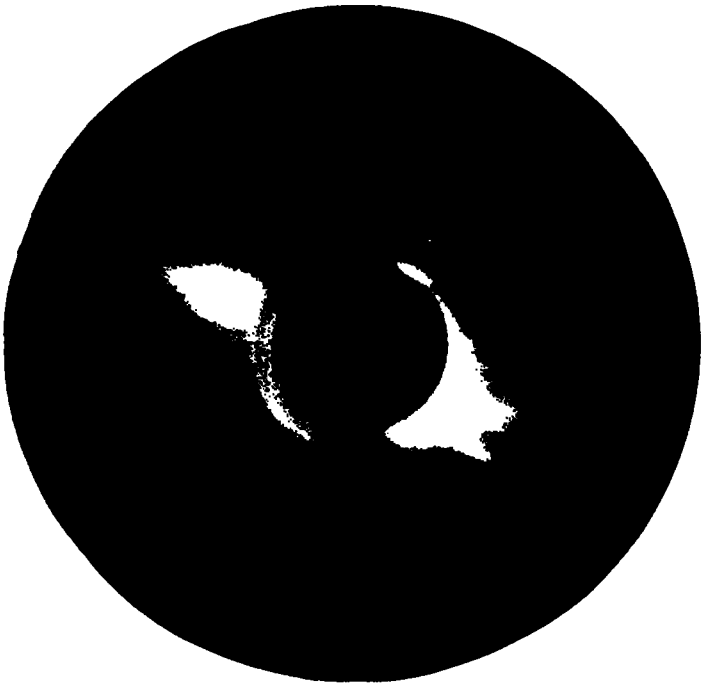
Since roll data (Gamma RR) for any given GMT from the three sources are not in precise agreement, an understanding of the data sources and the differences will facilitate the use of the data. All three sources rely on output from the ATM Digital Computer (DC) as their primary source. The ATM DC calculated Gamma RR, the angle between the +X Experiment Pointing Control axis and the projection of solar north onto the solar disk, taking into consideration Skylab drift rates, ATM canister roll manuevers, etc. Periodically the ATM DC roll program was updated with a star tracker sighting. The end-to end tolerances of the MDRS and the WLC diode matrix systems were such

that, in one set of seven data points, these data differed on the average by approximately +20 arc-minutes (MDRS - Diode Matrix). The MOL seeks to improve on the data by incorporating such things as improved drift rate calculations: in the same set of data points, the average difference of MDRS minus MOL was approximately 4 arc-minutes.

In an effort to achieve a more precise knowledge of roll position (Gamma RR), the roll position has been calculated from the positions of visible stars in a number of WLC film frames. The mean difference of the calculated values minus the diode matrix values is on the order of +1.5 degrees. Preliminary results indicate that the three sigma tolerance of this mean difference is on the order of ±1 degrees.

f. ATM Contamination - Periodically throughout each of the Skylab missions considerable contamination was seen in the White Light Coronagraph field of view as monitored by the crew on the WLC TV monitor. This contamination ranged from a few streaks to total "white out" depending on the amount and type of contamination which crossed through the WLC field of view. Figure 34 presents three typical views of ATM contamination which were photographed by the White Light Coronagraph and may be observed throughout the coronagraph film; (a) is a "no contamination" photograph, (b) is a "few particle" photograph, and (c) is an example of contamination completely blocking coronal observations. The majority of the photographs show little or no contamination.

g. Film Transport Stalled - On DOY 264, the day before the EVA for changing film loads, the film transport stalled in the



a

b

c

Figure 34

second Skylab 3 camera (film load 3). This anomaly was evidenced by failure of the frames remaining indicator to down count during an operating mode, and the film camera internal temperature showing an increase comparable to that predicted by computer analysis for a stalled camera. When the drive motor stalled, the temperature increased at a rate of approximately - .56°C (1.0^{o}F) per minute. The temperature increase was also comparable to that exhibited by the camera which stalled on Skylab 2. Of the nominal 750 feet in the camera film load, less than 10 feet of film (approximately 267 frames) remained on the supply spool. The film on the takeup spool completely filled the takeup cavity. The full takeup reel rubbed on the frame advance switch bracket, braking the takeup reel until it stopped.

h. Television System Degradation - On DOY 337 the crew observed a bright spot on the S-052 TB monitor in the 10 o'clock position. Later, the TV grid discharge switch was depressed and than released while watching the TV image. This test indicated the problem was in the S-052 TV camera, as the spot did not disappear. The degradation was considered permanent, and normal S-052 operations continued with the degraded TV until the end of the mission. The exact cause of the anomaly was not determined.

On DOY 340 the crew reported the presence of a black bar extending across the screen through the white spot. The crew noticed that the bar remained, even when the TV mirror was in the film camera position, and the grid discharge did not change the polarity

of the spot or bar. The condition of the TV vidicon remained static from DOY 340 to DOY 031, at which time a second bright spot and corresponding black streak were noticed on the S-052 monitor. The condition of the TV camera remained unchanged from DOY 031 until the end of S-52 operations on DOY 034. The S-052 TV degradation had no impact on the experiment mission objectives.

III. OPERATIONS LOG

A. Operations Data Log

1. Introduction

In order to provide easy access to the pertinent housekeeping data for each frame and also to permit rapid determination of the coronal frame number taken at a given date and time, an operations data log for each film load has been compiled. The log contains the DOY and GMT time for the start of each mode in addition to the pointing, roll, and internal alignment data. The time for any given frame can then be interpolated from the mode diagrams in Figure 4. For cross reference, solar activity has been added to the logs in the proper time frame. The solar activity data should not be considered complete nor exact; if conflicts arise the NOAA data will always take precedent. The operations data logs follow in chronological order.

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
148									0057	III	1+		28 May
	0639	S	-7162	7	-1	-13	10	13					
	1046:32	F	-7214	-2	4	-13	10	1-12 & 25-60					
									1239	FLA	SN	S02W48	
									1539	APR	2	N25W90	
									1640	FLA	SF	S01W48	
									1735	FLA	SB	S01W49	
									1741	ADF	1	N01W45	
	1850:17	S	-7372	-7	-11	-13	10	61	1930	ADF	1	S05W50	
149	0255:57	S	-7253	-2	-2	-13	12	73	0320	ADF	1	S05W50	
									0431	FLA	SN	S02W55	
	0602:02	S	-7255	-3	-1	-12	13	85					
	0657:52	S	-7256	-2	-2	-11	10	97					
	0707:23	F	-7256	-6	-2	-11	10	109					
	0834:40	S	-7256	-4	-3	-12	13	181					
	0841:46	F	-7256	-3	-1	-11	10	193					
	0915:29	S	-7256	-4	-1	-11	10	265					
	1003:02	S	-7257	-4	-1	-13	10	277					
	1022:48	S	-7257	-3	-1	-11	11	289					
	1135:32	S	-7258	-2	-1	-10	12	301	1100	FLA	2	S83E15	
	1143:29	S	-7258	-3	-1	-10	13	313					
	1151:06	F	-7258	-3	-3	-12	11	324	1515	APR	2	N00W90	
									1730	ADF	1	S07W58	
									1823	III	1	22-42 MHz	
									1903	III	1	8-44 MHz	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	1929:14	S	-5558	9	-6	-4	-15	382	1921	FLA	SN	N02W63	29 May
	1937:56	S	-5398	6	-5	- 3	12	394					
	1946:07	C(30)	-5398	6	-5	- 3	12	406					
	2120:27	S	-10800	7	-4	- 4	12	437	2158	ADF	1	S06W60	There is no frame No. 436
	2126:23	F	-10787	5	-6	- 3	10	449	2345	ADF	1	S06W62	
150									0114	III	1	30-80 MHz	
									0133	III	3	24-48 MHz	
									0137	III	1	25-60 MHz	
	0138:12	S	10748	7	-4	- 4	- 1	521	0149	III	1	23-80 MHz	
	0148:34	S	-5412	5	-7	-3	2	533	0153	ADF	1	S03W60	
	0155:33	C(26)	-5412	5	-7	-3	2	545	0200	III	3	24-39 MHz	
									0211	III	3	26-48 MHz	
									0316	CTM	2	24-48 MHz	
									0614	FLA	SN	S05W65	[On printing master only
	0653:31	F	-5414	1	1	-3	2	571	0654	III	2	24-38 MHz	There is a frame # 587,587A,B & C]
									0913	III	3	24-48 MHz	There is no frame No. 638, 639 and 64
	1057:00	S	-5415	2	1	-3	3	641	0913	MIN	250FU	200 MHz	
	1102:35	S	-5415	0	2	-4	4	653, 654, 655, 656, 657, 658A, 658B, 659, 660, 661, 662, 663					
	1114:27	F	-5415	0	0	-3	5	664					
	1414:05	S	-5415	7	-4	-7	15	736					
	1426:09	S	-10100	4	-2	-4	5	748					
	1431:56	C(25)	-10100	4	-9	-3	5	760					
									1817	III	2	24-48 MHz	
	1847:47	S	-5397	7	-4	-7	17	785	1824	SIM	34FU	880 MHz	
									2209	III			

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
151	0056:11	S	-10800	7	-4	-3	-5	797	0054	APR	1	S21E90	31 May
	0104:41	S	-5402	5	-7	-3	3	809	0104	FLA	SN	N18W46	
	0110:43	C(27)	-5402	5	-7	-3	3	821	0107	FLA	SN	N16W47	
									0352	FLA	SN	N15W68	
									0551	ADF	2	N16W48	
	0609:47	S	-5372	1	4	-6	14	848	0645	ASR	.1R	S01W90	
	0749	S				-5	14	860					Partial (4 frames)
									1110	BSL	.1R	S01W90	
	1325	S	-10213					864	1323	FLA	SF	N21W82	
	1336:03	S	-5412	2	-6	-6	12	876					
	1343:57	C(23)	-5412	2	-6	-6	12	888	1352	III	1	20-45 MHz	
	1503:13	S	-5400	-4	2	-7	15	911					
	1512:48	S	-5400	-7	-1	-6	13	923					
	1522:41	S	-5400	-6	-1	-6	13	935					
	1529:55	F	-5400	-6	0	-6	0	947					
									1713	III	1	35-80 MHz	
									1750	STM	1	42-80 MHz	
									1758	ADF	1	N16W51	
									1804	III	2	10-48 MHz	
									1854	STM	1	28-80 MHz	
	1934:08	S	-5401	3	-6	-5	10	1019					
	2305:28	S	-5394	-5	1	-7	14	1031	1333	CTM	1	31-41 MHz	
152									0029	FLA	SF	S12W81	
	0155:55	S	0186	-2	-4	-5	-4	1043					
	0205:08	S	-5426	5	-7	-3	4	1055					Approximate CMP of coronal hole
	0211:37	C(26)	-5426	5	-7	-3	4	1067					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	0226:36	F	-5329	2	19	-4	7	1093					Partial (4 frames)
									0344	ADF	1	N17W59	
									0405	ADF	1	N18W60	
									1021	APR	1	S16W90	
									1250	FLA	SN	N15W68	
									1257	III	1		
									1301	FLA	1N	N15W68	
	1418:39	S	-5608	-5	-7	-6	14	1097	1412	FLA	SF	S07W90	
	1428:03	S	-5608	-3	-7	-4	13	1109					
152	1545:59	S	-5577	-6	-9	-4	12	1121					
	1554:35	S	-5576	-5	-7	-4	12	1133					1133 thru 1142 and 1143A and 1143B
	1604:29	F(72)	-5577	-7	-7	-6	12	1144					
	1621:23	S	-5573	-5	-8	-6	12	1216					
	1734:23	S	-5639	-5	-8	-4	12	1228					
	1742:26	F	-5636	-6	-8	-6	12	1240					
	1801:59	S	-5635	-4	-7	-6	10	1312					
	1849:38	S	-5588	-3	-7	-6	12	1324					
	1910:37	S	-5588	-3	-7	-6	12	1336					
	1916:30	S	-5585	-7	-7	-6	12	1348					
	1922:41	S	-5584	-5	-9	-6	12	1360					
	2047:10	S	-5668	-3	-8	-7	11	1372					
	2053:29	F	-5668	-3	-9	-6	12	1384					
	2222:26	S	-5668	-3	-9	-6	12	1456					
	2356:51	S	-5642	-6	-7	-6	14	1468					
153	0135:15	S	-5705	-6	-8	-6	10	1480					
									0203	ARP	1	N20W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	0308:46	S	-5792	-5	-7	-7	10	1492					
									0405	APR	1	N20W90	
	0441:31	S	-5644	-5	-7	-35	17	1504	0443	ARP	1	S06W90	
	0629:49	S	-5713	-3	-7	-6	13	1516					
	0720:01	S	-5748	-3	-7	-6	12	1528					
	0757:25	S	-5746	-5	-8	-4	12	1540					
	0850:48	S	-5757	-7	-10	-6	12	1552	0840	FLA	SN	N21W83	
	0901:25	F	-5757	-5	-8	-6	11	1564					
	0936:08	S	-5754	-4	-7	-4	12	1636					
	1022:48	S	-5754	-6	-8	-7	12	1648					
	1028:49	S	-5755	-6	-9	-6	10	1660					
	1039:20	F	-5755	-4	-7	-4	11	1672					
	1156:40	S	-5788	-5	-7	-6	12	1744					
									1254	FLA	SN	N16W84	
	1340:40	S	0038	7	-4	-7	-5	1756					
	1352:56	S	-5397	4	-7	-3	4	1768					
	1401:04	C(26)	-5397	4	-7	-3	4	1780					
									1423	APR	2	S26E90	
	1507:36	S	-5388	4	-6	-2	-6	1806					
	1638:39	S	-5400	7	-4	-4	-4	1818					
	2133:31	S	-5400	38	2	-1	-8	1830					
	2250:37	S	-5349	7	-4	-7	-8	1842	2300	APR	2	N14W90	
									2310	FLA	SN	N17W86	
154	0026:35	S	-5400	9	-6	-1	-8	1854					
	0159:10	S		7	-4	-1	-8	1866					
	0207:09	S	-5418	5	-5	0	-19	1878					
	0214:18	C(32)	-5418	5	-5	0	-19	1890					
	0359:46	S	-5583	13	-5	0	11	1922					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	0506:43	S	-5583	11	-7	0	-11	1934					
	0716:04	S	-5583	11	-4	0	-11	1946					
	0810:34	S	-5583	11	-6	-1	-11	1958					
	0819:04	F	-5583	11	-6	-3	-10	1970					There is a counting error in this mode; in order to avoid a complete renumbering the last frame is 2040A
	0944:12	S	-5583	11	-6	-1	-11	2041					
	0955:41	F	-5583	11	-6	-1	-10	2053	1008	III	1	24-48 MHz	
									1032	APR	2	S13W90	
	1120:04	S	-5583	11	-6	-1	-10	2125					
	1125:50	S	-5583	11	-4	-1	-11	2136					Last frame designated 2135A (to correct numbering error)
	1132:59	F	-5583	11	-6	0	-10	2148					Splitting streamer
	1439:50	S	10581	7	-4	-1	-11	2220					
	1446:34	S	-5406	5	-5	0	-19	2232					
	1457:04	C(23)	-5406	5	-5	0	-19	2244					
	1734:41	S	-5400	5	-7	0	-19	2267					Mirror in TV position
	1744:17	S	-5400	5	-7	0	-19	2279					
									2117	III	1	2-56 MHz	
	2209:30	S	-10800	4	-6	-4	-8	2291					
	0118:17	S	-10800	4	-6	-4	3	2303	2303	III	1+	25-38 MHz	
155	0125:41	S	-5400	4	-6	-7	3	2315					
	0131:42	C(29)	-5400	7	-4	-4	3	2327	0152	APR	1	S14W90	
	0317:21	S	-5542	1	1	-6	14	2356					
	0422:28	S	-5438	2	2	-6	14	2368					
	0453:07	S	-5436	5	0	-4	14	2380					
	0555:06	S	-5501	1	1	-4	13	2392	0543	APR	1	S14W90	
	0632:31	S	-5498	2	0	-7	17	2404					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	0735:28	S	-5504	-2	2	-6	14	2416					
	0810:29	S	-5502	0	2	-4	14	2428					
									0842	FLA	SN	N13E64	
									0853	MIN		100 MHz	
	0902:57	S	-5532	0	3	-6	13	2440					
	1034:13	S	-5534	-1	2	-4	14	2452	1032	APR	2	S13W90	
									1115	APR	2	S13W90	
	1524:14	S	10800	7	-4	-7	17	2464					
	1532:53	S	-5395	9	-6	-5	13	2476					
	1541:41	C(24)	-5395	9	-6	-5	13	2488					
	2028:23	S	-5344	7	-4	-7	15	2512					
	2127:30	S	-5400	7	-8	-4	-1	2524	2127	SIM		8800 MHz	
	2326:55	S	-5399	16	-1	-7	-6	2536					
156	0033:49	S	-5400	7	-4	-4	15	2548					
	0208:25	S	-10782	2	-4	-4	5	2560					
	0215:27	S	-5427	5	-7	0	2	2572	0225	APR	1	S14W90	
	0221:32	C(29)	-5427	5	-7	0	2	2584					
									0249	APR	2	N16E90	
									0357	APR	2	N17E90	
	0652:57	S	-5412	12	1	0	14	2613					
	0725:06	S	-5412	-3	0	0	15	2625					
	0819:05	S	-5412	-3	3	0	15	2637					
	0829:33	F	-5412	-1	-1	-1	15	2649					
	0952:36	S	-5412	-2	2	0	15	2721					
	1126:16	S	-5412	-2	0	-3	16	2733					
	1143:41	S	-5412	-3	3	1	4	2745					
									1239	APR	2	S12W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	1301:15	S	-5412	-2	2	-1	4	2757	1330	APR	3	N26E90	5 June
	1311:52	S	-5412	-4	2	0	5	2769					
	1321:05	S	-5412	-2	2	0	5	2781	1330	APR	3	N26E90	
	1446:31	S	10800	-29	3	-1	10	2793					
	1456:18	S	-5403	2	26	0	8	2805					
	1502:07	C(26)	-5403	2	26	0	8	2817					
	1614:34	S	-5400	8	-5	0	13	2843					
	1648:45	S	-5400	24	26	-1	10	2855					
	1934:36	S	-5406	-5	-1	-3	14	2867					
									2112	APR	3	N22E90	
157	0127:50	S	-10800	21	20	-1	10	2879					
	0136:09	S	-5402	20	17	3	8	2891					
	0142:27	C(28)	-5402	20	17	3	8	2903					
									0342	CTM	1	24-48 MHz	
									0530	APR	1	N15E90	
	0611:41	F	-5397	-2	20	0	7	2931					
	0640:51	S	-5397	-3	21	0	8	3003					
	1051:53	S	-5397	-2	24	0	8	3015					
	1408:55	S	10655	4	-6	-4	17	3027					
	1418:33	S	-5400	4	-6	-1	7	3039					
	1425:12	S	-5399	5	-6	0	4	3051					
	1431:07	C(17)	-5399	5	-6	0	4	3063					
									1741	APR	1	N20E90	
	1855:59	S	-5391	-5	21	-3	7	3080					
									2126	APR	1	N19E90	
									2130	FLA	1F	N16E90	
									2253	FLA	SF	N16E86	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
									2307	CTM	1	32-42 MHz	
									2323	III	1	32-42 MHz	
158	0044:19	S	-10800	26	20	-4	-7	3092					7 June
	0051:47	S	-5375	5	18	- 4	5	3104					
	0057:52	C(29)	-5375	5	18	-4	5	3116	0111	ADF	1	S91E25	
	0353:14	S	-5214	7	-7	-4	12	3145					
	0702:24	F	-5260	5	-7	-3	12	3157					
	0737:29	S	-5248	4	-7	0	12	3229					
	0840:27	F	-5268	4	-2	-7	17	3241					
	1017:45	S	-5306	3	-6	-1	12	3313					
									1136	APR	2	S07W90	
									1405	APR	2	S06W90	
									1410	FLA	SF, SN	N16E75	
									1609	APR	2	S04W90	
									2253	FLA	SF	N16E86	
									2313	BSD	.OR	N12E70	
									2313	CTM	1	32-42 MHz	
159	0148:41	S	10711	33	10	-1	-4	3325					8 June
	0201:32	S	-5391	26	6	0	5	3337					
	0208:18	C	-5391	26	6	0	5	3349					0214 16^S 4 of July event
	0621:14	F	-5235	-2	27	-4	10	3381					
	0653:31	S	-5235	-2	27	-4	10	3453					
	0659:23	S	-5235	-2	27	-4	10	3465					
									1100	ADF	1	N19E67	
	1424:23	S	-5534	-3	21	-4	5	3477					
									1450	FLA	SN	N15E63	
									1450	APR	2	S07E90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
	1555:10	S	10699	4	-7	-4	12	3489					
	1607:14	S	-5400	2	0	-4	7	3501					
	1613:42	C(28)	-5382	2	0	-4	5	3513					
									1840	FLA	SF	S12E62	
	1926:55	S	-5394	0	23	-1	10	3541					
	2030:48	F	-5469	1	24	-3	8	3553					
									2310	FLA	SF	S14W72	
160									0027	FLA	SF	N20E57	
									0040	APR	2	N24E90	
	0113:54	S	10798	30	9	3	7	3625					
	0126:30	S	-5414	31	12	0	10	3637					
	0134:20	C(24)	-5613	31	12	0	10	3649					
									0220	ADF	2	S15E56	
	0536:57	F	-5611	-2	26	-3	8	3673					
	0608:16	S	-5607	0	24	-1	8	3745					
	0719:03	F	-5631	0	29	-4	10	3757					Faint loop visible - in motion
	0747:47	S	-5605	-2	24	-1	7	3829					
									1040	APR	2	N19E90	
									1308	APR	1	N20E90	
	1331:30	S	10745	26	16	-1	10	3841					
	1342:26	S	-5396	24	12	0	7	3853					
	1352:40	C(22)	-5396	24	12	0	7	3865	1450	APR	3	N15E90	
									1618	APR	2	N20E90	
									1618	ADF	1	N11W90	
									1618	ADF	1	N15E46	
									1636	III	1+	21-50 MHz	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
									1700	APR	2	N17E90	
									1700	ADF	1	N12W10	
									1700	ADF	1	N17E46	
									1804	III	1	24-34 MHz	
									1807	SIM		2700 MHz	
									1808	SIM		5000 MHz	
									1814	SIM		2695 MHz	
									1815	MIN		8800 MHz	
									1816	FLA	SN	N16E46	
									1841	SIM		8800 MHz	
									1945	APR	1	S15W90	
									1945	APR	1	N45W90	
									2112	ASR	.1R	N12E90	
									2146	FLA	SF	N17E43	
									2155	IIIB		METRIC	
									2158	III	1	28-42 MHz	
									2203	III	1+	20-120 MHz	
									2219	I,S,W		METRIC	
									2236	III,W,N		METRIC	
									2239	III	1+	20-50 MHz	
									2246	III	2	24-48 MHz	
									2258	III	1	24-50 MHz	
									2304	IIIG		METRIC	
161									0000	I,W,N		0000-0622 Hrs.	
									0004	IIIW,N		0000-0648 Hrs.	
									0007	IIIB		METRIC	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
									0011	IIIB		METRIC	
									0012	III	2	20-46 MHz	
									0012	CTM	2	24-48 MHz	
									0012	MIN		100 MHz	
									0012	III	2	20-200MHz	
									0014	APR	2	S19E90	
									0021	II		METRIC	
									0022	IIIG		METRIC	
									0025	III	1	24-48 MHz	
									0048	MIN		410 MHz	
									0052	EPL	.1R	N13E90	
									0053	III	2	18-56 MHz	
									0053	MIN		100 MHz	
									0054	CTM	3	24-48 MHz	
									0054	SIM		610 MHz	
									0054	III	2	20-200MHz	
									0055	SPY	.1R	N16E90	
									0057	IIIG		METRIC	
									0059	II		METRIC	
									0059	IIIG		METRIC	
									0105	EPL	.1R	N14E90	
									0109	FLA	SF	S17E48	
	0146:01	S	-10800	10	33	-1	10	3887	0149	III	2	20-200MHz	
	0154:14	S	-5305	12	23	0	8	3899	0150	III	1	22-44 MHz	
	0200:25	C(2M)	-5305	12	23	0	8	3911					
	0218:59	F	10707	13	17	3	0	3938	0221	IIIG		METRIC	
									0224	IIIG		METRIC	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	LAS U/D	LAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
									0225	IIIG		METRIC	
									0226	IIIG		METRIC	
									0231	IIIG		METRIC	
									0250	IIIB		METRIC	
									0324	IIIG		METRIC	
									0326	IIIG		METRIC	
									0326	APR	2	N17E90	
									0328	IIIB		METRIC	
									0329	IIIG		METRIC	
									0330	IIIG		METRIC	
									0333	IIIB		METRIC	
									0411	IIIG		METRIC	
									0413	IIIG		METRIC	
									0414	MIN		100 MHz	
									0419	III	2	24-40 MHz	
									0419	V		METRIC	
									0422	IIIG		METRIC	
									0432	IIIG		METRIC	
									0433	MIN			
									0512	III	2	20-200MHz	
									0512	MIN		100 MHz	
									0513	CTM	3	24-48 MHz	
									0513	MIN		200 MHz	
									0528	IIIG		METRIC	
									0536	IIIG		METRIC	
									0557	MIN		100&200MHz	
									0559	IIIB		METRIC	
									0615	MIN		100 MHz	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
									0615	III	2	20-200MHz	
									0620	IIIB	1+	METRIC	
									0628	IIIB		METRIC	
	0630:56	F	5316	1	15	-1	9	4010	0629	IIIG		METRIC	1st frame in TV position
	0703:29	S	5332	-2	24	0	8	4082	0712	FLA	SF	S18E69	
	0806:56	S	5336	0	24	0	7	4094	0815	EPL	.4R	N13E90	
	0812:32	F	5331	-1	25	0	7	4106	0855	EPL	.2R	N13E90	
									0857	FLA	1B	N10E90	
									0919	BSL	.2R	N09E90	
	0929:09	F	5303	-2	24	-1	7	4178	0922	BSL	.1R	N15E90	
	0945:33	F	5304	-2	24	0	7	4250	1007	APR	1	S25W90	
									1120	MIN		200 MHz	
									1411	III	1+	7-40 MHz	
									1411	V	2	14-48 MHz	
	1600:01	S	-10799	22	12	2	7	4322					
	1610:02	S	-5396	22	12	2	7	4334					
	1615:53	C	-5396	22	12	2	7	4346	1714	APR	2	N18E90	4355 is last frame
	1754	S											Not on film, camera jammed
									2118	MIN		8800 MHz	
									2118	APR	2	N15E90	
	2238	S											
									2334				
162	0110	S							0115	APR	2	N17E90	
		S	-5400	4	-7	-3	4						
		C	-5400	4	-7	-3	4						

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION	COMMENTS
	BBRC	PRE-FLIGHT CHECKOUT								19 June 1973 (Film Load #2)
170	1136:48	F(22)						4355		
170	2210:35	F	-9270	17	14	3	10	4377		
170	2357:42	S	-9194	17	15	5	12	4449		Transient
171	0546:15	S	-9097	11	12	3	10	4461		
171	1333:43	S	-9305	9	13	2	9	4473		
171	2129:59	S	-8801	17	15	3	10	4485		
172	0504:23	S	-8770	12	13	3	10	4497		
172	1252:30	S	-8512	11	15	-6	-4	4509		
172	2044:03	S	-8599	11	12	-6	1	4521		
173	0008:03	S	-8315	17	15	-3	0	4533		
173	1214:30	S	-8984	18	15	-4	-1	4545		
173	2000:27	S	-10309	16	16	-3	0	4557		
174	0421:58	S	-8578	16	15	2	-3	4569		
174	1325:42	S	-8328	11	12	-1	-3	4581		
174	1959:07	S	-8506	16	15	0	-3	4593		
175	0338:44	S	-8102	16	14	0	-4	4605		
175	1421:55	S	-7607	16	15	0	-4	4617		Transient
175	1736:15	S	-7462	17	15	0	-3	4629		(1722 suspected coronal transient)
175	1749:00	S	-7462	16	15	2	-4	4641		
175	1916:14	S	-7328	16	14	1	-2	4653		Transient
175	2015:52	S	-7192	16	15	0	-3	4665		
175	2327:09	S	-7109	15	15	0	-2	4677		
176	0431:05	S	-6904	17	15	0	-4	4689		
176	1337:21	S	-6394	16	17	-1	-5	4701		(0700 prominence lifted off west limb)
176	2115:52	S	-6097	17	15	0	-3	4713		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP COUNTS	LOCATION C	COMMENTS
177	0212:37	S	-5800	16	15	0	-3	4725				(coronal transient) 26 June 1973
177	0348:34	S	-5781	15	14	0	-3	4737				
177	1253:03	S	-5414	18	14	-1	-4	4749				D.E.
177	2031:44	S	-5087	18	15	0	-2	4761				
178	0441:18	S	-4810	17	17	0	-1	4773				
178	1348:24	S	?	17	15	0	-3	4785				D.E.
178	2123:16	S	-4292	17	15	-1	-3	4797				
179	0359:03	S	-4154	16	14	0	-4	4809				
179	1304:43	S	-4071	18	13	-1	-3	4821				D.E.
179	1955:25	S	-4023	17	13	0	-3	4833				Transient (1915 coronal transient)
179	2002:52	S(5)	-4020	17	14	0	-3	4845				(Partial Std - 4 or 5 frames) (Power was cycled to get polaroid wheel back in sync)
179	2125:13	S	-4011	0	2	-4	+11	4850	116		113	D.E.
180	0315:40	S	-3966	18	15	-1	-2	4862				D.E.
180	0454:07	S	-3918	19	18	-12	+11	4874	116		113	
180	1358:52	S	-3882	18	14	0	-3	4886				D.E.
180	1537:29	F	-3870	18	12	0	-3	4898				
180	2044:36	S	-3828	16	13	0	-4	4970				D.E.
181	0410:19	S	-3780	12	16	0	-4	4982				
181	1144:08	F	-3732	11	15	0	-4	4994				Eclipse data begins - D.E.
181	1315:31	S	-3723	11	15	0	-3	5066				
181	1455:03	S	-3714	12	17	-4	+14	5078	116		112	D.E.
181	1631:07	S	-3705	11	15	-1	-3	5090				
181	1810:29	S	-3693	-4	6	-1	+14	5102	117		112	End eclipse data
181	2135:11	S	-3675	17	12	0	-3	5114				D.E.

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE Count	IMP	LOCATION C	COMMENTS
													1 July 1973
182	05 14:46	S	-3624	12	17	0	-4	5126					D.E. Clear
182	1234:14	S	-3572	11	15	0	-3	5138					D.E.
182	2051:54	S	-3513	11	17	0	-3	5150					D.E.
183	0430:07	S	-3461	18	12	0	-4	5162					
183	1325:49	S	-3402	17	14	0	-5	5174					D.E.
183	1339:50	S	-3399	19	12	0	-4	5186					(surge prominence - obs. transient)
183	2141:26	S	-3345	11	17	0	-3	5198					D.E.
184	0507:55	S	-3294	16	13	0	-3	5210					Transient - clear D.E.
184	1109:10	S	-3249	18	14	0	-3	5222					D.E.
184	2058:35	S	-3177	19	22	-4	+14	5234	116			112	D.E.
185	0425:49	S	-3129	11	17	0	-4	5246					D.E.
185	1337:39	S	-3060	11	25	-1	-2	5258					
185	1834:15	S	-3021	11	15	1	-1	5282					D.E. L_5
185	1845:49	S	-3015	11	15	-3	-4	5270					L_5
185	2018:06	S	-3009	11	17	0	-3	5294					L_5
185	2034:24	S	-3007	10	15	0	-3	5306					(Est. 10 frames, Term. by momentum Dum
185	2157:00	S	-2999	-7	4	-4	+11	5316	116			113	D.E. L_5
185	2324:47	S	-2988	11	15	-3	-3	5328					L_5 Transient
186	0032:00	S	-2985	11	15	-3	-3	5340					D.E. L_5
186	0518:52	S	-2952	12	15	-3	-3	5352					Numbering error on plates 5 thru 33 (5512) to (10623)
186	1305:21	S	-2895	-4	2	-1	+11	5364	117			113	
186	2107:51	S	-2835	12	11	0	-3	5376					
187	0450:37	S	-2789	7	13	-1	-3	5388					
187	1350:36	S	-2733	13	11	-1	-3	5400					
187	2023:53	S	-2691	-4	2	-4	+11	5412	116			113	(shown in log, but no MDRS)

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Count	LOCATION C	COMMENTS
188	0353:23	S	-2640	12	12	-1	-3	5424				7 July 1974
188	1306:06	S	-2571	12	15	0	-2	5436				
188	1947:33	S	-2522	19	18	-1	+14	5448	117		112	D.E.
189	0324:31	S	-2466	15	14	-2	-5	5460				D.E. Clear
189	1400:18	S	-2388	17	14	-1	-2	5472				
189	2033:32	S	-2340	15	14	-1	-3	5484				
190	0054:44	S	-2320	17	12	0	-2	5496				D.E.
190	0417:53	S	-2345	16	14	0	-2	5508				
190	1317:03	S	-2347	17	13	0	-4	5520				
190	2126:30	S	-2332	17	12	0	-2	5532				
191	0321:39	S	?	17	12	-1	-3	5544				D.E.
191	1245:50	S	?	16	12	-1	-3	5556				
191	2043:43	S	?	16	11	0	-3	5568				
192	0236:57	S	-2393	18	12	0	-2	5580				
192	1025:26	S	-2422	17	11	-1	-3	5592				
192	2137:49	S	-2432	9	16	-1	-2	5604				D.E.
193	0230:47	S	-2434	18	13	0	-5	5616				D.E. Clear
193	1305:53	S	-2532	18	12	-1	-3	5628				
193	2220:04	S	-2589	19	9	-1	-3	5640				Transient
194	0251:48	S	-2601	8	12	-3	-1	5652				
194	1355:37	S	-2652	17	19	0	-4	5664				Transient
194	2136:30	S	-2676	10	18	-4	+14	5676	116		112	
195	0240:47	S	-2694	11	18	-1	-4	5688				D.E.
195	1315:39	S	-2745	12	18	0	-4	5700				D.E. Clear
195	2115:54	S	-2784	12	20	-1	-4	5712				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
196	0200:10	S	-2805	-2	4	-4	+14	5724	116		112	15 July 1973
196	0335:36	S	-2814	18	15	0	-3	5736				
196	1400:19	S	-2871	18	12	-1	-3	5748				
196	2148:27	S	-3630	16	14	0	-4	5760				
			-3630	17	20	-1	+11		117		113	Loss of operations due to failure of EPC
200	1859:10	S(3)	(Part of EPC checkout procedure we were terminated by 20" disc firing)					5772				
				MANNED								Rate Gyro
209	2355:25	S	-7737?	18	20	-4	-5	5775				D.E. (MANNED SL3)
210	0127:18	S	-7735?	18	20	-6	-4	5787				D.E.
210	0133:09	F	-7735?	17	20	-4	-5	5799				D.E.
210	0434:56	S	-7732?	17	21	-6	-2	5871				D.E.
210	0540:35	S	-7730?	17	20	-4	-4	5883				
210	0613:13	S	-7729?	12	20	-3	-4	5895				D.E.
210	1632:47	S	-6555	17	15	-6	-6	5907				
210	1820:21	S	-6555	18	15	-6	-6	5919				
210	1828:16	S	-6555	17	14	-4	-5	5931				
210	1957:55	S	-6556	16	14	-4	-5	5943				
210	2004:15	S	-6556	16	15	-4	-6	5955				
210	2138:24	S	-6556	16	14	-6	-5	5967				D.E.
210	2144:29	S	-6556	15	14	-4	-6	5979				D.E.
210	2307:54	S	-6556	16	15	-5	-6	5991				
211	0043:46	S	-6557	16	14	-6	-6	6003				
211	0050:43	S	-6526	16	15	-4	-6	6015				
211	0352:12	S	-6526	18	17	-6	-5	6027				
211	0459:09	S	-6527	16	14	-6	-6	6039				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
211	0532:52	S	-6686	17	14	-3	-6	6051				
211	0629:28	S	-6686	17	12	-4	-5	6063				
211	0636:24	S	-6686	16	15	-5	-6	6075				
211	0716:10	S	-6686	17	15	-4	-6	6087				
211	0808:43	S	-6687	17	14	-6	-6	6099				
211	0814:26	S	-6687	17	14	-6	-4	6111				
211	0949:35	S	-6687	17	14	-6	-5	6123				
211	0955:23	S	-6687	17	14	-3	-3	6135				
211	1022:50	S	-6687	17	12	-4	-3	6147				
211	1117:37	S	-6685	16	15	-4	-2	6159				
211	1127:09	S	-6685	16	14	-3	-4	6171				
211	1242:56	S	-6686	16	13	-6	-5	6183				
211	1248:57	S	-6686	15	14	-3	-4	6195				
211	1254:40	S	-6685	16	15	-3	-4	6207				
211	1306:06	S	-6685	18	15	-3	-3	6219				
211	1311:43	S	-6685	16	15	0	-4	6231				D.E.
211	1417:33	S	-6685	17	14	+3	+4	6243	119		116	
211	1807:51	S	-6740	18	15	-3	-4	6255				
211	1916:16	S	-6740	18	12	-4	-5	6267				
211	1921:59	S	-6740	20	17	-7	10	6279				
211	1941:36	S	-6740	18	13	-3	-4	6291				
211	2033:41	S	-6741	17	14	-3	-3	6303				
212	0004:39	S	-6794	8	6	-6	-3	6315				
212	0139:22	S	-6794	8	6	-6	-4	6327				
212	0309:58	S	-6795	8	6	-6	-4	6339				
212	0415:45	S	-6795	8	5	-4	-3	6351				
212	0447:21	S	-6850	8	10	-4	-3	6363				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION	COMMENTS
212	0550:01	S	-6850	8	12	-2	-4	6375		31 July 1973
212	0633:30	S	-6851	8	11	-3	-3	6387		
212	0724:38	S	-6851	7	11	-3	-4	6399		
212	0803:59	S	-6851	8	11	-3	-5	6411		
212	0854:29	S	-6851	7	12	-6	-4	6423		
212	0905:56	S	-6851	8	10	-3	-4	6435		
212	0939:29	S	-6852	6	10	-3	-5	6447		
212	1030:20	S	-6852	8	11	-3	-4	6459		
212	1042:56	S	-6852	8	11	-4	-4	6471		
212	1206:36	S	-6852	8	12	-4	-3	6483		
212	1223:35	S	-6929	8	12	-3	-3	6495		
212	1337:21	S	-6928	8	12	-6	-2	6507		
212	1357:42	F	-6929	8	11	-3	-4	6519		
212	1514:31	S	-6930	8	11	-4	-3	6591		
212	1525:20	S	-6930	8	11	-3	-4	6603		
212	2009:13	S	-6931	15	15	-4	-5	6615		
212	2032:34	S	-6931	15	14	-3	-5	6627		
212	2146:43	S	-6931	13	15	-3	-4	6639		
212	2317:25	S	-6932	13	14	-3	-4	6651		
212	2327:11	F	-6932	12	14	-3	-5	6663		
213	0054:44	S	-6932	15	12	-4	-4	6735		
213	0226:13	F	-6933	17	12	-5	-4	6747		
213	0823:32	S	-6934	12	15	-4	-5	6819		
213	0856:49	S	-6934	10	14	-3	-4	6831		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
213	0952:08	S	-6935	14	11	-4	-4	6843				1 August 1973
213	1000:36	S	-6935	11	12	-4	-4	6855				
213	1124:36	S	-6936	11	15	-5	-4	6867				
213	1131:03	S	-6936	12	14	-3	-5	6879				
213	1137:02	S	-6936	11	12	-3	-5	6891				
213	1931:06	S	-6938	8	12	-4	-5	6903				
213	1936:56	F	-6938	8	12	-4	-5	6915				
213	1954:09	S	-6938	15	15	-3	-4	6987				
213	2103:14	S	-6939	15	15	-3	-4	6999				
213	2126:51	S	-6939	15	14	-2	-5	7011				
213	2233:47	S	-6939	15	15	-3	-4	7023				
214	0011:00	S	-6939	15	15	-4	-3	7035				
214	0318:16	S	-6940	15	13	-4	-3	7047				
214	0646:05	S	-6941	17	18	-1	-4	7059				Last three exposures under 400 km
214	0739:04	S	-6941	18	18	-3	-5	7071				
214	0811:39	S	-6942	19	18	-2	-5	7083				
214	0819:47	S	-6942	18	20	-3	-5	7095				
214	0907:38	S	-6942	17	18	-1	-5	7107				Last three exposures under 400 km
214	0916:09	F	-6942	18	18	-1	-4	7119				
214	0950:17	S	-6942	19	11	-4	+14	7191	116		112	
214	1400:43	S	-6944	12	18	-3	-4	7203				Terrible contamination
214	1408:12	S	-6944	11	20	-5	-4	7215				Contamination
214	1842:19	S(3)	-6945	17	23	-3	-5	7227				
215	0236:28	S	-7270	9	6	-4	-4	7230				Transient
215	0655:06	S	-7340	6	-7	0	-1	7242				
215	1327:30	S	-7383	8	15	-6	-5	7254				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
215	1937:32	S	-7384	19	15	-3	-4	7266				3 August 1973
215	2118:39	S	-5507	-2	9	-7	+14	7278	115		112	
215	2127:03	S(1)	-5507	-4	7	-7	+11	7290	115		113	(1 frame with mirror in TV position)
216	0153:42	S	-5483	15	6	-3	-5	7291				
216	0331:16	S	-5483	17	6	-3	-5	7303				
216	0517:02	S	-5483	16	6	-4	-5	7315				
216	0645:20	S	-5484	17	6	-1	-5	7327				
												No OPS, ATM bus problem
217	1837:31	S	-5581	19	6	-6	-4	7339				
218	0201:56	S	-5630	19	8	-6	-4	7351				
218	0207:38	F	-5630	22	9	-3	-3	7363				
218	0702:21	S	-5630	24	10	-4	-4	7435				Transient
218	0707:58	S	-5631	19	6	-3	-4	7447				
218	1243:46	S	-5632	23	6	-3	-3	7459				
218	1252:38	S	-5632	23	9	-4	-5	7471				
218	1300:48	F	-5632	19	6	-3	-4	7483				
219	0310:44	S	-5399	16	10	-6	-4	7555				
219	0436:00	S	-5400	16	10	-4	-3	7567				
219	0441:39	F	-5400	19	7	-6	-4	7579				
219	0623:10	S	-5400	19	11	-4	-4	7651				
219	0716:12	S	-5400	19	12	-6	-4	7663				
219	0721:58	F	-5400	19	11	-4	-4	7675				
219	1159:30	S	-5402	19	10	-6	-4	7747				
219	1207:48	S	-5402	19	10	-3	-4	7759				
219	1400:34	S	-10674	16	15	-6	-4	7771				
219	1941:39	S	-5489	17	16	-7	+14	7783	115		112	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
220	0152:33	S	10801	19	18	-7	+14	7795	115		112	8 August 1973
220	0204:05	S	-5400	17	16	-7	+14	7807	115		112	(2nd STD of BB1)
220	0211:51	S	-5400	17	16	-4	+14	7819	116		112	
220	0212:23	C	-5400	14	11	-3	-3	7820				
220	0535:36	S	-5401	19	6	-6	-5	7853				
220	0541:42	F (40)	-5401	25	9	-3	-4	7865				
220	0632:29	S	-5401	19	6	-6	-3	7905				
220	0638:09	F	-5401	20	6	-6	-4	7917				
220	0706:26	S	-5401	24	6	-4	-3	7989				
220	1434:05	S	10708	14	11	-4	-6	8001				
220	1454:50	S	-5527	19	28	-7	+11	8013	115		113	
220	1500:35	C (20)	-5527	17	16	-7	+11	8025	115		113	
220	1916:26	S	-5414	17	11	-4	0	8045				(no data for this mode)
221	0109:40	S	-10285	12	20	-7	-2	8057	115		119	
221	0117:29	S	-5414	19	18	-7	-2	8069	115		119	
221	0123:25	S	-5414	17	16	-7	-2	8081	115		119	
221	0130:49	C	-5415	16	12	-2	2	8093				
221	0317:55	S	- 841	13	13	-6	2	8105				
221	0444:52	S	- 841	12	15	-6	3	8117				
221	0451:32	F	- 841	12	12	-3	2	8129				
221	0549:19	S	- 842	12	12	-6	2	8201				
221	0621:55	S	- 842	12	12	-3	2	8213				
221	0627:49	F	- 842	15	12	-4	0	8225				Frame 8290 end of first half load (72 frames; 6 frames of back of door; mode ran into sunset but not terminate by door close).

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
221	0726:51	S	- 841	12	13	-4	2	8297				9 August 1973
221	0903:43	S	- 842	12	12	-4	2	8309				
221	0909:23	F	- 842	12	12	-4	2	8321				(72 frames)
221	1031:50	S	- 842	12	11	-4	2	8393				
221	1041:59	F	- 842	12	12	-4	2	8405				(1055 prominence activity on west limb. Look for coronal transient)
221	1159.36	S	- 843	12	11	-5	2	8477				
221	1208:00	F	- 843	12	11	-5	2	8489				
221	1225:00	F	- 843	13	12	-3	2	8561				
221	1530:53	S	-5544	17	20	-7	+4	8633	115		116	571 footage-152 = 419
221	1541:22	S	-10397	16	12	-4	0	8645				
221	1547:20	C(11)	-10397	17	16	-7	+4	8657	115		116	There are frames 8665A,B,C.
221	1641:44	S(5)	-5408	15	11	-6	-1	8666				M2 flare AR85 transient
221	1644:36	Ext.Std.	-5403	17	16	-10	+4	8671	114		116	Mode begins in polaroid position 2
221	1701:20	Ext.Std.	-5382	15	12	-4	-1	8696				(18 frames) mode begins in polaroid position 2
222	0045:57	S	-5402	19	15	-6	-1	8714				(mode begins in polaroid position 4)
222	0052:56	F	-5402	19	15	-5	-1	8726				
222	0821:20	S	-5404	19	14	-6	0	8798				Transient - not bubble
222	0827:57	F	-5404	19	12	-4	-2	8810				
222	1126:31	S	-5405	18	13	-6	0	8882				
222	1139:48	S	-5405	19	13	-6	-2	8894				
222	1331:59	F(52)	-5405	0	12	-18	0	8906				Coronal Transient (OBS)
222	1343:55	F(3)	-5405	17	16	-20	0	8958	110		118	(400 km SS time 1343)
222	1424:28	S	-5405	16	12	-17	2	8961				
222	1432:04	S(4)	-5405	15	12	-16	2	8973				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
222	1434:21	S	-5405	16	12	-16	0	8977				10 August 1973 (Mode begins in polaroi position 2)
222	1441:07	C(19)	-5405	16	11	-16	2	8989				Good transient coverage
222	1450:25	S	-5405	17	16	-18	-2	9008	111		119	Good transient coverage
222	1457:26	S	-5405	18	14	-20	-2	9020	110		119	Good transient coverage
222	1512:28	S	-5395	21	16	-4	0	9032	116		118	Good transient coverage
222	1633:09	F	-5394	19	12	0	-1	9044				(first frame mirror in TV position)
222	1809:17	S	-5395	19	13	-3	-1	9116				
222	1917:50	S	-5388	18	14	-1	0	9128				
222	2212:17	S	-10800	19	18	-4	-2	9140	116		119	
222	2220:37	S	-5349	19	18	-4	0	9152	116		118	
223	0117:51	S	10801	19	18	-4	0	9164	116		118	
223	0126:14	S	-5400	19	18	-4	0	9176	116		118	
223	0132:32	C(26)	-5400	16	12	0	0	9188				
223	0458:59	S	-5401	19	14	-1	1	9214				
223	0506:36	S	-5401	19	15	0	2	9226				
223	0738:31	S	-5402	19	12	0	2	9238				
223	0745:02	F	-5402	19	13	0	0	9250				
223	1101:54	S	-5403	19	12	-1	2	9322				
223	1107:14	S	-5403	18	12	-1	0	9334				
223	1343:35	S	10794	17	12	-1	0	9346				
223	1354:34	S	-5409	17	11	0	0	9358				
223	1401:08	C(43)	-5359	17	12	-1	2	9370				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
223	1729:59	S	- 795	16	12	-1	0	9413				11 August 1973
223	2320:03	S	-5400	17	15	-6	2	9425				(first frame, mirror in TV position)
224	0036:37	S	-5400	19	18	-7	-2	9437	115		119	
224	0044:01	C(32)	-5400	17	16	-7	-2	9449	225		119	
224	0059:51	C(14)	10801	15	12	-3	3	9481				
224	0654:30	S	-5398	19	15	-4	2	9495				
224	0701:22	F	-5398	19	14	-4	2	9507				
224	0830:20	S	-5399	18	12	-4	2	9579				
224	0836:07	S	-5399	18	12	-3	0	9591				
224	0957:52	S	-5399	19	13	-4	2	9603				
224	1152:54	F	-5400	19	17	-4	2	9615				Transient obs. Type III burst
224	1303:06	S	-5400	18	15	-3	2	9687				Eruptive prominence
224	1757:47	F(4)	-5390	16	11	-4	1	9699				
224	1758:45	Ext/Std	-5391	16	12	-4	0	9703				
224	1959:26	S	10311	16	11	-4	2	9739				
224	2304:21	S	10801	19	18	-10	+7	9751	114		115	
224	2355:34	S	-5395	17	16	-10	+7	9763	114		115	
225	0129:15	S	10800	19	18	-10	+7	9775	114		115	
225	0136:46	S	-5400	17	16	-10	+7	9787	114		115	
225	0144:04	C(25)	-5400	19	14	-7	+7	9799	115		115	
225	0328:16	S	-5400	16	11	-6	-2	9824				
225	0506:00	S	-5400	15	14	-7	-2	9836				Type II, IV
225	0655:47	S	-5401	12	13	-6	-2	9860				Transient
225	0746:11	S	-5401	16	12	-6	-1	9872				Transient
225	0752:40	F	-5401	15	12	-6	-3	9884				Transient

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
225	0914:18	S	-5401	18	12	-7	-1	9956				
225	0923:38	S	-5401	15	11	-4	-3	9968				
225	1051:12	S	-5402	16	13	-6	-1	9980				Long Loop
225	1414:17	S	-5397	17	12	-3	-1	9992				Transient - Long Loop
225	1424:09	S	-5398	16	12	-4	-2	10004				Long Loop
225	1431:04	C(28)	-5398	16	12	-6	-3	10016				
225	1446:57	C(4)	-1917	17	16	-10	+7	10044	114		115	
225	1743:07	S	-5407	16	11	-6	-3	10048				
225	2141:05	S	-5400	19	18	-10	+9	10060	114		114	Transient
225	2233:24	S(4)	-1904	12	12	-3	-4	10072				
225	2315:07	S	-5400	19	18	-7	+11	10076	115		113	(Mode begins in polaroid 2)
226	0006:44	C(4)	-1900	15	12	-3	-2	10088				
226	0050:50	S	10797	17	16	-7	+9	10092	115		114	
226	0059:27	S	-5400	17	16	-7	+9	10104	115		114	
226	0107:54	Ext/Std	-5400	17	16	-4	+9	10116	116		114	(31 frames) stationary contaminant
226	0121:50	Ext/Std	-5400	17	16	-4	+9	10147	116		114	(34 frames) Mode begins in polaroid 3
226	0704:26	S	-5401	17	15	-4	-2	10181				Mode begins in polaroid 2
226	0710:09	F	-5402	17	15	-3	-3	10193				
226	1027:00	S	-5402	17	14	-4	-3	10265				
226	1325:32	S	-5396	18	6	-4	-2	10277				
226	1336:12	Ext/Std	-5397	16	10	-3	-2	10289				(26 frames) contaminant disappears
226	1923:40	S	-5400	17	16	-7	-2	10315	115		119	-
226	1929:26	S	-5400	17	16	-7	-2	10327	115		119	
227	0139:47	S	10800	19	18	-7	-2	10339	115		119	
227	0149:35	S	-5400	19	18	-7	-2	10351	115		119	
227	0156:45	S(2)	-5400	17	16	-7	-2	10363	115		119	
227	0157:30	C(24)	-5400	17	13	-3	0	10365				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
227	0756:47	S	-5401	17	14	-4	1	10389				
227	1055:46	S	-5402	17	15	-3	2	10401				
227	1421:00	S	-10786	17	11	-3	0	10413				
227	1429:30	S	- 5399	16	10	-3	2	10425				
227	1438:53	EXT STD	- 5185	17	12	-4	-1	10437				
227	1907:42	S	- 5400	19	18	-7	+4	10466	115		116	Begins in Polaroid Position 2
228	0102 :01	S	-10800	20	17	-7	+11	10478	115		113	Begins in polaroid position 2
228	0111:37	S	- 5404	18	12	-4	-2	10490				Begins in polaroid position 2
228	0120:06	C(26)	- 5404	18	12	-4	-2	10502				
228	0713:23	S	- 338	15	14	-4	0	10528				
228	1331:10	S	10800	16	11	-3	-1	10540				
228	1339:41	S	- 5400	17	16	-7	+4	10552	115		116	
228	1349:35	C (26)	- 5400	15	11	-1	0	10564				
228	1939:39	S	- 5401	20	17	-7	+7	10590	115		115	
229	0150:02	S	10801	19	18	-7	+4	10602	115		116	
229	0158:03	S	- 5399	16	12	-10	+2	10614	114		117	
229	0158:46	S (1)	- 5399	17	16	-7	+4	10615	115		116	
229	0207:03	C (25)	- 5399	16	12	-3	-1	10627				First frame TV in mirror po position.
229	0715:37	S	- 5399	16	15	-3	0	10652				
229	1132:37	S	10798	18	14	-28	+7	10664	107		115	
229	1140:34	S	- 5401	17	16	+9	+7	10676	121		115	
229	1149:50	C (23)	- 5401	17	16	+9	+4	10688	121		116	
229	1723:45	S	- 5399	18	13	11	-2	10711				
229	2033:01	S	- 5399	18	9	11	-3	10723				
229	2212:32	S	- 5401	17	13	10	-1	10735				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
229	2335:06	S	- 5401	17	16	+6	+2	10747	120		117	
230	0109:27	S	- 5399	19	18	+9	+4	10759	121		116	
230	0122:58	S	-10800	16	12	11	0	10771				
230	0139:13	C(10)	- 5399	16	12	11	0	10783				
230	0308:09	S	- 5400	19	13	11	-1	10793				
230	0410:16	S(10)	- 5400	19	12	9	0	10805				Sunrise JOP 7?
230	0414:37	S	- 5400	18	14	11	0	10815				Mode begins in polaroid position 4
230	0549:05	S	- 5401	18	13	5	0	10827				Polaroid Position 4
230	0722:46	S	- 5401	19	12	5	2	10839				Polaroid Position 4
230	0855:40	S	- 5401	17	12	5	2	10851				Polaroid Position 4
230	1028:30	S	- 5401	16	13	5	2	10863				Polaroid Position 4
230	1201:07	S	- 5400	18	11	5	2	10875				Mode begins in polaroid position 4
230	1335:39	S	-10797	16	13	5	2	10887				Polaroid Position 4
230	1347:44	S	- 5401	17	12	8	3	10899				Polaroid Position 4
230	1400:37	C(15)	- 5401	17	12	6	0	10911				
230	1511:22	S	- 5400	18	12	5	0	10926				
230	1641:24	S	- 5400	16	11	5	-1	10938				
230	1815:11	S	- 5400	16	12	-5	-2	10950				
230	1948:34	S	-5400	16	11	6	-3	10962				
230	2121:57	S	- 5400	17	12	5	-1	10974				
230	2254:05	S	- 5400	17	16	+3	+7	10986	119		115	
231	0028:25	S	10799	19	18	0	+7	10998	118		115	
231	0035:38	S	- 5398	19	18	+3	+7	11010	119		115	
231	0047:21	C(21)	- 5398	15	12	6	-1	11022				
231	0222:31	S	- 5401	15	15	5	-3	11043				
231	0411:38	S	- 5401	15	15	5	-1	11055				

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
231	0508:16	S	- 5401	13	14	5	-1	11067				19 August
231	0547:13	S	- 5402	14	14	5	-1	11079				
231	0641:30	S	- 5402	16	15	5	0	11091				
231	0723:46	S	- 5402	16	12	5	0	11103				
231	0814:12	S	- 5402	16	12	5	-1	11115				
231	0856:32	S	- 5402	16	14	8	-1	11127				
231	0948:14	S	- 5403	16	12	6	-1	11139				
231	1033:33	S	- 5403	16	12	5	-2	11151				
231	1121:10	S	- 5402	16	12	5	-2	11163				
231	1206:44	S	- 5403	20	17	0	+7	11175	118		115	
231	1308:05	S	-10800	17	16	0	+7	11187	118		115	
231	1317:12	S	- 5400	17	10	5	0	11199				
231	1328:11	C(17)	- 5400	17	16	+3	+7	11211	119		115	
231	1423:19	S(3)	- 5399	16	11	5	-2	11228				
231	1432:09	S(3)	- 5400	17	12	5	-1	11231				(Polaroid position 2)
231	1512:29	S	- 5404	19	18	+3	+7	11243	119		115	(Mode begins polaroid position 2)
231	1557:42	S	- 5401	18	11	0	-3	11255				(Polaroid position 2)
231	1734:35	S	- 5399	18	6	2	-1	11279				
231	1820:18	S	- 5401	12	11	0	2	11291				
231	1909:10	S	- 5401	15	12	2	-1	11303				
231	1955:15	S	- 5403	16	11	2	-2	11315				
231	2042:22	S	- 5403	16	12	3	-1	11327				
231	2127:31	S	- 5403	16	12	2	-3	11339				
231	2214:46	S	- 5403	19	18	-1	+9	11351	117		114	
231	2300:35	S	- 5394	19	18	-1	+7	11363	117		115	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION	COMMENTS
232	0001:20	S	- 5404	16	11	9	-1	11375		20 August 1973
232	0034:19	S	- 5398					11387		
232	0121:30	S	10799					11399		
232	0129:05	S	- 5398					11411		
232	0136:11	C	- 5398	18	11	5	-3	11423		
232	0300:18	S	- 5400					11448		
232	0425:19	S	- 5400	17	11	2	-1	11460		
232	0509:04	S	- 5400	15	10	5	-1	11484		
232	0640:47	S	- 5400	18	6	5	-3	11496		
232	0734:56	S	- 5401	16	11	0	-1	11508		
232	0813:54	S	- 5401	16	9	0	-1	11520		
232	0907:05	S	- 5401	15	9	0	-2	11532		
232	0949:45	S	- 5401	16	10	5	0	11544		
232	1041:18	S	- 5401	18	6	3	-1	11556		
232	1125:08	S	- 5401					11568		
232	1225:46	S	10800					11580		
232	1237:57	S	- 5400					11592		
232	1249:40	C	- 5400					11604		
232	1349:02	S	- 5393	15	12	0	0	11616		
232	1525:39	S	- 5400	16	12	0	-1	11628		
232	1604:36	S	- 5400					11640		
232	1654:20	S	- 5400	17	12	0	-1	11652		
232	1741:07	S	- 5404	16	11	0	0	11664		
232	1827:45	S	-5398	18	11	0	-1	11676		
232	1902:29	S	- 5401	16	11	2	0	11688		
232	2002:16	S	- 5401	15	12	3	0	11700		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	LAS U/D	LAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION B	Counts	C	COMMENTS
232	1048:04	S	- 5398	16	10	0	0	11712				20 August 1973
232	2135:11	S	- 5396	17	10	0	0	11724				
232	2221:45	S	- 5393	19	18	-4	+2	11736	116		117	
232	2308:06	S	- 5400	19	18	-4	+2	11748	116		117	
232	2354:34	S	- 5400	19	18	-4	+11	11760	116		113	
233	0044:50	S	10798	19	18	-4	+11	11772	116		113	
233	0052:44	S	- 5402	18	9	0	-2	11784				
233	0059:25	C(26)	- 5402	16	10	1	-3	11796				
233	0214:50	S	- 5401	17	16	-4	+11	11822	116		113	
233	0421:42	S	- 5400	16	14	0	-2	11834				
233	0558:42	S	- 5400	17	12	0	-3	11846				
233	0732:53	S	- 5401	16	14	0	-2	11858				
233	0908:18	S	- 5401	18	11	0	-3	11870				
233	1046:17	S	- 5401	17	14	-1	-3	11882				
233	1137:47	S	- 5401	19	18	-4	+11	11894	116		113	
233	1309:05	S	10798	17	16	-4	+11	11906	116		113	
233	1317:39	S	- 5401	18	14	-1	+11	11918	117		113	
233	1326:08	C(19)	- 5400	17	13	0	-2	11930				
233	1441:38	S	10800	18	14	-4	+11	11949	116		113	1330 Transient
233	1450:30	S(4)	-10800	17	16	-1	+11	11961	117		113	
233	1511:09	S(2)	- 5400	11	12	2	-2	11965				
233	1615:30	S	- 9000	16	11	5	0	11967				
233	1653:30	S	-9000	15	12	5	-1	11979				
233	1835:06	S	- 5400	17	13	5	0	11991				
233	2014:33	F(4)	0000	16	13	5	0	12003				
233	2052:24	F(4)	0000	19	18	0	+4	12007	118		116	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	LAS U/D	LAS R/L	FRAME	SOLAR ACTIVITY TIME: B	TYPE IMP Counts	LOCATION C	COMMENTS
233	2106:18	S	- 2400	16	6	5	0	12011				21 August 1974
233	2306:40	S	- 5400	19	18	0	+4	12023	118		116	
234	0145:58	S	- 5402	17	12	5	-1	12035				
234	0153:52	C(11)	- 5402	19	12	5	0	12047				
234	0651:47	S	- 5397	17	14	5	-1	12058				
234	1250:01	S	10799	16	11	8	0	12070				
234	1259:46	S	- 5400	17	16	+3	+2	12081	119		117	
234	1313:25	C(11)	- 5400	21	20	+3	+2	12094	119		117	
234	1845:21	S	- 5399	19	18	0	+2	12105	118		117	
235	0103:56	S	- 5400	16	12	5	0	12117				
235	0111:40	C(22)	- 5188	17	12	5	0	12129				
235	0709:01	S	-10793	16	13	5	0	12151				
235	1329:32	S	188	18	12	5	0	12163				
235	1337:58	S	- 5399	17	14	5	0	12175				
235	1344:12	C(29)	- 5399	18	12	8	-1	12187				
235	1801:33	S	- 5400	19	18	0	+2	12216	118		117	
236	0022:14	S	0000	17	12	8	-1	12228				
236	0035:02	S	- 5401	12	11	5	0	12240				
236	0040:49	C(43)	- 5400	17	16	+3	+2	12252	119		117	Occulting disk contamination
236	0658	S(12)	- 5392	13	12	5	-1	12295				
												12306 End of Second Half Load 2
236	0710:47	F(22)	- 5391	15	14	5	0	12307				-
								12328				

OPERATIONS LOG: CAMERA LOAD #3

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
236	1837:44	F	10574	4	-6	-1	2		117	117	
237	0109:13	F	-5399	19	18	6	14	12329	120	112	
237	0129:22	S	0003	17	16	6	11	12401	120	113	
237	0139:14	S	-5402	17	16	6	11	12413	120	113	
237	0150:55	C(7)	-5401	17	16	9	11	12425	121	113	
237	0156:32	C(7)	-5401	17	11	11	-4	12432			
237	0613:10	F	-5394	19	16	10	-2	12449			
237	0629:58	S	-5393	18	14	11	-5	12521			
237	0750:29	S	-5391	17	15	8	-5	12533			
237	0802:52	S	-5390	16	14	11	-4	12545			
237	1030:34	S	-5386	17	13	8	-4	12557			
237	1036:24	S	-5387	16	12	8	-4	12569			
237	1224:32	S	0003	19	18	6	14	12581	120	112	
237	1231:54	S	-5400	19	18	9	14	12593	121	112	
237	1242:21	C(22)	-5400	17	16	9	11	12605	121	113	
237	1259:31	C(3)	3498	17	16	9	11	12627	121	113	JOP 7
237	1828:23	S(1)	0007	17	16	6	14	12630	120	112	
237	1828:39	S	0007	17	16	6	11	12631	120	113	
237	1840:39	S	-5398	12	13	9	-4	12643			
237	1848:13	C(20)	-5397	16	12	9	-4	12655			
237	2126:50	S	-5405	16	12	9	0	12675			
238	0038:39	S	0001	18	10	11	0	12687			
238	0046:52	S	-5399	19	14	9	2	12699	121	117	
238	0055:17	C(23)	-5399	17	16	9	2	12711	121	117	
238	0417:17	S	-5395	17	12	7	0	12734			

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
238	0709:45	S	-5390	15	11	5	0	12746			
238	0715:25	F	-5390	12	11	6	0	12758			
238	1312:17	S	1200	17	16	3	2	12830	119	117	
238	1321:14	S	-5200	17	16	6	0	12842	120	118	
238	1337:33	C(21)	-4200	17	16	6	0	12854	120	118	
238	1945:14	S	1200	17	20	3	0	12875	119	118	
238	1953:38	S	-4200	16	12	8	0	12887			
238	2004:17	C(4)	-4200	15	11	5	-1	12899			
238	2302:12	S	-4521	19	12	5	0	12903			
238	2349:58	S	1200	18	12	5	-3	12915			
239	0003:23	S	-4200	9	10	-18	-9	12927	111	122	Transient
239	0011:53	C(24)	-4200	17	16	-18	-9	12939	111	122	
239	0206:17	S	-4198	19	14	-16	1	12963			
239	0512:08	S	-4193	19	12	-16	0	12975			
239	0622:21	F	-4191	19	11	-16	0	12987			
239	0638:55	S	-4191	19	12	-13	-1	13059			
239	1227:39	S	0006	16	11	-9	-2	13071			
239	1235:48	S	-4199	17	16	-12	4	13083	113	116	
239	1243:25	C(28)	-4198	17	16	-12	4	13095	113	116	
239	1255:48	S(1)	-4200	17	16	-12	4	13123	113	116	
239	1505:14	S	-4200	17	16	-12	4	13124	113	116	
239	1827:58	S	1198	21	16	-12	7	13136	113	115	
239	1838:42	S	-4199	21	16	-12	4	13148	113	116	
239	1922:37	C(4)	1482	17	12	-9	0	13160			JOP 7
239	2229:26	C(4)	1407	15	10	-10	0	13164			JOP 7
240	0043:56	S	0000	19	18	-15	4	13168	112	116	
240	0052:23	S	-4200	16	11	-10	-1	13180			
240	0100:23	C(21)	-4200	17	16	-12	4	13192	113	116	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
240	0213:26	S	-4198	19	18	-12	4	13213	113	116	
240	0407:52	S	-4202	15	13	0	-5	13225			
240	0413:36	F	-4201	16	14	2	-5	13237			
240	0540:10	S	-4198	19	12	0	-4	13309			
240	0717:35	S	-4195	19	12	0	-4	13321			
240	0827:19	S	-4193	16	13	0	-5	13333			
240	0957:28	S	-4191	18	10	2	-4	13345			
240	1003:03	F	-4191	18	11	2	-5	13357			
240	1315:16	S	0002	16	12	3	0	13429			
240	1327:21	S	-4202	17	16	0	4	13441	118	116	
240	1337:20	C(21)	-4202	17	16	0	2	13453	118	117	
240	1534:25	C(4)	1801	17	16	-1	4	13474	117	116	
240	1806:12	S	1200	16	13	3	0	13478			
240	1816:24	S	-4196	17	16	0	4	13490	118	116	
240	1830:12	EXTSTD	-4201	18	12	3	0	13502			
240	1840:49	C(4)	-4202	17	16	0	4	13523	118	116	
240	1920:11	S	-4202	17	11	3	-1	13527			
240	2320:29	C(4)	1801	19	18	-1	4	13539	117	116	JOP 7
241	0133:51	S	-0001	19	18	-1	4	13543	117	116	
241	0140:52	S	-4196	16	11	5	0	13555			
241	0151:21	C	-4196	17	12	3	0	13567			
241	0633:42	S	-4203	19	12	2	-1	13587			
241	0639:30	F	-4203	18	10	5	-1	13599			
241	1225:41	S	0001	12	11	3	-2	13671			
241	1234:00	S	-4199	16	12	2	-1	13683			
241	1246:00	C(18)	-4198	17	16	-1	4	13695	117	116	
241	1358:42	S	-4200	19	18	-1	4	13713	117	116	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION U/D	LOCATION R/L	COMMENTS
241	1706:15	S	-4200	19	18	-1	4	13725				117	116	
241	1758:51	C(4)	-1550	19	18	-1	4	13737				117	116	JOP 7
241	1836:02	S	-4198	17	12	3	-3	13741						
241	1846:23	S	10562	17	16	-1	4	13753				117	116	
241	1909:28	EXTSTD	-4200	16	14	3	0	13765						
241	1932:12	C(4)	1400	17	12	3	0	13801						
241	2225:55	S	-4206	15	11	2	0	13805						
241	2237:21	F(4)	-4206	19	18	-1	4	13817				117	116	
241	2238:35	C(4)	-4206	15	13	1	-2	13821						
242	0145:00	C(4)	1393	14	12	3	0	13825						
242	0225:53	S~O		19	18	-1	4	13829				117	116	
242	0240:25	S	-4203	15	13	2	-2	13841						
242	0248:52	C	-4203	16	11	3	0	13853						
242	0550:35	S	-4204	19	6	3	0	13869						
242	0557:38	F	-4204	19	6	3	-1	13881						
242	1237:24	C(4)	1406	17	16	-1	4	13953				117	116	JOP 7
242	1324:50	S	0000	16	12	3	-1	13957						
242	1332:08	S	-4199	18	9	2	-1	13969						
242	1340:29	C(22)	-4198	18	11	3	-1	13981						
242	1628:15	S	-5400	19	18	-1	4	14003				117	116	
242	1641:29	C(22)	-4290	17	10	2	0	14015						
242	1930:41	S	-0001	17	12	0	0	14037						
242	1948:04	S	-4201	16	12	-1	0	14049						
242	2133:03	S	-4200	15	12	0	-4	14061						
243	0011:04	S	0000	19	18	-4	14	14073				116	112	
243	0021:07	S	-4200	16	12	2	-4	14085						
243	0027:25	C(25)	-4181	17	16	-1	14	14097				117	112	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
243	0040:32	C(33)	-4200	15	11	1	-5	14122			
243	0103:12	C(4)	1402	17	12	2	-4	14155			JOP 7
243	0644:18	S	-4199	19	17	0	-4	14159			
243	0649:33	F	-4199	19	14	2	-5	14171			
243	1259:03	S	-0001	20	17	-1	16	14243	117	111	
243	1306:01	S	-4198	17	16	-1	16	14255	117	111	
243	1315:22	C(19)	-4198	17	16	0	16	14267	118	111	
243	1623:50	S	-4200	16	12	0	-4	14286			
243	1848:33	S	0000	17	16	-1	16	14298	117	111	
243	1858:10	S	-4200	17	16	-1	14	14310	117	112	
243	2100:13	S	-0001	16	11	2	-5	14322			
243	2243:59	F(6)	-1420	18	11	0	0	14334			D_4 calibration
244	0009:28	S	-4200	17	9	5	-4	14340			
244	0101	S	10800	17	16	0	9	14352	118	114	
244	0108:36	S	-4199	17	16	3	9	14364	119	114	
244	0117:07	C(54)	-4199	15	9	5	-2	14376			
244	0153:58	C(4)	599	15	12	8	0	14430			Limb Surge at SE10
244	0246:27	S	-4200	17	12	5	-2	14434			
244	0252:15	F	-4200	15	12	5	-3	14446			
244	0430:23	S	-4199	19	17	5	-1	14518			
244	0559:21	S	-4200	19	16	5	-1	14530			
244	0606:01	F	-4199	19	17	5	-3	14542			
244	1019:10	S	-4198	19	15	5	-3	14614			
244	1204:48	S	-0009	17	16	-1	7	14626	117	115	
244	1213:02	S	-4200	17	16	-1	7	14638	117	115	
244	1220:45	C(22)	-4200	17	16	-1	7	14650	117	115	
244	1419:38	C(3)	599	17	16	-1	7	14672	117	115	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
244	1637:47	S	0003	19	18	-1	7	14675	117	115	
244	1807:55	S	0002	19	18	-4	7	14687	116	115	
244	1817:55	S	-4202	17	16	-1	7	14699	117	115	
244	1940:24	S	0000	15	12	2	-1	14711			
244	2113:20	S	0002	17	12	10	-3	14723			
245	0020:28	S	-0001	19	18	0	9	14735	118	114	
245	0031:41	S	-4204	18	11	5	-2	14747			
245	0039:40	C(10)	-4204	17	16	3	9	14759	119	114	
245	0056:25	C(23)	-4193	16	12	5	-1	14769			
245	0353:29	S	-4197	13	11	5	-4	14792			
245	0530:13	S	-4201	12	12	5	-1	14804			
245	0536:04	F	-4201	16	14	5	-3	14816			
245	1313:05	S	-4197	19	18	3	9	14888	119	114	
245	1322:57	C	-4197	19	18	3	9	14900	119	114	
245	1331:52	S	-4197	17	16	3	9	14916			
245	1553:47	S	-4200	19	18	0	9	14928	118	114	
245	1606:21	S	-4200	17	12	8	-3	14940			
245	2118:48	C	-4200	17	16	3	9	14952	119	114	
245	2204:59	S	-0002	17	16	3	9	14960	119	114	
245	2345:19	S	-4195	19	12	6	-3	14972			
246	0004:57	S	-4195	18	12	6	-2	14984			
246	0014:59	S	-4195	16	12	5	-4	14996			
246	0110:48	S	1201	15	12	3	9	15008	119	114	
246	0118:07	S	-4199	16	10	8	-3	15020			
246	0134:08	C(8)	-4199	17	16	3	9	15032	119	114	
246	0137:31	S	-4199	16	11	7	-3	15040			
246	0144:50	C(25)	-4199	15	10	5	-4	15052			

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
246	0447:46	S	-4199	12	15	5	-1	15077			
246	0458:15	F	-4199	13	12	8	-2	15089			
246	1207:52	S	0000	14	11	8	-3	15161			
246	1217:03	S	5401	17	12	8	-3	15173			
246	1225:35	C(23)	5401	16	11	8	-3	15185			
246	1825:31	S	0004	19	18	3	9	15208	119	114	
246	1843:34	S	5403	16	11	9	-2	15220			
246	2121:41	S	5400	16	11	5	-1	15232			
247	0033:03	S	0000	17	12	1	-5	15244			
247	0041:13	S	5400	16	10	0	-5	15256			
247	0051:44	C(9)	5400	18	14	-1	14	15268	117	112	
247	0353:09	F(4)	-5394	15	11	2	-4	15277			
247	0945:53	S	5398	17	11	0	-4	15281			
247	0951:06	F	5398	12	11	3	-5	15293			
247	1303:15	S	0000	16	12	3	1	15365			
247	1313:56	S	5404	16	12	3	2	15377			
247	1323:28	C(21)	5404	17	16	0	-2	15389	118	119	
247	1346:38	C(4)	403	18	14	-1	-2	15410	117	119	JOP 7
247	1600:35	S	5401	19	18	-1	-2	15414	117	119	
247	1611:38	S	0001	19	18	0	-2	15426	118	119	
247	2125:39	S	5398	15	12	3	2	15438			
248	0121:10	S	0004	17	16	0	-2	15450	118	119	
248	0133:58	S	5401	17	12	3	2	15462			
248	0140:54	C(19)	5401	17	16	0	-2	15474	118	119	
248	0446:10	S	5400	14	12	0	1	15493			
248	0456:50	F	5400	15	12	2	0	15505			
248	1227:44	S	-0008	14	11	3	2	15577			
248	1235:34	S	5402	15	10	3	0	15589			

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
248	1244:47	C(25)	5402	19	18	0	-2	15601	118	119	
248	1437:55	C(3)	351	19	18	-1	-2	15626	117	119	JOP 7
248	1611:03	C(4)	349	19	18	-1	-2	15629	117	119	JOP 7
248	1653:13	S	5397	19	18	-1	-2	15633	117	119	
248	1825:03	S(8)	5399	18	14	17	9	15645	124	114	
248	1900:02	S	5398	14	11	5	0	15653			Begins in Polaroid Position 3
248	1906:26	F(49)	5399	16	12	5	0	15665			
248	2045:39	S	5772	17	12	6	0	15714			
248	2131:34	F(4)	5773	19	18	0	0	15726	118	118	
248	2133	F(4)	2058	19	18	0	8	15730			
248	2222	F(4)	-1774	17	20	4	0	15734			Frame No. 15734, 15735A, 15735B, 15736
249	0048:20	S	0001	17	11	8	0	15737			
249	0054:52	S	5398	17	11	6	0	15749			
249	0107:09	S	5398	14	11	8	0	15761			
249	0112:57	C	5398	16	12	6	0	15773			
249	0232:38	S	5402	17	11	5	0	15780			
249	0359:02	S	5402	19	15	5	0	15792			
249	0957:10	F	5404	16	9	5	2	15804			Transient
249	1002:30	F	5405	19	14	6	0	15829	120	118	
249	1155:31	S	-3280	16	11	5	-3	15901			Transient
249	1208:04	EXTSTD (31)	-1341	17	16	3	9	15913	119	114	
249	1225:50	S	-1341	17	16	3	9	15944	119	114	Polaroid Position 3
249	1304:20	S	0001	16	11	5	-3	15947			
249	1312:04	S	5401	17	12	5	-5	15959			Polaroid Position 4

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
249	1320:20	C	5401	18	12	5	-3	15971			
249	1350:14	EXTSTD	5407	17	16	3	9	15992	119	114	
249	1516:03	S	5402	16	12	4	-3	16007			Starts in Polaroid Position 2
249	1835:30	C	249	17	14	5	-3	16019			JOP 7
249	1919:40	S	0000	17	20	3	9	16023	119	114	
249	1930:40	S	5403	17	16	3	11	16035	119	113	
249	2051:06	S	5402	16	9	5	-3	16047			
249	2223:15	S	5401	16	12	5	-3	16059			
249	2358:29	S	0002	19	18	0	9	16071	118	114	
250	0010:38	EXTSTD	5401	15	11	5	-2	16083			
250	0130:18	S	-0004	16	12	5	-2	16119			
250	0142:40	S	5401	16	12	5	-4	16131			16142 is last frame of 1st half Load 3
250	0154:15	C	5402	16	17	3	9	16143	119	114	Transient
250	0200	F	-5406	13	14	5	-4	16146			
250	1051:20	S	5400	16	4	5	-1	16218			
250	1102:08	F	5400	15	4	5	-3	16230			
250	1306:48	F	-2263	19	18	0	9	16302	118	114	Coronal Transient
250	1308:55	F	-2263	17	16	3	9	16309	119	114	
250	1354:31	F	-2263	19	18	0	9	16331	118	114	
250	1434:15	S	-1091	17	13	5	-2	16335			
250	1440:31	EXTSTD	-1091	21	16	0	9	16347	118	114	
250	1530:49	S	5399	19	18	0	9	16361	118	114	
250	1537:51	C	5398	19	14	3	9	16373	119	114	
250	1658:51	S	- 522	19	18	-4	7	16396	116	115	
250	1746:16	S	-1135	15	12	1	-3	16388			Thin Ray Transient
250	1835:16	S	5401	17	16	-4	7	16400	116	115	
250	1851:49	S	0004	17	16	-1	7	16412	117	115	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: U/D	TYPE	IMP	LOCATION R/L	COMMENTS
250	1926:51	C	201	17	10	0	-3	16424					JOP 7
250	2141:45	S	-5401	21	16	-1	7	16427	117			115	
250	2228:49	EXTSTD	- 214	13	11	0	-3	16439					Eruptive Prominence on NW Limb
250	2312:32	S	-5399	17	16	0	-2	16452	118			119	Transient Observed (Multiple Loops)
250	2328:52	EXTSTD	-4990	17	10	0	-3	16464					
250	2347:12	EXTSTD	-4990	15	6	0	-1	16500					
250	2357:32	EXTSTD	-4990	15	10	2	-4	16516					Polaroid Position 2
251	0049:44	S	-0005	16	11	3	-1	16539					
251	0057:57	S	5397	13	10	2	-3	16551					
251	0106:43	C	5397	12	10	3	-2	16563					
251	1315:05	S	0002	15	11	0	-2	16586					
251	1324L49	S	5400	15	11	3	-2	16598					
251	1338:25	C	5400	19	18	0	7	16610	118			115	
251	1405:08	C	0001	19	18	0	7	16636	118			115	JOP 7
251	1449:57	S	5404	19	18	-4	7	16640	116			115	
251	1620:15	S	5403	17	16	-1	-2	16652	117			119	
251	1758:25	F	-3855	17	20	-4	-2	16664	116			119	Garriott Transient
251	1802:38	EXTSTD	-3855	17	16	-1	7	16676	117			115	
251	1809:26	F	-3855	17	16	-1	7	16690	117			115	
251	1812:06	S	-3855	17	16	-1	7	16702	117			115	
251	1816:24	EXTSTD	-3855	16	11	2	-2	16710					Starts in Polaroid Position 3)
251	1833:03	EXTSTD	-3854	16	11	3	-2	16744					Polaroid Position 2
251	1841:22	S	-3855	15	11	3	-3	16758					Polaroid Position 2
251	1926:07	EXTSTD	-3855	15	10	0	-1	16766					Polaroid Position 4
251	1943:46	EXTSTD	-3855	17	10	3	-2	16802					Polaroid Position 4
251	2001:10	EXTSTD	-3855	15	11	3	-1	16838					Polaroid Position 4
251	2100:28	S	5398	18	12	0	-3	16874					Polaroid Position 4
251	2115:52	S	0002	17	16	-1	7	16886	117			115	Polaroid Position 4

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: U/D	TYPE	IMP	LOCATION R/L	COMMENTS
251	2151:34	C(3)	0002	15	11	1	-1	16898					
251	2236:59	S	5411	18	11	2	-2	16901					
252	0139:45	S	0001	19	18	-4	7	16913	116			115	
252	0148:19	S	5400	15	12	2	-2	16925					First Frame Mirror in TV Position
252	0159:29	C(72)	5401	17	11	2	-3	16937					
252	0924:04	S	5402	17	6	2	-5	17009					
252	0929:56	S	5402	18	9	-1	-1	17021					
252	1101:28	S	-4800	15	12	0	-2	17033					
252	1150:03	C(4)	0000	17	16	-1	7	17045	117			115	JOP 7
252	1233:51	S	0000	15	12	0	-1	17049					
252	1242:25	S	-5400	15	12	2	-3	17061					
252	1252:35	C(18)	-5400	15	12	2	-3	17073					
252	1409:22	S	-4800	19	18	-4	7	17091	116			115	
252	1536:31	S	-4798	19	18	-4	9	17103	116			114	
252	1710:40	S	-4798	14	18	-4	7	17115	116			115	
252	1722:34	S	-0006	17	16	-1	9	17127	117			114	
252	2019:45	S	-4800	17	12	0	-1	17139					
252	2208:36	S	-4805	16	12	0	-2	17151					
252	2242:35	C(4)	0000	15	11	0	-1	17163					JOP 7
253	0113:42	F(25)	1046	16	11	1	4	17167					
253	0232:10	STD(8)	0000	17	20	-4	0	17192	116			118	
253	0408:04	S	-0003	14	18	-4	0	17200	116			118	Starts in Polaroid Position 3 - Transi
253	0416:03	S	-4804	17	16	-1	0	17212	117			118	Starts in Polaroid Position 3
253	0428:21	C(22)	-4804	14	18	-1	0	17224	117			118	Transient
253	0843:06	S	-4804	13	11	1	0	17246					
253	1024:12	S	-4802	16	11	2	0	17258					
253	1151:49	S	0004	18	12	2	0	17270					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: U/D	TYPE	IMP	LOCATION R/L	COMMENTS
253	1159:37	S	-4801	16	12	0	2	17282					
253	1206:08	C(43)	-4801	16	11	2	-1	17294					
253	1241:29	C(4)	- 250	19	18	-1	0	17337	117			118	JOP 7
253	1455:54	F(4)	-0003	17	20	-1	0	17341	117			118	
253	1708:47	S	-4793	15	10	0	-3	17345					
253	1717:16	F(7)	-4792	15	12	2	-3	17357					
253	2121:16	S	-4805	19	18	-4	11	17364	116			113	
253	2130:37	C(23)	-4805	15	12	0	-3	17376					
253	2141:15	C(40)	-4805	16	12	2	-4	17399					
253	2242:01	C(109)	-4800	15	11	0	-3	17439					Alfven Waves
254	0015:12	C(110)	-4800	16	11	0	-2	17548					
254	0149:12	S	0000	19	18	-4	9	17658	116			114	
254	0156:14	S	-4800	16	12	0	-4	17670					
254	0205:54	C(18)	-4800	17	12	1	-4	17682					
													(0700 Coronal Transient)
254	0936:38	S	-4801	25	11	2	-2	17700					Observed Transient
254	0943:21	S	-4801	25	22	2	-3	17712					
254	1115:14	S	-0008	18	11	1	-4	17724					First Frame Mirror in TV Position
254	1124:29	S	-5398	15	13	0	-3	17736					
254	1138:00	C(11)	-5397	18	12	0	-2	17748					
254	1455:32	F(4)	-5395	16	12	0	-2	17759					
254	1621:33	S(1)	-10800	17	20	-4	9	17763	116			114	
254	1623:43	S	-5396	12	12	2	2	17764					First Frame Mirror in TV Position
254	1721:17	S(3)	0003	17	16	-4	9	17776	116			114	
254	1722:37	C(100)	0003	16	11	0	-2	17779					Transient
254	1809:21	F(9)	0003	15	11	0	-3	17879					Coronal Transient in Progress
254	1812:39	C(4)	0002	15	11	3	-3	17888					
254	1852:09	EXTSID	0003	17	16	-4	9	17892	116			114	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
254	1916:05	EXTSTD	0003	16	11	0	-2	17928			
254	1932:21	EXTSTD	0002	12	11	2	-4	17964			
254	2025:45	(33) S	0002	4	-2	-4	4	17997	116	116	
254	2026:01	EXTSTD	121	16	10	-1	-3	17998			Begins in Polaroid Position 3 -Transier
254	2201:09	S	-5399	16	11	-1	-2	18034			Begins in Polaroid Position 3
254	2335:30	F(10)	-5399	18	12	-1	-2	18046			
255	0025:37	C(3)	- 353	16	12	-1	-2	18056			JOP 7
255	0108:21	S	0000	15	12	-1	-4	18059			Transient
255	0115:57	S	-5400	16	11	0	-4	18071			
255	0126:03	C(5)	-5400	16	11	0	-2	18083			
255	0129:34	C(11)	-5400	17	16	-4	9	18088	116	114	
255	0134:31	C(43)	-5400	16	10	-1	-3	18099			
255	0852:12	S	-5411	19	11	3	-3	18142			
255	1333:49	S	0006	19	18	-1	9	18154	117	114	
255	1343:43	S	-5399	17	16	-1	9	18166	117	114	
255	1352:44	C(28)	-5400	17	16	-1	9	18178	117	114	
255	1547:30	F(9)	-5396	12	12	0	-2	18206			
255	1549:55	S	-5396	12	13	2	-3	18215			Bright Streamer
255	1813:04	S	-5400	19	18	-4	9	18227	116	114	
255	1823:04	C(39)	-5401	17	16	-1	9	18239	117	114	
255	2119:34	S	0007	12	12	1	-3	18278			
255	2131:41	S	-5394	17	16	-1	9	18290	117	114	
255	2254:20	S	-5402	15	12	2	-1	18302			
256	0024:39	S	-5402	17	11	-13	-1	18314			
256	0112:30	F(9)	0001	16	10	-16	-1	18326			
256	0158:46	S	-0001	19	18	3	7	18335	119	115	
256	0207:35	S	-5400	19	18	-15	7	18347	112	115	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
256	0217:08	C(36)	-5400	17	16	3	7	18359	119	115	
256	0811:10	S	-5401	22	11	-13	-2	18395			Transient
256	1131:14	S	-0001	17	20	-18	9	18407	111	114	New Transient
256	1142:03	S	-5396	17	12	-13	-2	18419			
256	1152:30	C(33)	-5396	15	12	-14	-2	18431			
256	1305:10	S	-0001	14	18	-20	7	18464	110	115	
256	1508:06	S	-0010	19	18	-18	7	18476	111	115	
256	1556:59	S	-5399	19	18	-18	7	18488	111	115	
256	2039:18	S	-5399	16	10	-3	-4	18500			
256	2048:12	S	-5393	17	16	-7	14	18512	115	112	
256	2129:15	C(4)	- 681	15	12	3	-2	18524			JOP 7?
256	2209:52	S	-5403	18	12	-1	-4	18528			
256	2344:06	S	-5398	16	12	-3	-3	18540			
257	0035:40	S(4)	- 666	16	11	-3	-5	18552			JOP 7
257	0116:33	S	0000	19	18	3	14	18556	119	112	Begins in Polaroid Position 2
257	0123:35	S	-5401	19	18	-7	14	18568	115	112	Begins in Polaroid Position 2
257	0131:56	C	-5401	16	11	-3	-5	18580			
257	0734:01	S	-5400	18	6	-2	-5	18607			
257	0902:12	S	-5400	17	5	-4	-5	18619			
257	1217:36	S	-5401	19	18	-7	14	18631	115	112	
257	1225:29	S	-0003	17	16	0	14	18643	118	112	
257	1232:42	S	-5401	16	12	-4	-2	18655			
257	1242:39	C(21)	-5401	16	11	-1	-4	18667			
257	1338:45	S	-5400	19	18	-7	11	18688	115	113	
257	1349:56	S	-5400	17	16	-7	14	18689	115	112	
257	1432:26	F(4)	660	17	16	-7	11	18701	115	113	
257	1515:13	S	-5399	17	16	-7	14	18705	115	112	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
257	1823:15	S	-5399	19	18	-7	14	18717	115	112	
257	2017:25	S	-5400	19	18	-7	14	18729	115	112	
257	2033:09	S	0001	16	11	-1	-5	18741			
257	2128:53	S	-5398	16	10	-3	-4	18753			
257	2301:39	S	-5398	17	10	-3	-5	18765			
258	0032:41	S	0000	19	18	-7	14	18777	115	112	Transient
258	0041:28	S	-5398	16	11	-2	-4	18789			
258	0050:41	EXTSTD	-5398	16	12	-6	-5	18801			
258	0107:09	EXTSTD	-5398	17	12	-3	-4	18837			
258	0205:08	S	-5398	17	16	-7	14	18873	115	112	
258	0830:23	S	-5396	15	11	-3	-3	18885			
258	1129:05	S	-5397	19	18	-7	14	18897	115	112	
258	1130:01	S	-5397	17	16	-7	14	18898	115	112	
258	1220:36	C(4)	-1299	17	16	-7	14	18910	115	112	JOP 7
258	1308:20	S	0001	19	18	-7	14	18914	115	112	
258	1315:58	S	-5400	17	16	-4	14	18926	116	112	
258	1324:01	C(12)	-5400	17	16	-4	14	18938	116	112	
258	1436:14	F(9)	-5399	19	18	-7	14	18950	115	112	
258	1913:10	S	0005	16	11	-3	-5	18959			
258	1926:14	S	-5395	16	10	-1	-3	18971			
258	2047:03	S	-5400	18	12	-4	-3	18983			
258	2220:22	F(4)	-5398	18	12	-3	-3	18995			Transient
258	2250:01	F(4)	-5398	17	16	-4	14	18999	116	112	
258	2308:47	F(4)	-5397	15	11	-3	-3	19003			
258	2352:08	F(4)	-5401	17	16	-7	14	19007	115	112	
259	0139:45	S	0001	17	16	-7	14	19011	115	112	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: U/D	SOLAR ACTIVITY TYPE IMP LOCATION: R/L	COMMENTS
259	0146:30	S	-5400	17	16	-4	14	19023	116	112	
259	0153:37	C(11)	-5400	17	16	-7	11	19035	115	113	
259	0213:54	F(4)	-5399	15	10	-3	-4	19046			
259	0743:53	S	-5390	17	9	-3	-5	19050			
259	1109:20	S	-5400	17	11	-3	-4	19062			
259	1139:35	C(4)	-1712	17	16	6	14	19074	120	112	JOP 7
259	1224:01	S	0001	17	16	6	14	19078	120	112	
259	1231:42	S	-5400	17	16	6	14	19090	120	112	
259	1239:17	C(11)	-5400	17	16	6	14	19102	120	112	
259	1354:09	S	-5406	19	18	6	14	19113	120	112	
259	1412:47	F(4)	-5406	16	12	0	-18	19125			D_4 Calibration
259	1832:24	S	0001	16	12	-6	-3	19129			
259	1842:25	S	-5399	16	11	-6	-4	19141			
259	2138:55	F(4)	-5400	16	10	-6	-3	19153			
259	2228:20	F(4)	-5397	12	12	-6	-2	19158			No frame 19157
259	2317:56	S	0000	15	10	-5	-2	19162			
259	2327:47	S	-5397	17	12	-4	-4	19174			
259	2337:49	S	-5397	17	16	-7	11	19186	115	113	
259	2337:39	C	-5397	17	16	-7	11	19187	115	113	
260	0005:48	C(4)	-5397	18	12	-6	-4	19198			JOP 7
260	0701:10	S	-5385	17	6	-6	-3	19202			
260	0831:27	S	-5382	15	4	-6	-3	19214			
260	1009:35	S	0000	16	5	-7	-12	19226			
260	1024:57	S	-5401	16	12	-4	-5	19238			
260	1030:12	C	-5400	17	11	-6	-3	19250			
260	1034:53	F(4)	-5401	18	19	-7	9	19257	115	114	
260	1138:55	S	-5395	18	19	-10	11	19261	114	113	
260	1224:45	F	-4304	18	19	-10	11	19273	114	113	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
260	1314:20	S	-5397	18	19	-10	11	19277	114	113	
260	1402:47	F	-3627	18	19	-10	11	19289	114	113	
260	1619:07	EXTSTD	-3623	14	11	-7	-5	19293			Transient
260	1703:44	F	0001	17	10	-7	-5	19329			
260	1750:56	S	-5404	18	19	6	11	19333	120	113	
260	1926:33	S	-5400	17	11	11	-4	19345			Thin Ray Transient & Bubble Transient
260	2112:30	S	0000	18	19	3	9	19357	119	114	
260	2119:32	S	-5399	14	19	3	7	19369	119	115	First Frame Mirror in TV Position
260	2127:58	C	-5399	14	19	6	7	19381	120	115	
261	0619:21	S	-5384	12	5	5	-1	19392			
261	0933:18	S	0001	16	12	0	0	19404			
261	0941:18	S	-5400	17	11	0	-1	19416			
261	0948:52	C	-5400	16	12	1	0	19428			
261	1057:00	F	-5396	20	17	-4	0	19441	116	118	
261	1151:21	C	-2502	18	19	-1	0	19445	117	118	
261	1229:57	S	-5396	18	19	-4	0	19449	116	118	
261	1318:32	F	-5396	18	19	-4	0	19461	116	118	
261	1404:10	F	-5396	16	17	-4	2	19465	116	117	
261	1708:55	S	-5396	16	17	-4	0	19469	116	118	
261	1844:04	F	-5398	10	27	-4	0	19481	116	118	
261	2017:10	S	-5400	16	11	0	0	19485			
261	2059:45	F	-5399	15	9	0	0	19497			
261	2203:48	S	-0001	16	10	0	0	19501			
261	2213:07	S	-5403	16	17	-1	0	19513	117	118	
261	2224:52	C	-5403	16	11	0	0	19525			
261	2244:26	C	-5402	18	19	-4	0	19540	116	118	
261	2324:08	S	-5400	17	12	0	0	19543			
262	0139:29	S	-5397	18	14	-1	0	19555			

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	SOLAR ACTIVITY TIME: TYPE IMP LOCATION R/L	COMMENTS
262	0310:23	S	-5394	17	12	-1	2	19567			
262	0446:35	S	-5392	18	13	-1	2	19579			
262	0731:12	F	-5387	20	17	-4	0	19591	116	118	
262	0845:06	S	-0001	20	17	-4	0	19595	116	118	
262	0855:43	S	-4201	15	13	-1	0	19607			
262	0902:10	C	-4202	15	12	0	0	19619			
262	1108:04	F	0295	16	17	-7	-2	19633	115	119	
262	1149:07	S	-4198	18	19	-4	0	19637	116	118	
262	1502:09	S	-4203	15	12	0	2	19649			
262	1530:07	S	0001	16	12	0	3	19661			
262	1538:33	S	-4199	16	17	-1	-9	19673	117	122	
262	1629:11	F	-4204	16	17	-7	0	19685	115	118	
262	1801:36	S	-4199	20	17	-7	2	19689	115	117	
262	1854:34	F	-4105	18	12	-1	1	19701			
262	2108:59	S	-0001	18	12	-1	-1	19705			
262	2121:49	S	-4200	15	12	-1	0	19717			
262	2133:53	C	-4200	16	11	-1	0	19729			
263	0054:15	S	-9997	17	13	-1	0	19740			
263	0403:00	S	-9992	18	12	-3	0	19752			
263	0628:32	S	-9998	16	10	-3	0	19764			
263	0802:40	S	-4200	17	12	-1	0	19776			
263	0906:39	F	-3233	0	2	-4	4	19788	116	116	JOP 13 Door Open
263	0912:17	F	-3233	-6	4	-4	2	19790	116	117	JOP 13 Door Open
263	0917:29	F	-3233	-4	+7			19793			JOP 13 Door Open
263	0958:45	S	0002	18	19	7	0	19795	115	118	
263	1006:40	S	-4199	16	17	-4	0	19807	116	118	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME: TYPE IMP LOCATION U/D	R/L	COMMENTS
263	1017:40	C	-4198	16	17	-4	0	19819	116	118	
263	1109:43	F	-4200	18	19	-4	0	19835	116	118	
263	1247:33	S	-4196	16	11	-1	2	19839			
263	1413:38	F	-4197	18	14	-7	0	19851	115	118	
263	1731:59	S	-0003	16	11	-3	-0	19855			
263	1746:20	S	-4199	17	11	-1	-1	19867			
263	1854:33	F	-4200	18	19	-7	0	19879	115	118	
263	2202:22	S	0000	16	11	-2	1	19883			
263	2215:51	S	-4201	17	12	-1	2	19895			
263	2224:28	C	-4200	16	17	-4	2	19907	116	117	First Frame Mirror in TV Position
264	0319:14	S	-10242	15	2	-4	-2	19923			
264	0627:07	S	-10237	17	6	-3	-3	19935			
264	0733:45	S	0000	18	11	-1	-4	19947			
264	0743:35	S	-4200	18	19	-7	11	19959	115	113	
264	0753:48	C	-4199	16	17	-4	11	19971	116	113	First Frame Mirror in TV Position
264	0802:54	EXTSTD	-4199	16	12	0	-3	19982			
264	0855:19	F	-4215	20	17	-7	11	20015	115	113	
264	0901:46	S	-4197	15	12	-3	-3	20019			
264	1027:46	F	-4201	18	19	-7	11	20031	115	113	
264	1204:04	S	-4202	15	11	-3	-2	20035			
264	1218:50	F	-4201	15	9	-3	-4	20047			Long Exposure (240 sec)
264	1537:28	S	-4200	15	12	-3	-4	20048			
264	1819:58	S	0000	17	11	-3	-3	20060			
264	1828:20	S	-4200	16	12	-4	-3	20072			
264	1836:10	C	-4199	16	11	-1	-3	20084			20088 is last frame on 2nd half of Loa
264	1851:42	EXTSTD	-4198	16	12	-1	-3	20092			Camera Jam
								20112			Last Frame

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
265									0155	AFS		S10E50	
									0529	AFS		N15E61	
	1149:44	F(12)	10794										
									1254	AFS		N12E57	
									1804	AFS		N13E54	
	1942:10	F(72)	-5573	16	5	3	-4	20113					
	2040: 9	S	-5571	17	6	1	-1	20185					
									2350	AFS		N13E57	
266	0153:7	S	-5563	2	8	-1	9	20197					
									0417	ADF	2	N26E90	
									0443	AFS		N15E47	
									1055	APR	2	N29E90	
									1115	ASR		N25E90	
	1217:27	S	-5545	19	9	2	-4	20209					
									1430	DSF	1	N12E71	
									1515	APR	2	N25E90	
									1547	DSD		N13E46	
									1625	ASR		N17E90	
									1650	APR		N28E90	
									1748	V	3		
									1748	III	2		
									1757	II	1		
									1808	II	1		
									1820	APR	1	N20E90	
									2034	III	2		
									2114	III	2		
									2128	III	2		
									2252	III	2		
267									0013	APR	1	N15E90	
	0108:52	S	-5525	4	-1	1	-2	20221					
									0242	FLA	1N	N17E90	
									0245	EPL		N18E90	
									0250	APR	2	N22E90	
									0416	ASR		N22E90	
									0432	APR	1	N18E90	
									0502	ASR		N15E90	
									0639	III	3		
									0747	APR	2	N15E90	
									1033	APR	2	N25E90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1307:38	S	-5505	8	2	1	-1	20233					
									2310	APR	1	N33E90	
268									0034	FLA	C1	N25E73	
									0034	FLA	1N	N29E73	
	0201:24	S	-5483	5	6	-4	7	20245					
	0744:51	S	-5474	1	0	-0	-0	20257					
									1245	ASR		S14E90	
									1512	ASR		S16E90	
									1641	ASR		S12E90	
									1641	APR		N13E90	
									1716	FLA	C2	N04W16	
									1812	FLA	C2	S14E80	
									1905	FLA	C1	N13E73	
	2212:35	S	-7359	22	8	1	-2	20269					
									2340	ADF	2	N27E90	
									2350	ASR		S12E90	
									2350	ASR		N16E90	
269									0240	ASR		S14E90	
									0317	ADF	2	N14E90	
									0347	BSD		N22E64	
									0907	ASR		S13E90	
									0907	APR	2	N25W90	
									1030	APR	2	S28E90	
									1315	APR	2	N15E90	
	1326:03	S	-7096	(0)	6	2	0	20281					
									1651	ASR		S08E90	
									1651	APR		N35E90	
									1651	APR		S22E90	
									1651	APR		S08W90	
									1651	ASR		S14E90	
									1700	APR		S10W90	
									1753	III	1		
									2040	III	2		
									2255	ASR		S12E90	
									2255	ASR		N14E90	
									2255	ASR		S12E90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
270									0033	ASR		S12E90	
	0038:58	S	-7260	5	0	-1	-1	20293					
									0306	III	1		
									0402	ASR		N16E90	
									1141	APR	1	S14E90	
	1256:02	S	-7410	19	10	2	-1	20305					
									1355	CNT	3		
									1355	III	1		
									1402	III	1		
									1755	APR	2	N10W90	
									1909	DSD		N10E70	
									2357	APR		N12W90	
									2357	ADF		S13E59	
271									0058	ASR		S73E90	
									0058	ASR		S13E90	
	0128:02	S	-7548	5	4	-1	-4	20317					
									0300	APR		N12W90	
									0319	III	2		
									0540	APR	2	N18E90	
									0715	APR	2	N12W90	
									0715	ADF	1	S14E76	
	1330:38	S	-7680	24	26	-1	9	20329					
									1702	AFS		S16E53	
272	0043:00	S	-7800	19	15	0	-2	20341					
									0900	APR	2	N18E90	
	1431:30	S	-7920	22	15	2	-3	20353					
									1600	ASR		S01E90	
									1600	ASR		S18E90	
									2328	DSD		N18E47	
273									0039	ADF	1	N08E50	
									0254	ADF	1	N06W52	
	0307:34	S(7)	-8040	19	15	2	-1	20365					
									0535	DSF	2	N08W50	
									0536	C2		N08W50	
									0552	DSD		N07W56	
	1404:58	S	-8130	19	17	2	-1	20372					
	2315:32	S	-8190	19	11	2	-1	20384					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
274									0640	FLA	1N	N10W66	
	1303:14	S	-8268	19	12	3	-1	20396					
									1439	APR	1	N21E90	
275	0008:27	S	-8340	17	6	1	-2	20408					
									0910	BSD		N10W82	
									1048	ASR		S07W90	
									1256	ASR		N10W85	
	1405:38	S	-8400	24	18	*-1	7	20420					
									1758	EPL		N06W90	
									2224	FLA	C2	N06W82	
									2320	ASR		N06W90	
276									0111	FLA	C1	N13W83	
	0237:39	S	-8460	17	9	1	-1	20432					
									0358	FLA	C1	N13W83	
									0530	ASR	1	N12W90	
									0945	ASR		N12W85	
									1102	ASR		N12W90	
									1125	ASR		N14W85	
									1128	ASR		N14W90	N14W90-Actively surgi through entire day
	1312:1	S	-8508	17	6	3	-1	20444					
									1945	EPL		N21E90	
									2034	II	2		
									2034	ASR		N14W90	
	2104:37	S	-8520	19	6	2	-3	20456					
	2110:13	S	-8520	19	6	2	-2	20468					
	2240:58	S	-8520	19	6	2	-1	20480					
	2246:40	S	-8520	19	6	2	-2	20492					
277	0148:30	S	-8538	19	6	2	-1	20504					
									0257	ASR		N14W90	
									0833	ASR		N18W90	
									1129	II	1		
									1134	V	1		
	1406:16	S	-8580	19	5	1	0	20516					
									1653	APR		N18W90	
									1728	APR		S23W90	
									2218	ADF		S11W48	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
278									0018	ADF		S14W48	
	0105:25	S	-8928	9	6	0	-1	20528					
									0125	DSD		S18W55	
									0245	FLA	C1	S14W58	
									0245	FLA	SW	S14W58	
									0602	ASR		S15E90	
									1033	ADF		S15W53	
									1033	APR		N09W90	
	1322:59	S	-8640	10	6	2	-1	20540					
									1347	III			
									1654	ADF	1	S14W58	
									1815	ADF	1	S12W56	
									1935	FLA	C1	S12W56	
									2000	II	1		(Dekameter)
279									0136	FLA	C5	S15W45	
	0158:56	S	-8652	16	10	3		20552					
									0254	ADF	1	S16W66	
									0300	FLA	1F	S14W46	
									0300	FLA	C5	S14W46	
									0727	ADF	2	S15W45	
									1009	ASR		S16E75	
									1046	FLA	C1	S14W67	
									1051	II	1		
	1414:25	S	-8688	15	11	0	0	20564					
	2028:32	S(13)	-8694	16	6	0	-1	20576					
280	0112:48	S	-8700	17	16	-1	7	20589					
									0520	APR	1	S14W90	
									0650	ASR		S14W90	
									1103	ASR		S16E90	
									1220	ASR		S16E90	
	1330:38	S	-8700	16	6	2	-1	20601					
									1735	ADF		N14W63	
	1946:23	S	-8700	15	6	-0	-2	20613					
									2015	ASR		S16W90	
									2041	FLA	C1	S18W65	
									2322	III	1		
									2341	II	W		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
281	0031:6	S	-8700	17	6	-12	-4	20625					
									0231	FLA	C2	S15W64	
									0231	FLA	1N	S15W64	
									0652	ASR		S15W90	
									0954	ASR		S16W90	
									1038	ASR		S18W85	
									1209	SPY		N13W77	
									1218	EPL		N15W90	
									1249	CNT	1		
	1414:35	S	-8700	12	6	-12	-3	20637					
	2038:54	S	-8705	13	8	-12	-4	20649					
									2050	ASR		S12W80	
									2247	APR	1	S12W90	
282									0057	ASR		N14W82	
	0123:28	S	-8670	12	-6	-12	-5	20661					
									0134	FLA	C3		
									0304	ASR		S16W90	
									0510	AFS		S10W58	
									1040	APR	2	S15W90	
									1040	APR	2	N17W90	
									1248	III	1		
	1341:09	S	-8652	17	6	-12	-4	20673					
									1516	EPL		S15W90	
									1636	ASR		N15W85	
									1840	ASR		N13W90	
									1846	MDP		N15W90	
									1912	EPL		S16W90	
	1954:35	S	-8640	18	13	-9	-4	20685					
									2020	I			
									2040	BSD		S07W70	
									2220	APR	2	N11W90	
									2248	I	1	-	
									2328	DSD		S09W73	
									2328	APR		N11W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
283	0227:27	S	-8616	18	13	-9	-5	20697					
									1217	APR	2	N21W90	
	1259:46	S	-8592	19	12	-12	-5	20709					
									1635	ASR		S11W90	
									1652	BSD		S07W85	
									1714	ASR		S08W90	
									1730	III			
	2354:15	S	-8568	16	13	-9	-5	20721					
284									0309	ASR		S10W90	
									0736	ASR		S09W90	
									0822	APR	2	S06W90	
													N07W90 surged thru 123
									1331	III			
	1343:31	S	-8520	18	17	-12	-4	20733					
285									0043	III			
	0229:13	S	-8640	17	11	-12	-4	20745					
									0312	ASR		S10W90	
	1303:03	S	-8430	21	20	-12	20	20757					
286	0151:38	S	-8364	17	12	-12	-4	20769					
									0509	ASR		N17E90	
	1352:16	S	-8280	18	11	-12	-5	20781					
287	0107:22	S	-8208	18	12	-12	-5	20793					
	1310:32	S	-8130	19	11	-12	-5	20805					
288	0025:20	S	-8040	18	12	-9	-5	20817					
									0115	EPL		N09E90	
									1221	ASR		S02E90	
	1231:44	S	-7920	19	12	-10	-5	20829					
289	0109:34	S	-7830	19	12	-9	-4	20841					
									1008	ADF	1	N13W55	
									1012	MDP		N04E90	
									1113	APR		N09E90	
	1321:15	S	-7710	19	12	-12	-3	20853					
									1644	AFS		N14W56	
									2220	ADF	1	N13W62	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
290									0005	AFS		N12W63	
	0026:06	S	-7608	19	12	-10	-4	20865					
									0515	DSD		S03W48	
									0515	BSD		S04W48	
									0607	ADF	1	N12W64	
									0633	DSD		S05W52	S05W52 surged thru 123
									0712	ADF	2	N12W65	
									1036	AFS		N12W66	
	1106:08	S	-7440	18	11	-12	-4	20877					
									1148	APR		N31E90	
									1401	AFS		N11W71	
291	0118:46	S	-7308	18	12	-12	-5	20889					
									0246	ADF	1	N12W79	
									0300	APR	1	N28E90	
									0654	ASR		N12W90	
									0717	ASR		N05E90	
									1048	APR	2	N26E90	
									1113	ASR		N12W86	
									1330	ASR		N11W85	
									1457	APR		N11W90	
	1637:05	S	-7140	12	6	-12	-4	20901					
									1756	BSL		N11W90	
									2233	ASR		N12W90	
									2324	ASR		N11W90	
292	-035:35	S	-7020	16	11	-9	-4	20913					
									0453	APR		S05W90	
									0500	ASR		N12W90	
									0752	ADF		N10E75	
									1243	APR	2	S02W87	
	1304:37	S	-6840	18	12	-12	-4	20925					
									1610	ASR		S03W90	
	2221:34	S	-6750	17	10	-12	-4	20937					
									2233	ASR		N12W90	
									2303	ADF		N07E53	
293	1359:02	S	-6510	18	6	-12	-4	20949					
									1716	APR	2	S07E90	This region active throughout the day.

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
294									0004	ASR		S12E90	This region active till 2319
	0054:04	S	-6348	15	11	-12	-3	20961					
									1135	FLA	1F	S14E90	
	1313:43	S	-6150	18	11	-11	-4	20973					
									1656	FLA	C1	S12E86	
295	0000:54	S	-6000	16	3	-12	-4	20985					
									0012	ASR		S15E90	This region active till 1142
									0205	APR	2	N18E90	
									0457	AFS	1	S14E76	
									0702	AFS		S15E78	
									0958	AFS		S15E76	
									1121	FLA	C1	S19E88	
	1230:41	S	-5808	16	10	-12	-3	20997					
									2129	AFS		S13E63	Active till 296/0529
	2315:33	S	-5670	18	11	-12	-3	21009					
296									0614	APR	1	S15E90	
									0618	AFS		S13E64	
									0825	EPL		S15E90	
									0855	ASR		N03E90	
									1220	ADF	1	S10E63	
	1324:36	S	-5460	18	9	-12	-4	21021					
									1506	III			
									1625	APR	2	S15W90	
									1651	AFS		S14E56	
									1733	III	1		
									1808	III	1		
									1934	III	1		
									2030	ASR		S14E90	
									2030	AFS		S15E60	
									2059	ASR		N18E90	
									2128	III	2		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
297									0003	ASR		N12E90	
	0011:00	S	-5280	18	6	-12	-4	21033					
									0033	FLA	1N	S16E65	
									0033	FLA	1N	S15E50	
									0035	III	2		
									0105	ADF	1	S09E48	
									0132	ASR		N17E90	
									0209	AFS		S12E52	
									0325	ASR		N18E90	
									1110	ASR		N18E90	Active till 1527
	1240:54	S	-5100	16	6	-12	-4	21045					
									1556	III			
									1812	III	1		
									2020	I	1		
									2035	ASR		N16E88	
	2327:57	S	-4950	19	6	-10	-4	21057					
298									0027	ASR		N16E90	
									0433	ASR		S12E90	
									0525	ASR		N15E90	
									1040	ASR		N15E85	
	1335:14	S	-4800	19	6	-12	-5	21069					
									1552	III	2		
									2334	ADF	2	N25E71	
299	0209:24	S	-4620	18	8	-12	-4	21081					
	1250:49	S	-4500	21	16	*-10	18	21093					
									1617	III	1		
									2050	III	2		
300									0002	ADF	1	N13E59	
									0002	ADF	1	N12W42	
	0125:24	S	-4320	18	10	-12	-4	21105					
									0140	BSD		N16E72	
									0145	I	2		
									0158	III	1		
									0316	ADF	2	N20E60	
									0550	FLA	C1	N23E60	
									0632	FLA	C1	N23E60	
									0840	ASR		N10E90	
									1043	ASR		N10E90	Active till 1821
	1343:11	S		17	6	-11	-4	21117					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
									1543	FLA	M3	N20E55	
									1545	DSF		N15E53	
									1547	ADF		N25E58	
									1547	FLA	2B	N18E54	
									1548	BSD		N23E59	
									1554	IV	3		(Decimeter)
									1601	II	3		
									1601	FLA	2N	N15E61	
									1605	III	1		
									1641	IV,N	3		(Decimeter)
									1650	FLA	1N	N18E54	
	1659:49	S	-4170	18	6	-12	-2	21129					
									1710	ASR		N08E90	
									1716	IV,N			(Decimeter)
	1725:45	S(9)	-4164	17	6	-12	-4	21141					
									1835	IV			(Decimeter)
									2020	ADF	1	N14W53	
									2233	ASR		N08E90	
									2323	ASR		N08E90	
301									0008	ADF	1	N12W55	
									0027	ASR		N04E90	
									0027	ASR		S08E90	
									0027	ADF	1	N13W55	
									0027	ADF	1	N22E51	
	0109:40	S	-4080	17	16	-23	16	21150					
									0851	FLA	1N	S13W06	
									0851	FLA	M1	S13W06	
									1245	V	1		
	1438:18	S	-3930	18	6	-12	-1	21162					
									1940	I	2		
									1940	III	1		(Group)
									2205	III	2		
									2300	III	2		
302									0000	I	3		
									0000	III	1		(Group)
	0132:41	S	-3840	17	8	-12	-4	21174					
	0442:46	S	-3810	18	9	-13	3	21186					
									0445	III	3		
	1405:50	S	-3708	17	8	-12	-3	21198					
									1935	I	2		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
303									0000	I	2		
									0102	III	2		
	0226:29	S	-3600	18	6	-13	-3	21210					
									1437	IV	3		
									1442	III	1		
	1445:39	S	-3510	18	5	-12	-4	21222					
									1531	IV,P	2		(Decimeter)
									1531	III	1		
									1551	IV	2		(Decimeter)
									1631	III	1		(Group)
									1940	I	1		Activity till 2400
304	0142:20	S	-3420	18	6	-12	-3	21234					
									0600	ASR		N15E90	
									0630	APR		S03E90	
	1224:38	S	-3330	14	19	-18	16	21246					
									1700	DSD		S07W54	
									2220	ADF	1	S07W58	
305									0040	DSD		S20W53	
	0058:34	S	-3240	17	6	-13	-4	21258					
									0125	ADF	1	S09W49	
									0232	ADF	2	S20W53	
									1135	ADF	2	S22W46	
									1205	ADF	1	S07W55	
	1454:56	S	-3150	17	6	-12	-3	21270					
									1822	IV	2		
									1915	FLA	C7	S16W64	
									1950	I	3		
													Activity till 2400
306	0324:08	S	-3060	16	6	-12	-2	21282					
	1410:33	S	-2920	19	5	-12	-4	21294					
									1950	I	1		Activity till 2400
307									0010	III	2		
									0013	III	3		(Group)
									0014	FLA	X1	S13W82	
									0014	FLA	1N	S13W82	
									0014	LPS		S14W90	
	0102	S		17	5	-13	-5	21306					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
									0015	IV	2		
									0015	II,H	2		
									0020	IV	1		
	0107	S	-	17	5	-13	-5	21306	0035	III			
	0253:53	S	-2940	17	6	-13	-5	21318					
									0304	APR	2	S15W90	
	0429:28	S	-2910	16	5	-13	-3	21330					
									1100	ASR		S13N90	
	1504:44	S	-2850	18	5	-13	-3	21342					
308	0349:03	S	-2790	15	6	-10	-3	21354					
									0508	APR	1	S13W90	
									0954	FLA	1B	S14W90	
	1422:39	S	-2742	16	4	-12	-1	21366					
									1717	EPL		S26W90	
									1935	II	2		
									1950	IV	1		
									1950	I	1		
									1955	III	1		
309	0248:30	S	-2700	15	18	-12	-3	21378					
	1335:54	S	-2640	15	14	-12	-3	21390					
									2318	ASR		S14W90	
310	0205:07	S	-2580	16	15	-11	-3	21402					
									0455	FLA	C3	N18W69	
									0455	APR	2	S22W90	
									0639	APR	1	N23W90	
									0745	APR	2	S18E90	
									0900	EPL		S17E90	
	1450:32	S	-2520	13	15	-12	-3	21414					
311	0120:06	S	-2490	16	14	-12	-2	21426					
									0658	APR	1	N23W90	
									1244	ASR		N08W90	
	1413:31	S	-2460	14	12	-12	-2	21438					
									1500	III	1		
									1655	III	1		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
312	0214:00	S	-2400	17	12	-12	-2	21450					
	1327:14	S	-2376	16	12	-12	-2	21462					
									1500	III	1		
									1646	III	1		
313	0129:30	S	-2370	16	11	-12	-2	21474					
									1103	BSD		N19E50	
	1243:48	S	-2328	12	11	-12	-4	21486					
									1433	ADF	1	N20E49	
									2055	DSD		N19E47	
314	0045:16	S	-2292	16	9	-12	-3	21498					
	1502:38	S	-2280	15	6	-12	-3	21510					
315	0152:21	S	-2280	12	6	-12	-4	21522					
									0641	APR	1	N40E90	
									0744	APR	1	N36E90	
	1431:39	S	-2268	15	6	-12	-3	21534					
									1825	ASR		N12E90	
316	0054:24	S	-2250	15	6	-12	-2	21546					
									0530	ASR		N16E90	
									0908	ASR		N15E90	
									1045	APR	1	N17E90	
									1230	FLA	1F	N18E90	
									1242	ASR		N13E88	
									1337	APR	2	S02E90	
													Region N14E90 active till 2305
	1508:30	S	-2268	15	7	-12	-2	21558					
317	0012:44	S	-2280	12	8	-12	-2	21570					
	1430:46	S	-2280	16	17	-15	11	21582					
									1600	APR	2	N17E90	
									1802	ADF	1	N13E66	
									1810	APR	1	N18E90	
									1907	ADF	1	N10E70	
	2149:07	S	-2292	14	15	-12	-1	21594					
									2315	APR	2	N19E90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
318	1040:22	S	-2340	17	15	-12	-3	21606					
									1312	APR	2	N22E90	
									1510	APR	1	N17E90	
	1513:51	S	-2370	14	16	-12	-3	21618					
									2331	AFS		N15E56	
320			MANNED										EPC Failure - No operations till DOY 32
322	0329								0329	APR	1	S15E90	
									0805	ADF	1	S06E77	
									1220	APR	2	S22E90	
	1355:49	S	-4329	10	15	-9	-5	21630					
									2203	ADF	2	S13E68	
	2337:18	S	-4610	11	14	-9	-3	21642					
323									0000	ADF		S13E66	
	1445:09	S	-5047	11	13	-9	-5	21654					
	2253:04	S	-5259	10	13	-9	-5	21666					
324									0610	EPL		N15E90	
									0620	ASR		N12E90	Activity till 0756
	1401:12	S	-5962	12	14	-9	-5	21678					
									1442	III	1		
									1832	BSL		S13E90	
									2000	ASR		S13E90	
									2127	ADF	1	S18E88	
	2207:38	S	-6176	8	13	-9	-5	21690					
									2328	ADF	1	S15E45	
325									0252	ASR		S13E90	
									0612	APR	1	S12E90	
	0658:51	S	-6553	8	13	-9	-5	21702					
									0700	MDP		S13E90	Active till 1015
									0730	FLA	1N	S08E90	
									0800	ASR		S17W90	
	1317:55	S	-6668	10	14	-9	-4	21714					
									1941	ASR		S09E86	
	2125:14	S	-6913	13	14	-7	-5	21726					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
326									0004	ADF	1	S12E66	
									0004	ASR		S12E90	
									0047	FLA	1N	S11E85	
									0144	AFS	1	S10W82	
									0212	FLA	1N	S11E83	
									0255	AFS	1	S13E78	
	0517:30	S	-7146	10	13	-7	-4	21738					
									0830	ASR		S14E90	
									1037	APR	2	S07E90	
	1235:53	S	-7362	9	12	-10	-5	21750					
									1317	ASR		S11E90	
									1347	III	1		
									1509	III	1		
									1808	DSD		S16E63	
									1821	III	1		(Group)
									1944	ASR		S12E90	
									2006	III	1		
									2110	APR	2	S12E90	
									2111	EPL		S11E90	
									2303	ADF	1	S12E90	
									2305	ASR		S12E90	
327									0103	III	2		
									0302	DSD		S13E69	
									0437	ADF	1	S11E66	
									0520	BSD		S11E59	Activity in this regio throughout the day
	0611:03	S	+8842	10	12	-11	-5	21762					
	1501:54	S	+8640	11	15	-10	-4	21774	0812	FLA	C2	S10E56	
									1645	III	1		
									1655	BSL		S11E47	
									1848	ASR		N02W90	
									2008	ADF	1	-S12E75	
									2315	ADF	1	S12E74	
									2345	FLA	C5	S13E53	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	SOLAR ACTIVITY TIME:	TYPE	IMP	LOCATION	COMMENTS
328									0000	ADF		S12E53	
									0003	ADF		S14E72	
	0042:48	S	+8489	9	15	-12	-5	21786					
									0400	ADF	2	S09E51	Activity in this regic till 1415
									0650	ADF	I	S12E65	Activity in this regic till 1656
	0716:48	S	+8261	18	18	-9	-4	21798					
	1302:50	S	+8245	18	15	-9	-5	21810					
									1530	AFS		S14W46	
									1726	ADF	1	S17E61	
									1823	ADF	1	S13E66	
	1911:55	S	+8121	19	15	-9	-4	21822					
329									0022	DSD		S08W46	
									0130	DSF	3	S15E65	
	0135:36	S	+8062	18	16	-9	-5	21834					
	0800:53	S	+7960	19	15	-9	-5	21846					
	1218:21	S	+7913	18	17	-9	-5	21858					
									1257	AFS		S14W57	
									1730	AFS		S14W56	
	1828:42	S	+7764	21	18	-9	-4	21870					
330									0000	I	1		Activity till 0700
									0024	III	2		
	0051:53	S	+7774	20	17	-9	-5	21882					
									0102	III	3		
									0154	III	1		
									0550	III	3		
									0703	III	2		
									0705	CNT	3		
	0724:42	S	+7679	19	17	-7	-5	21894					
	1257:52	S	+7647	19	+11	-9	-4	21906					
									1332	FLA	M2	S17E10	
									1337	III	1		
									1340	V	2		
									1403	II	1		Transient observed at 270° 3.5 R_o
									1520	CNT	2		
									1520	III	2		Many III's + CNT throug out the day

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1745:49	S	+7607	19	18	-9	-5	21918					
	1958:57	S	+7595	20	17	-12	16	21930					
331									0124	III	1		
	0126:54	C(3)	-10800	10	17	-12	16	21942					
	0136:01	S	-5400	18	19	-12	16	21945					
	0146:23	C(22)	-5400	15	11	-9	-5	21957					
									0246	III	2		
									0304	CNT	2		
									0306	FLA	M1	S07E04	
									0315	II	2		
									0324	III	1		
									0350	CNT	2		
	0453:40	S	-5503	23	14	-9	-4	21979					
	0640:45	S	-5398	12	15	-7	-5	21991					
									0749	FLA	SF	S13W86	
	0810:8	S	-5469	23	15	-9	-5	22003					
									0810				Transient in SW
	0913:14	S	-5428	18	14	-10	-5	22015					
	1049:29	S	-5438	16	14	-9	-4	22027					
	1357:49	S	+10801	15	12	5	2	22039					
	1408:29	S	-5400	13	11	9	2	22051					
	1419:20	C(21)	-5400	18	14	6	-7	22063					
	1705:00	C(4)	-5398	17	12	-6	-2	22084					
	1706:26	C(1)	-5399	18	12	-6	-2	22088					
	1839:01	C(3)	-5399	18	11	-6	-2	22089					
	2047:08	S	-5400	12	12	-7	-3	22092					
	2141:00	C(3)	-5399	18	19	*-10	11	22104					
									2305	AFS		S10W52	
332									0005	AFS		S10W52	
									0206	ASR		S14W90	
	0217:14	S	-10800	10	17	*-10	-4	22107					
	0225:56	S	-10800	10	17	*-10	-7	22119					
	0234:29	C(22)	-5400	18	13	-4	-2	22131					
									0305	ADF		S07W59	
									0310	MDP		S12W90	
									0404	DSD		S03W88	
									0600	ADF		S10W86	
	0831:25	S	-5477	24	14	-14	-1	22153					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	0901:23	S	-5476	22	13	-12	-1	22165					
	1001:07	S	-5500	16	10	-12	-1	22177					
									1300	ADF		S06W53	
	1443:51	S	+10800	15	+12	-12	-2	22189					
	1453:39	S	-5402	13	13	-11	-1	22201					
	1504:21	C(15)	-5402	12	13	-11	-2	22213					
	1617:49	S	- 390	19	12	-13	0	22228					
									1916	III			
	1931:09	S	-5431	17	11	-14	0	22240					
	2058:51	S(3)	-5403	20	17	-18	*7	22252					
									2137	DSD		N05W46	
333	0017:43	S	-5472	16	10	-1	-1	22255					
	0135:59	S	~ 0					22267					
	0145:22	S	-5399	20	17	-18	2	22279					
	0153:08	C(15)	-5399	14	19	-1	2	22291					
	0324:14	S	-5431	16	12	0	0	22306					
	0504:07	S	-5454	15	12	0	-1	22318					
	0643:43	S	-5431	22	14	0	0	22330					
	0819:22	S	-5427	5	-8	0	0	22342					
	0923:40	S	-5432	23	11	2	-0	22354					
									1043	APR	1	S35W90	
	1101:49	S	-5438	19	11	1	-1	22366					
									1121	AFS		N04W57	
									1121	AFS		S10W47	
	1227:50	S	-5443	18	14	-4	2	22378					
									1322	APR	2	N07E90	
	1413	S	+10799	15	12	2	2	22390					
	1421:29	S	-5399	17	12	0	-2	22402					
	1430:35	C(16)	-5400	16	17	-1	-7	22414					
	1532:02	S	-5400	20	17	-4	4	22430					
						-4	4		1600	AFS		S08W48	
	1708:14	S(3)	-5401	20	17			22442					
	1709:49	S,C(3)	-5401	18	19	-4	4	22445					
	2026:27	S	-5399	15	12	-1	-2	22448					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
334	0234:04	S	10797	18	14	-4	7	22460					
	0259:04	S	-5400	20	17	-4	7	22472					
									0430	APR	1	N28W90	
								22484	1006	ASR		S15W90	
									1017				Transient 270°
	1017:51	S	-5400	18	24	-4	7	22496					
									1121	APR	2	N20W90	
									1305	ASR		S15W90	
									1400	APR	2	N28W90	Activity continues till 1725
	1453:59	S	-5397	16	12	-1	-1	22508					
	1502:02	S	-5397	12	13	0	-1	22520					
	1513:36	C(15)	-5397	18	19	-4	4	22532					
									1647	BSL		S15W90	
335	0148:48	S	-10800	18	19	-4	7	22547					
	0203:28	S(3)	8963	18	12	-1	-1	22559					
									0205	DSD		N14E68	
	0205:53	S(12)	-5401	18	12	-1	-1	22562					
	0212:07	C(16)	-5401	16	17	-4*	4*	22574					
									0620	ASR		N07W80	
									0637	ADF	1	N10E66	
									0740	ASR		S18W90	
									0913	ASR		N05W90	
									0930	APR	2	N24W90	
									1100	APR	2	N03W90	
									1139	ASR		N06W88	
									1426	ADF	2	S06W51	
									1502	ASR		N05W90	Activity till 2012
	1548:53	S	+10799	16	12	0	-2	22590					
	1558:31	S	-2261					22602					
	1607:37	C(15)	-5401	18	14	-4	-2	22614					
									1716	DSD		S14W51	
	2035:39	S	-5424	22	12	-3	-2	22629					
									2037	DSD		S18W53	
	2059:55	S	-5424	22	11	0	0	22641					
									2245	ASR		N06W90	Activity till 2356
	2332:35	S	-5396	18	19	3	0	22653					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
336									0059	MDP		N06W90	
									0105	ASR		N06E90	
									0146	ASR		N06W90	
									0151	FLA	C9	S15W55	
									0151	FLA	1N	S15W55	
	0242:47	S	-5412	20	17	-7	0	22665					
									0250	ASR		S08W90	
	0250:52	S	-9802	18	14	-4	0	22677					
	0259:44	C(11)	-9801	11	11	-1	-0	22689					
									0358	ADF	1	S05W57	
									0356	FLA	C1	S10W58	
									0622	ASR		N05W90	Activity till 1415
									0740	ASR		S18W90	
	0747:10	S	-5452	23	6	-1	1	22700					
									0858	FLA	SN	S13W63	
									0908	FLA	C2	S13W60	
									0950	AFS	1	S14W57	
									1215	ASR		S13W90	
									1223	FLA	C2	S13W60	
									1326	AFS		S14W64	
									1345	ASR		S08W90	
									1345	ASR		N14E90	
									1500	FLA	1N	S14W66	
	1502:47	S	10800	16	11	-2	0	22712					
	1511:25	S(7)	-5399	15	12	-3	0	22724					
	1523:53	C(15)	- 499	18	19	-7	0	22731					
	1533:55	S	- 499	15	11	-1	0	22746					
	1542:19	C(18)	- 499	16	17	-4	-2	22758					
	1550:12	S	- 499	16	17	-4	-2	22776					
									1645	AFS		S13W66	
									1647	BSL		N08E90	
									1827	FLA	C2	S14W67	
	1847:20	C(3)	- 484	18	12	0	0	22788					
									1924	ASR		N10E88	
									2010	FLA	C5	S14W67	
									2010	BSD		S14W67	
	2018:33	C(4)	- 474	16	11	-1	0	22791					
	2121:13	S	-5400	18	19	-4	7	22795					
									2336	AFS		S14W65	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
337									0144	AFS		S14W68	
	0159:36	S	+10800	18	14	-4	7	22807					
									0205	FLA	C2	S14W68	
	0207:48	S	-5396	16	11	-1	-1	22819					
	0220:54	C(15)	-5400	16	17	-4	7*	22831					
									0338	FLA	C3	S13W67	
	0356:53	S	-5407	14	11	-9	-4	22846					
	0534:28	S	-5434	16	11	-10	-4	22858					
									0607	II	1		
	0703:43	S	-5337	10	8	-9	-4	22870					
	0809:15	S	-5406	19	6	-7	-4	22882					
									0812	ASR		S07W80	
									0813	ASR		S10W90	
									0822	ASR		N10E90	
	0944:35	S	-5390	20	6	-9	-4	22894					
	1115:23	S	-5377	21	8	-9	-4	22906					
									1130	ASR		S06W78	
	1250:35	S	10798	17	12	-7*	0	22918					
	1304:27	S	-5401	16	12	-6	0	22930					
	1311:20	C(15)	-5401	17	10	-7	0	22942					
									1540	ASR		S15W80	
									1645	AFS		S13W66	
									1717	ASR		S08W83	
									1748	APR	1	S02W90	
									1951	ASR		S14W85	
	2037:05	EXT-STD	- 540	20	17	-12	2	22957					
									2343	BSD		N12W83	
338									0105	ASR		S14W90	
	0130:04	C(3)	-5398	15	11	0	-5	22993					
									0135	ASR		S05E85	
									0135	ASR		S05W85	
									0220	BSD		S12W85	
	0246:46	C(27)	-5406	20	17	-4	11	22996					
	0301:21	S	-5406	18	14	-1	9	23023					
	0311:43	S	-5405	15	12	2	-3	23035					
	0321:13	C(30)	-5405					23047					
									0335	ASR		S13W90	
									0525	ASR		S12W90	
									0600	BSL		S13W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	0800:33	S	-5384	22	7	0	-1	23077					
									0847	SPY		S13W90	
									0853	FLA	C7	S11W90	
									0914	SPY		S11W90	
	0948:21	S(11)	-5386	22	7	2	-3	23089					
									1000	ASR		S12W90	Activity till 1800
	1037:55	S	-5364	19	6	2	-3	23100					
									1142	FLA	1B	S13W90	
									1145	SPY		S12E90	
									1232	BSL		S13E90	
									1247	CRN		S10W90	
									1307	ASR		S12W90	Activity till 1510
	1345:23	S	-5401	15	12	0	-3	23112					
	1400:17	S		16	12	2	-4	23124					
	1411:38	C(15)	-5401	18	19	-10	9	23136					
									1522	EPL		S15W90	
									1600	EPL		S12W90	
									1715	ASR		S15W90	
	1718:19	C(3)	-5402	12	11	-1	-3	23151					
	1736:57	C(3)	-5405	20	17	-4	9	23154					
									1809	BSL		S15W90	
	1817:54	C(3)	-5406	20	17	-4	9	23157					
	1910:53	S(3)	-5400	20	17	-4	9	23160					
									1915	BSL		S15W90	
	1953:29	S(36)	-5408	17	12	2	-1	23163					
	2041:22	S(1)	-5408	20	17	-4	20	23199					
	2041:45	C(6)	-4599	18	19	-4	20	23200					
	2123:10	C(3)	- 600	20	17	3	16	23206					
									2212	ASR		S13W90	
	2259:20	C(3)	-5399	18	19	-15	4	23209					
									2335	APR	1	N38W90	
339									0000	APR	1	S02E90	
									0000	APR	1	N38W90	
									0012	BSL		S13W90	
	0206:26	S	-10800	16	17	-15	4	23212					
	0214:33	S	-5402	20	17	-15	4	23224					
	0223:39	C(15)	-5402	15	11	-10	-1	23236					
									0400	APR	1	S02E90	
									0400	APR	1	N38W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	0537:47	S	-5441	17	9	-12	0	23251					
									0631	ASR		S13W90	
									0714	ADF		N07E53	
	0818:20	S	-5398	17	10	-10	0	23263					
									0911	ASR		N25E90	
									0937	BSL		S14W90	
	1040:32	S(10)	-5407	16	12	-12	0	23275					
	1125:01	S	-5421	15	14	-11	0	23285					
	1259:09	S	10799	16	9	-10	0	23297					
	1307:30	S	-5400	18	14	-15	4	23309					
	1315:43	C(15)	-5400	16	17	-12	2	23321					
	1429:37	C(3)	-5399	16	12	3	-4	23336					
	1638:16	S	-5400	18	11	2	-4						
	1736:37	C(3)	-5400	20	17	-4	14	23351					
									1900	APR	2	S18W90	
									1923	APR	2	N01W90	
	2118:15	S(9)	- 700	16	11	2	-3	23354					
	2124:10	S	-5395	16	11	2	-3	23363					
	2303:42	S	-5393	17	11	-0	-2	23375					
	2352:54	C(3)	-5397	10	17	-1	14	23387					
340	0128:01	S	10800	18	19	-1	14	23390					
	0139:48	S	-5419	16	10	2	-3	23402					
	0151:00	C(15)	-5418	12	10	3	-4	23414					
	0201:30	S	-5418	17	17	-1	11	23429					
	0208:32	C(15)	-5410	16	17	-1*	11	23441					
									0230	APR	1	N46W90	
	0326:30	S	-5401	18	13	0	-3	23456					
	0452:00	S	-5385	18	13	1	-3	23468					
	0602:10	S	-5448	16	12	0	-4	23480					
	0631:00	S	-5447	16	10	3	-3	23492					
	0736:48	S	-5370	16	12	3	-4	23504					
	0828:50	S						23516					
	0911:39	S	-5389	16	11	3	-2	23528					
	0955:44	S	-5388	15	11	3	-3	23540					
	1041:21	S	-5382	15	10	3	-2	23552					
	1216:31	S	-5378	16	10	1	-2	23564					
	1401:39	S	+10800	18	11	3	-4	23576					Mirror in TV positior at mode start

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
340	1412:11	S	-5401	18	19	-1	11	23588					
	1747:51	S(3)	-1337	16	17	-1	11	23600					
	1827:50	S	-5400	16	12	0	-4	23615					
	2135:24	S	-5400	10	17	-4	11	23627					
	2309:52	C(3)	-5401	10	17	-4	14	23639					
341	0043:50	S	10801	20	17	-4	11	23642					
	0051:52	S	-5401	19	12	2	-5	23654					
	0058:22	C(15)	-5400	19	12	2	-5	23666					
	0240:46	S	-5400	16	12	2	-2	23681					
									0327	ASR		N02E90	
	0423:21	S	-5362	18	12	0	-3	23693					
	0556:58	S	-5408	16	11	0	-3	23705					
	0653:31	S	-5422	17	9	0	-4	23717					
	0830:10	S	-5386	16	11	0	-1	23729					
	0912:59	S	-5385	15	9	1	-4	23741					
	1004:47	S	-5388	15	9	0	-4	23753					
	1209:38	S	+10800	10	17	-4	14	23765					
									1211	ASR		N04E90	
	1218:08	S	-5400	16	17	-1	11	23777					
	1223:59	C(3)	-5399	15	12	1	-5	23789					JOP-7
	1612:06	C(3)	-5393	20	21	-4	11	23792					
	1755:36	C(3)	-5398	10	17	-4	14	23795					
	1907:01	F(3)	-7306	-2	4	-4	4	23798					
	1912:01	F(2)	-7306	-2	4	-4	4	23801					
	1917:00	F(2)	-7306	-2	4	-4	4	23803					
	1922:01	F(4)	-7306	-2	4	-4	4	23805					
	1927:03	F(7)	-7306	-2	4	-4	4	23809					
	2054:38	S	10800	20	17	-4	-2	23816					
	2103:42	Ext S(14)	-5400	16	12	3	3	23828					
342	0049:32	S(10)	-5399	16	10	-0	2	23842					
	0136:13	S	10799	18	19	-4	4	23852					
	0142:40	S	-5388	16	17	-1	4	23864					
	0150:04	C(15)	-5398					23876					
	0750:43	S	10778	17	10	0	-0	23891					
	1243:56	S	0	17	11	1	0	23903					
	1251:46	S	-5399	18	12	3	-1	23915					
	1300:56	C(15)	-5399	16	17	-1	9	23927					
	1357:59	C(3)	-5401	18	12	2	-0	23942					
	1705:24	C(3)	-5399	20	17	-1	4	23945					1705 Transient; There is a Frame #23959A

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1901:33	S	-5391	22	14	-1	4	23948					
	1910:56	ES(36)	10801	17	12	3	0	23960					
	2151:23	S	-5438	11	8	-0	-0	23996					
	2320:00	S	10798	20	17	-4	4	24008					
	2327:32	S	-5402	18	12	3	-1	24020					
	2334:54	C(15)	-5402	19	11	3	-1	24032					
343									0000	ADF	1	N01E73	
	0058:08	C(51)	-5401	18	19	-1	2	24047					
									0553	ADF	1	N04E58	
	0749:12												
	1321:06	S	0	15	10	0	-0	24064	0830	BSD		N04E61	
	1328:48	S	-5399	15	10	-0	-0	24076					
													Frame #24087 Last frame of Roll #1 Load
	1337:31	C(21)	-5399	18	14	-1	4	24088					
									1351	DSF	3	N02E66	
	1624:34	C(3)	-5400	18		-1	7	24109					
	1755:31	C(4)	-5399	18	19	-4	9	24112					
	1929:36	S	-5401	16	12	3	-1	24116					
	2119:00	C(3)	-5400	20	17	-4	7	24128					
344	0151:09	S	10801	20	17	-4	7	24131					
	0203:00	S	-5400	15	12	2	-1	24143					
	0212:11	C(15)	-5386	16	9	2	-1	24155					
	0757:28	S	-5373	9	9	-2	0	24170					
	1104:28	S	-5336	5	12	-1	0	24182					
	1410:08	S	-5319	6	10	-0	-1	24194					
	1446:37	S	+10801	17	12	2	-1	24206					
	1554:34	S	-5399	15	12	2	-1	24218					
	1603:37	C(15)	-5399	16	11	3	-1	24230					
	1855:28	S	-5399	16	11	3	2	24245					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
345	0254:07	S	-5432	19	15	3	-1	24257					
	0758:10	S	-5395	17	11	0	0	24269					
	1034:20	S	-5345	18	12	1	0	24281					
	1328:17	S	-5317	16	11	2	0	24293					
	1503:17	S	10799	16	12	0	0	24305					
	1511:50	S	-5400	20	17	-1	7	24317					
	1524:44	C(15)	-5400	15	14	-4	4	24329					
	1632:24	C(3)	-5400	16	11	0	-1	24344					
	2127:34	S	10801	18	19	-1	4	24347					
	2137:11	S	-5400	16	17	-1	11	24359					
	2247:33	C(3)	-5400	20	17	-1	9	24371					
	2338:11	C(3)	-5406	16	14	3	-3	24374					
346	0020:31	C(3)	-5393	12	12	-1	11	24377					
	0110:35	C(3)	-5394	15	14	-1	9	24380					
	0212:01	S(12)	-5396	16	12	3	-2	24383					
	0245:54	C(3)	-1374	10	17	-1	9	24395					
	0329:41	S	-1	18	14	-1	9	24398					
	0337:57	S	-5416	18	14	-1	9	24410					"Blue Flame" transien
	0351:37	C(15)	-5399	15	12	3	-1	24422					
	0417:52	C(3)	10799	18	19	-1	9	24437					
	0459:41	C(3)	-5394	17	8	3	-1	24440					
	0520:23	C(3)	-5394	16	17	-1	9	24443					
	0713:42	S	-5394	18	12	2	-2	24446					
	0807:16	S	-5319	18	11	4	-4	24458					
	0952:41	S	-5229	10	10	1	-1	24470					
	1114:20	S	-5297	12	12	2	-2	24482					
	1247:44	S	-5259	15	15	2	-3	24494					
	1419:10	S	-5246	15	12	2	-3	24506					
	1558:06	S	2	18	19	-1	11	24518					
	1612:45	S	-5400	15	12	3	-5	24530					
	1623:37	C(15)	-5400	16	11	5	-3	24542					
	1734:08	S	-5400	17	14	3	0	24557					
	1858:58	S	-5400	20	17	-4	0	24569					
	2032:52	S	-5400	16	12	2	-0	24581					
	2209:42	S	-5400	16	12	2	-3	24593					
	2342:50	S	-5403	20	17	-4	11	24605					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
347	0025:01	C(3)	-5576	20	17	-4	11	24617					
	0126:12	S	-5359	19	11	1	-4	24620					
	0139:49	S	-5359	16	10	3	-4	24632					
	0251:09	S	10800	18	19	-4	11	24644					
	0259:11	S	-5399	16	17	-1	11	24656					
	0306:29	S	-5383	16	11	3	-3	24668					
	0313:58	C(5)	-5383	17	11	0	-4	24680					
	0454:22	S	-5473	19	18	2	-3	24685					
	0631:12	S	-5271	19	18	-0	-2	24697					
	0726:14	S	-5368	17	18	0	-4	24709					
	0806:51	S	-5368	16	17	3	-3	24721					
	0900:27	S	-5328	17	24	-4	11	24733					
	0939:57	S	-5327	16	15	2	-2	24745					
	1033:07	S	-5350	18	18	2	-2	24757					
	1116:21	S	-5349	17	2	17	-4	24769					
	1205:19	S	-5306	16	17	0	-3	24781					
	1351:42	S	0	17	12	0	-1	24793					
	1409:22	S	-5393	20	17	-1	11	24805					
	1416:38	C(15)	-5398	20	17	-1	9	24817					
	1534:43	S	-5394	12	11	0	-2	24832					
	1646:57	S	-5438	17	12	2	-3	24844					
									1730	ASR		S12E90	
	1820:47	S	-3755	16	10	0	-2	24856					
	1901:51	S	-5402	20	17	-4	11	24868					
	1954:10	S	-5402	15	12	0	-3	24880					
									2055	ASR		S05E90	
									2055	ASR		S12E90	Activity till 248/010
	2137:51	S	-5400	10	9	-4	11	24892					
	2217:06	C(31)	-5398	18	19	-4	11	24904					
	2259:43	S	-5373	16	0	0	0	24907					
348	0052:15	S	1	17	12	0	-3	24919					
	0103:10	S	-5400	18	19	-1	11	24931					
	0110:44	C(15)	-5401	18	19	-1	11	24943					
	0206:23	S	-5398	18	19	-4	11	24958					
	0359:26	S	-5398	4	-7	0	-1	24970					
	0548:38	S	-5295	16	11	0	-3	24982					
	0724:13	S	-5303	17	12	2	-2	24994					
	0859:19	S	-5314	18	14	2	-2	25006					
	1002:50	S	-5296	16	11	0	-4	25018					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1008:48	S	-5296	16	13	1	-3	25030					
	1032:05	S	-5296	17	11	2	-2	25042					
									1205	ADF	2	S26E51	
	1212:56	S	-5270	4	14	-1	-2	25054					
	1303:31	C(2)	-5400	16	12	3	-3	25066					
	1435:18	S	- 8	18	19	-4	11	25068					
	1443:30	S	-5405	18	19	-1	11	25080					
	1452:22	C(3)	-5405	16	11	2	-3	25092					
	1520:28	C(3)	-5401	18	19	-1	11	25095					
	1622:05	C(3)	-5393	20	17	-4	11	25098					
	1738:29	C(3)	-5400	16	12	3	0	25101					
									1830	ASR		S05E90	
	1915:59	S	-5399	18	19	-4	?*	25104					
									1945	ASR		S30E90	
	2042:38	C(3)	-5397	16	12	-6	-3	25116					
									2046	ASR		N05E96	Activity till 2306
									2114	ASR		S15E90	
									2135	FLA	1N	N05E90	
	2217:00	C(3)	-5398	18	19	-1	11	25119					
	2228:16	C(3)	-5398	15	11	-6	-2	25122					
349	0125:37	S		20	17	-12	11	25125					
									0126	APR	1	S16E90	Activity till 0432
	0140:29	S	-5399	15	12	-7	-4	25137					
	0146:39	C(15)	-5399	18	14	-12	11	25149					
	0738:20	S	-5258	19	15	-7	-4	25164					
									0740	ASR		S15E90	
									0815	ASR		S02E90	
									0846	ASR		S16E90	Activity in this region for rest of da
	1132:46	S(11)	-5218	19	18	-7	-4	25176					
									1140	APR	2	S39E90	
	1355:30	S	1	17	12	-6	-4	25187					
	1403:57	S	-5400	15	11	-7	-1	25199					
	1415:18	C(15)	-5400	15	12	-7	-3	25211					
									1418	MDP		S19E90	
	1658:34	C(3)	-5400	15	14	-6	-2	25229					
									1747	APR	1	N06E90	
	1858:27	ExtS(36)	-5400	16	12	-6	-3	25232					
	1816:20	S(3)	-5388	17	12	-6	-3	25268					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
									1914	SPY		S18E90	
	2003:34	C(3)	-6562	16	12	-9	-2	25271					
	2049:00	C(3)	-5399	16	12	-7	-2	25274					
	2137:11	S	-5369	15	12	-9	-2	25277					
350	0218:08	S		18	14	-12	11	25289					
	0229:45	S	-5400	17	14	-6	-4	25301					
	0238:28	C(15)	-5400	15	12	-6	-1	25313					
									0528	FLA	1F	S18E87	
									0546	FLA	C2	S18E87	
									0601	APR	1	S20E90	
									0601	APR	1	N07E90	
									0646	ASR		S16E90	
	0659:15	S(12)	-5302	17	11	4	-2	25328					
									0736	FLA	1N	S18E87	
									0747	FLA	C2	S17E88	
									0824	ASR		S15W84	
									0824	APR	2	S02W90	
									0828	ASR		S20E90	
									0828	ASR		N07E90	
									0846	BSD		S18E87	
	0909:28	S	-5288	13	18	3	-2	25340					
									0920	PLA	SN	S18E85	
									0924	APR	2	S06W90	
									0934	DSD		S14E73	
	1002:25	S	-5265	11	18	5	-1	25352					
									1020	APR	2	N05W90	
	1044:11	S	-5265	12	18	5	-0	25364					
									1110	FLA	C5	S17E82	
									1110	BSD		S15E82	
									1114	SPY		S16E82	
									1148				Transient
	1148	S	-5252	12	18	3	-1	25376					
	1153:47	F(72)	-5252	12	18	3	-1	25388					
									1203	ASR		S09E86	
									1205	BSD		S15E80	
									1205	APR	2	S15E90	
									1212	ASR		N07W90	
	1310:09	S	0	18	12	5	-2	25460					
	1321:29	S	-5400	16	13	5	-2	25472					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
									1328	BSD		S18E80	
	1332:51	C(15)	-5400	15	14	5	-1	25484					
	1343:57	S	-5401	20	17	0	4	25499					
	1354:06	C(5)	10091	20	17	3	4	25511					
	1356:20	S	10077	20	17	0	4	25516					
									1421	ASR		N07W90	
									1453	BSD		S18E79	This region active throughout the day
	1532:43	C(3)	-5465	18	19	3	11	25528					
	1616:54	C(3)	-5410	16	12	+5	-0	25531					
									1832	APR	1	S22W90	
	1923:16	S(3)	-5400	16	17	5	0	25534					
									1954	FLA	C2	S17E74	
	2003:02	S	-5401	18	19	0	-2	25537					
	2057:21	C(27)	-5396	17	12	2	-1	25549					
									2109				Alfven wave PGM
	2109:45	C(77)	-5396	20	17	-1	2	25576					
									2144	FLA	M1	S18E74	
	2247:38	C(2)	-5386			-4	4	25653					
	2248:36	C(68)	-5386	18	19			25655					
									2354	FLA	C2	S19E75	
351	0001:59	C(68)	-5401	19	9	3	0	25723					
									0032	FLA	M1	S18E74	
	0134:09	C(3)	-6153	18	19	-4	2	25791					
	0159:16	S	3	19	12	0	-0	25794					
	0209:00	S	-5455	18	19	-1	4	25806					
	0217:12	C(15)	-5455	16	17	-1	2	25818					
									0255	III	2		
									0315	BSD		S19E76	
									0626	AFS		S18E69	
									0742	FLA	C3	S19E71	
	0829:16	S	-6342	19	11	2	0	25833					
									0855	AFS	1	S19E72	
									0907	FLA	C1	S18E68	
									1109	AFS		S17E68	
									1140	FLA	C1	S18E66	
									1200	AFS	1	S17E72	
									1521	BSD		S17E67	
									1536				Transient (both limbs

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1536:10	S	0	18	12	2	-0	25845					
	1545:04	S	-5400	20	17	-1	4	25857					
									1552	ASR		S09E90	
	1552:30	C(15)	-5400	18	19	-1	4	25869					
									1631	ADF	1	S14E65	
									1715	ASR		S09E90	
									1820	AFS		S18E65	
	1842:12	C(3)	-5408	20	17	-1	4	25884					
	1924:10	C(10)	-5754	18	14	-4	4	25887					
	1928:34	S	-5754	17	11	3	0	25897					
	2016:11	C(4)	-5671	16	12	2	0	25909					
	2020:10	S(12)	-5505	16	12	2	-0	25913					
	2325:55	ExtS(17)	-5400	16	12	3	-1	25925					
	2336:45	ExtS(16)	-5399	16	12	5	-1	25942					
352									0209	ASR		S15E90	
	0308:00	S	-5400					25958					
	0610:17	S	-5315	18	13	3	-0	25970					
	0742:18	S	-5318	18	12	2	-1	25982					
									0813	ADF	1	S16E54	
									0826	APR	1	N20E90	
	1233:31	C(3)	-5396	20	17	-1	4	25994					
	1322:47	S	10800	16	11	-12	-2	25997					
	1333:30	S	-5400	16	12	0	-1	26009					
	1343:35	C(15)	-5400	15	11	-1	-0	26021					
									1610	AFS		S16E50	
	1630:16	C(3)	-5400	18	19	-12	2	26036					
									1640	ASR		S16E90	
									1730	ASR		S16E90	
	1802:51	S	-5385	18	19	3	2	26039					
									1812	APR	2	N02E90	
									1817	AFS		S16E50	
									1830	ASR		S14E90	
	1841:41	S	-5401	16	12	0	0	26051					
	1936:27	S	-5400	16	11	-6	-0	26063					
	2018:39	S	-5401	20	17	-12	4	26075					
	2332:17	C(3)	-5400	14	9	-12	4	26087					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
353	0102:56	C(4)	-5401	14	14	-12	2	26090					
									0124	FLA	C2	S15E46	
									0130	ADF	2	S19E46	
	0147:38	S	-5401	14	14	-12	4	26094					
	0157:03	S	-5401	12	12	-10	2	26106					
	0204:38	C(15)	-5401	14	14	-10	2	26118					
	0216:05	S	10799	14	9	-10	2	26133					
									0313	ADF	1	S16E46	
									0330	ASR		S13E90	
									0516				Beginning of Lyman Lunar Libration PGM
	0526:41	S	-5272	17	15	-7	-1	26145					
	0543:30	S(10)	-5271	17	14	-6	0	26157					
									0624				Transient, EPL (P59) NE Limb
	0624:42	S	-5402	16	12	-7	-1	26167					
									0655	III	2		
	0700:21	S	-5203	15	14	-6	0	26179					
	0805:36	S	-5202	19	15	-7	-1	26191					
	0833:21	S	-5202	16	13	-4	0	26203					
									0850	III	2		
	1014:29	S	-5193	20	15	-8	-0	26215					
									1040	FLA	1N	S17E46	
									1051	DSD		S16E47	
	1103:20	S	-5164	16	14	-7	0	26227					
	1241:40	C(3)	-5400	20	17	-12	2	26239					
	1332:45	C(3)	-5695	16	12	-12.	2	26242					
	1417:49	S	1	14	14	-12	2	26245					
	1426:05	S	-5399	16	12	-12	2	26257					
	1435:20	C(15)	-5399	12	12	-6	-0	26269					
									1610	AFS		S16E50	
	1617:02	S	+ 485	5	-7	-1	-1	26284					Off Pointing Comet
	1623:00	S(2)	+ 484	10	19	-4	4	26296					Off Pointing Comet
	1623:58	F(1)	+ 484	10	19	-4	4	26298					Off Pointing Comet
	1624:04	F(1)	+ 484	(5)	-0	0	0	26299					Off Pointing Comet
	1624:08	F	+ 484	(5)	-6	0	0	26300					Off Pointing Comet
	1626:29	F(1)	+ 484	(5)	-6	0	0						
	1854:49	C(3)	-5400	16	12	-12	0	26301					
									1859	AFS		S11E73	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	1904:43	S(8)	-5402	14	14	-12	0	26304					
	1926:18	S(12)	-5401	20	17	-12	14	26312					
	2032:45	S(3)	+ 45	16	12	-12	11	26324					
	2034:04	C(3)	+ 45	12	12	-7	-2	26327					
	2111:13	C(3)	-5411	16	12	-12	11	26330					
354	0107:13	S	0	16	12	-12	11	26333					
	0115:13	S	-5400	16	12	-12	11	26345					
	0124:16	C(15)	-5400	14	14	-10	9	26357					
	0131:20	F(3)	-5400	16	12	-10	11	26372					
	0443:06	S	-5309	17	17	-7	-4	26375					
	0616:53	S	-5282	18	18	-9	-1	26387					
	0752:52	S	-5263	16	17	-7	-3	26399					
	1333:57	S	+10801	16	12	-12	11	26411					
	1342:52	S	-5401	14	14	-10	11	26423					
	1352:16	C(15)	-5402	16	12	-7	-3	26435					
	1708:42	S	-5386	17	12	-7	-3	26450					
	1814:46	S	-5397	14	14	0	-4	26462					
									1857	ADF	1	N05E68	
	1945:20	S	-5396	16	12	5	2	26474					
	2252:02	C(3)	-5399	16	12	-1	9	26486					
355	0219:24	S	0	16	12	5	0	26489					
	0228:28	S	-5400	18	14	6	-2	26501					
	0240:30	C(15)	-5399	18	14	3	-2	26513					
	0358:50	S	-5305	15	13	8	2	26528					
									0448	CNT	2		
	0709:35	S	-5293	18	10	5	2	26540					
	0846:05	S	-5280	20	12	8	2	26552					
	0851:52	S	-5280	17	12	8	-0	26564					
	1258:54	C(3)	-5401	20	17	3	0	26576					
	1426:30	S	2	18	19	0	-2	26579					
	1434:03	S	-5400	16	17	3	-2	26591					
	1441:36	C(15)	-5400	16	12	8	-0	26603					
	1531:32	S(1)						26618					Off Pointing Comet
	1554:25	S	+1051	5	-7	0	-0	26619					Off Pointing Comet
	1600:50	F(7)	+1051	-2	4	-4	4	26631					Off Pointing Comet
	1909:09	S	-5399	16	17	-1	-2	26638					Off Pointing Comet
	2256:12	C(3)	-5400	18	19	-23	4	26650					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
	2304:54	C(2)	+1001	16	10	-16	0	26653					
									2321	ASR		S02E90	
356	0000:58	C(3)	-5400	16	12	-16	0	26655					
	0118:31	S	+10798	18	19	-15	7	26658					
	0130:28	S	-5399	18	19	-12	7	26670					
	0139:28	C(15)	-5399	15	12	-9	-1	26682					
	0211:27	C(2)	+1000	16	9	-9	-1	26697					
									0306	II	N,W		
	0340:25	C(3)	-5397	12	14	-10	-1	26699					
	0452:58	S	-5341	16	14	-9	-1	26702					
	0626:32	S	-5320	16	14	-9	-3	26714					
	0804:28	S	-5290	18	14	-8	0	26726					
	0816:35	S	-5290	19	15	-7	-2	26738					
	1043:09	S	-5274	18	12	-7	-1	26750					
	1220:07	S	-5259	18	13	-9	-1	26762					
	1350:43	S	10800	20	17	-12	7	26774					
	1358:14	C(15)	-5400	15	13	-8	-1	26786					
	1405:00	S	-5401	16	12	-7	-1	26801					
	1419:23	F(5)	-5401	20	17	-33	-9	26813					
	1517:00	C(4)	-5393	18	19	-12	11	26818					
	1705:26	S	-5402	18	19	-12	9	26822					
	1824:44	C(3)	-5400	20	17			26834					
	2000:36	S	-5400	16	12	-7	-2	26837					
	2134:30	S	-5399	15	11	-7	-3	26849					
									2222	III	1		
	2223:57	C(1)	1401	17	12	-9	-3	26861					
	2303:00	S	-5399	17	12	-7	-3	26862					
357									0000	II	N,W		Through 0725
	0214:32	S	+ 1	20	17	-12	9	26874					
	0223:33	S	-5400	16	17	-10	9	26886					1st frame mirror in T\ position
	0231:01	C(15)	-5400	16	17	-10	9	26898					
	0558:19	S	-5471	18	18	-12	3	26913					
	0719:14	S	-5429	18	17	-10	-1	26925					
	0725:09	F(72)	-5429	18	18	-10	0	26937					
									0750	III	1		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
357									1129	APR	2	N17W90	
									1200	AFS		S17W57	
	1313:09	S	+ 1	15	12	-10	-1	27009					
	1327:09	S	-5400	18	19	-15	2	27021					
	1335:58	C(39)	-5399	16	17	-15	2	27033					
									1526	III	1		Intermittent till 202
									1628				Transient
	1628:04	S	-5400	18	19	-15	2	27072					
	1911:01	S	- 198	5	-8	0	-0	27084					
	1920	F(3)	+1597	4	-12	0	-0	27096					
	1921:19	F(24)	+1597	1	-12	0	-1	27099					
	1933:20	F(3)	+1597	2	-4	-4	4	27123					
	1938:41	S(2)	+1597	-6	4	-4	4	27126					
	1939:40	F(2)	+1597	-6	4	-4	4	27128					
	1944:50	F(2)	+1597	-6	4	-4	4	27130					
	1949:50	F(2)	+1597	-6	4	-4	4	27132					
	1954:40	F(2)	+1597	-6	4	-4	4	27134					
	1959:48	F(2)	+1597	-6	4	-4	4	27136					
	2049:02	F(3)	+1597	-6	4	-4	4	27138					
	2049:47	F(1)	+1597	-6	4	-4	4	27141					Off Pointing Comet
	2100:06	F(2)	+1598	-6	4	-4	4	27142					
	2103:35	F(2)	+1598	-6	4	-4	4	27144					
	2107:17	F(3)	+1598	-6	4	-4	4	27146					
	2111:02	F(2)	+1598	-6	4	-4	4	27149					
	2122:59	F(1)	+1599	-6	4	-4	4	27151					
	2123:19	F(3)	+1598	-6	4	-4	4	27152					
	2127:50	F(2)	+1598	-6	4	-4	4	27155					
	2131:36	F(2)	+1598	-6	4	-4	2	27157					
									2218	III	1		
									2331	III	2		
358									0017	AFS		S16W45	
	0143:37	S	+ 1	15	12	-10	0	27159					
	0152:12	S	-5397	17	12	-12	-0	27171					
	0202:04	C(15)	-5397	18	19	-15	2	27183					
									0223	DSD		S16W49	
	0326:11	S	-5455	16	12	-11	-1	27198					
	0637:45	S	-5437	17	20	-11	0	27210					
	0815:18	S	-5446	15	18	-11	0	27222					
									0955	ADF		S16W47	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
358									1054				Eclipse
	1054:05	F(72)	-5403	18	18	-12	0	27234					
									1100	ADF	1	S16W51	
									1230	APR	2	N18W90	
	1231:29	F(72)	-5379	17	18	-12	0	27306					
	1352:19	F(58)	-5400	20	17	-15	2	27378					
	1408:40	S	+ 1	12	12	-10	0	27436					
	1418:54	S(12)	-5399	15	11	-10	0	27448					
	1430:53	C(14)	-5399	18	14	-15	2	27460					
	1437:17	F(40)	-5399	18	14	-1	0	27474					
	1701:38	F(1)	-5400	20	17	-20	11	27514					
	1705:12	F(70)	-5400	18	19	-18	11	27515					
									1740	III	1		
	1832:43	S	+1869	2	-10	0	-1	27587					
	1839:20	F(4)	+1869	4	-10	0	-1	27599					
	1839:59	F(39)	+1869	1	-10	0	-1	27603					
									1900	I	2		
	1904:02	F(2)	+1869	-6	4	-4	4	27642					
	1911:11	F(2)	+1870	0	-10	0	0	27644					
	1914:03	F(2)	+1870	5	-10	1	0	27646					
	1917:05	F(2)	+1869	2	-9	0	0	27648					
	1921:35	F(2)	+1869	-6	4	-4	4	27650					
	2008:19	F(2)	+1869	-6	4	-4	4	27652					Off Pointing Comet
	2008:56	F(2)	+1869	-6	4	-4	4	27654					
	2009:19	F(2)	+1869	-6	4	-4	4	27656					
	2013:42	F(2)	+1869	-6	4	-4	4	27658					
	2025:41	F(2)	+1869	-6	4	-4	4	27660					
	2027:43	F(2)	+1869	-6	4	-4	4	27662					
	2035:30	F(2)	+1870	-6	4	-4	4	27664					
	2038:04	F(2)	+1870	-6	4	-4	4	27666					
	2043:12	F(2)	+1870	-6	4	-4	4	27668					
	2048:42	F(3)	+1870	-6	4	-4	4	27670					
	2049:23	F(4)	+1870	-6	4	-4	4	27673					
	2054:40	F(2)	+1870	-6	4	-4	4	27677					
									2112	III	1		
	2142:	S	-5400	12	18	14	-4	27679					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
359	0113:12	S	0	12	12	0	-1	27691					
	0124:24	S	-5401	16	17	-18	11	27703					
	0132:44	C(4)	-5401	16	17	-18	11	27715					
						-18	11		0134	III	2		
	0134:34	F(1)	-5401	16	17	-18	11	27719					
	0134:39	F(1)	-5401	16	17	-18	11	27720					
	0134:42	F(1)	-5401	16	17	-18	11	27721					
	0134:55	C(15)	-5401	16	17	-18	11	27722					
	0221:52	S	+ 1	16	17	-20	11	27737					
	0228:19	S	-5399	16	17	-18	11	27749					
	0235:06	C(25)	-5399	16	17	-18	11	27761					
	0246:19	F(1)	-5399	15	11	-13	-4	27786					
	0246:27	F(1)	-5399	16	10	-15	-2	27787					
	0246:33	F(1)	-5399	12	12	-15	-3	27788					
	0553:56	S	-5314	15	21	-16	-4	27789					
									0746				Transient (SW)
	0746:11	S	-5284	16	12	-14	-3	27801					
	1148:56	S	-5236	17	9	-14	-3	27813					
	1154:37	F	-5236	15	11	-15	-3	27825					
													Frames 27840, 27894, 27895, 27896 from thi sequence missing (Test strip cutting error)

OPERATIONS LOG: CAMERA LOAD #5

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
359									12:44	APR	2	S25W90	
									14:50	ADF	1	S17W46	
									15:52	ADF	1	S15W46	
									17:45	ADF	1	S17W48	Activity till 0338
	1928:00	F(12)	(Camera Checkout (these frames not included in number system)										
									19:40	DSD		S15W68	
									19:40	DSD		S03W70	
360	0450:46	C(36)	-5400	12-16	11-12	3	-1	27897					
	0513:46	S	0000.7	12-16	11-12	3	-1	27933					
	0521:48	S	-5403	12	11-14	5	-4	27945					
	0529:51	C(15)	-5403	12-15	11-13	3	-1	27957					
	0647:46	S	-5416	8 -12	10-14	2	-1	27972					
	0655:15	S	-5416	8 -12	10-12	3	-1	27984					
									07:22	FLA	1F	S15W74	
									07:22	FLA	C2	S15W74	
									12:33	FLA	C1	N07W64	
									12:35	ADF	1	S21W57	
									12:38	BSD		S15W80	
									15:33	ASR		S15W86	
									15:59	BSD		S15W86	
									16:01	ASR		S14W81	
	1623:13	S	-5329	9-12	12-13	2	0	28008					
	1713:34	S	-5400	20	17	-1	11	28020					
									18:06	ASR		S15W82	
									18:20	DSF		S03W45	
	1846:18	S	-5427	16-17	9-10	2	-2	28032					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
									19:11	BSD		S15W86	
									19:15	APR	2	S18W90	
	19:26:54	S	-5427	12-16	10-11	5	0	28044					
	20:17:42	C(3)	-5386	15-18	6-12	3	0	28056					
	21:50:43	C(3)	-5293	15-16	14	3	-1	28059					
									21:52	III	1		Thru 2224
	22:25:11	S	-5400	18	19	-12	14	28062					
	23:28:40	C(3)	-5399	20	17	-12	14	28074					
									23:30	ASR		S16W90	
361									00:35	BSD		S22W71	
									00:41	III	1		
	00:58:34	C(3)	-5356	20	17	-10	14	28077					
	01:19:29	S	-5356	15-18	10-13	-6	-4	28080					
									01:30	III	I		
									01:40	ASR		S15W87	
	01:49:34	C(3)	-9924	11-15	12	-6	-4	28080	01:49				Comet Kohoutek in FOV
	02:37:33	S	0000	20	17	-15	16	28095					
	02:47:20	S	-5402	18	14	-10	12						
	02:55:26	C(15)	-5402	12-17	10-12	-6	-5	28119					
									04:04	CNT	1		
									04:04	III			Through 0516.
	04:40:32	S	-5519	15-19	10-14	-4	-5	28134					
	06:16:35	S	-5350	19	12	-6	-4	28146					
									06:28	ASR		S16W90	Activity through 0900
	07:10:04	S	-5409	17-18	9-11	-6	-5	28158					
	08:45:19	S	-5404	17	10	-6	-4	28170					
	10:19:45	S	-5415	18	11	-6	-4	28182					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
361									10:46	FLA	C3	S14W79	
									11:34	ASR		S13W90	Activity through 2003
	12:02:30	S	-5376	11-12	10/12	-6	-4	28194					
	13:26:43	S	-5400	20	17	-10	16	28206					
	13:32:58	C(1)	-5400	18	19	-18	14	28218					1 Second Exposure
	13:33:07	C(1)	-5400	18	19	-10	14	28219					
	13:33:15	C(1)	-5400	18	19	- 7	14	28220					
									14:21	BSD		S18W78	
									14:22	III	2		
	14:56:03	S	-5398	20	17	-10	14	28221					
	15:02:12	C(1)	-5398	20	17	-10	11	28233					
	15:02:19	C(1)	-5398	20	17	-10	11	28234					
	15:02:24	C(1)	-5398	20	17	-10	11	28235					
	16:30:01	S	-5400	20	17	-10	16	28236					
	16:36:15	C(1)	-5400	20	17	-10	16	28248					
	16:36:21	C(1)	-5400	18	14	-10	16	28249					
	16:36:26	C(1)	-5400	20	17	-10	14	28250					
									16:53	ASR		N07W85	
									17:38	ASR		S16W90	
									17:38	AFS		S10W70	
	18:05:29	C(1)	-5400	20	17	-10	14	28251					
	18:05:33	C(1)	-5400	20	17	-10	14	28252					
	18:05:37	C(1)	-5400	20	17	-10	14	28253					
	18:05:46	C(23)	-5400	16	11	- 6	-3	28254					
	18:17:06	C(85)	-5400	12-17	10-12	- 6	-5	28277					
									19:15	III	2		
									19:28	ASR		N06W90	
									19:29	BSD		N10W85	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
361	19:3735	S	-5401	14-16	9-12	-6	-5	28362					6 Second Exposure
	19:4550	F1	-5401	16	17	-10	16	28374					1 Second Exposure
	19:4604	F1	-5401	16	17	-10	16	28375					3 Second Exposure
	19:4616	F(3)	-5401	16	17	-10	16	28376					
	19:4631	C(28)	-5401	18	14	-10	16	28379					
	20:0300	C(57)	-5401	16	17	-10	14	28407					
	21:1107	F(3)	-5516	16	13	-6	-5	28464					3 Single Exposures
	21:1300	C(81)	-5516	16	12	-6	-5	28467					
									21:52	III	1		Activity through 222[illegible]
	21:5956	C(10)	-5517	16	10	-4	-5	28548					
	22:4227	S	-5400	16	7	-6	-5	28558					
	22:5809	C(3)	-5400	16	12	-6	-5	28570					
	22:5824	C(65)	-5400	16	12	-6	-5	28573					
									23:30	ASR		S16W90	
									23:34	III	1		
362	00:1749	S	-5389	20	17	-12	16	28638					
									00:20	ASR		N10W90	
									00:23	APR		N15W90	
	00:2452	C(3)	-5389	17	16	-10	16	28650					
	00:2528	C(13)	-5389	19	18	-10	16	28653					
	01:0811	C(3)	-5631	17	11	-6	-6	28666					
									01:12	ASR		S17W90	Activity through 0752
	01:5335	S	-0005	24	12	-12	16	28669					
	02:0058	S	-5403	18	19	- 9	9	28681					Comet still visible
	02:0930	C(15)	-5401	16	12	-4	0	28693					C/D Frames remaining 7203
	03:4258	S	-5388	16	12	-6	-4	28708					Comet leaves FOV
	03:4842	F	-5388	17	12	-6	-3	28720					
	05:2030	S	-5376	17	12	-7	-2	28792					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
362	05:2613	F	-5376	17	12	-7	-3	28804					
	08:0317	S	-5353	17	12	-6	-2	28876					
	08:0913	F	-5353	17	12	-6	-3	28888					
	09:3737	S	-5343	16	12	-9	-2	28960					
	09:4324	F	-5343	16	12	-6	-3	28972					
	11:1528	S	-5333	16	12	-7	-3	29044					
	11:2132	F	-5333	15	12	-7	-1	29056					
									11:45	ASR		S17W90	
									11:48	ADF		S14W55	
	12:5314	S	-5321	16	12	-6	-3	29128					
	12:5903	F	-5323	19	12	-6	-1	29140					
	14:1507	S(3)	1	18	19	-12	9	29212					
	14:1754	S	-5399	20	17	-12	9	29215					
	14:2835	S	3	16	12	-6	-3	29227					
	18:0735	S	-5369	11	14	-7	-1	29239					
	18:5839	C(3)	Not Avail.	16	12	-7	-2	29251					
									19:24	ASR		S15W90	Activity through 2144
	19:3546	S	-5400	16	14	-14	-2	29254					
	20:2921	S	-5370	16	12	-15	-3	29266					
	20:5004	S	-5370	11	13	-14	-1	29278					
	23:4031	S	-3226	14	24	-7	7	29290					
	23:4642	C(3)	-3227	-4	7	-7	7	29302					Off-Pointing Comet JOP-18D
	23:4900	C(23)	-3226	-5	+7	-3	0	29305					
363	04:3801	S	-5386	22	12	-15	-4	29328					
	08:5515	S	-5345	3	-7	1	-0	29340					
									10:43	APR	1	S35W90	
									11:21	AFS		N04W57	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
363									12:30	ASR		S18W90	
									13:22	APR	2	N07E90	
	13:36^{34}	S	1	18	19	-20	14	29352					
	13:43^{50}	S	-5400	17	12	-15	-5	29364					
	13:52^{00}	C(19)	-5400	16	12	-12	-5	29376					
									14:39	ASR		S19W88	
									16:00	AFS		S08W48	
									19:46	ASR		S19W90	
									21:32	APR		S30W90	
	22:01^{06}	S	-5491	23	13	-9	-5	29395					
	23:36^{44}	S	-5445	22	14	-7	-4	29407					
364	02:03^{07}	S	+1320	22	14	-12	7	29419					
	02:08^{56}	F(1)	+1320	0	2	-4	4	29431					
	02:09^{01}	F(1)	+1320	0	2	-4	4	29432					
	02:09^{08}	F(1)	+1319	0	2	-4	4	29433					Off Pointing Comet
	02:10^{43}	F	+1320	5	-4	0	0	29434					
	02:25^{29}	F(1)	+1320	5	-3	0	0	29456					
	02:25^{40}	F(4)	+1320	6	-6	2	0	29457					
	02:30^{01}	F(2)	+1320	10	5	-1	4	29461					
	02:35^{32}	F(2)	+1320	10	5	-4	4	29463					
	02:40^{15}	F(2)	+1320	0	-3	0	0	29465					Star Fields Around Comet Khoutek
	02:45^{00}	F(2)	+1320	4	-3	0	0	29467					
	02:50^{01}	F(2)	+1320	4	2	-4	4	29469					
	03:54^{16}	S	-5401	16	10	-6	-6	29471					
	08:11^{41}	S	-5389	19	8	-8	-4	29483					
									11:22	APR	1	S00W88	
									11:22	ADF	2	N11W57	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
364									12:15	ADF	2	N11W58	
	13:0523	S	-5364	16	11	-8	-4	29495					
	13:1440	S	-1	16	12	-7	-5	29507					
	13:2121	S	-5400	15	10	-9	-5	29519					
	13:3532	C(16)	-5400	18	19	-12	14	29531					
	13:4635	C(1)	N/Avail	18	19	-12	9	29547					
	14:3550	F(4)	-9376	24	10	-4	4	29548					
	14:3901	F(7)	-9376	-8	2	-4	4	29552					
	14:4340	F(2)	-9376	-8	2	-4	4	29559					
	14:5004	F(4)	-9376	-8	2	-4	4	29561					
	14:5346	F(24)	-9376	OFF SUN POINTING				29565					
	15:1544	F(2)	-9375	PES & IAS INACTIVE				29589					
	16:0715	F(2)	-9376	"	"	"		29591	16:07	APR	2	S00W90	
	16:0747	F(2)	-9375	"	"	"		29593					
	16:1113	F(2)	-9376	"	"	"		29595					
	16:1719	F(2)	-9376	"	"	"		29597					Off Pointing Comet
	16:2030	F(2)	-9376	"	"	"		29601					
	16:2546	F(6)	-9376										
	16:31:00	F(4)	-9377	"	"	"		29604					
	16:3503	F(2)	-9377	"	"	"		29608					
	16:4000	F(2)	-9377	"	"	"		29610					
	16:4505	F(2)	-9376	"	"	"		29612					
	16:5037	F(2)	-9377	"	"	"		29614					
	17:3847	S	-4377	"	"	"		29616					
	17:4659	C(1)	-4377	"	"	"		29628					
	17:4708	C(1)	-4377	"	"	"		29629					
	17:4717	C(1)	-4377	"	"	"		29630					Comet in FOV
	17:4755	C(12)	-4377					29631					
									19:13	III	1		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
364	20:41:01	ES(34)	-5400	12	11	-9	-1	29643					
	21:00:40	C(15)	-5400					29677					
	21:05:39	C(52)	-5400					29692					
	Matrix Smear	C(1)						29744					
	22:27:10	F(3)	-4200	-7	-6	1	-0	29745					
	22:27:46	F(4)	-4200	INSTRUMENT OFF POINTED FROM SUN, PES/IAS INACTIVE				29748					
	22:30:16	F(2)	-4200	"	"	"	"	29752					
	22:35:01	F(1)	-4200	"	"	"	"	29754					
	22:40:25	F(3)	-4200	"	"	"	"	29755					
	22:45:01	F	-4200	"	"	"	"	29758					Comet spike & fan tails obvious
	22:50:02	F(2)	-4200	"	"	"	"	29760					
	23:44:26	F(2)	-4201	"	"	"	"	29762					
	23:44:32	F(1)	-4201	"	"	"	"	29764					
	23:49:40	F(1)	-4201	"	"	"	"	29765					
	23:49:44	F(1)	-4201	"	"	"	"	29766					JOP-7
	23:49:49	F(1)	-4201	"	"	"	"	29767					
	23:49:54	F(1)	-4201	"	"	"	"	29768					
	23:49:55	F(22)	-4201	"	"	"	"	29769					
365	00:01:06	F(2)	-9202	"	"	"	"	29791					
	00:06:24	F(2)	-9202	"	"	"	"	29793					
	00:10:07	F(2)	-9203	"	"	"	"	29795					
	00:22:08	F(2)	-9203	"	"	"	"	29797					Comet Kohoutek
	00:29:41	F(2)	-9203	"	"	"	"	29799					
	01:18:50	S(3)	-9203	"	"	"	"	29801					
	01:21:32	S	0	"	"	"	"	29804					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
365	01:2835	S	-5399	17	12	-4	6	29816					
	01:3529	C(16)	-5399	12	11	-9	-3	29828					
	03:0942	S	- 301	16	11	-4	5	29844					
	03:1525	S	- 301	18	16	-4	5	29856					
	04:4703	S	- 336	19	11	-9	-3	29868					
	04:5429	S(1)	- 336	18	12	-9	-3	29880					
	04:5552	S	- 336	19	12	-7	-2	29881					
	09:0659	S	- 77	19	12	-9	-2	29893					
									09:10	ADF	1	N10W75	
	13:4615	S	7	19	10	-7	-5	29905					
	13:5453	S	-5399	17	12	-7	0	29917					
	14:0539	C(15)	-5398	17	12	-8	0	29929					
	15:1647	F(1)	-9558	16	12	-9	4	29944					
	15:1653	F(1)	-9558	17	18	-6	8	29945					
	15:1702	F(1)	-9558	18	12	-7	6	29946					JOP-7
	15:1720	F(1)	-9558	16	13	-8	4	29947					
	15:4820	C(3)	-9559	17	15	-7	3	29948					
									17:46	ASR		S19W90	
	18:2943	S	-9561	5	-12	0	-1	29951					
	18:4800	F(1)	-9561	16	15	-4	4	29963					
	18:4805	F(1)	-9561	18	15	-1	5	29964					Comet Kohoutek
	18:4813	F(1)	-9561	17	15	-2	6	29965					
	18:4822	F(44)	-9561	19	17	-4	7	29966					
	20:3317	S	-9574	20	19	-3	4	30010					

DOY 1974	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
001	02:13^{09}	S	+ 1					30022					
	02:20^{32}	S	-5398	18	12	-10	-2	30034					
	02:2956	C(18)	-5398	15	12	- 9	-1	30046					
	02:3927	ESTD(36	-5398	16	11	- 9	-3	30061					
	04:0312	S	-5481	16	13	-12	-4	30097					
	08:2202	S	-5401	15	12	- 9	-4	30109					
	08:2758	S		16	15	- 9	-4	30121					
	09:5948	S	-5395	16	13	-10	-2	30132					
	14:3911	S	4	15	12	- 9	-4	30145					
	14:4724	S	-5401	16	15	- 9	-4	30157					
	14:5404	C(15)	-5401	17	12	- 9	-2	30169					
									17:35	EPL		N09W90	
	17:4232	S	-5371	15	12	-10	-1	30184					
									17:50	APR	2	N09W90	
	18:1641	S	-5371	17	14	- 9	-2	30196					
	18:2300	S	-5352	15	12	- 7	-3	30208					
	19:5021	S	-5403	16	14	-12	-3	30220					
	19:5610	S	-5403	15	12	-10	-2	30232					
	22:3024	S	-9302	17	14	-10	-2	30244					
	22:3908	C(15)	-9302	4	-7	- 1	-1	30256					
	22:4545	C(1)	-9302	18	12	- 4	4	30271					JOP-18 Can't see comet
	22:4552	C(1)	-9302	16	14	- 9	10	30272					
	22:4600	C(1)	-9302	17	12	- 6	7	30273					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
002	01:31:32	S	+ 1	16	10	7	-3	30274					
	01:40:03	S	-5399	12	11	-9	-3	30286					
	01:48:31	C(21)	-5400	15	10	-7	-4	30298					
	07:43:02	S	-5394	20	12	5	2	30319					
	09:16:09	S	-5388	19	12	5	2	30331					
	10:56:23	S	-5382	18	13	3	1	30343					
	15:28:08	S	+ 1	20	17	4	-4	30355					
	15:40:08	S	-5401	19	18	-5	7	30367					
	15:47:41	C(15)	-5401	16	15	-1	4	30379					
	20:45:49	S	-5400	19	10	3	2	30394					
	20:51:08	S	-5400	19	12	4	1	30406					
	21:42:06	S	-5400	18	17	-2	6	30418					
003									00:45	APR	1	N26E90	
	00:48:55	S	+ 1	16	12	-4	8	30430					
	00:57:08	S	-5397	17	19	-4	8	30442					
									01:01	ASR		N02E90	
	01:03:24	C(15)	-5397	12	12	5	0	30454					
	01:37:25	C(3)	-5220	16	11	3	2	30469					
									03:15	ASR		N02E90	
	08:34:15	S	-5360	20	12	3	2	30472					
	08:39:58	S	-5359	18	12	5	0	30484					
									11:30	EPL		N08W90	
	12:10:00	C(3)	-5399	18	11	5	0	30496					
	13:14:36	S	0	18	17	-5	4	30499					
	13:24:03	S	-5399	15	12	5	0	30511					
	13:32:58	C(16)	-5399	16	12	5	0	30523					
	13:54:15	C(22)	-5400	15	10	5	2	30539					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
003									14:19	ASR		N06E85	
	17:13:36	C(1)	+3001	15	12	5	-4	30561					
	17:54: 21	S	-5400	15	11	5	-4	30562					
	18:46:56	C(1)	+3000	15	11	5	-3	30574					
	19:52:46	EXTSTD	-5400	15	11	6	-4	30575					
	20:20:10	C(1)	+3000	16	14	-2	4	30611					
	20:59:39	C(1)	-9262	15	11	6	-4	30612					
	20:59:45	C(1)	-9262	18	16	-5	4	30613					
	20:59:51	C(1)	-9262	19	16	-3	4	30614					
	21:10:47	S	-9263	5	-6	1	0	30615					
	21:17:18	C(1)	-9263	6	-4	0	0	30627					
	21:17:23	C(1)	-9265	Instrument Off Pointing From Sun, PES/IAS INACTIVE				30628					
	21:17:29	C(1)	-9263	"	"	"	"	30629					Off Pointing Can't see Comet
	21:17:47	C(26)	-9263	"	"	"	"	30630					
	MATRIX	C(1)		"	"	"	"	30656					
	SMEAR	C(1)		"	"	"	"	30657					
	"	C(1)		"	"	"	"	30658					
004									00:10	ARP	1	S09E90	
	01:54:19	S	-5392	20	13	4	-4	30659					
	01:59:40	S	-5392	19	12	5	-2	30671					
	07:53:03	S	-5377	20	12	3	-1	30683					
	11:08:00	S	-5394	19	13	5	-5	30695					
	12:31:20	S	0	17	14	5	-4	30707					
	12:43:40	S	-5401	12	5	5	0	30719					
	12:52:22	C(15)	-5401	11	4	5	0	30731					
	13:04:31	EXTS(24)	-5401	8	4	5	0	30746					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
004									13:14	APR	2	S06E90	
									13:14	ASR		N23W90	
	14:47:59	F(4)	0	16	11	-27	0	30770					D_4 Calibration
	15:37:50	C(3)	-5399	17	12	-10	4	30774					
	16:32:11	C(1)	+3001	18	11	-10	-3	30775					
	17:11:15	C(3)	-5400	20	14	-10	-3	30778					
	20:55:28	S	-5374	16	12	-12	-4	30781					
	22:00:31	S	-5400	15	11	-12	-3	30793					
005	01:12:46	S	+ 3	18	10	-13	-1	30805					
	01:20:37	S	-5400	15	11	-12	-3	30817					
	01:28:18	C(15)	-5400	17	10	-12	-3	30829					
	01:51:40	C(1)	+2922	15	12	-11	-4	30844					
	03:07:31	S	-5253	16	11	-13	-3	30845					
	07:09:54	S	-5245	16	11	-13	-2	30857					
	07:15:07	S	-5245	15	11	-12	-3	30869					
									08:52	APR	2	S65E90	
	10:21:35	S	-5240	16	11	-13	-3	30881					
	1207:01	S	0	15	10	-12	-3	30893	12:03	APR	2	N10E90	
	12:14:30	S	-5400	17	12	-12	-4	30905					
	12:21:31	C(15)	-5400	16	11	-12	-2	30917					
									12:35	APR	2	S27E90	
	12:44:19	C(1)	+2701	15	10	-12	-4	30932					Mirror in TV?
									13:12	APR	2	S39W90	
	13:21:35	C(6)	-5407	16	10	-11	-2	30933					
	14:15:12	C(3)	-7340	17	11	-12	-4	30939					
									14:33	DSF		N18W58	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
005	15:17:09	F(1)	-9210	17	13	-13	-4	30942					
	15:1721	F(3)	-9210	15	11	-13	4	30943					
	15:2304	F(2)	-9210	17	14	-10	5	30946					
	16:2853	C(3)	-5398	18	12	-13	-4	30948					
	17:2107	C(3)	+4055	16	12	-13	-4	30951					
	18:0138	C(3)	+4220	18	11	-12	-3	30954					
	18:5504	C(3)	-6917	18	13	-12	-2	30957					
	19:3702	EXTSTD (36)	-5400	16	11	-12	-4	30960					
	20:0900	S(1)	-5400	17	11	-11	-3	30996					
	2108:32	C(5)	-5400	18	17	-12	4	30997					
006	00:1639	S	- 1	19	17	-10	5	31002					
	00:2418	S	-5400	15	13	-12	-2	31014					
	00:3535	C(14)	-5400	12	12	-12	-3	31026					
	00:4941	F(1)	-5400	15	11	-11	-3	31040					
									04:23	APR	1	N09E90	
	08:0241	S	-5221	21	12	-9	-3	31041					
									08:50	ADF	1	S22E75	
									09:30	APR	2	S32E90	
									12:49	APR	2	N17W90	
	14:2036	S	0	15	13	-12	4	31053					
	14:2829	S(1)	-5398	19	18	-1	1	31065					
	14:2841	S	-5398	21	14	1	0	31066					
	14:3730	C(15)	-5398	20	19	-4	3	31078					
	15:4807	C(3)	-5400	23	14	-2	4	31093					
	19:3052	S	-5503	22	12	-10	-4	31096					
	20:3008	EXTSTD 36	-5400	15	16	-9	-3	31108					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
006	22:01:08	C(3)	-5400	20	17	-9	7	31144					
									22:35	DSD		S16W56	
	23:36:55	C(1)	-8259	Instrument Off Pointed From Sun, PES/IAS inactive				31147					JOP 18D
	23:45:38	F(2)	-8259	"	"	"	"	31148					
	23:52:00	F(2)	-8259	"	"	"	"	31150					
007	00:28:06	F(2)	-8259	"	"	"	"	31152					Off Pointing Can't see Comet but Venus very bright.
	00:33:00	F(2)	-8259	"	"	"	"	31154					
	01:14:25	F(2)	-8259	"	"	"	"	31156					
	01:19:22	F(2)	-8259	"	"	"	"	31158					
	02:47:35	C(3)	-5401	"	"	"	"	31160					
	03:33:32	C(3)	-5810	"	"	"	"	31163					
									07:03	APR		N10E90	
	07:19:55	S	-5392	19	13	-9	-3	31166					
									07:21	ASR		S10E90	
	07:24:41	S	-5392	20	12	-9	-4	31178					
									08:29	APR		N18W90	
									08:29	ASR		S11E90	
	10:45:31	S	-5392	17	12	-10	-1	31190					
									11:26	APR		S10E90	Activity through S14E
	12:14:03	C(3)	-5400	18	14	-9	-3	31202					
	13:35:22	S	0	19	17	-9	4	31205					
									13:40	ASR		S14E90	
	13:43:38	S	-5400	18	19	-2	3	31217					
	13:53:11	C(15)	-5400	17	12	-7	7	31229					
	14:25:13	C(3)	-5403	19	17	2	-4	31244					
	15:06:06	C(3)	-5400	18	13	-6	6	31247					
	18:51:05	S	-5356	18	14	-9	-1	31250					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
007	19:43:53	C(1)	-5400	22	18	-4	2	31262					
	19:45:42	C(4)	-5400	20	16	-6	4	31263					
	21:49:25	S	-5396	28	13	-9	0	31267					
008	00:26:57	S	- 1					31279					
	00:34:20	S	-5400	15	14	-8	0	31291					
	00:43:12	C(15)	-5400	16	12	-7	-1	31303					
									01:15	ASR		S16E90	
	01:21:15	C(1)	+2501	16	14	-6	0	31318					
	06:39:25	S	-5287	12	13	-7	0	31319					
									12:20	FLA	1F	S16E78	
	13:05:59	S	+ 1	16	12	-8	7	31331					
	13:14:44	S	-5401	18	19	-4	3	31343					
	13:25:14	C(15)	-5401	17	16	-6	0	31355					
	13:44:31	C(3)	-5394	15	14	-1	7	31370					
	14:22:37	C(3)	-5404	16	12	-4	4	31373					
	19:07:11	EXT STD (34)	-5400	16	12	-9	-2	31376					
	22:11:31	C(3)	-5399	19	18	-8	2	31410					
	23:44:01	C(3)	-5400	17	16	-2	2	31413					
009	01:22:57	S	- 1	16	14	-4	7	31416					
	01:32:07	S	-5399	17	18	-3	6	31428					
	01:38:27	C(15)	-5399	19	18	-2	9	31440					
	01:47:38	S	-5399	17	12	-9	2	31455					
	02:11:04	C(3)	-5400	16	12	5	1	31467					
									03:52	APR	1	N85W90	
									05:15	AFS	1	N11E70	
	07:31:36	S	-5317	16	12	8	0	31470					
									09:35	SPY		S08E90	
	12:12:40	S	+ 1	17	13	-7	2	31482					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
009	12:21 38	S	-5400	15	12	6	2	31494					
	12:34 24	C(15)	-5400	17	12	-4	2	31506					
									12:50	MDP		S16E90	
	13:43 48	C(3)	-5400	16	13	-3	2	31521					
									15:34	ASR		S15E90	
	18:22 34	C(3)	-5399	17	16	-2	4	31524					
	19:15 20	C(3)	-5500	17	12	5	0	31527					
									19:20	ASR		S14E90	
	19:55 05	S	-5720	DIODE	STREAKED			31530					
									20:50	APR	2	S25E90	
									21:23	APR	1	S26E90	
									21:35	APR	2	S16E90	
									21:50	DSD		N09E58	
	22:21 59	S(1)	-5448	17	63	3	0	31542					
	23:02 17	C(3)	-5400	15	11	3	0	31543					
010	00:49 40	S	+ 1	15	11	3	0	31546					
	01:01 11	S	-5400	15	12	4	0	31558					
									01:02	ASR		S13E90	
	01:11 01	C(15)	-5401	15	12	5	-1	31570					
									01:17	APR	1	S15E90	
									08:19	ASR		S12E90	
	08:24 20	S	-5582	15	13	3	0	31585					
									08:45	APR	2	S11E90	
									09:35	SPY		S20E90	
									09:35	LPS		S16E90	
									09:38	BSD		S18E85	
									09:44	FLA	1F	S24E90	
	10:00 24	S	-5480	12	13	2	0	31597					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
010									11:38				Transient
	11:3800	S	-5488	11	12	2	0	31609					
	13:3022	S	-5562	12	12	2	0	31621					
									13:32	BSD		S16E81	
	14:3604	C(3)	-5400	15	12	2	0	31633					
	16:0602	C(3)	-5399	16	12	-12	2	31636					
									17:17	AFS		S08E45	Activity through 215(
	17:4433	S	-5400	59	62	-10	0	31639					Optimum Sun Center Pointing
									18:34	III	1		
	18:3539	C(2)	-5393	18	12	-11	0	31651					
	19:1206	C(3)	-5406	16	17	-7	7	31653					
									19:23	ASR		S10E90	
									20:02	APR	2	S23E90	
	21:4153	C(6)	-5360	18	11	2	-2	31659					
	22:2133	S	0	16	13	2	-1	31665					
	22:3101	S	-5401	16	11	1	-2	31677					
	22:3738	C(18)	-5401	19	18	7	-7	31689					
									22:44	ADF	1	S09E45	
	23:1431	C(3)	-6939	18	12	3	-1	31707					
									23:32	APR	1	S30E90	
	23:5208	C(3)	-5405	19	17	4	-4	31710					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
011									00:28	ASR		S24E90	Activity through 0135
									02:01	ASR		N12E90	
									04:02	ASR		S17E90	
	07:4120	S	-5447	15	12	-3	0	31713					
									08:35	ASR		S12E90	
	09:1719	S	-5510	12	12	-6	0	31725					
									09:30	BSL		S18E90	
									09:30	APR	2	S24E90	
	10:5445	S	-5484	8	12	-6	0	31737					
									11:15	ASR		S18E90	Activity through 1319
	13:5709	S	0	14	10	-4	2	31749					
	14:0643	S	-5400	16	12	-2	1	31761					
	14:1729	C(15)	-5400	14	11	-4	-1	31773					
									15:18	CNT	1		
									15:18	III	1		Activity through 1843
	15:2540	C(3)	-5406	18	17	-6	4	31788					
	16:2121	S(3)	-5272	19	18	-4	2	31791					
									18:46	CNT	1		
	19:1502	S	-5400	12	62	-6	-3	31794					
									19:45	ASR		S18E90	
									19:51	III	1		
	20:0548	C(3)	-5405	16	13	-4	1	31806					
									20:50	III	1		
	20:5724	S(11)	-5649	16	17	-6	-1	31809					
									21:08	III	2		
	21:3604	S(i)	-5621	17	12	-2	6	31820					
	21:36 29	S	-5435	16	11	-1	4	31821					
	23:26 04	S	-5401	16	12	-5	-2	31833					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
012	00:4943	S	+ 1	19	18	-2	7	31845					
	00:5727	S	-5388	20	17	-4	6	31857					
	01:0545	C(16)	-5388	19	17	-3	6	31869					
									02:25	ASR		S30E90	
									03:37	APR	1	S18E90	
									06:53	CNT	1		
	07:1003	S	-5232	16	13	-4	0	31885					
	08:3317	S	-5263	17	11	-3	0	31897					
	10:1353	S	-5265	19	18	-4	3	31909					
									10:30	FLA	1N	S19E84	
									11:44				Coronal Transient
	11:4425	S	-5397	11	10	-6	0	31921					
	11:5124	C(13)	-5397	19	18	-5	2	31933					
	11:5710	C(29)	-5397	19	18	-2	10	31946					
	12:1056	C(88)	-5397	16	9	-3	-1	31975					Alfvén Wave Program
	13:1834	C(104)	-5399	17	9	1	-2	32063					
	14:4442	C(108)	-5503	15	10	2	0	32167					
	15:3401	S	-5505	16	12	2	-1	32275					
									18:19	III	2		
	19:2659	S	-9000	13	12	0	-1	32287					
									20:53	III	1		
	21:0033	C(3)	-5399	15	12	0	-2	32299					
									21:53	III	1		
									22:00	III	1		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
013	00:0633	S	0	20	17	4	-2	32302					
	00:1625	S	-5396	16	12	2	-2	32314					
	00:2558	C(15)	-5397	17	11	1	-2	32326					
	00:3520	S	-5397	17	11	3	-3	32341					
									01:35	ASR		S12E90	
									03:05	APR	1	S85N90	
									03:44	III	I		
									05:33	III	3		
	06:2700	S	-5605	16	14	2	-3	32353					
	07:5026	S	-5524	16	11	1	-1	32365					
									09:00	ASR		S13E87	
	09:2819	S	-5541	11	10	0	-1	32389					
	11:2635	S	-5591	12	10	0	0	32389					
									11:35	APR	1	S13E88	Activity through 2138
	12:5528	S	-5546	12	10	0	-3	32401					
	14:0615	S	0	16	15	4	-3	32413					
	14:2430	C(15)	-5400	19	17	0	2	32437					
	15:0008	C(3)	-5427	20	18	-1	3	32452					
	15:3554	C(3)	-5403	17	14	-1	4	32455					
									16:10	FLA	C1	N05W56	
									16:20	III	1		
									16:20	DSD		S19W59	
									16:25	FLA	C1	S16E62	
									16:30	III	1		
									16:31	DSD		S18E65	
	16:3333	S(2)	-5332	16	13	-4	2	32458					
									16:51	FLA	C2	S20E59	
									16:53	III	3		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
013									16:56	DSD		S19W59	
	17:1253	C(3)	-5400	16	11	-4	-2	32460					
	18:0535	C(3)	-5383	15	13	-4	-3	32463					
	18:4348	C(3)	-5402	17	14	-4	3	32466					
	19:3932	S(1)	-5404	16	11	-5	0	32469					
	19:3939	C(3)	-5404	16	11	-5	-2	32470					
	20:2212	S	-5400	13	11	-6	0	32473					
	22:0129	S	-5400	16	12	-3	0	32485					
									22:50	I	1		
	23:2505	S(3)	-5401	20	17	-10	7	32497					
014									00:00	I	1		Through 0400
									00:39	III	1		Through 0317
	00:5951	S	+ 1	20	17	-10	7	32500					Mode Started in PolPc
	01:0755	S	-5518	18	19	-7	7	32512					" " "
	01:1425	C(18)	-5400	18	19	-7	7	32524					
	01:2741	S	-5400	69	20	-7	14	32542					
	01:3644	S	+ 219	69	20	-7	11	32554					
									02:00	AFS	1	N14W80	
									02:52	AFS	1	N04W64	Activity through 0424
									03:33	FLA	C8	S14E80	
									03:51	III	2		
									06:04	CNT	1		
	07:1214	S	-5474	17	12	0	-1	32566					
	08:4535	S	-5502	19	15	0	0	32578					
	10:4248	S	-5655	18	15	0	-3	32590					
									10:43	DSD		N04W72	
	11:5243	S	-5418	20	17	-4	9	32602					
	13:2503	S	0	18	19	-4	9	32614					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
014	13:3225	S	0	16	17	-1	9	32626					
	13:3954	C(24)	-5399	16	11	2	-2	32638					
									17:54	III	1		Activity through 2310
	18:0830	S	-5394	16	12	1	-2	32662					
	19:4148	EXT STD (32)	-5389	18	14	0	-1	32674					
	21:1756	C(3)	-5400	15	13	2	-2	32706					
	22:4229	S	-5401	20	17	-4	9	32709					
									23:20	ASR		N08W90	
015	00:1925	S	-5401	20	17	-4	9	32721					
									00:22	ADF	1	S16E54	
	00:3020	S	-5400	20	17	-4	9	32733					
	00:3617	C(15)	-5400	18	14	-1	9	32745					
	00:5041	S	-5401	71	17	-4	14	32760					
									01:20	BSL		N07W79	
									01:59	III	1		
									02:27	III	1		
									02:39	ADF	1	S16E56	
									02:39	III	1		Activity through 0755
									03:42	CNT	3		
									04:28	ASR		N08W90	
									05:34	III	2		
									06:19	EPL		N10W90	
									06:19	SPY		N08W90	
	06:3613	S	-5680	17	13	2	-2	32772					
									06:52	III	2		
									07:52	III	2		
									07:54	CNT	2		

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
015									07:56	SPY		N07W90	
	08:0517	S	-5726	18	14	0	-2	32784					
									08:28	ASR		N07W90	
									08:57	FLA	C1	N07W85	
	09:5803	S	-5779	18	15	2	-1	32796					
									10:28	APR	2	N10W90	
									10:52	EPL		N07W90	
									10:56	FLA	M1	N10W80	
									11:00	EPL		N10W90	
									11:32				Coronal Transient
	11:3206	S	-5775	19	14	0	-3	32808					
									11:35	ADF	1	S13E64	
	11:4611	S	-5776	18	12	0	-2	32820					
	12:4656	S	-5398	20	17	-15	2	32832					
	12:5742	S(1)	-5399	17	12	-9	0	32844					
	12:5749	S	-5399	17	12	-9	0	32845					
									13:01	ASR		N05W87	
	13:0441	C(16)	-5400	15	12	-7	0	32857					
									13:40	IV	1		
	14:2054	C(3)	-5400	20	17	-15	0	32873					
									14:22	FLA	C6	N07W84	
									14:25	III	1		
	15:0751	S	-5396	20	17	-15	0	32876					
									15:30	APR	2	N05W90	
	15:4832	S	-5407	20	17	-18	2	32888					
	16:3921	S	-5399	16	11	-11	0	32900					
	17:0119	C(1)	-2200	18	19	-15	0	32912					
	17:0145	C(1)	-2200	16	17	-15	0	32913					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
015	17:0217	C(1)	-2200	16	17	-15	0	32914					
	17:0246	C(1)	-2200	MATRIX	SMEAR			32915					
	17:2626	C(6)	-5402	16	14	-10	-1	32916					
									18:00	ASR		N08W90	
	18:1401	S	-5401	15	11	-10	2	32922					
	19:0115	EXT STD	-5405	17	13	-10	0	32934					
									19:50	I	1		
									19:50	III		(Group)	
	19:5337	C(3)	-5401	20	17	-18	0	32970					
	20:3003	S	-5533	17	12	-12	0	32973					
	2207:47	S	-5400	16	11	-12	-1	32985	21:57	BSL		N03W90	
									23:09	ASR		N08W90	
	23:3704	C(3)	-5400	20	17	-18	9	32997					
016									00:00	I	1		Activity till 0400
									00:00	III	1	(Group)	Activity till 0400
	00:4050	S	-2499	16	-18	-11	-2	33000					
	00:5004	C(1)	-2500	16	11	-11	-2	33012					
	00:5034	C(1)	-2500	15	14	-12	-2	33013					
	00:5104	C(1)	-2500	16	11	-10	-2	33014					
	00:5126	C(1)	-2500	16	10	-10	-2	33015					
	01:3707	S	- 154	18	19	-18	9	33016					
	01:4813	S	-5460	18	19	-15	9	33028					
	01:5817	C(15)	-5460	16	11	-10	-2	33040					
	03:3015	S	-5542	18	12	-12	-3	33055					
									04:29	III	1		
									05:47	III	2		
	05:5536	S	-5633	17	12	-12	-3	33067					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
016									06:28	ASR		N07W90	
									06:37	III	1		
									06:47	II	1		
									06:50	III	1	(Group)	Activity till 0800
									07:30	APR	2	N06W90	
									07:30				Coronal Transient
									07:30	AFS		S14E50	
	07:30 08	S	-5679	16	11	-10	-3	33079	07:33	APR	2	S11W90	
									08:52	ASR		N07W90	
	09:15 22	S	-5789	18	14	-12	-4	33091					
	10:54 55	S	-5793	18	13	-12	-3	33103					
	12:07 00	S	+ 1	18	19	-18	11	33115					
	12:16 11	S	-5401	20	17	-15	11	33127					
	12:24 38	C(18)	-5401	18	14	-15	11	33139					
									12:40	AFS	2	S13W49	
									12:40	APR	1	N07W90	
									13:01	ASR		N05W87	
	13:43 46	C(3)	-5398	18	19	-18	9	33157					
	14:45 59	S	-2699	18	12	-11	-1	33160					
	14:53 46	C(1)	-2700	17	12	-10	-2	33172					
	14:54 05	C(1)	-2700	18	19	-15	9	33173					
	14:54 15	C(1)	-2700	CANNOT	READ	MATRIX		33174					
	14:54 31	C(1)	-2700	18	19	-12	9	33175					
	14:54 43	C(1)	-2700	CANNOT	READ	MATRIX		33176					
	14:54 57	C(1)	-2700	16	17	-15	9	33177					
	14:55 16	C(1)	-2700	18	19	-15	9	33178					
	14:55 29	C(1)	-2700	18	19	-15	9	33179					
	15:27 59	C(3)	-5399	15	12	-10	-1	33180					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
016									16:24	AFS		S15E46	
									16:58	APR	2	N25W90	
	17:0639	S	-5602	18	15	-12	-1	33183					
									18:00	APR	2	N22W90	
									18:19	III	1		
	18:2301	C(3)	-5400	20	17	-18	11	33195					
									18:32	APR	2	N03W90	
									19:30	III		(Group)	
	19:5508	S	-5400	17	13	-11	-4	33198					
									21:25	BSL		N06E90	
	21:2924	C(3)	-5400	15	14	-12	-1	33210					
									21:33	ASR		N05W90	
	22:4102	C(1)	-2701	20	17	-15	11	33213					
	22:4133	C(1)	-2701	18	14	-15	9	33214					
	22:4159	C(1)	-2701	18	14	-15	9	33215					
	22:4259	C(1)	-2701	18	14	-15	9	33216					
	22:5836	C(3)	-5399	14	24	-4	-4	33217					
017	00:3441	S	-10800	18	19	-18	9	33220					
	00:4245	S	-5400	18	19	-15	9	33232					
	00:5315	C(15)	-5400	18	19	-15	9	33244					
	01:0604	S	-5400	72	20	-45	14	33259					
	04:2639	S	-5562	18	12	-13	-5	33271					
	06:4841	S	-5612	19	14	-13	-4	33283					
									07:03	ASR		N17E90	
									07:05	ASR		N07E90	
	09:1300	S(10)	-5643	17	12	-13	-4	33295					
									09:30	ASR		N07E90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
017									10:08	ASR		N17E90	
	12:06^{25}	S	-5400	71	17	-15	-4	33305					Optimum Sun Center Poin
									12:40	AFS		S12E51	
									12:40	EPL		N09E90	
									12:49	ASR		N17E90	
									12:53	EPL		N07E90	
	12:59^{15}	C(3)	-5403	20	17	-10	16	33317					
	14:34^{11}	S	+ 2	20	17	-18	2	33320					
	14:41^{34}	S	-5399	16	17	-15	0	33332					
	14:48^{19}	C(15)	-5399	16	12	-11	-2	33344					
	15:36^{46}	S	-3300	20	17	-18	0	33359					
	15:46^{03}	C(1)	-3300	18	19	-15	0	33371					
	15:46^{22}	C(1)	-3300	16	17	-15	0	33372					
	15:47^{04}	C(1)	-3300	18	19	-15	0	33373					
	15:47^{18}	C(1)	-3300	16	17	-15	0	33374					
	15:48^{04}	C(1)	-3300	18	19	-15	0	33375					
	15:48^{19}	C(1)	-3300	18	14	-12	0	33376					
	15:49^{04}	C(1)	-3300	MATRIX	SMEAR			33377					
	15:49^{18}	C(1)	-3300	20	12	-12	0	33378					
	15:49^{39}	C (1)	-3300	16	17	-15	0	33379					
	15:49^{46}	C (1)	-3300	18	19	-12	9	33380					
	15:50^{04}	C (1)	-3300	16	17	-15	0	33381					
	15:50^{18}	C (1)	-3300	MATRIX	SMEAR			33382					
	15:50^{35}	C (1)	-3300	18	19	-15	0	33383					
	15:50^{49}	C (1)	-3300	16	17	-15	0	33384					
	15:51^{04}	C (1)	-3300	16	17	-15	0	33385					
	15:51^{21}	C (1)	-3300	16	17	-15	0	33386					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
017	16:0605	C(3)	-5402	16	17	-15	0	33387					
	17:4341	S	-5332	16	12	-15	-2	33390					
	19:1550	C(3)	-5401	20	17	-20	-2	33402					
									19:25	EPL		N07W90	
									19:25	SPY		N03W90	
									19:31	II	1		
									19:36	II	2		
									19:43				Coronal Transient
	19:4338	S(1)	- 737	18	13	-15	3	33405					
	19:4354	C(3)	- 737	17	13	-15	2	33406					
	19:4428	C(10)	- 737	16	12	-15	2	33409					Last 3 frames are single exposure
	19:4933	S	- 737	16	13	-14	2	33419					
	19:5602	C(16)	- 737	16	13	-13	2	33431					
	20:0334	C(19)	- 738	20	17	-18	-2	33447					
	20:1243	C(5)	- 738	16	12	-11	2	33466					
	20:1446	S	- 738	17	12	-12	2	33471					
	20:2055	C(1)	- 738	20	17	-18	-2	33483					
	20:2058	C(14)	- 738	20	17	-18	-2	33484					
	20:2823	C(1)	-3298	MATRIX	SMEAR			33498					
	20:2837	C(1)	-3298	MATRIX	SMEAR			33499					
	20:2853	C(1)	-3298	MATRIX	SMEAR			33500					
	20:2905	C(1)	-3298	MATRIX	SMEAR			33501					
	20:2923	C(1)	-3298	MATRIX	SMEAR			33502					
	20:2935	C(1)	-3298	MATRIX	SMEAR			33503					
	20:2954	C(1)	-3298	MATRIX	SMEAR			33504					
	20:3006	C(1)	-3298	MATRIX	SMEAR			33505					
	20:3024	C(1)	-3298	MATRIX	SMEAR			33506					
	20:3035	C(1)	-3298	MATRIX	SMEAR			33507					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
017	20:3053	C(1)	-3298	MATRIX SMEAR				33508					
	20:3109	C(1)	-3298	MATRIX SMEAR				33509					
	20:3124	C(1)	-3298	MATRIX SMEAR				33510					
	20:3136	C(1)	-3298	MATRIX SMEAR				33511					
	20:3150	C(1)	-3298	MATRIX SMEAR				33512					
	20:3204	C(1)	-3298	MATRIX SMEAR				33513					
	20:3221	C(1)	-3298	MATRIX SMEAR				33514					
	20:3234	C(1)	-3298	MATRIX SMEAR				33515					
	20:3250	C(1)	-3298	MATRIX SMEAR				33516					
	20:3307	C(1)	-3298	MATRIX SMEAR				33517					
	20:3321	C(1)	-3298	MATRIX SMEAR				33518					
	20:3334	C(1)	-3298	MATRIX SMEAR				33519					
	20:3351	C(1)	-3298	20	17	-18	-4	33520					
	20:3405	C(1)	-3298	20	17	-18	-4	33521					
	20:3420	C(1)	-3298	20	17	-18	-4	33522					
	20:3436	C(1)	-3298	20	17	-18	-2	33523					
	20:3833	C(25)	-3298	16	14	-13	2	33524					
	20:5019	S	-3299	20	17	-18	-4	33549					
	20:5802	C(1)	-3299	20	17	-18	-4	33561					
	20:5808	C(26)	-3299	20	17	-18	-4	33562					
	21:1019	C(40)	-3299	20	17	-18	-4	33588					
	21:2911	C(25)	-3299	16	15	-13	2	33628					
	21:4056	S	-3300	20	17	-18	-4	33653					
	21:4747	C(1)	-3300	20	17	-18	-4	33665					
	21:4758	C(12)	-3300	20	17	-18	-4	33666					
	22:2451	C(1)	-5401	16	12	- 3	1	33678					
	22:2453	C(4)	-5401	16	12	- 3	1	33679					
	23:1748	C(3)	-5421	16	12	- 3	0	33683					
	23:5646	S	-5399	18	19	-10	2	33686					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
018									00:24	ADF	1	N29W60	
	01:3040	S	- 1	20	17	-10	2	33698					
	01:3942	S	-5401	16	17	-7	0	33710					
	01:4620	C(15)	-5401	16	17	-7	2	33722					
									02:00	ADF	1	N07W61	
	03:4103	S	-5538	17	10	-4	1	33737					
	06:4950	S	-5702	19	12	-3	0	33749					
									07:45	ASR		N05W90	
	09:2558	S	-5818	18	12	-3	0	33761					
									11:15	AFS	2	S13W46	
	12:2735	S	-5919	18	14	-3	2	33773					
	14:0415	S	+ 5	17	11	-4	0	33785					
		C(1)						33797					
	14:1334	S	-5403	18	13	-3	0	33798					
	14:2523	C(15)	-5365	19	12	-3	0	33810					
	16:2533	C(3)	-5463	16	17	-10	2	33825					
	17:1459	C(3)	-5470	17	12	-3	0	33828					
	18:3801	C(3)	-5416	22	19	-10	2	33831					
									19:03	FLA	C1	N07W78	
	21:4754	S	-5403	17	11	-3	0	33834					
	23:5837	S	-5418	22	19	-10	2	33846					
019	00:5845	S	+ 1	18	19	-7	2	33858					
	01:0658	S(7)	-5403	18	19	-7	-2	33870					
	01:1601	S	-5403	16	12	-1	-3	33877					Mode starting in Pol Pc
	01:2533	C(15)	-5404	17	12	-3	-3	33889					
									04:40	ASR		N08W90	
	07:0725	S	-5121	17	12	-9	-5	33904					
									07:40	ASR		N10W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
019	08:4242	S	-5172	18	12	-9	-5	33916					
	10:1352	S		20	17	-12	14	33928					
	11:4256	S	+ 2	16	13	-7	-4	33940					
	11:5313	S	-5401	17	12	-6	-5	33952					
	12:0330	C(15)	-5401	18	12	-8	-4	33964					
	13:1859	C(3)	-5400	17	13	-7	-3	33979					
	14:5202	C(3)	-5400	18	19	-12	16	33982					
	16:2638	C(3)	-5401	15	11	-7	-5	33985					
	17:5851	C(3)	-5401	18	12	-7	-5	33988					
									19:00	ASR		N06W90	
	19:3232	C(4)	-5402	18	19	-18	7	33991					
	21:1139	C(3)	-5412	18	9	0	-1	33995					
	22:3954	C(3)	-5396	20	17	-4	7	33998					
									23:00	ASR		N07W90	
020	00:1638	S(5)	-10799	20	17	-4	7	34001					
	00:2532	S	-5401	18	19	-4	7	34006					
	00:3237	C(18)	-5401	17	12	0	0	34018	06:38	APR	1	N07W90	
									06:45	ADF	1	N07W90	
	08:0434	S	10574	18	12	0	-1	34036					
									09:00	APR	2	S20W90	
	11:3417	C(3)	10796	8	7	-7	4	34048					
									11:51	APR	2	S20W90	
	12:4411	S	10800	16	11	0	-1	34051					
	12:5406	S	-5403	17	11	1	-2	34063					
	13:0133	C(15)	-5403	17	12	1	0	34075					
	14:2307	C(4)	-5398	15	12	0	-1	34090					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
020									15:15	APR	2	S26W90	
	15:47 06	C(3)	-5400	18	11	-10	0	34094					
	17:23 00	C(3)	-5401	15	12	-12	0	34097					
									17:51	APR	2	S21W90	
	19:40 27	C(3)	-5399	16	12	-9	0	34100					
	20:24 27	C(3)	-5400	20	17	-15	2	34103					
									20:35	APR		S17W90	
									21:10	APR	1	S14W90	
	21:58 37	C(3)	-5401	20	17	-15	2	34106					
									23:30	BSL		S14W90	
	23:34 11	C(3)	-5401	41	-17	-15	9	34109					
021									00:07	ASR		S14W90	
									00:30	APR	1	S19W90	
	01:07 34	C(3)	-10800	20	17	-15	11	34112					
	01:15 07	S	-5401	16	17	-15	11	34115					
									01:23	ASR		S11W90	
	01:26 06	C(15)	-5400	16	12	-10	-3	34127					
									01:40	APR	a	S25W90	
									02:07	ASR		S14W90	
									07:20				Coronal Transient
	07:20 11	S	-5442	18	10	-11	-4	34142					
									08:30	APR	2	S28W90	
									09:45	APR	1	S21W90	
	10:27 28	S	-5519	16	17	-15	11	34154					
	12:02 23	S	0	8	21	-12	-3	34166					
	12:11 37	S	-5401	27	7	-15	11	34178					
	12:22 44	C(15)	-5402	26	9	-15	11	34190					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
021	12:3455	C(3)	-5402	69	15	-1	-4	34205					
	13:3537	C(3)	-5401	18	11	-12	-4	34208					
	15:0735	C(3)	-5400	16	12	-12	-3	34211					
	16:4024	C(3)	10729	15	11	-12	-3	34214					
	17:3437	C(1)	-5400	18	14	- 1	-4	34217					
	18:1321	C(3)	-5399	16	12	3	0	34218					
									20:53	FLA	M1	N06W47	
	21:2107	C(3)	-5403	20	17	- 1	4	34221					
									22:44	FLA	C7	N06W50	
	22:5132	C(3)	-5387	18	19	- 1	2	34224					
									23:36	III	1		
022									00:02	ADF	1	N06W53	
	00:2450	C(3)	-5399	20	17	-1	2	34227					
									00:55	ASR		S13E90	
	00:5729	C(3)	-10801	18	19	-1	2	34230					
	01:0519	S	-5398	16	17	-1	2	34233					
	01:1138	C(15)	-5399	16	17	0	2	34245					
									02:10	ADF	1	N18W90	
	06:4011	S	-5467	18	10	3	0	34260					
									08:34	FLA	M1	N07W55	
									09:00	DSF	3	S16W46	
									09:19	FLA	C4	N07W56	
									10:00	AFS	2	S16W45	
	10:2641	S	-5520	19	12	3	0	34272					
									10:45	APR	2	S12W90	
									11:00	FLA	C1	N07W57	
	11:5102	S	-5394	18	19	- 1	4	34284					
									12:00	ADF	1	S16W45	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
022	12:0404	C(15)	-5400	18	12	3	0	34296					
	13:0703	C(3)	-5402	15	12	3	0	34311					
	14:2601	C(3)	-5403	16	12	-3	-5	34314					
									14:28	ADF	1	S17W45	
									14:45	MDP		N18E90	
	15:1933	C(3)	-5401	20	21	-12	-2	34317					
	16:0622	S	-5400	15	11	- 7	0	34320					
									17:40	FLA	C3	N06W61	
									18:18	ADF	1	S15W49	
									19:11	FLA	1F	N09W62	
									19:11	FLA	C5	N09W62	
									19:18	DSD		N06W60	
									19:25	DSD		N08W64	
	20:4140	C(3)	-5400	18	14	-12	7	34332					
									21:16	FLA	C2	N08W65	
	22:1405	C(3)	+10800	20	17	-10	4	34335					
	22:2235	S	-5400	20	17	-10	4	34338					
	22:3140	C(15)	-5400	17	13	-6	0	34350					
023	00:0556	S	-5417	18	12	-7	0	34365					
									01:03	ASR		S15W90	
									01:15	DSD		S14W56	
									02:12	DSD		S18W57	
									05:57	DSD		S17W56	
	06:2707	S	-5481	18	11	-7	0	34377					
									08:43	AFS		S17W60	
									10:04	AFS		S17W57	
	12:1851	S	+10801	17	11	-6	0	34389					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
023	12:3128	S	-5403	18	12	-6	0	34401					
	12:4043	C(15)	-5403	16	17	-7	4	34413					
									13:29	APR	2	S17W90	
	13:4504	C(3)	-5401	16	11	-7	0	34428					
	15:1656	C(3)	-5400	18	12	-7	0	34431					
									16:30	ASR		S06W77	
									16:39	III	1		
									16:56	III	1		
									17:28	III	2	(Group)	
									17:29	APR	1	S20W90	
									17:33	III			
									17:41	APR		S18W90	
									18:01	ASR		S12W80	
									18:16	III	1		
									18:23	ASR		S15W79	
	18:2631	C(3)	-5396	20	17	-12	4	34434					
									19:28	ASR		S16W83	
									19:55	ASR		S16W80	
	20:0436	S	-5399	20	17	-10	4	34437					
	21:3212	C(3)	-5401	18	19	-12	4	34449					
	21:3320	C(3)	-5401	18	19	-10	4	34452					
	23:0549	C(3)	-10801	18	14	-12	4	34455	22:41	ASR		S16W86	
									23:15	ASR		S16W90	
	23:1511	S	-5400	12	12	-6	-1	34458					
	23:2805	C(17)	-5400	14	12	-6	-1	34470					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
024									00:00	ASR		S16W90	
	00:3729	C(3)	-5393	20	17	-12	4	34487					
	00:4137	S(1)	-5393	18	19	-10	4	34490					
	01:3213	C(3)	-5400	18	10	-6	2	34491					
									03:36	APR	1	S20W90	
									03:39	APR	3	S22W90	Activity till 0642
	05:4410	S	-5491	18	10	-7	2	34494					
									08:26	ASR		S16W87	
	08:5949	S	-5448	16	10	-7	0	34506					
									09:15	ASR		S16W90	
									10:32	ASR		N07W90	
	11:3746	S		7	7	7	7	34518					
	11:4916	S	-10792	16	12	-6	-2	34530					
	12:0244	CONT(15)	-5404	18	14	-10	4	34542					
									13:09				Coronal Transient
	13:0920	S	-5398	17	12	-6	0	34557					
MATRIX	SMEAR	S(1)	-5940					34569					
	13:5357	S	-5940	16	12	-5	-2	34570					
									14:20	ASR		N06W90	Activity till 1912
	14:3812	S	-5340	15	12	-6	-1	34582					
									19:09	BSL		S14W90	
	19:2009	S	-5400	20	17	-7	7	34594					
	20:0604	C(3)	-5401	20	17	-7	7	34606					
									20:50	ASR		N06W90	
	20:5128	C(3)	-5398	20	17	-10	7	34609					
	21:4411	C(3)	-5405	20	17	-10	9	34612					
									21:55	ASR		N08W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
024	22:21 52	C(4)	-5401	18	19	-10	9	34615					
									22:51	ADF	1	S13W65	
									23:10	ASR		S15W90	
	23:17 47	C(3)	-5408	18	19	-10	9	34619					
	23:58 12	C(3)	0	18	19	-10	9	34622					
025	00:05 59	S	-5400	16	17	-10	9	34625					
	00:12 33	C(16)	-5401	15	10	-6	-3	34637					
	00:26 23	C(3)	-5401	16	17	-7	9	34653					
									02:15	ASR		N07W90	
									04:12	ASR		N04W90	
	06:47 33	S	-5454	16	11	-6	-3	34656					
									11:25	APR	1	S12W90	
									11:41	ASR		S17W85	
	12:22 34	S	10800	15	12	-6	-3	34668					
	12:30 17	S	-5399	20	17	-7	9	34680	17:53	APR	2	S22W90	
	12:37 18	C(17)	-5400	18	19	-7	9	34692					
	12:50 52	C(3)	-5401	71	17	-10	14	34709					
	12:59 54	C(3)	-5416	20	17	-12	14	34712					
	18:40 52	S	-5400	16	12	-7	0	34715					
									18:45	APR	2	S30W90	
	20:12 24	C(3)	-5400	20	17	-12	-1	34727					
									21:07	EPL		N10W90	
									21:15	APR	1	S32W90	
									21:35	APR	2	S43W90	
	21:42 48	C(3)	-5400	20	17	-10	16	34730					
	22:00 23	C(3)	-5400	20	17	-15	11	34733					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
025	22:0904	C(3)	-5400	18	14	-15	9	34736					
	22:3205	S	-5400	20	17	-10	14	34739					
	23:1929	C(3)	-10801	19	16	-3	-4	34751					
	23:2651	S	-5399	15	12	-3	-2	34754					
	23:3747	C(15)	-5399	16	12	-3	-2	34766					
026	09:1717	S	-5411	18	14	-10	14	34781					
									12:48	APR	2	N08W90	
	13:2246	S	+1080Q	16	13	-4	-5	34793					
	13:3812	S	-5401	17	12	-4	-4	34805					
	13:5131	C(16)	-5402	18	19	-7	14	34817					
	14:0244	C(3)	-5401	59	17	-7	18	34833					
	14:4841	S(1)	-5400	16	12	-9	-2	34836					
	14:4904	C(3)	-5400	16	12	-6	-3	34837					
	16:2156	C(3)	-5400	15	11	-8	-3	34840					
	17:5418	C(3)	-5401	20	17	-12	11	34843					
									18:00	ADF	2	N10W90	
									19:45	ADF	2	N17W63	
									19:45	APR	2	N10W90	
	20:5901	C(3)	-5398	20	17	-12	11	34846					
	22:3337	S	-5400	20	17	-12	11	34849					
									22:33	ASR		S14W90	Do not digitize 34854 thru 34873
									22:45	APR	1	S36W90	
									22:45	APR	1	N06W90	
									22:45	APR	1	N35W90	
									23:45	APR	2	S36W90	
									23:45	APR	2	N06W90	
									23:45	APR	2	N35W90	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
026									23:45	ADF	2	N18W63	
027	00:06 26	C(3)	-5400	20	17	-10	14	34861					
									00:10	APR	2	S35W90	
									00:35	ASR		N03E90	
	01:43 50	S	-5399	18	19	-10	-7	34864					
	01:56 22	C(15)	-5399	14	10	-4	4	34876					
									03:00	ASR		N03E90	
	06:52 13	S	-5450	11	12	-6	2	34891					
									13:00	APR	3	S35W90	
	14:06 27	S	-10800	16	12	-4	-2	34903					
	14:14 44	S	-5401	17	12	-5	-1	34915					
	14:22 29	C(16)	-5401	17	11	-4	-2	34927					
	14:29 42	SECPROG (13)	-5401	17	12	-4	-2	34943					
	15:02 17	S(1)	-5407	-2	4	-4	4	34956					
									20:48	APR	1	N05W90	
	20:56 40	S	-5525	21	12	-17	2	34957					
	21:56 04	C(3)	-5405	20	17	-10	7	34969					
									22:48	APR	1	N12E90	
	23:28 53	C(3)	-5400	20	17	-10	7	34972					
028									00:20	APR	1	N18W90	
	01:04 25	S(8)	-10800	18	19	-10	7	34975					
	01:08 54	C(3)	-10801	17	16	-10	7	34983					
	01:13 08	S	-5399	17	16	-10	7	34986					
	01:24 23	C(15)	-5399	17	16	-7	7	34998					
	07:56 06	S	-5361	18	13	-4	-2	35013					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
028	11:5243	S	0	15	13	-6	-1	35025					
									12:00	ASR		S00E90	
	12:0316	S	-5400	12	12	-4	-1	35037					
	12:1121	C(13)	-5400	12	12	-6	-3	35049					
	12:4011	C(3)	-10801	17	20	-10	7	35062					
									13:00	ASR		S10E90	
	14:1516	C(3)	-5402	19	18	-10	7	35065					
	15:4903	C(3)	-5401	17	20	-10	7	35068					
	17:2315	C(3)	-5399	19	18	-12	7	35071					
	20:2532	C(3)	-5400	17	20	-15	14	35074					
									20:52	APR	1	N07E90	
									21:07	MDP		N07E90	
									21:19	APR	1	N07E90	
	22:0013	C(3)	-5400	16	11	-7	-5	35077					
	23:3328	C(1)	+10801	15	11	-7	-4	35080					
	23:3443	C(3)	-5398	15	12	-8	-2	35081					
029	00:1940	S	+10800	17	20	-15	14	35084					
	00:2637	S	-5400	19	18	-12	11	35096					
									00:29	ASR		S04E90	
	00:3346	C(15)	-5400	19	18	-12	11	35108					
									01:06	ASR		S22E90	
									01:08	ASR	S	S06E90	
	02:0851	C(4)	-5400	17	11	-9	-3	35123					
									07:00	APR	3	N25W90	
	07:0126	S	-5355	17	14	-9	-5	35127					
	12:4603	S	-10800	17	14	-9	-4	35139					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
029	13:0203	S	-5400	15	10	-7	-4	35151					
	13:0803	C(15)	-5400	18	11	-9	-4	35163					
	13:2051	F(4)	-5400	19	18	-30	-2	35178					
	14:1638	C(3)	-5400	17	11	-6	-4	35182					
	14:2031	S	-5399	16	65	-3	-6	35185					
	15:5346	C(16)	-5399	12	11	-6	-3	35197					
									18:36	ASR		N03E90	
	19:0750	S	-5382	15	11	-7	-3	35203					
	22:0701	S	-10800	17	20	-12	9	35215					
	22:1840	S	-5400	+15	12	-6	-3	35227					
	22:3006	C(15)	-5400	17	16	-10	9	35239					
030	00:2741	F(2)	-9268	4	-7	0	0	35254					
	00:2818	F(2)	-9268	4	-7	0	0	35256					
									05:52	DSD			
									06:48	BSD		N02E68	
	07:2242	S	-5453	12	11	-7	-3	35258					
	12:0825	S	-10801	15	12	-6	-2	35270					
	12:1656	S	-5400	16	11	-6	-1	35282					
	12:2720	C(15)	-5400	17	16	-10	9	35294					
	18:3011	S	-10667	18	14	-2	-3	35309					
	20:0657	S	-5400	14	15	-7	14	35321					

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
031	00:3640	S	10801	17	12	-3	-3	35333					
	00:4723	S	-5394	31	18	-7	11	35345					
	00:5733	C(15)	-5394	19	18	-7	11	35357					
	01:0731	S	-5394	19	18	-7	11	35372					
	07:1320	S	-5577	16	12	-3	0	35384					
	12:5944	S	-5551	15	11	-2	0	35396					
	17:4127	S	-5544	17	12	-3	-1	35408					
	19:1040	S	+10801	17	71	-7	18	35420					
	19:5711	C(3)	-5400	21	20	-7	4	35432					
									21:33	FLA	1F	S05E45	Extra S mode in MOPS.
	22:5819	S	-5325	12	12	-11	-4	35435					
032	01:3257	S	-5388	+15	14	-1	-1	35447					
	04:5157	S	-5309	10	12	-3	0	35459					
	07:3313	S	-5339	11	11	-3	0	35471					
	09:0822	S	-5330	11	10	-3	0	35483					
	10:4906	S	-5330	11	9	-3	0	35495					
	13:3102	F(2)	-9200	5	-8	0	-2	35507					
	14:1138	S	+10800	15	11	-1	-1	35509					
	14:1925	S	-5401	17	16	-4	4	35521					
	14:2945	C(15)	-5401	17	16	-4	4	35533					
	15:1950	S	-5553	17	10	-3	0	35548					
	18:3446	S	-5558	17	11	-3	-1	35560					
	20:0853	S	-5234	17	11	-3	0	35572					
	22:0136	S	-5400	17	71	-4	11	35584					
DIODE MATRIX STREAKED		C(3)	-5400					35596	23:00	DSD		N17W58	

DOY	GMT	MODE	ROLL	PES U/D	PES R/L	IAS U/D	IAS R/L	FRAME	TIME:	SOLAR ACTIVITY TYPE	IMP	LOCATION	COMMENTS
033	00:5146	S	-5394	17	12	0	0	35599					
	02:2733	S	-5424	15	12	2	0	35611					
	04:1037	S	-5414	12	11	-1	-1	35623					
	05:4509	S	-5406	11	9	-1	-1	35635					
	06:5240	S	-5393	12	9	0	0	35647					
	08:2711	S	-5397	12	9	-1	-1	35659					
	10:0236	S	-5471	12	8	0	0	35671					
	11:3009	S	-5461	11	8	0	0	35683					
	13:0810	S	-5463	12	8	-1	0	35695					
	14:3815	S	-5468	11	8	0	0	35707					
	16:1436	S	-5470	19	18	2	-1	35719					
	17:4322	S	-10801	19	18	-4	4	35731					
	17:5138	S	-5401	18	11	3	0	35743					
	18:0209	C(16)	-5378	19	18	-1	2	35755					
									18:48	APR	2	N14E90	
	20:5830	S	-5374	17	11	0	0	35771					
									22:20	III	1		
									23:45	ADF	1	S45W46	
034	00:0557	S	-5392	18	11	-1	-1	35783					
	01:3451	C(36)	-5400	17	14	-10	-3	35795					

Frames 35803 thru 35821 & 35823 thru 35831 are on test film. Frames 35801, 35802, 35822 are missing.

B. Mission Control Center Console Log

1. Introduction

During the Skylab mission a scientific and engineering representative monitored the S-052 console position 24 hours per day for manned operations and 12 hours per day for unmanned operations. Both representatives were required to maintain a log of what they considered to be "pertinent" events in the course of the mission. Section III-B-2 below is a synopsis of both the scientific and engineering logs containing only that data that could be useful in scientific data analysis.

DOY	TOD	EVENT
134	17:30	Lift off. Numerous malfunctions in OWS. ATM looks good.
	22:39	Switch to rate gyros may have caused attitute problem.
	23:45	Back on Solar Inertial - TACS only.
135	01:23	Best guess of OWS problem is micrometeorite shield came loose during Q-max and jammed the solar wing panel.
	13:00	S052 door temperature probe C306 looks bad, temperature is -57°F.
	18:11	Instrument TCS activation.
	18:37	Power on Standby. Temperatures: TP1 60.7, TP2 61.2, TP3 60.5, TP4 60.3, TP5 67.2, TP6 67.5, TP7 59.5, TV 67.3
136	06:12	Summary - temperatures are stabilizing. Film vault temperature is normal.
	16:45	Skylab pitched up 45° for OWS cooling using ATM solar wing shade.
136-		Temperatures stabilizing. Minimum power requirements for S052 furnished to FOMR.
146		SEVA from SWS unsuccessful, docking completed with some difficulty.
	06:00	CBRM 15 failed.
147	01:40	Parosol is deployed and is working.
147	06:27	ATM thermal busses on.
	06:28	Controller, heater power, and pump for ATM TCS ON.
147	06:29	S056 TCS ON.
147	06:41	S052 main power ON.

DOY	TOD	EVENT
147	07:25	S055 and S056 power ON.
	23:25	NOAA Briefing F/P58 is active. AR14 F.P. 9/2/ϕ - active.
148	03:35	AOS HAW FSS U/D - 195, FSS R/L - 198, ROU - 7133
	03:37	U/D - 3, R/L - 5, ATM GO.
	03:39	Door close. Door open at 03:38:37 and open for 38^s. PES U/D = +38 arc sec PES R/L = + 30 arc sec FSS U/D = - 1 arc sec FSS R/L = - 5 arc sec 20 arc sec Disc ON.
	04:52	Per unattended command Plan, original dated 5/22-73, page 1: NOTE: Build FSS wedge load for SC using S052 PES readings to get bias. Have load control assign load number 1401 and transmit to all sites. Therefore at CYI (0604) when the 052 door opens an algebraic bias of PES +38 - FSS -1 = + 37% PES +30 - FSS -5 = + 25 R/L will be already in the system thereby bringing 52 PES to ϕ.
148	06:07	Command FSS load for S/C. FSS readouts on 1258 responded in dark U/D 35 arc sec R/L 20 arc sec
	06:39	Door OPEN.
	06:46	Door CLOSED. 12 exposures, polaroid cycled exposures timed properly. Mode duration time to almost exactly 5.5 min. Roll = -7100

	06:53	Solar briefing.
		Region 92 coming on but so far quiet.
148	10:43	Door open, 7 seconds.
	10:46	Fast scan nominal.
	13:00	NOAA briefing, AR14, AR17 growing, F59 on limb. Nothing new coming on East limb till June 5.
	13:46	FSS wedge load to be sent YAW 30 (R/L) Pitch 37 (U/D) This is an over compensation to account for octal load not going in correctly.
	14:06	FSS Pit = U/D = 36 YAW = R/L = 30
	14:45	There seems to be a (0.2 arc min/min) drift in the roll (γ_{RR}), arc sec R/L and 37 arc sec U/D.
	16:07	NOAA reports sunflare from AR13 at 16:02.
	17:40	Flare with x-ray from AR-14.
	17:42	Flare max - class M1.
	18:48	Door opened in 8 seconds and STD mode ran normally.
	19:00	Small flare going in AR-14.
		54 was operating
		82A was operating
		55 was operating
	19:17	Door closed in 7 seconds.
	20:20	Variation of PES during 1350 was 4 arc sec peak to peak UP- 46 at 1850 of FSS also shows 4 arc sec peak to peak. See back of HAO console notebook for 1850 UP-46 plots.
	20:40	Data from 1700 GMT on DOY 148 showing approximately 3 arc sec variation in PES with door closed. 2042 data (back of console notebook) also shows approximately 3 arc sec in FSS with FSS door closed.
149	02:56	Standard - Nominal
	02:59	S055 door was closed during our STD mode.
	06:02	STD mode nominal.

06:58	STD mode nominal.
07:05	Fast scan nominal.
07:35	γ_{RR} will have error on our frames.
08:35	STD mode nominal.
08:42	Fast scan nominal.
09:15	STD mode nominal.
10:03	STD mode nominal.
10:22	STD mode nominal.
11:35	STD mode nominal.
11:41	STD mode nominal.
12:00	Door closed after 12 min. 49 sec. of FS mode (57 frames).
13:17	UP-26 R-28 to put WLCE to ϕ on pointer (SPT)
13:18	D_4 -1, -1, crew command.
14:28	Past 12 hours 2 flares in 17. AR17 continues to grow.
15:00	According to FSS output at 1 sample/second and the calibration, jitter is approximately 10 arc seconds/sec.
16:07	SN in AR-17.
16:52	Limb remarkably steady during 4 limb coalignment. Oscillation noticable, only at zoom in. Undetectable zoomed out. Random by axis, few arc seconds.
18:00	Canister driven off sun, tried secondary gyro too soon and gets 5 arc minute oscillation in U/D.
18:33	Problem has apparently been fixed. Must zero wedges when EPC turned on.
19:42	STD mode nominal.
19:44	SPT looking at TV-WLC looks good - not 100% centered bright on 7:30 to 8:30 portion eliminate by manual pointing.

		Pointing was up 5; Left 6 D_4 was down 3, right 12.
	19:46	Continuous started.
	19:55	C1 flare peaked at 1922 in AR-14.
	19:59	Cont OFF. SN in AR-17.
	20:29	STD START. Roll is -0787.
	25:59	STD OFF.
	26:25	Fast scan ON.
	24:00	NOAA briefing. AR-17 and AR-14 flares. AR-17 should grow but no large flare problem. Same for AR-14.
150	01:28	Crew reported operate light went out 15-20 seconds during CONT mode.
	02:50	NOAA bright surge AR-17 at 01:38. Type III radio event at 01:33.
	06:21	STD mode nominal.
	06:53	Fast scan nominal.
	09:15	Frames remaining count does not agree with panel count of 7749.
	10:56	STD mode nominal.
	11:12	Fast scan nominal.
		From plans <u>Film Dose limits</u>

Mission day	2	3	4	5
	.315	.344	.372	.401

	15:25	For canister roll versus experimental roll -5415 Exp roll = +36° β_z.
	15:25	F62 started fading about an hour ago about 1/3 gone.
	16:07	Film dose log

Mission	2	3	4	5	6
Dose	.315	.344	.372	.401	.430 1.09

		First line is accumulated dose to date in RADS Second line is projected dose to end of mission.
	17:40	Crew reports S082A operate light is not on and frames remaining counter is not decrementing.
	18:31	Sub-flare in AR-17 about 30 min ago (1816). It's dead now.
	18:43	STD mode nominal.
	18:45	Type III burst at 1816; related to sub-flare AR-17.
	18:59	Assume BB-2 completed.
	19:58	PMEC saturated at 960-SPT got 1/min of flare. AR-14; flare rise; into flare fall in sunset.
	20:03	Flare was SAA! NOAA saw <u>no</u> flare.
	20:10	S055 experiment PM problems during flare mode.
	21:41	Dark surge in AR-17 - near neutral line.
	23:55	Eruptive prominence (NOAA) at 23:45 on east limb. Too bad we lost our observing.
151	01:21	CONT on for atmospheric extinction.
	06:10	STD mode nominal.
	06:15	STD mode nominal.
	06:26	NOAA briefing. AR-17 SN, is declining slowly. AR-14 Nothing - declare W-limb. P59 - gone today past W-limb E-limb should be "old stuff" from 92.
	08:01	STD terminated by sunset after about 1 min.
	13:29	CDR reports Operate light blinking off during the STD mode for approximately 10 seconds.
	14:56	New bright region emerging near N18W80.
	15:03	STD mode nominal.
	15:12	STD start, STD start again, fast start (see 13:29 comment)

	23:05	STD mode nominal.
152	01:00	CONT for Atmospheric Extinction.
	02:17	CONT
	13:20	Sub-flare at 0100. S/L W88 region or over limb. Minor surge and active filament on west limb. Region 17 dying. Nothing on east limb or expected on east limb for some time. NW enhancement in 8 min. MLO Data coming on stronger.
	14:18	STD mode nominal
	14:28	STD mode nominal
	15:43	STD mode nominal.
	15:54	STD mode nominal.
	16:04	Fast scan nominal.
	16:21	STD mode nominal.
	17:34	STD mode nominal.
	17:42	Fast scan nominal.
	18:02	STD mode nominal.
	18:49	STD mode nominal.
	19:10	STD mode nominal.
	19:16	STD mode nominal.
	19:22	STD mode nominal.
	19:47	STD mode nominal.
	19:53	Fast scan nominal.
	19:10	Modes were run in this period while the crew was doing acrobatics in OWS. No immediate effect seen on PES.
	21:19	Door closed as vehicle went through sunset and both discriminators fired.

	22:28	STD mode nominal.
	23:17	NOAA Briefing - not much, some activity from AR-17; no limb activity except something may be coming over E-limb. Small limb flare on AR-14 (over the limb).
	23:56	STD mode nominal.
153	01:35	STD mode nominal.
	03:08	STD mode nominal.
	04:41	STD mode nominal.
	04:47	STD mode nominal.
	06:29	STD mode nominal.
	07:10	NOAA Briefing. AR-17 - Close to limb C6 at 152/1256 F62 - on limb DAY 155. F69/AR-18 - slight brightening NE limb small surge - possible AR over.
	07:20	STD mode nominal.
	07:58	STD mode nominal.
	08:50	STD mode nominal.
	09:01	FST scan nominal.
	09:35	STD mode nominal.
	10:22	STD mode nominal.
	10:29	STD mode nominal.
	10:39	Fast scan nominal.
	11:55	STD mode nominal.
	13:10	Sub-flare in AR-17.
	13:42	STD mode nominal.
	14:01	CONT mode ON.
	15:05	BB-2 roll -5388.

		Electrical zero PES +5 U/D FSS U/D 19 +24 R/L 35 total offset +30
153	21:50	S054 door would not open. Crew tried secondary motor and still would not open. Opened door with both motors enabled.
	22:06	Crew ran door MAL and S052 is open.
	23:24	S052 mirror in TV, Power in STBY, Door Inhibit.
154	02:22	STD Nominal
	03:59	STD Nominal
	04:30	The star tracker has updated the computer so the γ_{RR} at 0359 is <u>incorrect</u> on the film.
	07:21	STD mode nominal
	07:35	Film dose log M.D. 9 = .517 To Date = 1.09
	08:10	STD mode nominal.
	08:18	Fast Scan nominal.
	09:46	STD mode nominal.
	09:56	Fast Scan nominal.
	11:20	STD mode nominal.
	11:26	STD mode nominal.
	11:33	Fast Scan nominal.
	14:28	Crew reported that the following readings were obtained with the sun best centered behind the disk: FSS Down 63 and Left 75; Crosspointer UP 13 and Right 75 (scale X10)
	17:43	Crew took two STD modes at 17:43 because TV mirror was up for first time.
155	03:18	Went into sunset somewhere between 03:18 and 03:29 with the door open and the night signal

		inhibited. Door was closed at AOS next station after sunset. MDRS report indicated 5 arc-minute discriminator fired at about the 40 kilometer level.
155	04:32	STD mode nominal.
	04:53	STD mode nominal.
	06:00	STD mode nominal.
	07:36	STD mode nominal.
	08:08	STD mode nominal.
	09:03	STD mode nominal.
	10:34	STD mode nominal
	15:57	BB2 nominal with 23 CONT.
	19:38	F70 is disappearing in the last three hours.
	21:05	Type III, one minus.
	23:27	STD nominal.
156	06:53	STD mode, lost first frame.
	07:25	STD mode nominal.
	08:20	STD mode nominal.
	08:29	Fast Scan nominal.
	09:52	STD mode nominal.
	11:26	STD mode nominal.
	13:01	STD mode nominal - Timed out properly.
	13:11	STD mode nominal
	14:48	PLT cannot see libration cloud on TV.
	15:15	Crew reported that a continuous mode terminated and the READY light came on. Possibly due to 20 arc-second discriminator or turning mode switch. (MDRS didn't show a 20 arc-second firing, but a momentary firing wouldn't show up on MDRS anyway).

156 21:08 STD mode nominal.

PES READINGS WITH VISUAL OPTIMIZATION

TLM Readings	(1)	(2)	(3)
PES U/D	18	0	0
PES L/R	38	26	24
IAS U/D	2	0	0
IAS L/R	7	9	8
FSS U/D Error	.2	-29	-1.6
FSS L/R Error	3.9	+1.1	1.9
γY FSS U/D	31	33	30
γX FSS R/L	35	3	3
γ_{RR} Roll	-5729	0800	5402

(1) 20 arc second disc ON.

(2) 14:48 GMT - STD ON.

(3) 14:56 GMT - STD ON.

156	16:17	STD mode nominal.
	16:47	STD mode nominal.
	19:34	STD mode nominal.
157	02:00	BB1 nominal.
	06:11	Fast Scan nominal.
	06:40	STD mode nominal.
	10:52	STD mode nominal.
	14:31	Got an extra STD in -5400 roll of BB1. NOTE: IAS L/R was 14 on 10800 roll, then moved to L/R 3 at -5400. This is the third time this phenomenon has been seen.
	18:55	STD mode nominal.
	21:41	Arch filament and bright surge in AR31.
	21:46	Surge has stopped.
158	00:58	BB1 nominal.
	01:14	Best pointing is when Crosspointer is R/L = 24, U/D corresponding to TLM of U/D = 6 and R/L = 24.
	03:53	STD mode nominal.
	06:58	AR31 growing.
	07:02	Fast Scan nominal.
	07:37	STD mode nominal.
	08:40	Fast Scan nominal.
	10:17	STD mode nominal.
	13:00	S054 is having trouble getting their Main Power OFF. Power is failed ON.
	18:32	Crew reports (from EVA) that S054 door was closed ... it should have been open.
	20:10	Crew reports S054 door now pinned open.
	21:13	Panels are out 30-40%. Ground control thinks they are frozen in place. Will maneuver so as to thaw them out.

158	21:58	Crew reports one of the OWS panels is out 80%.
159		Ran 2 STD's and one FS with TCS OFF shortly after midnight of DOY 159. TCS turned ON at 02:44.
	06:21	Fast Scan nominal.
	06:58	STD mode nominal.
	14:25	STD mode nominal.
	15:55	BB1 nominal.
	16:30	Temperatures have dropped about 3 degrees in four hours.
	17:02	ADE sent command to turn TCS ON.
	19:04	Temperatures look good.
	19:27	STD mode nominal.
	20:31	Fast Scan nominal.
160	00:14	BB1 nominal.
	05:40	Fast Scan nominal.
	06:08	STD mode nominal.
	07:19	Fast Scan nominal.
	07:47	STD mode nominal
	13:47	Prominence 79 has become slightly but noticably active - BB1 starting at 1326.
	13:31	STD mode nominal.
	13:42	STD mode nominal.
	13:52	CONT on.
	16:37	Single Type III, 20-50 MHz.
	18:44	P79 (NE18-21) still moderately bright and active. On Boulder spectrohelioscope it is bright in sodium and magnesium and one iron line (specific lines not yet identified). This is unusual, the prominence may be associated (connected) with returning AR03 - due NE12 early tomorrow.

	18:17	Sub-brilliant flare in 31, x-rays weak, small radio burst.
	19:43	Type III at 18:04.8 to 18:05.3 NE5. PA ≈ 50-60^{0} OFF limb. Positive angles east 85 MHz to 20 MHz - Clark Lake.
161	00:16	Type III 0012-0015, IMP 1 & 2
	01:03	Type III continuing NE quadrant.
	01:11	Boulder reports massive surge in progress at N17E90.
	01:33	Surge still in progress.
		Surge at P79 - 290/1.0.
	02:08	CONT mode on at ADS.
	02:22	Fast Scan nominal.
	03:06	NRL notified of surge.
	03:40	MLO notified of surge.
	06:30	Fast Scan nominal.
	08:07	STD mode nominal.
	08:12	Fast Scan nominal.
	08:29	NOAA reported another eruptive prominence; also a Type II burst with the earlier one.
	09:29	Fast Scan nominal.
	10:00	NRL notified of EPL.
	14:16	Type III 1412-1414 from Boulder.
	16:00	STD mode nominal.
	16:10	STD mode nominal.
	16:13	SAC Peak reports coronal rain at 1608 at NE18.
	16:19	AOS in CONT.
	17:56	STD mode nominal.
	17:58	Camera temp up to 74.4^{0}F. This is about 14^{0} higher than we have been running at LOS 18:06 the temp was down to 71.1^{0}F.

	18:58	From Bill Erickson at Clark Lake:
		22:38 Type III, IMP 2 22:46 Type III, IMP 2 22:58-23:03 Type III, IMP 2, Group 0012-0015 Type III, IMP 3, Group 0022 Type III, IMP 2 0026 Type III, IMP 3 0054-0058 Continuum 0059 Type III, IMP 1 0101 Type III, IMP 1 0151 Type III, IMP 2
	21:13	SN in AR31.
	21:20	MLO says P79 still active.
	23:00	Crew reports they got a ready light but no operate light. They ran through the MAL procedures and isolated the problem to either the programmer or the film camera.
162	00:12	SN in AR27.
	01:30	Verified CONT modes signals come from the programmer O.K. Camera temperatures go up as long as Main Power is ON. This pretty well verifies the camera has jammed. From 23:06 report, the following MAL procedure was run by crew at approximately 01:19: STD mode, 3.5 min; Secondary Prog., 2 min; 2 min pause; STD, 5.5 min' CONT, ?min.
	02:25	Acknowledged camera failure.
	13:34	TVD.
	18:57	VTR.
	21:20	VTR
163	13:10	VTR (?)
	14:44	TVD
	17:22	P81 active.
	19:01	VTR (?)
	20:28	SN in AR27.

164	01:47	TVD
	15:04	SN in AR27 and AR37
	15:21	VTR(?)
	17:19	SN in AR37
	18:01	SN is now 1 normal.
	18:16	Flare in AR37 now C4.
	23:10	X-ray flare.
165	00:56	VTR
	00:57	Crew running S052.
	03:40	S054 shows increase in x-ray count.
	03:51	SB in AR27
	13:10	VTR(?)
	16:31	W. Erickson reports Type III, IMP 1 at 0019 and 0115. Also Type III at 1519 with maybe weak Type IV after.
	18:18	VTR
	2030	SB in AR27, 1 normal.
	20:47	Limb surge from AR27.
166	00:30	Flare in AR37.
	02:11	SN from AR27.
	10:51	VTR
	11:05	VTR
	14:10	S056 XREA counts going up <u>fast</u>. NOAA reports subnormal in AR31.
	14:11	Crew is observing flare in AR31. (0 cm burst, 67 flux units on 6 cm).
	14:17	Two bright flares, Type III.

	14:21	Bright spot x-ray 1 & 4 positions. Slewed Hα, 10x brighter, unmistakable flare 1 to 2 min of flare rise now in flare roll.
167	00:05	Limb flare in AR27.
	00:50	SN from AR41.
	10:26	VTR
	14:24	SN in AR37.
	14:33	Type IV from 1417 to 1424
	14:36	Short Type III at 1427.
	14:38	Type II starting 1435.
	15:42	SF in AR37.
	15:48	EPL at 1640.
	21:06	Bill Erickson called
		2155-2158 IMP 3 120-20 MHz
168	10:56	TVD
	15:45	VTR(?)
169	10:36	VTR(?)
	16:50	VTR(?)
170	12:09	Camera CM14A-5 removed and CM14A-8 installed. D-1 cleaned.
	19:21	NOAA notified us of the following Type III's recorded at Clark Lake:

1542	III	IMP 2
1602	III	IMP 2
1715	III	IMP 2
1726	III	IMP 1
1732	III	IMP 1
1738	III	IMP 1
1753	III	IMP 2

	20:25	Type III, IMP 1
	22:10	Fast Scan nominal.
	23:57	STD Mode nominal.
171	05:46	STD Mode nominal.
	14:06	Type III, IMP 1.
	15:29	Type III, IMP 1.
172	05:04	STD Mode nominal.
	12:52	STD Mode nominal.
	20:44	STD Mode nominal.
173	00:06	STD Mode nominal.
	12:08	STD Mode nominal.
	15:12	Fanning or Type III, IMP 1, over.
	20:00	STD Mode nominal.
174	04:22	STD Mode nominal
	13:24	STD Mode nominal.
	19:59	STD Mode nominal.
	21:08	(From yesterday) Phone call from Bill Erickson, Clark Lake: Summary of Radio Activity for last 3 days:

			Intensity	Freq. Range
171	1529	Type III	2	70-20
	1530	Type III	2	
	1543	Type III group	2	70
	1907-2000	CONT	1	50-20
172	1745-46	Type III group	2	20-27
	2005	Type III	1	
	2007	Type III	1	
	2053	Type III	1	
	2055	Type III	1	weak
	2059	Type III	1	
	2210	Type III	1	

		173 Radio Tel. down till 1900.
		2001-2015 Type III Group 2 80-20
175	03:39	STD Mode nominal.
	17:05	Hawaii reported a large eruption about to take place on the limb.
	17:35	STD Mode nominal.
	17:49	STD Mode nominal.
	18:37	NOAA briefing: P81 in SOV is what MLO may be seeing. AR 47-49 seems to be decaying. P84 will be on the W-limb tomorrow. F.P. AR50 9/0/0. P93 on the E-limb, pretty quiet.
	19:16	STD Mode nominal.
	19:58	MLO reports prominence still active.
	20:15	STD Mode nominal.
	23:27	STD Mode nominal.
176	00:30	MLO reports SW limb still bright.
	00:46	CSIRO reports only a weak source 240°.
	04:31	STD Mode nominal.
	07:00	Large prominence with FEET at 5 3 and N 6 lifted off W-limb.
	09:00	Prominence dissipated at 3 $R_{\odot}$.
	13:37	STD Mode nominal.
	21:00	Clark Lake reports Type II (1822, IMP 1) (1922, IMP 1) (2007, IMP 1) (2023, IMP 1)
177	01:38	Type IV at 240°.
	01:55	MLO reports prominence at PA 320 lifting.
	02:12	STD Mode nominal. Possible Transient.

	02:40	STD Mode nominal.
	03:49	STD Mode nominal.
	20:33	STD Mode nominal.
178	04:41	STD mode nominal.
	21:23	STD Mode nominal.
179	03:59	STD Mode nominal.
	19:54	Type III in AR50 surge reported by MLO. STD mode stopped by momentum dump.
	20:30	Transient from AR58 (behind limb).
	21:25	STD Mode nominal.
180	01:43	Group Type III and Type V.
	03:15	STD Mode nominal.
	03:23	C8, SN in AR58.
	04:54	STD Mode nominal.
	08:04	Type III 24-40 Hz
	13:08	Group Type III
	13:26	Type III
	15:14	Type IV, 2 +, AR57.
	15:22	Type II with spray at 1524.
	15:37	Fast Scan nominal.
	16:51	Surge from AR58.
	19:09	Flare and Type III from AR57.
	19:46	M4 in AR58, cm radio.
	20:44	STD Mode nominal.
	21:34	Surge on E-limb.

181	00:35	Type III from AR58
	01:06	Type III from 100^0 (AR57?)
	04:20	STD Mode nominal.
	11:44	Fast Scan nominal.
	13:16	STD Mode nominal.
	15:00	STD Mode nominal.
	15:16	1B in AR58.
	16:31	STD Mode nominal.
	18:10	STD Mode nominal.
	21:35	STD Mode nominal.
182	02:20	Strong Type III and small flare in AR57.
	05:16	STD Mode nominal.
	12:35	STD Mode nominal.
	20:52	STD Mode nominal.
183	04:12	Possible surge at NE16.
	04:30	STD Mode nominal.
	12:45	F97 lifted. At 0.2-0.3 $R_\odot$ 10 min later - [2].
	13:59	F97 History: Started as a "surge" prominence, with the loop lifting off. Material started falling back, then the top of the loop separated and went off ~1500 km/s. This material was small and bright. Waited ~10 minutes and put in another STD, then went to AR58 per command plan. Material and event was not large enough to start FAST or wait sun-center for more than an hour for our next observation.
	13:26	STD Mode nominal.
	14:41	STD mode nominal. Transient.
	21:07	Sub-bright in AR59.
	21:14	Type III, Importance I
	21:53	Type III's at 2133, 2137, 2144.

184	01:45	Mess of Type III's at 0125 reported by phone from Boulder.
	02:17	Routine report from Culgoora - very weak. Intermittent sources at limb PA 50-80.
	03:33	Type III, IMP 2, 0306, MANILA.
	05:07	STD Mode nominal.
	05:10	0451 Type III, IMP 1.
	11:04	STD Mode nominal. Operation synoptic.
	20:57	STD Mode nominal. Operation synoptic.
185	04:25	STD Mode nominal. Operation synoptic.
	13:37	STD Mode nominal. Operation synoptic.
	18:44	STD Mode nominal. Operation Libration Cloud
	18:53	STD Mode nominal. Operation L5
	20:18	STD Mode nominal. Operation L5
	20:34	STD Mode - Terminated by momentum dump. (10 frames were shot).
	21:57	STD Mode - Nominal of - L5.
	23:25	STD Mode nominal. (L5)
186	00:32	STD Mode nominal. (L5)
	05:18	STD Mode nominal.
	21:01	STD Mode nominal.
187	04:50	STD Mode nominal.
	13:50	STD Mode nominal.
	14:08	Flare in AR62.
188	03:45	STD Mode nominal.
	13:00	STD Mode nominal.
189	03:25	STD Mode nominal.
	14:00	STD Mode nominal.
	20.33	STD Mode nominal.

	23:52	SN in AR58.
190	00:48	Type III's reported by MANILA.
	00:55	STD Mode nominal, Type III's in progress.
	04:18	STD Mode nominal.
	21:26	STD Mode nominal.
191	00:30	Type III's - MANILA
	00:53	Type III's - MANILA
	01:20	Type III's - MANILA
	02:14	M1 in AR58.
	03:21	STD Mode nominal.
	12:45	STD Mode nominal.
	19:00	P08 can be seen at G^1 by Mauna Loa. Very bright now with a coronal condensation at the top. Coronal structure above may consist of two streamers. Feature is ~4 rotations old and <u>very stable</u> since coming over the east limb. Coronal structure from AR58 is now emerging over the west limb.
	20:43	STD Mode nominal.
192	00:43	Group of Type III, MANILA.
	02:37	STD Mode nominal.
	21:37	STD Mode nominal.
193	02:25	STD Mode nominal.
	22:20	STD Mode nominal.
194	02:51	STD Mode nominal.
	13:35	STD Mode nominal.
	18:34	NOAA Briefing: AR65 - most active. But whole sun is very quiet. P11 is still around. AR68 looks promising.

	19:39	NOAA Note: SE limb seems to be getting active. It is interesting to note that our pylon is (γ_{pr} = -2646) around the SE section.
	21:36	STD Mode nominal.
195	02:41	STD Mode nominal.
	13:15	STD Mode nominal.
	21:15	STD Mode nominal.
196	02:00	STD Mode nominal.
	03:35	STD Mode nominal
	14:00	STD Mode nominal.
	21:48	STD Mode nominal.
	23:36	Type III, 30-48 Mhz.
	23:45	Type III & V continuum.
197	01:22	AR68 growing, arch filaments growing.
	13:25	Gyro study continues. Has been unstable for a couple of days. Decision: no ops, would not use backup gyro until further study.
198	17:00	Instability of gyro caused actuator motor to drive hard, causing overheating and freezing. Review of problem.
199:	02:38	Type III
	02:45	Moderate Type II
	18:59	Started STD mode - premature shutdown after 3 exposures due to marginal pointing.
201	18:45	Bright knot on W-limb, 1 $\widehat{\text{min}}$ above surface (MLO).
	18:52	Possible flare in AR74.
	19:00	Type III.
204	21:08	Opened door with pointing in SI to check stability of point. PES U/D indicates 296-300 arc seconds, L/R appears to be dead: it indicates about 9 arc seconds.

	21:09	Closed door. Analysis of MDRS data showed PES R/L from -27 to -42 arc seconds, and U/D from 296 to 305 arc seconds.
209		SL-3 has been launched.
	16:00	Type II
	17:47	SN in AR77.
	20:07	Crew reports CSM is docked.
	23:55	Started STD mode unattended - ran O.K.
210	01:27	STD Mode nominal.
	01:33	Fast Scan nominal.
	04:34	STD Mode nominal.
	05:40	STD Mode nominal.
	06:13	STD Mode nominal.
	13:20	M7 flare in AR76, Type IV for 20 minutes.
	16:32	STD Mode nominal.
	18:20	STD Mode nominal.
	18:28	STD Mode nominal.
	19:57	STD Mode nominal.
	20:04	STD Mode nominal.
	21:38	STD Mode nominal.
	21:44	STD Mode nominal.
	23:08	STD Mode nominal.
211	00:43	STD Mode nominal.
	00:50	STD Mode nominal.
	03:52	STD Mode nominal
	04:59	STD Mode nominal.
	05:32	STD Mode nominal.

211 05:38 Assembling some data on FSS U/D readings:

		FSS U/D	ERR	FSS R/L	ERR
		11	-0.6	19	1.2
	05:32	11	1.4	19	0.4
	05:03	11	-1.6	19	3.5
	03:52	13	0.7	19	0.7
	00:50	15	0.4	20	0.4
	00:43	15	1.2	20	3.0
210	23:07	16	-1.9	21	2.5
	21:44	18	1.2	21	2.5
	18:33	20	-0.1	21	-0.1

		PES U/D	ERR
211		17	14
	05:32	17	14
	05:03	16	14
	03:52	18	17
	00:50	16	15
	00:43	16	14
210	23:07	16	15
	21:44	15	14
	18:33	16	14

211	06:30	STD Mode nominal.
	06:36	STD Mode nominal.
	07:16	STD Mode nominal.
	08:08	STD Mode nominal.
	08:14	STD Mode nominal.
	08:49	STD Mode nominal.
	09:55	STD Mode nominal.
	10:22	STD Mode nominal.
	11:17	STD Mode nominal.
	11:27	STD Mode nominal.
	12:42	STD Mode nominal.
	12:49	STD Mode nominal.
	12:54	STD Mode nominal.

211	13:06	STD Mode nominal.
	13:11	STD Mode nominal.
	14:17	STD Mode nominal.
	18:40	55 door problem. 0/0 using one motor (primary and secondary.
	18:58	55 will go to two motors. 52 + 54 normal OPS will be run first at GDS at 1914.
	19:16	STD Mode nominal.
	19:22	STD Mode nominal.
	19:41	STD Mode nominal.
	20:42	STD Mode nominal.
212	00:05	STD Mode nominal.
	00:30	Star tracker not working starting here.
	01:39	STD Mode nominal.
	03:10	STD Mode nominal.
	04:15	STD Mode nominal.
	04:47	STD Mode nominal.
	05:50	STD Mode nominal.
	06:32	STD Mode nominal.
	07:24	STD Mode nominal.
	08:04	STD Mode nominal.
	08:54	STD Mode nominal.
	09:05	STD Mode nominal.
	09:39	STD Mode nominal.
	10:30	STD Mode nominal.
	10:42	STD Mode nominal.
	12:06	STD Mode nominal.
	12:23	STD Mode nominal.
	13:37	STD Mode nominal.

212	13:57	Fast Scan nominal.
	15:14	STD Mode nominal.
	15:25	STD Mode nominal.
	17:10	Active prominence in SE, material falling to surface.
	20:09	STD Mode nominal.
	20:32	STD Mode nominal.
	20:40	Coronal rain in SE.
	21:46	STD Mode nominal.
	23:17	STD Mode nominal.
	23:24	Fast Scan nominal.
	23:55	SN in progress SE limb.
213	00:55	STD Mode nominal.
	00:59	Small surge SE limb, .03 R_0.
	02:15	Small surge SE limb, .08 R_0.
	02:26	Fast Scan nominal.
	08:23	STD Mode nominal.
	08:56	STD Mode nominal.
	09:52	STD Mode nominal.
	10:00	STD Mode nominal.
	11:24	STD Mode nominal.
	11:31	STD Mode nominal.
	11:37	STD Mode nominal.
	13:30	Type III
	19:11	Type III
	19:12	Type III
	19:14	SN in AR77.
	19:31	STD Mode nominal.

213	19:36	Fast Scan nominal.
	19:54	STD Mode nominal.
	21:03	STD Mode nominal.
	21:27	STD Mode nominal.
	22:33	STD Mode nominal.
	22:40	NOAA Briefing: AR 77 Active (some spot growth, some sub-flares) E limb (on equator) Active region coming over limb (AR83) F.P. 5/0/0. F23 at CMP.
214	00:11	STD Mode nominal.
	00:20	ATM clock is updated at midnight GMT if error exceeds one second.
	03:18	STD Mode nominal.
	04:29	CSIRO Reports: 0225-0227 & 0236-0239 - Type III group, 1^+
	04:33	SN in AR77.
	06:37	STD Mode attempted, discriminator fired.
	06:46	STD Mode nominal.
	07:39	STD Mode nominal.
	08:11	STD Mode nominal.
	08:19	STD Mode initiated. The last three exposures are under 400 km.
	09:07	STD Mode nominal.
	09:16	Fast Scan nominal.
	09:50	STD Mode nominal.
	14:00	STD Mode nominal.
	14:08	STD Mode nominal.
	18:32	AR77 filament erupting.
	18:42	Starting STD Mode ... terminated after two frames apparently due to 20 arc second discriminator firing.

214	18:51	Starting STD mode ... did not go due to PES U/D 17, L/R 24.
215	02:15	NOAA Briefing: AR76 - kind of quiet - movement in the filament. AR77 - C1 today, brightest region F.P. 6/1/0 F24 - approaching W-limb. June 10 prominence due back on E-limb mid-day tomorrow.
	02:36	STD Mode nominal.
	05:36	γ_{RR} has been correct for some time.
	06:56	STD Mode nominal.
	16:20	Star tracker not working so γ_{RR} OFF.
	21:09	Owen discussed the pointing. When pointed at U + 8, R + 16 it was so close to the 20 arc second discriminator that the ready light kept popping in and out. Owen plans to modify this pointing to keep ready light ON.
	23:14	Crew said they ran STD mode successfully, and started another with READY light OFF, got an OPERATE light. Only ran one frame the second time.
216	01:54	STD Mode, first frame lost to TV.
	02:50	NOAA Briefing: AR83 F.P. 5/0/0 - Seems most interesting. P28 (E-limb)
	03:31	STD Mode nominal.
	05:17	STD Mode nominal.
	06:45	STD Mode nominal.
	12:00	Summary: ATM Bus 2 may be shorted to TV Bus 2 causing FSS wedge to indicate 0,0. S052 READY light intermitent. ATM Bus 2 read 350 amps for 35 seconds.
	15:02	Several Type III associated with dark surge in AR77.
	16:36	Type III, 20-40 MHz.

217	18:37	STD Mode nominal.
	23:17	NOAA Briefing: AR85 browing SN 1837 UT. Filament growth in AR76 and lifting. P24 (W-limb) somewhat active.
	23:40	SN in AR85.
218	02:01	STD Mode nominal.
	02:07	Fast Scan nominal.
	03:25	Group intensity 2 Type III in AR35.
	07:02	STD Mode nominal.
	07:08	STD Mode nominal.
	08:40	M flare in AR85.
	12:43	STD Mode nominal.
	12:52	STD Mode nominal.
	13:00	Fast Scan nominal.
219	03:04	STD Mode nominal.
	04:36	STD Mode nominal.
	04:41	Fast Scan nominal.
	06:23	STD Mode nominal.
	07:16	STD Mode nominal.
	07:22	Fast Scan nominal.
	10:30	Eruptive filament in AR76, P23.
	11:59	STD Mode nominal
	12:08	STD Mode nominal.
	14:00	STD Mode nominal.
	14:24	SPT reports a disk-shaped object floating through the S052 field of view in sharp focus. SPT reported that TV image moved rapidly to the 11 o'clock position and disappeared. It was subsequently restored. This occurred while the ATM was being rolled from -5400 to -10,600.

219	18:36	SN, C3 flare in AR85.
220	02:11	STD and CONT
	03:00	Weak Type I in west.
	05:02	Eruptive Prominence N12W85.
	05:36	STD Mode nominal.
	05:41	Fast Scan into sunset.
	06:32	STD Mode nominal.
	06:38	Fast Scan nominal.
	07:06	STD Mode nominal.
	12:56	Star tracker OFF.
	14:20	20 frames CONT.
	14:34	STD Mode nominal.
	14:37	SPT reports no operate light, no ready light on S052.
	15:25	SPT reports operate light O.K., ready light intermitent.
	19:20	STD Mode nominal.
221	01:27	STD Mode nominal.
	03:17	STD Mode nominal.
	04:45	STD Mode nominal.
	04:51	Fast Scan nominal.
	05:49	STD Mode nominal.
	06:22	STD Mode nominal.
	06:27	Fast Scan nominal.
	07:26	STD Mode nominal.
	09:03	STD Mode nominal.
	09:09	Fast Scan nominal.
	10:31	STD Mode nominal.
	10:42	Fast Scan nominal.

221	10:59	P27 lifted off W-limb one foot lifted and material flowed to other footpoint.
	12:00	STD Mode nominal.
	12:08	Fast Scan nominal.
	12:25	Fast Scan, 65 frames.
	15:41	BB1 nominal.
	17:06	Owen caught flare out of AR85. San EXTD STD for post-flare activity. Owen thinks he sees a coronal manifestation on TV. Dumped TV at GDS. Then went back into STD or EXTD STD. Previous EXTD STD was truncated for TV.
	17:19	Small flare in progress in AR84.
	17:54	BB1 truncated for flare.
	20:02	Type III, IMP 1.
	21:44	SN optical from AR85.
	22:40	NOAA Briefing The prominence at 1059 was probably from both P27 and P23 since the amount of material was very massive.
222	00:46	STD Mode nominal.
	00:53	Fast Scan nominal.
	04:24	Weak Type I storm and weak Type II.
	08:22	STD Mode nominal.
	08:28	Fast Scan nominal.
	11:26	STD Mode nominal.
	11:34	STD Mode nominal.
	12:40	Eruptive prominence to .13 R_o.
	12:54	Bright surge to .16 R_o.
	13:30	SPT saw loop over activity and ran Fast Scan.
	14:10	NRL and Clark Lake notified.
	14:30	STD Mode nominal, SPT sees transient to 4 R_o.

222	14:33	STD Mode
	14:41	CONT Mode
	15:11	Small Type III.
	16:33	Fast Scan nominal.
	18:09	STD Mode nominal.
	19:17	STD Mode nominal.
	22:20	NOAA reports the previous transient appeared as fast surge of material grom ground.
223	01:39	BB1 nominal.
	04:59	STD Mode nominal.
	05:06	STD Mode nominal.
	07:02	Type I storm in west at 1.3 $R_0/290^o$, on 160 MHz.
	07:38	STD Mode nominal.
	07:45	Fast Scan nominal.
	11:02	STD Mode nominal.
	11:07	STD Mode nominal.
	13:46	BB1 nominal.
	17:30	STD Mode nominal.
	20:03	Limb surge from AR85, now at .14 R_0.
	20:50	Crew reports prominence over AR85 disappeared.
	23:20	STD Mode - First frame lost to TV.
224	00:55	BB1 nominal.
	01:32	Type III's, IMP 1, 20-40 MHz.
	03:38	Group Type III's, IMP 1, 24-42 MHz.
	06:55	STD Mode nominal.
	07:01	Fast Scan nominal.
	08:30	STD Mode nominal.
	08:36	STD Mode nominal.

224	09:58	STD Mode nominal.
	11:53	Fast Scan nominal.
	11:58	Type III, AR85, 24-32 MHz.
	13:03	STD Mode nominal.
	16:20	EPL N35W90 to 0.2 R_o.
	16:27	Series of bright blobs moving out.
	16:55	MLO reports two blobs at 1.25 R_o, 270°.
	17:58	Fast Scan
	18:16	Clark Lake and NRL informed of transient.
	19:59	STD Mode nominal.
	21:10	NOAA reports active prominence in SW. S10W90, 1.05 R_o. Start 2020z, bright knots visible at 2100z. No radio bursts.
225	02:00	BB1 nominal.
	05:06	STD Mode nominal.
	06:09	STD Mode nominal.
	06:15	Possible Type II/IV event, 15-300 MHz end
	06:30	End above event no optical.
	06:55	STD Mode nominal.
	07:46	STD Mode nominal.
	07:52	Fast Scan nominal.
	09:04	STD Mode nominal.
	09:23	STD Mode nominal.
	10:51	STD Mode nominal.
	13:56	PES/FSS calibration.

Test Condition	FSS	Hard Copy	PES	Crew Verbal Real Time
		U/D		
U 28	0		+46	0
U 28	0		+43	0
D 28	+69		-36	+68
D 28	+73		-36	+72
0	+35		+ 5	+35
Best	+15		+19	+14
		R/L		
L 28	+80		-39	+80
R 28	+ 9		+27	+ 8
R 28	+11		+26	+11
L 28	+81		-39	+81
0	+45		- 7	+45
Best	-45		+82	+78

SPT best centered looked good on TV, and he reported time readings were just like last time.

14:24 STD Mode nominal.

17:05 APR (IMP II) in F/P 29, S17W90.

17:43 STD Mode nominal.

21:43 BB1 nominal.

22:33 STD Mode atmospheric extinction.

23:16 STD Mode nominal.

226 00:02 CONT, 4 frames.

00:20 Extensive surge in AR83.

01:24 Extended STD mode.

07:04 STD Mode nominal.

07:10 Fast Scan nominal.

226	10:27	STD Mode nominal.
	13:25	EXT STD Mode
	19:54	MLO reports active prominence.
	19:55	Weak Type III
227	02:00	P-29 gone.
	02:08	BB1 completed nominal.
	07:56	STD Mode nominal.
	10:56	STD Mode nominal.
	14:31	BB1 with EXT STD instead of CONT.
228	01:20	CONT mode.
	07:13	STD Mode nominal.
	13:31	BB1 nominal.
	15:00	Minor surges on E-limb, N13S22.
	15:54	Emerging region S29E08 (tip of F37), Tiny surges at N24W63.
	16:05	Small mound prominence SE11 at 1600.
	16:15	NOAA Reports P28 moderately active.
	16:40	Minor surges NE22, F28.
229	02:09	CONT Mode.
	07:15	STD Mode nominal.
	12:00	BB1 nominal.
	17:23	STD Mode nominal.
	20:33	STD Mode nominal, start of JOP-9.
	22:10	STD Mode nominal.
230	01:29	BB1 nominal.
	03:08	STD Mode nominal.

230	04:11	STD Mode, 10 frames.
	04:14	STD Mode, start Pos 4.
	05:49	STD Mode, start Pos 4
	07:22	STD Mode, start Pos 4
	08:55	STD Mode, start Pos 4
	10:28	STD Mode, start Pos 4
	12:02	STD Mode, start Pos 4
	13:35	BB1 nominal.
	15:11	STD Mode, start Pos 4
	16:41	STD Mode, start Pos 4
	18:15	STD Mode, Start Pos 4
	19:48	STD Mode, start Pos 4
	21:22	STD Mode, Start Pos 4
231	00:47	CONT, 21 frames.
	02:22	STD Mode, start Pos 4
	04:11	STD Mode, start Pos 4
	05:03	STD Mode, start Pos 4
	05:47	STD Mode, start Pos 4
	06:41	STD Mode, start Pos 4
	07:23	STD Mode, start Pos 4
	08:14	STD Mode, start Pos 4
	08:56	STD Mode, start Pos 4
	09:48	STD Mode, start Pos 4
	10:33	STD Mode, start Pos 4
	11:21	STD Mode, start Pos 4
	13:08	STD Mode, start Pos 4

231	13:17	STD Mode, start Pos 4
	14:23	STD Mode, start Pos 4, stop after 3 hours.
	14:32	STD Mode, start Pos 2
	15:06	STD Mode, start Pos 2
	16:00	STD Mode, start Pos 2
	16:03	Recycle power to reset polaroid wheel.
	17:34	STD Mode nominal.
	18:20	STD Mode nominal.
	19:09	STD Mode, first frame lost to TV.
	19:55	STD Mode nominal into sunset.
	20:42	STD Mode nominal.
	21:27	STD Mode nominal.
232	00:01	STD Mode nominal.
	00:08	Large Loop in XUV at AT96.
	01:36	CONT Mode.
	04:25	STD Mode nominal
	05:09	STD Mode nominal.
	06:01	STD Mode nominal.
	06:40	STD Mode nominal.
	07:34	STD Mode nominal.
	08:13	STD Mode nominal.
	09:07	STD Mode nominal.
	09:49	STD Mode nominal.
	10:41	STD Mode nominal.
	13:49	STD Mode nominal.
	13:51	Geomagnetic storm in progress.
	16:54	STD Mode nominal.
	17:41	STD Mode nominal.

232	18:28	SN in AR93.
	18:28	STD Mode nominal.
	19:02	STD Mode nominal.
	20:02	STD Mode nominal.
	20:31	Active prominence NE64^{o}.
	21:38	STD Mode nominal.
233	00:52	STD Mode nominal.
	00:59	CONT Mode.
	04:21	STD Mode nominal.
	05:58	STD Mode nominal.
	07:32	STD Mode nominal.
	09:08	STD Mode nominal.
	10:46	STD Mode nominal.
	13:17	STD Mode nominal.
	13:19	Eruptive Prominence
	13:26	CONT Mode
	13:35	Type IV, IMP 2, 20-50 MHz.
	14:35	C1 Flare.
	14:42	STD Mode nominal.
	14:44	Continuum, Int 1, 25-40 MHz.
	15:04	Bubble visible on TV.
	15:12	STD Mode nominal.
	16:15	STD Mode nominal.
	16:58	STD Mode nominal.
	18:35	STD Mode nominal.
	18:40	MLO reports coronal condensation to footpoints at 82° and 100° geocentric.

232	20:00	SPT reports large loops in XUV monitor to 2 R_o on NW limb.
	21:06	STD Mode nominal.
234	01:48	STD Mode nominal.
	01:53	CONT Mode.
	06:51	STD Mode nominal.
	10:40	Fast Scan, 4 frames.
	12:50	STD Mode nominal.
	19:48	Small surge E-limb, N22.
235	01:04	STD Mode nominal.
	01:11	CONT Mode.
	07:09	STD Mode nominal.
	13:18	Minor surging above AR03, N15E85.
	13:23	STD Mode nominal.
	13:38	STD Mode nominal.
	14:44	CONT Mode.
	15:30	BSL from AR04 behind E-limb.
236	00:23	STD Mode nominal.
	00:35	STD Mode nominal.
	06:58	STD Mode nominal.
	07:10	Fast Scan, 22 frames.
	14:20	P38 on W-limb is active.
	18:42	Camera Load 3 installed.
	22:30	24-36 MHz Continuum.
237	01:56	CONT Mode.
	06:13	Fast Scan nominal.
	06:29	STD Mode nominal.
	07:50	STD Mode nominal.

237	08:02	STD Mode nominal.
	10:30	STD Mode nominal.
	10:36	STD Mode nominal.
	12:04	Contamination appears on WLC disk.
	18:40	STD Mode nominal.
	21:26	STD Mode nominal.
238	00:38	BB1 nominal.
	04:17	STD Mode nominal.
	07:09	STD Mode nominal.
	07:15	Fast Scan nominal.
	17:57	MLO reports hedgerow prominence 70° geocentric.
	19:55	STD Mode nominal.
	20:05	Atmospheric extinction, 4 frames.
	22:26	Type III storms.
	23:02	STD Mode into sunset.
	23:50	BB1 nominal.
	23:55	MLO reports hedgerow now two big loops in NE out to .14 R_o.
239	01:34	Type III east limb.
	02:06	STD Mode nominal.
	05:12	STD Mode nominal.
	06:22	Fast Scan nominal.
	06:38	STD Mode nominal.
	12:27	STD Mode nominal.
	17:14	Subfaint flare in AR93.
	19:22	CONT Mode.
	22:29	CONTfor atmospheric extinction.

240	00:53	BB1 nominal.
	02:33	Type III, INT 1
	04:07	STD Mode nominal.
	04:13	Fast Scan nominal.
	05:00	Weak Type I noise storm.
	05:40	STD Mode nominal.
	07:17	STD Mode nominal.
	08:27	STD Mode nominal.
	09:57	STD Mode nominal.
	10:03	Fast Scan nominal.
	13:15	STD Mode nominal.
	18:06	STD Mode nominal.
	18:17	STD Mode nominal.
	18:30	EXT STD Mode
	19:20	STD Mode nominal.
241	01:41	STD Mode nominal.
	01:51	CONT Mode
	06:33	STD Mode nominal.
	06:39	Fast Scan nominal.
	12:26	STD Mode nominal.
	12:34	STD Mode nominal.
	13:09	Type II
	13:59	Type III.
	14:00	STD Mode nominal.
	14:46	Type III.
	14:55	Type III.
	15:40	Type III.

241	16:41	Type III.
	22:26	STD Mode nominal.
	22:28	SPT reports a surge from AR93, a BSL, but ran HCO and did not go sun center to WLC TV.
	22:40	CONT Mode.
	23:00	NOAA Hawaii reports BSL IMP III at 2252 on east limb 22N. North end of P52 lifted off and fell back. Further reports, activity over.
23:28	23:28	Owen reports AR93 surges still there; looks like prominence is forming.
242	01:45	CONT for atmospheric extinction.
	02:40	BB1 nominal.
	05:50	STD Mode nominal.
	05:57	Fast Scan nominal.
	13:24	BB1 nominal.
	13:53	P52 Active.
	15:07	y_z error of 6°.
	15:20	y_z update.
	16:37	CONT Mode during crew activity T013.
	19:30	STD Mode nominal.
	19:40	SN in AR09
	20:24	SN in AR09.
	21:00	SN in AR08.
	21:36	STD Mode nominal.
	22:55	Weak Type III.
	23:09	SN in AR09.
	23:50	SN in AR09.

243	00:10	BB1 nominal.
	01:03	CONT for Atmospheric Extinction.
	03:37	SN from AR12.
	06:44	STD Mode nominal.
	06:49	Fast Scan nominal.
	07:35	C1 flare, AR09.
	07:59	C1 flare, AR09.
	13:51	Minor noise storm in progress.
	19:20	SN in AR12
	19:55	Very weak Type III.
	21:00	STD Mode nominal.
	22:20	C2 in AR13, Type I SE, Type III
	22:40	D_4 calibration.
	23:58	SN in AR13.
244	00:09	STD Mode nominal.
	01:50	CONT mode for Atmospheric Extinction.
	02:16	MLO reports surge on limb, NOAA reports BSD with flare, IMP II.
	02:46	STD Mode nominal.
	02:52	Fast Scan nominal.
	02:54	Called Dick Hansen back; he said surge began around 0210 and is more or less over at 0250, saw change in the inner corona at 1.2 $R_\odot$. Dick says it's basically a realignment of green coronal structures like the SAC Peak data of February 17, 1972.
	04:22	Culgoora reports Type I and weak Type III's in the south east.
	04:30	STD Mode nominal.

	05:28	Call from Dick Hansen - Summary of prior event. In a white light structure 2 min above the limb there was a shift of 7° in this structure. This shift was associated with a prominence surge and feels confident of a coronal transient.
	05:59	STD Mode nominal.
	06:06	Fast Scan nominal.
	06:46	Weak Type III storm in progress 25-50 MHz, Type I storm in SE.
	10:19	STD Mode nominal.
	10:47	C1 flare.
	14:00	Type III, IMP 1, 28-32 MHz.
	15:25	Type III
	19:40	STD Mode nominal.
	20:06	Top half of F47 vanished.
	20:28	Faint Hyder flare base of F47, N25W45.
	20:33	BSL, SE.
	21:13	STD Mode nominal.
	21:23	SN in AR15, C5.
	22:10	Type I, Int. 2 and weak Type III SE limb.
	22:14	SN in AR09.
	22:50	Surges and coronal rain at SE16.
	23:05	SN in AR13.
	23:22	Type III, IMP 1 (22-40 MHz) at 2309.
245	00:44	SN in AR15.
	00:31	STD Mode nominal.
	00:56	CONT mode.
	01:57	SF in AR09.
	02:23	SF in AR15.

245	02:39	C5 X-ray flare.
	03:53	STD Mode nominal.
	03:59	1N Flare in AR15, IMP 2, BSD also.
	05:30	STD Mode nominal.
	05:36	Fast Scan into sunset.
	06:16	1B flare in AR15, associated C4 from Vela.
	08:44	SN in AR18.
	10:34	C5 flare
	13:49	SN in AR15.
	14:10	Weak Type III.
	15:50	Several Type III.
	16:06	STD Mode nominal.
	16:15	Group Type III.
	18:07	Class M1 with x-ray but no optical.
	19:00	SPT reports x-ray flare in AR15.
	22:10	STD Mode nominal.
	23:32	Type I and Type III IMP 2.
	23:45	STD Mode nominal.
246	00:05	STD Mode nominal.
	00:15	STD Mode nominal.
	01:21	STD Mode nominal.
	01:40	STD Mode nominal.
	01:44	CONT Mode.
	04:47	STD Mode nominal.
	04:53	Fast Scan nominal.
	12:08	STD Mode nominal.
	12:19	STD Mode nominal.
	12:25	CONT mode.

246	16:14	Large SN in AR10.
	17:37	Bright prominence at 276° geocentric.
	18:43	STD Mode nominal.
	19:27	Group of Type III.
	20:05	Strong Type III.
	21:16	STD Mode nominal.
	21:30	Type I and Type III.
247	00:35	STD Mode nominal.
	00:41	STD Mode nominal.
	03:53	Fast Scan - 3 frames.
	04:14	Noise storm and Type III in SE, INT 3.
	09:46	STD Mode nominal, sunrise.
	09:51	Fast Scan nominal.
	09:51	M1 bright in AR12.
	13:03	STD Mode nominal.
	13:08	Type III, IMP 2, 20-70 MHz.
	13:14	STD Mode nominal.
	14:36	SPT reports a radio burst at 1331.
	14:55	SN in AR09.
	15:00	SN in AR12, 6 cm burst.
	15:27	Type II from AR12.
	16:25	Type III.
	16:32	SN in AR12.
	16:34	1 Bright on AR12, Many Type III.
	16:45	1 Faint in AR09.
	21:25	STD Mode nominal.

248	01:33	STD Mode nominal.
	02:00	SAC Peak reports E-limb prominence changing.
	04:46	STD Mode nominal.
	04:56	Fast Scan nominal.
	09:22	6 cm radio burst.
	11:15	Large SN in AR09.
	12:28	STD Mode nominal.
	12:35	STD Mode nominal.
	12:55	SN in AR09, optical.
	16:31	Type III, IMP 1, 22-25 MHz
	18:26	Sub-bright, strong Type III AR12.
	18:53	Type II in progress.
	19:00	STD Mode nominal.
	19:06	Fast Scan to sunset.
	19:23	Group Type III.
	20:09	SN in AR09.
	20:46	STD Mode nominal.
249	00:48	STD Mode nominal.
	00:54	STD Mode nominal.
	01:07	STD Mode nominal.
	01:12	CONT Mode.
	02:33	STD Mode nominal.
	03:59	STD Mode nominal.
	07:53	BB in AR12.
	09:12	M5 on W-limb.
	09:20	Surge on W-limb.
	09:22	Flare, X1, max.
	09:57	Fast Scan

249	11:55	EXT STD run to sunset for brightening of helmet streamer and blob moving in corona.
	12:18	SN in AR09.
	13:05	BB1 nominal.
	15:12	STD Mode nominal.
	16:44	SN in AR19.
	18:14	SN in AR15.
	18:24	Type III group.
	18:35	CONT Mode for Atmospheric Extinction.
	19:18	STD Mode nominal.
	19:20	Decametric continuum, IMP 1, 80-30 MHz.
	20:51	STD Mode nominal.
	22:16	SN in AR13, Weak Type III.
	22:24	STD Mode nominal.
	23:15	SN in AR10, Type III, IMP 1.
250	00:10	EXT STD Mode
	01:42	STD Mode nominal.
	01:54	CONT Mode, 3 frames.
	02:00	Fast Scan mode.
	10:51	STD Mode nominal.
	11:02	Fast Scan nominal.
	11:55	1 bright flare from AR09, radio noise storm X1 from Vela.
	12:23	Flare now three brilliant.
	12:57	Type IV continuum.
	14:34	EXT STD Mode.
	17:46	STD Mode nominal.
	19:00	SN in AR09.
	19:22	CONT for Atmospheric Extinction

250	21:43	STD Mode nominal.
	22:26	A rather large and apparently impulsive EPL was noted originating from behind the NW limb 2218 in progress - from MANILA OBS.
		An EPL extending about 0.20 R was observed in progress at 2226 near NW18 (place where old region 221 departed).
	22:26	Mauna Loa Obs - P60 erupting 2225z running 8' scan for transient. Position at 70° 1.0 $R_{\odot}$.
	22:29	STD Mode nominal.
	22:58	MLO says slight evidence of coronal transient based on 8' scan (.25R) above W-limb. Material is "very fast and diffuse".
	23:29	EXT STD Mode nominal.
	23:47	EXT STD truncated.
	23:57	EXT STD
251	00:34	F55 is moving toward large spot in Ø9 F53 & 55 are darkening. Significantly, these are major flare precussors.
	00:50	STD Mode nominal.
	00:58	STD Mode nominal.
	01:07	CONT Mode.
	13:15	STD Mode nominal.
	13:24	STD Mode nominal.
	13:37	CONT Mode.
	18:16	STD Mode nominal.
	18:18	Transient in progress 080, NW limb moved 0.2 or 0.3 $R_{\odot}$ in 15^{m}, active region 07 XUV source bright behind limb.
	18:20	Some limb structure visible, loop stronger to 2 & 3 $R_{\odot}$ is expanding and brightness changing over 15^{m} interval. Transient seen at sunrise ~17:57. Transient was apparent when we look at TV.

251	18:33	STD Mode nominal.
	18:41	STD Mode truncated.
	19:26	EXT STD Mode.
	20:01	EXT STD Mode.
	21:01	STD Mode nominal
	21:20	STD Mode nominal.
	21:51	CONT mode for Atmospheric Extinction.
	22:20	3 cm radio burst.
	22:37	STD Mode nominal.
	22:54	Brightening of prominence at S40 on E-limb.
	22:57	Prominence disappeared.
252	01:48	STD Mode, first frame lost to TV.
	01:59	CONT Mode.
	09:24	STD Mode nominal.
	09:30	STD Mode nominal.
	11:02	STD Mode nominal.
	12:34	STD Mode nominal.
	12:42	STD Mode nominal.
	12:57	CONT Mode.
	14:51	SN in AR24.
	16:12	Surging in AR10.
	19:48	SN in AR09 surges at S15^{o}.
	20:19	STD Mode nominal.
	20:51	SN in AR09, surges S16.
	21:43	SN in AR24, M2.
	22:09	STD Mode nominal.

253	01:13	Fast Scan nominal.
	01:21	CRO reports large loop structure (SE20) with high density but no surge. This is AR09, west limb.
	01:31	Additional report (CRO) - observing moving matter to .05 $R_\odot$ off limb but then fell back.
	02:15	AR09 (F53) Active prominence with small portion erupting began at 0151z. By 0200 CRO, in a 9 min period, observed sufficient motion outward to .09 $R_\odot$ of a relatively small portion of the prominence to call this a small eruptive (with the active prominence) S056 observed five times increase.
	02:25	SB in AR24, radio bursts at 6 cm and 10 cm.
	02:54	SB in AR24.
	03:01	SN in AR15.
	08:43	STD Mode nominal.
	08:44	NOAA/Teheran report indicates small prominence active around 0500 where AR10 is rotating off limb. An elongated mass was seen to lift off from this area at 0520. Matter rose to 0.1 $R_\odot$ and near 0610 brightened and then moved back toward limb.
	10:24	STD Mode nominal.
	11:52	BB1 nominal.
	13:30	Pointing stability test results: 2½ arc seconds per second drift with 1 arc min dead-band.
	16:33	P53 very active (above ϕ9) lifting slowly but accelerating out to .06 $R_\odot$, may lift off.
	17:10	STD Mode nominal.
	17:17	Fast Scan nominal.
	19:00	Eruptive Prominence from AR09, EREP.
	19:15	Type III
	21:30	CONT Mode.

254	00:19	CONT Mode.
	01:56	STD Mode nominal.
	04:30	EPL, Weak Type I storm NW.
	07:02	Type II in progress, 20-140 MHz, proceded by 1^+ group of Type III.
	09:36	STD Mode nominal.
	09:43	STD Mode nominal.
	11:15	BB1 nominal.
	14:56	Fast Scan, 4 frames.
	15:53	SN in AR24.
	16:29	STD Mode nominal.
	16:50	SN in AR19.
	17:43	CONT Mode.
	18:11	Fast Scan, 1 frames.
	19:19	EXT STD Mode nominal.
	19:32	SPT says transient halfway out on TV.
	20:28	EXT STD Mode nominal.
	21:17	SN in AR19.
	22:03	STD Mode nominal.
	23:36	Fast Scan nominal.
255	00:25	CONT Mode.
	01:09	STD Mode nominal.
	01:16	STD Mode nominal.
	01:26	CONT Mode.
	05:45	CRO report - suspended material at S10W90 0530z up to .14 $R_\odot$. South end appears to be coming back to limb.

255	08:52	STD Mode nominal.
	13:22	TCS has been OFF.
	14:02	CONT Mode.
	14:30	Material condensing over AR19.
	15:46	Fast Scan, 6 frames.
	15:49	STD Mode nominal, SPT reports bright streamers over NW limb at 080°.
	18:02	SN in AR24.
	18:36	CONT Mode.
	19:57	SN in AR19.
	21:19	STD Mode nominal.
	22:54	STD Mode nominal.
256	00:28	STD Mode nominal.
	01:13	Fast Scan
	08:11	STD Mode nominal.
	11:42	STD Mode nominal.
	13:21	Thermal switch OFF again.
	13:22	STD Mode nominal.
	20:39	STD Mode nominal.
	20:57	Type III, IMP 1.
	21:29	CONT Mode.
	22:10	STD Mode nominal.
	23:44	STD Mode nominal.
257	00:35	STD Mode nominal.
	01:39	CONT Mode.
	02:26	1N in AR19.
	07:34	STD Mode nominal.
	09:02	STD Mode nominal.

257	12:32	STD Mode nominal.
	12:42	CONT mode.
	13:25	EPL in progress in AR19.
	14:19	Crew reports a prominence forming in AR19.
	20:17	STD Mode nominal.
	20:34	STD Mode nominal.
	21:28	STD Mode nominal.
	23:01	STD Mode nominal.
	23:30	Possible Type IV off NW limb.
258	00:41	STD Mode nominal.
	00:53	EXT STD Mode nominal.
	06:15	P58, S10 lifted to .05 $R_\odot$.
	08:30	STD Mode nominal.
	19:13	STD Mode nominal.
	19:27	STD Mode nominal.
	20:47	STD Mode nominal.
	21:24	F69 disappeared in last six hours.
	23:08	Fast Scan, 3 frames.
259	02:14	Fast Scan
	07:43	STD Mode nominal.
	11:09	STD Mode nominal.
	12:43	CONT Mode.
	14:08	D_4 calibration.
	18:32	STD Mode nominal.
	21:43	43 seconds of Fast Scan.
	23:18	STD Mode nominal.
	23:28	STD Mode nominal.

260	00:05	Atmospheric Extinction
	07:01	STD Mode nominal.
	08:31	STD Mode nominal.
	10:24	STD Mode nominal.
	10:30	CONT Mode.
	15:10	Type IV, 30-80 MHz, 900 km/sec, Type II.
	16:34	Crew says corona changed considerable in two hours.
		EXT STD Mode nominal.
	19:32	STD Mode nominal.
261	01:45	Crew reports brightest streamer yet seen at S20 on E-limb.
	06:19	STD Mode nominal.
	09:36	STD Mode nominal.
	09:41	STD Mode nominal.
	09:49	CONT Mode.
	20:17	STD Mode nominal.
	23:23	STD Mode nominal.
262	01:39	STD Mode nominal.
	04:46	STD Mode nominal.
	08:56	STD Mode nominal.
	09:02	CONT Mode.
	15:07	STD Mode nominal.
	15:29	STD Mode nominal.
	18:54	Active surge on W limb, 4 frames Fast Scan.
	21:05	STD Mode nominal.

263	00:54	STD Mode nominal.
	04:03	STD Mode nominal.
	06:28	STD Mode nominal.
	09:59	STD Mode nominal.
	12:46	STD Mode nominal.
	13:19	Small surge on SW limb.
	17:32	STD Mode nominal.
	17:47	STD Mode nominal.
	22:03	STD Mode nominal.
264	03:17	STD Mode nominal.
	06:27	STD Mode nominal.
	07:33	STD Mode nominal.
	09:02	EXT STD, 21 hours.
	12:07	STD Mode nominal.
	12:18	Long exposure.
	15:37	STD Mode nominal.
	18:20	STD Mode nominal.
	18:28	STD Mode nominal.
	18:36	CONT Mode.
	18:51	EXT STD Mode, camera temperature rising, crew reports no frame decramenting.
	19:07	Shut down, out of film.
265	11:45	Load 4 installed.
	12:22	D_1 cleaned.
	19:27	Fast Scan Mode, terminated by discrimator, must re-zero wedges.
	19:42	Fast Scan nominal.
	20:40	STD Mode nominal.

266	01:53	STD Mode nominal.
	03:09	Type III.
	12:17	STD Mode nominal.
267	00:08	STD Mode nominal.
	02:42	C_1 flare in AR10.
	13:07	STD Mode nominal.
268	02:01	STD Mode nominal.
	07:44	STD Mode nominal.
	22:12	STD Mode nominal.
269	13:26	STD Mode nominal.
	14:35	Surge arbitrary S20.
270	00:37	STD Mode nominal.
	12:56	STD Mode nominal.
271	01:28	STD Mode Mode nominal.
	13:36	STD Mode nominal.
272	00:48	STD Mode nominal.
	14:31	STD Mode nominal.
273	03:07	STD Mode (7 frames).
	14:05	STD Mode nominal.
	23:15	STD Mode nominal.
274	13:03	STD Mode nominal.
275	00:08	STD Mode nominal.
	14:05	STD Mode nominal.
276	02:32	STD Mode nominal.
	13:12	STD Mode nominal.
	19:48	Mound on east limb, N16.
	19:51	Small eruptive on east limb.

276	20:34	Type II.
	20:35	Filament disappeared with SN flare in AR51.
	21:04	STD Mode nominal.
	21:10	STD Mode nominal.
	22:41	STD Mode nominal.
	22:46	STD Mode nominal.
277	01:48	STD Mode nominal.
	10:40	STD Mode nominal.
278	01:05	STD Mode nominal.
	13:23	STD Mode nominal.
279	01:58	STD Mode nominal.
	14:14	STD Mode nominal.
	20:28	STD Mode nominal.
280	01:12	STD Mode nominal.
	13:30	STD Mode nominal.
	19:46	STD Mode nominal.
	23:30	SN, C_1 Flare from AR28.
281	00:31	STD Mode nominal.
	12:53	Limb surge activity.
	14:14	STD Mode nominal.
	20:38	STD Mode nominal.
282	01:23	STD Mode nominal.
	13:41	STD Mode nominal.
	15:14	Type III burst.
	15:26	SAC Peak reports bright surge on W-limb AR47.
	19:54	STD Mode nominal.

283	02:27	STD Mode nominal.
	12:59	STD Mode nominal.
	21:35	X-ray, C5 flare.
284	13:43	STD Mode nominal.
285	02:29	STD Mode nominal.
	13:03	STD Mode nominal.
286	01:57	STD Mode nominal.
	03:52	STD Mode nominal.
287	10:07	STD Mode nominal.
	13:10	STD Mode nominal.
288	00:25	STD Mode nominal.
	12:31	STD Mode nominal.
289	01:09	STD Mode nominal.
	13:21	STD Mode nominal.
290	00:26	STD Mode nominal.
	11:06	STD Mode nominal.
291	01:18	STD Mode nominal.
	16:37	STD Mode nominal.
292	00:35	STD Mode nominal.
	13:04	STD Mode nominal.
	22:21	STD Mode nominal.
293	13:59	STD Mode nominal.
294	00:54	STD Mode nominal.
	13:13	STD Mode nominal.
295	00:00	STD Mode nominal.
	12:30	STD Mode nominal.
	23:15	STD Mode nominal.

296	13:24	STD Mode nominal.
	21:26	Weak Type II on SE limb.
297	00:11	STD Mode nominal.
	12:40	STD Mode nominal.
	23:27	STD Mode nominal.
298	13:35	STD Mode nominal.
	16:00	Type III, IMP 2
	23:28	Moderate Type III group from SE.
299	02:09	STD Mode nominal.
	12:50	STD Mode nominal.
300	01:25	STD Mode nominal.
	13:43	STD Mode nominal.
	15:43	2N Flare, AR67, N15E61.
	16:22	Type II, Boulder, cm radio burst is complex, material visible off-band early + 2 ribbon flare apparent infall impact mechanism x-ray contained Solrad (M1) & Vela (M2).
	16:35	Flare max still in progress. Radio max 1601z, 187 F.U. (4895 MHz); 173 F.U. (2695 MHz).
	20:10	C. Garcia from MLO reports much change in corona during the period of the coronal transient activity today. He stated he observed very gross changes which should immediately be apparent in the photos he is sending us via telecopy.
301	01:09	STD Mode nominal.
	14:38	STD Mode nominal.
	17:00	NOAA reported a weak <u>possible</u> Type IV continuum from 30-80 MHz, some time before 1555. No visible phenomena observed. No sweep frequency. HAO & Czar did not go into transient program. Note there were noise storms in AR62 and AR64 from 0400 on.

301	17:56	1748 Type III, 34-80 MHz. No associated optical.
302	01:05	Culgoora reports a moderately strong noise storm in progress since at least 19402 DOY 301 from LH polaroid source at 0.6 $R_{\odot}$.
302	03:20	Culgoora special report issued DOY 301 0245, Type III storm showing steady increase particularly since DOY 302 0100z Frequency range 20-600 MHz. Source appears to be in SE, exact sources unavailable.
	01:32	STD Mode nominal.
	04:42	STD Mode nominal.
	14:05	STD Mode nominal.
303	02:20	STD Mode nominal.
	14:45	STD Mode nominal.
	14:42	Type III (8-19 MHz).
	14:45	Type IV
	14:52	Type II (40-46 MHz). Clark Lake reports continuum on W limb.
304	01:42	STD Mode nominal.
	12:24	STD Mode nominal.
305	00:58	STD Mode nominal.
	14:55	STD Mode nominal.
	18:27	Continuum 30-80 MHz, IMP I.
	18:25-18:48	EPL, very small, coronal transient 280° geocentric (corresponds to AR64).
	19:22	M2 in progress S16W64. SF in AR64 (1915z Max).
	19:50	Strong continuum storm in progress up to time of report 2020.
306	03:24	STD Mode nominal.
	14:10	STD Mode nominal.

307	00:10	Type III.
	00:15	Weak Type II, strong Type IV appears to be starting.
	00:35	Possible second Type II following group of Type III.
	00:40	Optical 1B flare S8W80, Total SWF on 4.9 and 7.5 MHz.
	01:07	STD Mode nominal.
	02:53	STD Mode nominal.
	04:29	STD Mode nominal.
	15:04	STD Mode nominal.
308	03:49	STD Mode nominal.
	14:22	STD Mode nominal.
309	13:35	STD Mode nominal.
310	02:05	STD Mode nominal.
	14:50	STD Mode nominal.
311	01:20	STD Mode nominal.
	14:13	STD Mode nominal.
312	02:14	STD Mode nominal.
	13:27	STD Mode nominal.
313	01:30	STD Mode nominal.
	12:44	STD Mode nominal. Mercury in FOV DOY 313, 18:00 to DOY 315, 02:00.
314	00:45	STD Mode nominal.
	15:02	STD Mode nominal.
315	01:53	STD Mode nominal.
	14:31	STD Mode nominal.
316	00:54	STD Mode nominal.
	15:09	STD Mode nominal.

317	00:12	STD Mode nominal.
	14:31	STD Mode nominal.
	21:49	STD Mode nominal.
318	10:40	STD Mode nominal.
	15:14	STD Mode nominal.
320	14:01	Launch of SL4.
322	13:55	STD Mode nominal.
	23:37	STD Mode nominal.
323	14:45	STD Mode nominal.
	22:53	STD Mode nominal.
324	14:01	STD Mode nominal.
	22:07	STD Mode nominal.
325	06:59	STD Mode nominal.
	13:17	STD Mode nominal.
	21:25	STD Mode nominal.
	18:30	Weak Type III, Type IV bursts, surging.
326	05:17	STD Mode nominal.
	12:35	STD Mode nominal.
	20:46	C_1 Flare.
	23:15	SN flare in AR87.
327	01:03	Weak Type III.
	01:28	Weak Type III.
	05:45	Type III.
	06:11	STD Mode nominal.
	08:45	CMG Failure.
	15:01	STD Mode nominal.
	16:50	Type III.
	22:25	Type I and weak Type III.

327	2350	C5, SN flare from AR87.
328	00:41	STD Mode nominal.
	07:17	STD Mode nominal.
	13:02	STD Mode nominal.
	19:12	STD Mode nominal.
	20:01	SN, C5 flare from AR27.
329	01:30	Filament 40 disappearing.
	01:35	STD Mode nominal.
	04:37	SN flare from AR87.
	08:01	STD Mode nominal.
	08:54	C5 flare from AR87.
	12:18	STD Mode nominal.
	15:42	5 to 10 arc sec oscillation in 2 sec in Hα, nothing new.
	18:28	STD Mode nominal.
330	00:51	STD Mode nominal.
	01:07	Strong Type III, IMP 3.
	02:27	Number of moderate Type III's since 2235.
	05:54	SN flare in AR87.
	07:07	Sub-bright flare in AR87.
	07:25	STD Mode nominal.
	12:57	STD Mode nominal.
	13:51	M1-9 flare in AR81.
	14:01	Type III.
	14:27	Type III, IMP 2.
	15:33	X-ray flare, Type III, IMP 2.
	16:55	Type III.

330	17:45	STD Mode nominal.
	19:19	FSS/PES Calibration:

	U/D	L/R
PES	+8	+16
FSS	0040	0035

In order to center scattered light, go 0/0 20, right OFF SCALE, FSS read U/D+3 and L/R-42.

	20:54	STD Mode nominal.
	20:58	AOS-SPT reports STD was run. Frame counter decremented by 12. Says OPERATE light did not go out when he commanded stop prior to timing out. Light went out later. MDRS analysis indicates mode was terminated by 20 arc sec discriminator at sunset 1 sec before timing out.
331	01:40	BB1 nominal.
	02:30	S054 Be filter wheel hung up while in transit. SPT ran MAL procedure and ground commanded filter reset. Did not work.
	03:10	M1 flare in AR87.
	03:15	Moderate Type III followed by moderate Type II.
	04:53	STD Mode.
	06:40	STD Mode nominal.
	08:10	STD Mode nominal.
	08:40	SN in AR90 with surge on limb.
	09:13	STD Mode nominal.
	10:49	STD Mode nominal.
	13:57	STD Mode nominal.
	14:08	STD Mode nominal.
	17:10	CONT mode.
	18:39	CONT mode.

331	20:47	STD Mode nominal.
	21:06	Type III, IMP 2.
	21:42	Type III, IMP 2.
	23:47	Numerous Type III, 8-700 MHz.
332	00:05	SN flare from AR84.
	02:34	BB1 nominal, NW limb is down-streaming.
	07:46	Prominence on NW limb .
	08:31	STD Mode nominal.
	08:35	Prominence is breaking up.
	09:01	STD Mode nominal.
	10:01	STD Mode nominal.
	14:43	STD Mode nominal.
	14:53	STD Mode nominal.
	15:04	CONT Mode.
	16:17	STD Mode nominal.
	16:33	SF flare in AR87.
	17:26	F37 becoming active.
	19:31	STD Mode nominal.
	20:47	Dark surge in AR87.
	23:18	ν_z update, γ_{RR} jumped 9 arc min.
333	00:17	STD Mode nominal.
	03:24	STD Mode nominal.
	05:04	STD Mode nominal.
	06:43	STD Mode nominal.
	08:19	STD Mode nominal.
	09:23	STD Mode nominal.

333	11:01	STD Mode Nominal.
	12:27	STD Mode Nominal.
	14:13	BB1 Nominal.
	15:32	STD Mode Nominal.
	17:12	CONT Mode.
	19:54	SN Flare in AR92.
	20:05	SN Flare in AR87.
	20:30	STD Mode Nominal.
334	07:36	STD Mode Nominal.
	10:17	STD Mode Nominal.
	14:54	BB1 Nominal.
	16:58	BSL From AR84, S11W90.
	19:51	SO54 says C5 flare in progress, NOAA says 1B, possibly M.
335	02:03	STD Mode Nominal.
	02:06	STD Mode Nominal.
	15:49	BB1 Nominal.
	17:18	Dark surges in AR92, SN optical flare.
	18:30	Dark surges westward out of AR89.
	19:27	ν_z update, γ_{RR} change 17 arc minutes in 6 hours.
	20:35	STD Mode Nominal.
	20:59	Surges from AR92 and prominence activity in AR91, w-limb.
	20:59	STD Mode Nominal.
	22:29	SN Flare in AR87.
	23:50	STD Mode Nominal.

336	02:20	SN Flare in AR92, weak radio enhancement.
	02:53	BB1, bad roll.
	07:47	STD Mode Nominal.
	09:12	SN Flare in AR92.
	15:02	STD Mode Nominal, S054 shows increase in IIC.
	15:11	STD Mode Nominal.
	15:28	CONT Mode.
	18:05	SN Flare in AR92.
	18:29	SN Flare in AR92, 1B.
	18:47	CONT Mode.
	20:10	SN, optical, M1 X-ray in AR92, Centimetricradio.
	20:18	CONT Mode.
	21:24	STD Mode Nominal.
	22:00	SN Flares (2) in AR92.
337	01:18	SN Flare in AR92, C3.9.
	02:08	BB1 Flare from unknown region.
	03:57	STD Mode Nominal.
	05:34	STD Mode Nominal.
	06:06	Weak Type II 55-220 MHz.
	07:03	STD Mode Nominal.
	08:09	STD Mode Nominal.
	09:44	STD Mode Nominal.
	11:15	STD Mode Nominal.
	12:54	STD Mode Nominal.
	13:04	STD Mode, first frame to TV.
	13:11	CONT Mode.
	20:39	EXT STD.

338	01:30	CONT Mode.
	02:30	Surge S12W90 (AR87-92) to 0.1 $R_\odot$.
	03:53	BB1 Nominal.
	05:24	Surge from AR87 (S12W90) to 0.03 $R_\odot$.
	05:43	Surge visible to 0.1 $R_\odot$ and ±1A.
	06:01	C4 Flare.
	08:00	STD Mode Nominal.
	08:47	BSL to 0.15 $R_\odot$ with M1 flare.
	09:48	STD Mode to sunset.
	10:37	STD Mode Nominal.
	11:47	PMEC records M1 flare.
	12:06	PMEC records M1 flare.
	13:45	BB1, wrong roll.
	14:26	Bright point in AR87, surge pointing south.
	14:44	Surge from AR87 to 0.18 $R_\odot$.
	14:59	BSL from AR87.
	15:38	Surge from AR87 to 0.3 $R_\odot$.
	16:57	Material from corona falling into AR87.
	17:18	Surge from AR87.
	17:19	CONT, 3 frames.
	17:56	Material suspended over east equator at 0.1 $R_\odot$.
	18:08	Surge from AR87.
	19:51	EXT STD.
339	01:12	Surge from AR87.
	02:19	BB1 Nominal.
	05:35	STD Mode Nominal.
	07:21	SN Flare from AR95.

339	08:18	STD Mode Nominal.
	09:37	Surge from AR92 to 0.4 $R_\odot$. Surge material appeared to escape and some seen returning to disk at SW18. Small centimetric burst.
	10:40	STD Mode into sunset.
	11:25	STD Mode, start position 4.
	12:59	BB1, start position 4.
	14:29	CONT Mode.
	16:38	STD Mode Nominal.
	21:24	STD stopped into position 4.
	22:46	Surge from AR87.
	23:00	STD Mode, start position 4.
340	01:30	STD Mode nominal.
	01:52	CONT Mode.
	03:24	STD Mode Nominal.
	04:52	STD Mode nominal.
	06:02	STD Mode Nominal.
	06:31	STD Mode Nominal.
	07:36	STD Mode Nominal.
	08:20	STD Mode Nominal.
	09:11	STD Mode Nominal.
	09:55	STD Mode Nominal.
	10:41	STD Mode Nominal.
	12:16	STD Mode Nominal.
	14:01	STD Mode, first frame to TV.
	18:32	STD Mode off in position 2.
	18:35	Bright spot and dark line on TV.
	20:05	STD Mode start position 2.
	22:22	SPT following mini-surge on limb.

341	00:51	BB1 Nominal.
	02:40	STD Mode Nominal.
	04:23	STD Mode Nominal.
	05:56	STD Mode Nominal.
	06:53	STD Mode Nominal.
	08:30	STD Mode Nominal.
	09:12	STD Mode Nominal.
	10:04	STD Mode Nominal.
	12:18	STD Mode Nominal.
	12:23	CONT Mode.
	19:27	Fast Scan, door closed and mode continued, finally manually stopped.
	21:03	STD Mode Nominal.
342	00:50	STD Mode to sunset, end in position 4.
	07:50	STD Mode Nominal.
	12:45	STD Mode Nominal.
	12:51	STD Mode Nominal.
	13:58	CONT Mode.
	19:11	EXT STD Mode Nominal.
	21:51	STD Mode Nominal.
	23:20	STD Mode Nominal.
	23:34	CONT Mode.
343	03:43	Filament active on E-limb.
	07:49	STD Mode Nominal.
	13:21	STD Mode Nominal.
	13:29	STD Mode Nominal.
	17:57	CONT Mode.
	19:29	STD Mode Nominal.

344	01:55	BB1 Nominal.
	07:57	STD Mode Nominal.
	11:04	STD Mode Nominal.
	14:10	STD Mode Nominal.
	15:00	Sac Peak reports enhancement in corona at E90S35.
	15:40	BB1 Nominal.
	18:55	STD Mode Nominal.
	19:22	Calroc launched.
345	02:54	STD Mode Nominal.
	07:58	STD Mode Nominal.
	10:34	STD Mode Nominal.
	13:28	STD Mode Nominal.
	15:03	BB1 nominal.
	18:56	BSL, east limb N17.
	23:40	SPT said he noticed streamer at 8 o'clock narrowing down. He is doing shopping list items 1 (the quickie) when he can.
	23:53	SPT reports that helmet streamer is stretching out and bottom like bottleneck. Changing swiftly. He did SL1 at beginning and end of cycle 393 and will do one at beginning of cycle 394. Not really "normal" coronal transient.
346	02:12	STD Mode Nominal.
	03:47	BB1 Nominal.
	03:50	SPT says the streamer is really moving. Questioned back room for change to OPS.
	07:13	STD Mode Nominal.
	08:07	STD Mode Nominal.
	09:45	STD Mode Nominal.
	11:14	STD Mode Nominal.
	12:47	STD Mode Nominal.

346	14:19	STD Mode Nominal.
	16:13	STD Mode Nominal.
	16:23	CONT Mode.
	17:34	STD Mode Nominal.
	18:59	STD Mode Nominal.
	20:33	STD Mode Nominal.
	22:10	STD Mode Nominal.
347	01:26	STD Mode Nominal.
	01:39	STD Mode Nominal.
	04:54	STD Mode Nominal.
	06:31	STD Mode Nominal.
	07:26	STD Mode Nominal.
	08:06	STD Mode Nominal.
	09:00	STD Mode Nominal.
	09:40	STD Mode Nominal.
	10:33	STD Mode Nominal.
	11:16	STD Mode Nominal.
	13:52	STD Mode Nominal.
	15:43	STD Mode Nominal.
	16:47	STD Mode Nominal.
	17:30	Small bright surge in SE, old AR84.
	18:20	STD Mode Nominal.
	19:02	STD Mode Nominal.
	19:54	STD Mode Nominal.
	23:02	STD Mode Nominal.

348	00:52	BB1 got some EXT STD.
	03:59	STD Mode Nominal.
	05:48	STD Mode Nominal.
	07:24	STD Mode Nominal.
	08:59	STD Mode Nominal.
	09:10	Small prominence lifting at E90S15.
	09:24	Prominence reaches max, 0.12 $R_\odot$.
	10:02	STD Mode Nominal.
	10:08	STD Mode Nominal.
	10:32	STD Mode Nominal.
	12:58	STD Mode Nominal.
	13:03	CONT Mode.
	14:40	BB1
	17:38	CONT Mode.
	18:09	SPT reports that Kohoutek through binoculars has tail 4° (3° yesterday) with a length/width ratio of 20. The tail is straight and white. Expect dramatic changes in the next few days.
	20:42	CONT Mode.
	21:28	Small surge at SE12.
	21:30	SF Flare on limb.
	22:11	Surging on east limb, S08.
	22:28	CONT Mode.
	23:45	MLO reports small flare on east limb, S10.
349	01:32	BB1 Nominal.
	01:35	Impulsive event reaching 0.08 $R_\odot$, weak Type III.
	01:45	Surge on east limb, S10.
	03:58	Surges near SE15.
	07:38	STD Mode Nominal.

349	11:32	STD Mode into sunset.
	14:04	STD Mode Nominal.
	14:15	CONT mode.
	15:22	CONT mode.
	16:58	CONT mode.
	19:09	STD Mode Nominal.
	19:16	STD Mode Nominal.
	19:21	Surge in AR00, S13E90.
	19:24	Two large pieces of material moving out of AR00.
	20:49	CONT mode.
	21:37	STD Mode Nominal.
350	02:29	STD Mode Nominal.
	02:38	CONT Mode.
	04:25	C type x-ray flare.
	05:28	SN flare from AR00.
	06:59	STD Mode nominal.
	07:36	M1 x-ray flare from AR00. Radio noise 2695 MHz and 4995 MHz.
	09:09	STD Mode Nominal.
	09:38	SN flare from AR00, dark surge on disk at S16E79.
	10:03	STD Mode Nominal.
	10:44	STD Mode Nominal.
	11:25	Blob of material above AR00, BSL, M3 flare, material to 0.1 $R_\odot$ in three minutes.
	11:48	STD Mode Nominal.
	11:53	Fast Scan Nominal.
	13:10	STD Mode Nominal.
	13:23	STD Mode Nominal.

350	13:32	CONT Mode.
	15:03	Loop prominence on east limb behind AR00.
	15:04	BSL from AR00 to .01 $R_\odot$.
	15:52	Type III, 15-55 MHz.
	16:17	CONT Mode.
	16:31	Small flare in AR00.
	16:57	Group of Type III, 12-50 MHz.
	19:23	STD Mode, three frames.
	20:02	STD Mode Nominal.
	20:56	CONT Mode for Alfvén waves.
	21:30	CONT Mode.
	21:52	C Flare from AR00.
	22:49	CONT Mode.
351	00:07	CONT Mode.
	01:59	STD Mode Nominal.
	07:46	C4 sub-faint flare.
	08:29	STD Mode Nominal.
	13:03	X-ray event in progress, C1.
	15:36	BSL Nominal.
	16:56	SN Flare from AR00.
	18:43	Sac Peak reports feet of P59 very small. He thinks it will lift off in next two days. P59 is <u>very</u> bright.
	18:55	P49 at SW27 extends out to .2 $R_\odot$ and is feeding material back down to limb.
	19:15	Prominence lifted off west limb with coronal rain.
	19:25	CONT Mode.
	19:28	STD Mode Nominal into sunsey.
	20:16	CONT Mode.

351	20:20	STD Mode Nominal.
	23:26	EXT STD Mode.
352	06:10	STD Mode Nominal.
	07:42	STD Mode Nominal.
	13:27	P59 out to 0.13 $R_\odot$.
	13:33	STD Mode Nominal.
	13:43	CONT Mode.
	15:30	SN from AR00.
	18:41	STD Mode Nominal.
	19:36	STD Mode Nominal.
353	01:24	Small flare in AR00.
	04:29	Prominence lifting slowly.
	05:26	STD Mode Nominal.
	05:43	STD Mode into sunset.
	05:46	P59 erupting at 45 km/sec.
	06:24	STD Mode Nominal.
	07:00	STD Mode Nominal.
	07:56	SN Flare from AR00 and Type III.
	08:05	STD Mode Nominal.
	08:33	STD Mode Nominal.
	10:14	STD Mode Nominal.
	11:03	STD Mode into sunset.
	14:31	STD Mode Nominal.
	14:35	CONT Mode.
	16:24	Fast Scan

353	17:00	SN Flare in AR00.
	18:54	Bright streamer has formed over P59.
	20:28	STD Mode Nominal.
	20:34	CONT Mode.
354	01:28	CONT Mode
	04:43	STD Mode Nominal.
	06:16	STD Mode Nominal.
	07:52	STD Mode Nominal.
	13:47	STD Mode Nominal.
355	02:22	BB1 Nominal.
	03:58	STD Mode Nominal.
	04:07	Group of Type III to 0450.
	07:09	STD Mode Nominal.
	08:46	STD Mode Nominal.
	08:51	STD Mode Nominal
	09:51	P61 slowly dissipating.
	14:46	CONT Mode.
	20:17	SF Flare from AR00.
	23:04	SN Flare from AR00.
356	00:01	CONT Mode.
	01:40	CONT Mode.
	02:11	CONT Mode.
	02:20	STD
	03:40	CONT Mode
	04:53	STD Mode Nominal.
	06:26	STD Mode Nominal.
	08:04	STD Mode Nominal.
	08:16	STD Mode Nominal.

356	10:43	STD Mode Nominal.
	13:59	CONT Mode.
	19:59	STD Mode Nominal.
	21:43	STD Mode Nominal.
	22:21	Type III, IMP 1
	22:24	CONT Mode for atmospheric extinction.
	23:03	STD Mode Nominal.
357	01:04	Small Type III, weak Type I storm, SF Flare in AR00.
	02:32	CONT Mode.
	05:58	STD Mode Nominal.
	07:19	STD Mode Nominal.
	07:25	Fast Scan into sunset.
	07:50	Moderate group Type III followed by weak Type II.
	13:14	STD Mode Nominal.
	17:27	Type III, 45-80 MHz.
	19:18	Type III, 25-80 MHz.
	19:25	Type III, 18080 MHz.
	20:28	Type III, 20-55 MHz, IMP 1.
	23:33	SN Flare in AR05, sweep Type III, IMP 2.
358	00:57	Type I storm SW, several Type III.
	01:48	STD Mode Nominal.
	01:53	STD Mode Nominal.
	03:26	STD Mode Nominal.
	06:37	STD Mode.
	10:54	Fast Scan Nominal.
	12:31	Fast Scan Nominal.

358	14:08	BB1 Nominal.
	17:45	Strong Type III, 10-80 MHz.
	18:24	STD Mode Nominal.
	18:39	Four each, 1 second exposure.
	20:08	Fast Scan, first frame lost to TV.
	21:22	Noise Storm over AR00, AR05.
	21:38	STD Mode Nominal.
	21:50	Type I storm, Int 1, 80-500 MHz.
	22:25	SF in AR00.
359	01:35	CONT Mode.
	02:41	CONT Mode.
	02:46	Fast Scan.
	05:54	STD Mode Nominal.
	07:46	STD Mode Nominal.
	11:49	STD Mode Nominal.
	11:54	Fast Scan.
	15:54	Small centimetric burst.
	19:29	Load 5 installed, Fast Scan.
	19:43	Small Type III.
	20:30	Type I continuum noise storm.
360	05:05	CONT Mode
	05:13	STD Mode Nominal.
	05:21	STD Mode Nominal.
	05:29	CONT Mode into sunset.
	06:47	STD Mode Nominal.
	06:55	STD Mode Nominal.
	07:22	Class 1F Flare.
	14:35	STD Mode Nominal.

360	16:03	BSL from AR05.
	16:23	STD Mode Nominal.
	16:57	Two simultaneous BSL.
	18:46	STD Mode Nominal.
	19:02	Type III bursts, weak.
	19:10	BSL From AR05.
	19:26	STD Mode Nominal.
	19:53	Type III and BSL From AR05.
	20:17	CONT Mode.
	21:01	SPT sees Hα surge 15-20 arc sec out of AR05.
	22:05	Group Type III, IMP 1.
	22:24	Type III, IMP 1+.
361	00:28	Type I storm on 80 MHs, weak Type III, 20-30 MHz.
	00:46	Bright surge of "semi-opaque" material moving SW from AR00.
	01:19	STD Mode nominal.
	02:53	CONT Mode.
	04:32	SN Flare from AR99.
	04:40	STD Mode Nominal.
	06:16	STD Mode Nominal.
	07:10	STD Mode Nominal.
	08:45	STD Mode Nominal.
	10:19	STD Mode Nominal.
	11:04	Small surge from AR00, C4 flare.
	12:02	STD Mode Nominal.
	14:22	Type III, IMP 2.
	17:04	Surge in AR05.
	18:05	CONT Mode.
	18:15	BSL in AR05 to .08 $R_\odot$.

361	18:50	CONT Mode.
	19:15	Type III, IMP 1+, 18-80 MHz.
	19:37	STD Mode Nominal.
	19:51	Type III, IMP 1, 17-42 MHz.
	20:05	Group Type III, IMP 2, 18-80 MHz.
	20:08	BSL from AR05.
	20:16	CONT Mode.
	20:24	S054 PMEC has very high counts.
	20:30	MLO reports large surge to 3 or 4 arc min.
	21:11	Three each one second exposures, Type III.
	21:13	CONT Mode.
	21:49	CONT Mode.
	21:59	CONT Mode into sunset.
	22:49	STD Mode Nominal, material visible above limb in AR00.
	23:25	CONT Mode.
	23:41	MLO reports coronal enhancement above AR00.
362	00:33	Type I storm.
	02:08	BB1 Nominal.
	02:08	Star tracket dies.
	03:42	STD Mode Nominal.
	03:48	Fast Scan Nominal.
	05:19	STD Mode Nominal.
	05:20	Fast Scan Nominal
	08:03	STD Mode Nominal.
	08:09	Fast Scan Nominal.
	09:37	STD Mode Nominal.
	09:43	Fast Scan Nominal.

362	11:15	STD Mode Nominal.
	11:21	Fast Scan Nominal.
	12:59	Fast Scan Nominal.
	14:29	STD Mode Nominal.
	16:15	Surge above AROO.
	18:07	STD Mode Nominal.
	18:57	Surge at SW13 to .08 $R_\oplus$
	18:58	CONT Mode.
	19:35	STD Mode Nominal.
	20:29	STD Mode Nominal.
	22:50	STD Mode Nominal.
	23:50	CONT Mode.
363	04:38	STD Mode Nominal
	08:55	STD Mode Nominal.
	13:44	STD Mode Nominal.
	13:52	CONT Mode.
	14:02	ν_z update.
	14:07	Surge over AROO.
	14:44	Surge over AROO.
	15:30	Surge over AROO.
	21:32	"Tenuous" surge SW30.
	22:01	STD Mode Nominal.
	23:36	STD Mode Nominal.
364	02:25	Fast Scan, first frame lost to TV.
	03:54	STD Mode Nominal.
	08:11	STD Mode Nominal.
	13:05	STD Mode Nominal.
	13:14	STD Mode Nominal.
	13:21	STD Mode Nominal.

364	14:43	Fast Scan.
	14:50	Fast Scan.
	16:25	Fast Scan Nominal.
	19:08	Type III.
	20:41	EXT STD Mode Nominal.
	21:15	CONT Mode.
	21:33	CONT Mode for atmospheric extinction.
365	01:37	CONT Mode.
	03:09	STD Mode Nominal.
	03:15	STD Mode Nominal.
	04:47	STD Mode Nominal.
	04:55	STD Mode Nominal.
	09:07	STD Mode Nominal.
	13:55	STD Mode Nominal.
	14:01	ν_z update.
	14:05	CONT Mode.
	20:33	STD Mode Nominal.
	20:35	ν_z update.
001	02:25	STD Mode Nominal.
	02:29	CONT Mode.
	02:39	STD Mode Nominal.
	04:53	STD Mode Nominal.
	08:22	STD Mode Nominal.
	08:28	STD Mode Nominal.
	09:59	STD Mode Nominal.
	14:47	STD Mode Nominal.
	14:54	CONT Mode.
	17:27	Group Type III, IMP 1, 25-50 MHz.

001	17:33	Continuum, Type I.
	17:42	STD Mode Nominal.
	18:16	STD Mode Nominal.
	18:23	STD Mode Nominal.
	19:50	STD Mode Nominal.
	19:56	STD Mode Nominal.
002	01:42	STD Mode Nominal.
	01:48	CONT Mode.
	05:21	SN Flare from AR12 with Type III.
	07:43	STD Mode nominal.
	09:16	STD Mode Nominal.
	10:56	STD Mode Nominal.
	16:12	SN Flare in AR12.
	20:45	STD Mode Nominal.
	20:56	STD Mode terminated early.
003	00:30	STD Mode Nominal.
	01:00	STD Mode Nominal.
	01:03	CONT Mode.
	01:15	Slowly lifting prominence at 294° to 0.06 $R_{\odot}$.
	08:34	STD Mode Nominal.
	08:40	STD Mode Nominal.
	11:30	P61 lifting off.
	13:24	STD Mode Nominal.
	13:33	CONT Mode.
	13:54	CONT Mode.
	15:22	SN Flare and small bright surge from AR14.
	17:13	CONT Mode for Atmospheric Extinction.
	17:55	STD Mode Nomina.

003	18:46	CONT Mode for Atmospheric Extinction.
	20:00	STD Mode Nominal.
	20:21	CONT Mode.
	21:10	STD on Comet
004	01:54	STD Mode Nominal.
	01:59	STD Mode Nominal.
	07:53	STD Mode Nominal.
	11:08	STD Mode Nominal.
	12:43	STD Mode Nominal.
	12:52	CONT Mode.
	13:04	EXT STD Mode, 24 frames.
	14:46	D_4 Calibration:

	U/D	L/R
FSS	-9	98
PES	17	12
IAS	-28	0

	17:11	CONT Mode.
	20:55	STD Mode Nominal.
	22:00	STD Mode Nominal.
005	01:12	STD Mode Nominal.
	01:22	STD Mode Nominal.
	01:28	CONT Mode.
	01:58	CONT Mode for Atmospheric Extinction.
	03:07	STD Mode Nominal.
	07:09	STD Mode Nominal.
	07:15	STD Mode Nominal.
	10:21	STD Mode Nominal.
	12:07	STD Mode Nominal.
	12:14	STD Mode Nominal.

005	12:21	CONT Mode.
	13:36	CONT Mode.
	16:29	CONT Mode.
	17:21	CONT Mode.
	18:01	CONT Mode.
	19:41	EXT STD Mode.
	21:00	Minor prominence at SW40, southern segment disappeared.
006	00:24	STD Mode Nominal.
	00:35	CONT Mode.
	04:04	P72 became active, not eruptive.
	08:02	STD Mode Nominal.
	19:30	STD Mode Nominal.
	20:33	STD Mode Nominal.
	22:39	SN Flare from AR12.
	23:45	Fast Scan
	23:52	Fast Scan.
007	00:33	Fast Scan
	01:19	Fast Scan
	07:19	STD Mode Nominal.
	07:24	STD Mode Nominal.
	10:45	STD Mode Nominal.
	12:14	CONT Mode.
	18:51	STD Mode Nominal.
	18:55	AR16 has small surges and coronal rain.
	21:49	STD Mode Nominal.

008	00:36	STD Mode Nominal.
	00:43	CONT Mode.
	01:01	SF Flare in AR15.
	06:39	STD Mode Nominal.
	13:25	CONT Mode.
	15:48	SN Flare from AR14.
	15:53	SF Flare from AR16.
	19:07	EXT STD Mode.
009	01:32	STD Mode Nominal.
	01:38	CONT Mode.
	01:48	STD Mode Nominal.
	02:11	CONT Mode.
	07:31	STD Mode Nominal.
	09:46	NOAA reports a spray began 0938z at ER08 arching northward, extends out to 0.03 $R_\odot$ and for 6° along the limb.
	10:15	Canary report indicates material of spray is diffuse and did not get beyond .03 $R_\odot$.
	12:21	STD Mode Nominal.
	12:38	CONT Mode.
	15:48	Minor surges in AR17, weak centimetric emission.
	19:16	CONT Mode.
	20:00	STD Mode Nominal.
	20:46	Bright mound in AR17 near flare brightness.
	22:11	PES/FSS calibration, best TV picture at FSS U/D-11, L/R + 50.
	22:22	STD Mode Nominal.

010	00:49	STD Mode Nominal.
	01:00	STD Mode Nominal.
	05:15	Surging at SE13.
	09:05	APR From SE12.
	09:30	SF Flare from AR14 then SN from S17E88. Loops to 0.03 $R_\odot$.
	10:00	STD Mode Nominal.
	11:37	STD Mode Nominal.
	13:30	STD Mode Nominal.
	16:06	CONT Mode.
	17:44	STD Mode with optimum pointing U/D +8 L/R +60.
	18:34	Type III, IMP 1.
	18:35	CONT Mode.
	20:09	CONT Mode.
	21:41	CONT Mode.
	22:31	STD Mode Nominal.
	22:40	CONT Mode.
	23:15	CONT Mode.
011	07:41	STD Mode Nominal.
	09:17	STD Mode Nominal.
	10:54	STD Mode Nominal.
	15:18	Type III, IMP 1 group, 14-80 MHz.
	17:20	Type III, IMP 2+, 18-80 MHz.
	18:14	Type III, IMP 1
	18:49	Type III, IMP 2 group, 7-80 MHz
	19:05	STD Mode, optimum pointing.
	20:14	C-2 reported by Vela.
	20:57	STD Mode Nominal.
	21:07	Type III, IMP 2, 7-80 MHz

011	22:46	P77 is a suspended cloud.
	23:26	STD Mode Nominal.
012	07:10	STD Mode Nominal.
	08:33	STD Mode Nominal.
	10:14	STD Mode Nominal.
	10:20	SF Flare in AR17.
	10:33	One bright flare in AR20, M3.
	12:11	CONT Mode.
	13:34	CONT Mode.
	15:07	CONT Mode.
	15:34	STD Mode Nominal, large change in corona.
	18:20	Type III.
	19:27	STD Mode Nominal.
	20:56	Type III
	21:53	Type III
	22:00	Type III, IMP 2, 7-80 MHz.
013	00:16	STD Mode Nominal.
	00:30	CONT Mode
	06:27	STD Mode Nominal.
	07:50	STD Mode Nominal.
	09:28	STD Mode Nominal.
	11:26	STD Mode Nominal.
	12:55	STD Mode Nominal.
	14:25	CONT Mode.
	14:36	Glob ejected at SE13 to 0.01 $R_\odot$.
	16:21	Type III
	16:30	Type III, IMP 1
	16:55	Type III and SN Flare in AR20.

013	17:12	CONT Mode
	18:05	CONT Mode
	19:39	Short STD Mode the CONT Mode.
	20:22	STD Mode Nominal.
	22:01	STD Mode Nominal.
014	03:33	SN Flare from AR21, radio bursts 17-44 FU.
	07:12	STD Mode Nominal.
	08:45	STD Mode Nominal.
	13:44	CONT Mode.
	18:03	Type III, IMP 1, 25-65 MHz.
	18:06	Type III, IMP 1, 25-65 MHz.
	18:08	STD Mode nominal.
	19:42	EXT STD Mode.
	21:17	CONT Mode.
	21:34	Type III
	22:48	STD Mode Nominal.
015	06:36	STD Mode Nominal.
	07:58	SN Flare in AR14.
	08:05	STD Mode Nominal.
	09:58	STD Mode Nominal.
	10:50	One normal flare from AR14.
	11:08	Radio centimeter burst.
	11:25	Surge to 1.0 $R_\odot$ in Hα.
	11:32	STD Mode Nominal.
	11:46	STD Mode Nominal.
	13:03	STD Mode Nominal.
	13:40	Tive IV Dekameter, 24-40 MHz.

015	14:35	SPT studying flare in AR14, surge accompanied flare.
	15:30	Weak Type IV continuum, 24-42 MHz.
	18:14	STD Mode Nominal.
	19:01	EXT STD Mode, first frame to TV.
	19:01	NRL Calroc launched.
	20:13	Type III, IMP 1, 22-50 MHz.
	20:30	STD Mode Nominal.
	21:00	SF Flare from AR14 and large surge.
	21:30	BSL from AR14.
	21:55	SF Flare from AR14.
	22:00	Type III storm, IMP 1, 15-160 MHz.
	22:07	STD Mode Nominal.
016	00:46	STD Mode Nominal.
	00:50	CONT Mode for Atmospheric Extinction
	01:58	CONT Mode.
	03:30	STD Mode Nominal.
	05:47	Type III, IMP 2
	05:55	STD Mode Nominal.
	06:26	M2 Flare.
	06:47	Weak Type II after group Type III, IMP 1.
	06:52	Group Type III, IMP 1.
	07:30	STD Mode Nominal.
	09:15	STD Mode Nominal.
	10:54	STD Mode Nominal.
	12:16	STD Mode Nominal.
	12:24	CONT Mode.
	15:28	CONT Mode.

016	17:06	STD Mode Nominal.
	19:48	SF Flare from AR20, dark surge on disk at S20E22.
	21:29	CONT Mode.
017	04:26	STD Mode Nominal.
	06:48	STD Mode Nominal.
	09:13	STD Mode Nominal.
	14:45	STD Mode Nominal.
	16:37	Mg X loops over AR14.
	17:42	Weak Type III.
	17:48	STD Mode Nominal.
	19:38	Eruptive prominence from AR14 to 0.22 $R_\odot$. Type IV strong at 1933.
	19:40	STD Mode Nominal.
	19:43	Weak Type II.
	19:47	Type IV, IMP 2, and Type II.
	19:50	STD Mode Nominal.
	20:21	STD Mode Nominal.
	21:21	CONT Mode.
	22:24	CONT Mode.
	23:18	CONT Mode.
018	02:05	Intermittent weak Type III.
	03:41	STD Mode Nominal.
	06:49	STD Mode Nominal
	09:25	STD Mode Nominal.
	09:32	Continuum of weak Type I storm.
	12:27	STD Mode Nominal.
	14:04	STD Mode Nominal.
	14:13	STD Mode Nominal.

018	14:15	Weak Type III, possible slow drift of very weak II.
	14:25	CONT Mode.
	15:25	SF Flare in AR16.
	17:15	CONT Mode.
	18:44	F81 Lifting off.
	19:07	SF Flare in AR23.
	19:52	SF Flare in AR21.
	21:48	STD Mode Nominal.
	23:58	STD Mode Nominal.
019	01:20	STD Mode Nominal.
	01:26	CONT Mode.
	07:07	STD Mode Nominal.
	08:42	STD Mode Nominal.
	10:13	STD Mode Nominal.
	11:42	STD Mode Nominal.
	11:53	STD Mode Nominal.
	12:03	CONT Mode.
	13:19	CONT Mode.
	16:26	Small SN Flare on AR20.
	17:58	CONT on.
	18:44	SN Flare in AR31.
020	00:36	BB1 Nominal.
	08:04	STD Mode Nominal.
	12:44	STD Mode Nominal.
	12:55	STD Mode Nominal.
	13:01	CONT Mode.
	14:23	CONT Mode.

020	15:35	SF Flare AR31
	15:47	CONT Mode.
	17:23	CONT Mode.
	18:59	SN Flare in AR21.
	19:40	CONT Mode.
	23:35	APR from P83. Motion northward along W-limb.
021	00:27	Weak Type III
	01:30	BB1 Nominal.
	07:20	STD Mode Nominal.
	10:27	STD Mode Nominal.
	12:02	STD Mode Nominal.
	12:12	STD Mode Nominal.
	13:35	CONT Mode.
	15:07	CONT Mode.
	16:40	CONT Mode.
	18:13	CONT Mode.
	18:46	SN Flare in AR32.
	20:45	One bright in AR31.
	22:16	BSL N15W90.
	22:47	SN flare in AR31.
	23:17	SN Flare in AR31.
022	06:40	STD Mode Nominal.
	08:31	SN Flare in AR33.
	08:34	SN Flare in AR31.
	10:26	STD Mode Nominal.
	12:04	CONT Mode.
	12:45	Small X-ray flare in progress.
	13:07	CONT Mode.

022	13:28	SF Flare in AR31.
	14:26	CONT Mode.
	14:50	SF Flare in AR31.
		SN Flare in AR32.
		SN Flare in AR32.
	15:52	SF Flare in AR31.
	16:01	SF Flare in AR31.
	16:07	STD Mode Nominal.
	17:39	1N Flare in AR31.
	19:12	SF-1F Flare in AR31-followed by DSD.
	20:26	SN Flare in AR37.
	20:28	Flare in AR31.
	21:17	SN Flare in AR31.
	22:32	CONT Mode.
	23:28	SF Flare in AR33.
023	00:06	STD Mode Nominal.
	01:02	SF Flare in AR33.
	01:09	SF Flare in AR31.
	06:27	STD Mode Nominal.
	12:18	STD Mode Nominal.
	13:45	CONT Mode.
	15:17	CONT Mode.
	15:57	Type III.
	16:41	Type III, IMP 1.
	16:53	Type III.
	17:19	Type III, IMP 1, 26-40 MHz.
	17:22	Type III, 10-75 MHz.
	17:33	Type III, IMP2+, 8-80 MHz.

023	18:21	AR35 surging.
	19:43	CM radio burst at 1415 MHz, 15 FU.
	22:00	SPT saw surge over AR33.
	23:28	CONT Mode.
024	04:00	AR35 surging.
	05:44	STD Mode Nominal.
	06:05	Small Prominence at SW20 disappeared.
	08:59	STD Mode Nominal.
	11:41	STD Mode Nominal.
	13:09	STD Mode Nominal.
	14:38	STD Mode Nominal.
	19:21	Bright surge of flare intensity from AR35.
	19:34	Significant change in corona from morning.
025	00:14	CONT Mode.
	01:10	Coronal rain on SW limb near AR35.
	06:47	STD Mode Nominal.
	12:22	STD Mode Nominal.
	12:33	STD Mode Nominal.
	12:37	CONT Mode.
	18:44	STD Mode Nominal.
	21:05	Type III
	21:10	Eruptive prominence NW10 to 0.13 $R_\odot$.
	22:00	CONT Mode.
	22:32	STD Mode Nominal.
	23:38	CONT Mode.

026	09:17	STD Mode Nominal.
	13:22	STD Mode Nominal.
	13:38	STD Mode Nominal.
	14:49	CONT Mode.
	15:12	Dark Surge in AR36.
	16:22	CONT Mode.
	19:31	Small surge over AR31.
027	00:58	SPT reports surge.
	01:56	CONT Mode.
	03:00	Active surges over N03.
	06:52	STD Mode Nominal.
	14:06	STD Mode Nominal.
	14:14	STD Mode Nominal.
	14:22	CONT Mode.
	14:29	Secondary programmer.
	20:56	STD Mode Nominal.
	22:52	Minor active prominence near AR35.
028	07:56	STD Mode Nominal.
	11:52	STD Mode Nominal.
029	12:46	STD Mode Nominal.
	12:50	Another burn spot in TV.
	13:02	STD Mode Nominal.
	13:08	CONT Mode.
	14:21	STD Mode - null pointing.
	15:53	CONT Mode.
	19:07	STD Mode Nominal.
	22:18	STD Mode Nominal.

030	00:27	Fast Scan, two frames.
	00:28	Fast Scan, two exposures.
	12:08	STD Mode Nominal.
	12:17	STD Mode Nominal.
	18:30	STD Mode Nominal.
	21:20	SF Flare in AR39.
031	00:39	STD Mode Nominal.
	12:59	STD Mode Nominal.
	16:55	SF Flare in AR38.
	20:43	BSL at N11W90.
	21:34	1N Flare in AR38.
	22:58	STD Mode Nominal.
032	01:32	STD Mode Nominal.
	13:31	Fast Scan for γ Vel
	14:11	STD Mode Nominal.
	15:19	STD Mode Nominal.
	16:26	SF Flare in AR39.
	18:34	STD Mode Nominal.
	20:08	STD Mode Nominal.
033	14:38	STD Mode Nominal.
	16:14	STD Mode Nominal.
	17:51	STD Mode Nominal.
	17:59	ν_z update.
	20:58	STD Mode Nominal.
	22:20	Type I.
034	00:05	STD Mode Nominal.
	01:43	CONT Mode.
	01:51	END S052 ATM OPERATIONS
035	15:45	Camera Loads 4 & 5 in CSM.

C. Film Numbering

Frame numbers were assigned chronologically, i.e., the first photograph exposed on camera load 1 through the final photograph made on camera load 5. The frames throughout all five loads were numbered consecutively, each camera load does not start with frame 1 but continues the numbering from the previous load. As noted in Section II-B-2, some partial frame advances occurred; but again, each exposure was given a number so that a partial frame advance will be numbered x/x+1. Finally, some mistakes were made in the original numbering requiring a few number-plus-letter designation.

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