NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Technical Report No. 32-1023

Surveyor I Mission Report

Part III. Television Data

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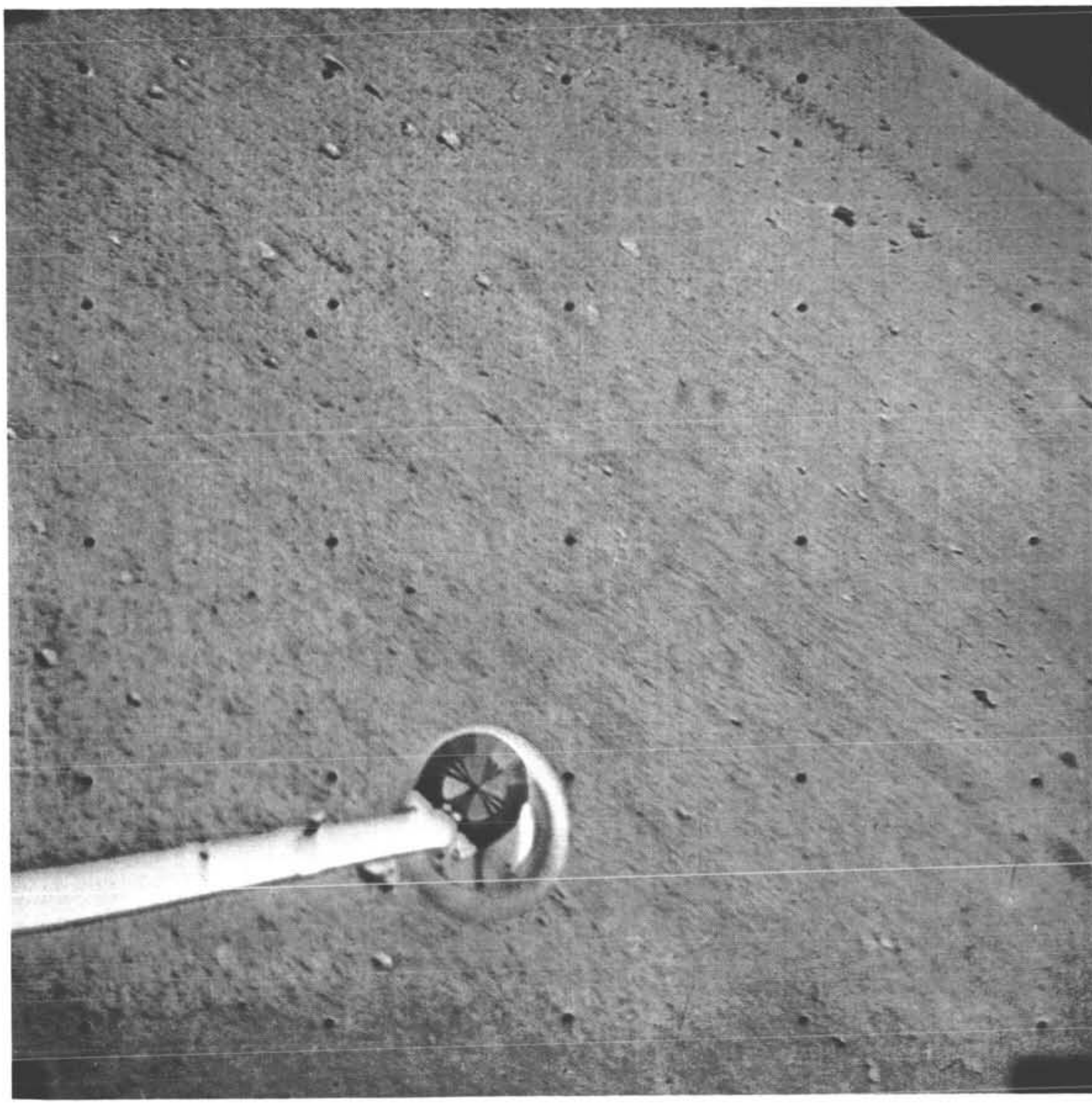
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

November 1, 1966



This color view of the lunar landscape, to the northeast of the landed spacecraft, was recorded by the *Surveyor I* camera about noon of the first lunar day following touchdown. In the foreground are the white boom and omnidirectional antenna B with a photometric chart. The blackness of space appears in the upper right hand corner. Here, the horizon is tilted 54 degrees.

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PREFACE

Contents of Part III of the *Surveyor I Mission Report* represent the photographic results of Mission A of the *Surveyor* series. Part I presents engineering aspects of the mission; Part II contains scientific data and analyses.

ACKNOWLEDGMENT

Color separations for the frontispiece were provided through the courtesy of *National Geographic Magazine*, in whose photographic laboratory the color was reconstructed under the supervision of Mr. Jay Rennilson, JPL physicist, from the original *Surveyor I* negatives.

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ABSTRACT

Some 281 selected television photographs of the lunar surface, as acquired by and sent from *Surveyor I* between June 2 and July 14, 1966, are presented in this report. Accompanying information provides assistance in the interpretation of these pictures. The supporting material comprises descriptions of the television subsystem, the orientation of camera and sun, the ground photo recording system, and camera parameter information. In addition, 32 preliminary mosaics aid with spatial relationship interpretation.

I. INTRODUCTION

Leonard D. Jaffe

Surveyor I sent over 11,000 photographs to earth from the lunar surface. This volume, Part III of the Mission Report, presents 281 of these photographs, each of which has been selected as being of special interest. Auxiliary information, of use in interpreting the photographs, is given in the text.

Also included in this document are preliminary mosaics composed of individual frames. Combined, these mosaics cover essentially all of the lunar surface viewed by *Surveyor I* television. Although most of these mosaics were produced as quickly as possible during the course of the mission for use in continued lunar operations—and speed, rather than quality, was the prime consideration—these preliminary mosaics are helpful in understanding the spatial relations between objects visible in different frames.

Individual *Surveyor* photographs can best be identified by the time of recording. Each frame is labeled by day of year (running from 153 for June 2 to 195 for July 14) and by Greenwich Mean Time (GMT given, for example, as 123654 for 12 hr, 36 min, 54 sec). Differences in recording time between various stations may cause variations of ± 1 sec in the time for a frame. This should cause no ambiguity, since the interval between successive frames was at least 3.6 sec.

The National Space Science Data Center at Goddard Space Flight Center, Greenbelt, Maryland, is responsible for dissemination of *Surveyor I* photographs and other scientific data. An index, and copies of the photographs in various forms, can be obtained from that NASA Data Center.

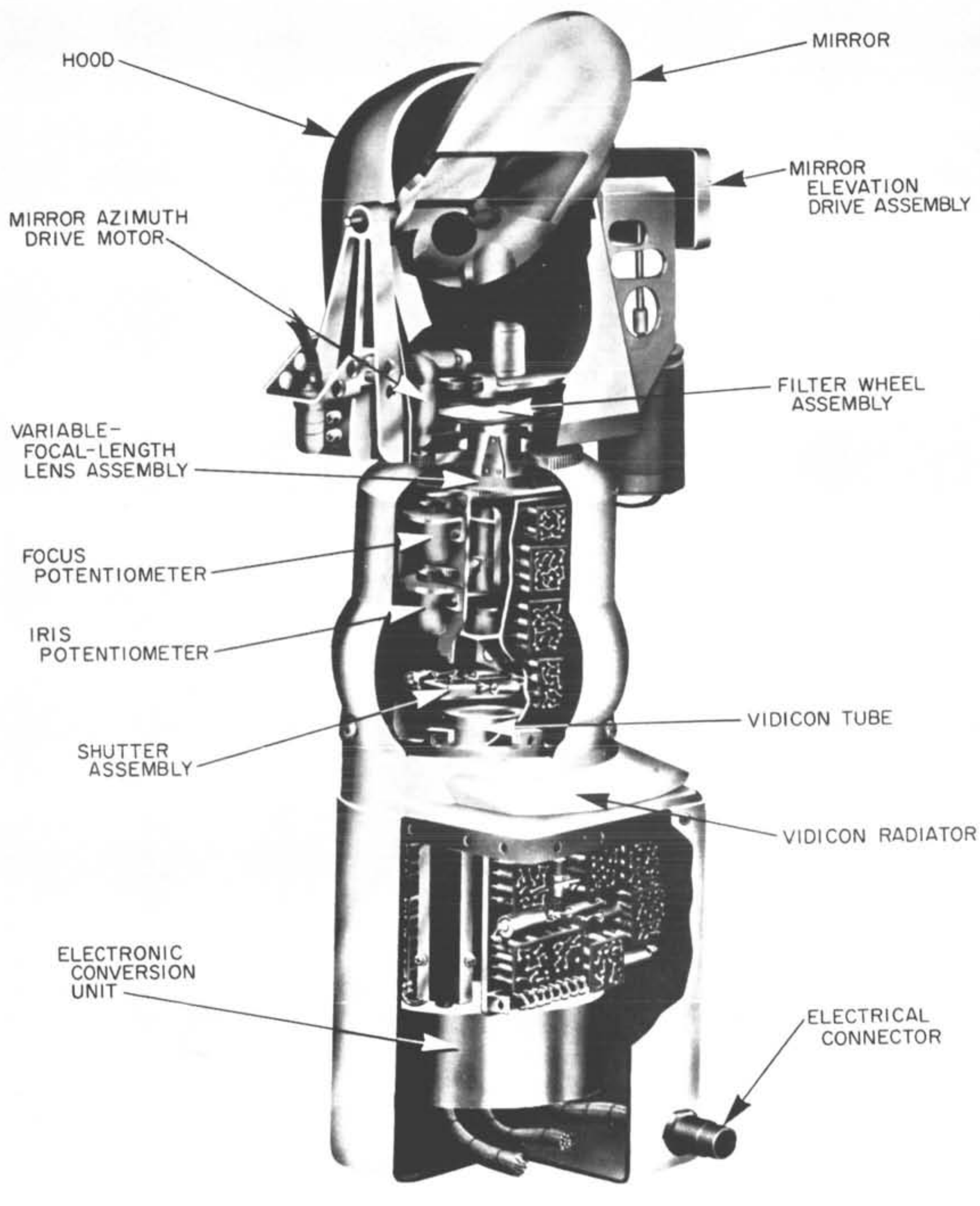


Fig. II-1. Cutaway view of survey camera

II. TELEVISION SUBSYSTEM

Donald R. Montgomery

The *Surveyor* television subsystem is designed primarily to obtain video photographs of the lunar surface. It includes a survey camera capable of panoramic viewing, and a television auxiliary that serves to commutate identification signals and provide appropriate video mixing.

A. Camera General Description

The slow-scan survey television camera, shown in Figs. II-1 and II-2, provided images of the lunar surface over a 360-deg panorama. Each picture, or frame, was imaged through an optical system onto a vidicon image sensor whose electron beam scanned a photoconductive surface to thus produce an electrical output which was proportional to conductivity changes resulting from the varying receipt of photons from the object space. The camera is designed to accommodate scene luminance levels from approximately 0.008 to 2600 ft-L, employing both electromechanical mode changes and iris control.

Frame-by-frame coverage of the lunar surface provides a 360-deg azimuth viewing and an elevation viewing from approximately +31 deg above the plane normal to the camera Z axis to −67 deg below this same plane. Camera operation is totally dependent on receipt of the proper command structure from earth. Commandable operation allows each frame to be generated by sequencing the shutter with appropriate lens settings and mirror azimuth-and-elevation positioning to obtain adjacent

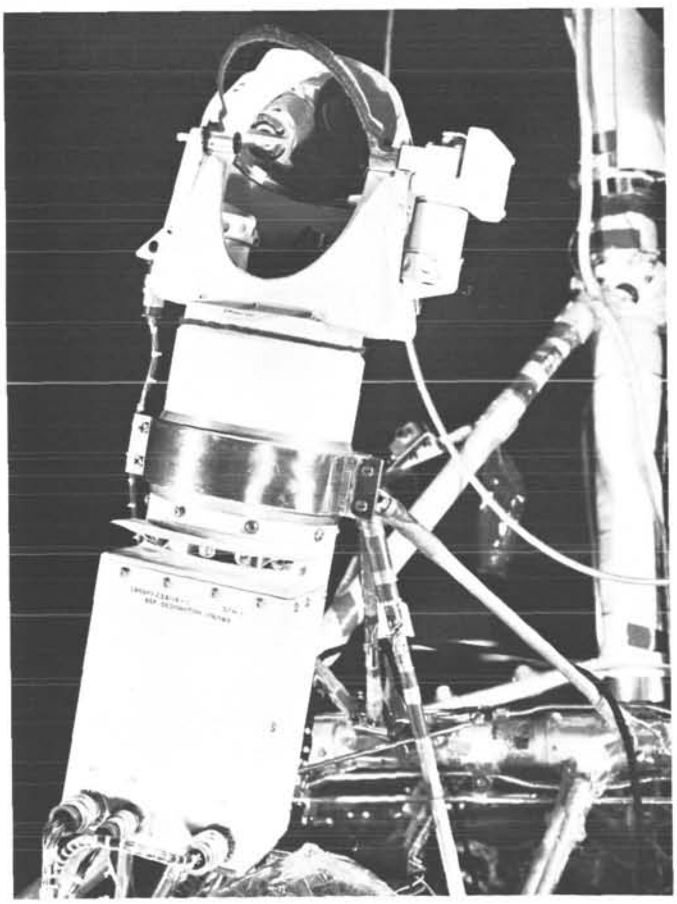


Fig. II-2. Survey camera on the spacecraft views of the object space. The camera provides a designed resolution capability of approximately 1 mm at 4 m and can focus from 1.23 m to infinity. The 16.1-lb (7.5 kg) camera consists essentially of six major components—namely, the mirror, lens, shutter, filter wheel, vidicon, and the attendant electronic circuitry.

The mirror assembly shown in Fig. II-3 comprises a 10.5- × 15-cm elliptical mirror supported at its minor axis by trunnions. This mirror is formed by vacuum-depositing an aluminum surface on the beryllium blank, followed by depositing a layer of Kanogen, and finishing with an overcoat of silicon monoxide. The mirrored surface is flat over the entire surface to less than ¼ wavelength at $\lambda = 550$ mμ and exhibits an average specular reflectivity in excess of 86%. The mirror is positioned by means of two drive mechanisms, one for azimuth and the other for elevation. The drive mechanism consists of stepper motors which, through appropriate gear reduction, provide a mirror step size of 2.48 ± 0.1 deg in elevation and of 3.0 ± 0.1 deg in azimuth. Angular step positions of both axes are sensed by position potentiometers, the outputs of which are digitized and transmitted to earth in pulse code modulation (PCM) form.

The rotation of the mirror in the azimuth direction, while providing the azimuth coverage capability to the camera, creates an image rotation proportional to the angular azimuth position of the mirror, since the image plane and the scanning raster of the image sensor, the vidicon, are stationary with respect to the mirror azimuth axis.

In addition to the mirror itself, the mirror assembly contains a commandable filter-wheel mechanism (Fig. II-4) that accommodates four separate sections of optical-quality glass filters. The *Surveyor I* filter wheel contained red, green, and blue filters; the fourth section contained a clear element for non-monochromatic observations. Response curves for typical color-filter elements used on *Surveyor I* are shown in Fig. II-5. Segments of the filter wheel were placed sequentially in the field of view of the camera, following the receipt of the proper earth-originated command. Color photographs of a scene can be reproduced on earth after three video transmissions, each with a different-color filter element in the field of view.

The optical formation of the image was performed by means of a variable-focal-length lens assembly between the vidicon image sensor and the mirror assembly. Each lens (Fig. II-6) was capable of either a 100-mm or 25-mm focal length, providing optical fields of view of approximately 6.43 deg and 25.3 deg, respectively. Additionally, the lens assembly could vary its focus by means of a rotating focus cell from near 1.23 m to infinity, while an adjustable iris provided effective aperture changes of

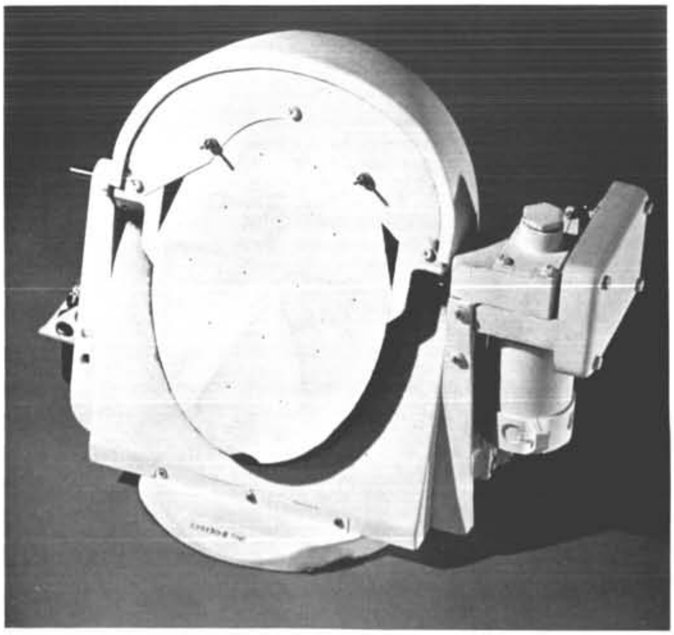


Fig. II-3. Mirror assembly

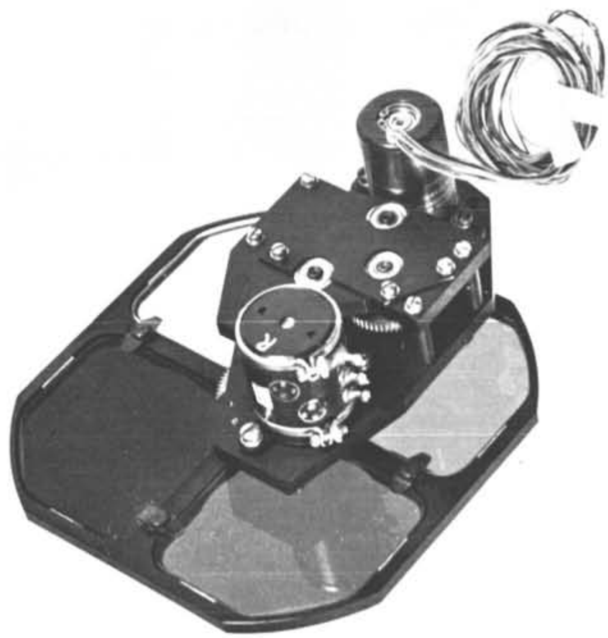


Fig. II-4. Filter wheel assembly

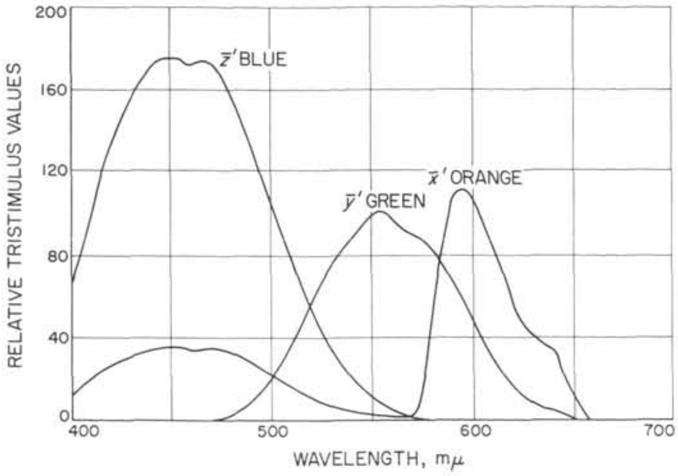


Fig. II-5. Relative tristimulus values of color filter elements

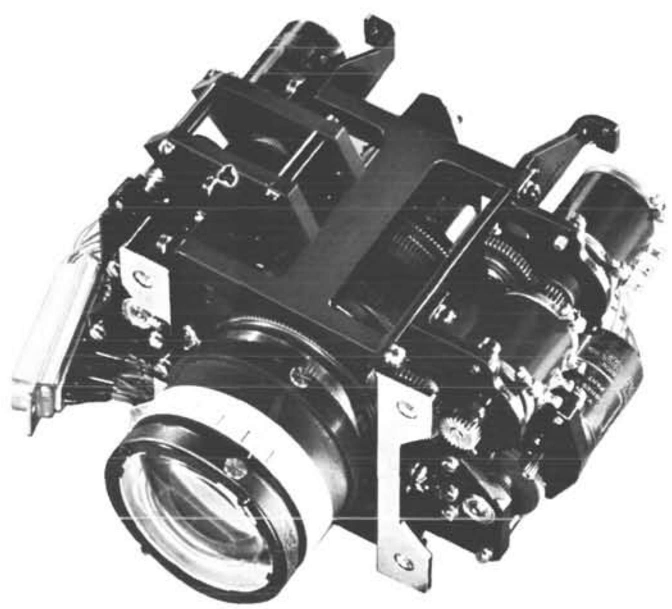


Fig. II-6. Variable-focal-length lens assembly

f/4 to f/22 in increments that resulted in an aperture-area change of 0.5. While the most effective iris control is accomplished by command operation, a servo-type automatic iris was available to control the aperture area in proportion to the average-scene luminance. As in the mirror assembly, potentiometers were geared to the iris, focal length, and focus elements to allow ground determination of these functions. A beam splitter, integral to the lens assembly, provided a light sample for operation of the automatic iris.

Two methods of exposure were afforded by a mechanical focal-plane shutter between the lens assembly

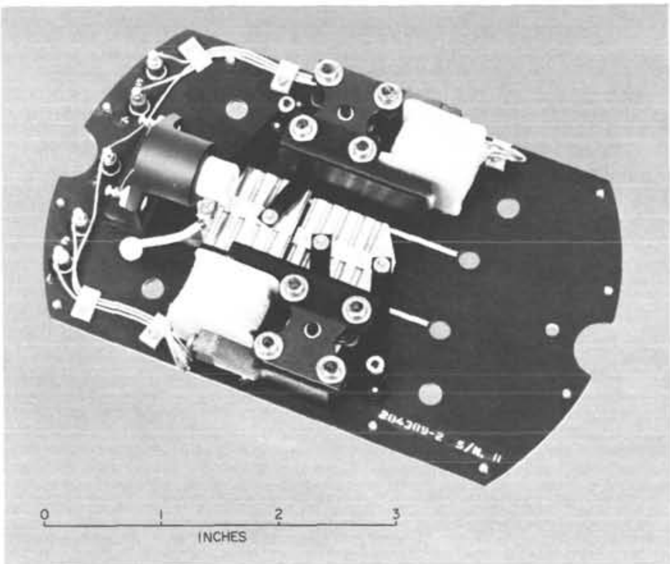


Fig. II-7. Shutter assembly

and the vidicon image sensor (Fig. II-7). Upon receipt of an appropriate earth command, rotary solenoids drove the shutter blades sequentially across an aperture in the shutter base plate, thereby allowing light energy to reach the image sensor. The time interval between the initiation of each blade determined the exposure intervals, nominally 150 msec. As an alternative, the blades could be positioned to leave the aperture open, thereby providing continuous light energy to the image sensor. This mode of operation was useful in the imaging of scenes exhibiting such low-luminance levels as star patterns.

The transducing process of converting light energy from the object space to an equivalent electrical signal in the image plane was accomplished by the vidicon tube; this hybrid tube (Fig. II-8) used electrostatic focus and electromagnetic deflection. The principle by which the video signal was produced from the photoconductive surface is illustrated by Fig. II-9. A low-velocity scanning beam strikes one side of the surface, the other side of which receives illumination through a signal plate from which the video signal is taken. When the photoconductive surface is scanned in darkness, electrons deposited from the scanning beam reduce the potential to zero. The conductivity becomes so low under these conditions that very little current flows across the surface. If, on the other hand, the surface is illuminated, the conductivity increases and charge flows across the surface, and the scanned surface becomes more and more positive in the interval between successive scans. The beam then deposits sufficient numbers of electrons to neutralize the accumulated charge, thereby generating the video signal.

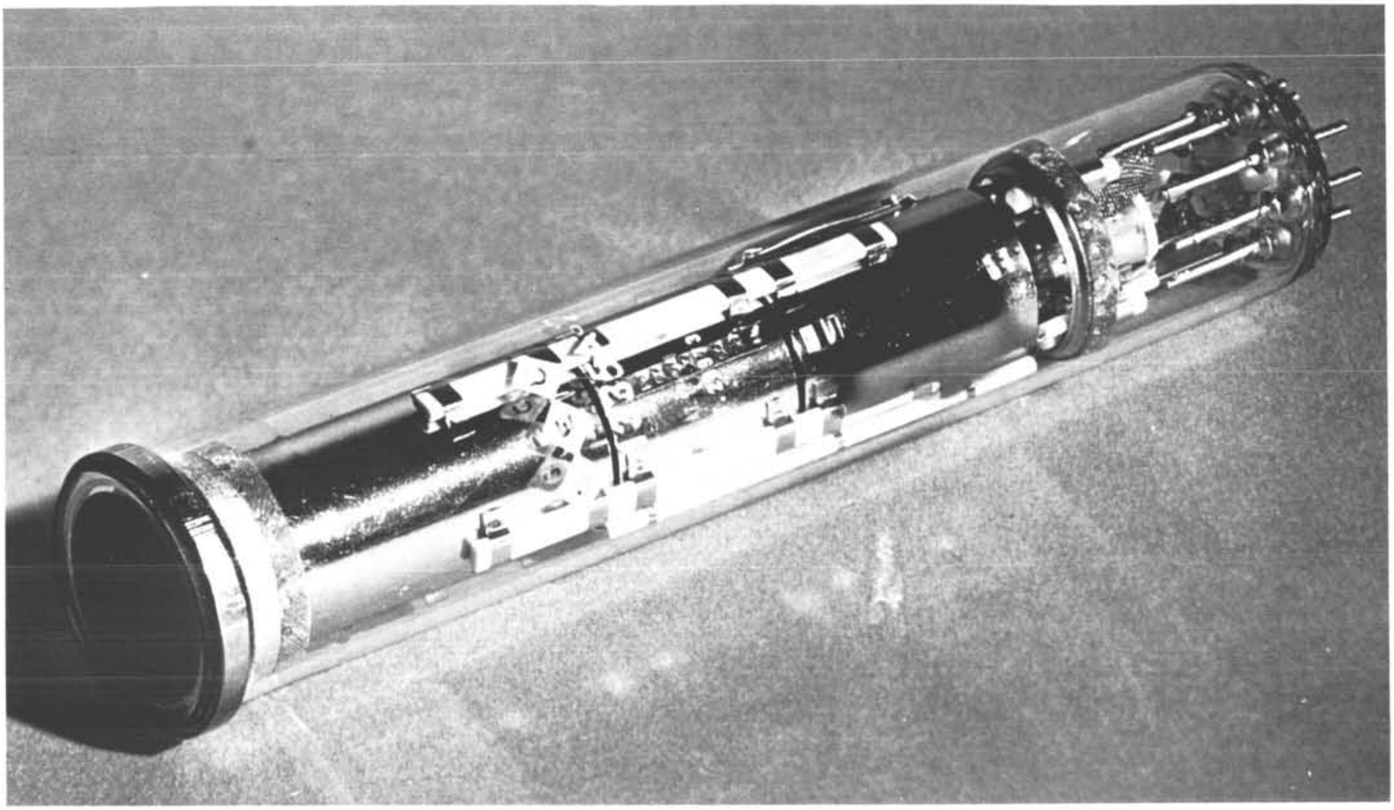


Fig. II-8. One-inch vidicon for survey camera

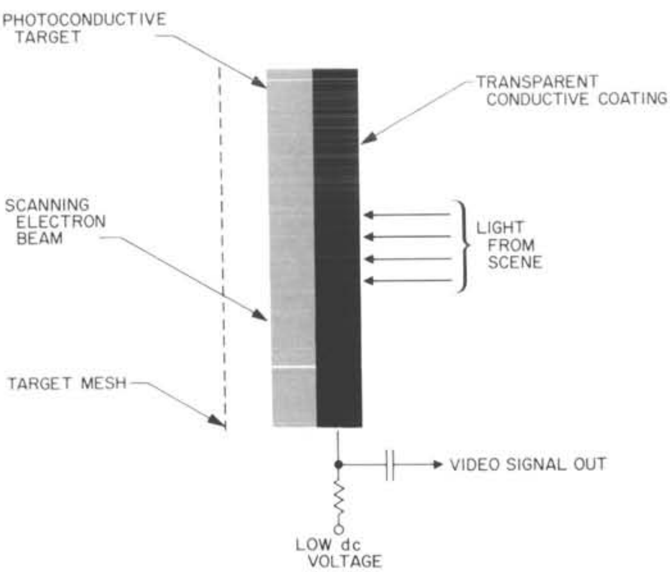


Fig. II-9. Vidicon functional diagram

The photoconductor incorporated in the vidicon sensor consists of a selenium derivative. Integral to the photoconductor surface is a 5 by 5 matrix of dots comprising a reseau that can be used in correcting the image information for nonlinearities and distortions. Additionally, a reference mark is included in each corner of the scanned format to provide, in the video signal, an electronic level representing optical black for photometric reference.

Electronic circuitry for timing, power, and amplification functions of the camera was constructed of solid-state circuitry and packaged in module form, as depicted by Fig. II-10. This circuitry comprised five functional groups, consisting of (1) the drive circuits for lens and mirror mechanical positioning, (2) the video amplifier, (3) the horizontal- and vertical-sweep circuits that create the scanning raster, (4) the synchronization circuitry for ground recording and reproduction purposes, and (5) an electronic conversion unit to provide voltages and regulation from the spacecraft central power source for camera operation. Thermal control devices were within the camera—surrounding the vidicon faceplate, on selected electronic modules, and within the mirror assembly—to provide and maintain operational temperatures when the camera experienced low transit- and lunar-temperature conditions.

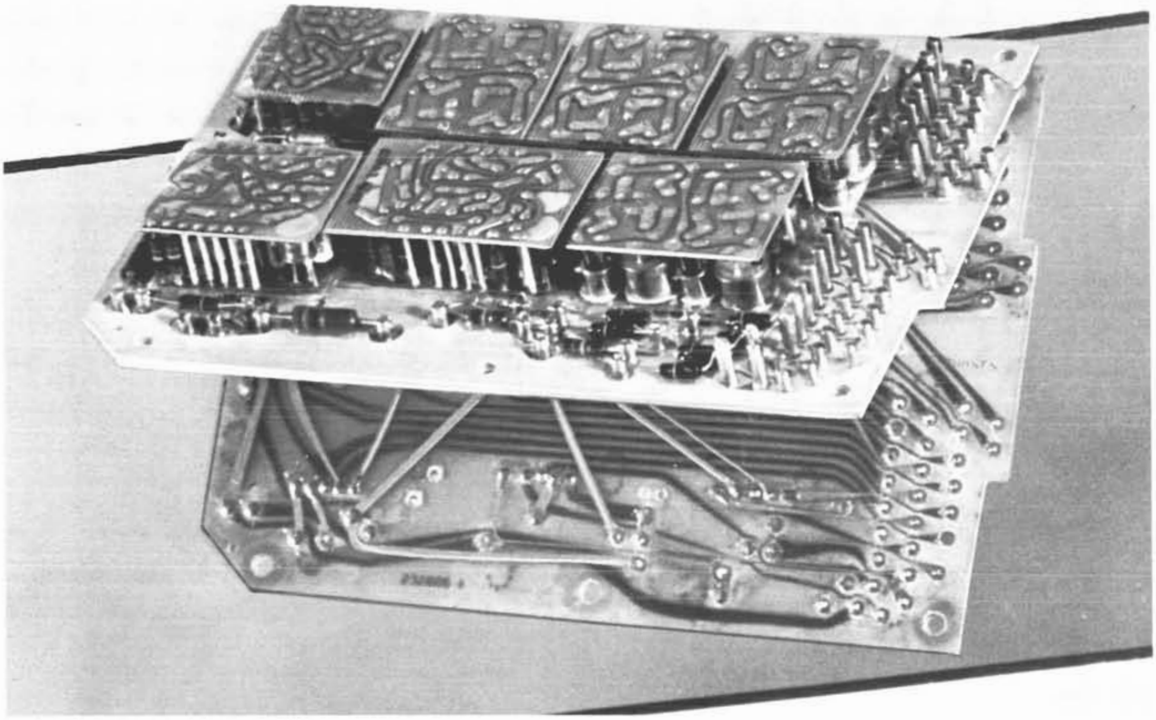


Fig. II-10. Electronic module configuration

Functionally, the camera operated in a slow-scan mode, in contrast to the standard scan used in commercial television. Such a reduced scan rate requires less information bandwidth from the spacecraft communications system for a given picture quality and, thereby, reduces the RF power requirements for the lunar distances involved.

In the normal mode of operation, the camera provided one *600-line frame* every 3.6 sec. Each frame required 1 sec to be read from the vidicon, and the transmission of lens- and mirror-position information, plus several temperature measurements, required 200 msec. The remaining 2.4 sec were used in erasing the image from the vidicon, in preparation for the next exposure.

A second mode of operation in the camera provided one *200-line frame* every 60.8 sec. Each frame required 20 sec to complete the video transmission and utilized a bandwidth of 1.2 kc, in contrast to the 220 kc for the 600-line mode. This 200-line mode was used in instances of omnidirectional antenna transmission from the spacecraft. The 600-line mode could be used only when the directional antenna was oriented toward the earth.

To obtain long exposures, the scanning beam of the vidicon could be cut off while the shutter was allowed to remain open. Such a configuration allowed continued charge buildup on the vidicon, proportional to received photon energy. Readout of the vidicon was commanded from earth after a given, predetermined exposure period, with the resulting video output proportional to photons received or the exposure time. The *dark current* of the vidicon would increase exponentially with time; hence, for any given scene luminance, the video amplitude decreased as a function of time. Camera sensitivity to scene luminance on the order of 0.008 ft-L in this mode of operation permitted photographs under *earthshine* conditions. An example of such earthshine photography (*Surveyor I*-272 photograph in Section VIII) shows the spacecraft leg and footpad, as well as the lunar surface, illuminated by earth at a luminance level on the order of 0.05 ft-L.

Integral to the spacecaft, and within the viewing capability of the camera, were two photometric/colorimetric reference charts. These charts were located on an omnidirectional antenna and on a spacecraft leg adjacent to the footpad, so that the line of sight of the camera in viewing each chart was normal (± 3 deg) to the chart plane. The charts were identical; each had a series of 13 grey wedges arranged circumferentially. In addition, three color wedges (with known CIE[1] chromaticity coordinates) were located radially from the chart center. A series of radial lines were incorporated to provide a gross estimate of camera resolution. Finally, each chart contained a center post to help determine solar angles, by means of the shadow information, after the lunar landing. Prior to launch, the charts were calibrated gonio-photometrically to allow an estimation of post-landing camera dynamic range.

B. Camera Calibration

To derive maximum scientific information from a photograph, it is necessary to have precise quantitative information on the camera that obtained the photograph in terms of those parameters that describe the quality of the image. To ensure such precise information, a calibration was performed on the *Surveyor I* with the camera mounted on the spacecraft. Each calibration used the entire telecommunication system of the spacecraft, so as to include those factors of the modulator, transmitter, etc., that influenced overall image-transfer characteristics. This calibration was performed at the launch complex on April 3–4, 1966, which was as close to the launch day as practical.

Calibration information was used both prior to the mission and during the post-mission data analysis period. Prior to launch, the entire television ground data handling system was adjusted and calibrated, utilizing the pre-recorded spacecraft/camera video signal derived during the calibration of the camera. This allowed the ground equipment to be optimized for the particular spacecraft in terms of real-time receipt and processing of image information. With respect to the post-mission analysis, camera calibration information could be used to correct the images for geometric nonlinearities and distortions, fall off of spacial frequency response, photometric non-uniformities, and coherent noise.

Digital computer techniques, developed and utilized in conjunction with the *Ranger* and *Mariner* photographic experiment and applied to *Surveyor* imagery, allowed correction factors to be applied to any selected frame of video in a pre-programmed manner. An example of spacial frequency fall-off correction by the use of digital techniques is shown in *Surveyor I*-8, *I*-9, and *I*-10 photographs. The first of these three pictures depicts original film data, the second is a digitized photograph before sine-wave correction, and the third is the result after sine-wave correction. The correction shown in this instance represents a *flat* response out to the 20% relative response point on the spatial frequency fall-off response curve.

Those factors, or parameters, of the camera that control the first-order effects in the resulting images are: the dynamic range or light-transfer characteristic, the modulation transfer or spatial frequency response, the geometric distortion, the shading, and the vignetting of the lens/vidicon combination. It is, therefore, primarily these parameters that are calibrated extensively on the *Surveyor* camera.

Calibration stimuli for the camera system consist of test slides accurately calibrated and configured for placement in a special light source. Representative samples of these test slides are shown in Figs. II-11 and -12. Figure II-11 is a sine-wave slide for determining the modulation transfer or spatial frequency response of the system. It should be noted that the true sine wave is used in contrast to the more often-used square wave, thus enabling a determination of the true Fourier representation of the camera response. Figure II-12 has a series of grey scale wedges that determine the vidicon erasure characteristics, thereby enabling a correction to be applied as a function of latent image level resulting from previous exposures. Finally, there is a grid pattern which—by means of either manual or computer techniques—allows nonlinearities and distortions to be removed from each image. Light transfer characteristics and shading measurements are obtained by exposing the camera to a series of uniform light fields, each progressively brighter, until a saturation point is obtained.

Data of the type obtained during camera calibration are presented in Figs. II-13 through -18. Figures II-13 through II-17 indicate light-transfer characteristics of the camera in various modes of operation. Figures II-13, -14, and -15 are based on actual lunar scene brightness, as determined through appropriate correction-factor calculations. These correction-factor calculations involve the spectra of the camera, standard-eye, measuring photometer, light source, lunar light, and a separate National Bureau of Standards calibration light source. Figure II-18 illustrates the modulation transfer response characteristic in terms of a relative response (normalized to the dc component) with respect to spatial frequency in television lines per picture height.

[1]Commission Internationale d'Eclairage (International Commission on Illumination, formerly ICI).

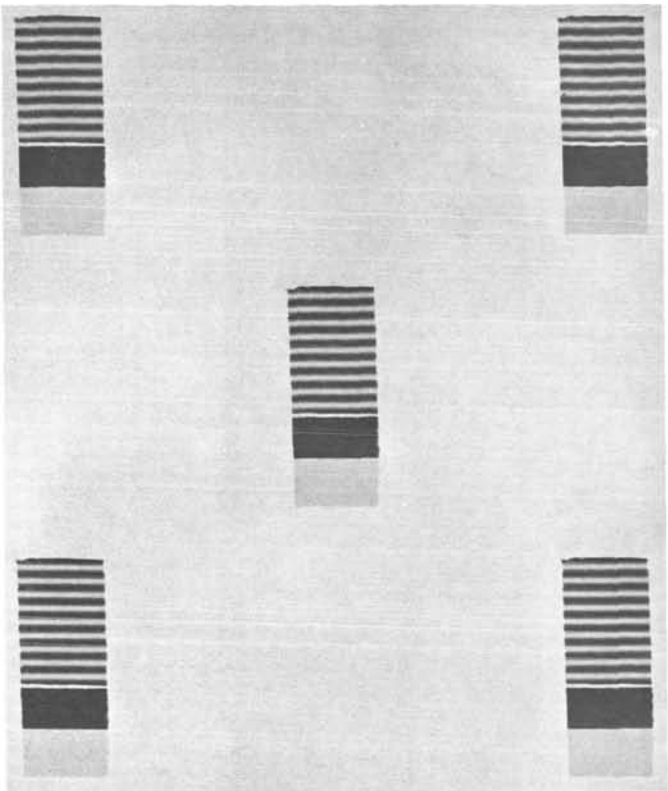


Fig. II-11. Sine-wave target used in determining spatial frequency response of camera during calibration

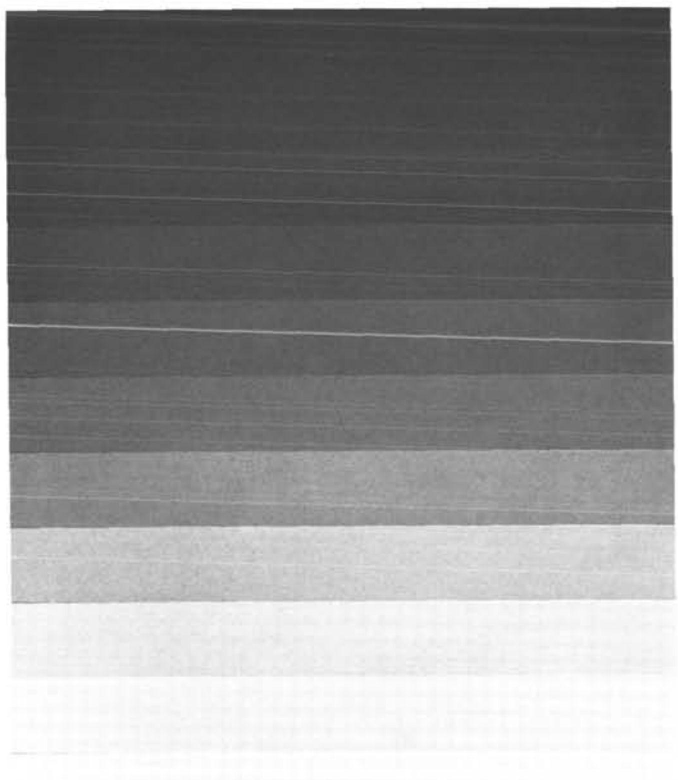


Fig. II-12. Grey-scale calibration target for erasure-characteristic calibration

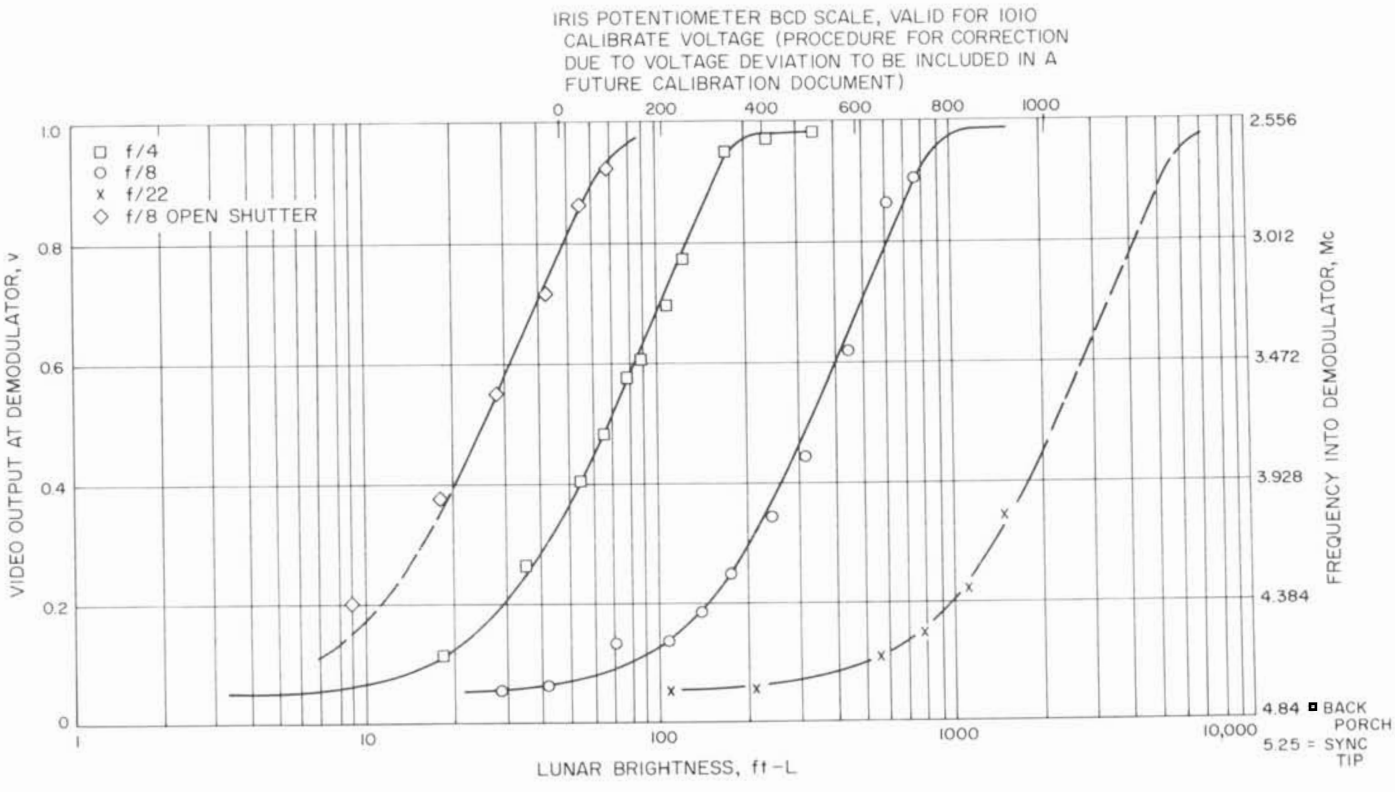


Fig. II-13. Camera 600-line light-transfer characteristic as a function of lunar brightness

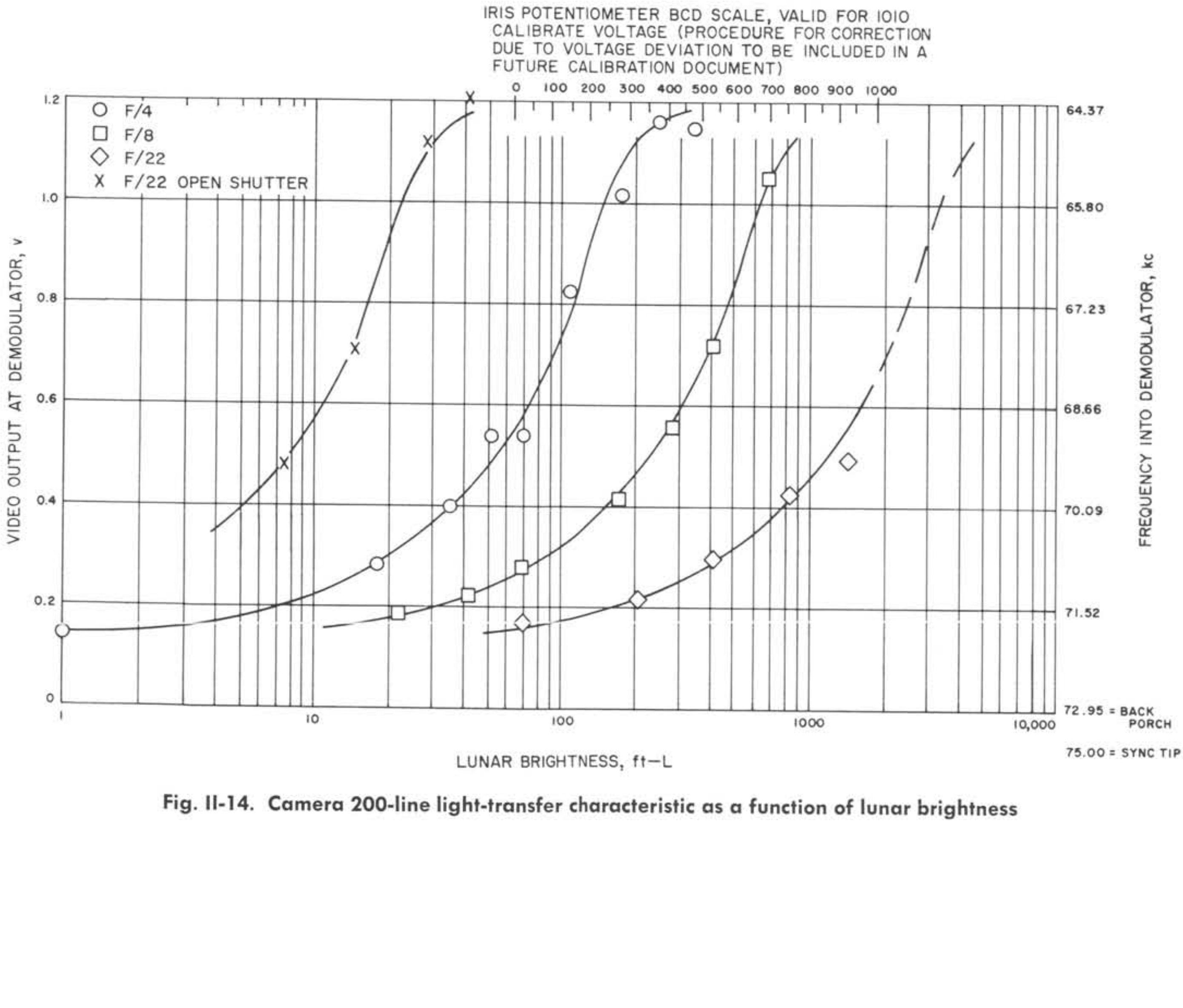


Fig. II-14. Camera 200-line light-transfer characteristic as a function of lunar brightness

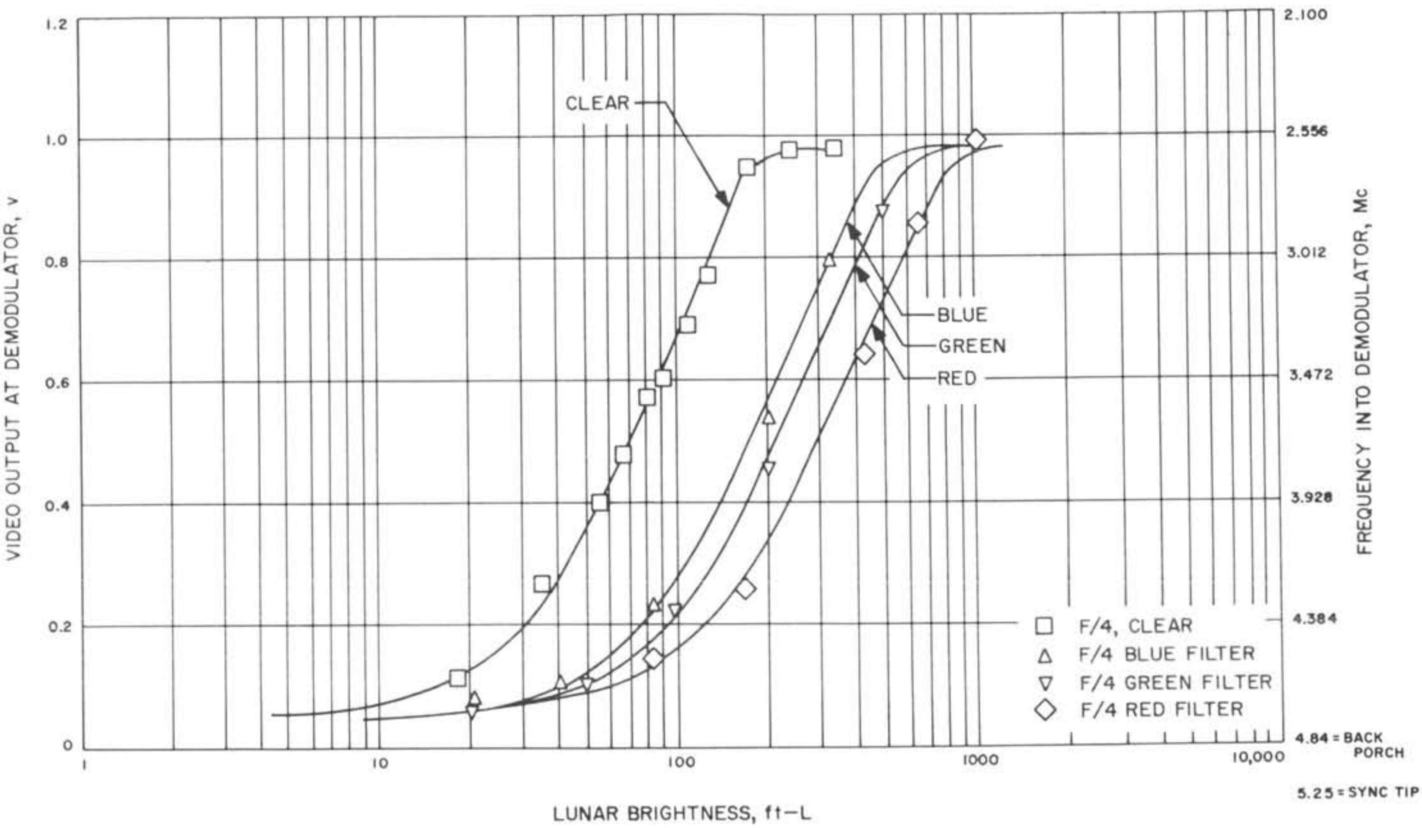


Fig. II-15. Camera 600-line light-transfer characteristic as a function of color-filter position

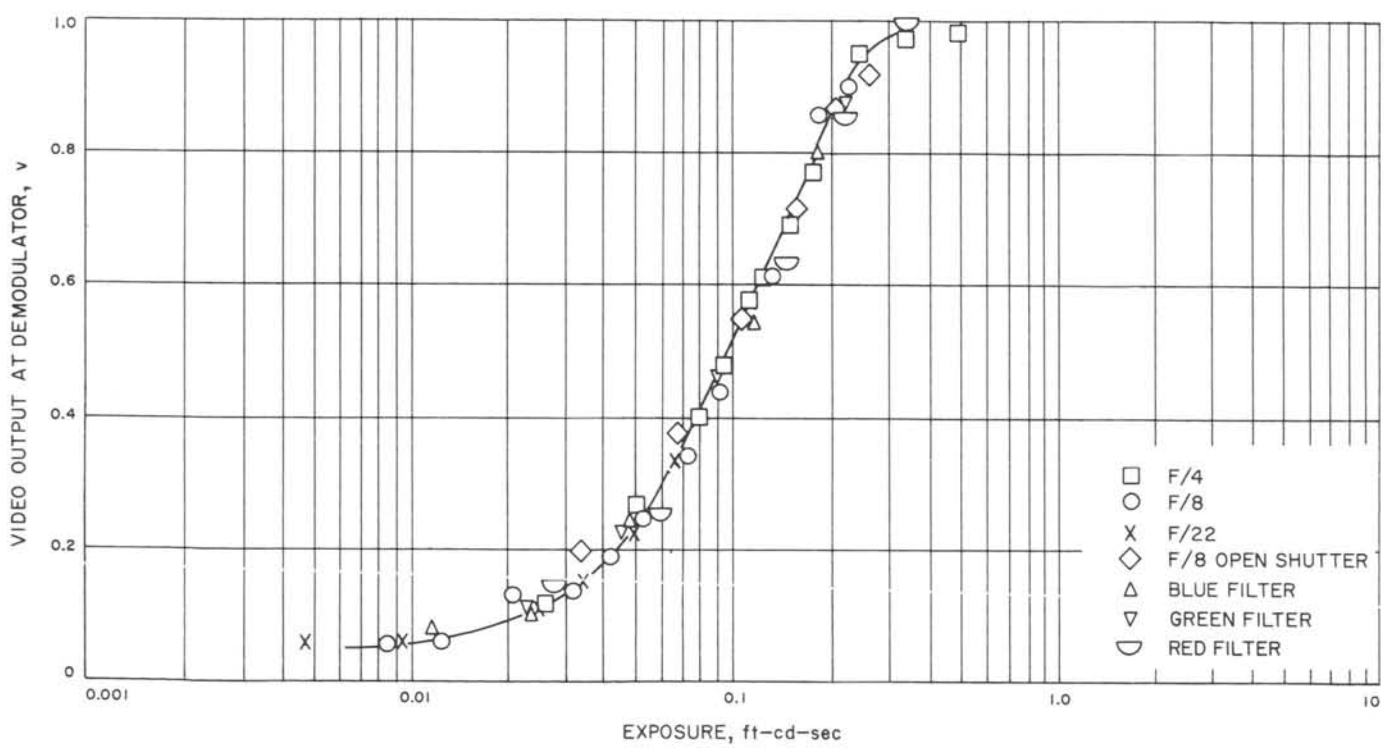


Fig. II-16. Camera 600-line light-transfer characteristic as a function of exposure

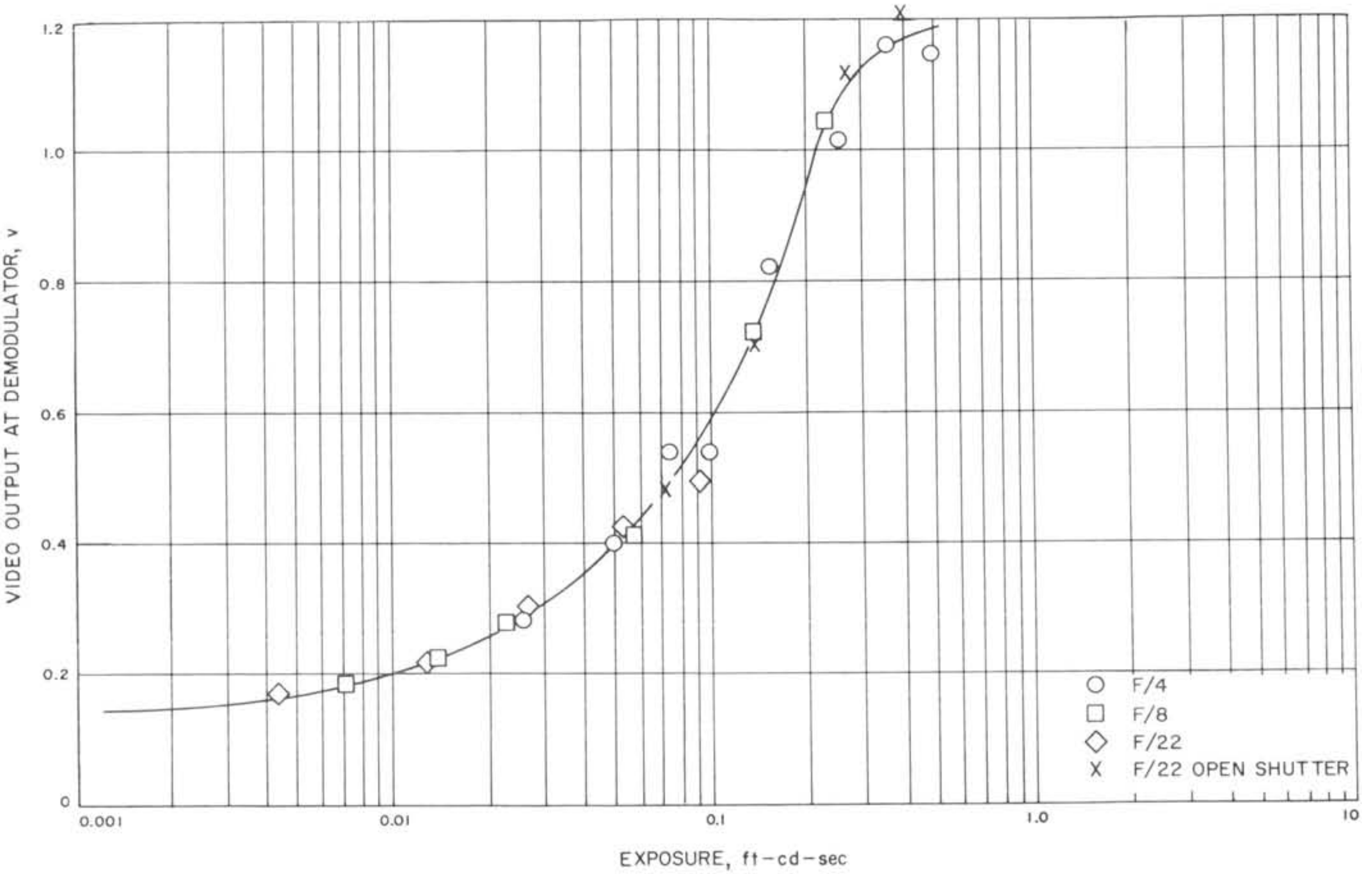


Fig. II-17. Camera 200-line light-transfer characteristic as a function of exposure

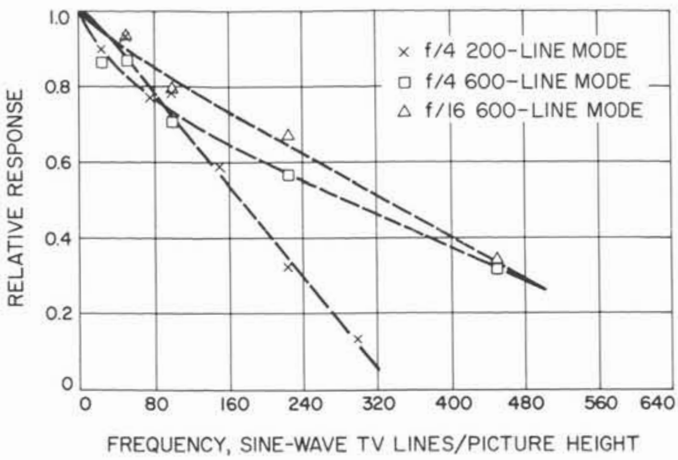


Fig. II-18. Spatial frequency response characteristic

C. Subsystem Mission Performance

The performance of the survey camera during Mission A was, for the most part, as expected. All modes of operation were exercised, each producing the anticipated imagery. Failure of the mirror-elevation readout potentiometer near the end of the first lunar day resulted in inability to receive mirror-elevation-position data. Because of the large quantity of imagery obtained during the early part of the mission, and the use of photo-mosaics prepared in real time, image matching generally was possible.

D. Mission Thermal Profile

Temperature conditions experienced by the survey camera during the course of the first and second lunar days are depicted in Figs. II-19 through II-22. The profile for each temperature sensor is shown as a function of both Greenwich Mean Time and solar angle. Temperature sensor assignments and locations were:

TV-9	Vidicon faceplate
TV-10	Electronic conversion unit
TV-16	Chassis 3 (200-line mode sweep chassis)
TV-17	Mirror assembly base

As seen from the profile plot, the camera experienced a minimum temperature of $-133°F$ during the transit phase of the trajectory, with a slight increase during the midcourse sequence when camera/sun orientation varied. To achieve an operable post-touchdown temperature, camera heaters were energized prior to touchdown. The camera electronics and mirror heater were energized on day 153 at 01:16:42 GMT, or some 5 hr prior to touchdown. Because of the low thermal lag of the vidicon faceplate, its heater actuation was delayed 4 hr (until 05:04:14 GMT).

As a result of the landed roll orientation of the spacecraft, the camera was provided almost continuous shade by the solar panel/planar array, thereby allowing much longer periods of operation at high solar angles than anticipated. The high temperature experienced during the mission was on the order of 140°F. Camera operation was discontinued following the lunar sunset as the camera temperature fell below $-20°F$, the minimum standard operation temperature.

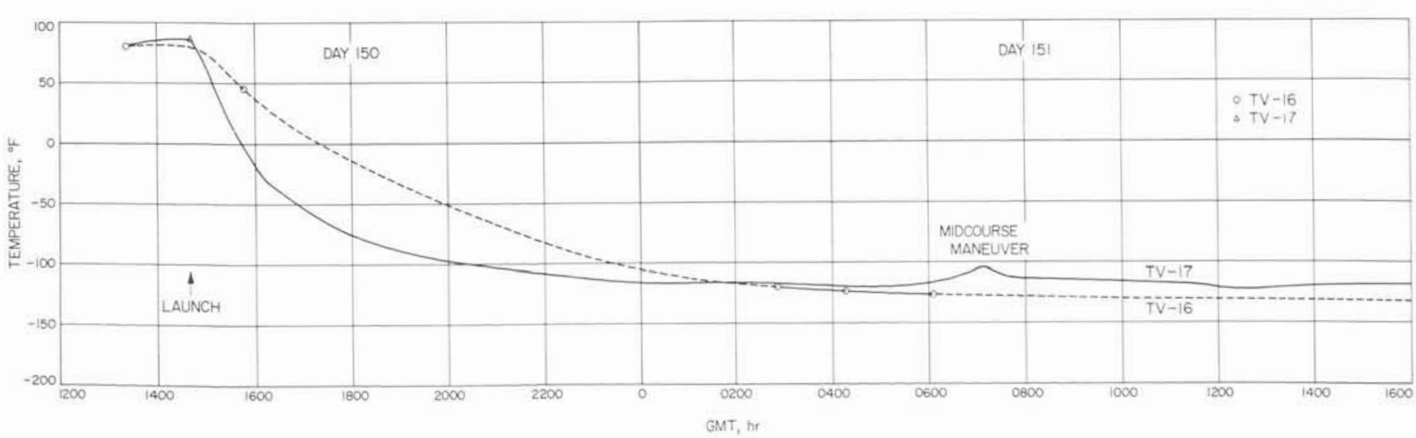


Fig. II-19. Thermal profile, first lunar day: Day of yr 150-151 (in transit, before touchdown)

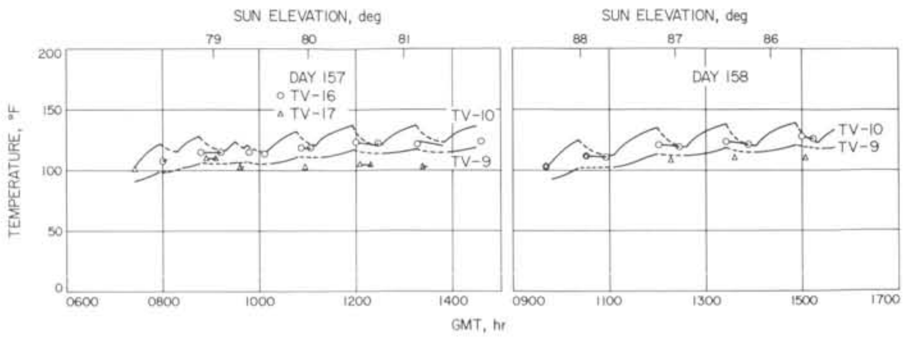


Fig. II-20. Thermal profile, first lunar day: Day of yr 157-158

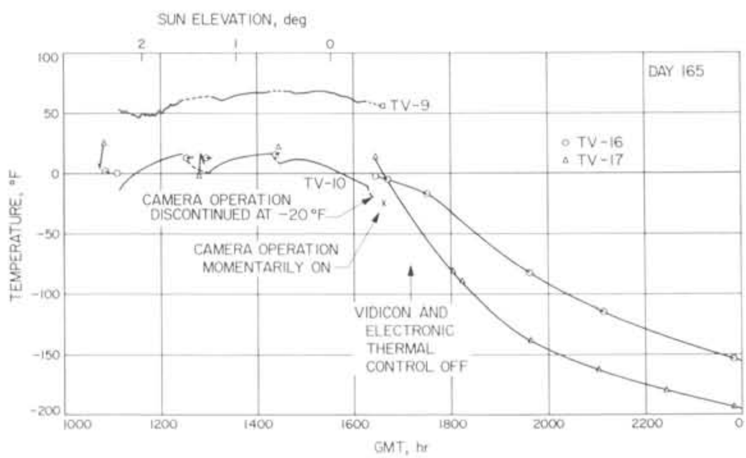


Fig. II-21. Thermal profile, first lunar day: Day of yr 165

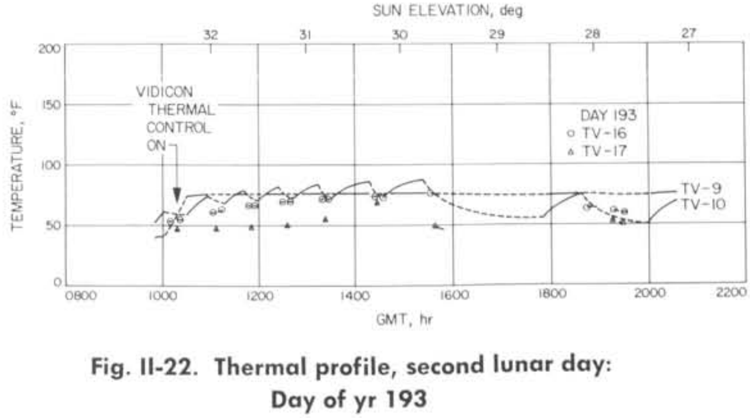


Fig. II-22. Thermal profile, second lunar day: Day of yr 193

Data indicate the camera achieved a minimum temperature of −290°F during the lunar night. However, all components survived, and subsequent operation yielded no observable performance deterioration as a result of the temperature extreme.

E. Mission Anomalies

Items below were camera anomalies during the Mission A. With the exception of item 1, all anomalies were such as to be correctable with test and calibration data. No major effect on mission results are expected as a result of these anomalies.

1. *Mirror-elevation potentiometer failure at +17 deg:* The failure resulted in the loss of mirror-elevation telemetry and caused the mirror to fail to respond to elevation commands on an intermittent basis.

2. *Lens focus shift as a function of temperature:* Based on prelaunch tests, the focus variation with temperature is here tabulated for lens iris = f/4:

Lens temp, °F	Focus range, m: Focal length = 100 mm	Focus range, m: Focal length = 25 mm
−60	1.28 to infinity	1.68 to infinity
+30	1.23 to infinity	1.23 to infinity
+75	1.23 to 107	1.23 to 6.70
+165	1.23 to ≤107	1.23 to 2.49

3. *Dirt on optical surfaces of the camera:* Dirt particles were present in the camera optical system prior to launch. These particles were imaged by the camera prior to launch, thus providing a calibration on their distribution. No additional particulate material was observed in post-landing images.

4. *Raster shift:* There is evidence to suggest that the raster experienced a clockwise rotation (as viewed from the image) and a translation to the left and downward.

III. ORIENTATION OF CAMERA AND SUN

Leonard D. Jaffe

The landed position of *Surveyor I* was measured as 2.58 ± 0.16 deg south and 43.35 ± 0.10 deg west by radio tracking from the lunar surface.[2,3] Comparison of surface features observed from the spacecraft with those observed from earth gave a position of 2.53 deg south and 43.35 deg west, with an uncertainty of 0.03 deg or greater.[3]

The positive direction of the camera axis was 15.1 ± 0.5 deg from the zenith. Its projection on the lunar horizontal was 37.1 ± 0.4 deg east of lunar north.[3] The camera pointing coordinates, used in identifying photographs, are an azimuth–elevation system. The positive direction of camera axis is taken as +90 deg elevation, and the negative direction of the camera axis as −90 deg elevation. Thus, an elevation of 0 deg in camera coordinates refers to the plane perpendicular to the camera axis. The plane of 0-deg camera azimuth contains the camera axis and intersects the lunar horizontal at 89.6 ± 0.4 deg east of north.[3] Positive camera azimuths are taken counterclockwise, as seen from above, from this 0-deg azimuth to +132 deg, where a camera stop is located. Negative azimuths increase clockwise from 0 deg to a stop at −222 deg.

At *Surveyor's* landing, the sun was 28 deg above the eastern horizon. Figures III-1 and III-2 show the sun elevation during the periods of camera operation. The ecliptic plane passed 3 deg north of the zenith the first lunar day (June 2 to June 14) and 4 deg north of the zenith the second lunar day (June 29 to July 14). Local noon was approximately 06:30 GMT June 7, the first lunar day, and 17:18 GMT July 6, the second. The center of the solar disk was at the horizontal about 15:12 GMT on June 14 and about 02:10 GMT on July 14, 1966.

[2] *Surveyor I Mission Report. Part I. Mission Description and Performance.* Technical Report 32-1023, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, August 31, 1966.

[3] *Surveyor I Mission Report. Part II. Scientific Data and Results.* Technical Report 32-1023, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, September 10, 1966.

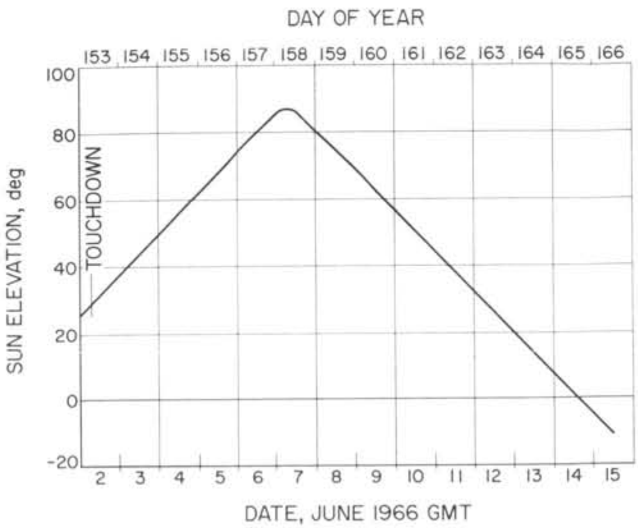


Fig. III-1. Sun elevation at *Surveyor I* location during first lunar day after landing

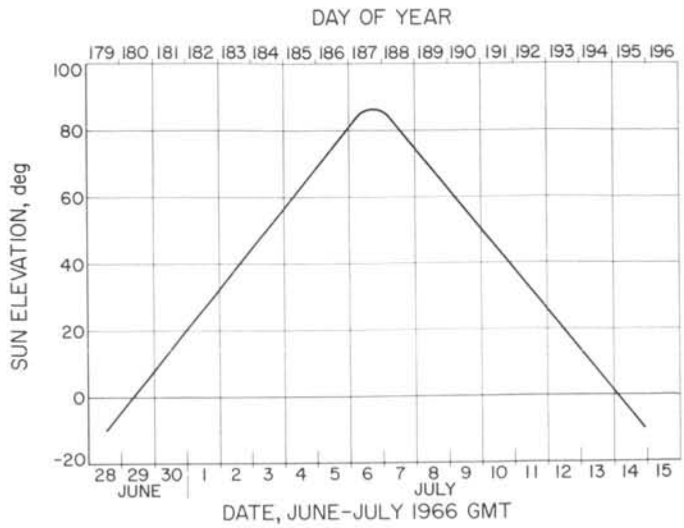


Fig. III-2. Sun elevation at *Surveyor I* location during second lunar day after landing

IV. *SURVEYOR* GROUND PHOTO RECORDING SYSTEM

Stephen Z. Gunter

Television data transmitted by *Surveyor I* was recorded on film at the tracking stations. By use of a calibrated flying-spot scanner, at Goldstone, the television image was recorded on 70-mm film. A 48-mm square window contains the lunar scene; camera parameter data and time are recorded in the remaining area. The pictures reproduced in Part III of the report have retained the lunar scene portion of the format, while the camera parameter information has been moved to caption each picture.

The original 70-mm film recording was developed by Yale Laboratories of Los Angeles under the supervision and careful control of JPL photo-processing engineers. The developed 70-mm film was then taken to the facilities of the Army Map Service, where a master transparent positive was generated. The negatives used to prepare these prints for publication have been made from this master positive film. The original 70-mm film recording and processing was held to a system gamma of 1 and a density range of 0.5 to 1.9. For publication purposes the printing negative was developed to a density range of 0.2 to 1.2. Other than by computer processing of frames so marked, there has been no intentional alteration of the imagery—by such means as dodging.

In addition to *film* recording, the received video signal was recorded on linear- and rotating-head *magnetic-tape* recorders. The computer-processed picture data were derived from the linear-head magnetic-tape recordings. A more complete description of the Television Ground Data Handling System is included in Part I of this report (pp. 116–119).

V. CAMERA PARAMETER INFORMATION

Stephen Z. Gunter

The camera parameter data that captions each photograph is derived from the telemetry transmitted with each picture. The camera mechanical functions were monitored by position-sensing devices whose measurements were telemetered to the ground receiving stations. By use of prelaunch-derived calibration data, the telemetry value was converted to engineering units by mathematical fitting of a fifth-order polynomial to the best curve through the calibration points. Telemetry word length and ground processing limit the data accuracy to 0.1%. The data in the picture caption have been validated by editing, which used mission sequence logs, data quality indicators, and the mosaics as reference sources. (Table VI-1 gives camera parameter data for the selected photographs.)

The format of the data follows.

Time The Greenwich Mean Time of picture receipt by the tracking station given as day of year, hours, minutes, seconds.

Azimuth The camera-mirror azimuth in camera coordinates. The range is +132.0 to −222.0 deg in nominal 3-deg increments.

Elevation The camera-mirror elevation in camera coordinates. The range is +31.50 deg to −67.70 deg in nominal 4.96-deg increments. Due to a spacecraft elevation-readout malfunction, after day 163 elevation data either are derived from mosaics or are deleted.

During day 157 a shift in elevation position of approximately +0.4 deg was noted; this shift remained for the duration of the mission. The nominal elevation values listed do not include this shift, which will be apparent upon examination of similar views for times before and after day 157. The shift appears to be associated with the mirror elevation mechanism, rather than with any general spacecraft movement.

Focus The distance to the plane of principal focus, in meters. The range of the calibration curve used is 1.23 to 27.4 m.

Iris The camera iris setting expressed as f/number. The range is f/4.0 to f/22.0.

Focal Length The focal length of the camera optics is 25.0-mm for wide angle and 100.0-mm for narrow angle.

Filter The filter-wheel position can be clear, green, blue, or red. For verification, the color sector on the picture of the photometric chart which is lightest in tone corresponds to the color filter used. In order, clockwise from the white step on the outer grey scale of the chart, the color sectors are grey, red, green, and blue.

VI. NOTATIONS ON SELECTED LUNAR PHOTOGRAPHS

Robert H. Steinbacher

Captions for the selected photographs received from *Surveyor I* include camera parameter data and, in some instances, provide additional descriptive information. To assist with proper orientation, a small box, in which the horizon and local vertical have been indicated, is included on the page with each picture.

Photographs were chosen for their clarity, for the uniqueness or variety of features shown, for their value in comparison with other pictures included, and for their indication of television capability to record and send images under various conditions of light and temperature. The photographs are presented in time order in Section VIII.

Caption information of day and time is the positive reference used in identifying any photograph. Table VI-1 provides a listing of the pictures in their order of appearance. Table VI-2 is included to aid in finding photographs taken with the same mirror position for varying sun angles, as well as for similar or related subject matter.

While the greater number of photographs were taken during the first lunar day, a few have been included that were made after the system was reactivated, following the extreme cold of the first lunar night.

Orientation of spacecraft parts visible in the *Surveyor I* photographs is aided by Figs. VI-1 and VI-2, which show the craft in a landed configuration.

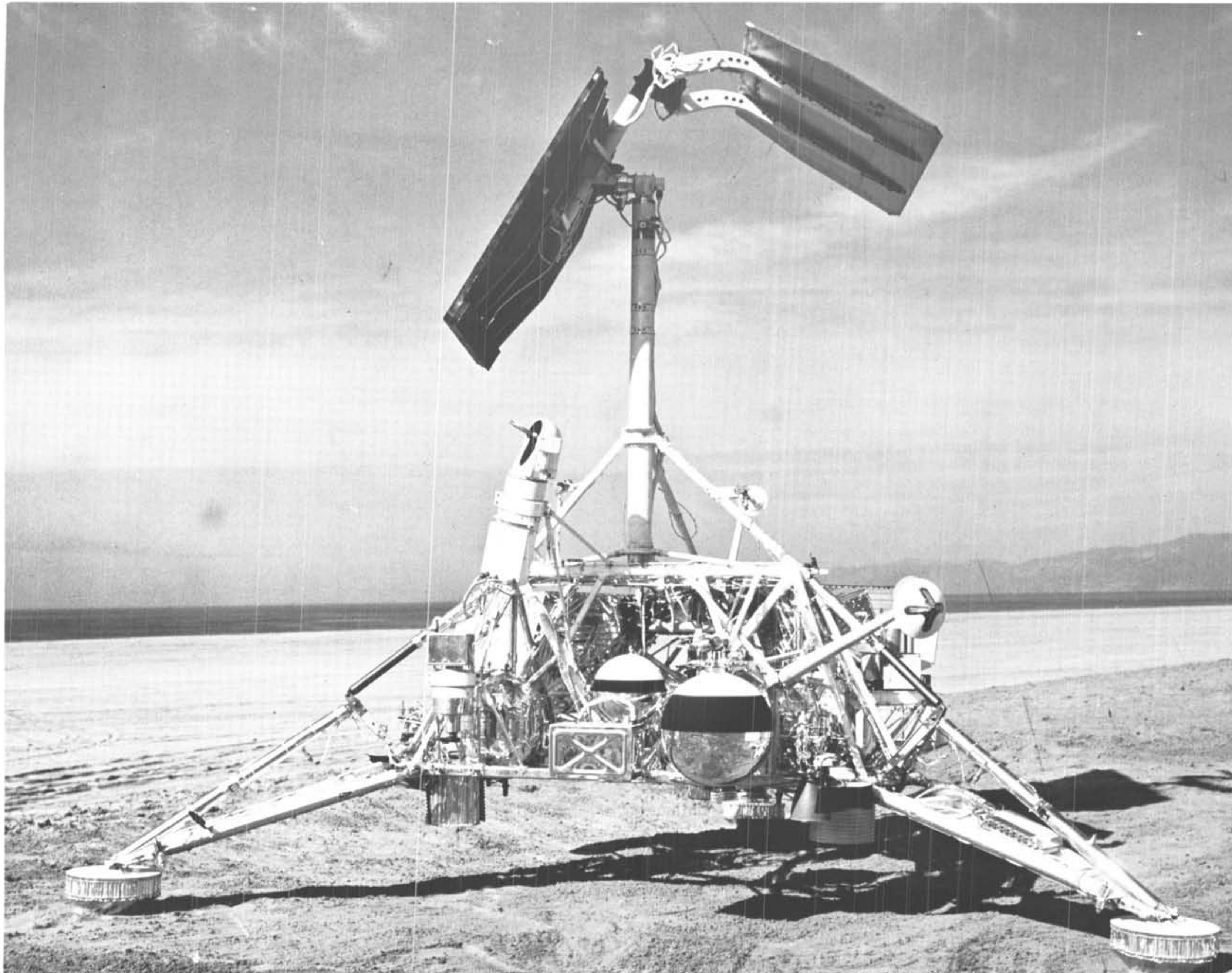


Fig. VI-1. ***Surveyor*** **spacecraft in landed configuration, legs 2 and 3 in foreground**

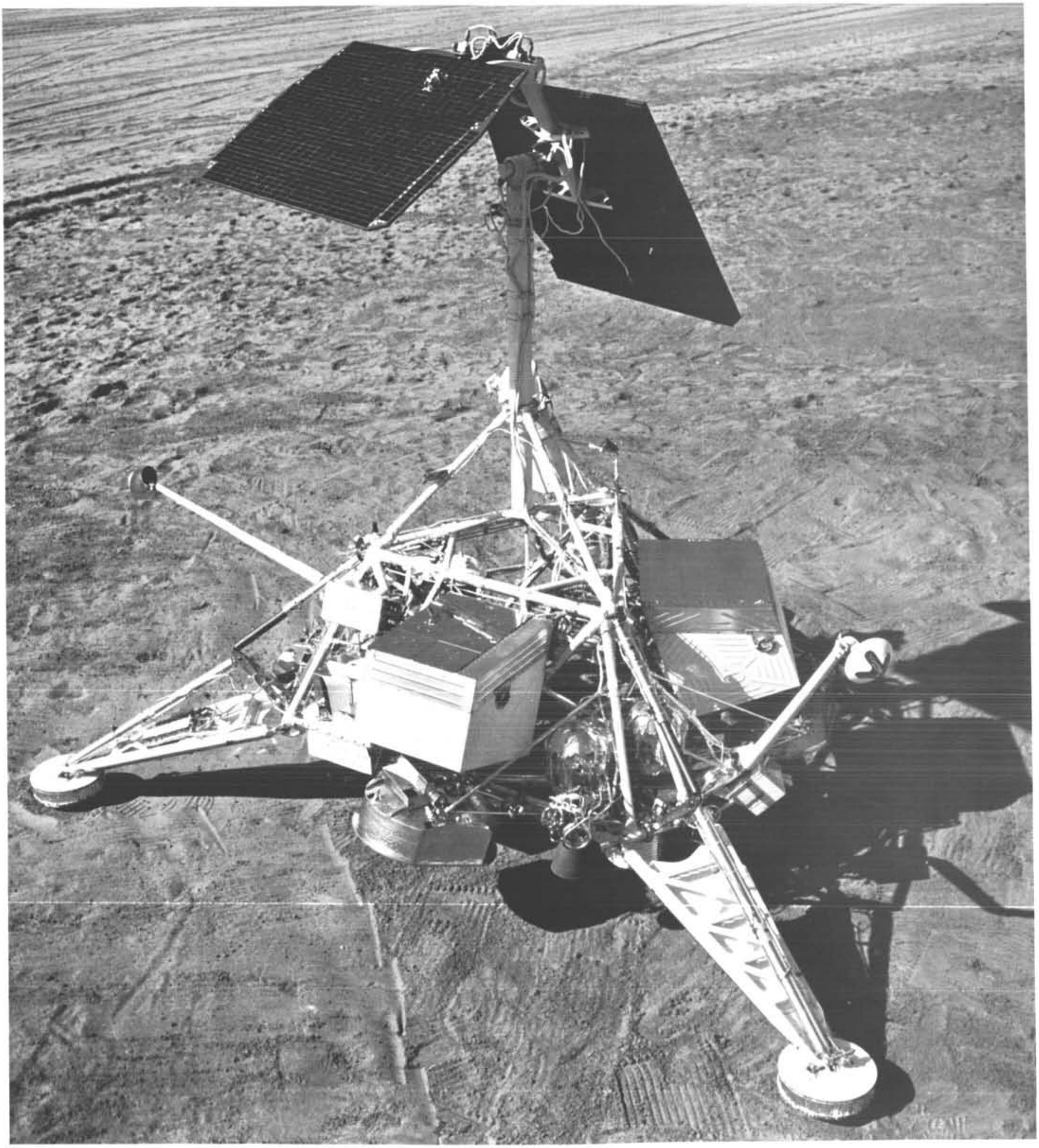


Fig. VI-2. *Surveyor spacecraft in landed configuration, leg 1 in foreground*

Table VI-1. Listing of selected lunar photographs

Photo No.	Day of yr	GMT hr	GMT min	GMT sec	Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
1	153	06	52	47	81	−23.06	3.47	F 4.0	W	CLR	00705
2	153	07	39	02	−45	−23.06	3.47	F 7.8	W	CLR	00716
3	153	07	43	10	−60	−62.74	3.47	F12.9	W	CLR	00722
4	153	09	45	07	−60	−62.74	3.47	F12.9	W	CLR	01324
5	153	09	55	52	−48	−18.10	3.47	F 6.7	W	CLR	01334
6	153	09	57	41	−174	−28.02	3.47	F11.1	W	CLR	01337
7	153	10	28	37	48	16.62	3.47	F22.0	W	CLR	01354
8	154	06	34	09	90	−52.82	2.10	F15.8	N	CLR	02613
9[b]	154	06	34	09	90	−52.82	2.10	F15.8	N	CLR	02613
10[c]	154	06	34	09	90	−52.82	2.10	F15.8	N	CLR	02613
11	154	07	49	13	99	16.62	27.40	F22.0	N	RED	04121
12	154	09	33	07	−168	−32.98	5.03	F13.8	N	CLR	04300
13	154	09	33	59	−165	−32.98	5.03	F13.8	N	CLR	04307
14	155	05	29	56	81	−23.06	3.47	F13.4	W	CLR	06242
15	155	06	55	26	−51	−57.78	2.44	F22.0	N	CLR	06277
16	155	07	48	28	−69	−52.82	2.68	F 6.5	N	RED	06322
17	155	07	58	15	−51	−52.82	2.56	F 6.5	N	BLU	06364
18	155	07	58	49	−57	−52.82	2.68	F 6.5	N	BLU	06365
19	155	08	00	42	−63	−52.82	2.68	F 6.5	N	BLU	06370
20	156	06	21	19	−60	−62.74	3.47	F12.0	W	CLR	07200
21	156	07	13	48	−51	−23.06	4.63	F10.4	N	CLR	07307
22	156	07	18	22	−48	−28.02	3.11	F10.3	N	CLR	07315
23	156	08	17	25	−15	6.70	27.40	F10.3	N	CLR	07442
24	156	08	31	25	15	−3.22	6.98	F10.3	N	CLR	07566
25	156	08	37	05	27	−23.06	2.96	F10.3	N	CLR	07631
26	156	09	16	46	39	6.70	18.55	F10.4	N	CLR	07701
27	156	09	30	02	63	16.62	27.40	F10.4	N	CLR	10013
28	156	10	22	53	−168	−28.02	6.98	F10.3	N	BLU	10141
29	156	10	23	53	−165	−37.94	5.03	F10.3	N	BLU	10142
30	156	10	25	20	−168	−28.02	6.98	F10.3	N	GRN	10147
31	156	10	26	19	−165	−37.94	5.03	F10.3	N	GRN	10152
32	156	10	27	44	−168	−28.02	6.98	F 7.5	N	RED	10155
33	156	10	28	34	−165	−37.94	5.03	F 7.5	N	RED	10156
34	156	11	29	38	−54	−28.02	3.47	F11.8	W	CLR	10412
35	156	11	41	18	72	16.62	3.47	F11.8	W	CLR	10467
36	156	11	42	30	108	1.74	3.47	F11.7	W	CLR	10502
37	156	12	50	47	−60	−62.74	3.47	F10.9	W	CLR	10642
38	157	10	22	09	−54	−13.14	3.47	F 7.7	W	BLU	11031
39	157	10	22	18	−54	−28.02	3.47	F 7.7	W	BLU	11032
40	157	11	15	32	54	16.62	3.47	F 5.4	W	GRN	47057
41	157	11	20	27	−144	−28.02	3.47	F 5.4	W	GRN	47144
42	157	14	23	40	−60	−62.74	2.18	F11.1	N	BLU	13371
43	157	14	24	25	−60	−62.74	2.18	F11.1	N	GRN	13376
44	157	14	25	06	−60	−62.74	2.18	F 8.2	N	RED	13377
45	158	10	09	01	60	−28.02	3.47	F .	W	CLR	.....
46	158	10	09	50	72	21.58	3.47	F .	W	CLR	.....
47	158	10	11	31	108	16.62	3.47	F .	W	CLR	.....
48	158	11	07	16	−102	−62.74	2.26	F 6.8	N	BLU	13427
49	158	14	16	07	−33	−3.22	18.55	F 6.8	N	GRN	14611
50	158	15	25	55	−60	−62.74	2.44	F13.1	W	CLR	15203

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

[b]Digitized, before correction.

[c]After processing.

Table VI-1. (Cont'd)

Photo No.	Day of yr	GMT			Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
		hr	min	sec							
51	158	15	39	49	78	−23.06	3.47	F14.6	W	CLR	15217
52	161	09	37	31	36	−42.90	2.18	F 5.0	W	CLR	22106
53	161	09	37	38	36	−28.02	2.18	F 7.3	W	CLR	22107
54	161	09	44	15	90	1.74	2.18	F 6.6	W	CLR	22133
55	161	09	45	12	108	1.74	2.18	F 6.2	W	CLR	15336
56	161	09	47	32	− 54	−62.74	2.18	F 8.8	W	CLR	15357
57	161	10	02	30	−168	−32.98	5.03	F 4.0	N	RED	15444
58	161	10	38	18	− 48	−28.02	4.63	F 5.8	N	RED	22306
59	161	10	39	21	− 51	−23.06	5.55	F 8.0	N	BLU	15500
60	161	10	51	53	72	−28.02	2.18	F16.2	W	CLR	22351
61	161	12	50	33	21	16.62	27.40	F 7.7	N	GRN	26014
62	161	13	43	00	45	16.62	27.40	F 7.7	N	BLU	47473
63	161	14	08	28	63	16.62	27.40	F 7.7	N	BLU	47740
64	161	14	10	23	69	16.62	27.40	F 7.7	N	BLU	27413
65	161	15	55	45	108	11.66	27.40	F 4.0	N	RED	17604
66	161	18	27	59	−138	−18.10	27.40	F 4.0	N	RED	47144
67	162	10	03	24	− 54	−28.02	2.18	F 7.6	W	CLR	22533
68	162	10	14	32	− 54	−57.78	2.18	F10.1	W	CLR	22535
69	162	10	20	03	36	−28.02	2.18	F10.1	W	CLR	22600
70	162	10	20	48	54	16.62	2.18	F10.1	W	CLR	22606
71	162	10	21	32	72	−28.02	2.18	F10.1	W	CLR	22614
72	162	10	21	55	72	16.62	2.18	F10.1	W	CLR	22617
73	162	10	25	26	− 36	−62.74	2.18	F10.1	W	CLR	22652
74	162	11	10	39	− 75	−13.14	27.40	F10.1	N	CLR	23273
75	162	11	10	44	− 72	− 8.18	27.40	F10.1	N	CLR	23274
76	162	11	43	33	− 51	−23.06	5.55	F10.1	N	CLR	23362
77	162	11	44	10	− 48	−28.02	5.55	F10.1	N	CLR	23370
78	162	11	45	07	− 45	− 3.22	22.59	F10.1	N	CLR	23402
79	162	11	46	37	− 36	1.74	22.59	F10.1	N	CLR	23421
80	162	11	51	26	− 33	− 3.22	18.55	F10.1	N	CLR	23437
81	162	11	51	42	− 30	1.74	27.40	F10.1	N	CLR	23442
82	162	11	54	11	− 21	−42.90	2.56	F10.1	N	CLR	23473
83	162	11	54	40	− 21	6.70	27.40	F10.1	N	CLR	23500
84	162	11	57	28	− 15	6.70	27.40	F10.1	N	CLR	23521
85	162	11	58	59	− 9	6.70	27.40	F10.1	N	CLR	23541
86	162	12	00	28	− 3	6.70	27.40	F10.1	N	CLR	23561
87	162	12	00	32	0	11.66	27.40	F10.1	N	CLR	23562
88	162	12	03	12	6	11.66	27.40	F10.1	N	CLR	23605
89	162	12	04	51	12	11.66	27.40	F10.1	N	CLR	23627
90	162	12	06	29	18	11.66	27.40	F10.1	N	CLR	23651
91	162	12	09	27	21	16.62	27.40	F10.1	N	CLR	23672
92	162	12	09	37	24	11.66	27.40	F10.1	N	CLR	23674
93	162	12	11	05	27	16.62	27.40	F10.1	N	CLR	23714
94	162	12	11	15	30	11.66	27.40	F10.1	N	CLR	23716
95	162	12	12	42	33	16.62	27.40	F10.1	N	CLR	23736
96	162	12	18	00	39	6.70	27.40	F10.1	N	CLR	23760
97	162	12	18	05	39	16.62	27.40	F10.1	N	CLR	23761
98	162	12	18	14	42	11.66	27.40	F10.1	N	CLR	23763
99	162	12	19	44	45	16.62	27.40	F10.1	N	CLR	24003
100	162	12	21	21	51	16.62	27.40	F10.1	N	CLR	24025

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

Table VI-1. (Cont'd)

Photo No.	Day of yr	GMT hr	GMT min	GMT sec	Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
101	162	12	24	18	57	16.62	27.40	F10.1	N	CLR	24050
102	162	12	25	55	63	16.62	27.40	F10.1	N	CLR	24072
103	162	12	27	32	69	16.62	27.40	F10.1	N	CLR	24114
104	162	12	30	19	75	16.62	27.40	F10.1	N	CLR	24137
105	162	12	31	51	81	6.70	18.55	F10.1	N	CLR	24160
106	162	12	31	56	81	16.62	27.40	F10.1	N	CLR	24161
107	162	12	32	05	84	11.66	27.40	F10.1	N	CLR	24163
108	162	12	33	42	90	11.66	27.40	F10.1	N	CLR	24205
109	162	12	36	30	96	11.66	27.40	F10.1	N	CLR	24230
110	162	12	38	07	102	11.66	27.40	F10.1	N	CLR	24252
111	162	12	39	29	105	6.70	18.55	F10.1	N	CLR	24271
112	162	12	39	44	108	11.66	27.40	F10.1	N	CLR	24274
113	162	12	42	04	111	6.70	27.40	F10.1	N	CLR	24314
114	162	12	43	30	117	6.70	27.40	F10.1	N	CLR	24334
115	162	12	44	57	123	6.70	27.40	F10.1	N	CLR	24354
116	162	12	45	06	126	1.74	27.40	F10.1	N	CLR	24356
117	162	13	20	40	−153	−13.14	27.40	F 7.5	N	CLR	24376
118	162	13	20	49	−150	−18.10	27.40	F 7.5	N	CLR	24400
119	162	13	21	49	−147	−13.14	27.40	F 7.5	N	CLR	24412
120	162	13	21	59	−144	−18.10	27.40	F 7.5	N	CLR	24414
121	162	13	24	32	−141	−13.14	27.40	F 7.5	N	CLR	24427
122	162	13	24	40	−138	−18.10	27.40	F 7.5	N	CLR	24431
123	162	13	25	48	−132	−18.10	27.40	F 7.5	N	CLR	24445
124	162	13	26	56	−126	−18.10	27.40	F 7.5	N	CLR	24461
125	162	13	30	12	−120	−18.10	27.40	F 7.5	N	CLR	24476
126	162	13	31	20	−114	−18.10	27.40	F 7.5	N	CLR	24512
127	162	13	32	27	−108	−18.10	27.40	F 7.5	N	CLR	24526
128	162	13	36	04	−105	−13.14	27.40	F10.1	N	CLR	24541
129	162	13	36	13	−102	−18.10	27.40	F10.1	N	CLR	24543
130	162	13	37	12	− 99	−13.14	27.40	F10.1	N	CLR	24555
131	162	13	37	20	− 96	−18.10	27.40	F10.1	N	CLR	24557
132	162	13	38	19	− 93	−13.14	27.40	F10.1	N	CLR	24571
133	162	16	07	50	−120	−18.10	27.40	F 5.8	N	BLU	24734
134	162	16	08	59	−114	−18.10	27.40	F 5.8	N	BLU	24750
135	162	16	10	07	−108	−18.10	27.40	F 5.8	N	BLU	24764
136	162	16	12	19	−120	−18.10	27.40	F 5.8	N	GRN	25001
137	162	16	13	26	−114	−18.10	27.40	F 5.8	N	GRN	25015
138	162	16	14	35	−108	−18.10	27.40	F 5.8	N	GRN	25031
139	162	16	16	55	−120	−18.10	27.40	F 4.0	N	RED	25046
140	162	16	18	03	−114	−18.10	27.40	F 4.0	N	RED	25062
141	162	16	19	11	−108	−18.10	27.40	F 4.0	N	RED	25076
142	162	16	41	15	− 60	−62.74	2.18	F 8.0	W	CLR	25120
143	162	17	11	13	81	−23.06	2.18	F11.2	W	CLR	25247
144	163	10	38	06	− 54	−62.74	2.18	F 8.2	W	CLR	30154
145	163	10	39	43	− 54	−13.14	2.18	F 8.2	W	CLR	30165
146	163	10	44	34	54	−16.62	2.18	F11.7	W	CLR	30225
147	163	10	46	17	72	−28.02	2.18	F 8.6	W	CLR	30233
148	163	10	46	39	72	16.62	2.18	F 8.6	W	CLR	30236
149	163	10	48	06	108	1.74	2.18	F 8.6	W	CLR	30251
150	163	10	57	42	0	−28.02	2.18	F12.4	W	CLR	30314

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

Table VI-1. (Cont'd)

Photo No.	Day of yr	GMT hr	GMT min	GMT sec	Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
151	163	11	33	05	−147	−42.90	4.63	F 4.0	N	RED	30524
152	163	11	42	50	−114	−28.02	8.48	F 4.0	N	RED	30635
153	163	11	44	16	−108	−37.94	4.63	F 4.0	N	RED	30652
154	163	11	51	32	− 93	−32.98	5.55	F 8.0	N	CLR	30712
155	163	12	43	34	− 51	−23.06	5.55	F 8.2	N	CLR	37277
156	163	12	44	06	− 48	−28.02	4.27	F 8.2	N	CLR	37305
157	163	12	48	31	− 33	−42.90	2.56	F11.1	N	CLR	31167
158	163	12	49	58	− 27	−42.90	2.56	F11.1	N	CLR	31207
159	163	12	50	59	− 24	−37.94	2.80	F11.1	N	CLR	31222
160	163	12	55	42	− 9	−23.06	3.96	F11.1	N	CLR	31272
161	164	11	29	58	− 54	−57.78	2.18	F 6.5	W	CLR	32654
162	164	11	47	12	− 99	−52.82	2.68	F 7.9	N	CLR	32722
163	164	11	48	56	− 63	−57.78	2.44	F 7.9	N	CLR	32730
164	164	11	51	46	− 48	−62.74	2.26	F 7.9	N	CLR	32741
165	164	12	20	32	− 48	−28.02	3.72	F 7.9	N	CLR	33071
166	164	12	20	59	− 54	−28.02	3.72	F 7.9	N	CLR	33072
167	164	12	35	16	− 51	−23.06	5.55	F 7.9	N	CLR	33134
168	164	13	30	01	− 93	−37.94	4.63	F11.0	N	CLR	33221
169	164	13	39	55	− 51	−13.14	12.52	F 7.9	W	CLR	33256
170	164	15	36	58	57	16.62	27.40	F 7.9	W	CLR	33556
171	164	15	40	05	105	16.62	27.40	F 7.9	W	CLR	33571
172	164	15	59	12	81	11.66	2.02	F 7.9	W	CLR	33572
173	164	18	50	59	− 54	− 3.22	2.18	F 7.9	W	CLR	34002
174	164	18	51	06	− 54	−18.10	2.18	F 7.9	W	CLR	34003
175	164	19	02	50	72	−28.02	2.18	F 7.9	W	CLR	34045
176	164	19	02	57	72	−13.14	2.18	F 7.9	W	CLR	34046
177	164	19	03	10	72	11.66	2.18	F 7.9	W	CLR	34050
178	164	19	11	43	− 54	−62.74	2.18	F 7.9	W	CLR	34103
179	164	19	44	15	− 72	−62.74	3.11	F 7.9	N	CLR	34356
180	164	19	46	35	− 69	−57.78	2.44	F 7.9	N	CLR	34361
181	164	19	47	18	− 66	− 8.18	27.40	F 7.9	N	CLR	34370
182	164	19	48	02	− 63	−57.78	2.44	F 7.9	N	CLR	34377
183	164	19	49	05	− 60	−42.90	3.47	F 7.9	N	CLR	34411
184	164	19	49	12	− 60	−52.82	2.68	F 7.9	N	CLR	34412
185	164	19	49	28	− 57	−57.78	2.44	F 7.9	N	CLR	34415
186	164	19	50	44	− 54	−62.74	4.63	F 7.9	N	CLR	34431
187	164	19	51	58	− 51	−47.86	2.80	F 7.9	N	CLR	34435
188	164	21	00	41	60	16.62	27.40	F 7.9	N	CLR	35104
189	164	21	02	40	63	11.66	15.17	F 7.9	N	CLR	35123
190	164	21	03	12	66	16.62	27.40	F 7.9	N	CLR	35124
191	164	21	05	54	72	16.62	27.40	F 7.9	N	CLR	35144
192	164	21	27	22	108	6.70	27.40	F 4.0	N	GRN	35307
193	165	11	19	36	− 72	−18.10	2.18	F 7.9	W	CLR	35344
194	165	11	20	09	− 54	− 3.22	2.18	F 7.9	W	CLR	35350
195	165	11	20	17	− 54	−18.10	2.18	F 7.9	W	CLR	35351
196	165	11	21	07	− 36	− 8.18	2.18	F 7.9	W	CLR	35357
197	165	11	21	34	− 36	1.74	2.18	F11.0	W	CLR	35361
198	165	11	22	11	− 18	6.70	2.18	F11.0	W	CLR	35362
199	165	11	22	18	− 18	− 8.18	2.18	F11.0	W	CLR	35363
200	165	11	23	12	0	− 3.22	2.18	F11.0	W	CLR	35372

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

Table VI-1. (Cont'd)

Photo No.	Day of yr	GMT			Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
		hr	min	sec							
201	165	11	23	19	0	11.66	2.18	F11.0	W	CLR	35373
202	165	11	23	42	18	11.66	2.18	F11.0	W	CLR	35376
203	165	11	23	50	18	− 3.22	2.18	F11.0	W	CLR	35377
204	165	11	25	28	36	−37.94	2.18	F 7.9	W	CLR	35405
205	165	11	25	49	36	6.70	2.18	F 7.9	W	CLR	35410
206	165	11	26	11	54	11.66	2.18	F 7.9	W	CLR	35413
207	165	11	27	56	72	− 8.18	2.18	F 5.5	W	CLR	35423
208	165	11	28	11	72	11.66	2.18	F 5.5	W	CLR	35425
209	165	11	28	34	90	11.66	2.18	F 5.5	W	CLR	35430
210	165	11	28	41	90	− 3.22	2.18	F 5.5	W	CLR	35431
211	165	11	45	38	−102	−18.10	27.40	F 5.5	N	CLR	35560
212	165	11	48	06	− 93	−13.14	27.40	F 5.5	N	CLR	35606
213	165	11	48	18	− 90	−23.06	12.50	F 5.5	N	CLR	35610
214	165	11	50	25	− 87	−42.90	3.72	F 5.5	N	CLR	35620
215	165	11	50	45	− 87	−13.14	27.40	F 5.5	N	CLR	35623
216	165	11	52	03	− 81	−13.14	27.40	F 5.5	N	CLR	35637
217	165	11	53	22	− 75	−13.14	27.40	F 5.5	N	RED	35653
218	165	11	53	29	− 72	−13.14	22.59	F 5.5	N	RED	35654
219	165	11	59	06	− 66	− 8.18	22.59	F 4.0	N	GRN	35673
220	165	12	00	40	− 60	− 8.18	27.40	F 4.0	N	GRN	35711
221	165	12	02	15	− 54	− 8.18	27.40	F 4.0	N	GRN	35727
222	165	12	10	54	− 48	− 8.18	22.59	F 7.9	N	CLR	35751
223	165	12	11	20	− 48	− 3.22	22.59	F 7.9	N	CLR	35752
224	165	12	22	30	− 39	− 8.18	27.40	F 8.0	W	CLR	36013
225	165	12	26	24	− 39	− 3.22	22.59	F 7.9	N	CLR	36016
226	165	12	26	55	− 36	1.74	10.30	F 8.0	N	CLR	36017
227	165	13	00	35	− 51	−67.00	2.02	F 7.9	W	CLR	36027
228	165	13	06	34	− 51	−28.02	5.55	F 7.9	N	CLR	36035
229	165	13	09	24	− 51	− 3.22	22.59	F 7.9	N	CLR	36040
230	165	13	11	45	− 48	−28.02	4.27	F 7.9	N	CLR	36045
231	165	13	15	16	− 45	− 3.22	22.59	F 7.9	N	CLR	36057
232	165	13	44	19	− 60	−23.06	2.18	F 7.9	W	CLR	36104
233	165	13	46	34	− 60	−13.14	2.18	F 7.9	W	CLR	36106
234	165	13	58	27	− 42	− 8.18	2.18	F 7.9	W	CLR	36111
235	165	14	01	33	− 24	− 8.18	2.18	F 7.9	W	CLR	36112
236	165	14	03	47	− 6	− 3.22	2.18	F 7.9	W	CLR	36114
237	165	14	06	39	3	1.74	2.18	F 7.9	W	CLR	36117
238	165	14	09	53	0	6.70	27.40	F 7.9	N	CLR	36121
239	165	14	10	35	− 3	6.70	22.59	F 7.9	N	CLR	36122
240	165	14	17	47	15	6.70	2.18	F 7.9	W	CLR	36124
241	165	14	19	34	36	6.70	2.18	F 5.5	W	CLR	36126
242	165	14	31	39	54	6.70	2.18	F 5.5	W	CLR	36130
243	165	14	32	18	69	6.70	2.18	F 5.5	W	CLR	36131
244	165	14	33	29	87	6.70	2.18	F 5.5	W	CLR	36132
245	165	14	39	41	3	1.74	2.18	F 5.5	W	CLR	36136
246	165	14	44	44	0	6.70	27.40	F 5.5	N	CLR	36145
247	165	14	44	57	− 3	6.70	27.40	F 5.5	N	CLR	36146
248	165	14	45	10	− 6	6.70	27.40	F 5.5	N	CLR	36147
249	165	14	45	23	− 9	6.70	27.40	F 5.5	N	CLR	36150
250	165	14	45	36	− 12	6.70	27.40	F 5.5	N	CLR	36151

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

Table VI-1. (Cont'd)

Photo No.	Day of yr	GMT hr	GMT min	GMT sec	Azimuth	Elevation	Focus distance, m	Iris setting	Focal length[a]	Filter color	File No.
251	165	14	45	49	−15	6.70	27.40	F 5.5	N	CLR	36152
252	165	14	46	02	−18	6.70	27.40	F 5.5	N	CLR	36153
253	165	14	46	16	−21	6.70	27.40	F 5.5	N	CLR	36154
254	165	14	47	02	−21	1.74	27.40	F 5.5	N	CLR	36155
255	165	14	47	25	−24	1.74	27.40	F 5.5	N	CLR	36156
256	165	14	47	40	−27	1.74	27.40	F 5.5	N	CLR	36157
257	165	14	47	54	−30	1.74	27.40	F 5.5	N	CLR	36160
258	165	14	48	12	−33	1.74	27.40	F 5.5	N	CLR	36161
259	165	15	11	11	−72	−8.18	2.18	F 4.0	W	CLR	36201
260	165	15	12	50	−72	−8.18	27.40	F 4.0	N	CLR	36203
261	165	15	13	46	−69	−8.18	27.40	F 4.0	N	CLR	36204
262	165	15	46	11	−183	−8.18	27.40	F 4.0	N	CLR	36240
263	165	15	47	53	−183	−8.18	27.40	F 4.0	N	CLR	36241
264	165	15	49	08	−183	−8.18	27.40	F 7.9	N	CLR	36243
265	165	15	51	33	−183	−8.18	27.40	F 5.5	N	CLR	36246
266	165	16	02	40	−183	−8.18	27.40	F 4.0	N	CLR	36273
267	165	16	03	22	−183	−8.18	27.40	F 4.0	N	CLR	36301
268	165	16	04	28	−183	−3.22	27.40	F 4.0	W	CLR	36302
269	165	16	04	53	−183	−3.22	27.40	F 4.0	W	CLR	36307
270	165	16	14	22	−183	6.70	27.40	F 4.0	W	CLR	36320
271	165	16	17	22	−183	6.70	27.40	F 4.0	N	CLR	36321
272	165	16	35	54	−60	−57.78	2.18	F 4.0	W	CLR	36324
273	193	10	48	11	−48	−28.02	2.26	F 4.4	N	CLR	37624
274	193	13	50	49	−177	−32.98	1.23	F .	N	CLR	40047
275	193	13	51	31	−177	−32.98	1.23	F .	N	CLR	40051
276	193	20	12	18	90	−47.86	2.18	F 7.5	N	CLR	37641
277	194	11	30	23	57	16.62	27.40	F 7.9	N	CLR	40022
278	194	11	30	42	63	16.62	27.40	F 7.9	N	CLR	40023
279	194	11	31	03	69	16.62	27.40	F 7.9	N	CLR	40024
280	194	11	37	17	39	6.70	15.20	F 7.9	N	CLR	40047
281	194	12	56	03	24	−8.18	2.18	F 7.9	W	CLR	40271
282	194	15	24	35	−60	−52.82	2.18	F 7.6	N	CLR	40442
283	194	15	31	48	0	−3.22	2.18	F10.5	W	CLR	40452

[a]W = wide angle, 25mm;
N = narrow angle, 100mm.

Table VI-2. Reference list of photographic subjects

Subject	Photograph No.
Footpad No. 2	3, 4, 15, 17, 18, 19, 20, 37, 42, 43, 44, 50, 56, 68, 73, 142, 144, 161, 163, 178, 179, 180, 182 185, 186, 282
Footpad No. 3	1, 14, 51, 60, 71, 143, 147, 207
Crush block No. 3 surface depression	8, 9, 10, 276
Compartment A fractured radiator element	274, 275
Omnidirectional antenna B shadow	45, 52, 53, 69
Spacecraft shadow	150, 236, 237, 238, 245, 247, 248, 281, 283
Rock at azimuth −165 deg	6, 12, 13, 28, 29, 30, 31, 32, 33, 57
Rock field at azimuth −66 deg	181, 219
Rock and/or crater at azimuth −51 deg	2, 5, 21, 22, 34, 38, 39, 58, 59, 67, 76, 77, 145, 155, 160, 165, 166, 167, 169, 173, 174, 194, 195 228, 230, 232, 273
Rocks at azimuth −33 deg	49, 80
Features northeast to northwest horizon	
+60 to +69 deg	7, 27, 35, 40, 46, 63, 64, 70, 72, 101, 102, 103, 148, 170, 173, 177, 188, 190, 191, 206, 208, 243 277, 278, 279
+90 deg	54, 108, 173
+99 to 108 deg	11, 36, 47, 54, 55, 65, 109, 110, 111, 112, 149, 171, 192, 209
Day 162 horizon sequence	74, 75, 78 through 132
Day 165 horizon sequences	193 through 206, 208, 209, 210 wide angle lens 211 through 223, 225, 226 narrow angle lens 233 through 237, 240 through 244 wide angle lens 246 through 257 narrow angle lens
Solar corona	262 through 269
Objects visible by earthshine	270, 272
Stars	270, 271
Processed photographs	10, 12, 13, 15, 16, 17, 18, 19, 179, 180, 181, 182, 184, 185, 186, 187
Color filter sequences	
Rock at azimuth angle −165	28, 29, 30, 31, 32, 33
Footpad No. 2	42, 43, 44
Horizon to the southwest	133, 134, 135, 136, 137, 138, 139, 140, 141
200-line photographs	1, 2, 3

VII. PREPARATION OF PHOTOGRAPHIC MOSAICS

Stephen Z. Gunter

The majority of mosaics included in Part III were prepared during mission operations in the following manner. The individual frames from a continuously processed, directly recorded paper strip were placed on prepared mosaic grids that indicated the center point of each frame and, also, the direction of the top of the photograph. Spacecraft components were sketched on the grid to further assist orientation. The mosaic grids were labeled with camera-mirror azimuth and elevation.

Figure VII-1 is a wide-angle mosaic grid. The dashed line across the grid is the theoretical horizon for a spacecraft on a level surface. The left and right stop positions are the mechanical limits of mirror azimuth-motion.

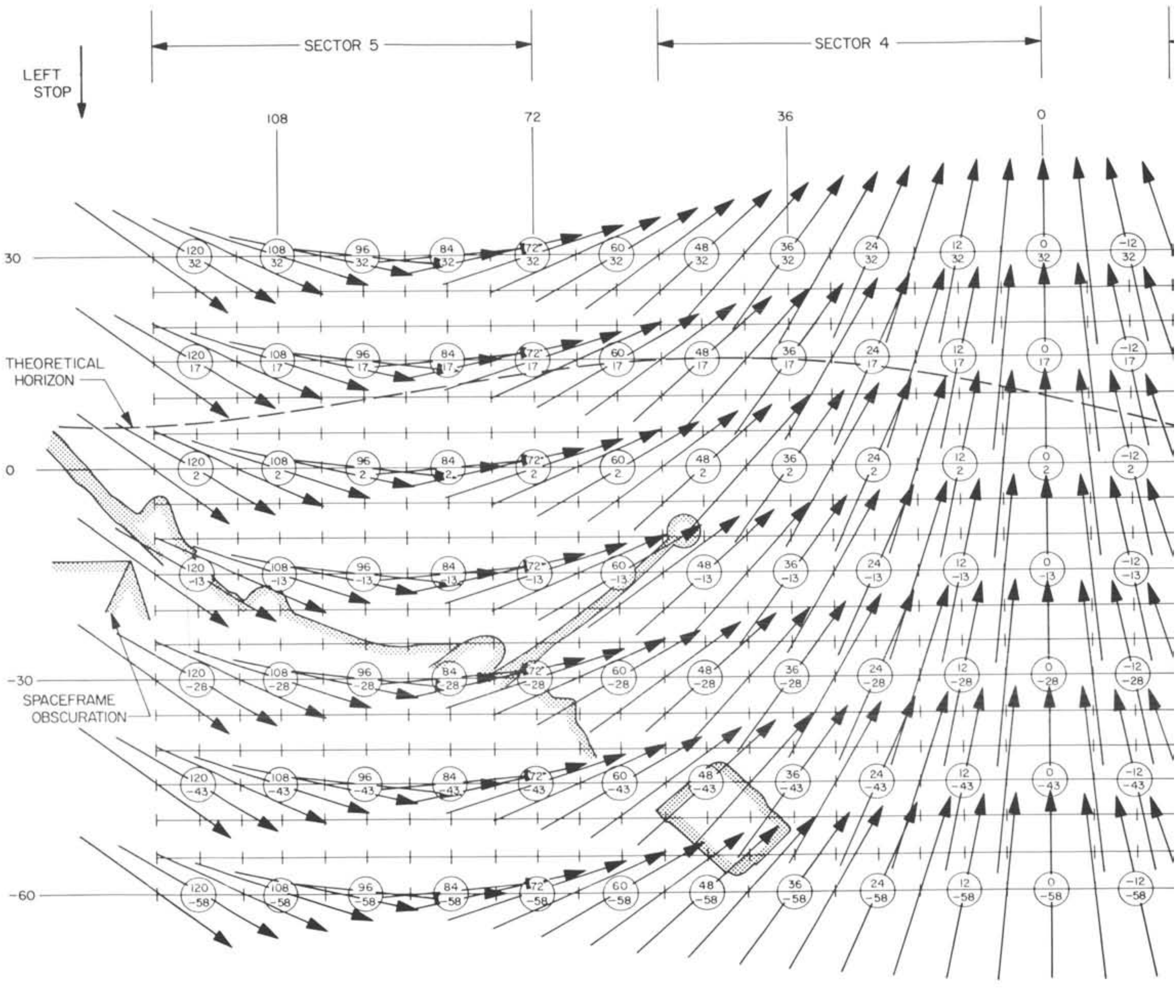
Figure VII-2 is a narrow-angle mosaic grid corresponding to the area including the No. 2 footpad. Here again, the dashed line represents the theoretical horizon.

Some semi-improved flat and spherical mosaics also are included. Table VII-1 lists the mosaics included and describes their subject matter.

Table VII-1. Listing of selected mosaics

Mosaic No.	Focal length[a]	Azimuth limits, deg	Day of yr	Remarks
1	Wide angle	−220 to +126	157	Operations mosaic
2	Narrow angle	0 to +36	162	Operations mosaic
3	Narrow angle	36 to 72	162	Operations mosaic
4	Narrow angle	72 to 108	162	Operations mosaic
5	Narrow angle	108 to 144	162	Operations mosaic
6	Narrow angle	−216 to −180	162	Operations mosaic
7	Narrow angle	−180 to −144	161	Operations mosaic
8	Narrow angle	−144 to −108	162	Operations mosaic
9	Narrow angle	−108 to −72	158	Operations mosaic
10	Narrow angle	−72 to −36	164	Operations mosaic
11	Narrow angle	−36 to 0	162	Operations mosaic
12	Wide angle	+24 to +100	153	Semi-improved mosaic
13	Narrow angle	−177 to −144	154	Semi-improved mosaic
14	Wide angle	−156 to +120	156	Semi-improved mosaic (Horizon only)
15	Narrow angle	−36 to 0	156	Semi-improved mosaic
16	Narrow angle	−156 to 0	163	Improved, spherical mosaic
17	Narrow angle	−156 to −12	164	Improved, spherical mosaic
18	Narrow angle	−12 to +69	164	Improved, spherical mosaic
19	Wide angle	−156 to +108	164	Improved mosaic (USGS)
20	Narrow angle	−36 to 0	164	Improved mosaic (USGS)
21	Narrow angle	0 to +36	164	Improved mosaic (USGS)
22	Narrow angle	36 to 72	164	Improved mosaic (USGS)
23	Wide angle	−156 to +108	165	Improved mosaic (USGS)
24	Wide angle	−80 to +90	165	Operations mosaic
25	Narrow angle	−36 to +10	165	Operations mosaic
26	Narrow angle	+63 to +69	156	Large peak to the northeast
27	Narrow angle	−168 to −165	154	Rock over compartment A (processed)
28	Narrow angle	−63 to −51	155	Footpad No. 2 (processed)
29	Narrow angle	−75 to −45	164	Footpad No. 2 (some processed photos)
30	Narrow angle	+66 to +87	163	Footpad No. 3 semi-improved
31	Narrow angle	+66 to +87	194	Footpad No. 3 semi-improved
32	Narrow angle	−180 to −156	193	Compartment A fractured radiator element

[a]Wide angle = 25 mm.
Narrow angle = 100 mm.



SECTOR 5
SECTOR 4
LEFT STOP
108
72
36
0
30
0
-30
-60
THEORETICAL HORIZON
SPACEFRAME OBSCURATION

37-1

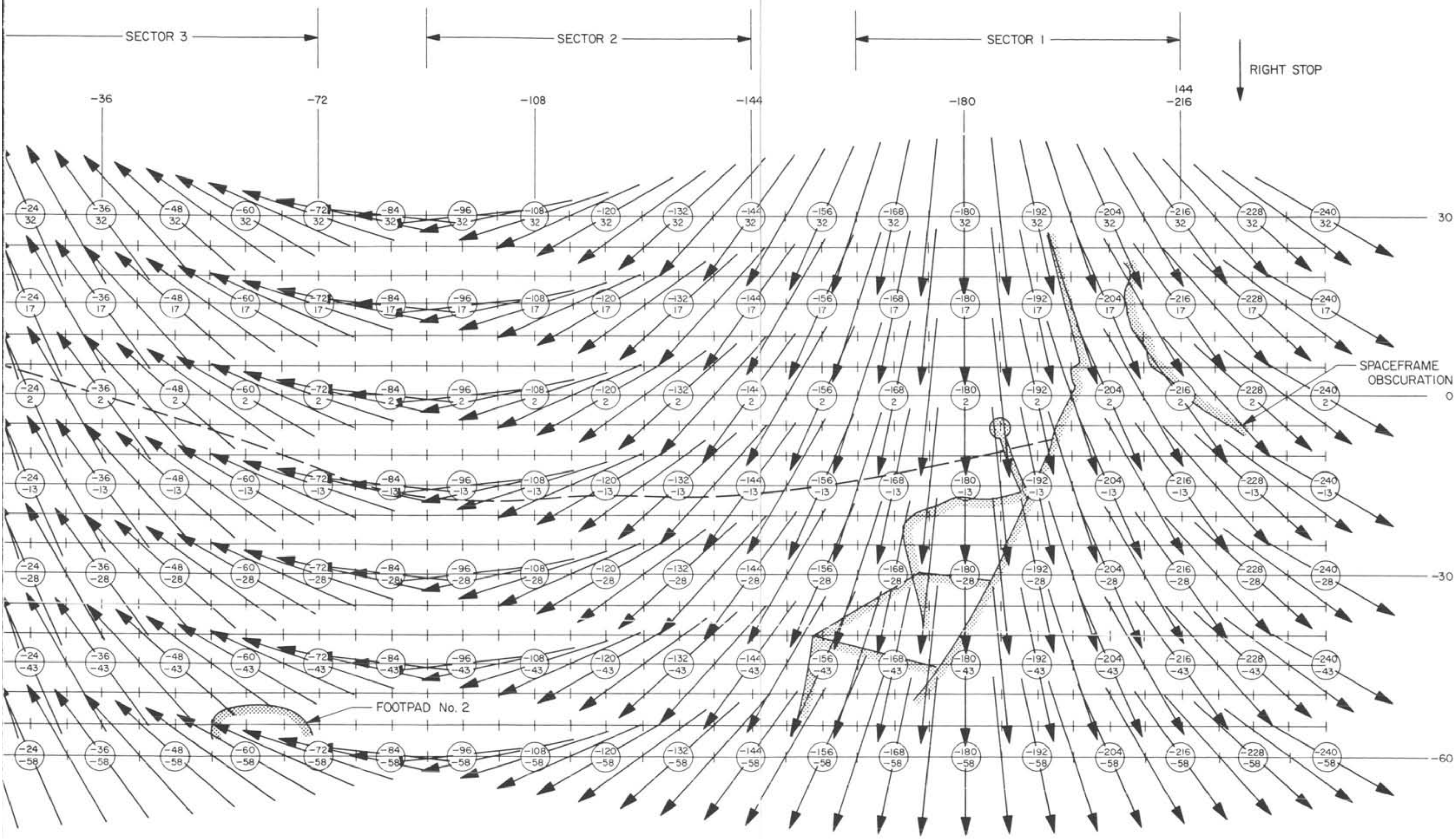
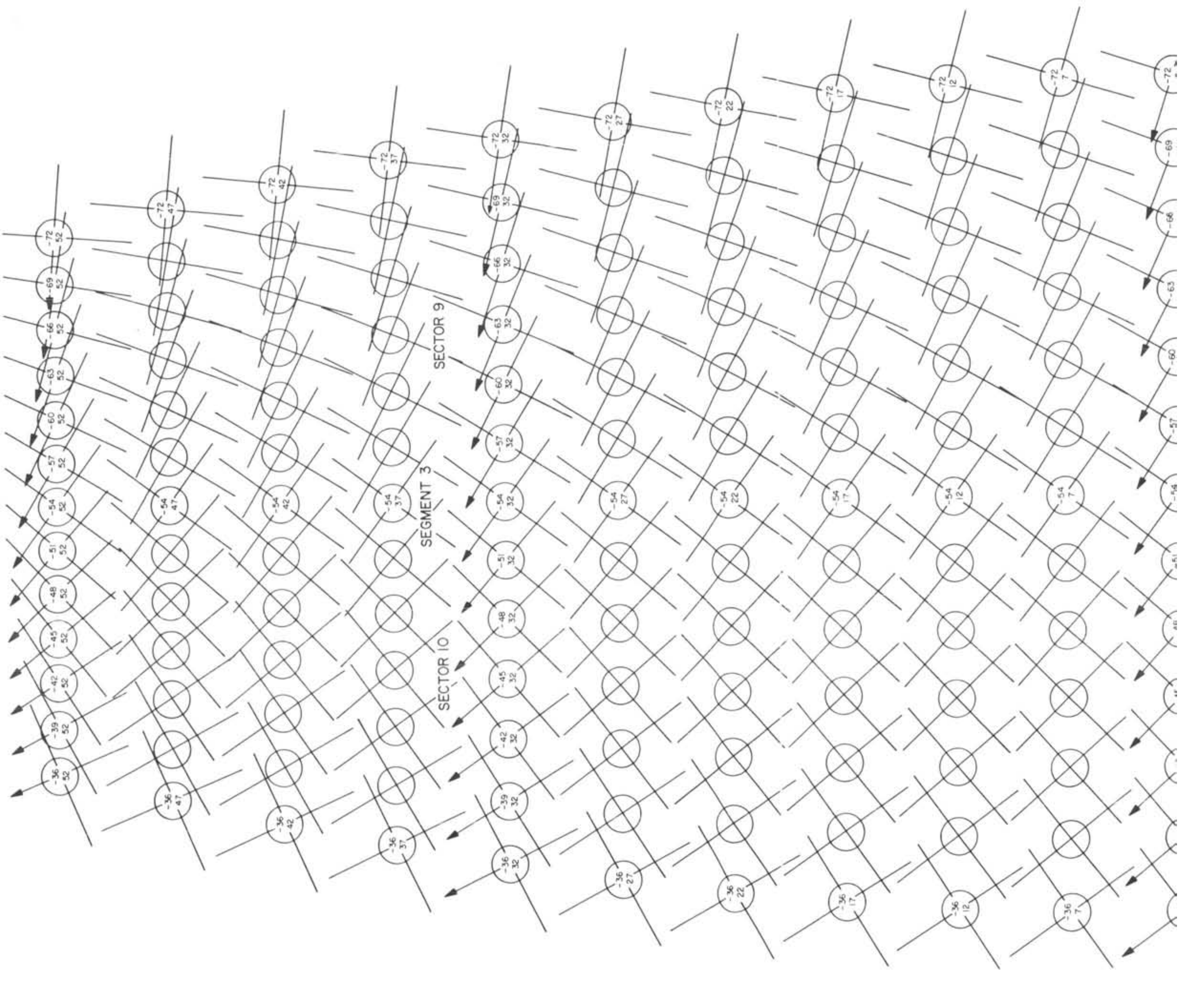


Fig. VII-1. Wide-angle mosaic grid

37-2



38-2

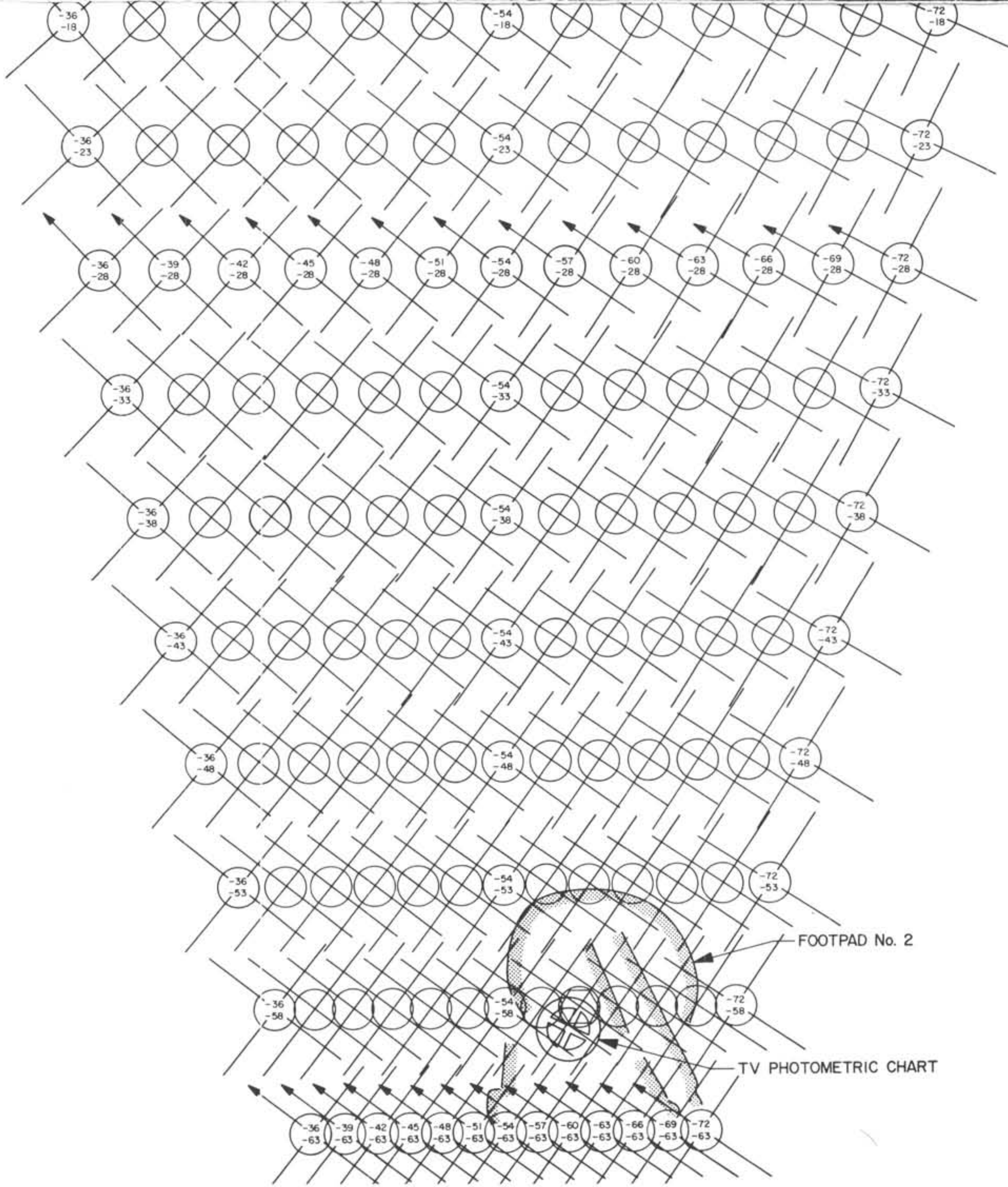
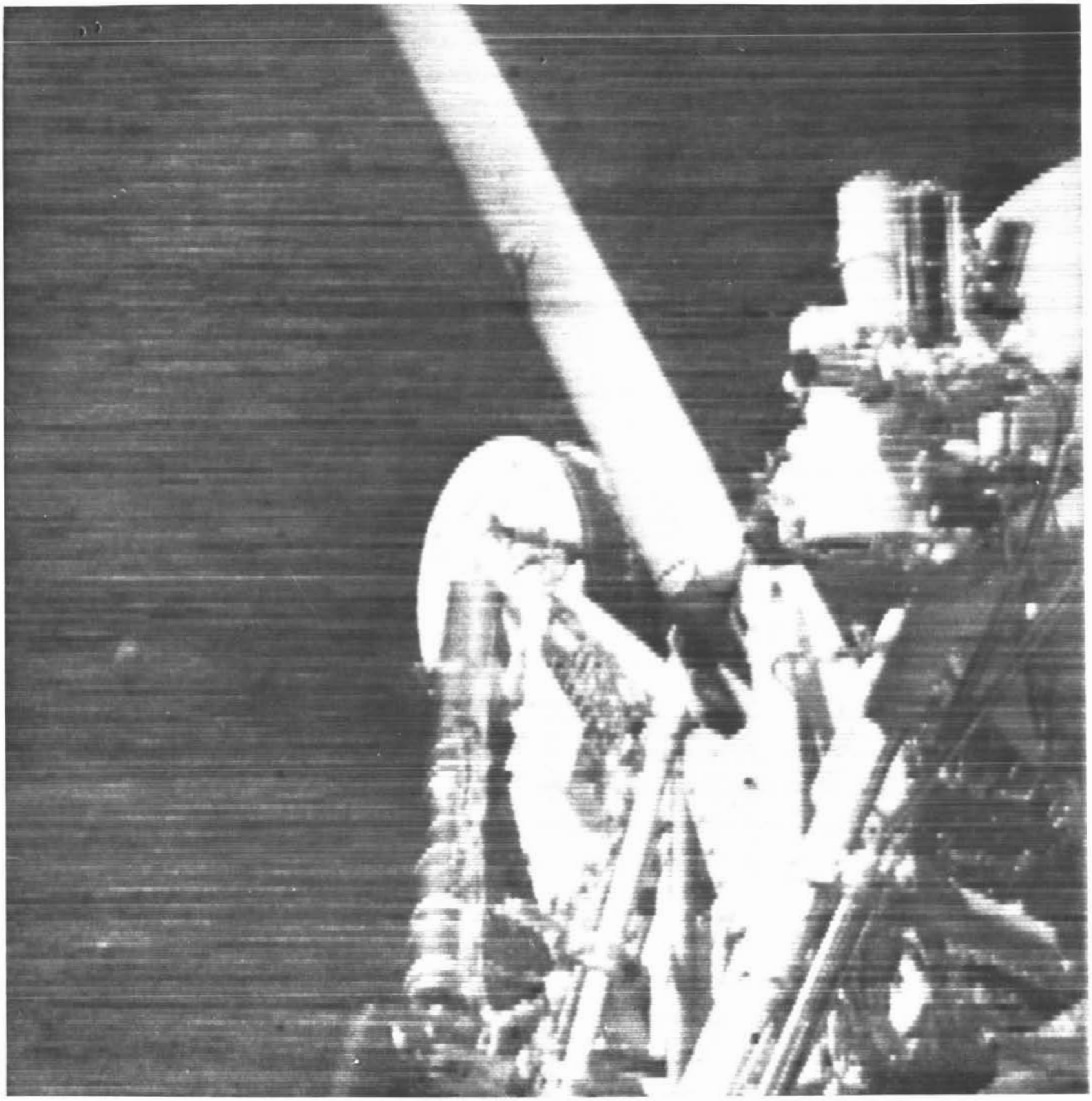


Fig. VII-2. Narrow-angle mosaic grid

VIII. SELECTED LUNAR PHOTOGRAPHS AND MOSAICS

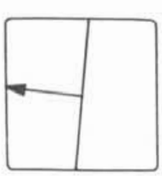
The National Space Science Data Center at Goddard Space Flight Center, Greenbelt, Maryland, is responsible for dissemination of *Surveyor I* photographs and other scientific data. An index, and copies of the photographs in various forms, can be obtained from that NASA Data Center.

Surveyor I-1



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(1)	153	06 52 47	81	−23.06	3.47	F 4.0	W	CLR	00705

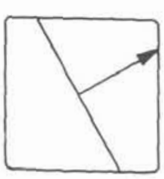
200-line scan



Surveyor I-2

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(2)	153	07 39 02	− 45	−23.06	3.47	F 7.8	W	CLR	00716

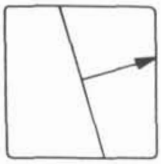
200-line scan



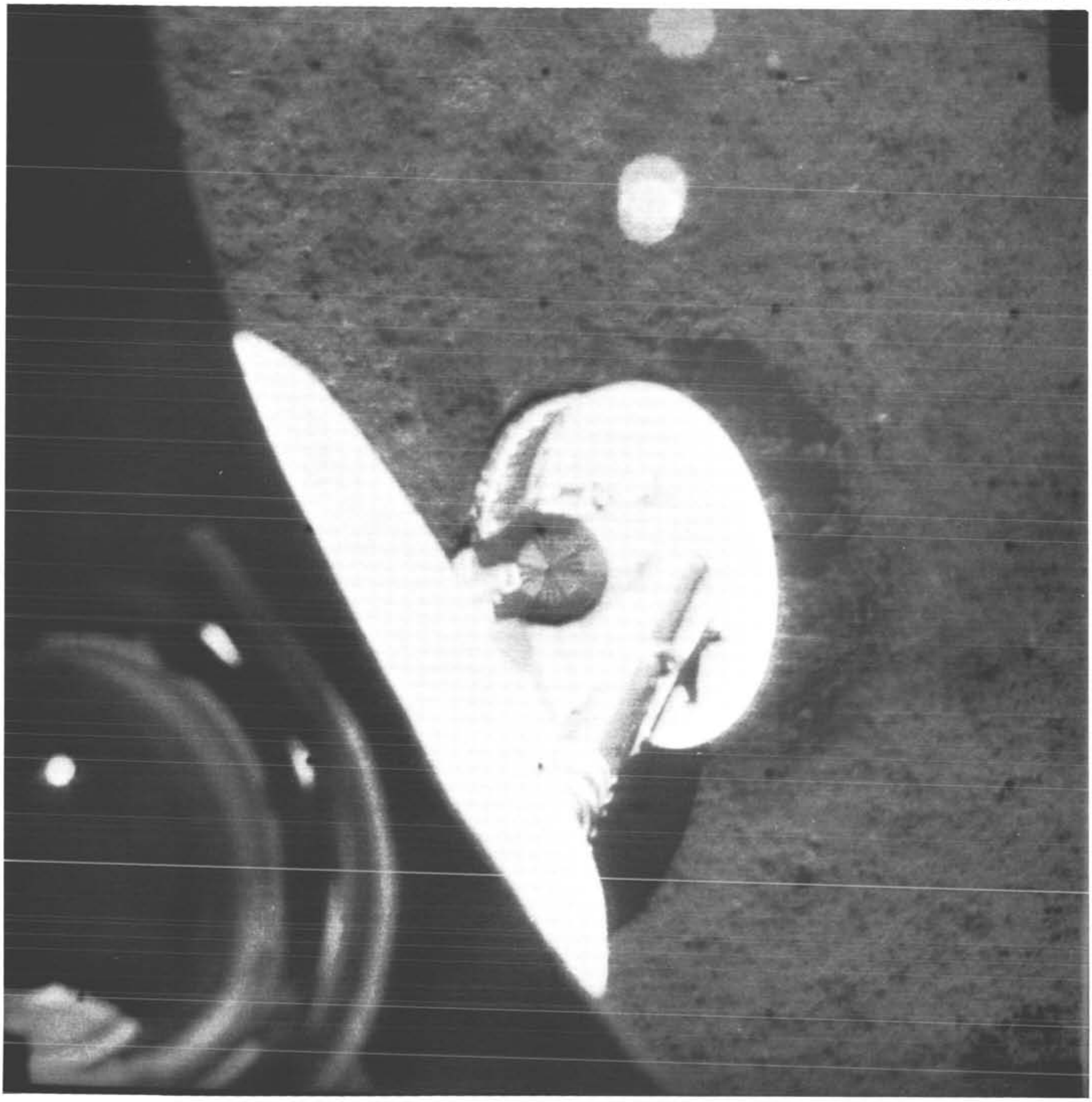
Surveyor I-3

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(3)	153	07 43 10	− 60	−62.74	3.47	F12.9	W	CLR	00722

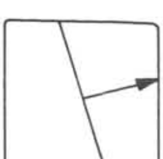
200-line scan



Surveyor I-4

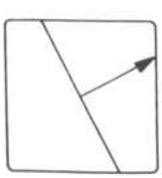


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(4)	153	09 45 07	− 60	−62.74	3.47	F12.9	W	CLR	01324

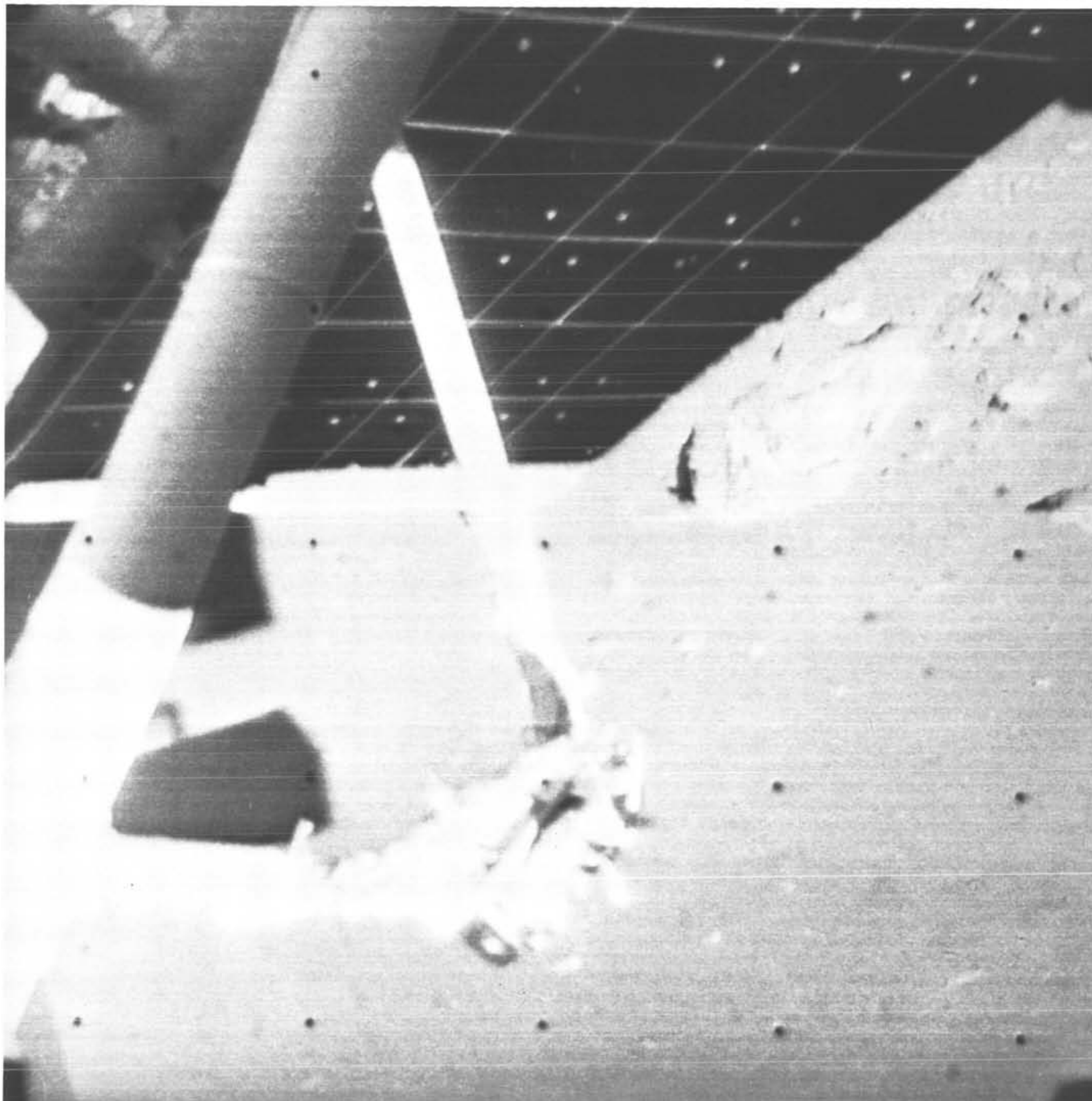


Surveyor I-5

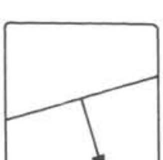
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(5)	153	09 55 52	− 48	−18.10	3.47	F 6.7	W	CLR	01334



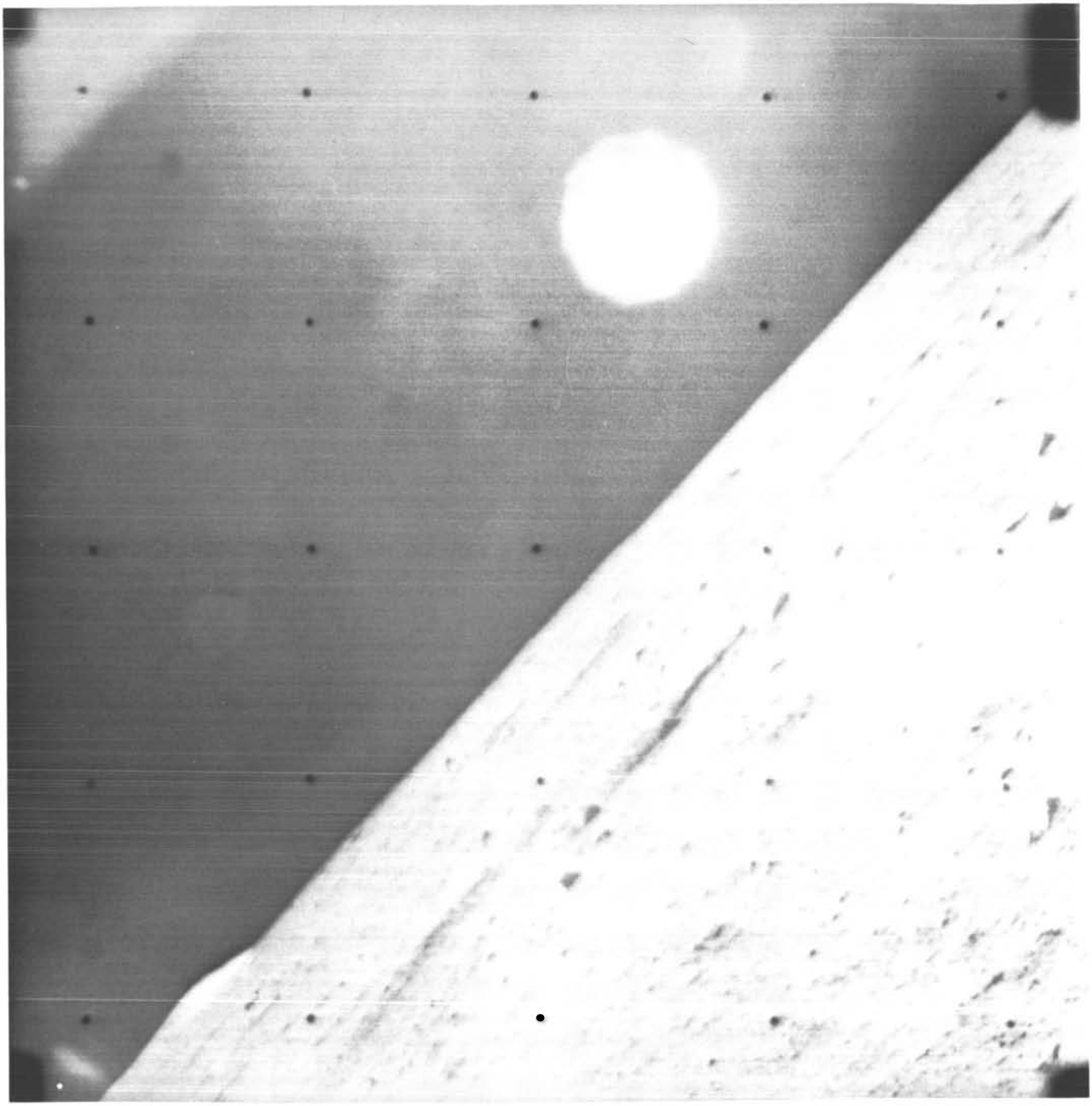
Surveyor I-6



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(6)	153	09 57 41	−174	−28.02	3.47	F11.1	W	CLR	01337



Surveyor I-7

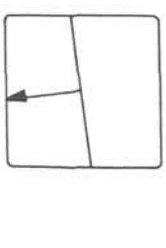


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(7)	153	10 28 37	48	16.62	3.47	F22.0	W	CLR	01354

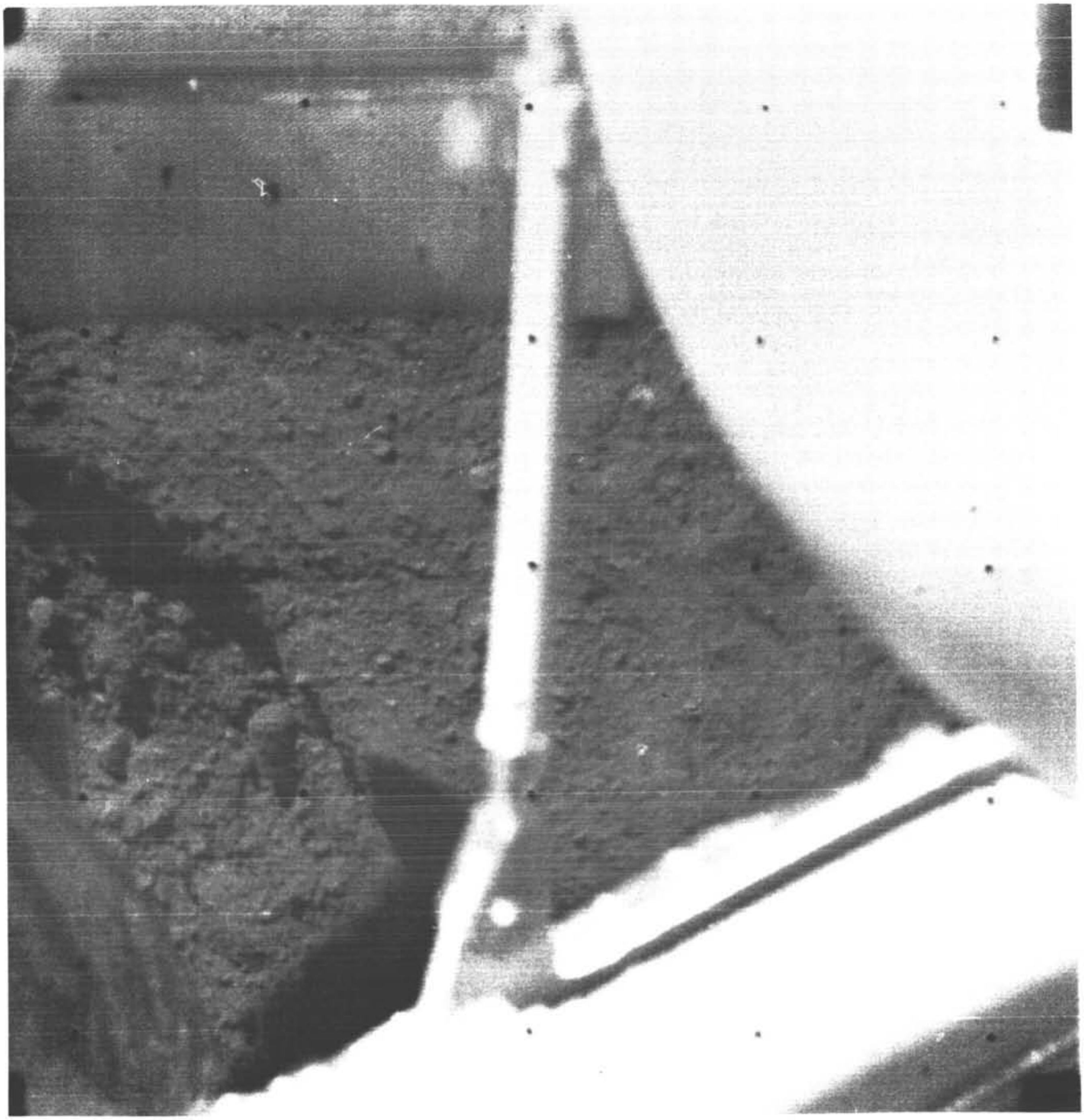
Surveyor I-8

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(8)	154	06 34 09	90	−52.82	2.10	F15.8	N	CLR	02613

Original

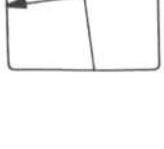


Surveyor I-9

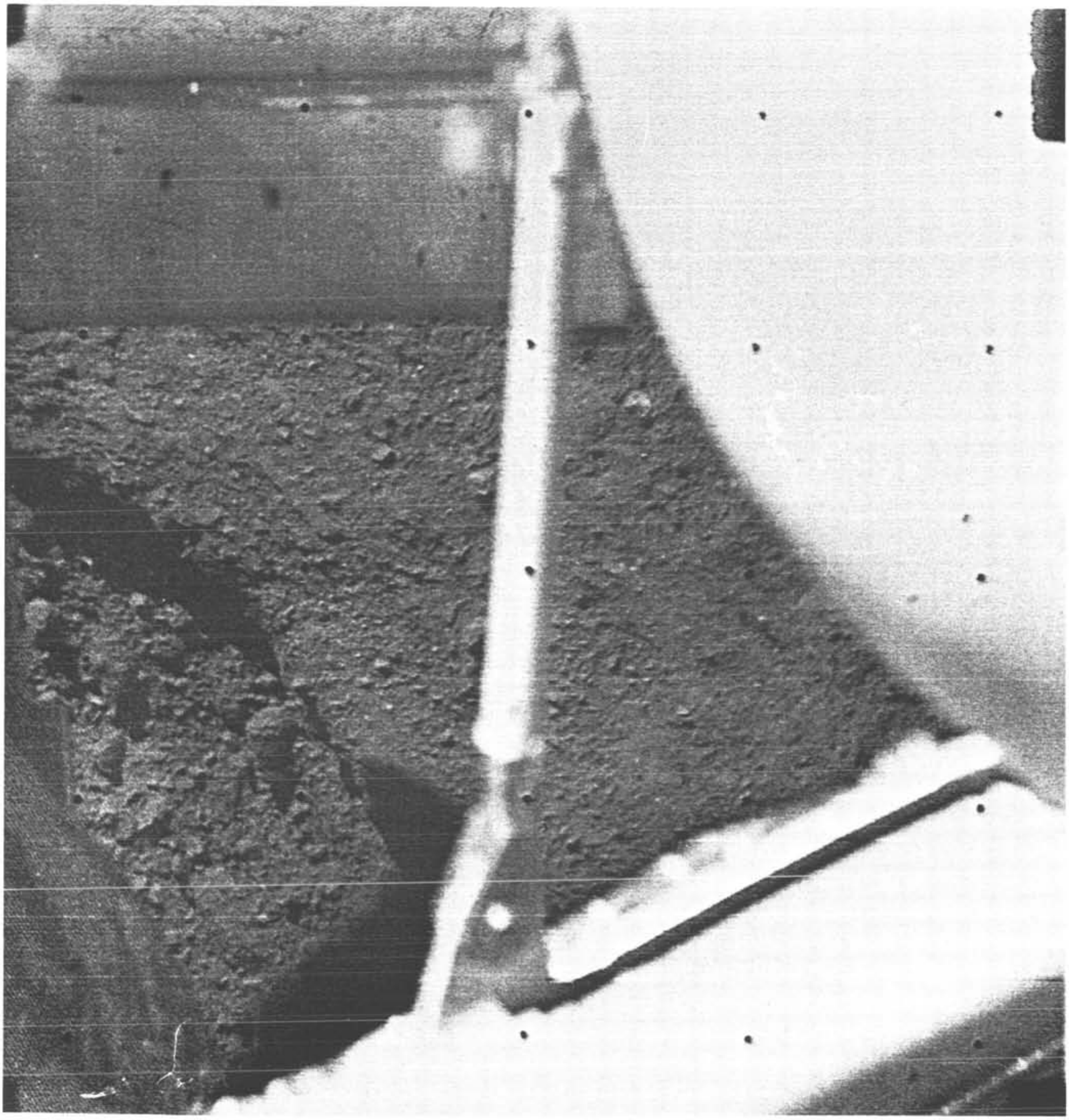


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(9)	154	06 34 09	90	−52.82	2.10	F15.8	N	CLR	02613

Digitized

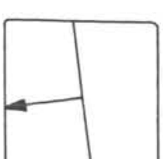


Surveyor I-10

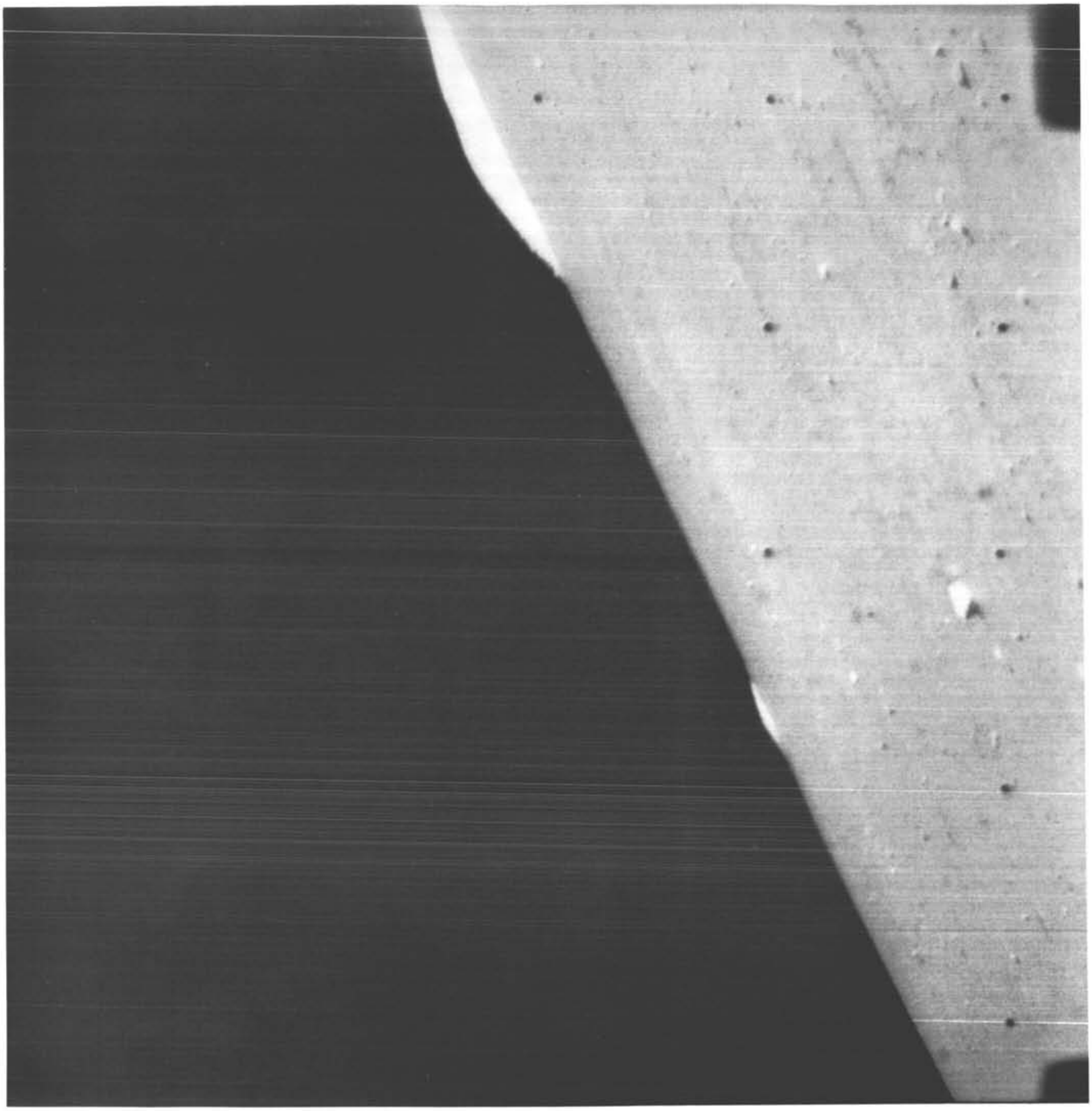


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(10)	154	06 34 09	90	−52.82	2.10	F15.8	N	CLR	02613

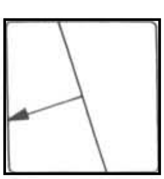
Processed



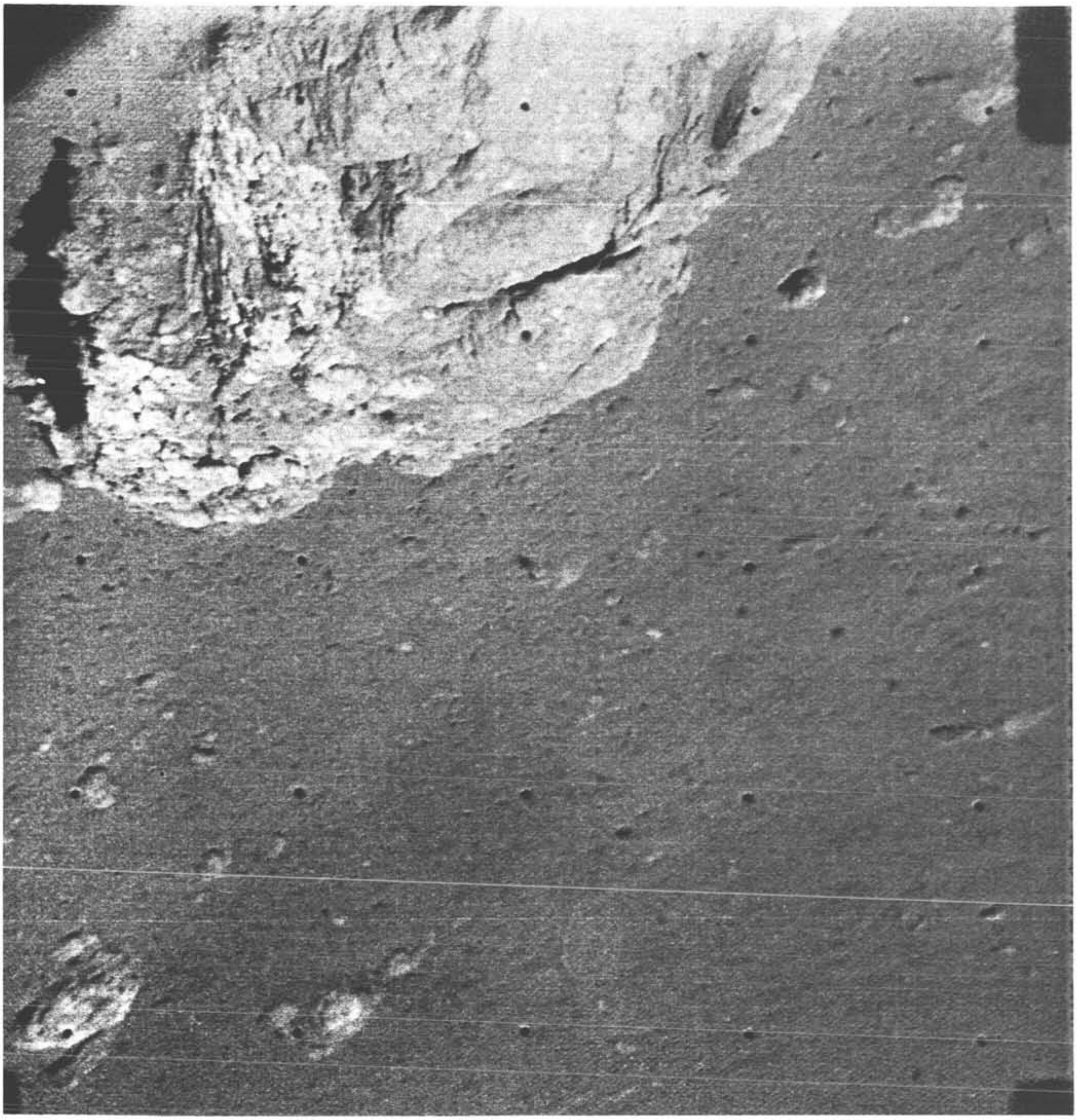
Surveyor I-11



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(11)	154	07 49 13	99	16.62	27.40	F22.0	N	RED	04121

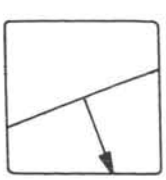


Surveyor I-12

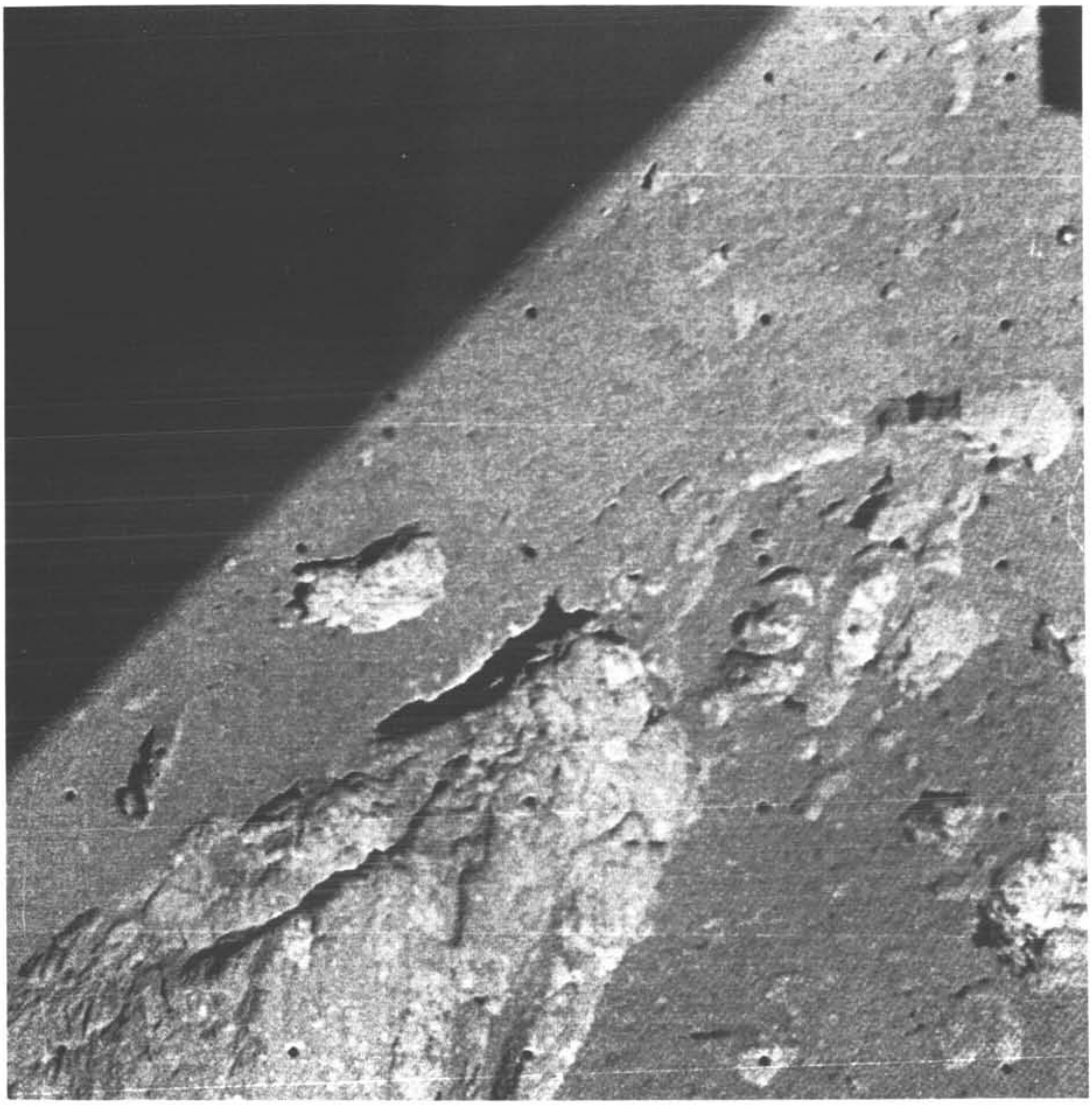


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(12)	154	09 33 07	−168	−32.98	5.03	F13.8	N	CLR	04300

Processed

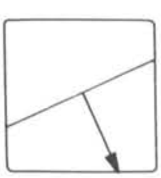


Surveyor I-13

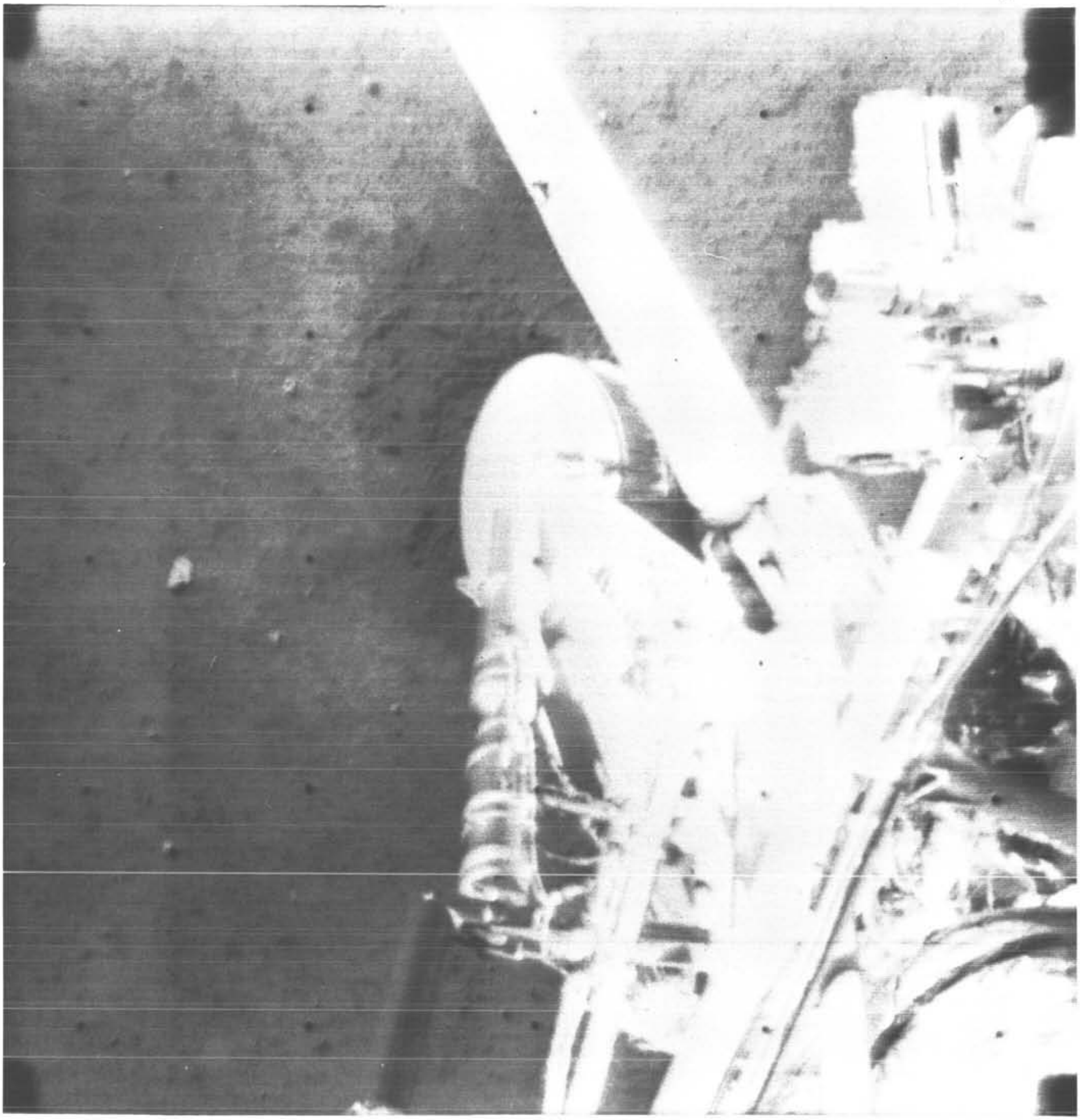


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(13)	154	09 33 59	−165	−32.98	5.03	F13.8	N	CLR	04307

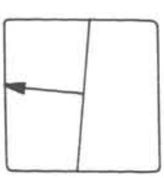
Processed



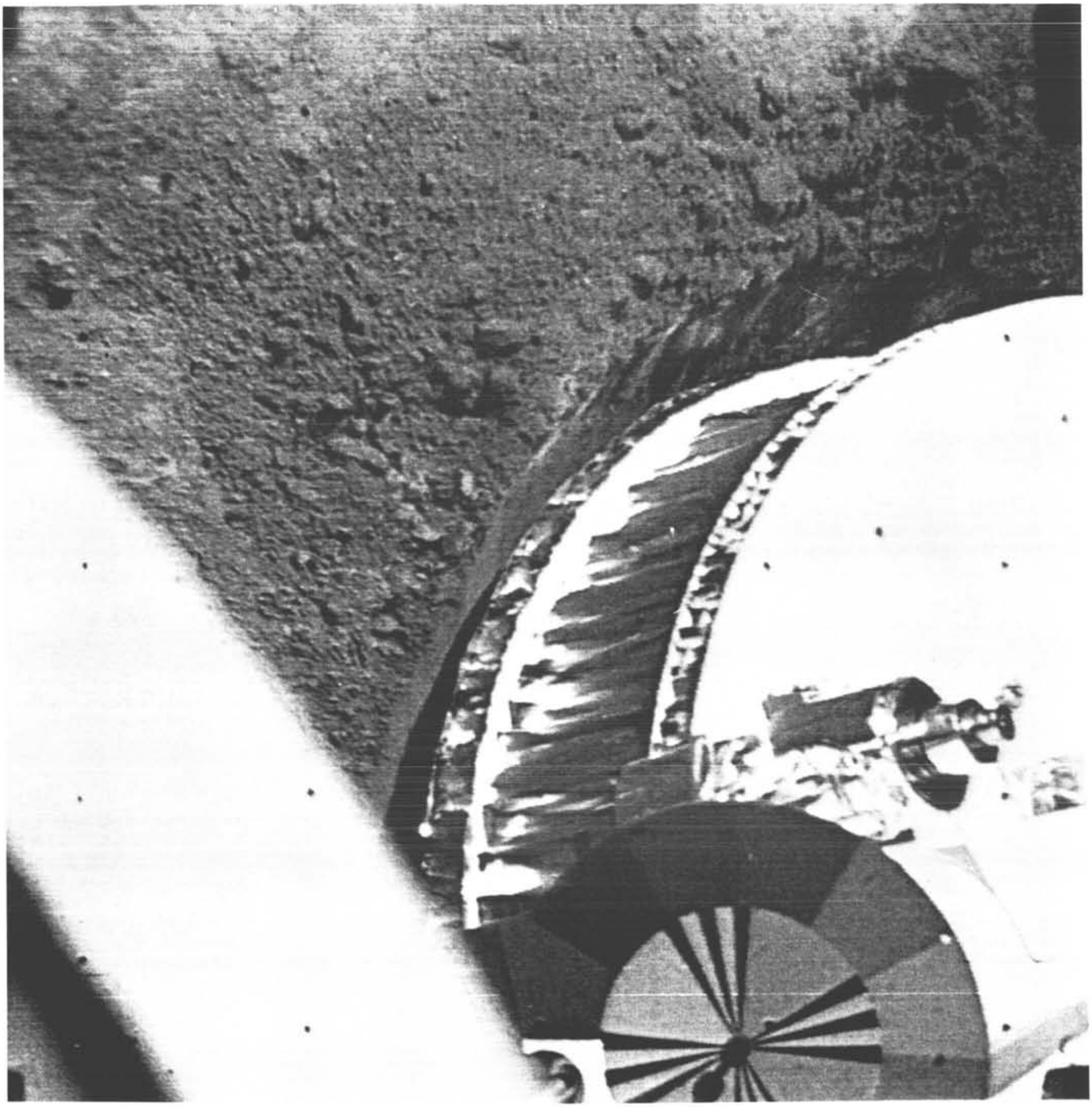
Surveyor I-14



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(14)	155	05 29 56	81	−23.06	3.47	F13.4	W	CLR	06242

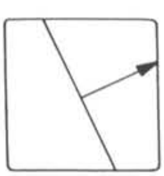


Surveyor I-15

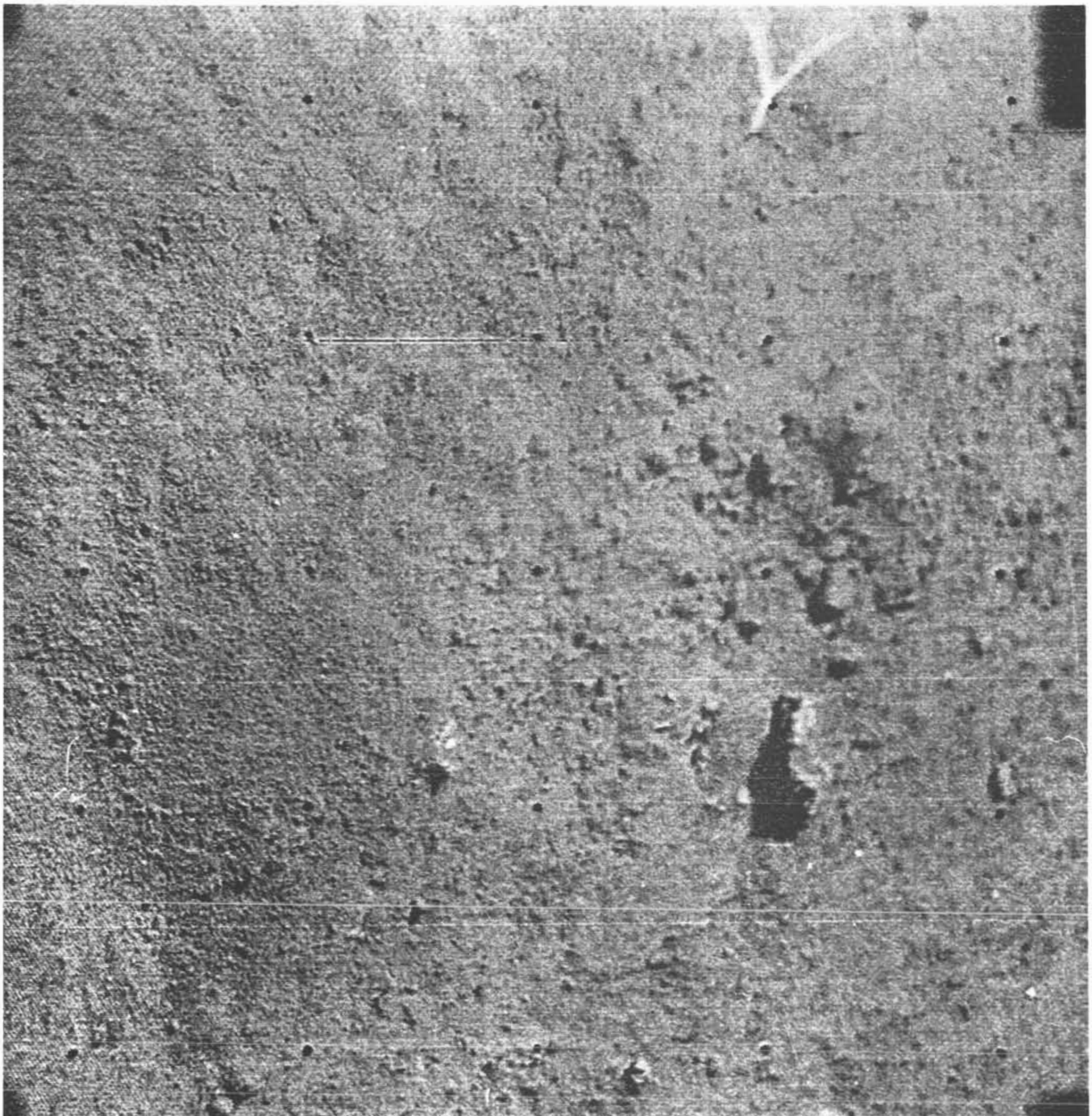


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(15)	155	06 55 26	− 51	−57.78	2.44	F22.0	N	CLR	06277

Processed

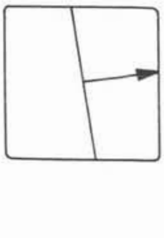


Surveyor I-16

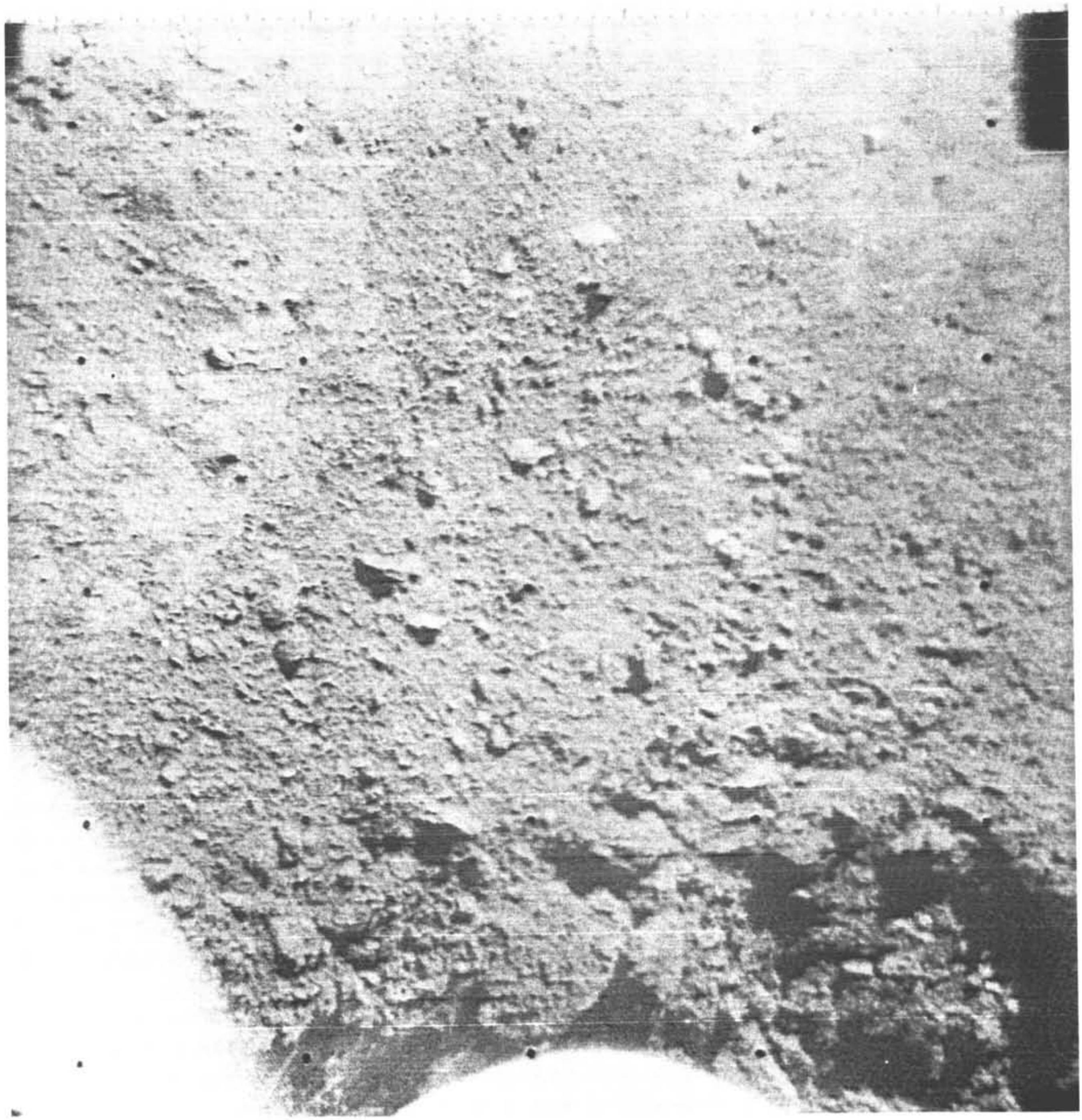


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(16)	155	07 48 28	− 69	−52.82	2.68	F 6.5	N	RED	06322

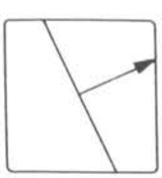
Processed



Surveyor I-17

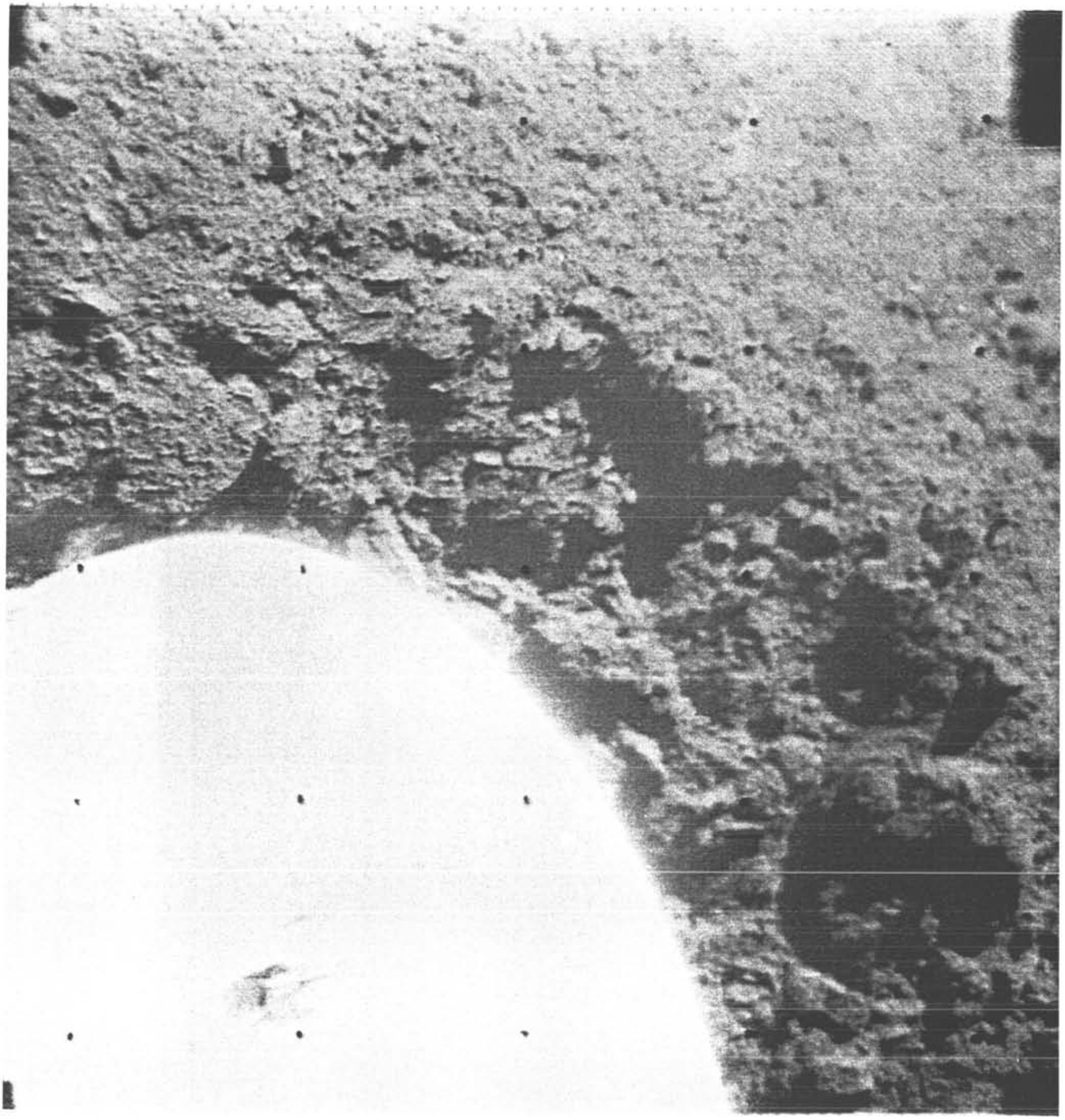


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(17)	155	07 58 15	− 51	−52.82	2.56	F 6.5	N	BLU	06364



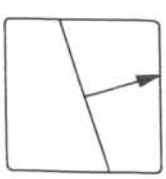
Processed

Surveyor I-18

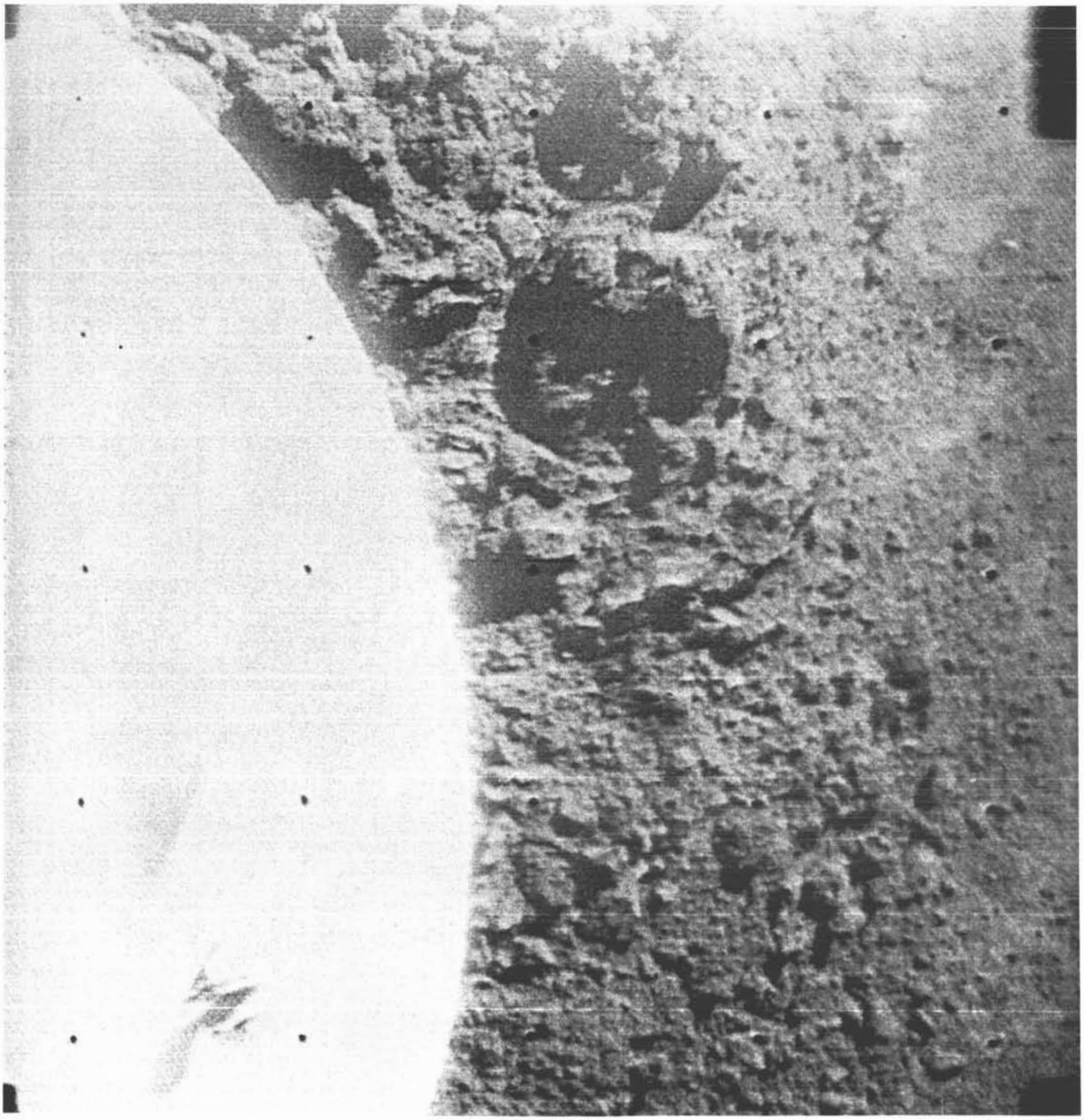


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(18)	155	07 58 49	− 57	−52.82	2.68	F 6.5	N	BLU	06365

Processed

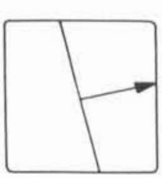


Surveyor I-19



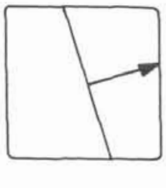
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(19)	155	08 00 42	− 63	−52.82	2.68	F 6.5	N	BLU	06370

Processed

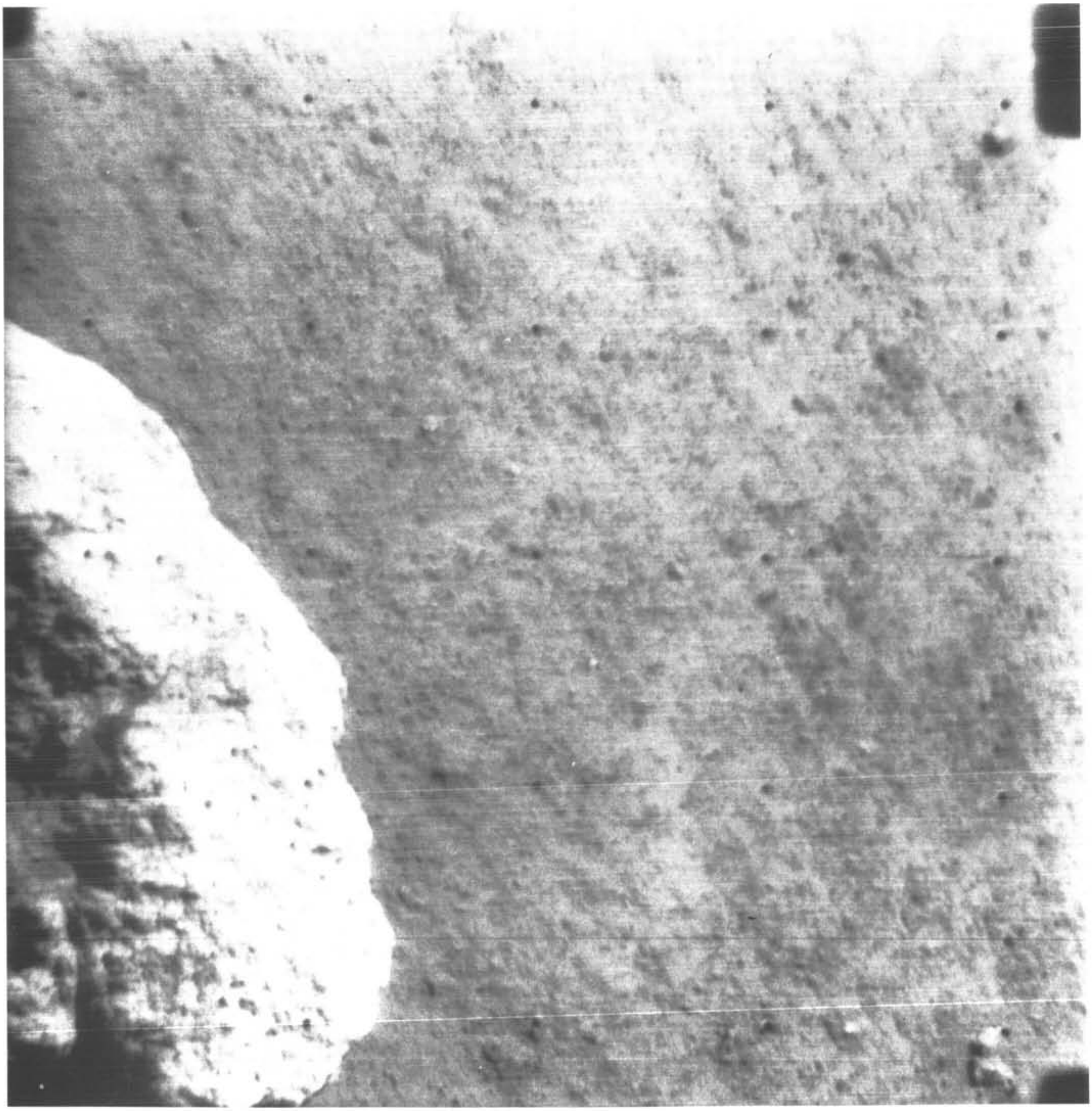


Surveyor I-20

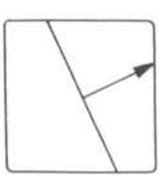
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(20)	156	06 21 19	− 60	−62.74	3.47	F12.0	W	CLR	07200



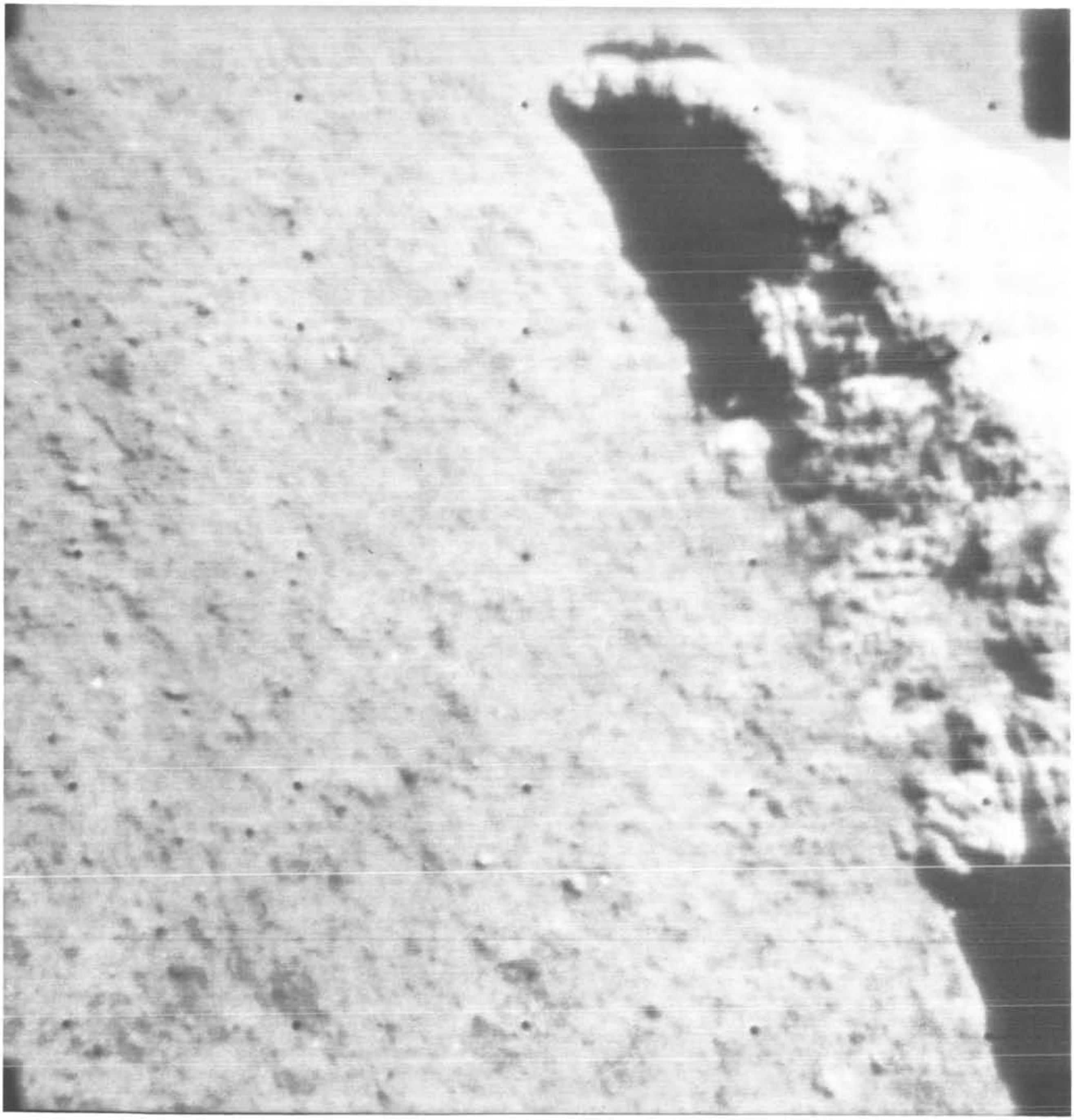
Surveyor I-21



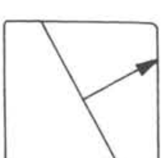
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(21)	156	07 13 48	− 51	−23.06	4.63	F10.4	N	CLR	07307



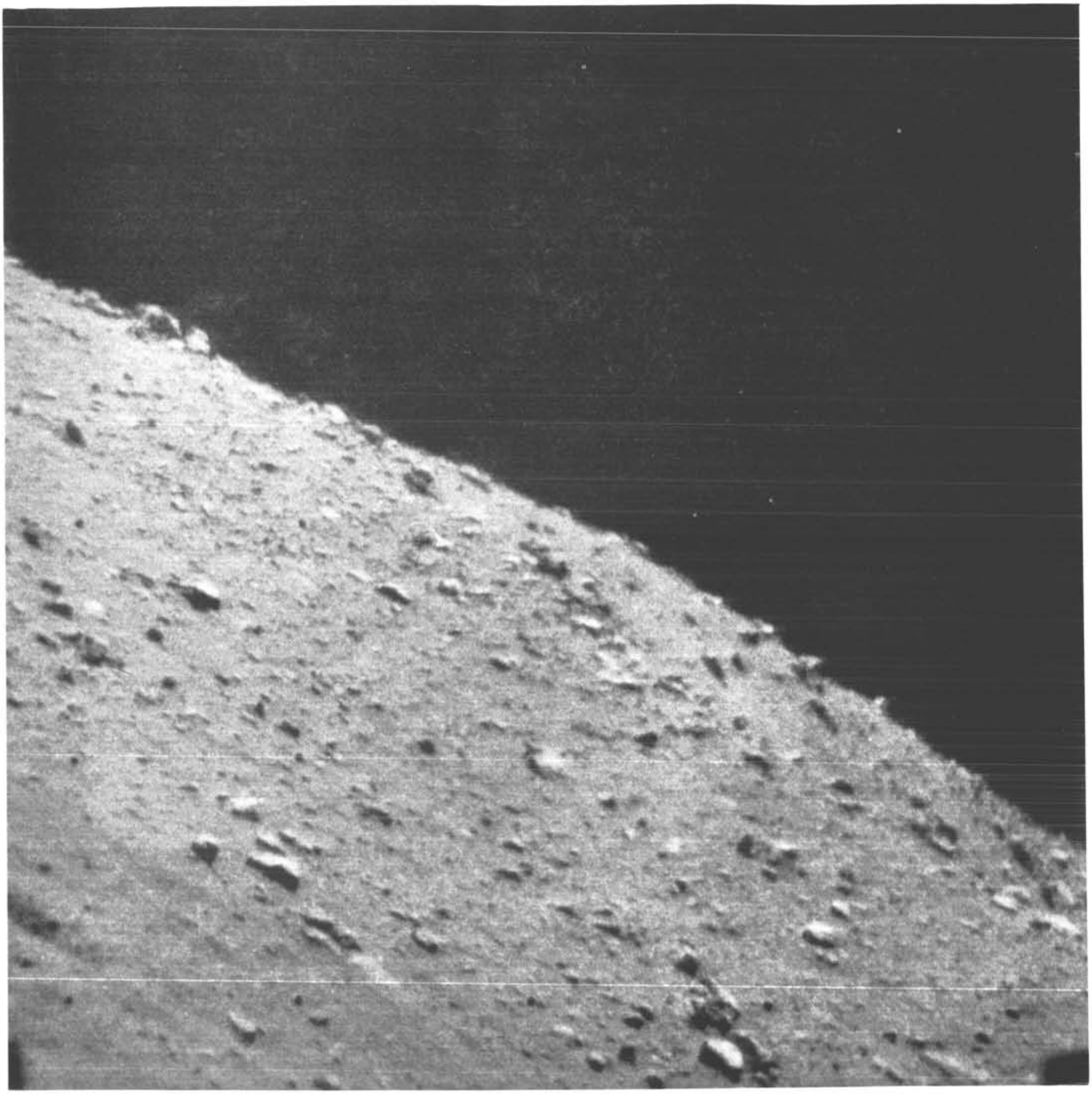
Surveyor I-22



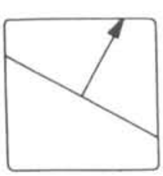
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(22)	156	07 18 22	− 48	−28.02	3.11	F10.3	N	CLR	07315



Surveyor I-23

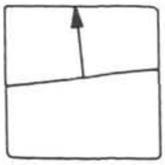


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(23)	156	08 17 25	− 15	6.70	27.40	F10.3	N	CLR	07442



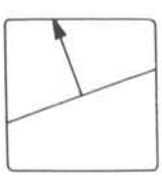
Surveyor I-24

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(24)	156	08 31 25	15	− 3.22	6.98	F10.3	N	CLR	07566

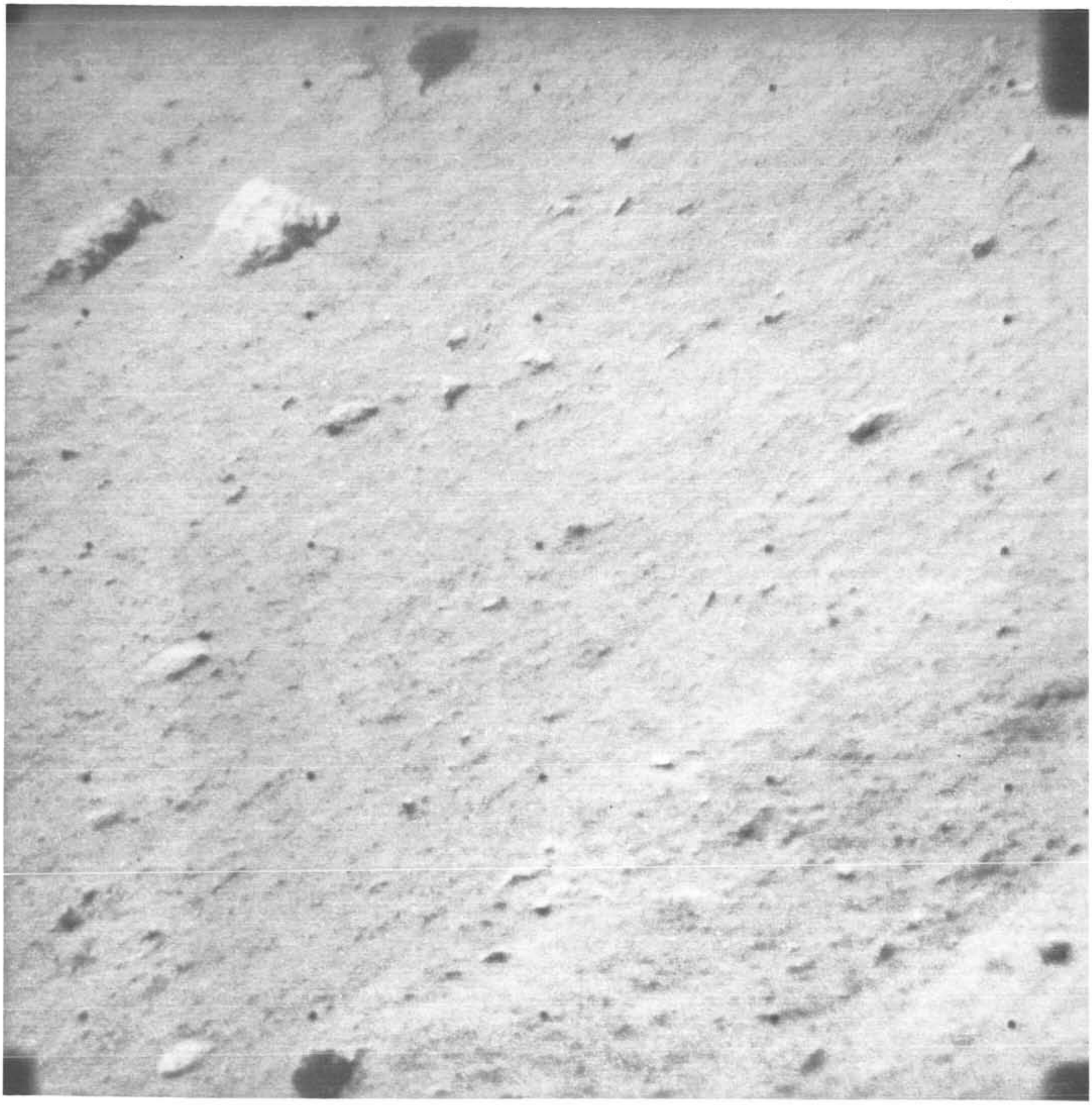


Surveyor I- 25

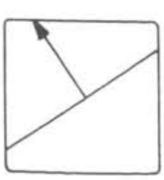
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(25)	156	08 37 05	27	−23.06	2.96	F10.3	N	CLR	07631



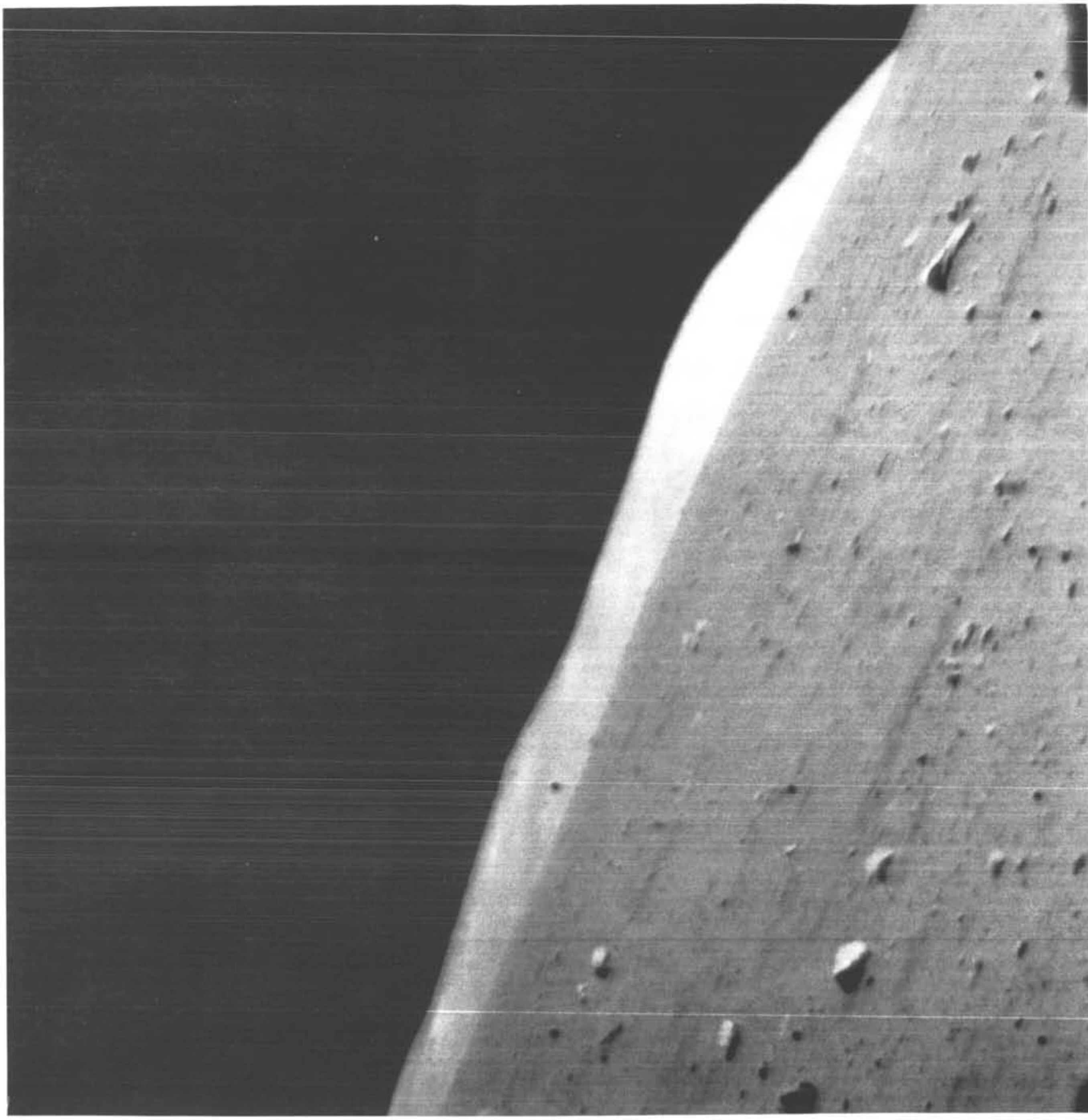
Surveyor I-26



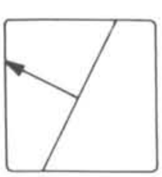
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(26)	156	09 16 46	39	6.70	18.55	F10.4	N	CLR	07701



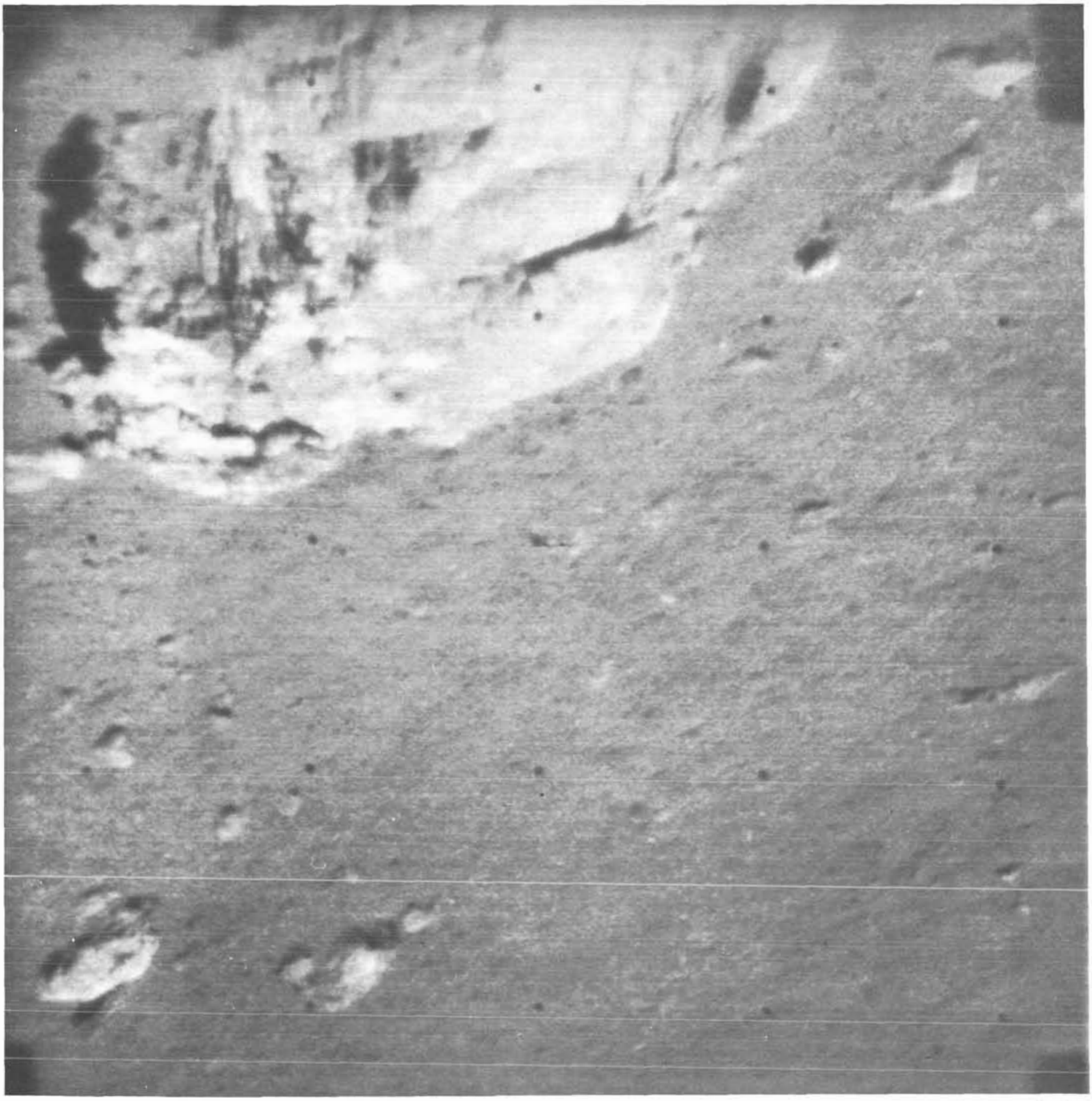
Surveyor I-27



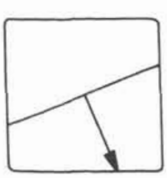
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(27)	156	09 30 02	63	16.62	27.40	F10.4	N	CLR	10013



Surveyor I-28

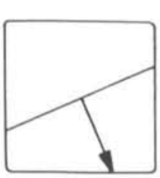


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(28)	156	10 22 53	−168	−28.02	6.98	F10.3	N	BLU	10141

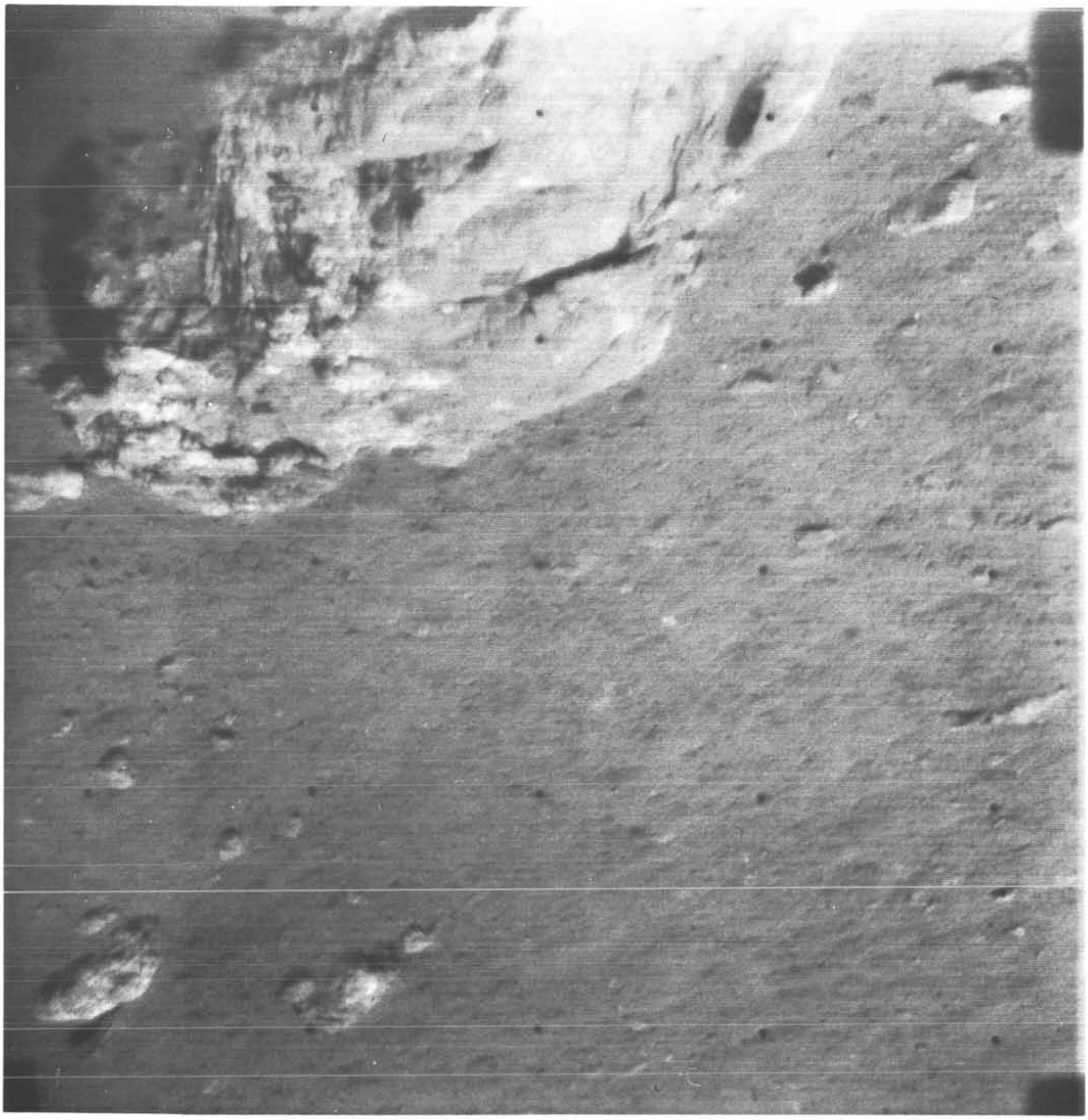


Surveyor I- 29

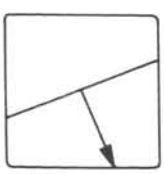
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(29)	156	10 23 53	−165	−37.94	5.03	F10.3	N	BLU	10142



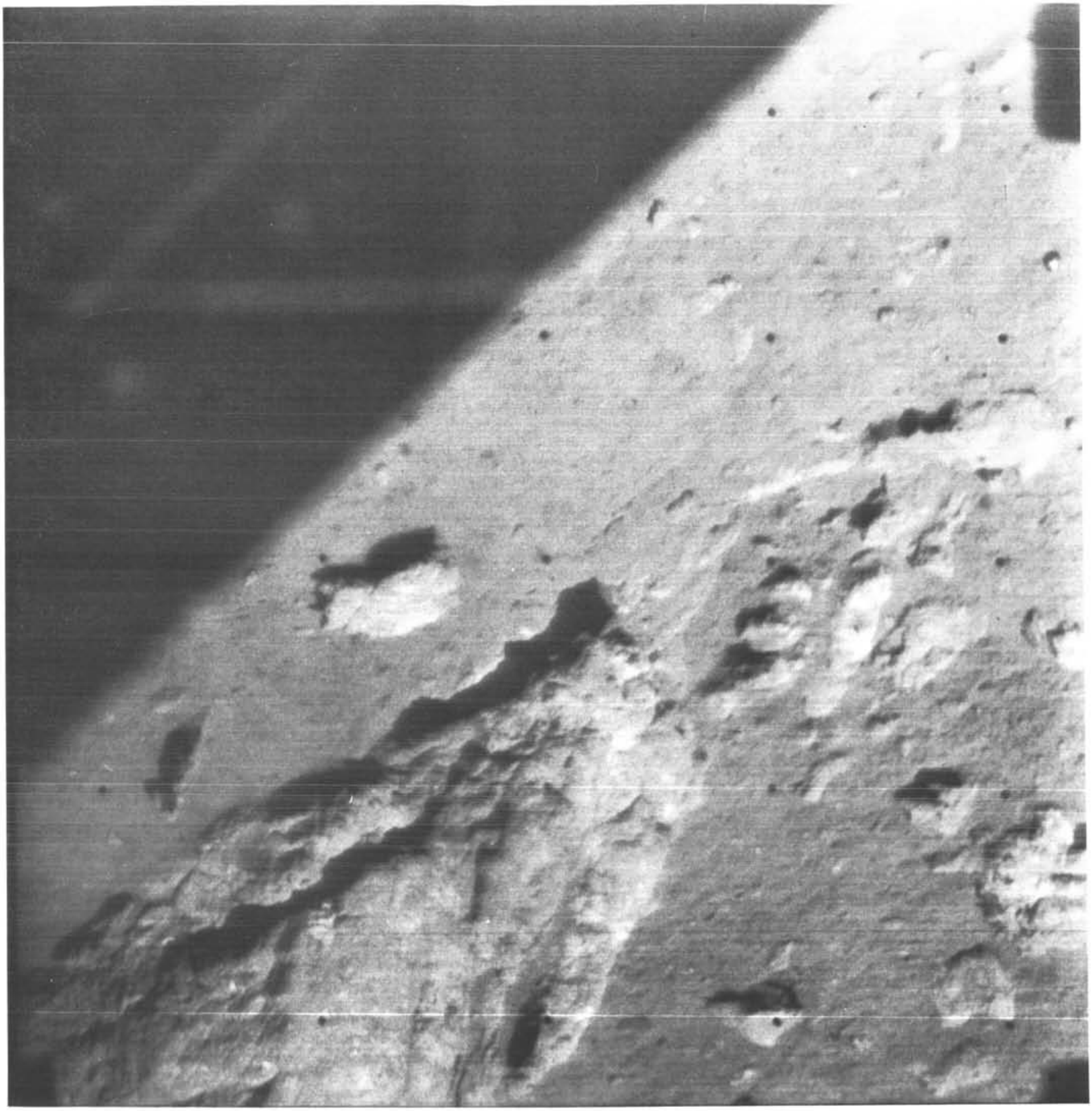
Surveyor I-30



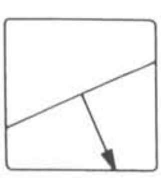
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(30)	156	10 25 20	−168	−28.02	6.98	F10.3	N	GRN	10147



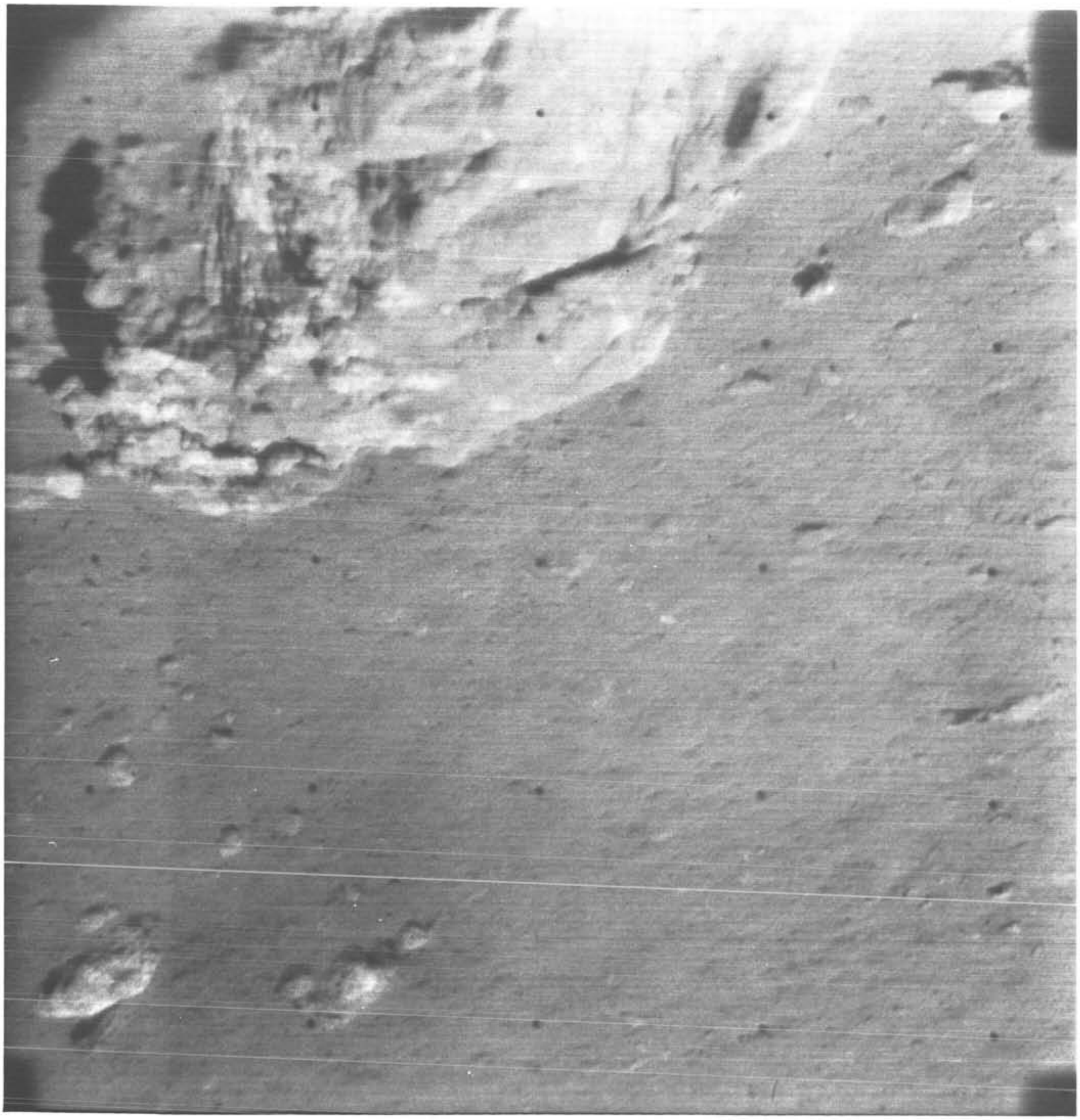
Surveyor I-31



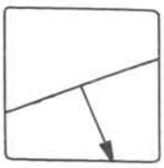
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(31)	156	10 26 19	−165	−37.94	5.03	F10.3	N	GRN	10152



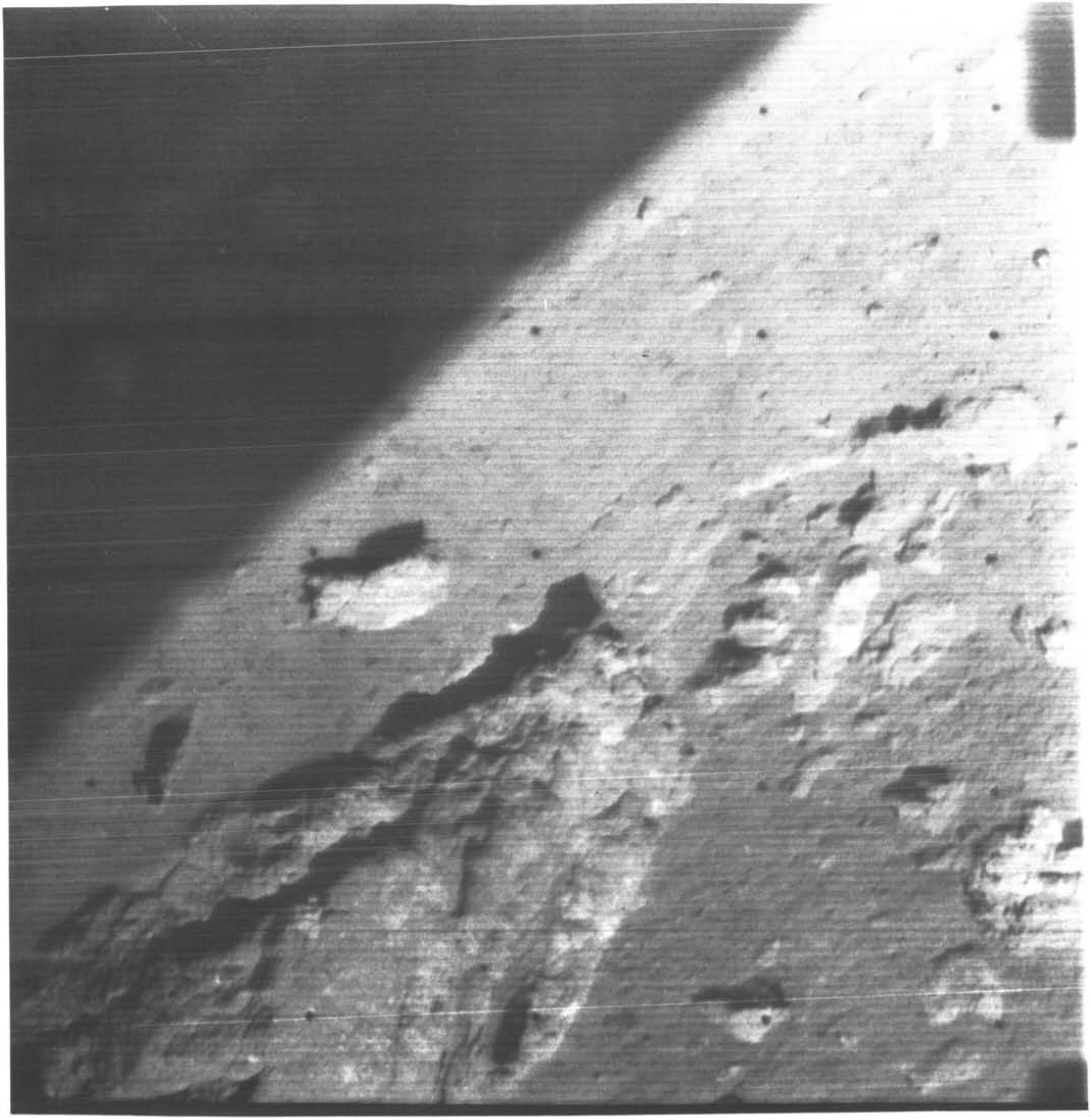
Surveyor I-32



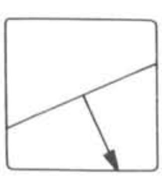
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(32)	156	10 27 44	−168	−28.02	6.98	F 7.5	N	RED	10155



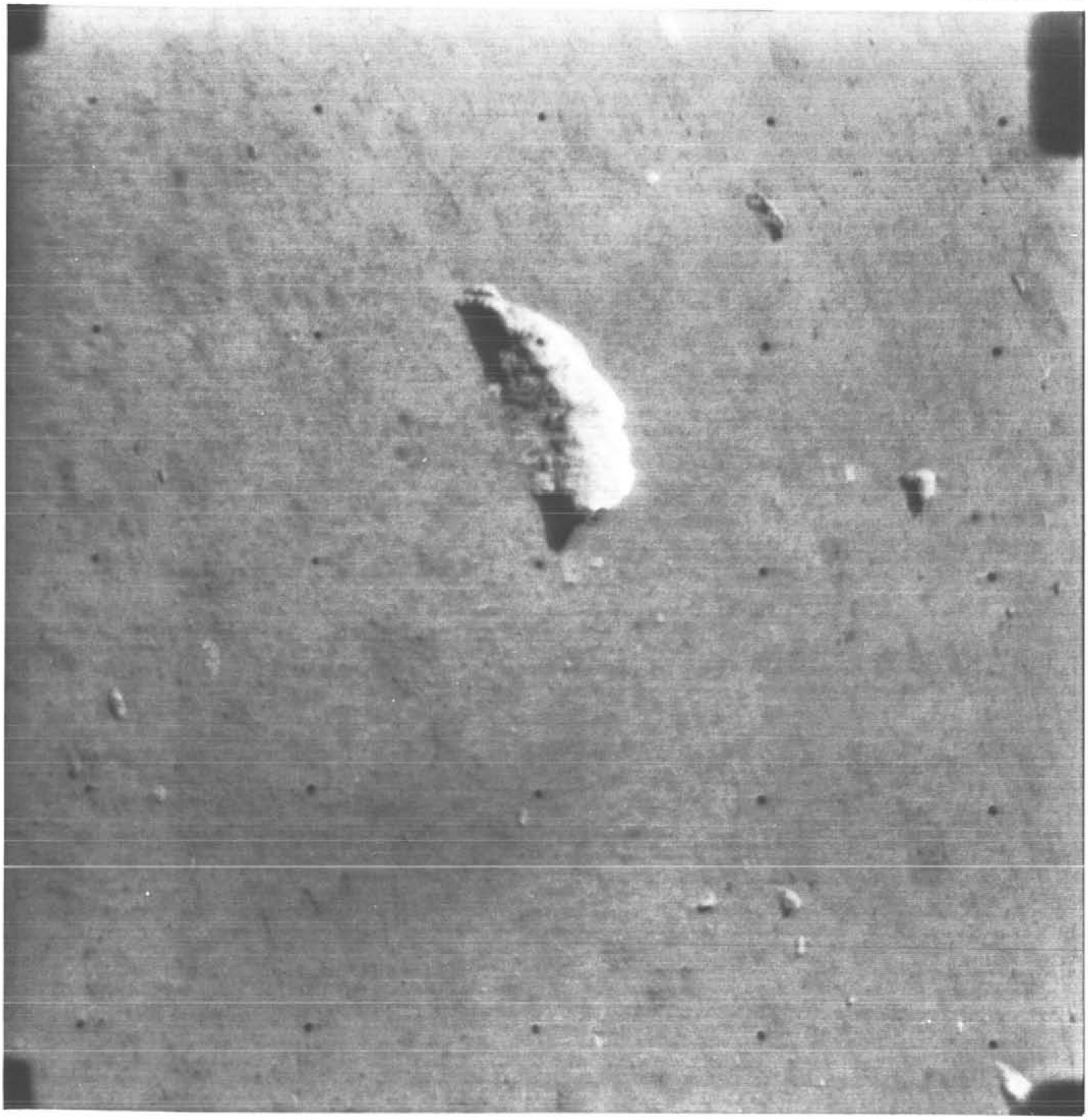
Surveyor I-33



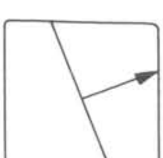
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(33)	156	10 28 34	−165	−37.94	5.03	F 7.5	N	RED	10156



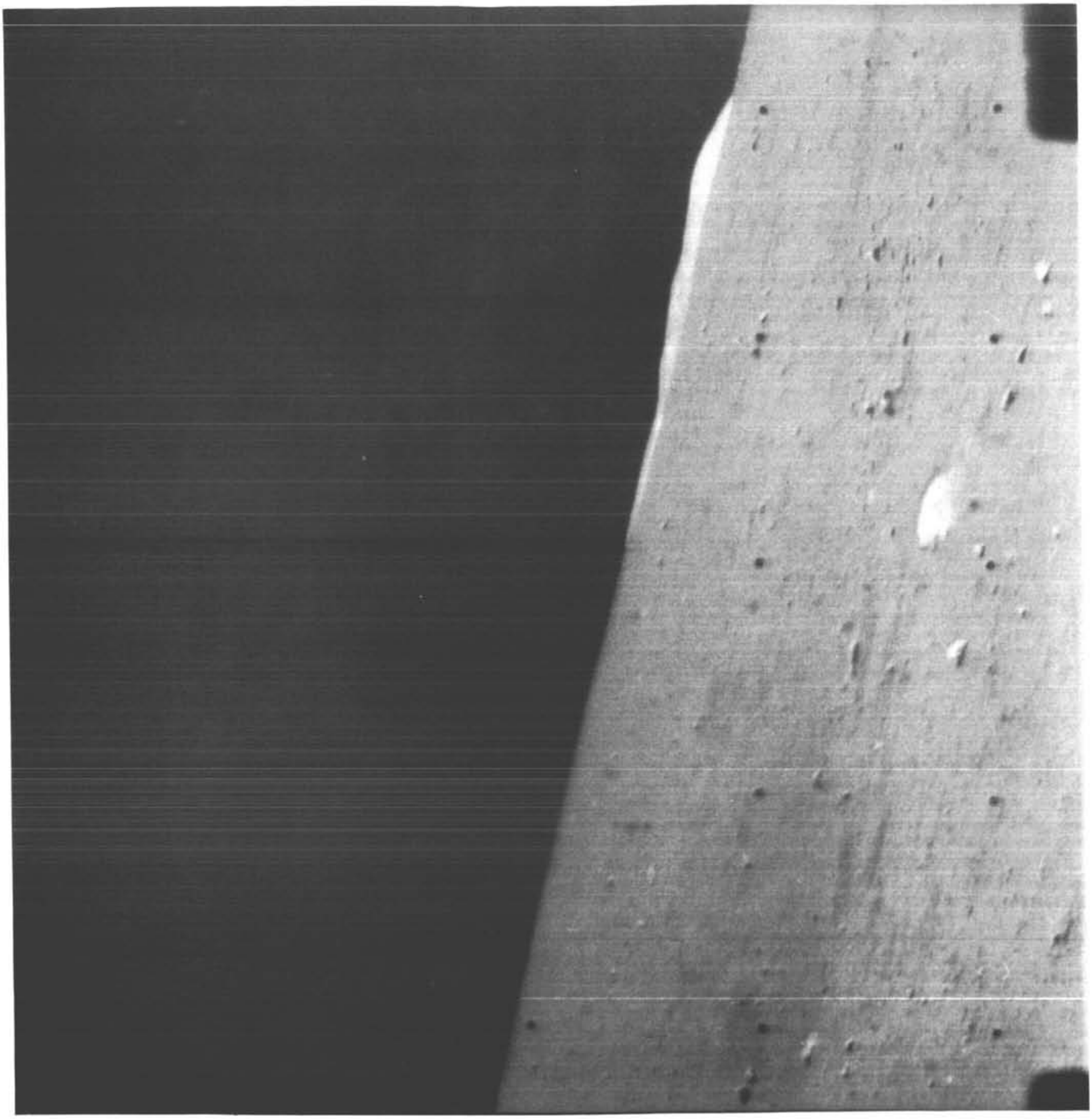
Surveyor I-34



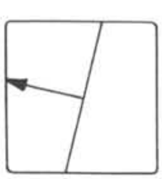
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(34)	156	11 29 38	− 54	−28.02	3.47	F11.8	W	CLR	10412



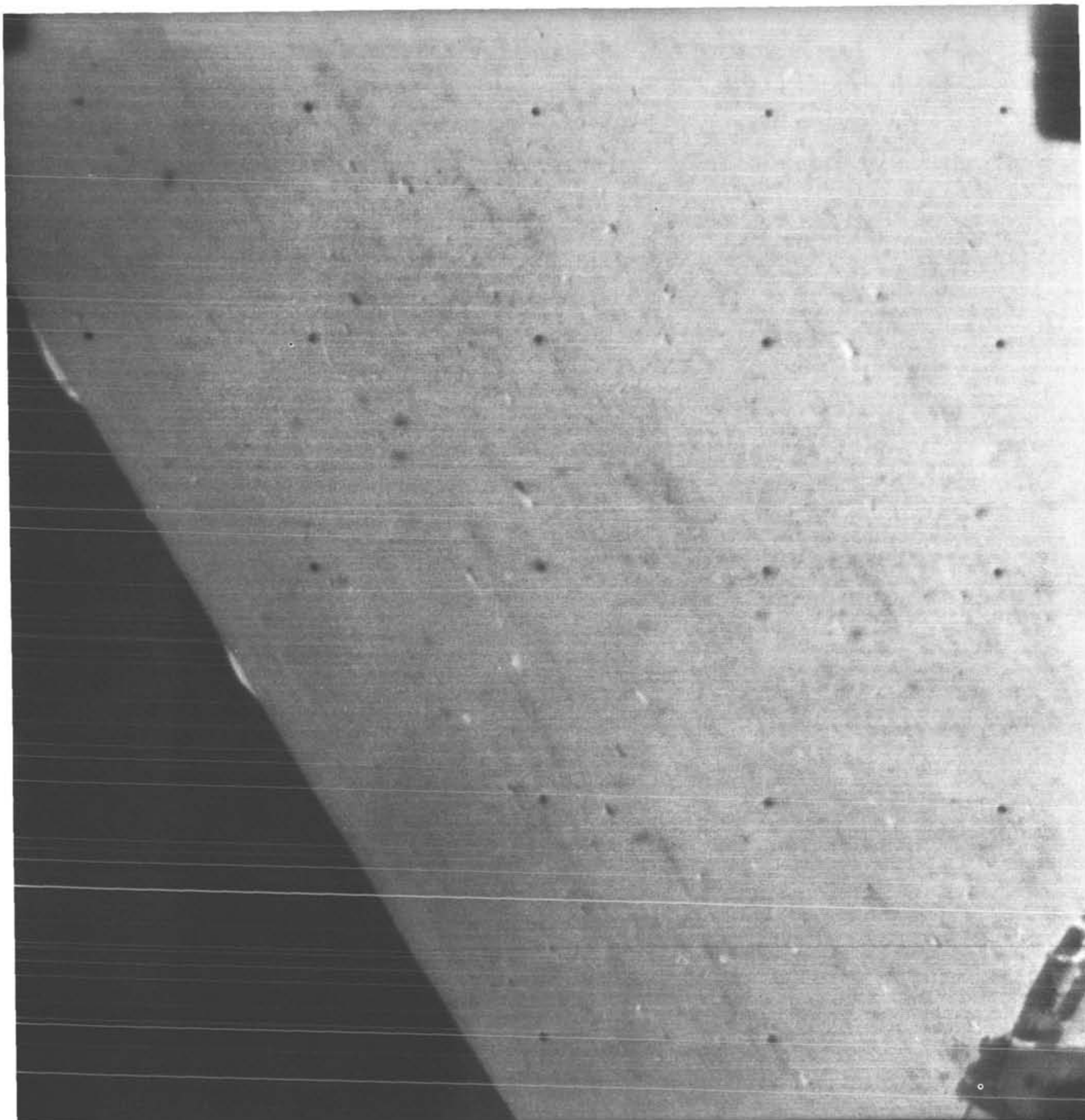
Surveyor I-35



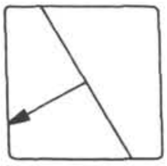
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(35)	156	11 41 18	72	16.62	3.47	F11.8	W	CLR	10467



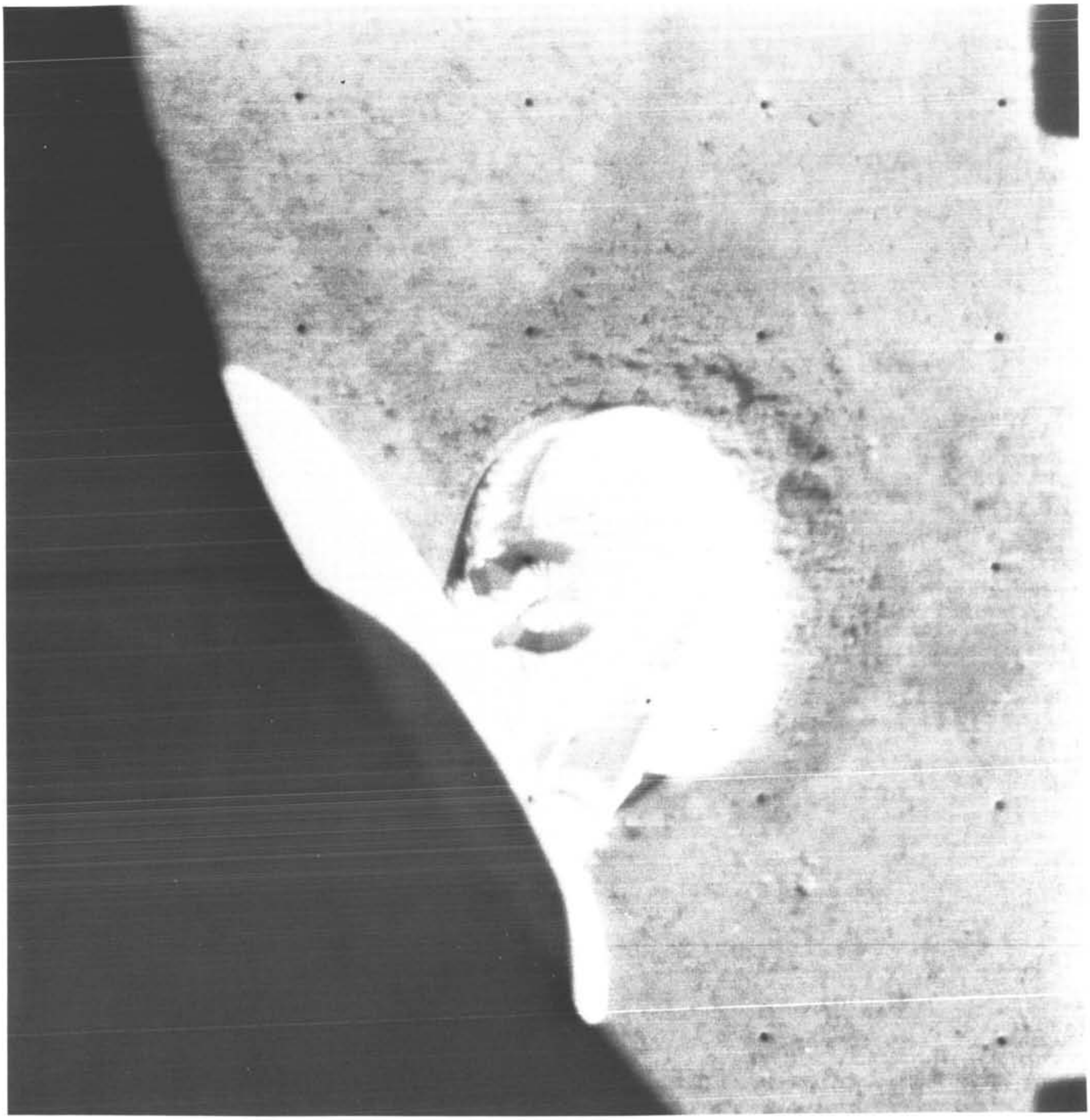
Surveyor I-36



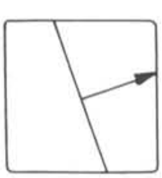
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(36)	156	11 42 30	108	1.74	3.47	F11.7	W	CLR	10502



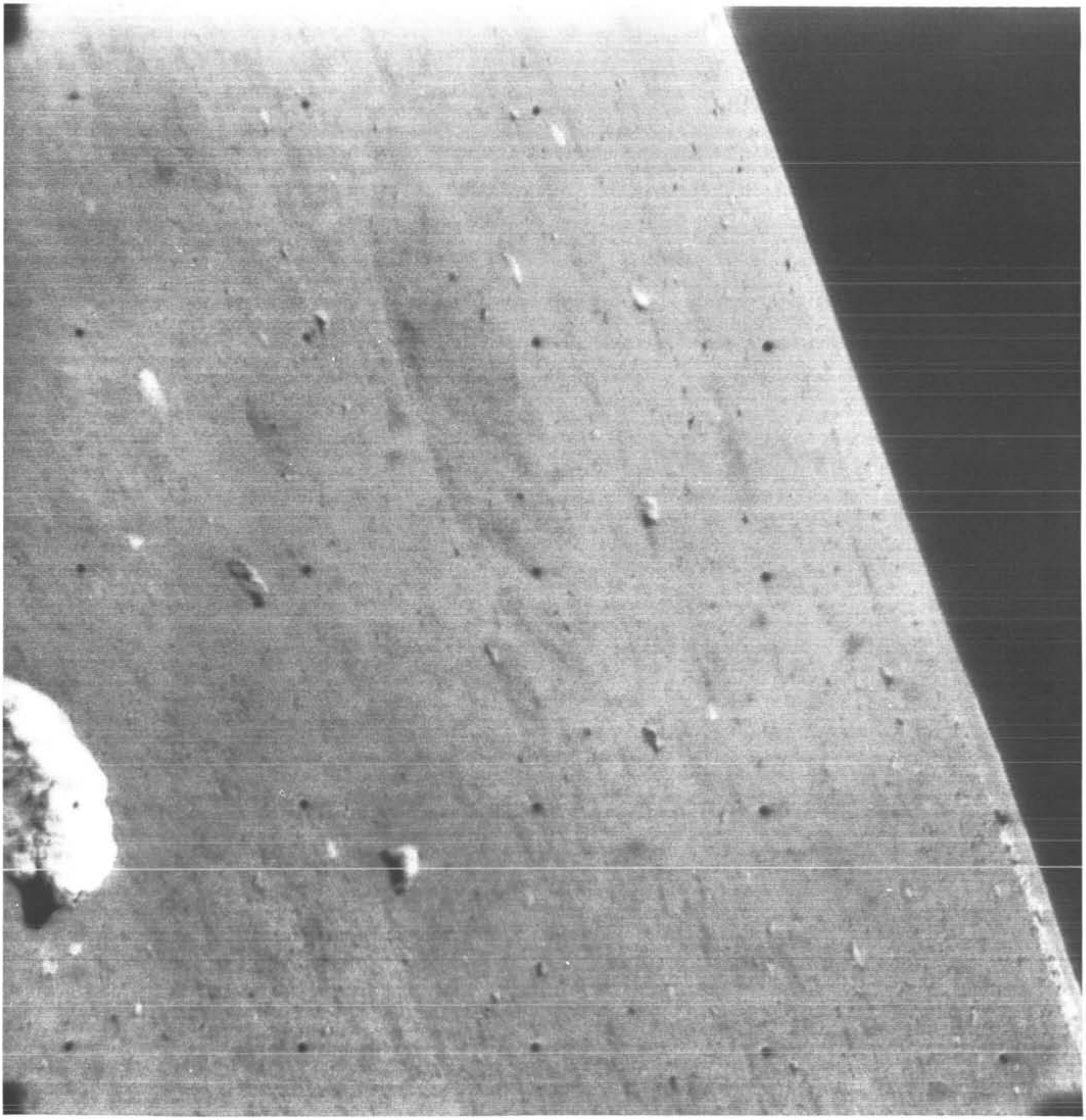
Surveyor I- 37



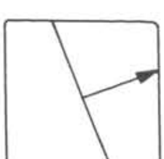
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(37)	156	12 50 47	− 60	−62.74	3.47	F10.9	W	CLR	10642



Surveyor I-38

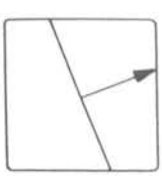


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(38)	157	10 22 09	− 54	− 13.14	3.47	F 7.7	W	BLU	11031

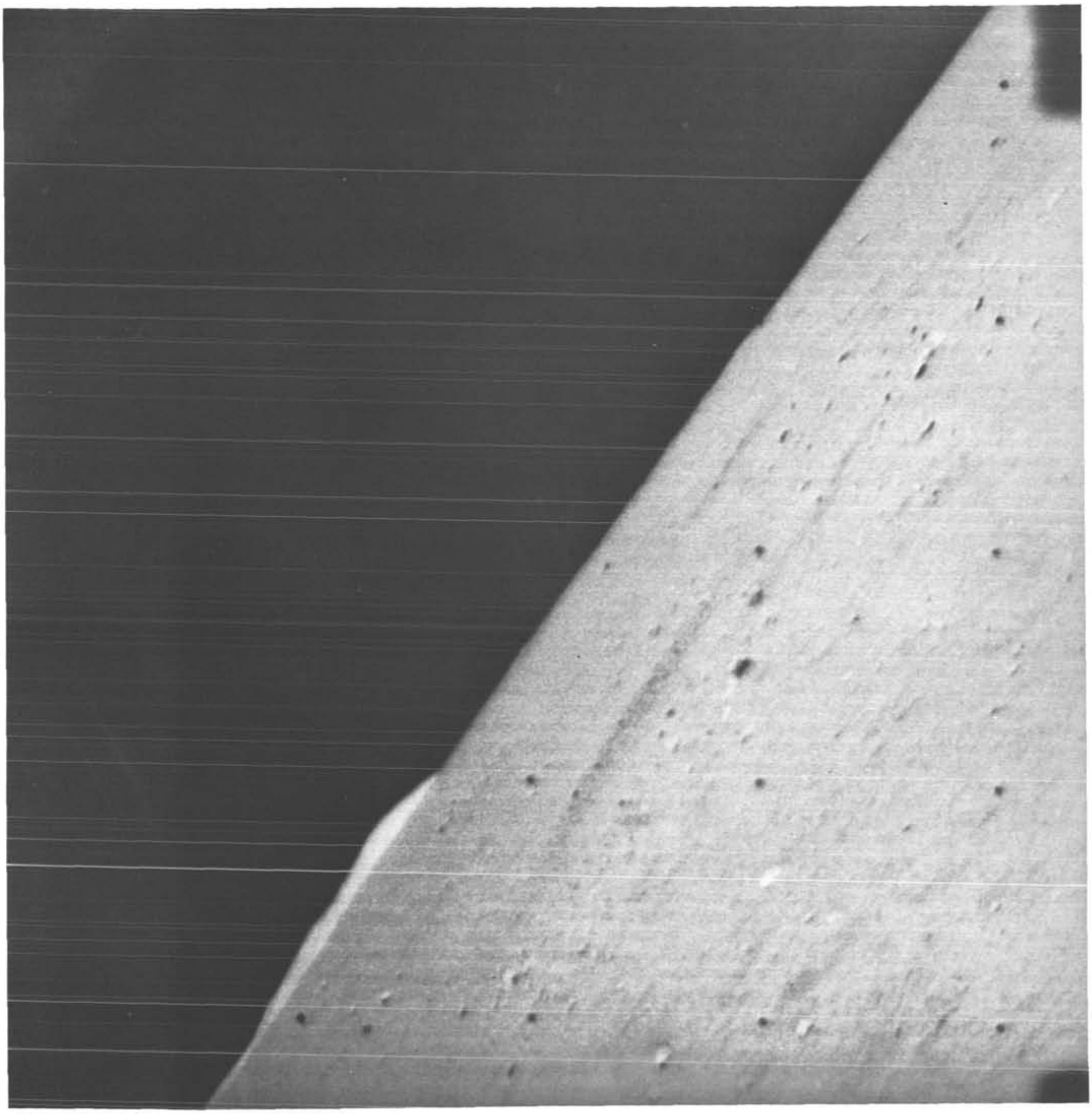


Surveyor I-39

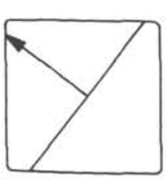
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(39)	157	10 22 18	− 54	−28.02	3.47	F 7.7	W	BLU	11032



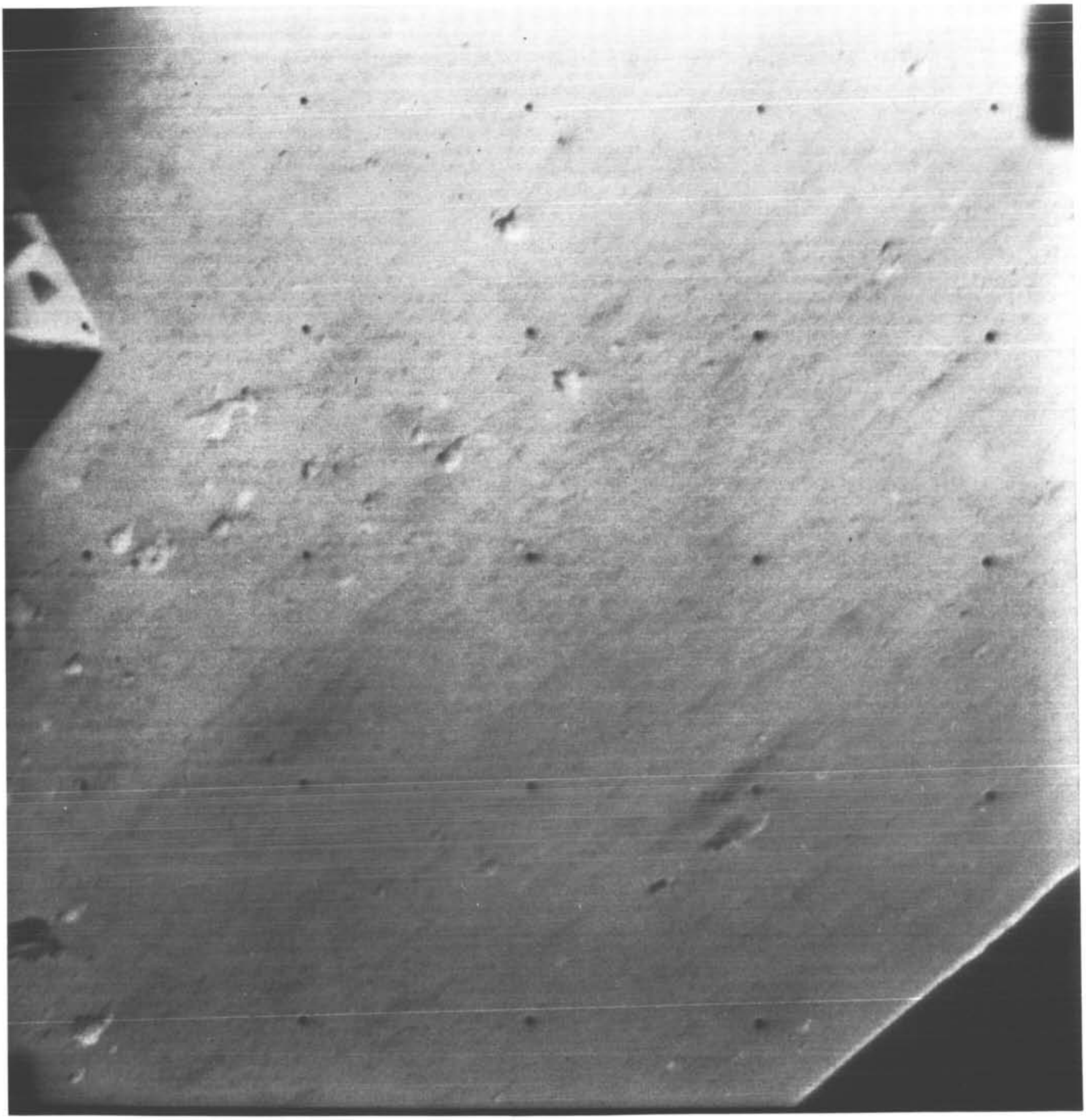
Surveyor I-40



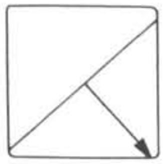
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(40)	157	11 15 32	54	16.62	3.47	F 5.4	W	GRN	47057



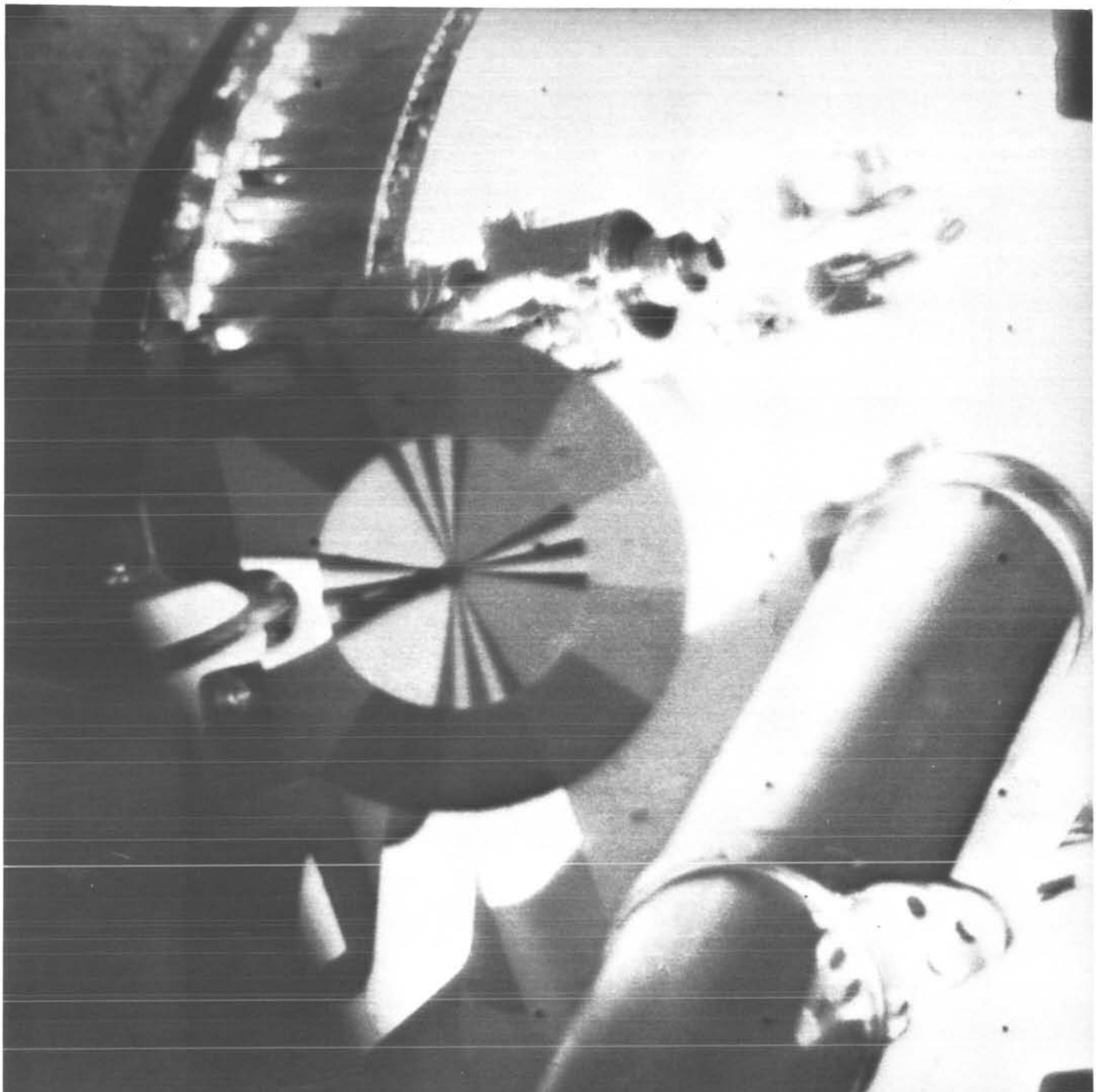
Surveyor I-41



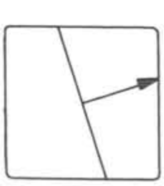
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(41)	157	11 20 27	−144	−28.02	3.47	F 5.4	W	GRN	47144



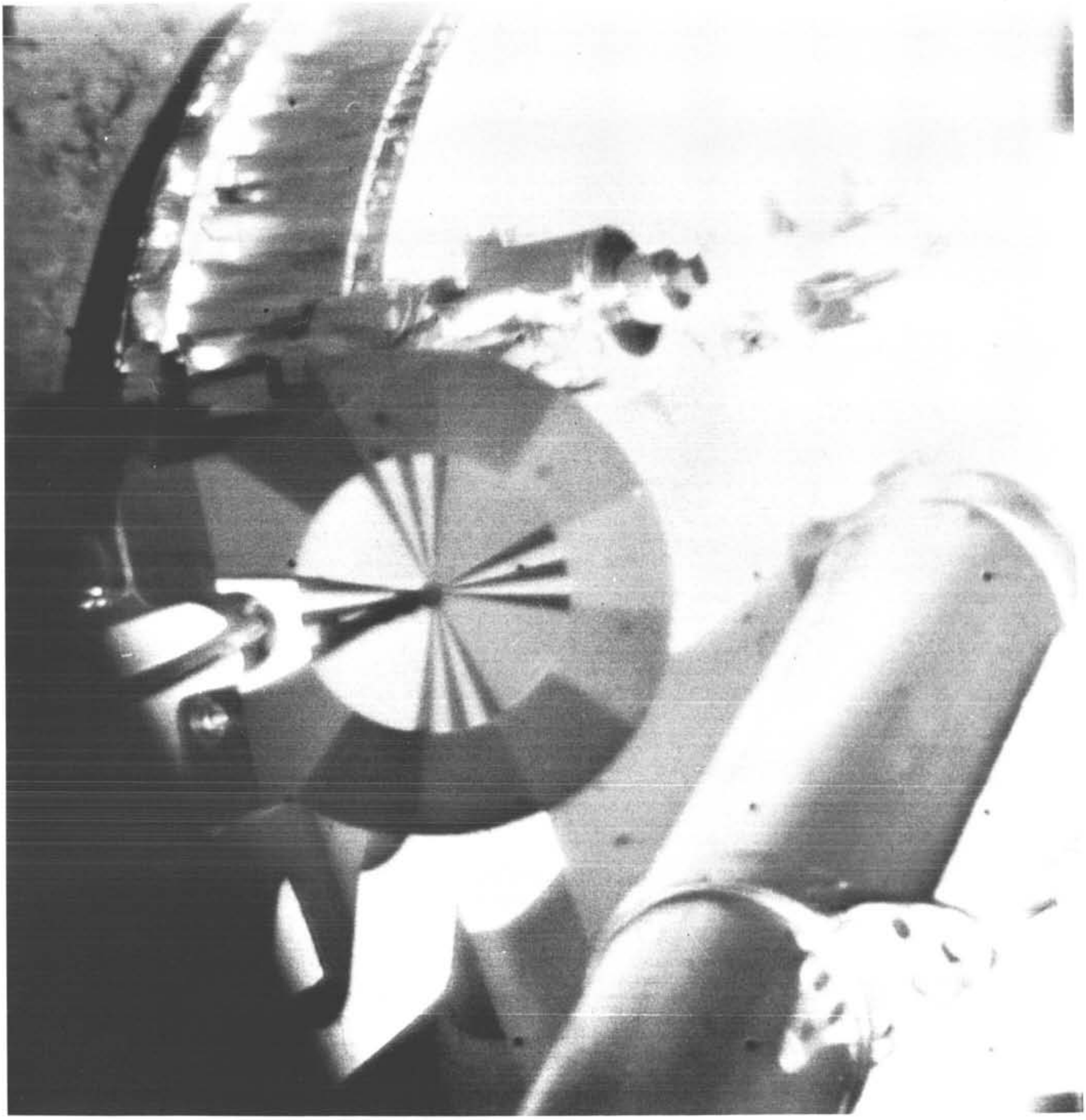
Surveyor I-42



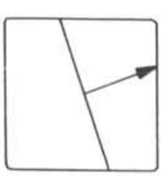
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(42)	157	14 23 40	− 60	−62.74	2.18	F11.1	N	BLU	13371



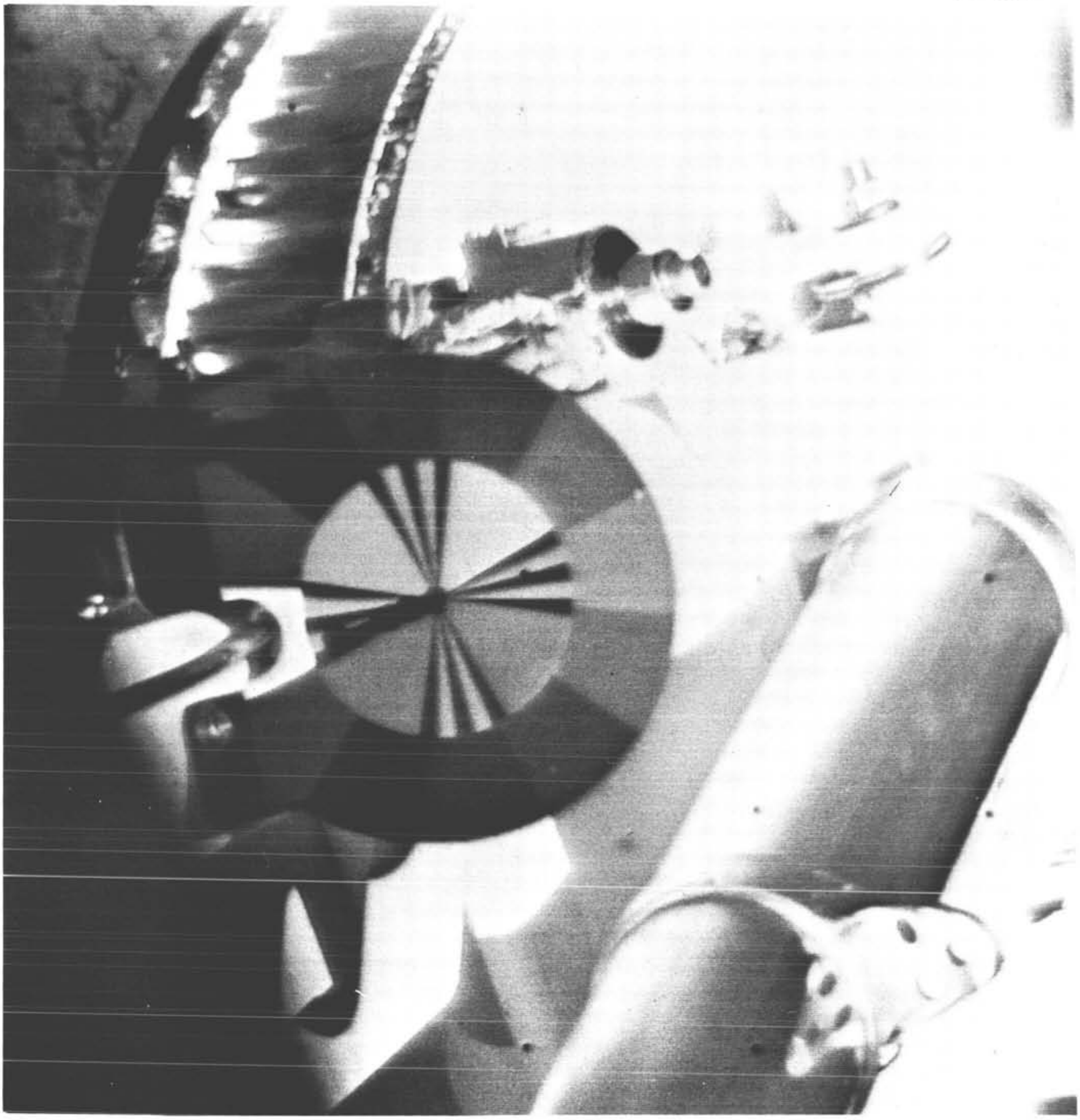
Surveyor I-43



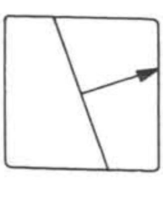
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(43)	157	14 24 25	− 60	−62.74	2.18	F11.1	N	GRN	13376



Surveyor I-44

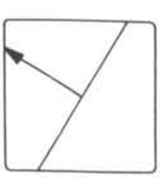


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(44)	157	14 25 06	− 60	−62.74	2.18	F 8.2	N	RED	13377

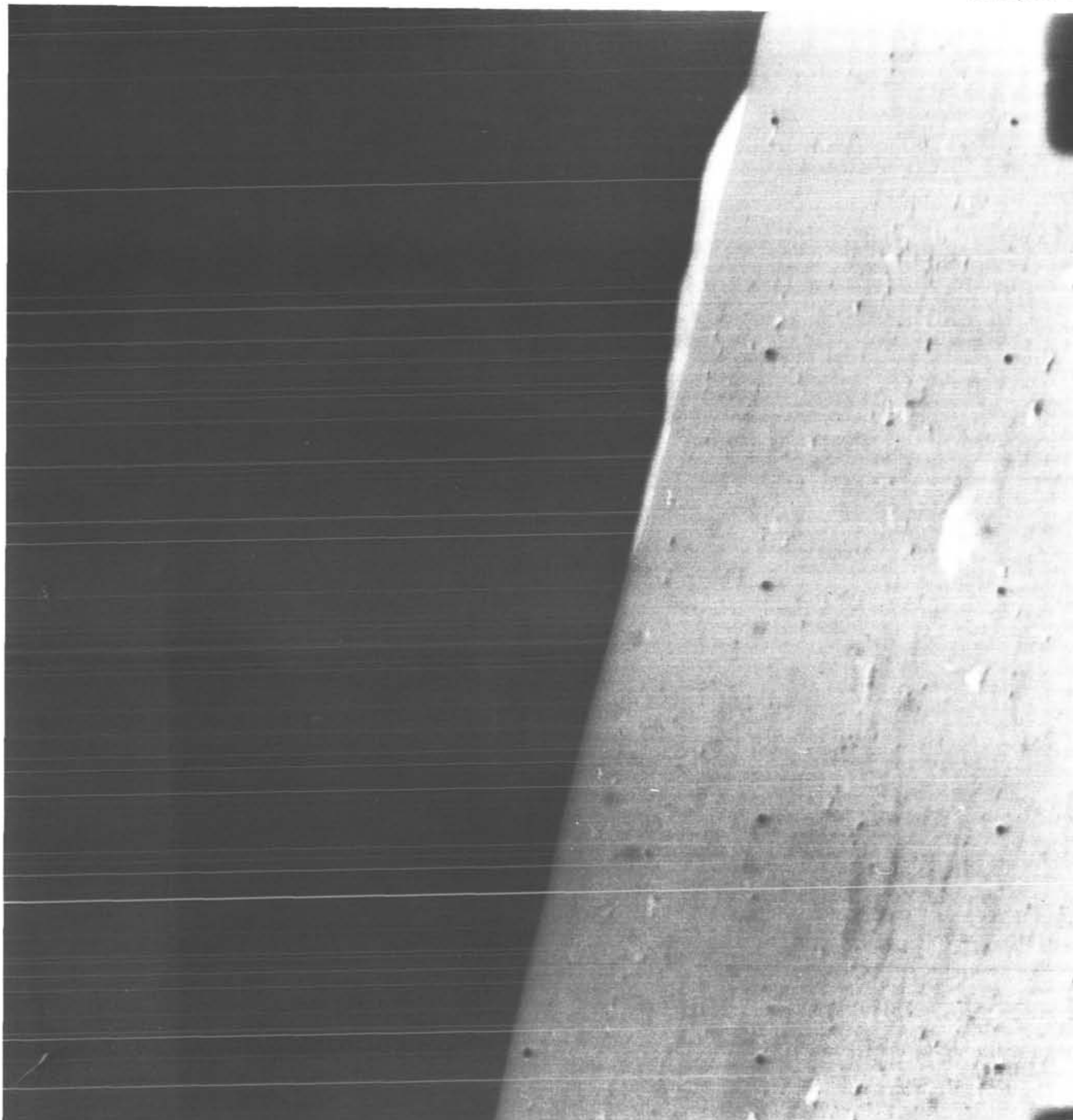


Surveyor I-45

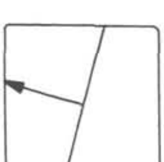
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(45)	158	10 09 01	60	−28.02	3.47	F .	W	CLR	. . . . .



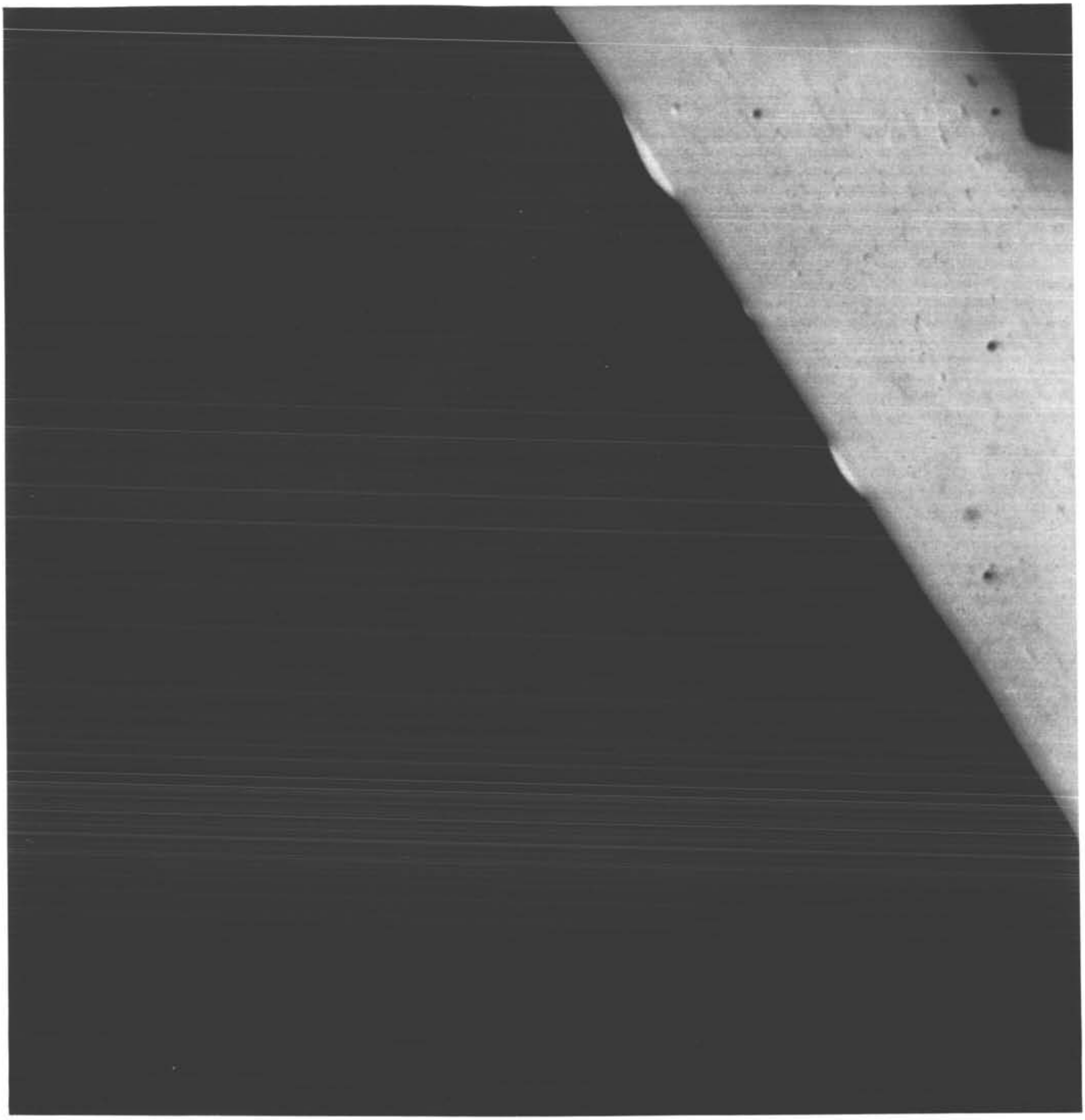
Surveyor I-46



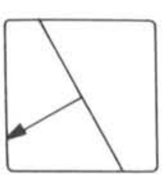
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(46)	158	10 09 50	72	21.58	3.47	F .	W	CLR	. . . . .



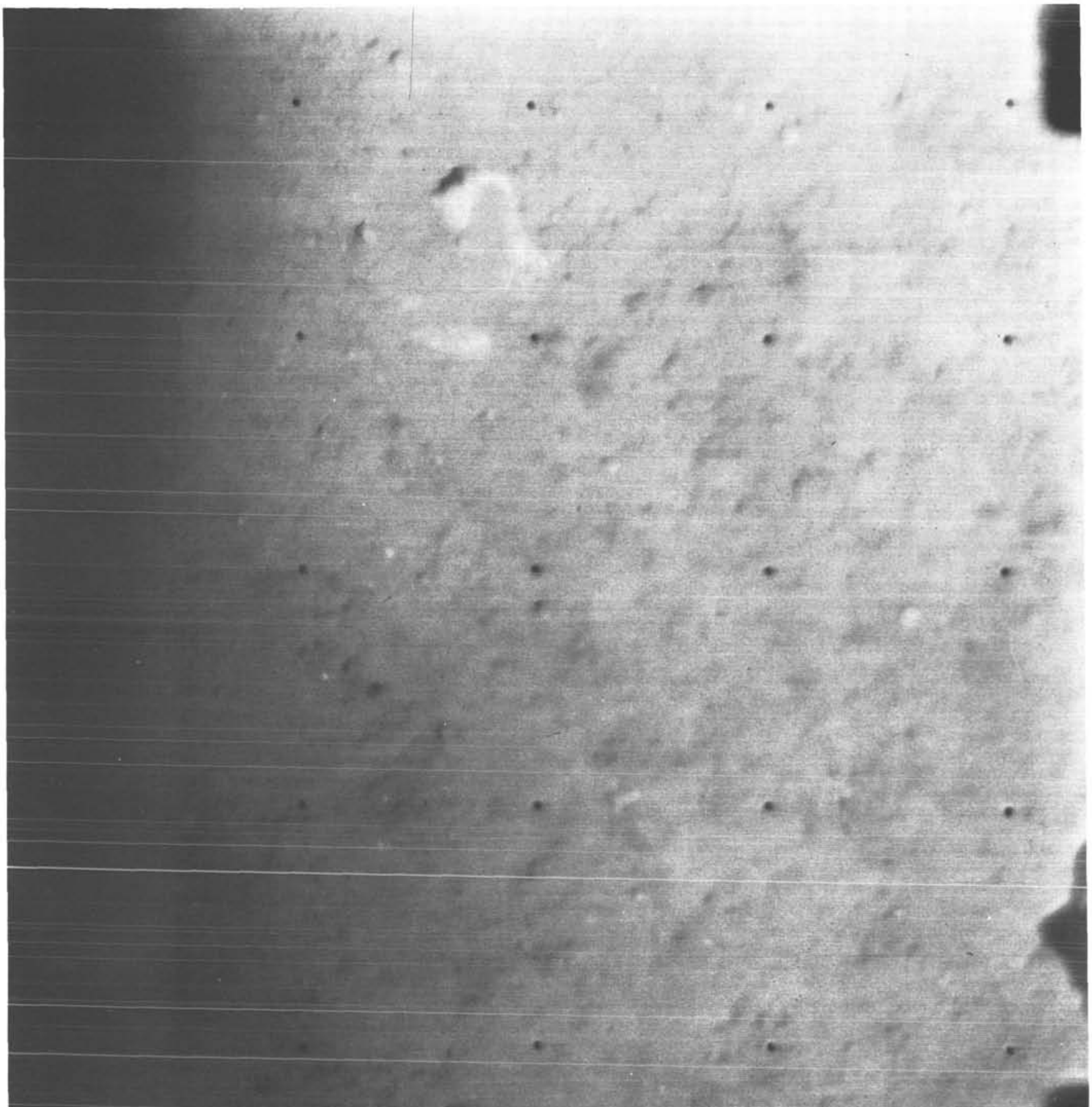
Surveyor I- 47



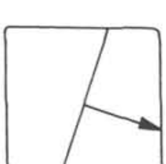
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(47)	158	10 11 31	108	16.62	3.47	F .	W	CLR	. . . . .



Surveyor I-48

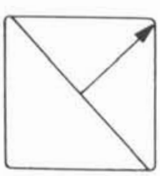


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(48)	158	11 07 16	−102	−62.74	2.26	F 6.8	N	BLU	13427

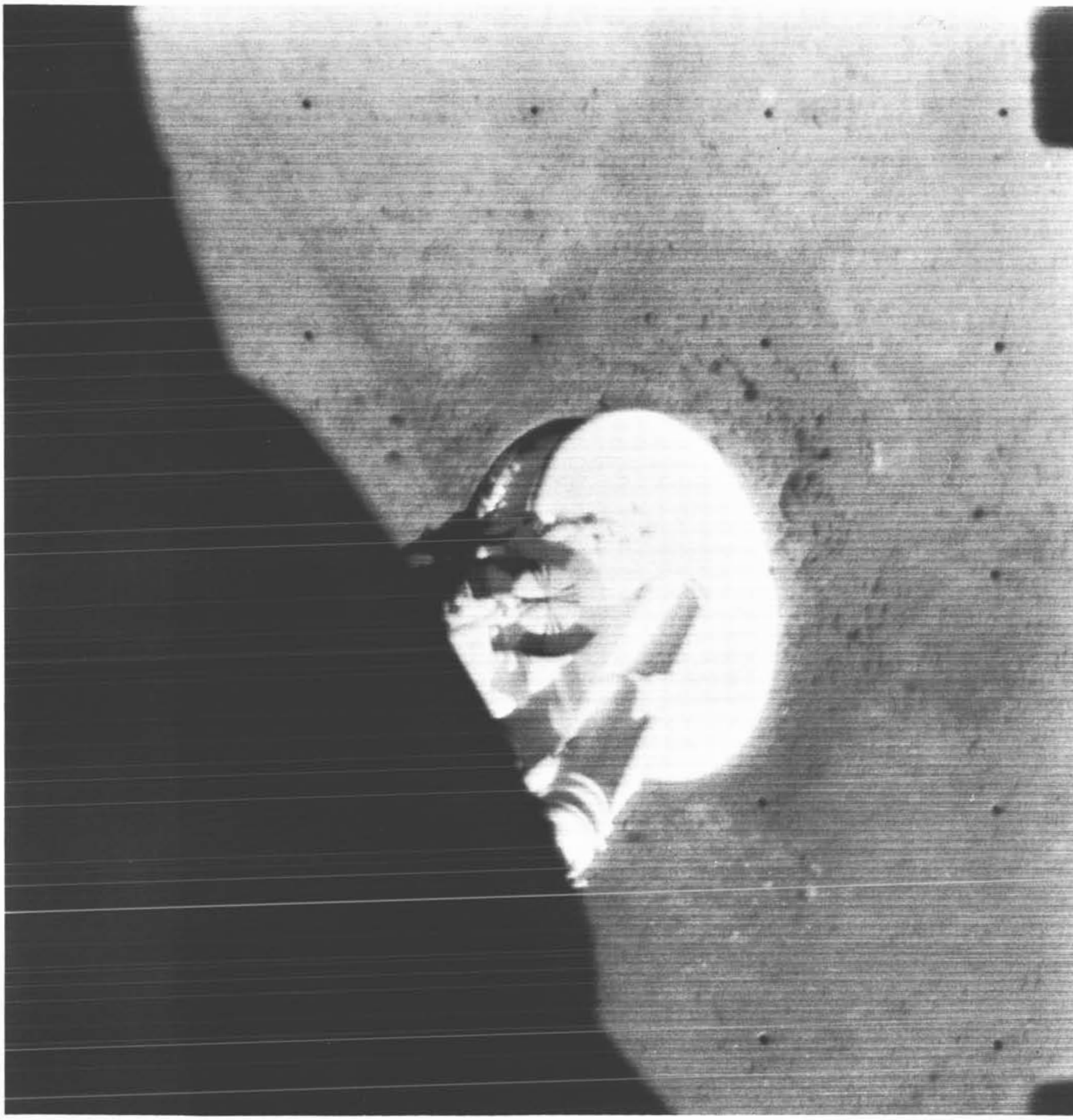


Surveyor I-49

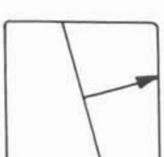
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(49)	158	14 16 07	− 33	− 3.22	18.55	F 6.8	N	GRN	14611



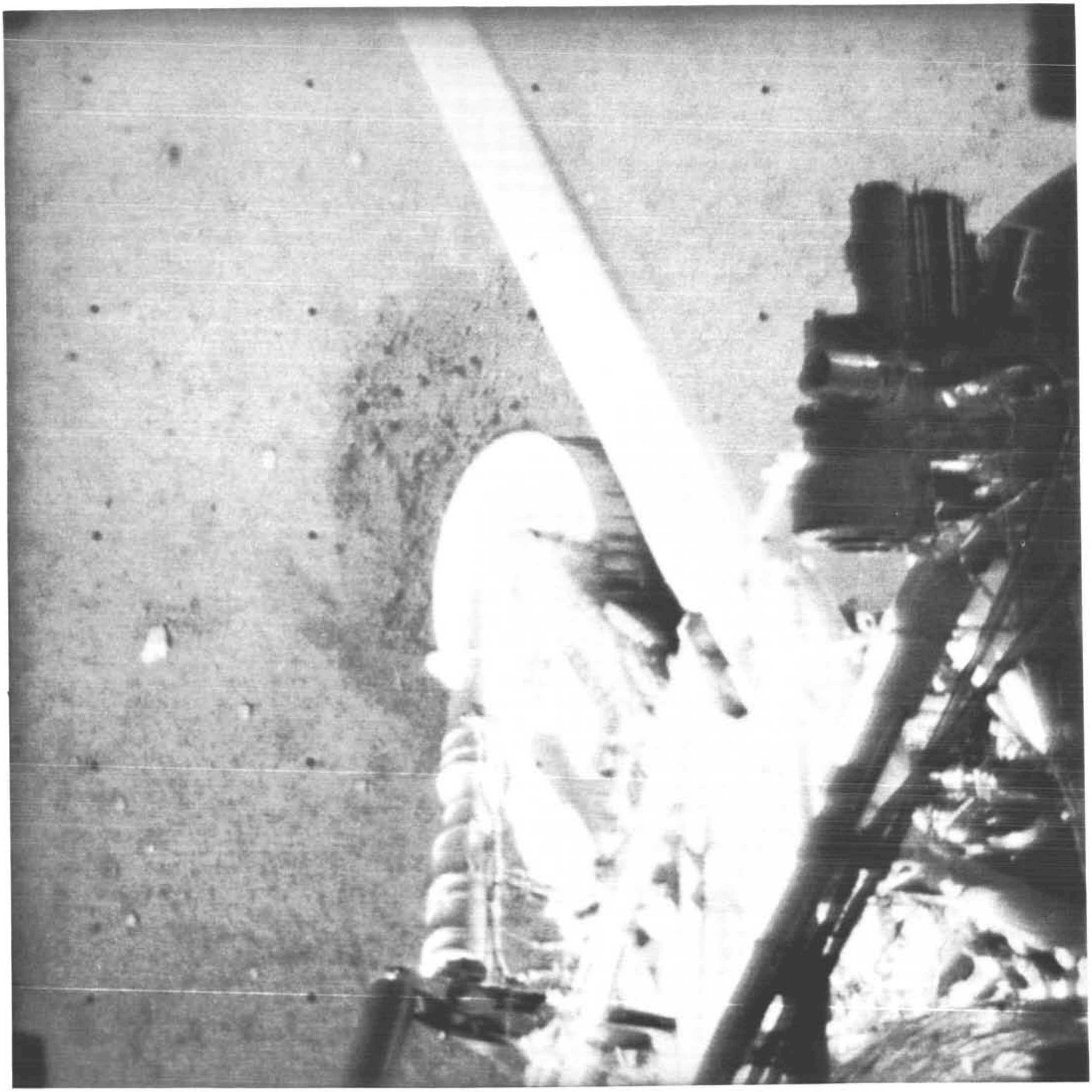
Surveyor I-50



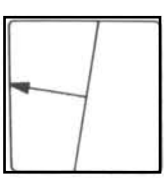
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(50)	158	15 25 55	− 60	−62.74	2.44	F13.1	W	CLR	15203



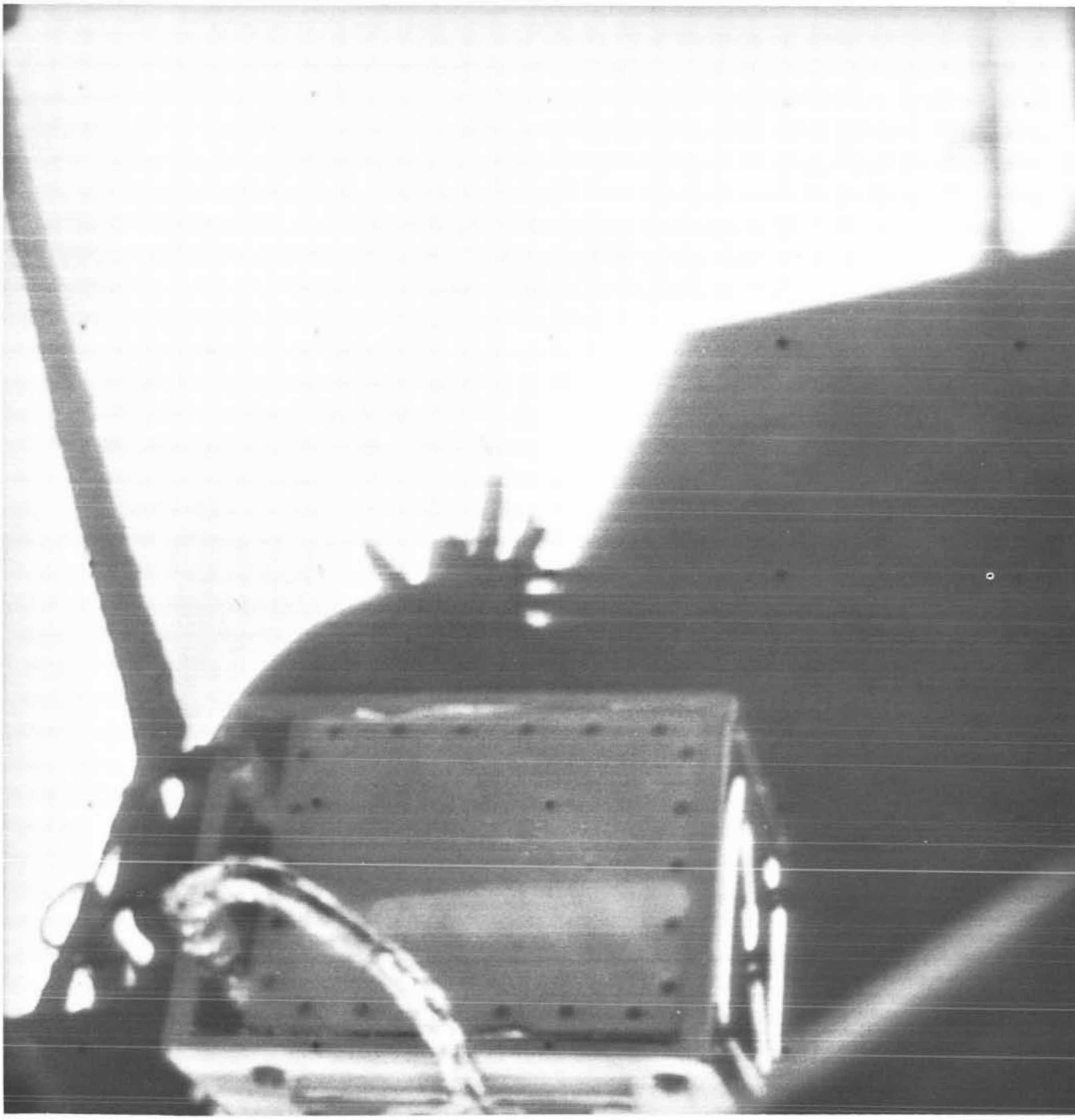
Surveyor I-51



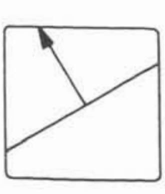
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(51)	158	15 39 49	78	−23.06	3.47	F14.6	W	CLR	15217



Surveyor I-52

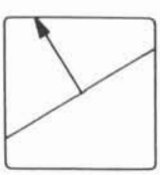


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(52)	161	09 37 31	36	−42.90	2.18	F 5.0	W	CLR	22106

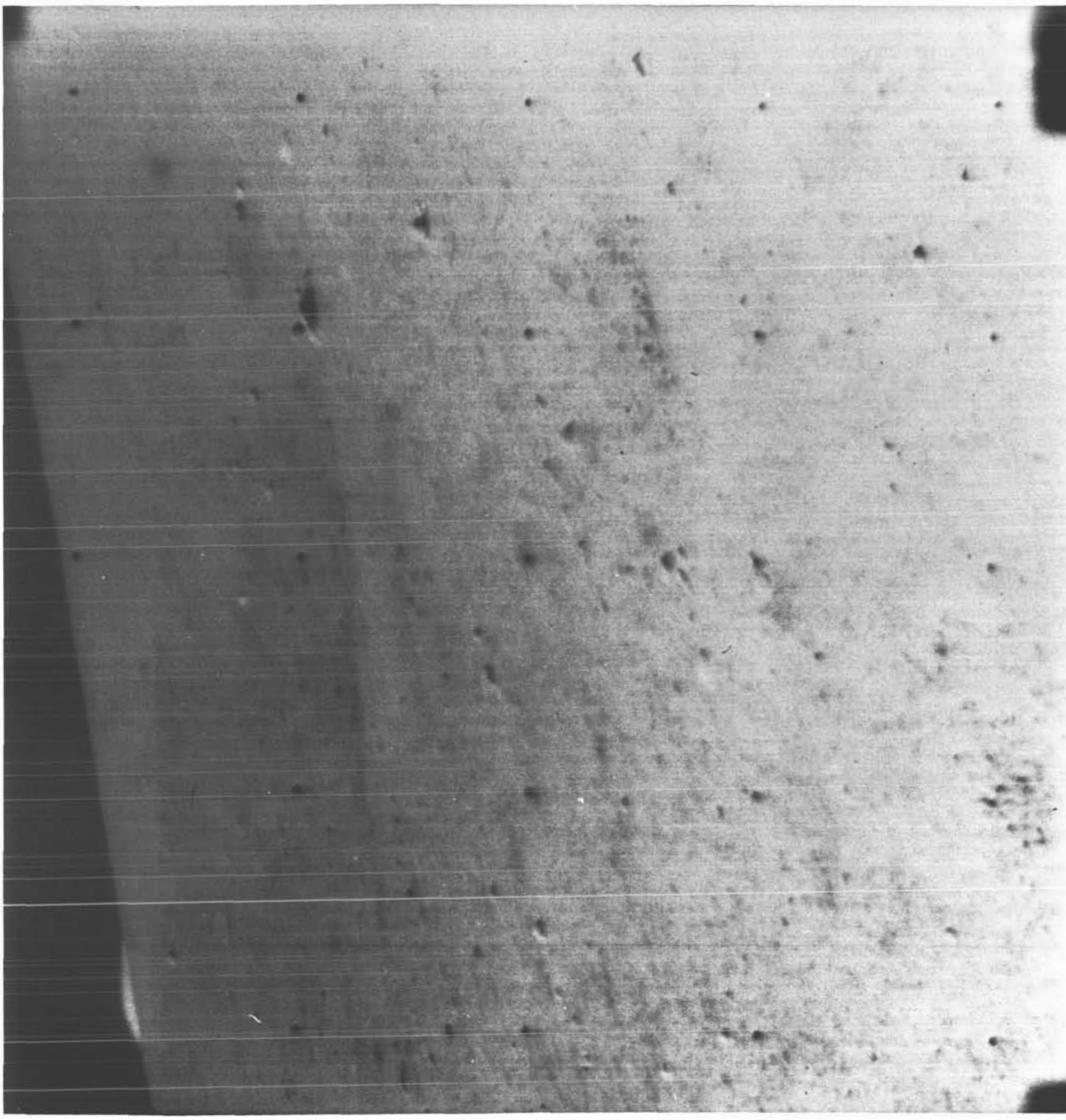


Surveyor I-53

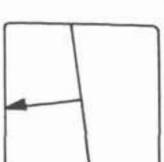
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(53)	161	09 37 38	36	−28.02	2.18	F 7.3	W	CLR	22107



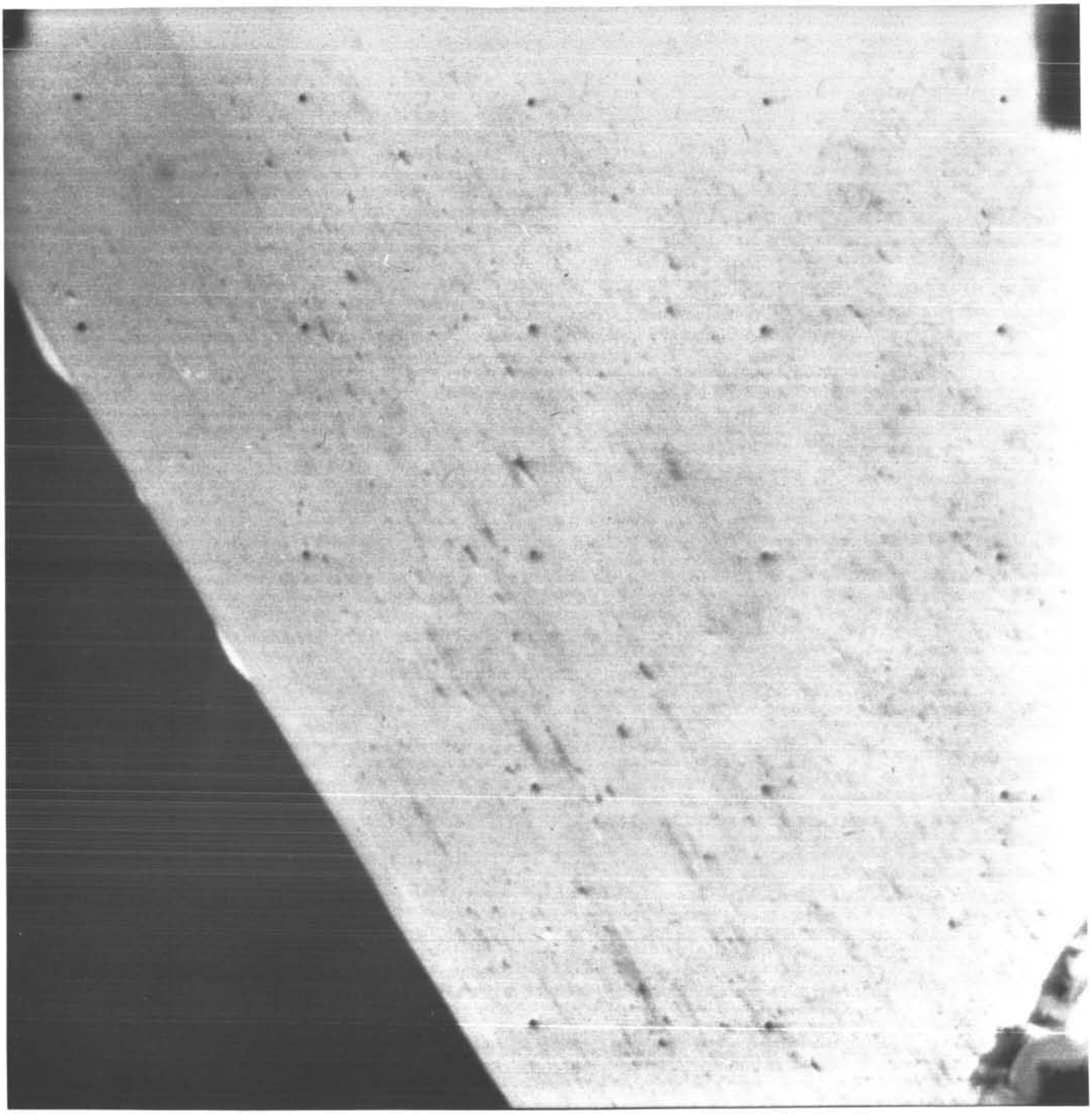
Surveyor I-54



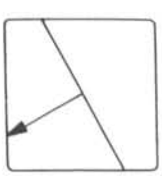
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(54)	161	09 44 15	90	1.74	2.18	F 6.6	W	CLR	22133



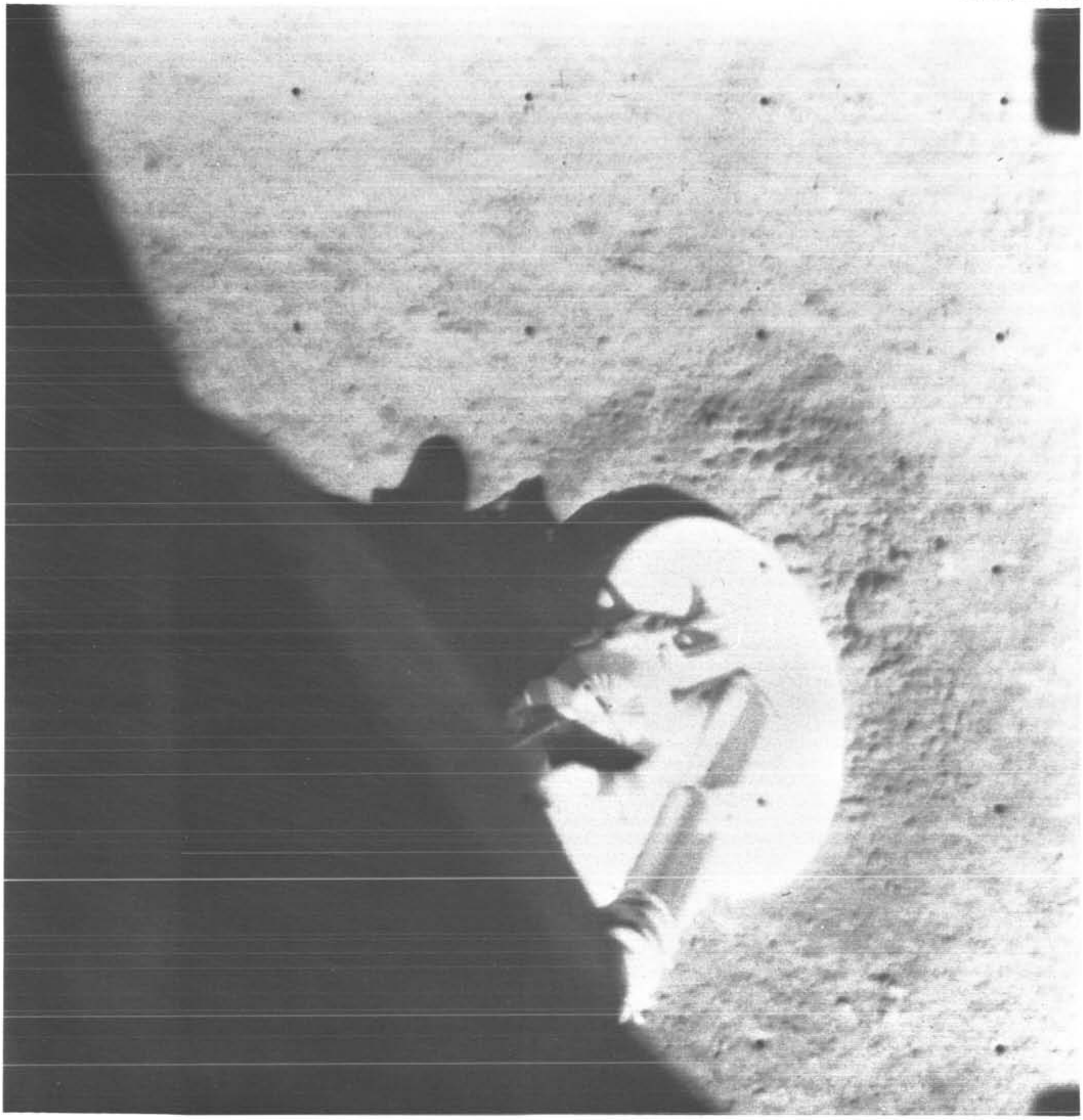
Surveyor I-55



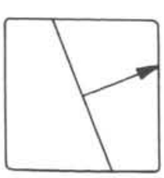
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(55)	161	09 45 12	108	1.74	2.18	F 6.2	W	CLR	15336



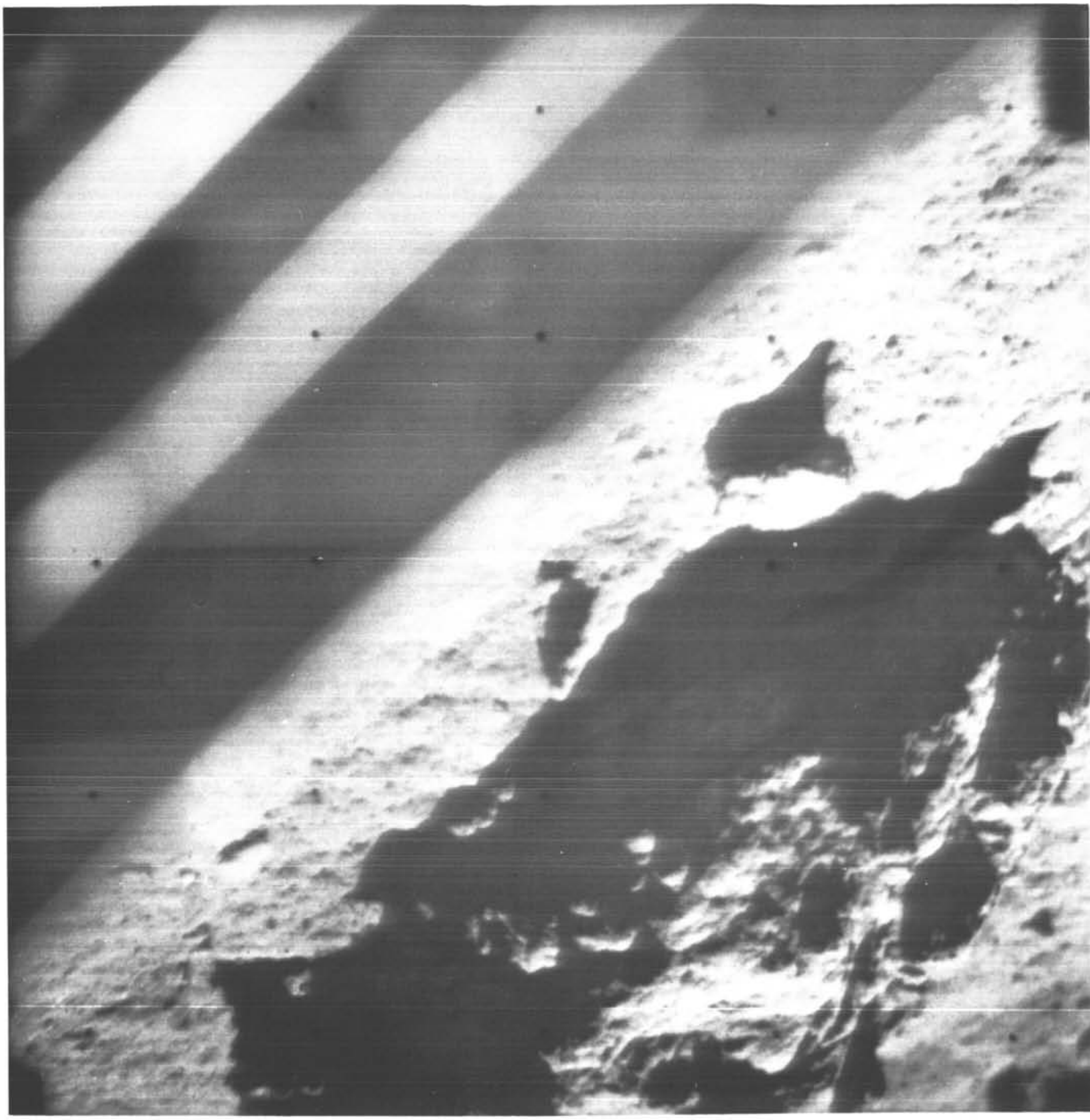
Surveyor I-56



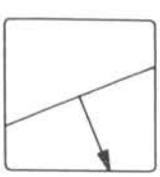
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(56)	161	09 47 32	− 54	−62.74	2.18	F 8.8	W	CLR	15357



Surveyor I- 57

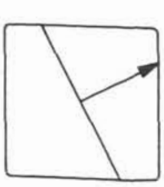


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(57)	161	10 02 30	−168	−32.98	5.03	F 4.0	N	RED	15444

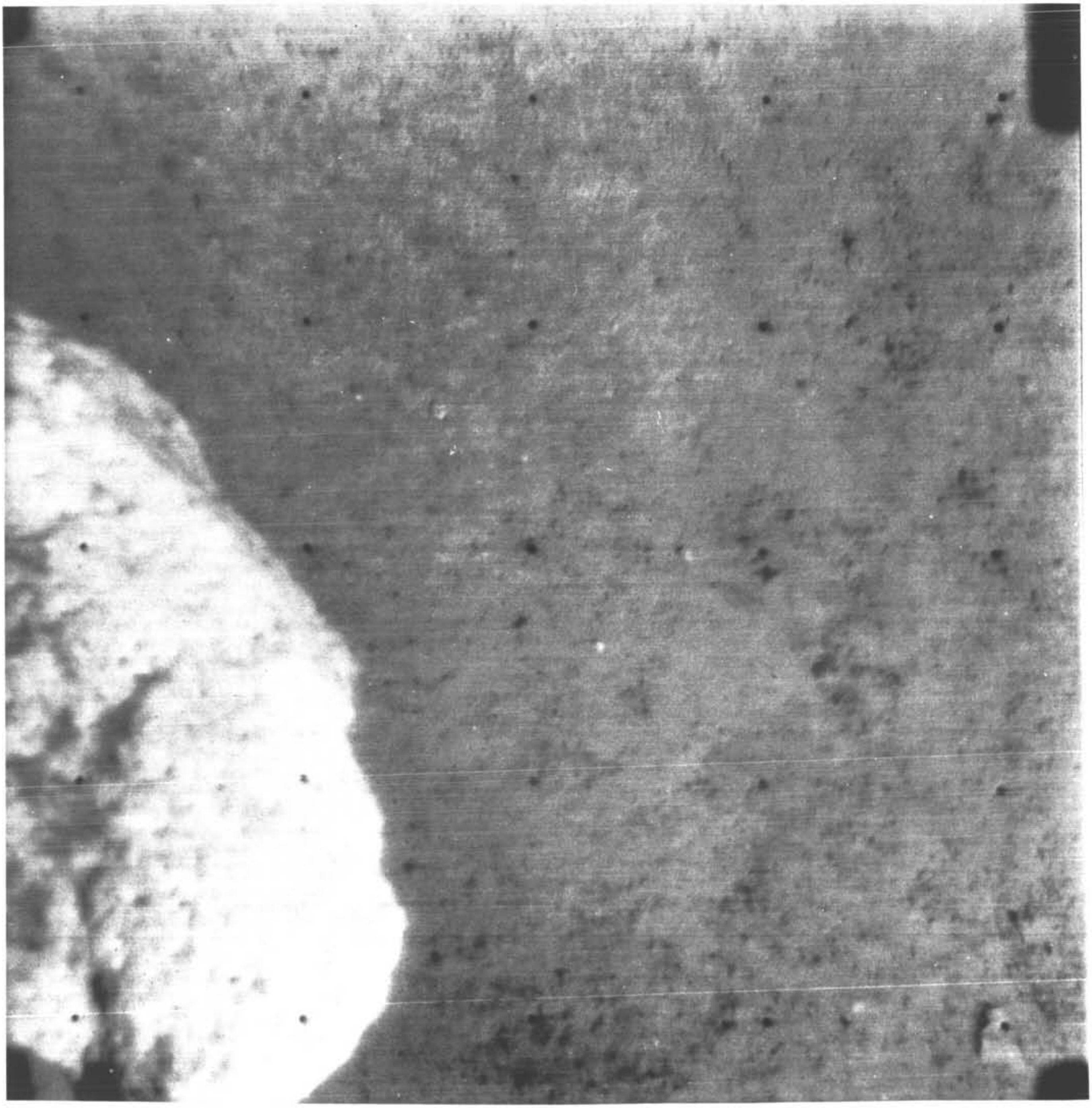


Surveyor I-58

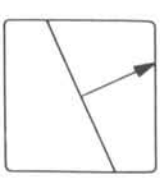
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(58)	161	10 38 18	− 48	−28.02	4.63	F 5.8	N	RED	22306



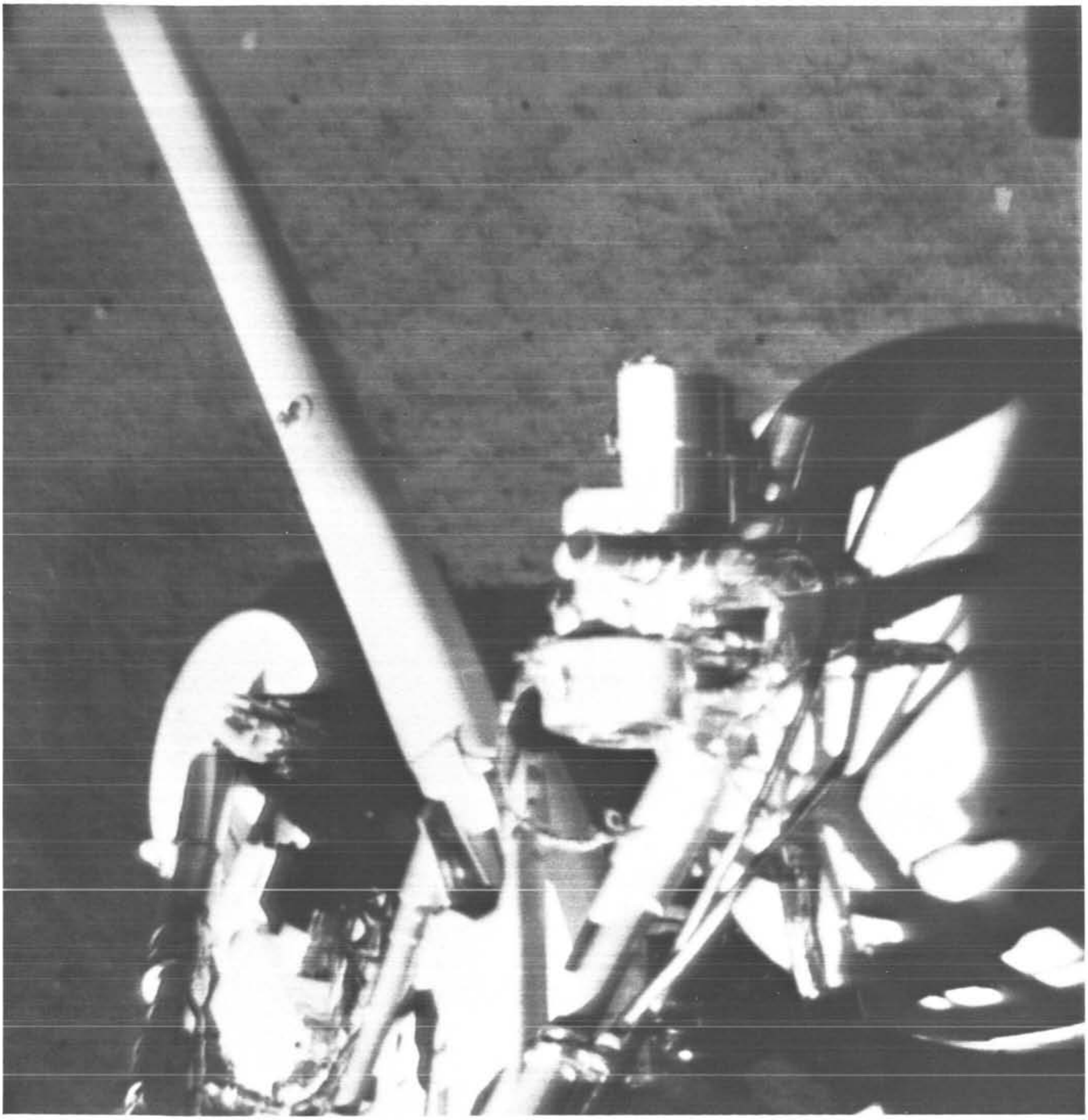
Surveyor I-59



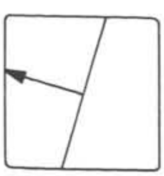
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(59)	161	10 39 21	− 51	−23.06	5.55	F 8.0	N	BLU	15500



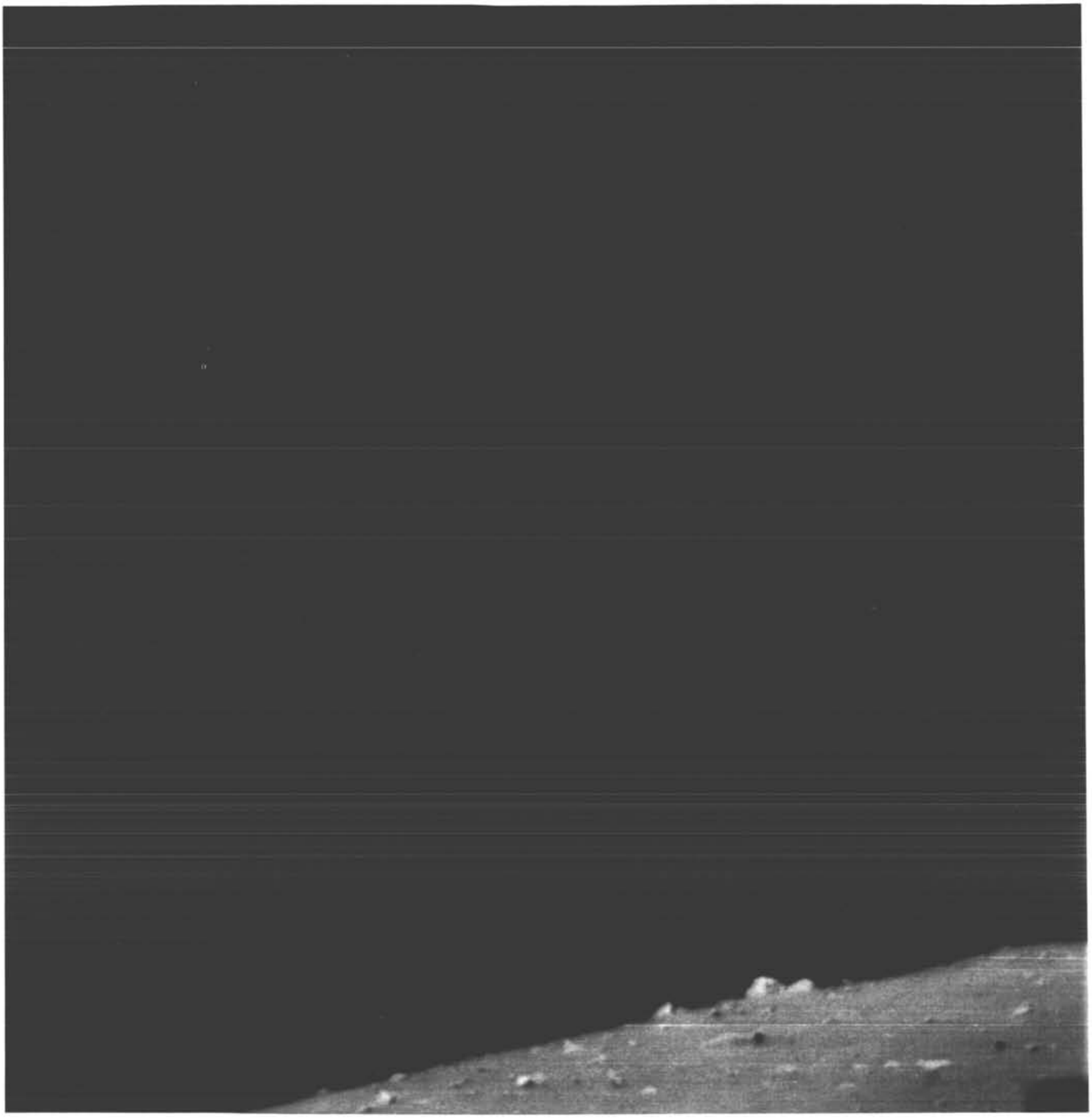
Surveyor I-60



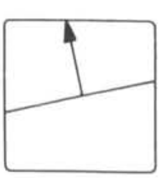
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(60)	161	10 51 53	72	−28.02	2.18	F16.2	W	CLR	22351



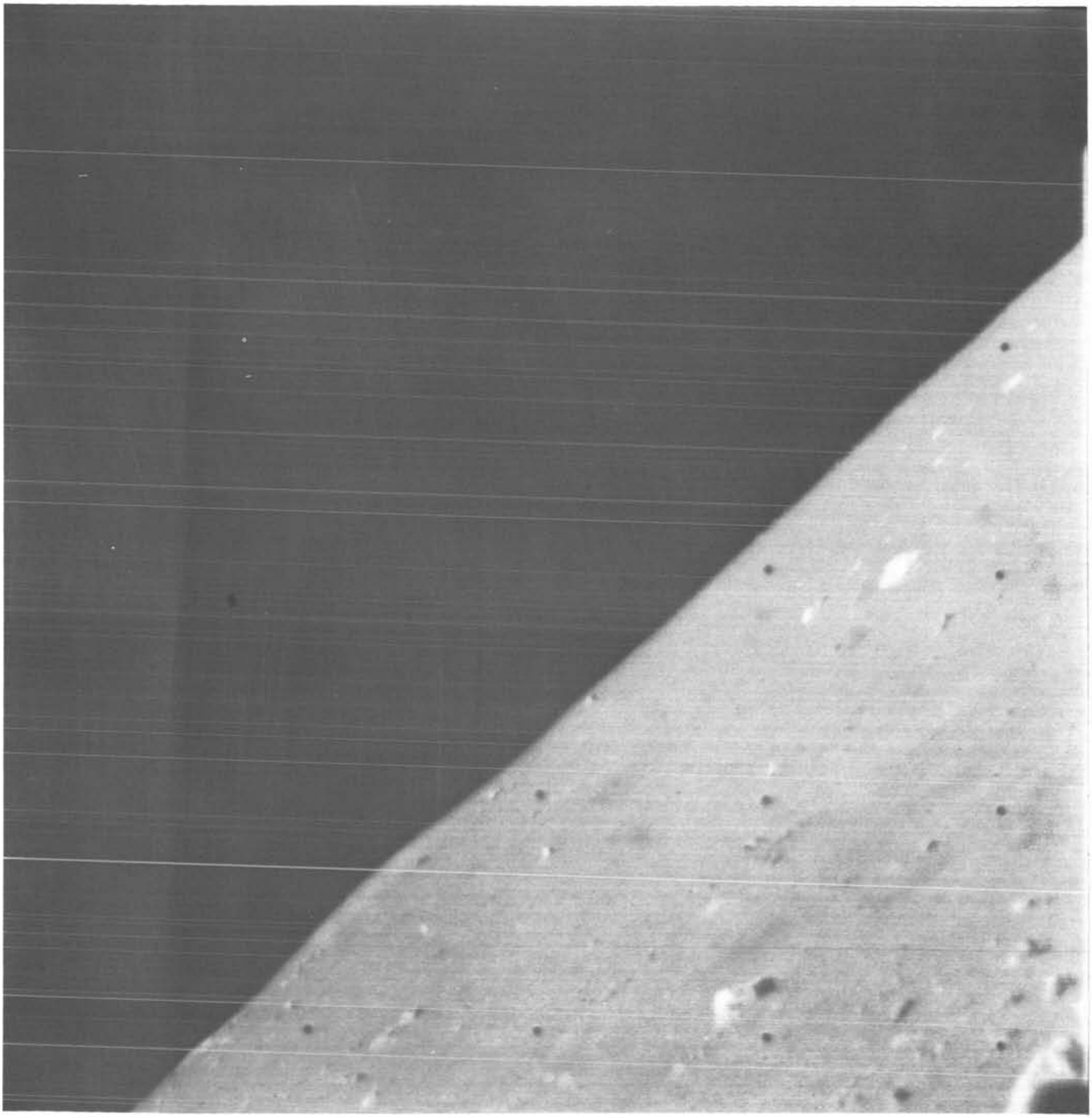
Surveyor I-61



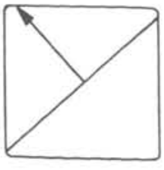
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(61)	161	12 50 33	21	16.62	27.40	F 7.7	N	GRN	26014



Surveyor I-62

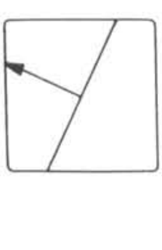


	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(62)	161	13 43 00	45	16.62	27.40	F 7.7	N	BLU	47473

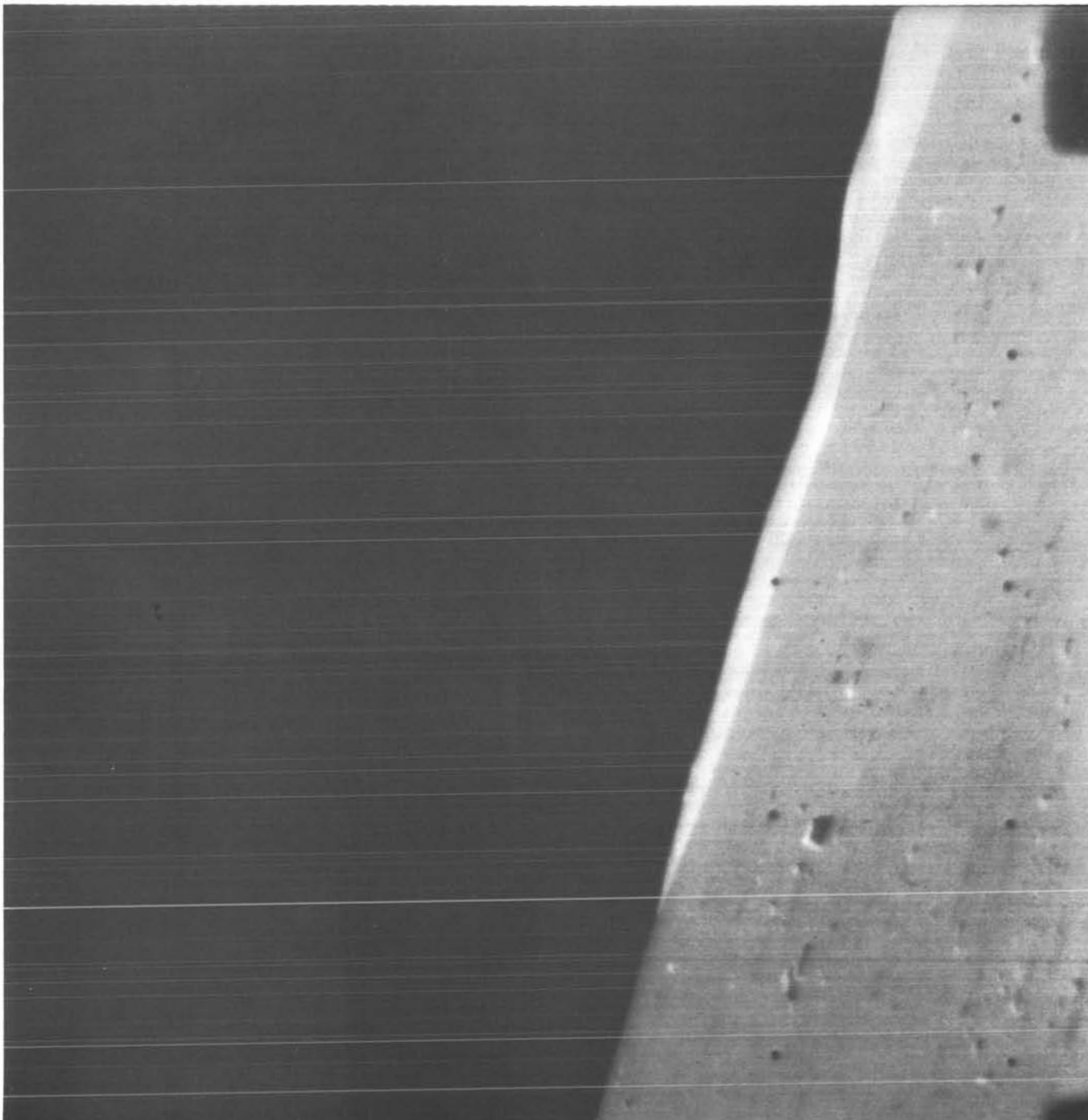


Surveyor I-63

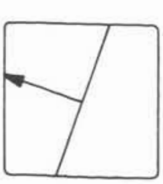
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(63)	161	14 08 28	63	16.62	27.40	F 7.7	N	BLU	47740



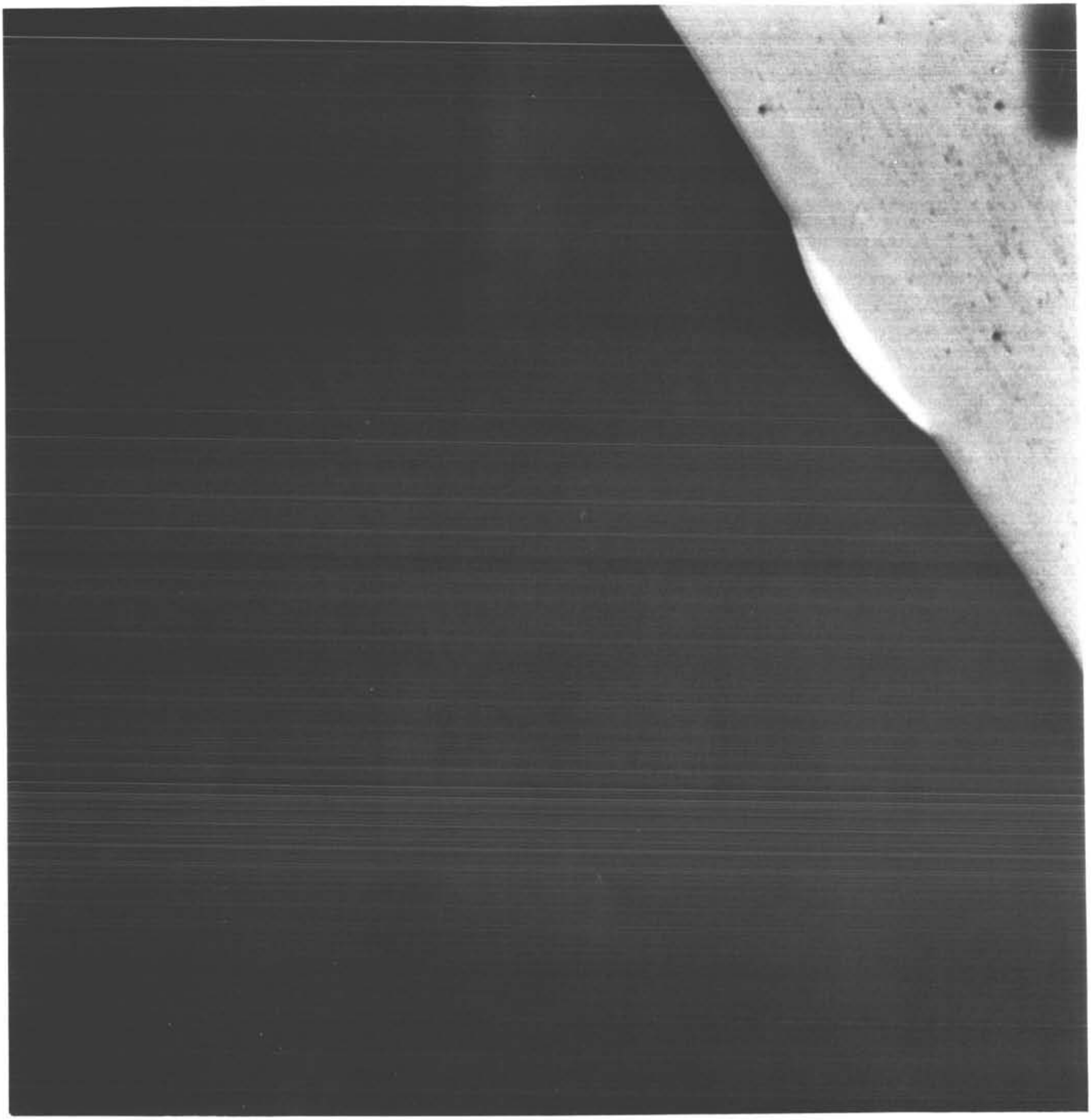
Surveyor I-64



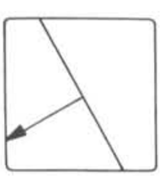
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(64)	161	14 10 23	69	16.62	27.40	F 7.7	N	BLU	27413



Surveyor I-65

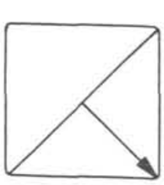


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(65)	161	15 55 45	108	11.66	27.40	F 4.0	N	RED	17604

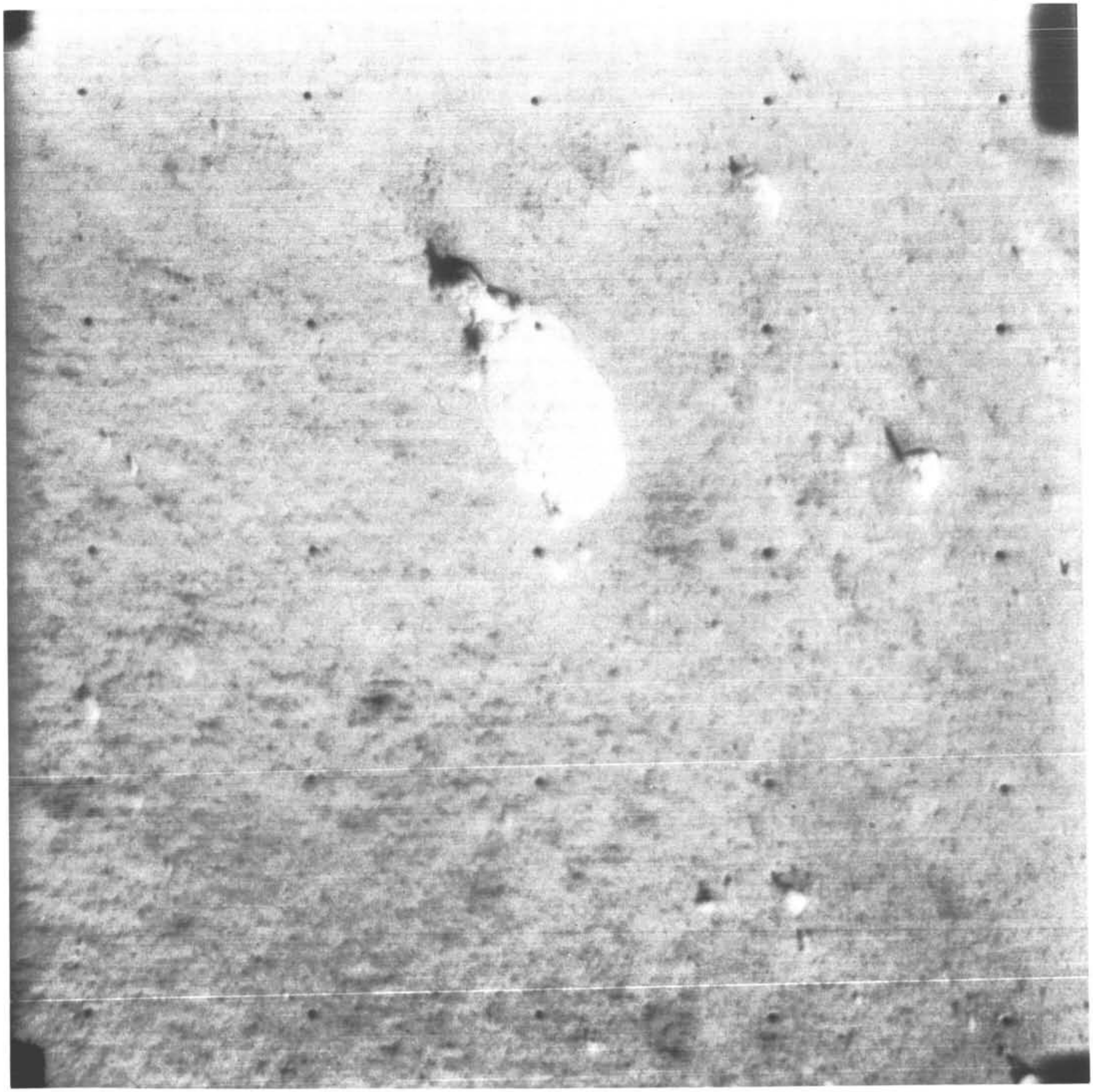


Surveyor I-66

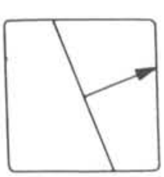
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(66)	161	18 27 59	−138	−18.10	27.40	F 4.0	N	RED	47144



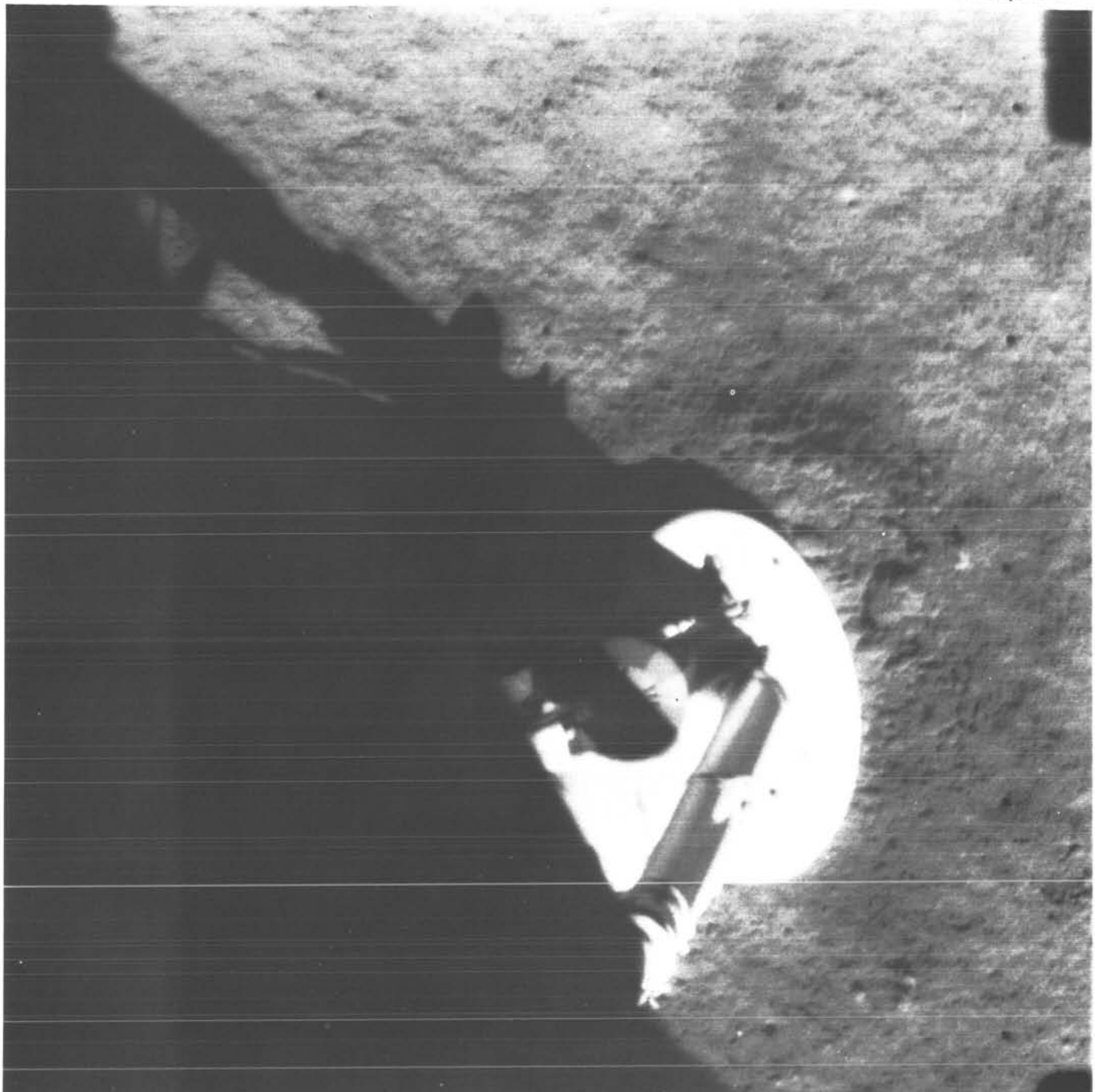
Surveyor I- 67



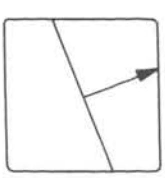
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(67)	162	10 03 24	− 54	−28.02	2.18	F 7.6	W	CLR	22533



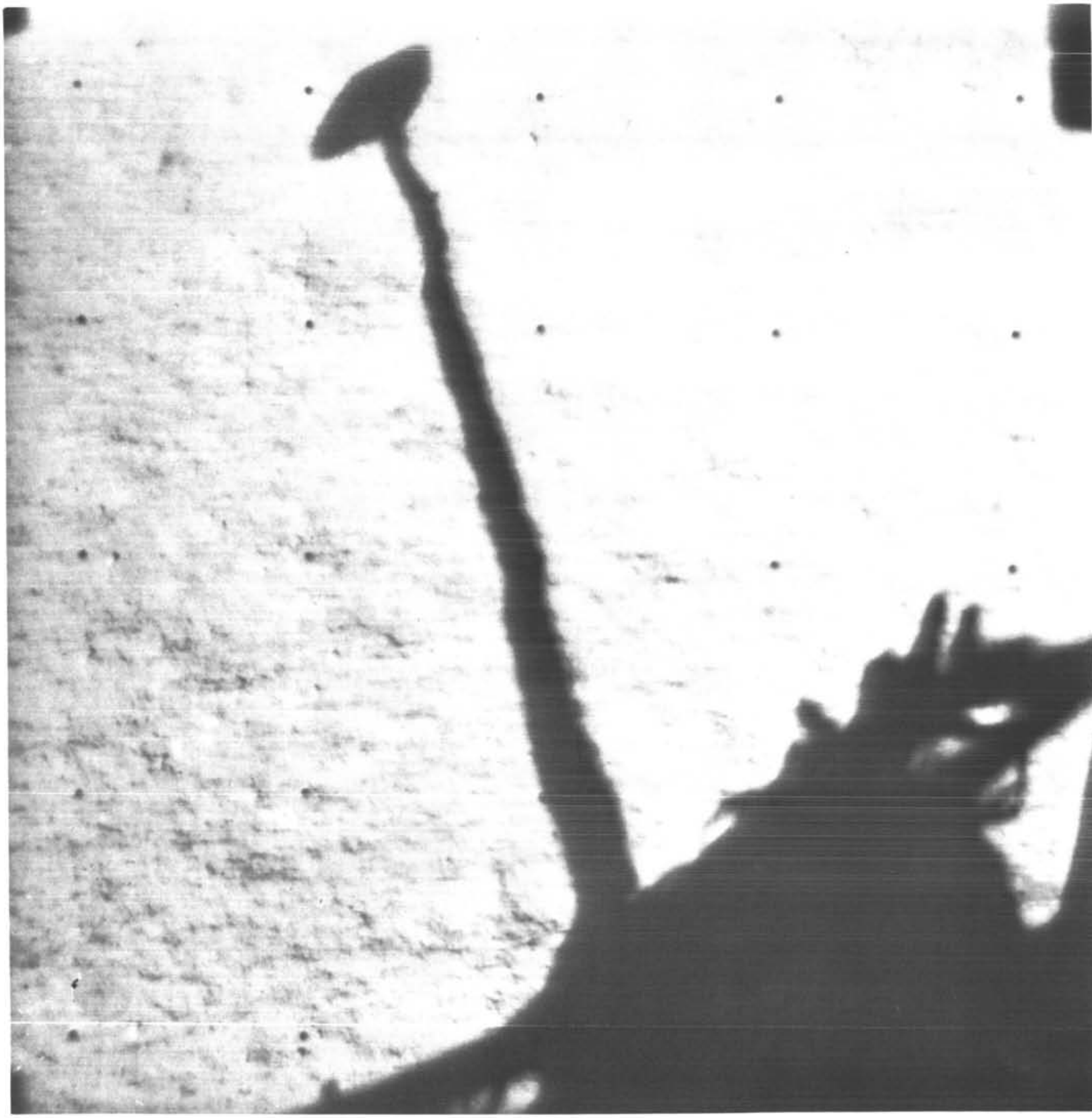
Surveyor I-68



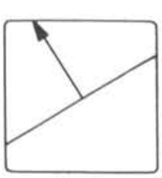
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(68)	162	10 14 32	− 54	−57.78	2.18	F10.1	W	CLR	22535



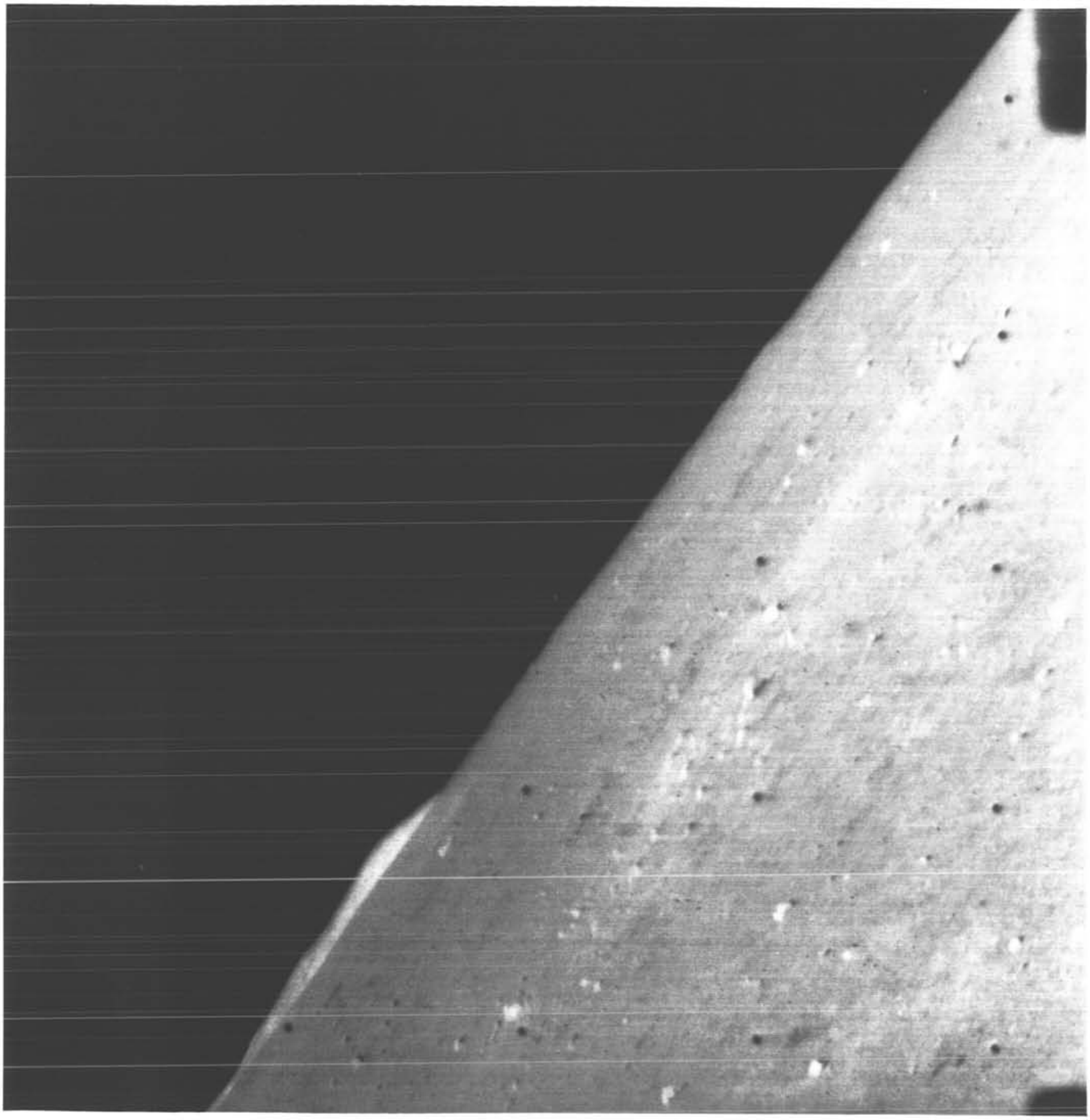
Surveyor I-69



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(69)	162	10 20 03	36	−28.02	2.18	F10.1	W	CLR	22600

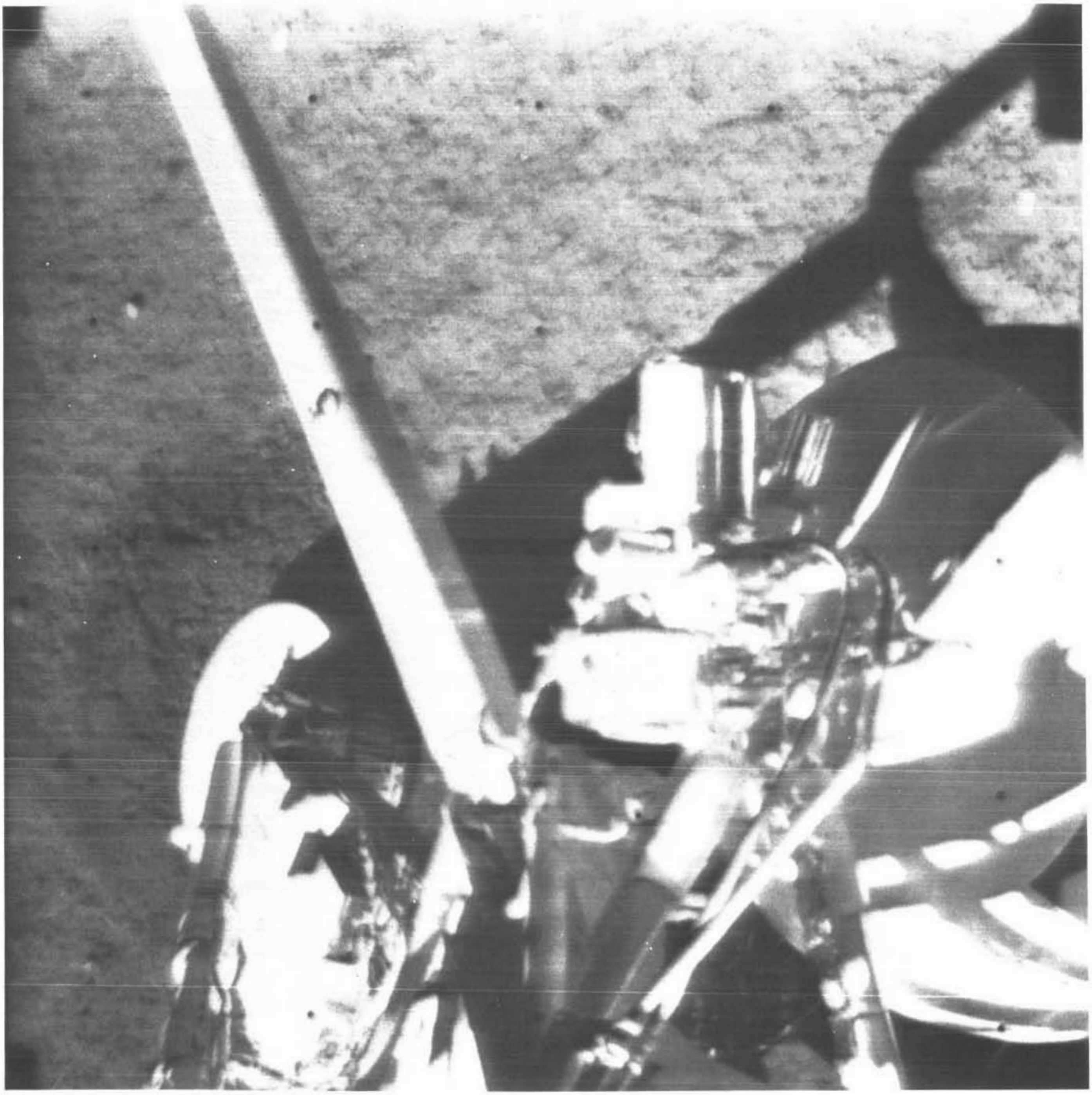


Surveyor I-70

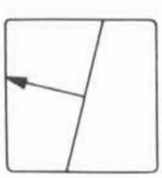


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(70)	162	10 20 48	54	16.62	2.18	F10.1	W	CLR	22606

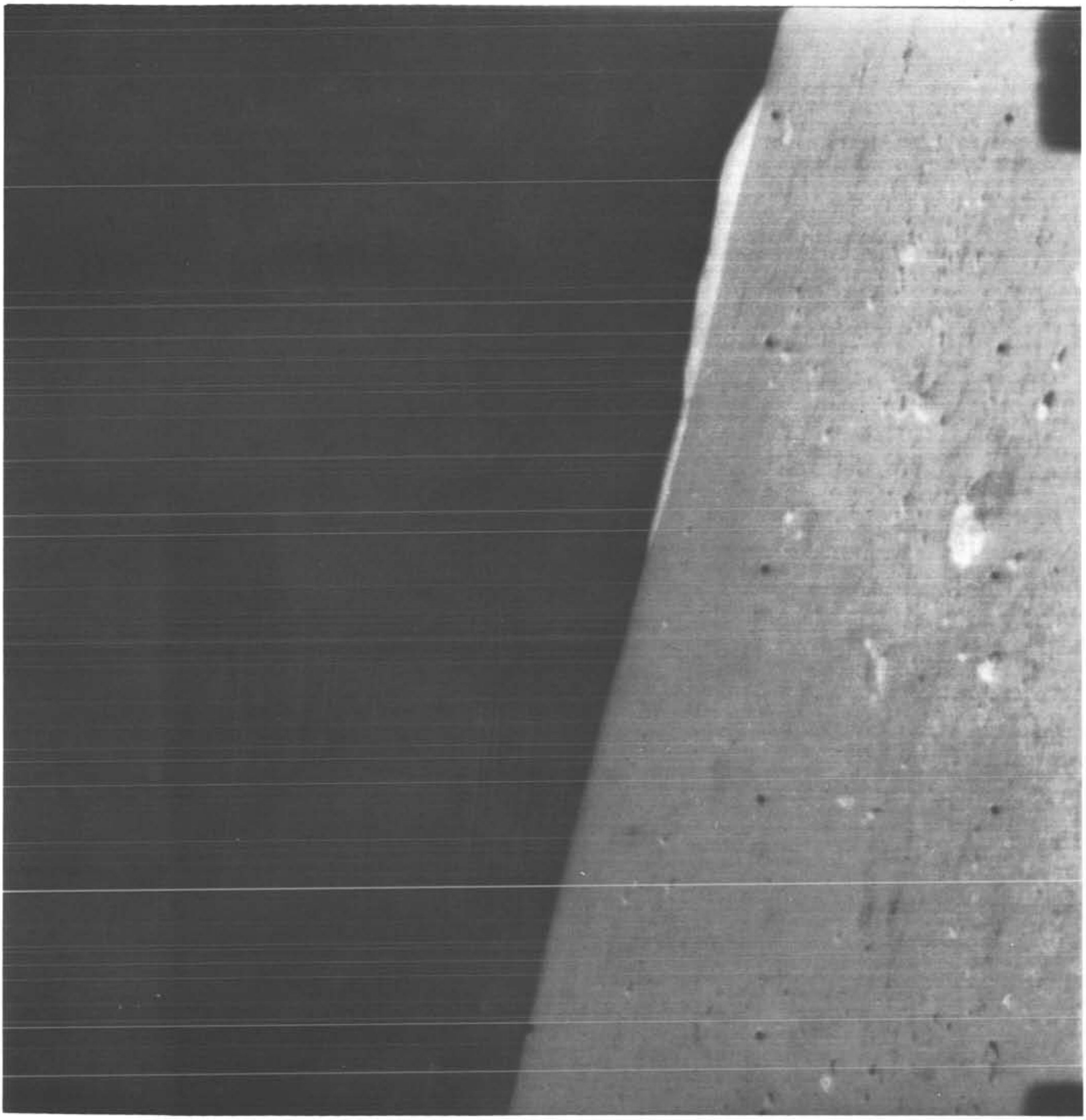
Surveyor I-71



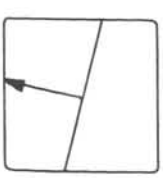
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(71)	162	10 21 32	72	−28.02	2.18	F10.1	W	CLR	22614



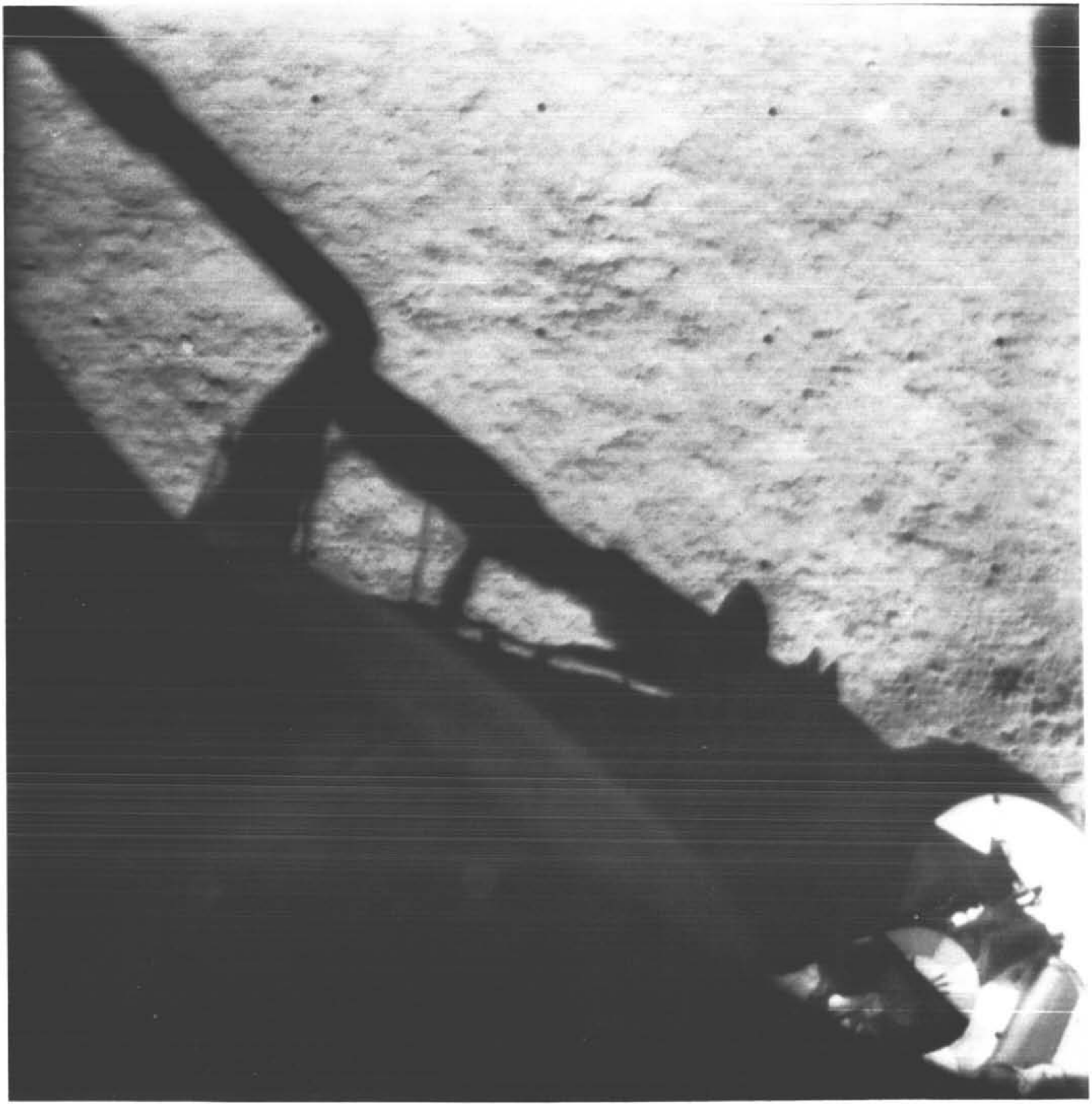
Surveyor I-72



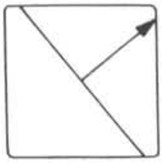
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(72)	162	10 21 55	72	16.62	2.18	F10.1	W	CLR	22617



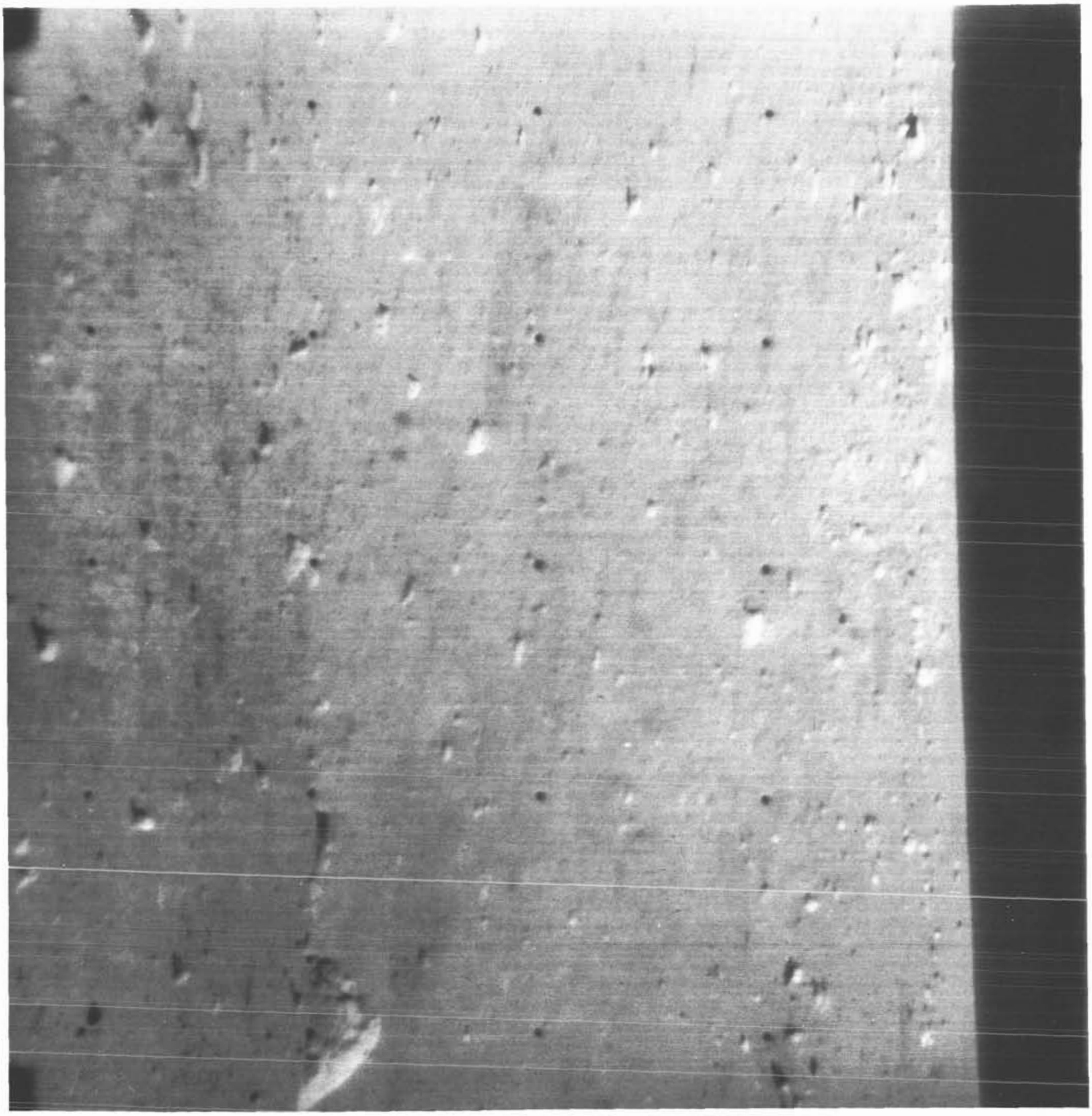
Surveyor I-73



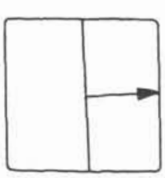
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(73)	162	10 25 26	− 36	−62.74	2.18	F10.1	W	CLR	22652



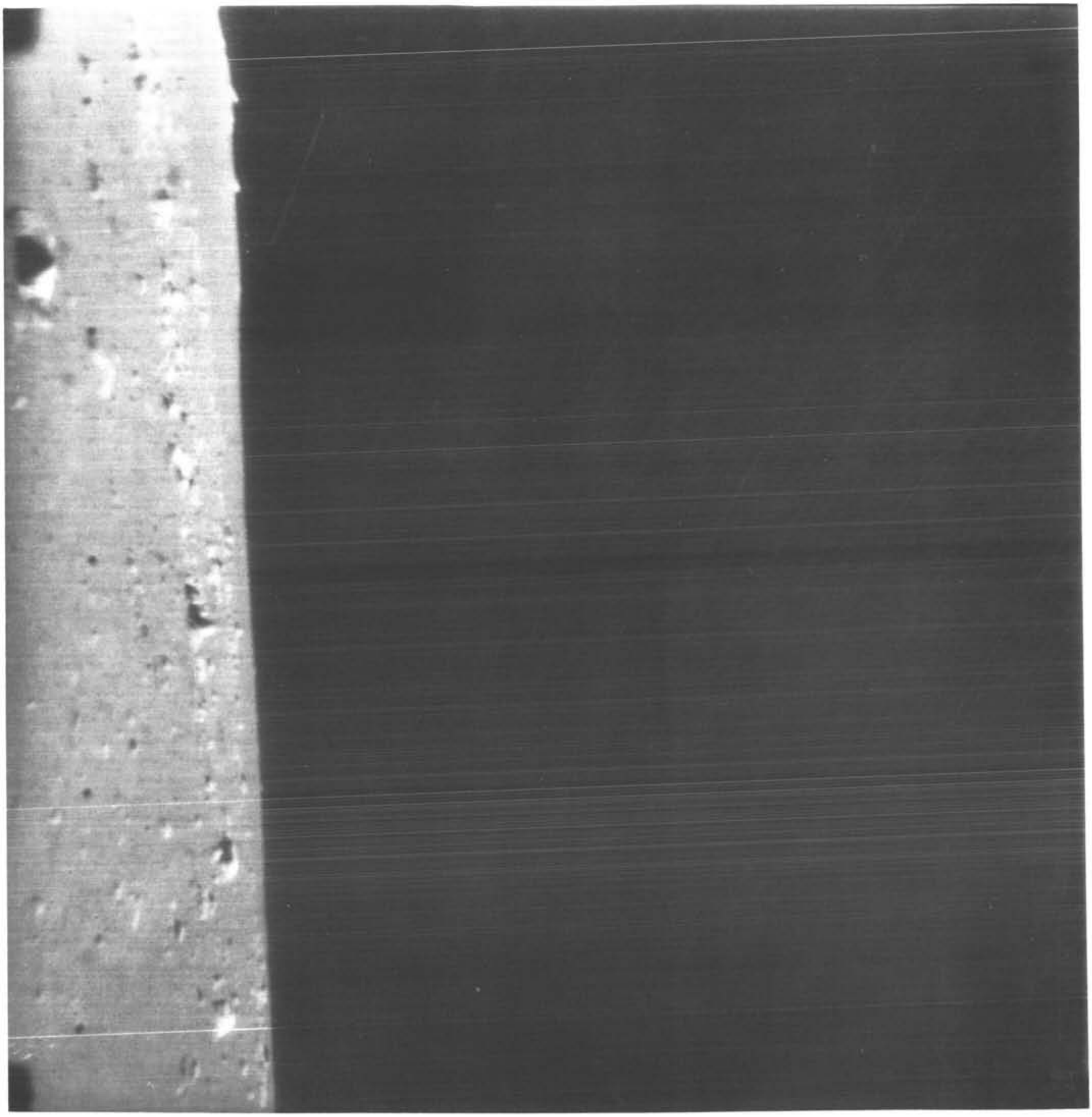
Surveyor I-74



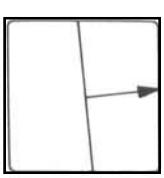
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(74)	162	11 10 39	− 75	−13.14	27.40	F10.1	N	CLR	23273



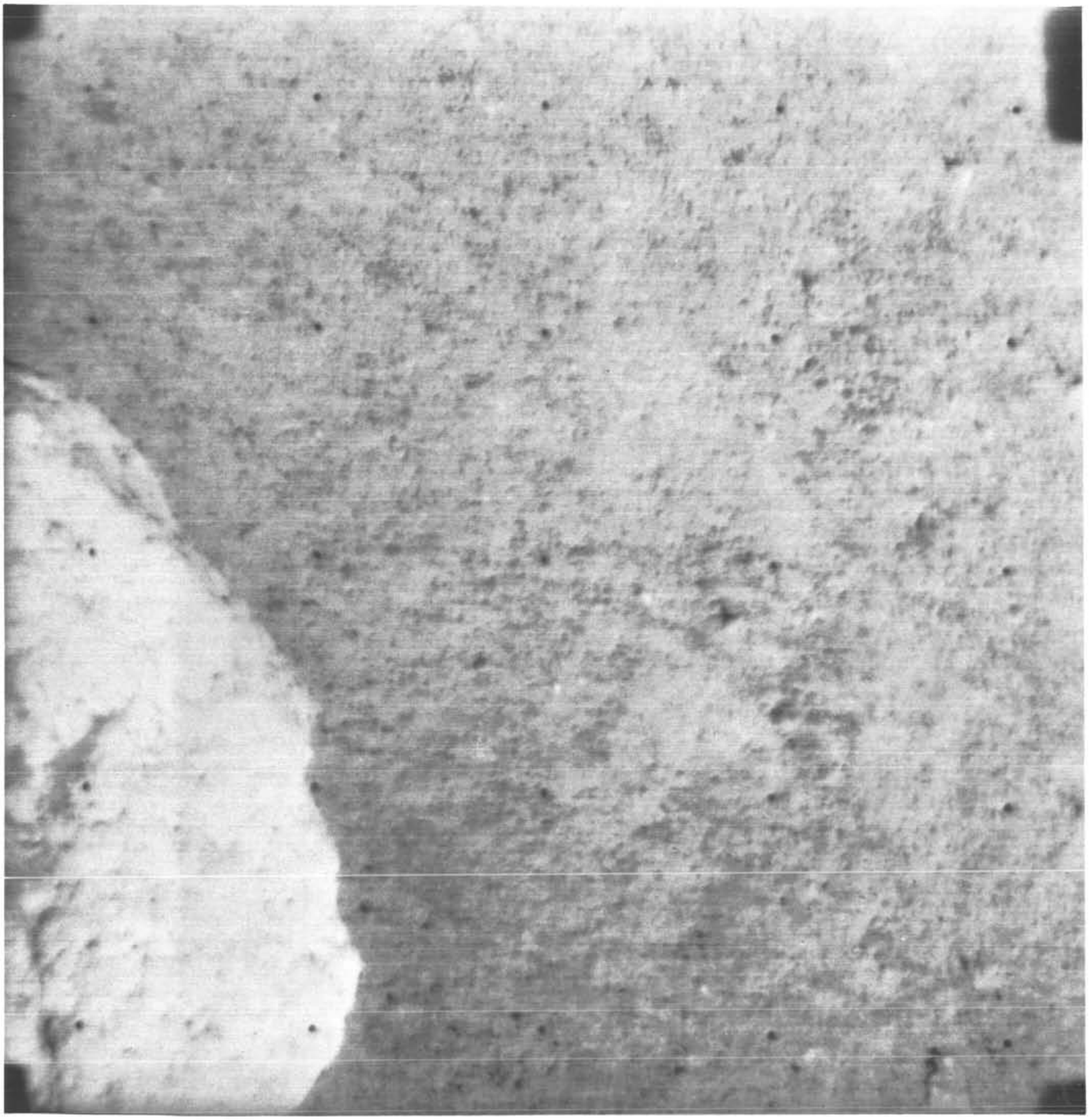
Surveyor I-75



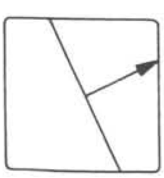
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(75)	162	11 10 44	− 72	− 8.18	27.40	F10.1	N	CLR	23274



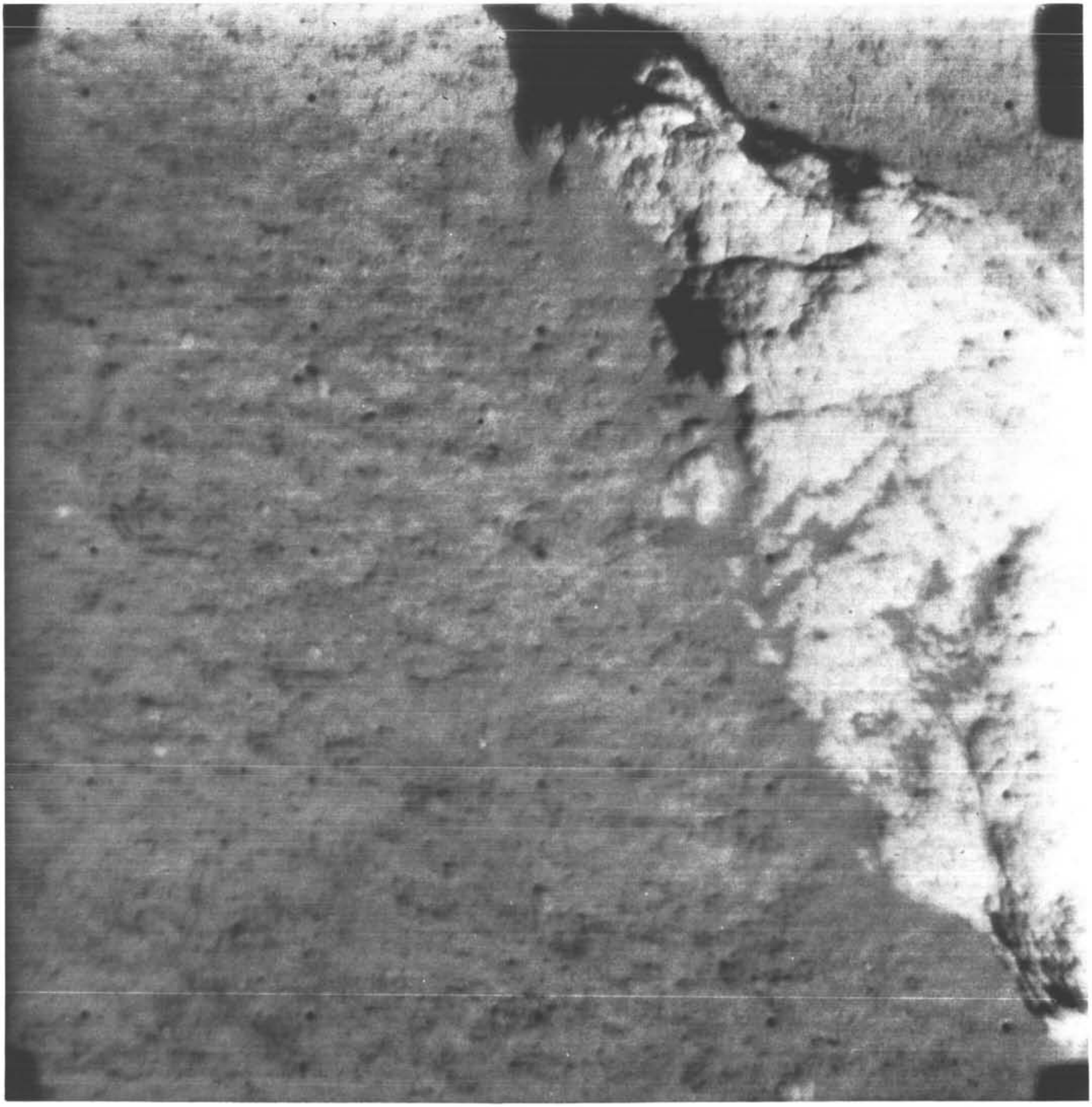
Surveyor I-76



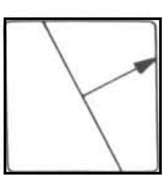
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(76)	162	11 43 33	− 51	−23.06	5.55	F10.1	N	CLR	23362



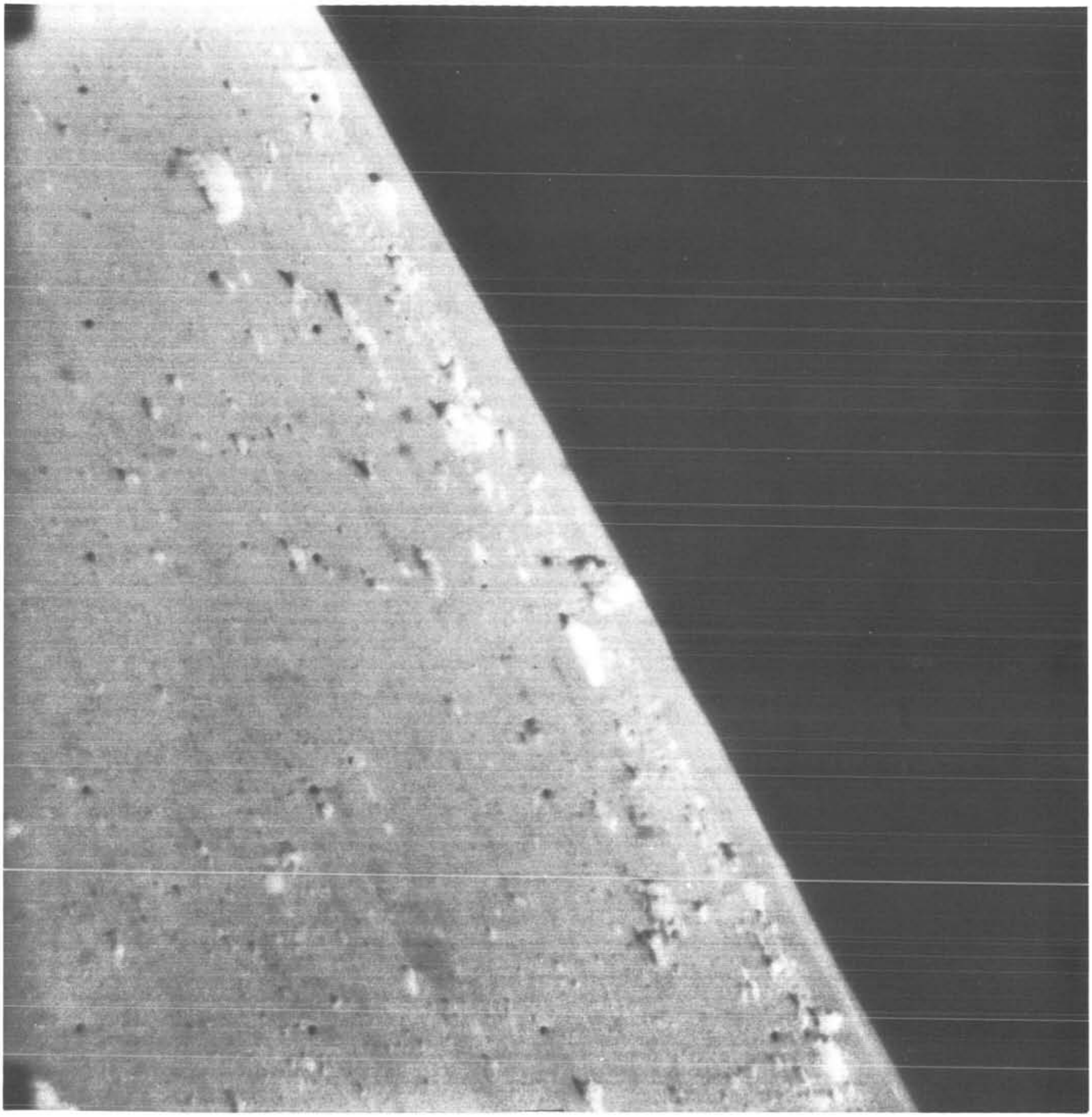
Surveyor I-77



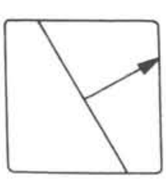
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(77)	162	11 44 10	− 48	−28.02	5.55	F10.1	N	CLR	23370



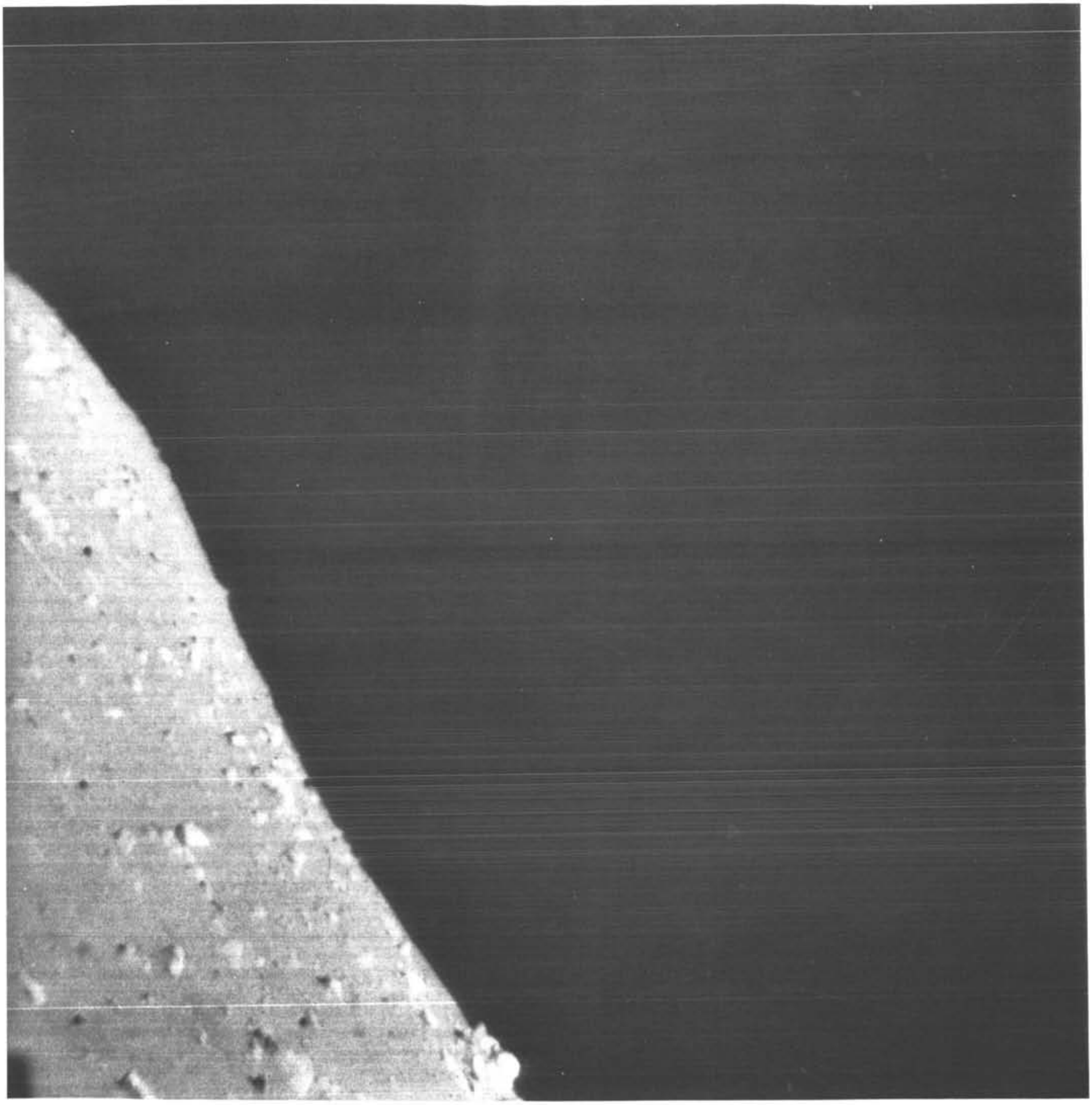
Surveyor I-78



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(78)	162	11 45 07	− 45	− 3.22	22.59	F10.1	N	CLR	23402

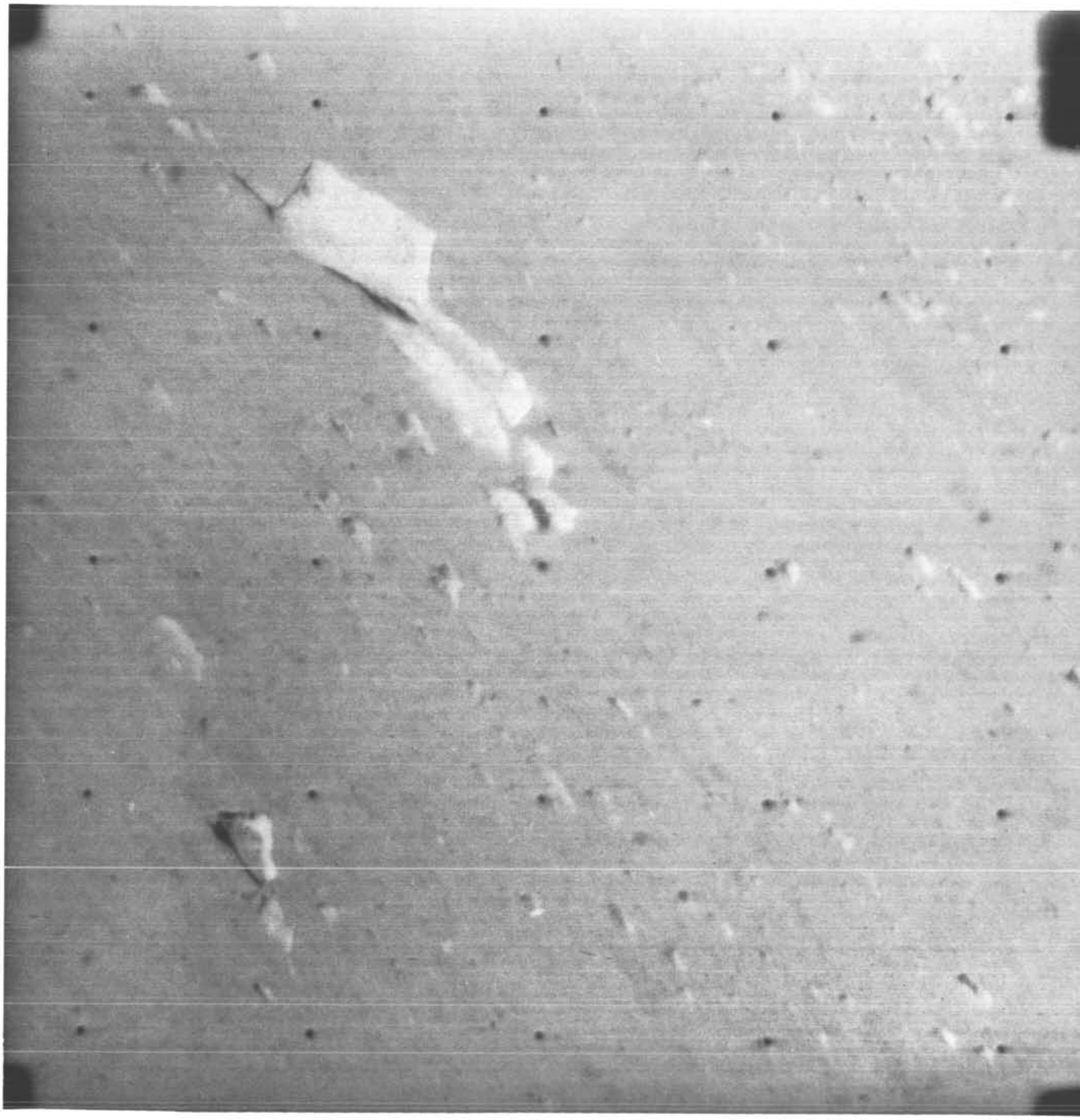


Surveyor I-79

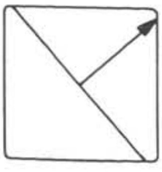


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(79)	162	11 46 37	− 36	1.74	22.59	F10.1	N	CLR	23421

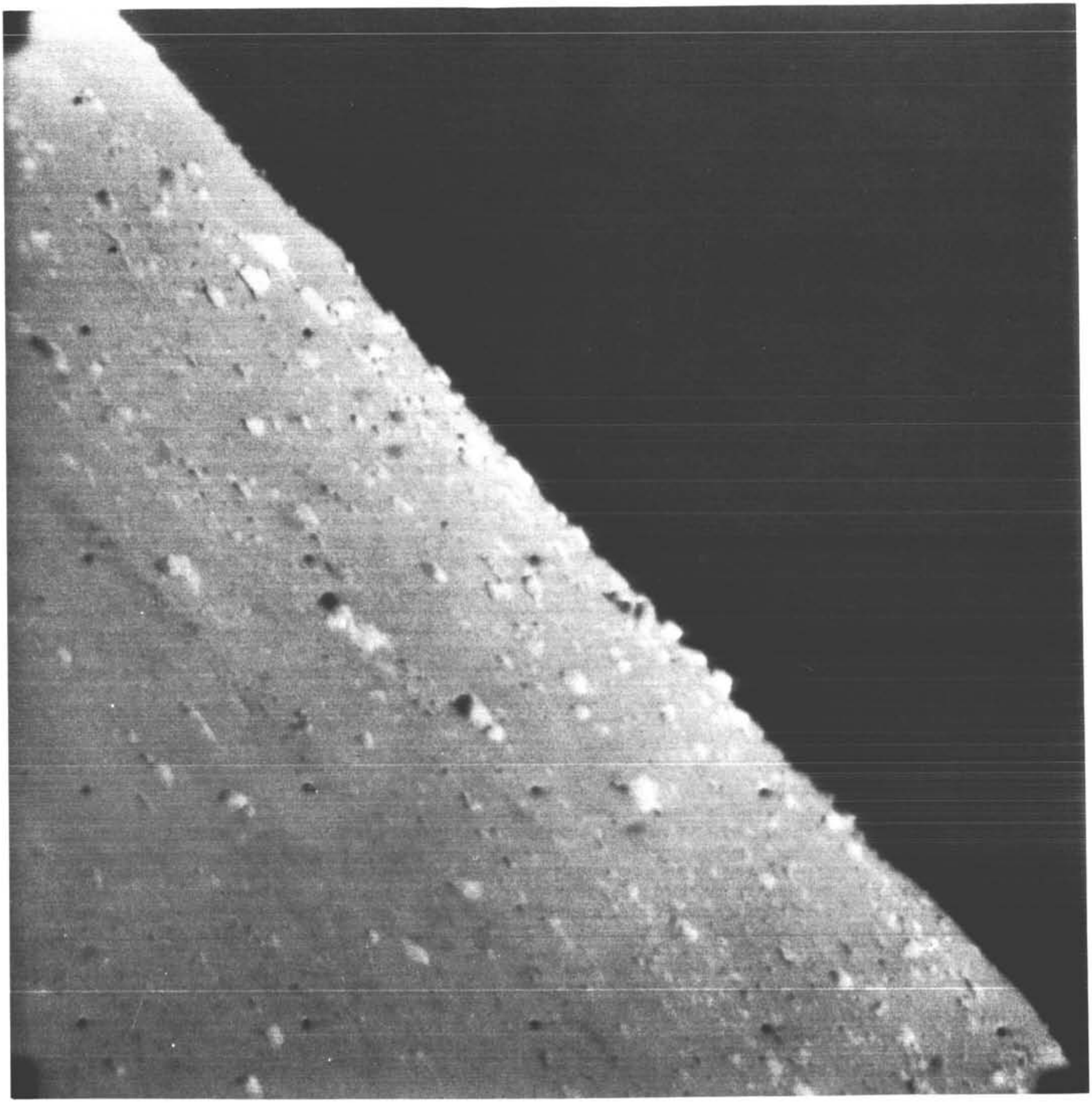
Surveyor I-80



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(80)	162	11 51 26	− 33	− 3.22	18.55	F10.1	N	CLR	23437



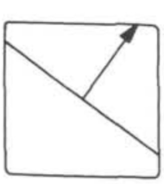
Surveyor I- 81



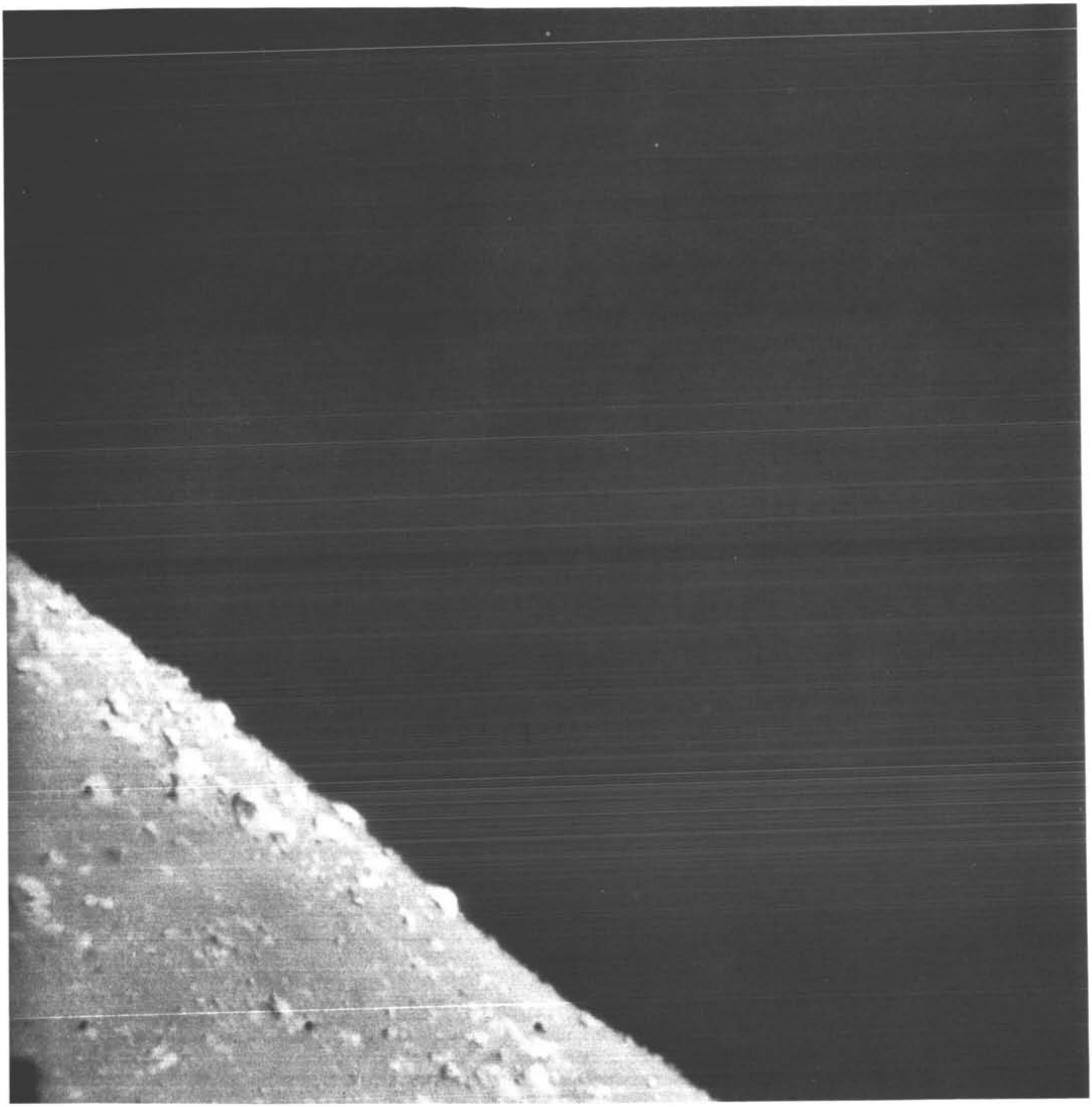
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(81)	162	11 51 42	− 30	1.74	27.40	F10.1	N	CLR	23442

Surveyor I-82

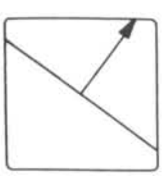
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(82)	162	11 54 11	− 21	−42.90	2.56	F10.1	N	CLR	23473



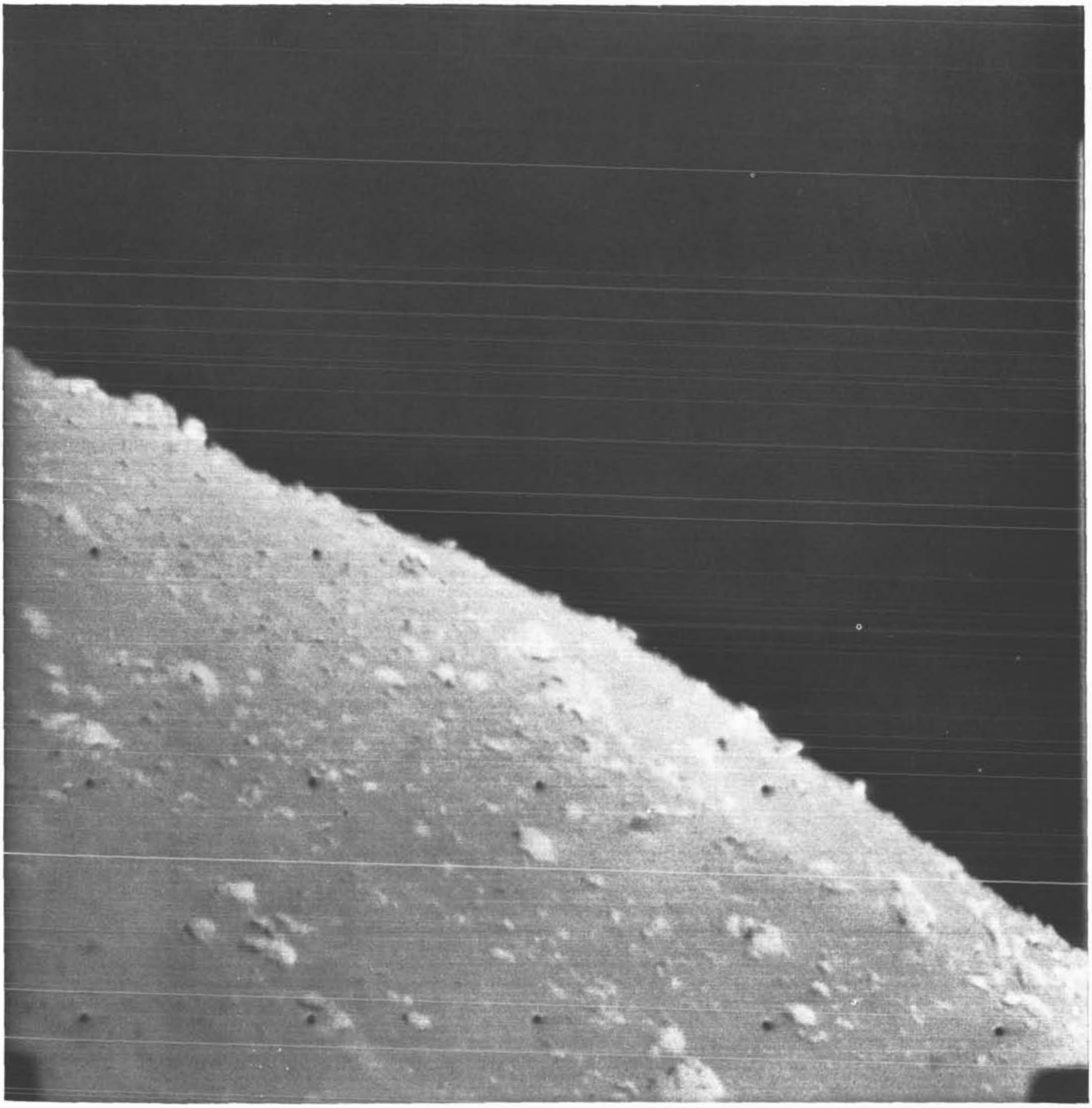
Surveyor I-83



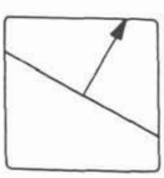
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(83)	162	11 54 40	– 21	6.70	27.40	F10.1	N	CLR	23500



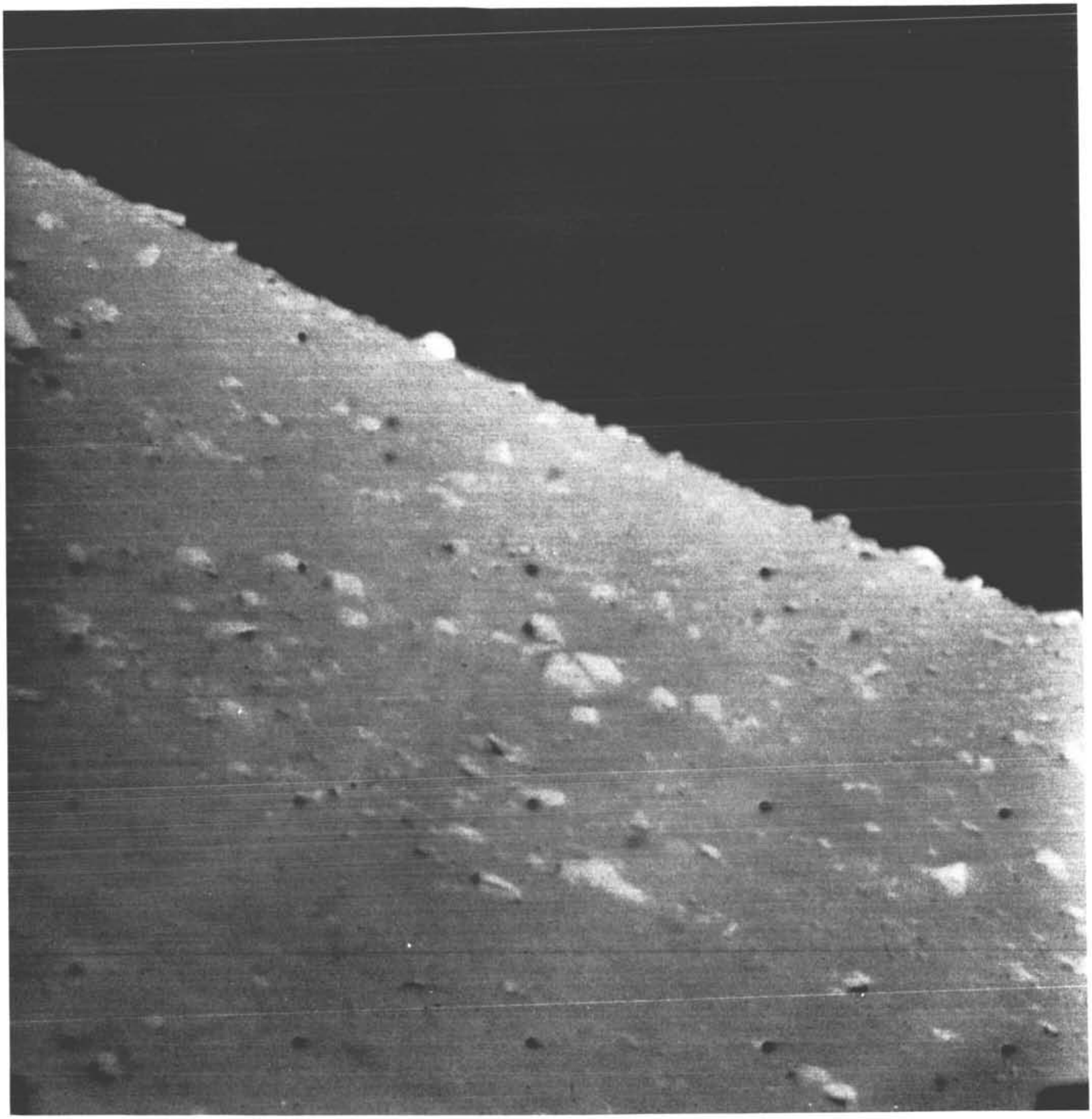
Surveyor I-84



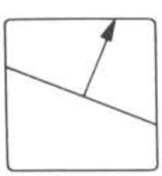
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(84)	162	11 57 28	− 15	6.70	27.40	F10.1	N	CLR	23521



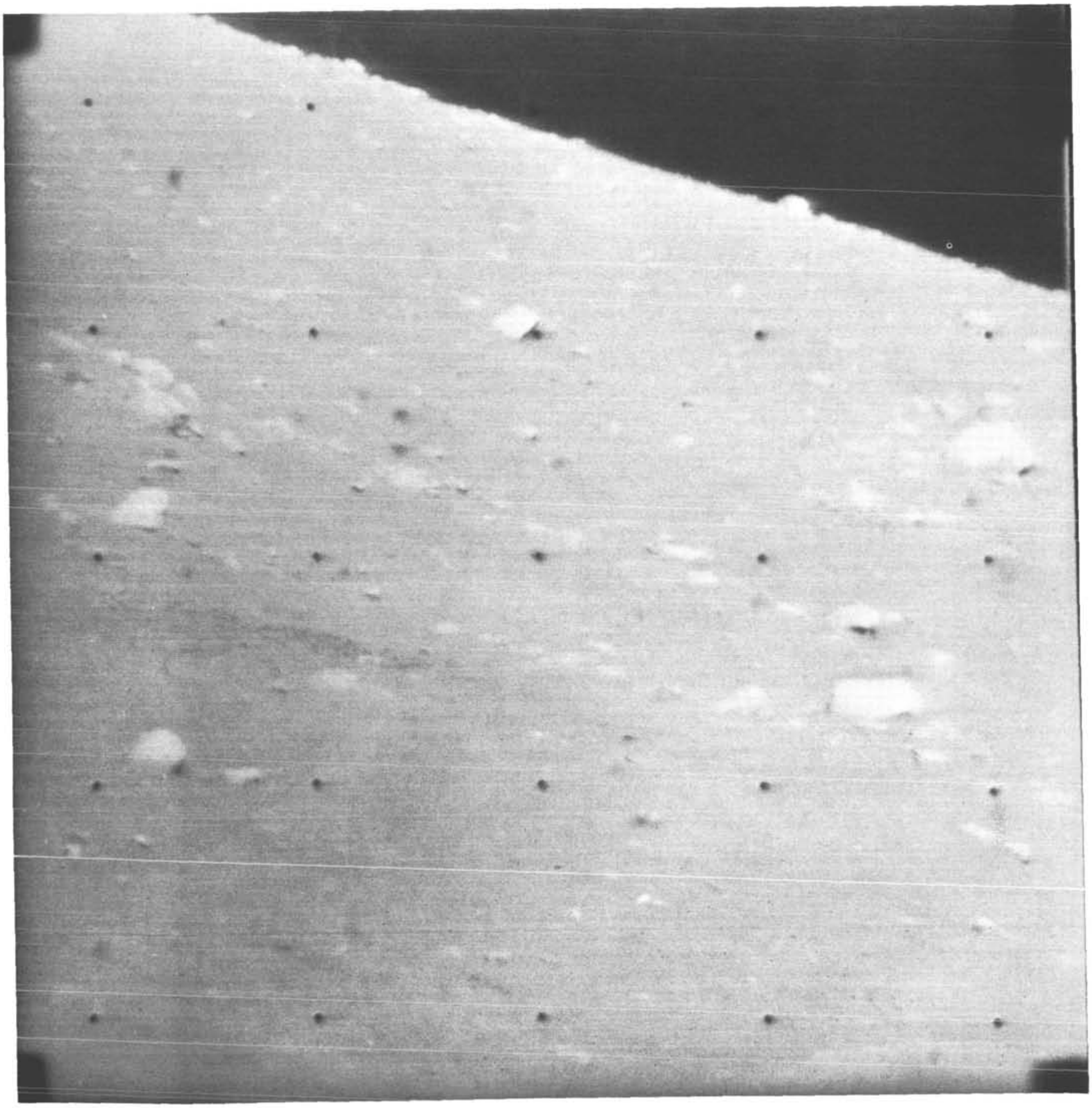
Surveyor I-85



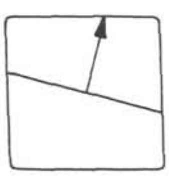
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(85)	162	11 58 59	— 9	6.70	27.40	F10.1	N	CLR	23541



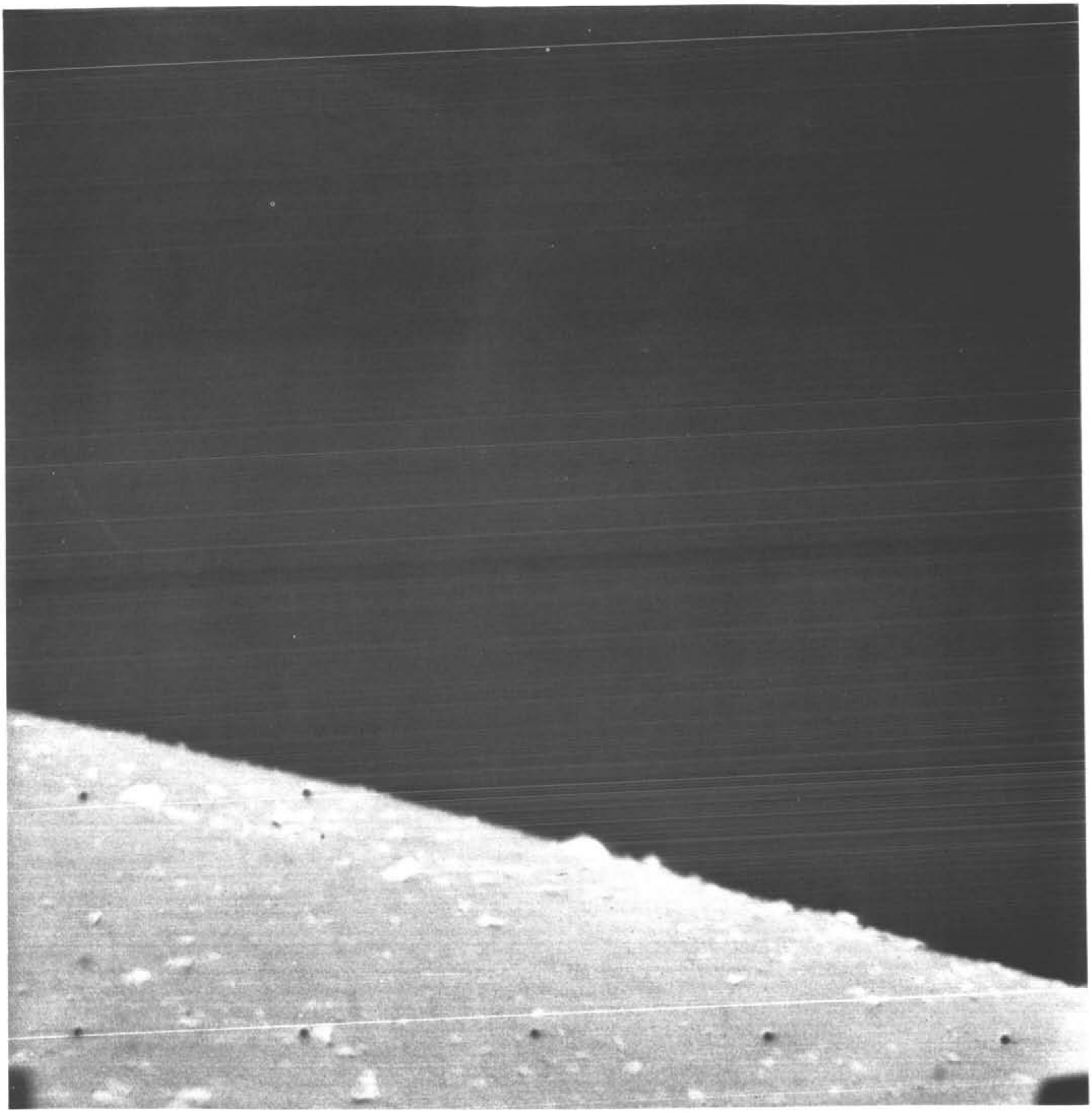
Surveyor I-86



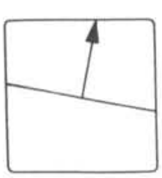
	Day	G M T		Az	El	Focus, m	Iris	Lens	Filter	File No.
(86)	162	12 00 28	—	3	6.70	27.40	F10.1	N	CLR	23561



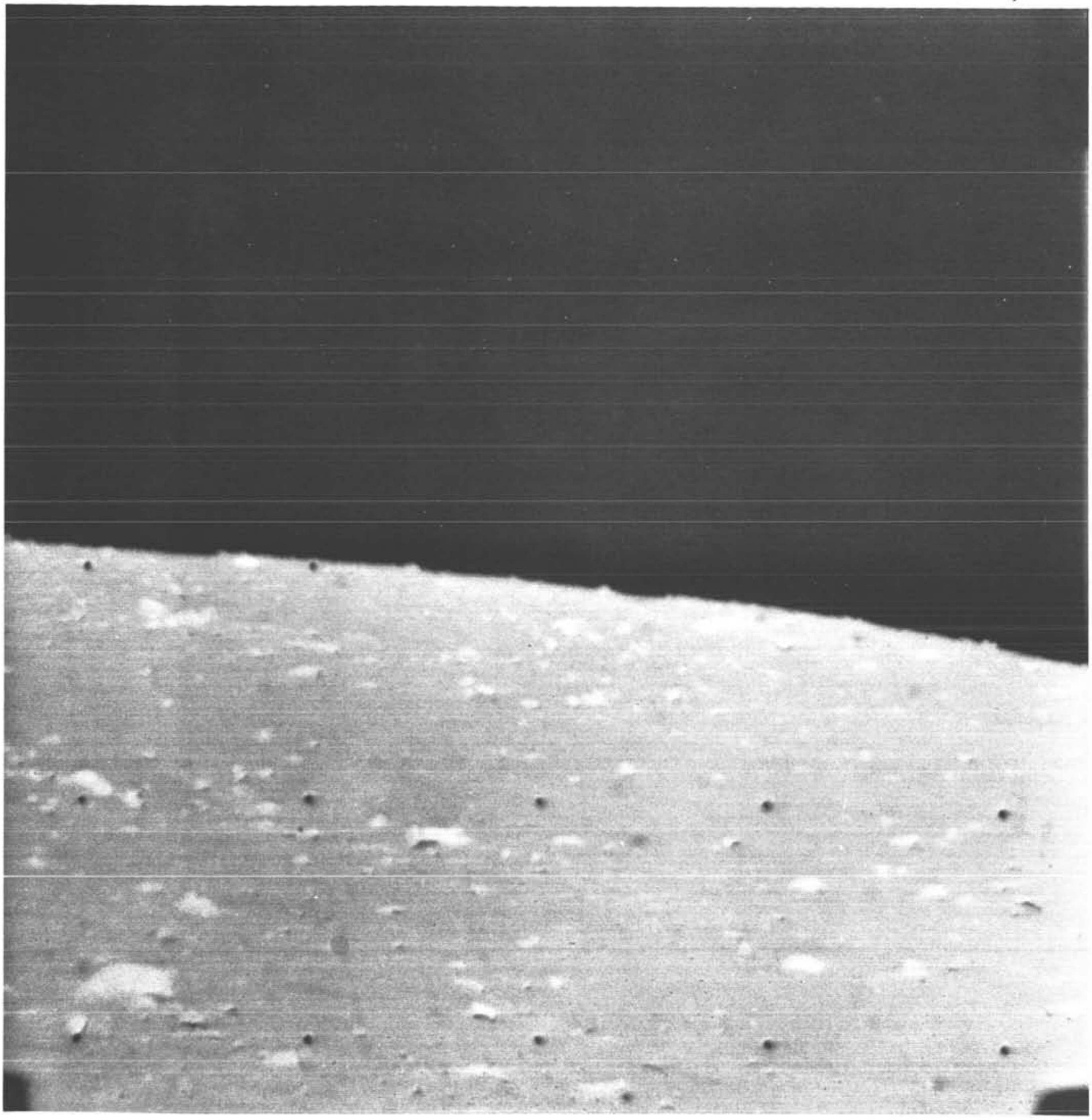
Surveyor I- 87



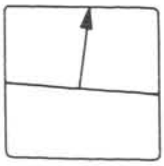
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(87)	162	12 00 32	0	11.66	27.40	F10.1	N	CLR	23562



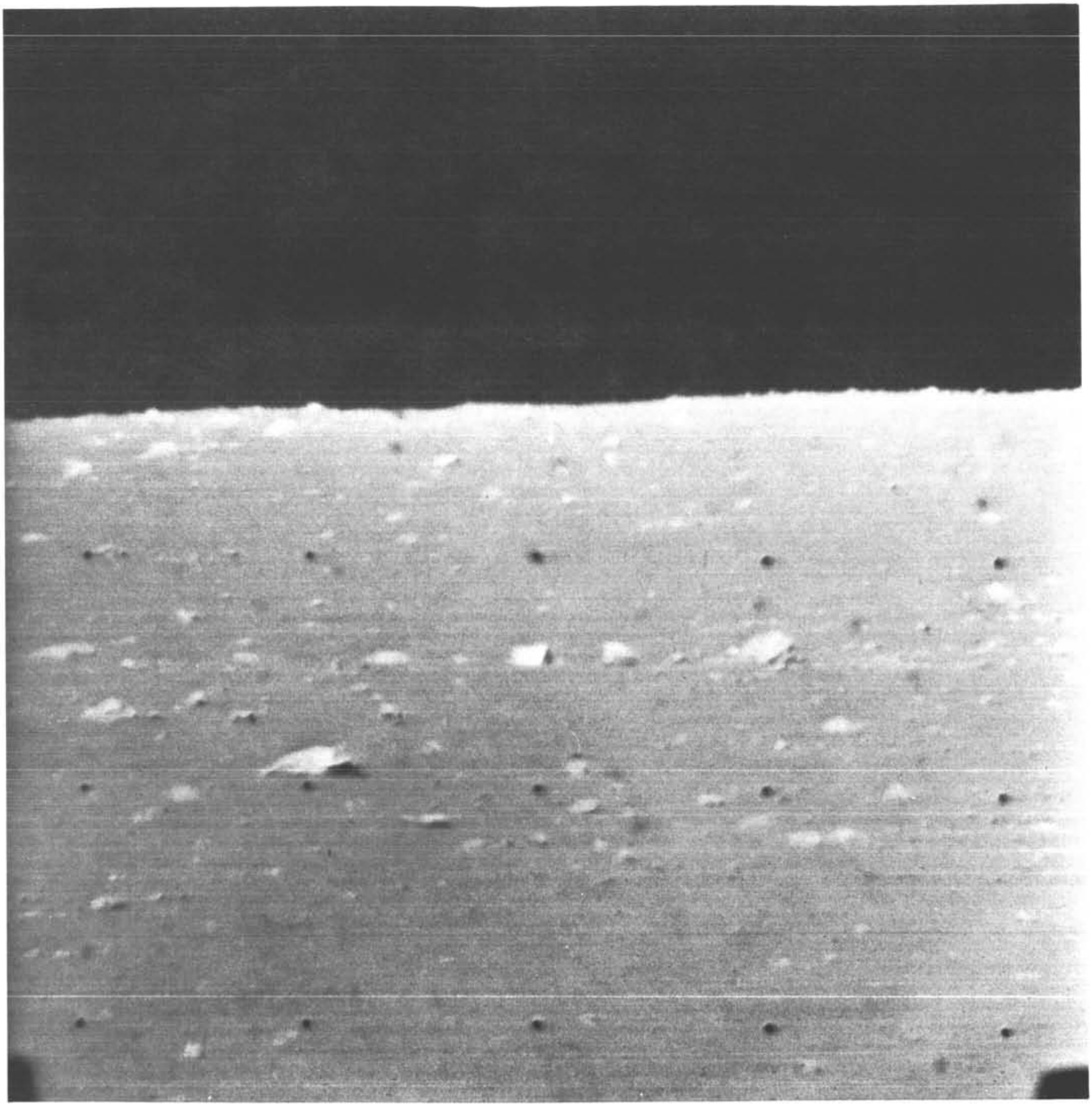
Surveyor I-88



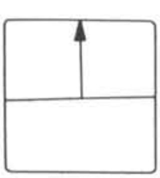
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(88)	162	12 03 12	6	11.66	27.40	F10.1	N	CLR	23605



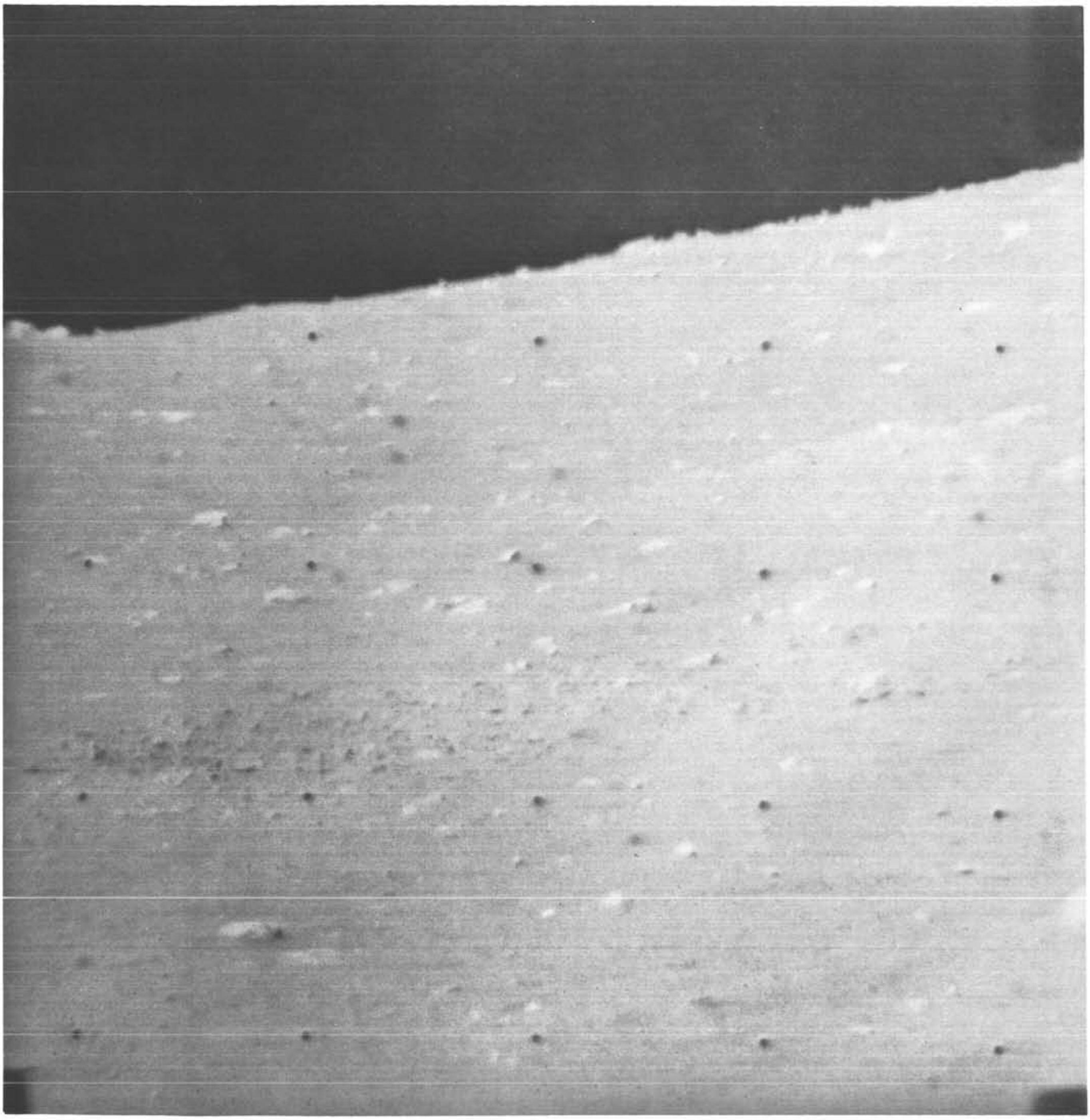
Surveyor I-89



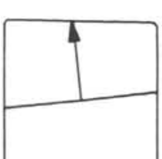
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(89)	162	12 04 51	12	11.66	27.40	F10.1	N	CLR	23627



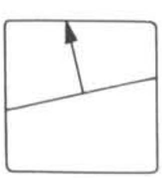
Surveyor I-90



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(90)	162	12 06 29	18	11.66	27.40	F10.1	N	CLR	23651



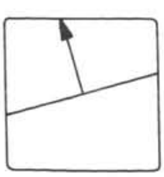
Surveyor I-91



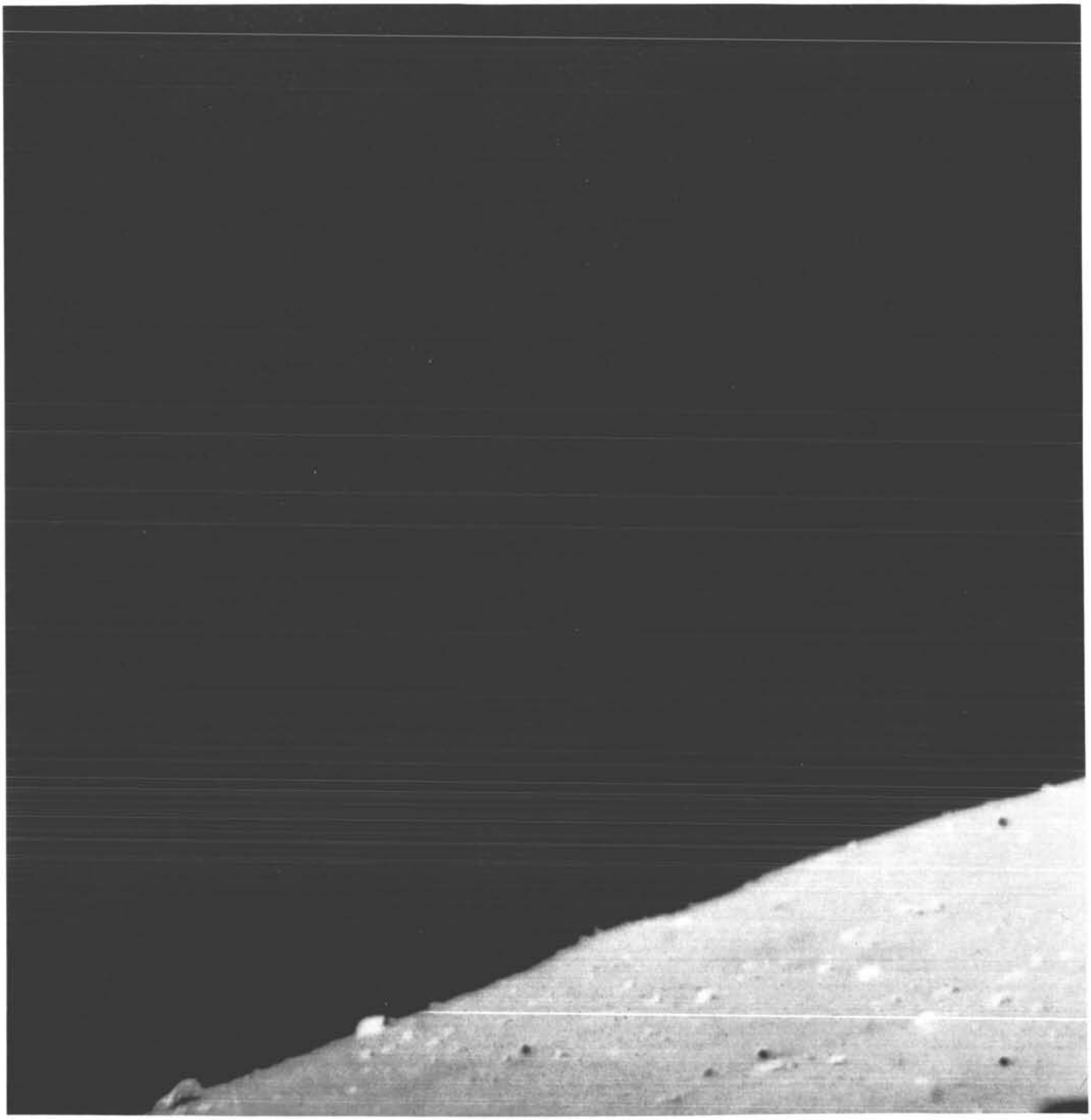
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(91)	162	12 09 27	21	16.62	27.40	F10.1	N	CLR	23672

Surveyor I-92

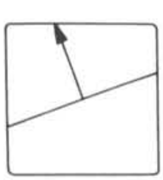
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(92)	162	12 09 37	24	11.66	27.40	F10.1	N	CLR	23674



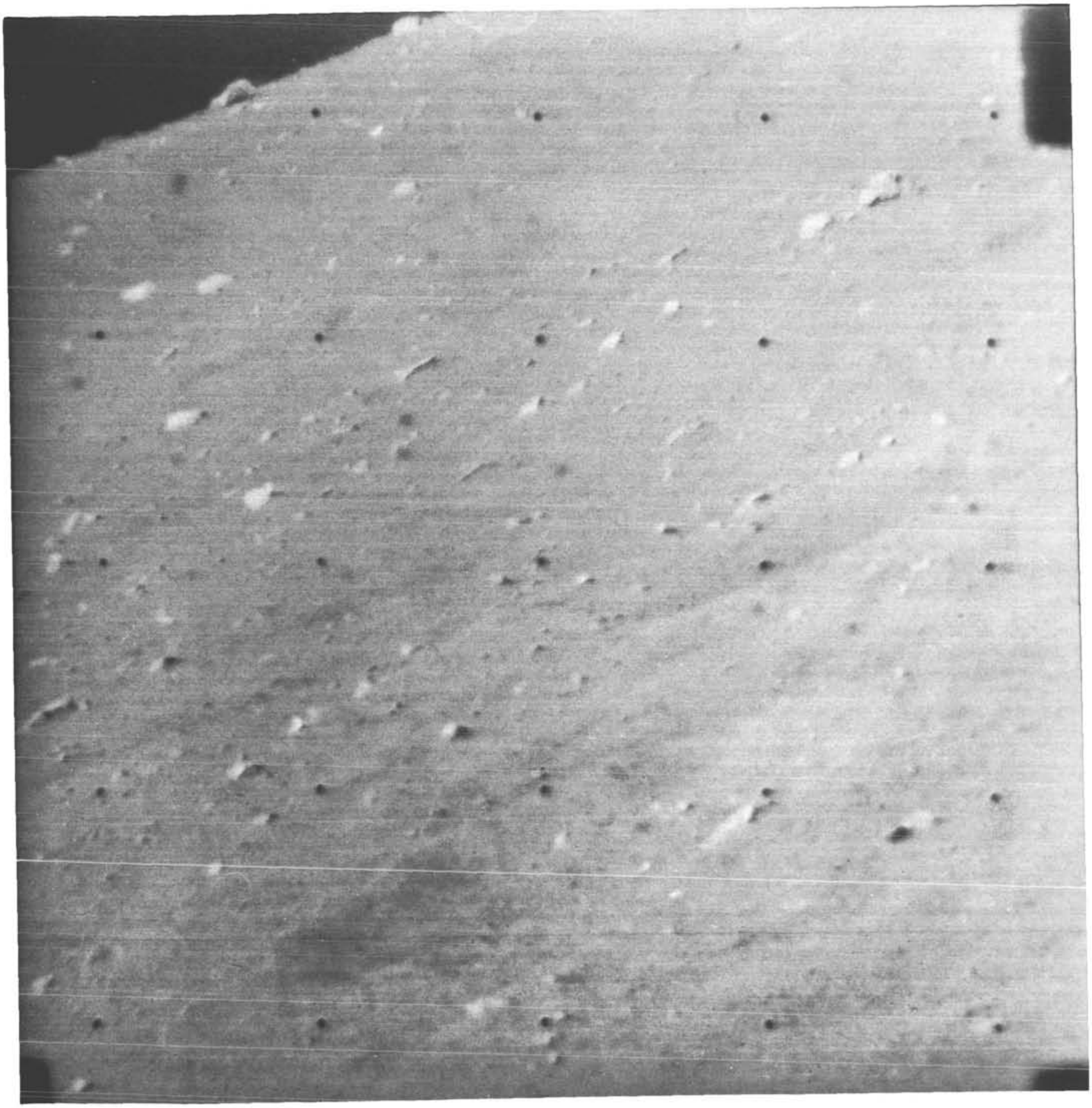
Surveyor I-93



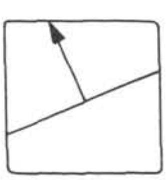
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(93)	162	12 11 05	27	16.62	27.40	F10.1	N	CLR	23714



Surveyor I-94

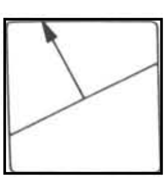


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(94)	162	12 11 15	30	11.66	27.40	F10.1	N	CLR	23716

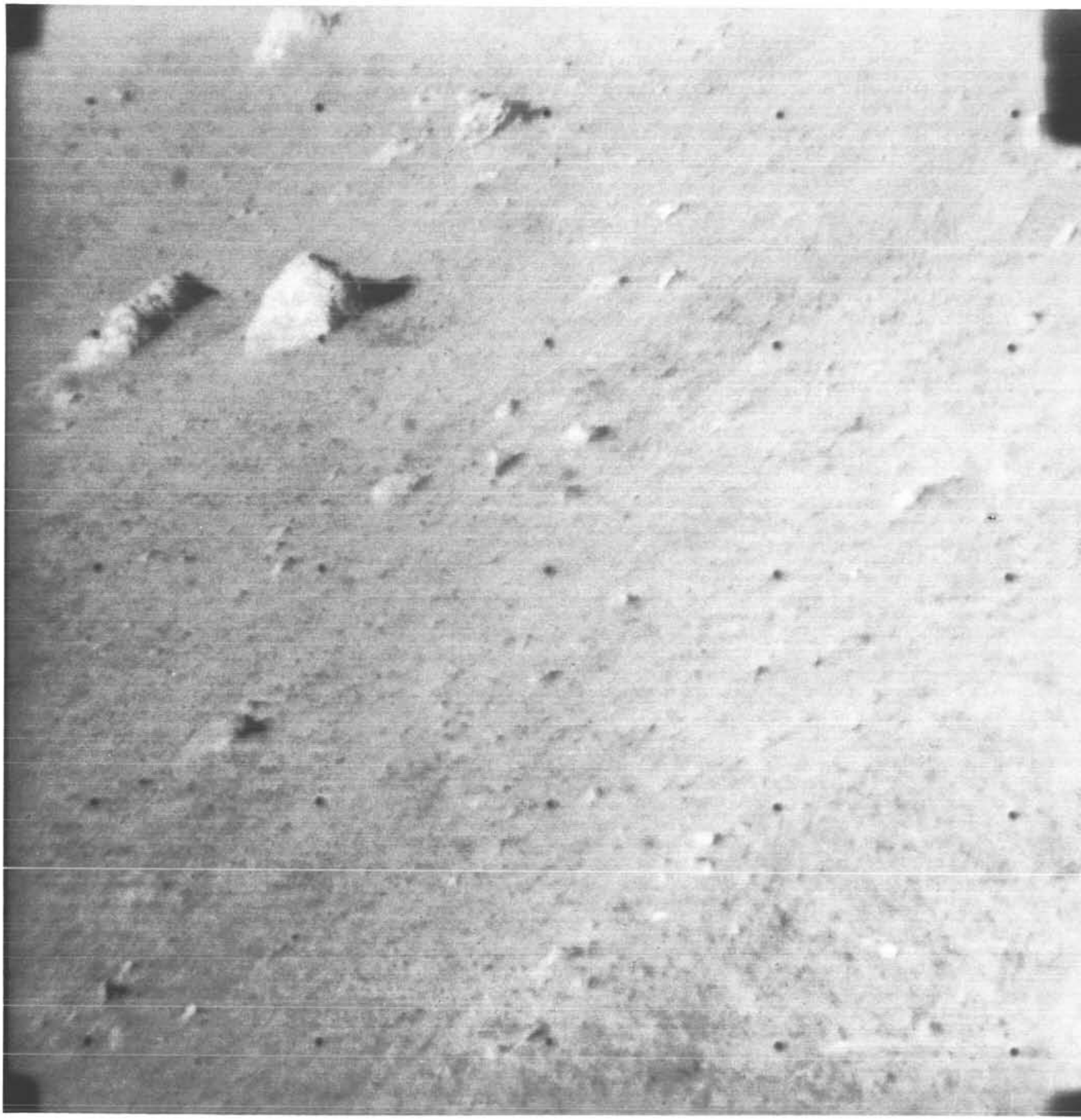


Surveyor I-95

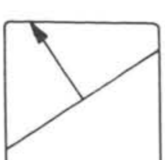
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(95)	162	12 12 42	33	16.62	27.40	F10.1	N	CLR	23736



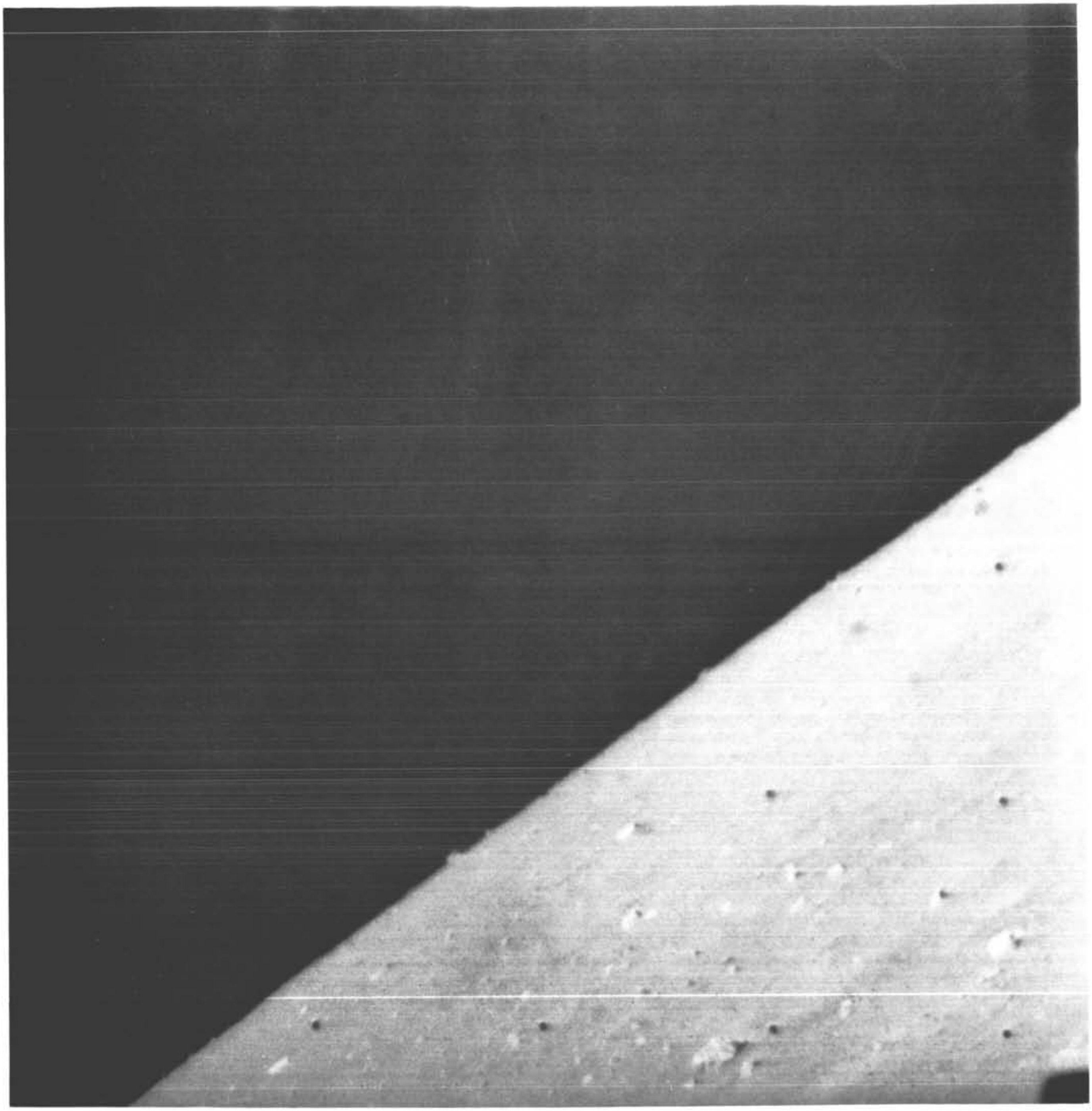
Surveyor I-96



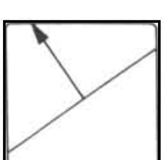
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(96)	162	12 18 00	39	6.70	27.40	F10.1	N	CLR	23760



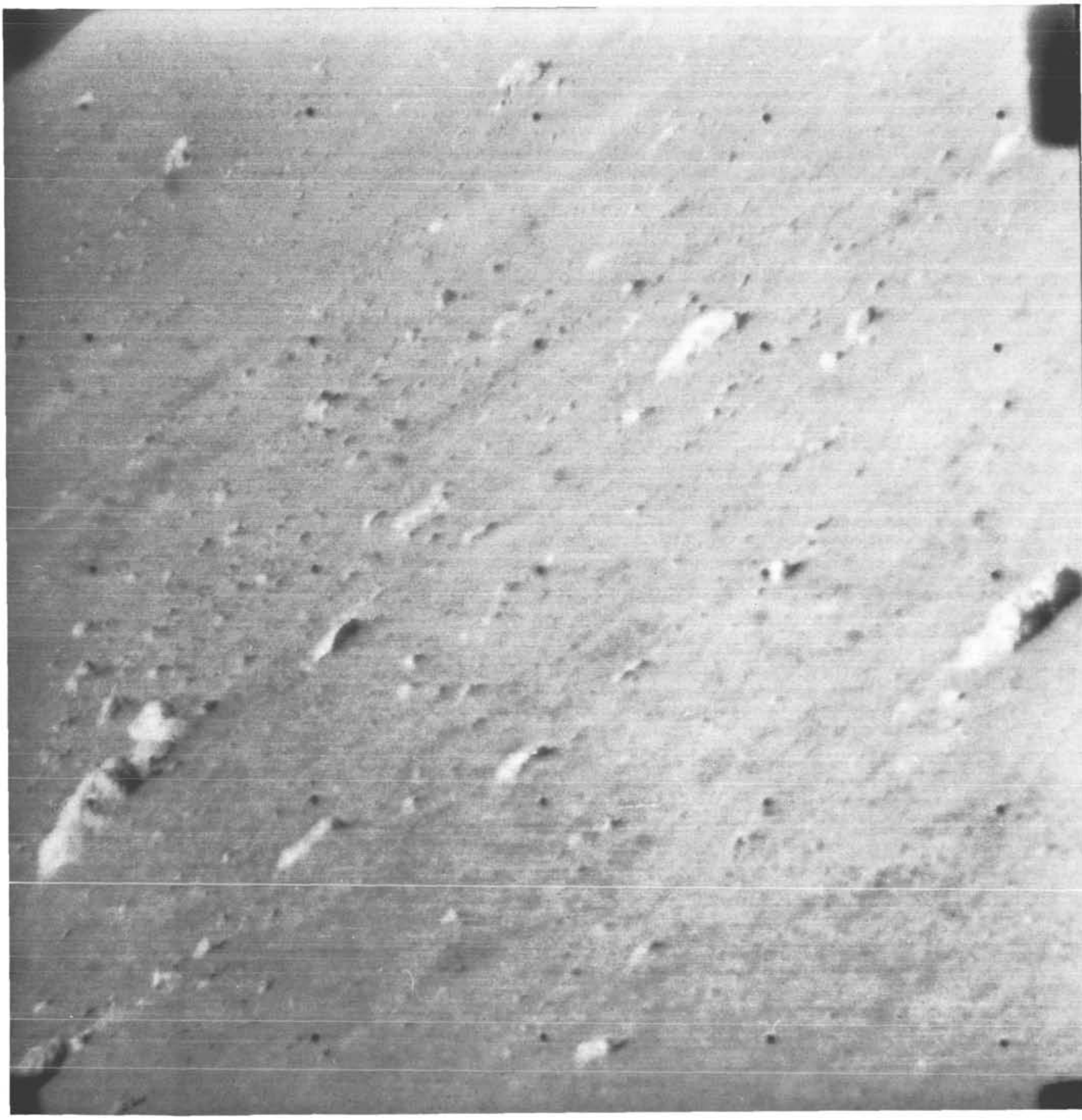
Surveyor I-97



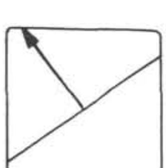
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(97)	162	12 18 05	39	16.62	27.40	F10.1	N	CLR	23761



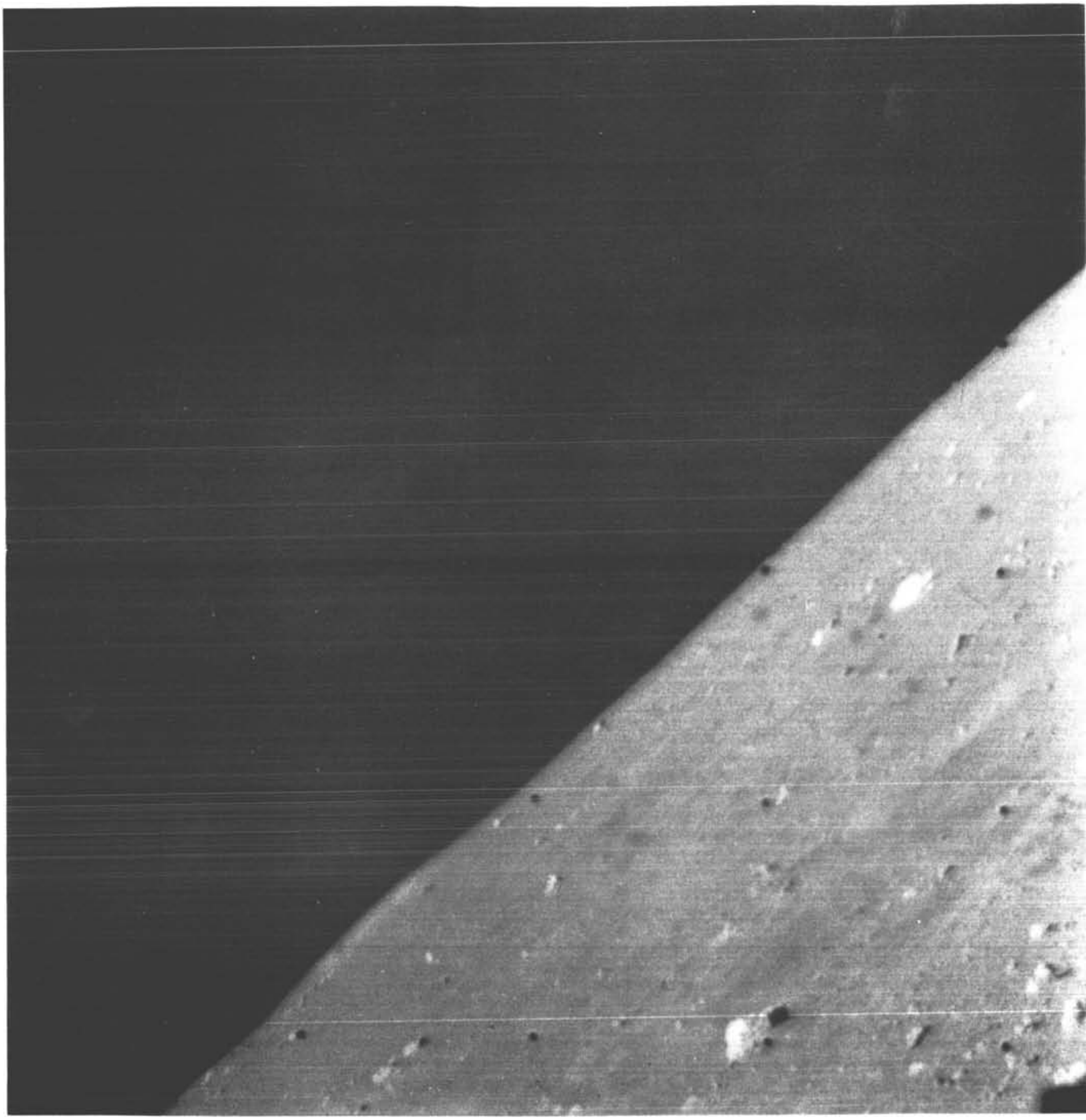
Surveyor I-98



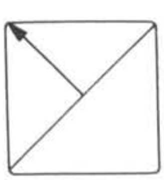
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(98)	162	12 18 14	42	11.66	27.40	F10.1	N	CLR	23763



Surveyor I-99



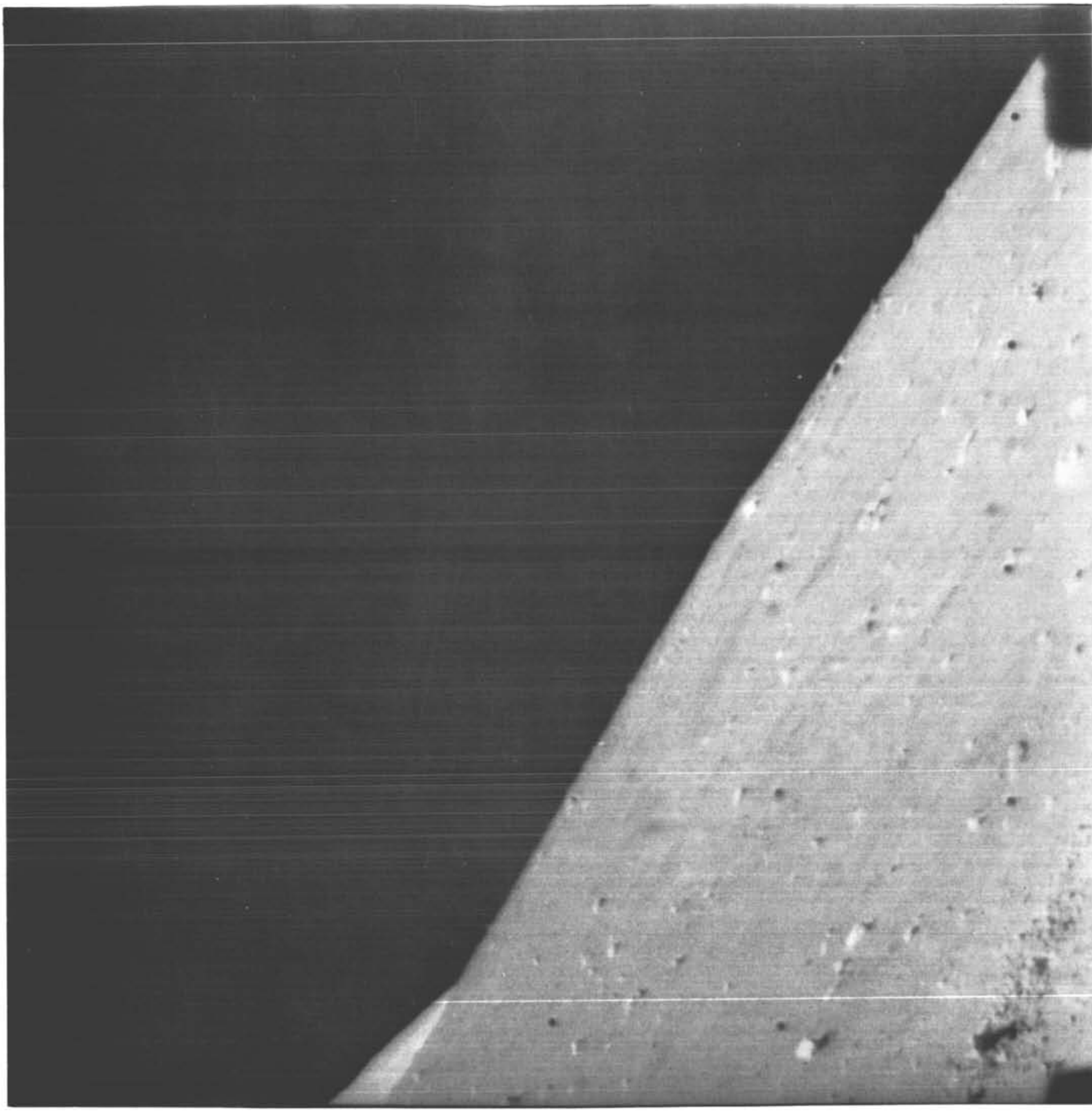
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(99)	162	12 19 44	45	16.62	27.40	F10.1	N	CLR	24003



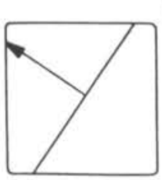
Surveyor I-100

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(100)	162	12 21 21	51	16.62	27.40	F10.1	N	CLR	24025

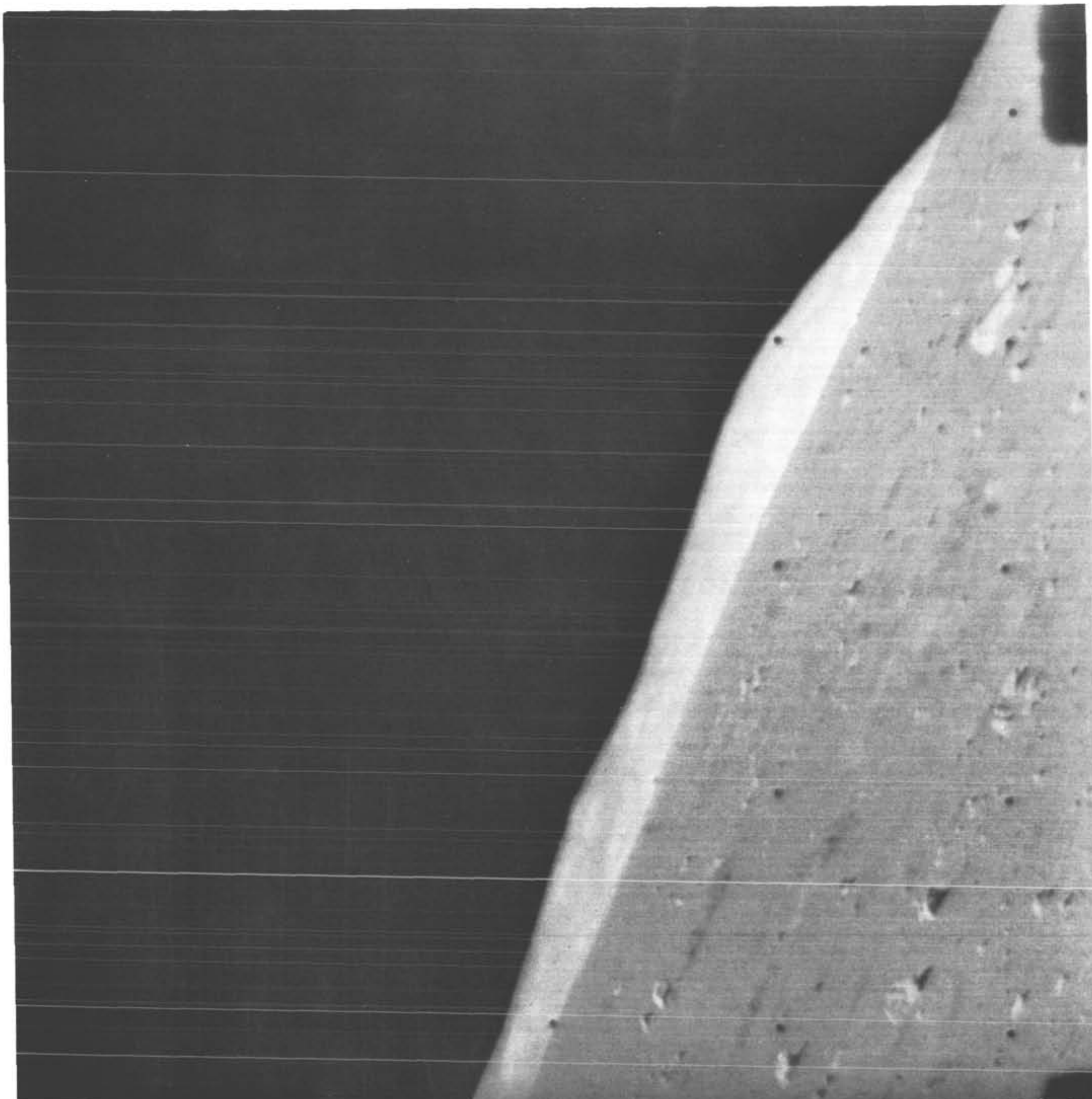
Surveyor I-101



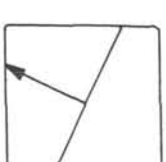
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(101)	162	12 24 18	57	16.62	27.40	F10.1	N	CLR	24050



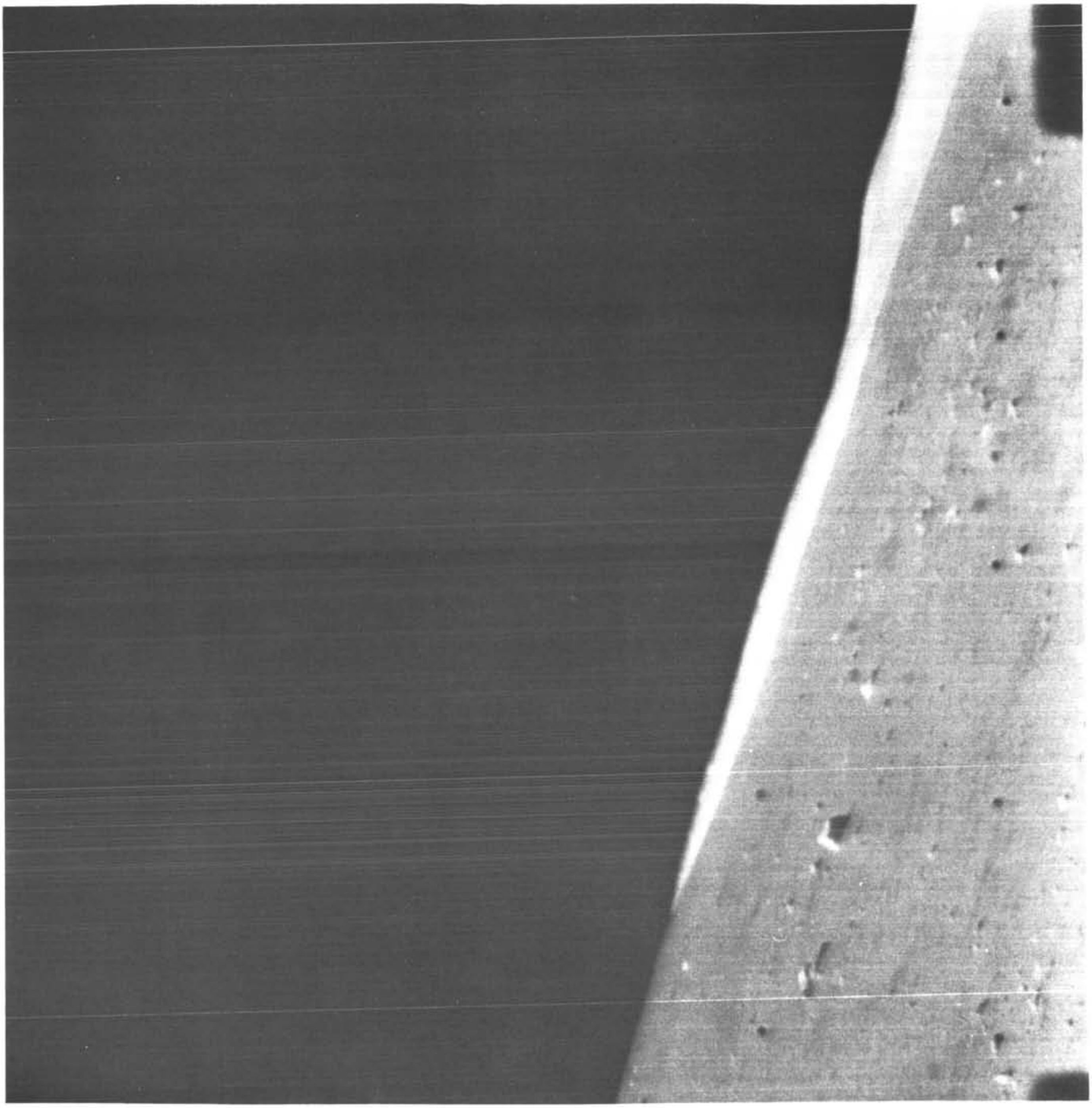
Surveyor I-102



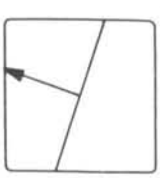
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(102)	162	12 25 55	63	16.62	27.40	F10.1	N	CLR	24027



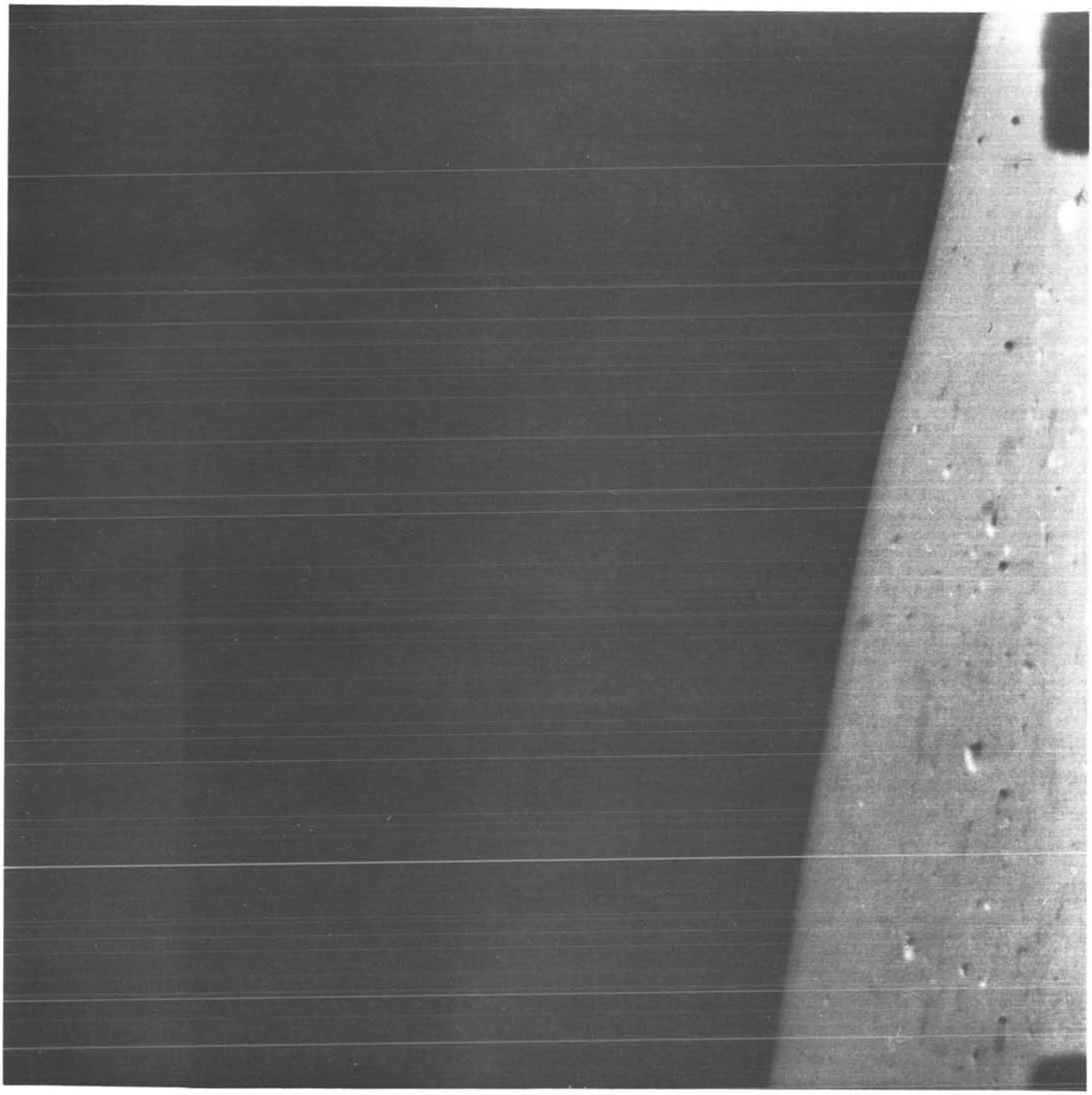
Surveyor I-103



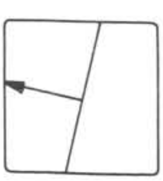
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(103)	162	12 27 32	69	16.62	27.40	F10.1	N	CLR	24114



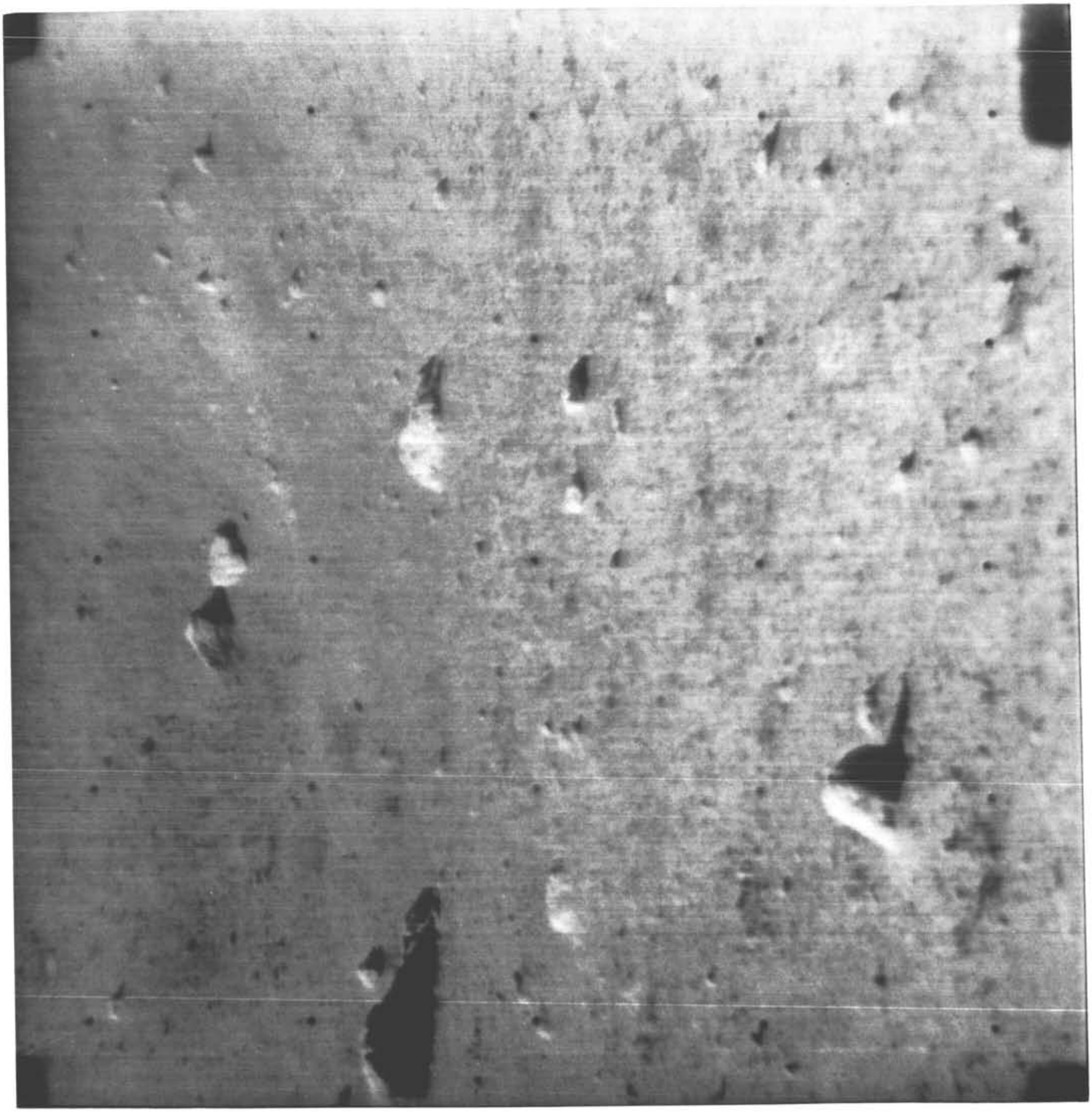
Surveyor I-104



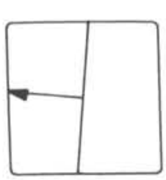
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(104)	162	12 30 19	75	16.62	27.40	F10.1	N	CLR	24137



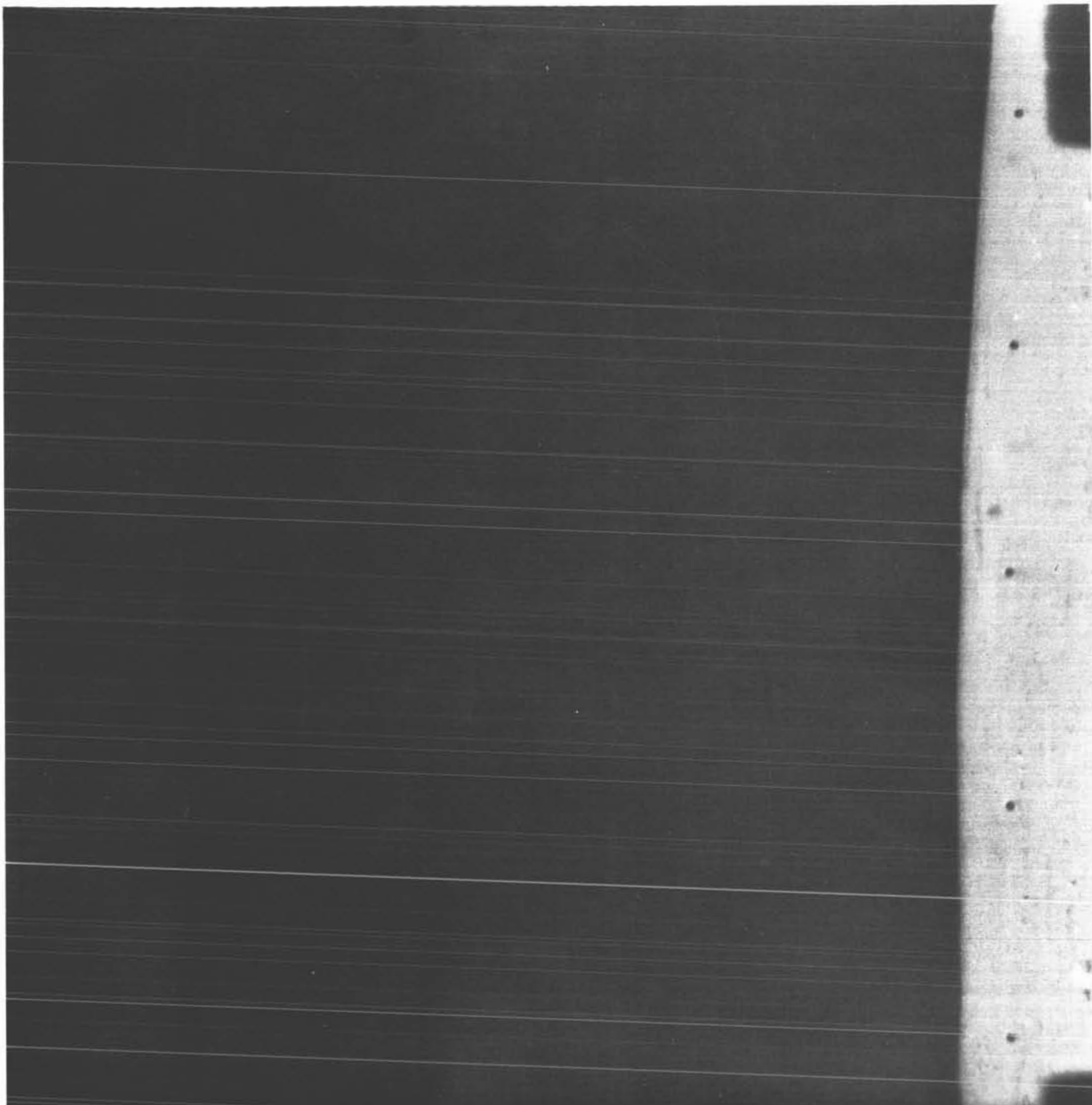
Surveyor I-105



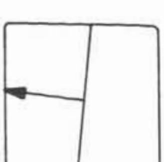
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(105)	162	12 31 51	81	6.70	18.55	F10.1	N	CLR	24160



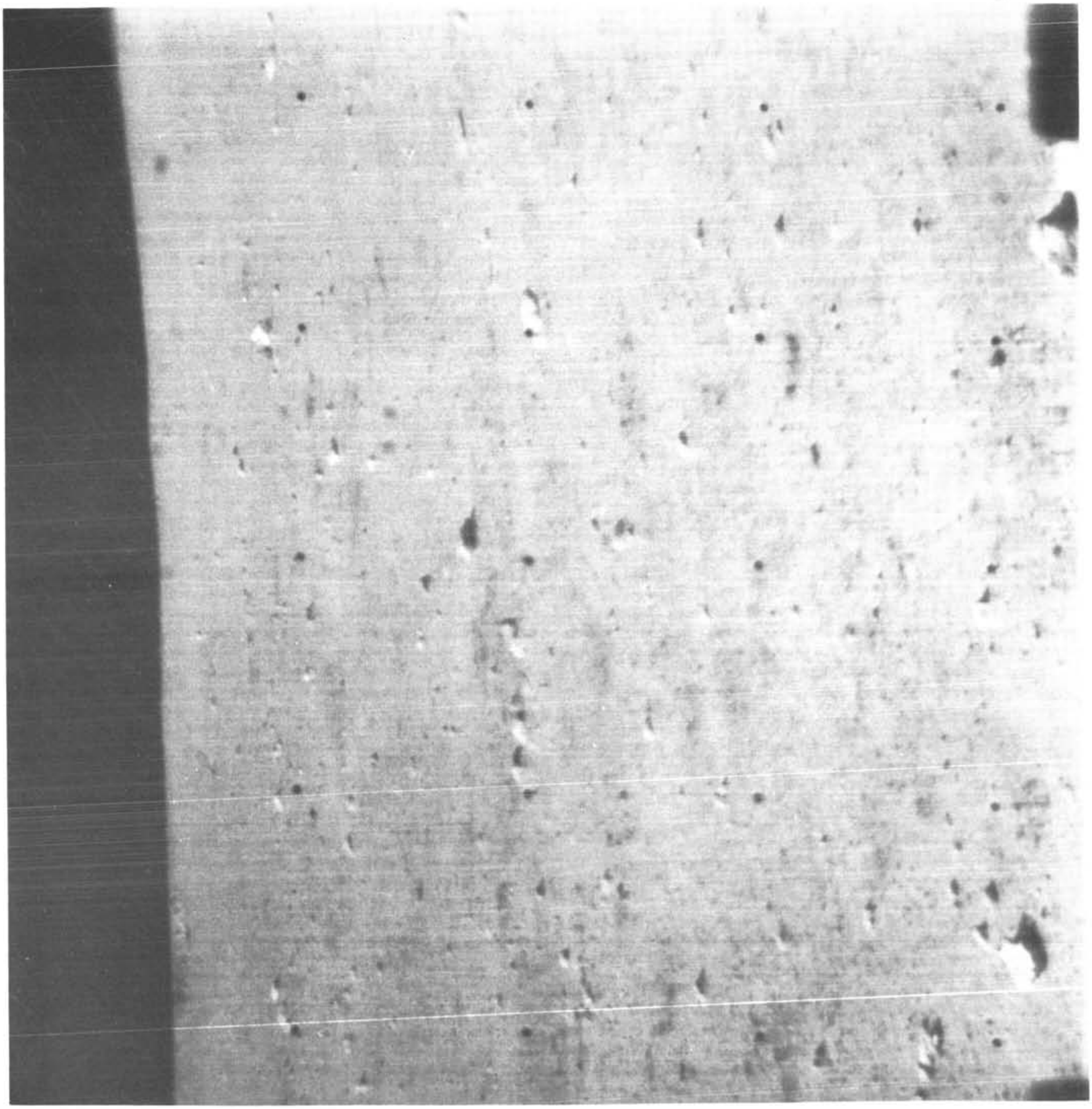
Surveyor I-106



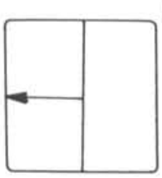
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(106)	162	12 31 56	81	16.62	27.40	F10.1	N	CLR	24161



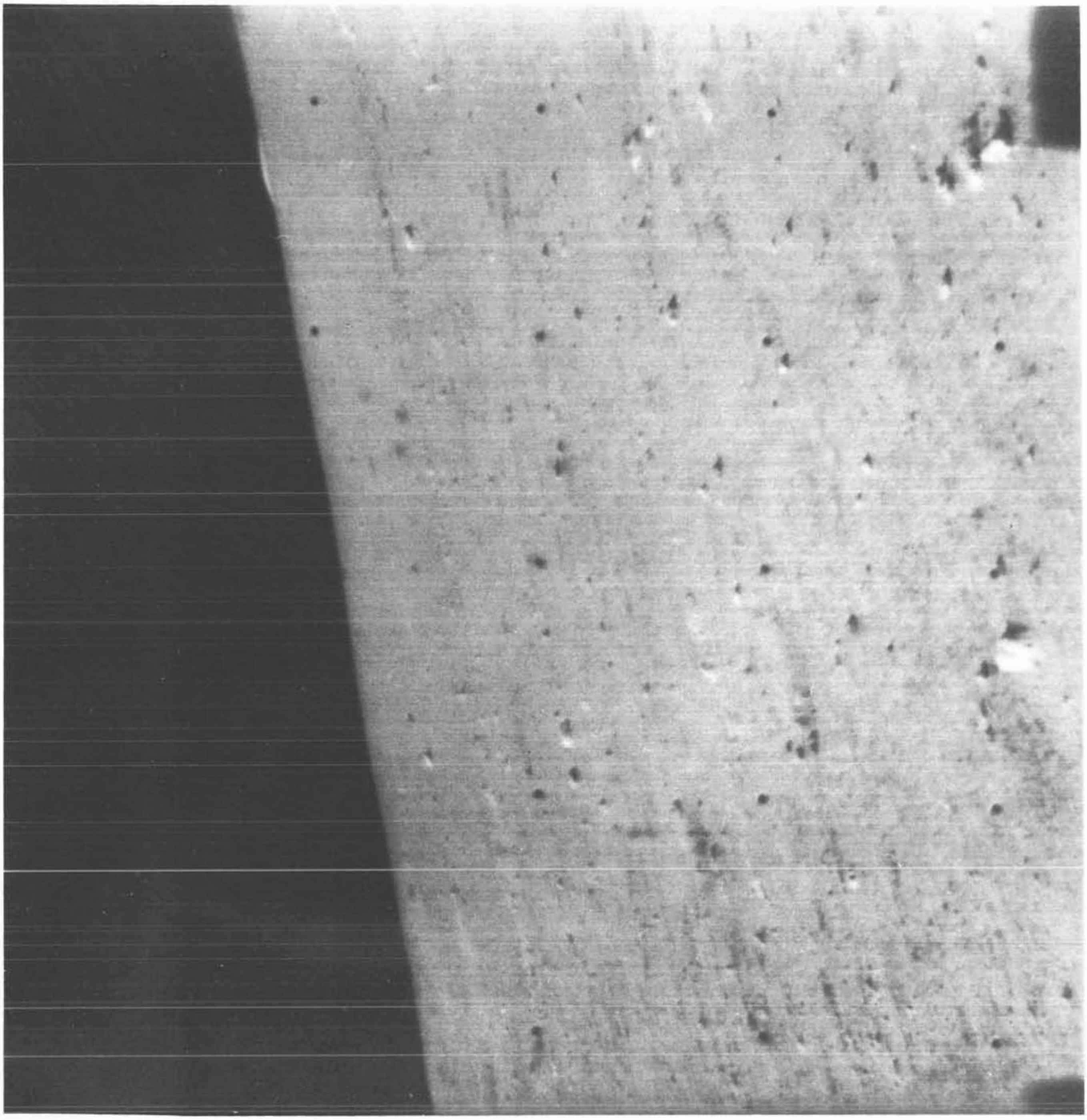
Surveyor I-107



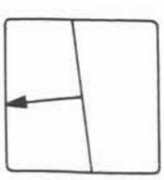
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(107)	162	12 32 05	84	11.66	27.40	F10.1	N	CLR	24163



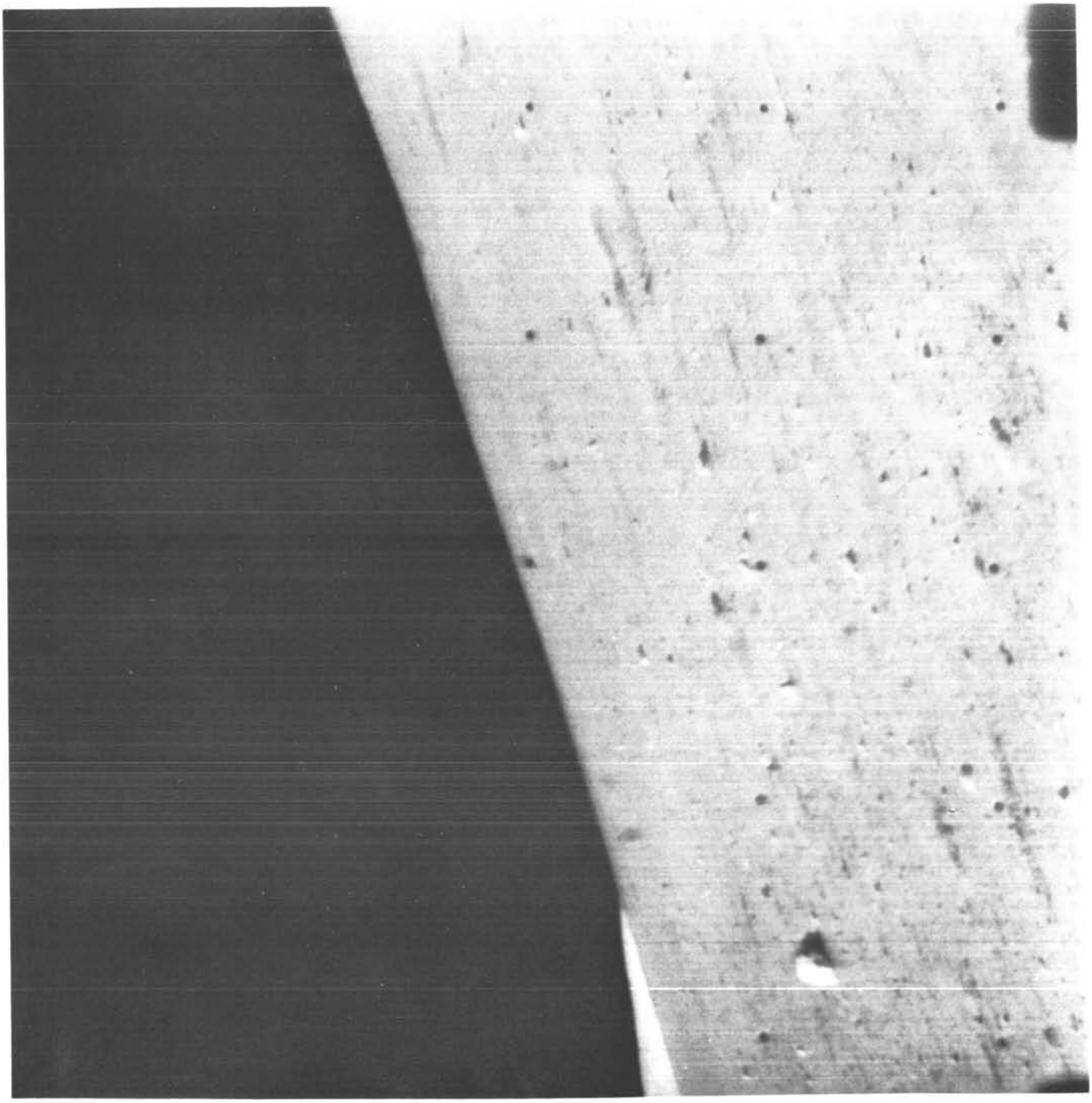
Surveyor I-108



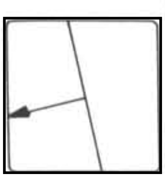
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(108)	162	12 33 42	90	11.66	27.40	F10.1	N	CLR	24205



Surveyor I-109

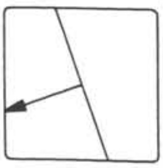


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(109)	162	12 36 30	96	11.66	27.40	F10.1	N	CLR	24230

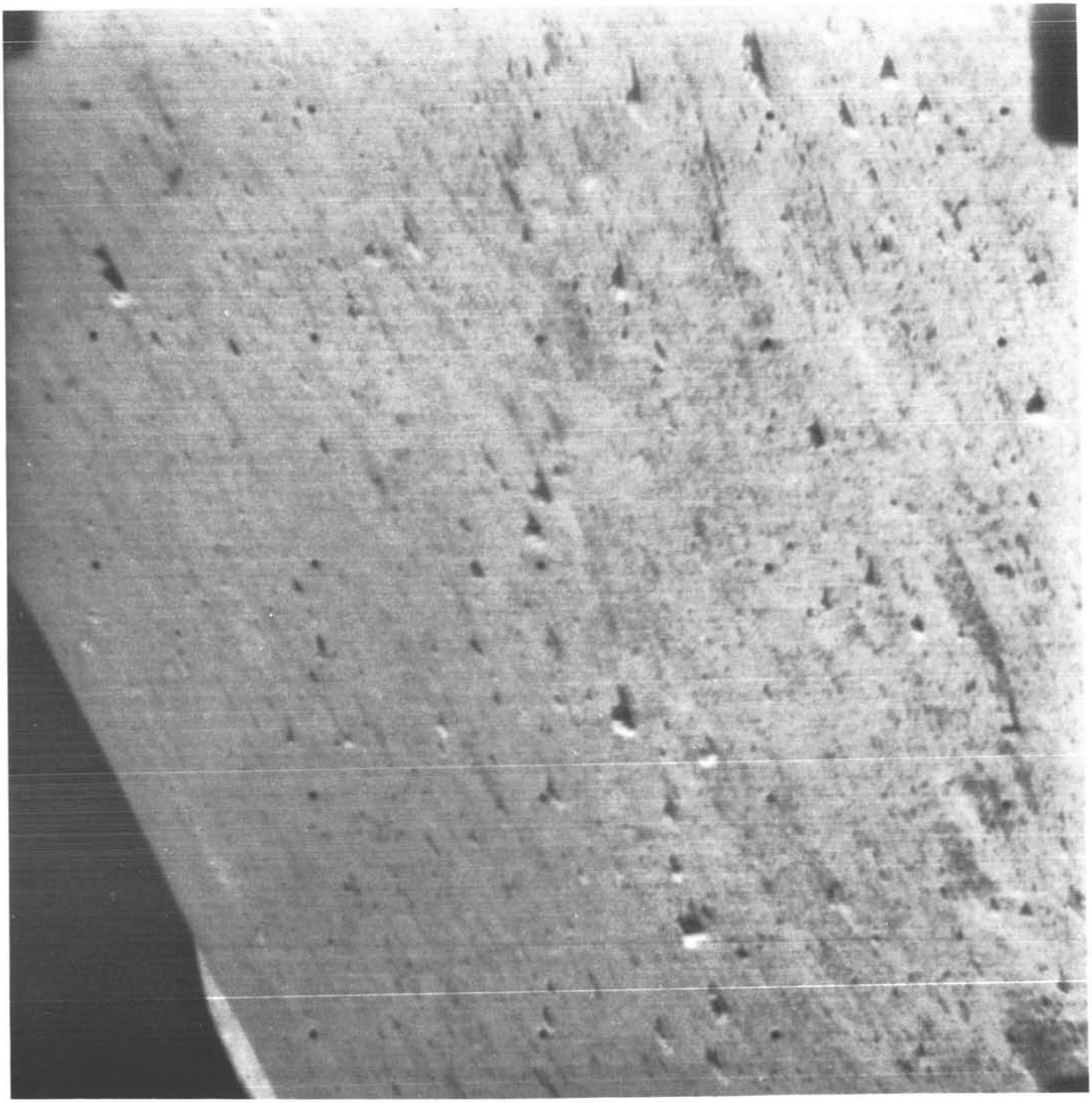


Surveyor I-110

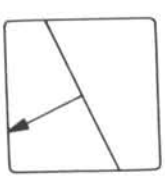
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(110)	162	12 38 07	102	11.66	27.40	F10.1	N	CLR	24252



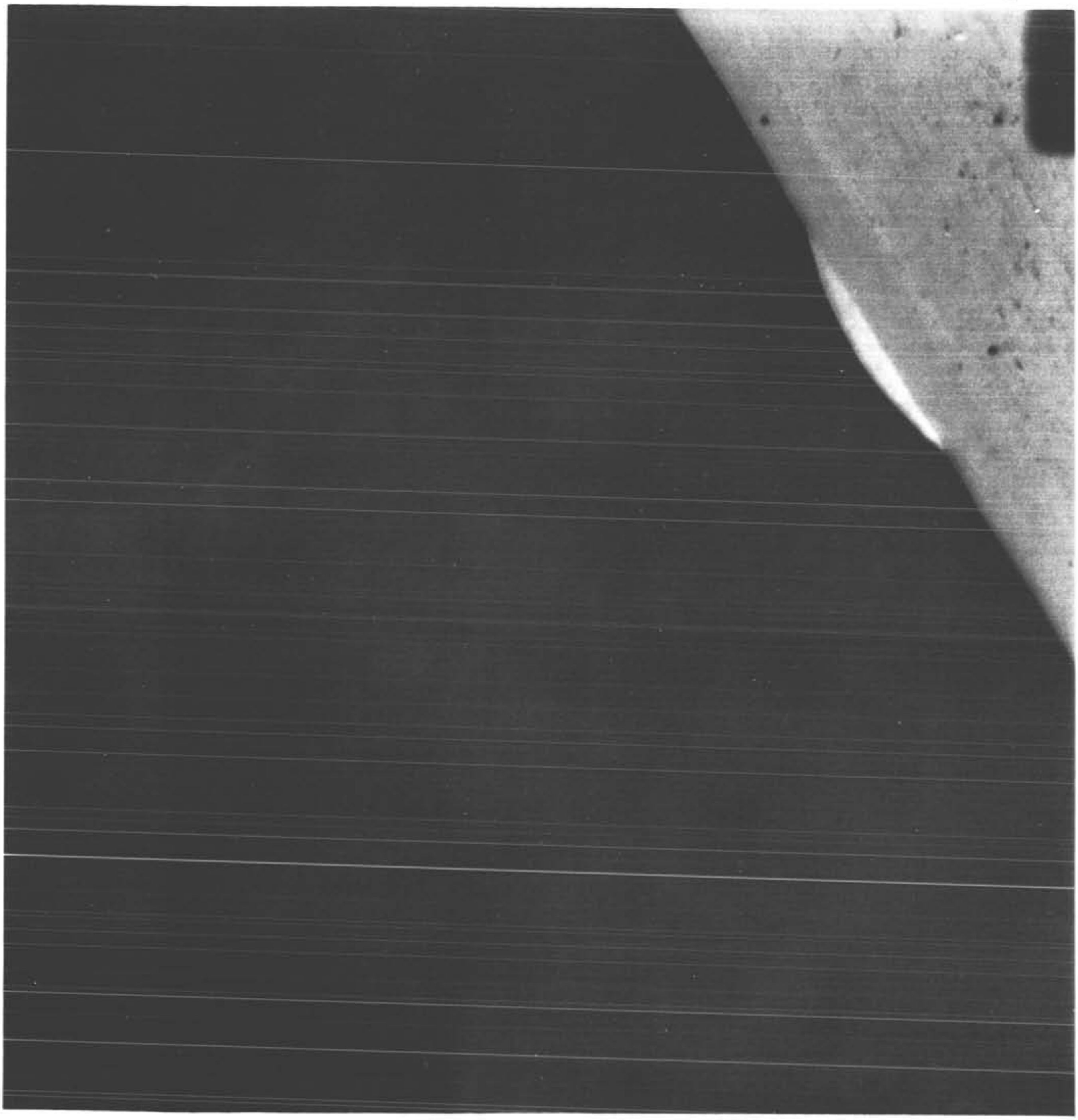
Surveyor I-111



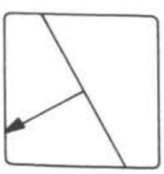
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(111)	162	12 39 29	105	6.70	18.55	F10.1	N	CLR	24271



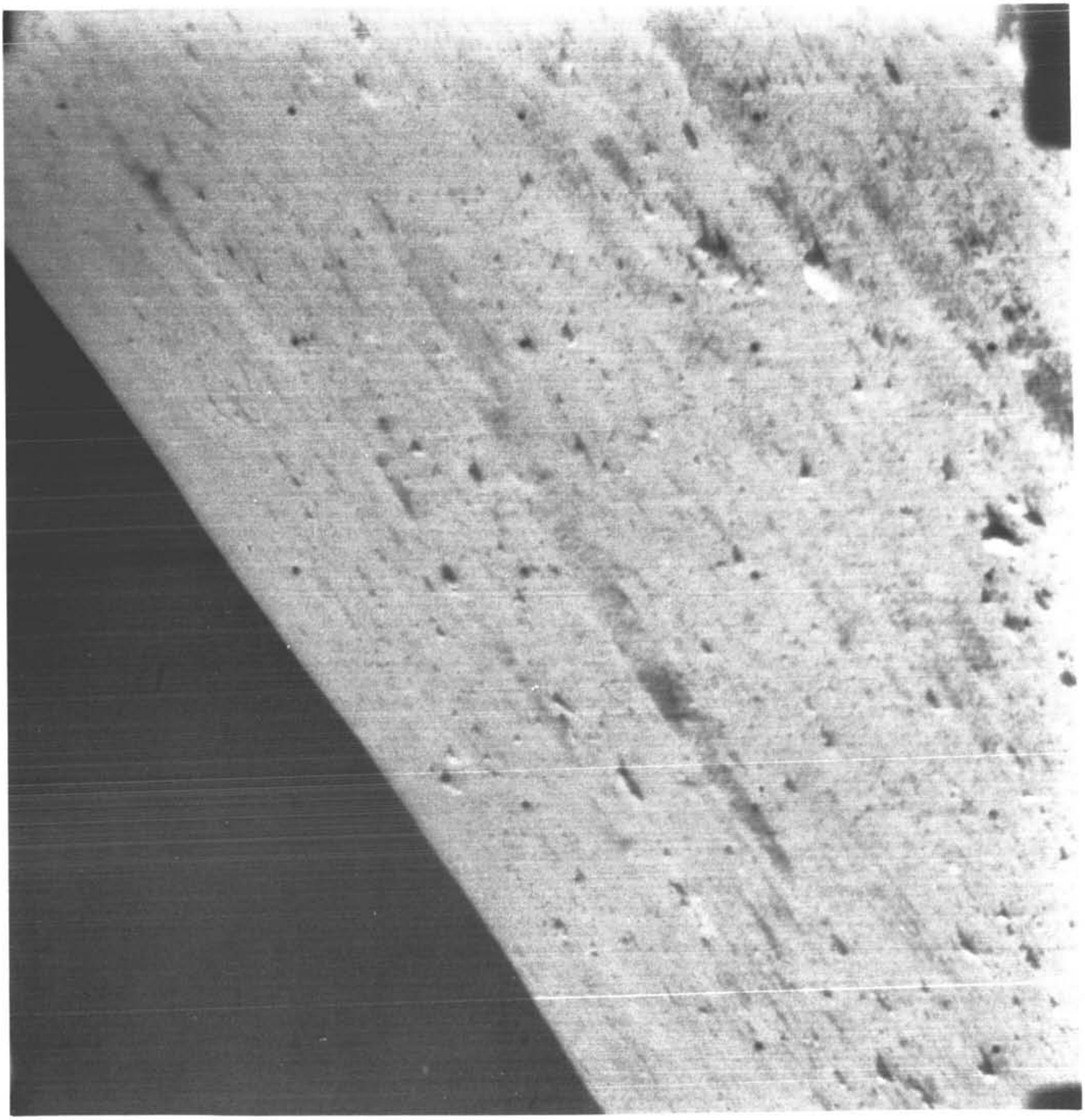
Surveyor I-112



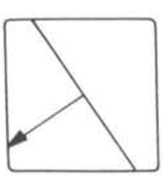
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(112)	162	12 39 44	108	11.66	27.40	F10.1	N	CLR	24274



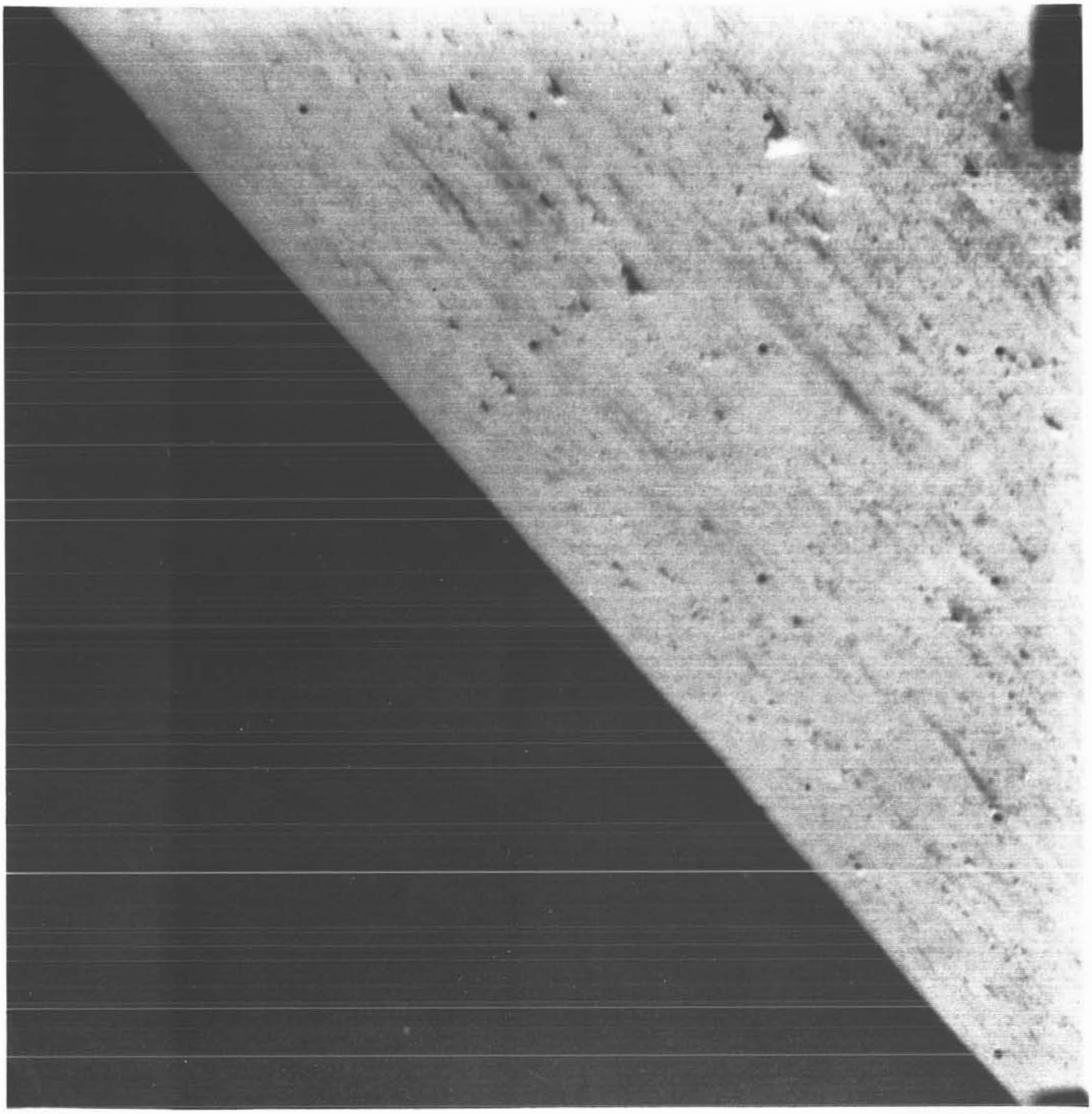
Surveyor I-113



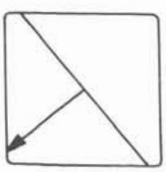
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(113)	162	12 42 04	111	6.70	27.40	F10.1	N	CLR	24314



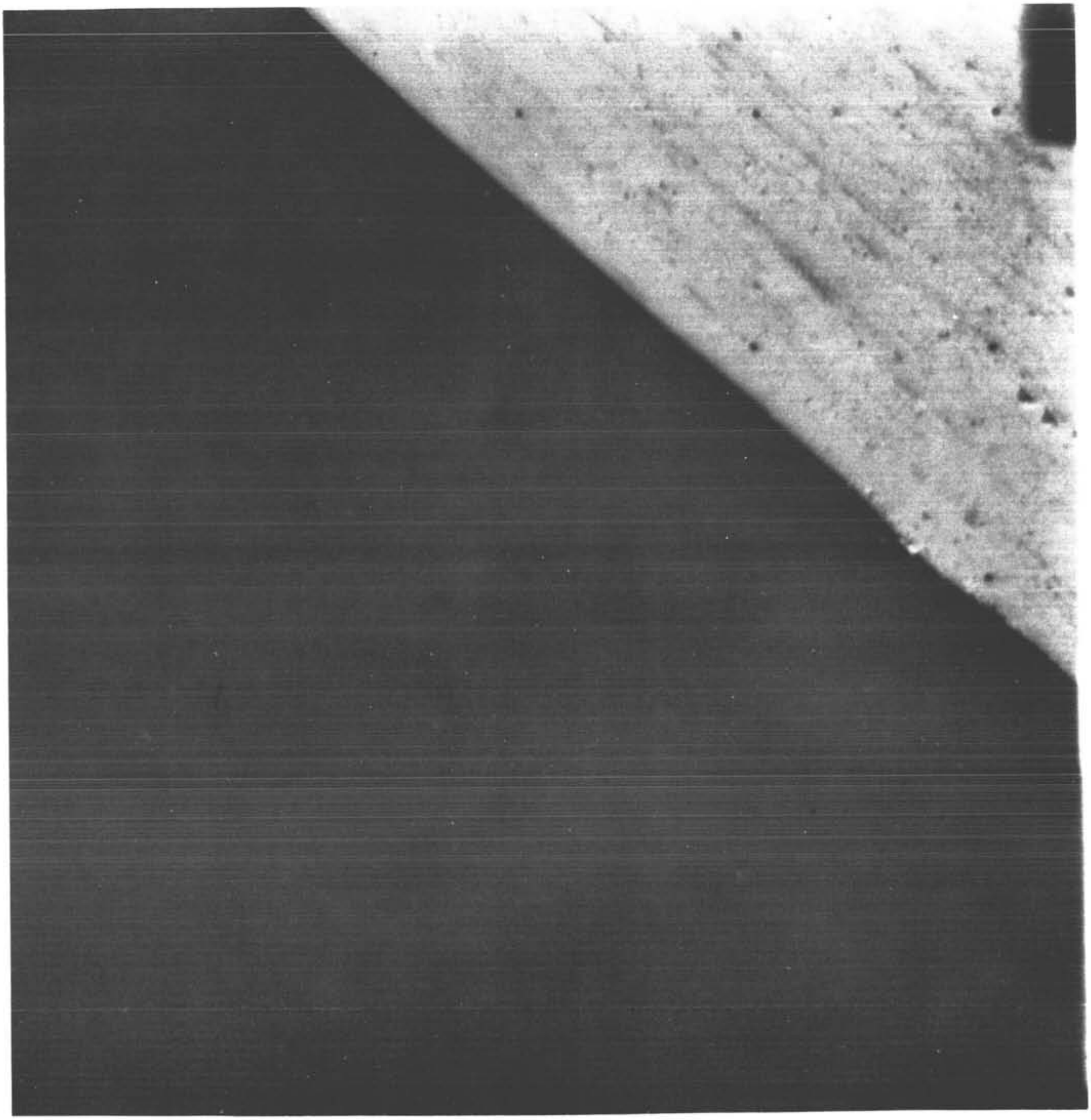
Surveyor I-114



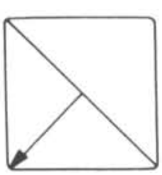
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(114)	162	12 43 30	117	6.70	27.40	F10.1	N	CLR	24334



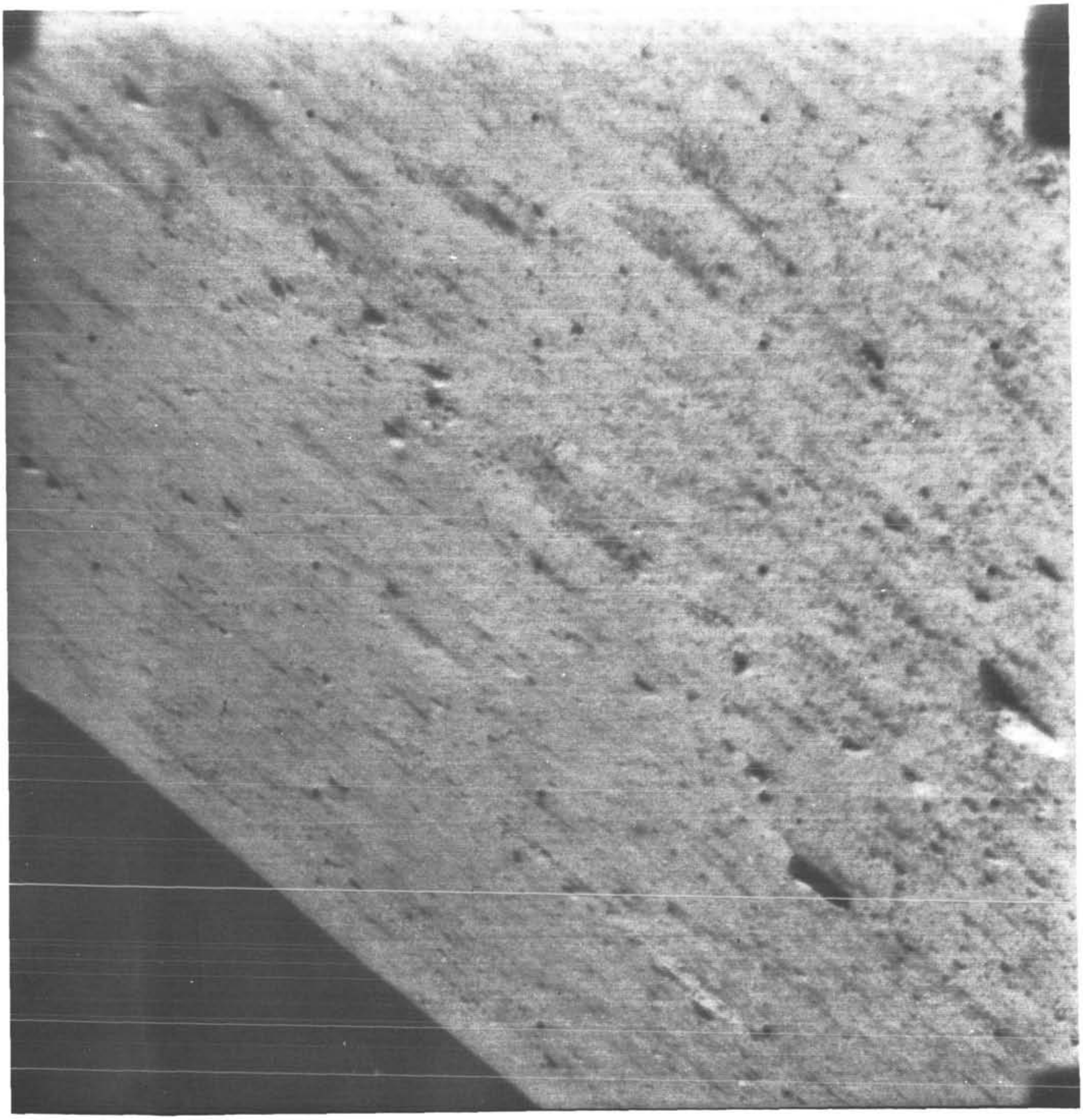
Surveyor I-115



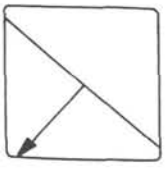
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(115)	162	12 44 57	123	6.70	27.40	F10.1	N	CLR	24354



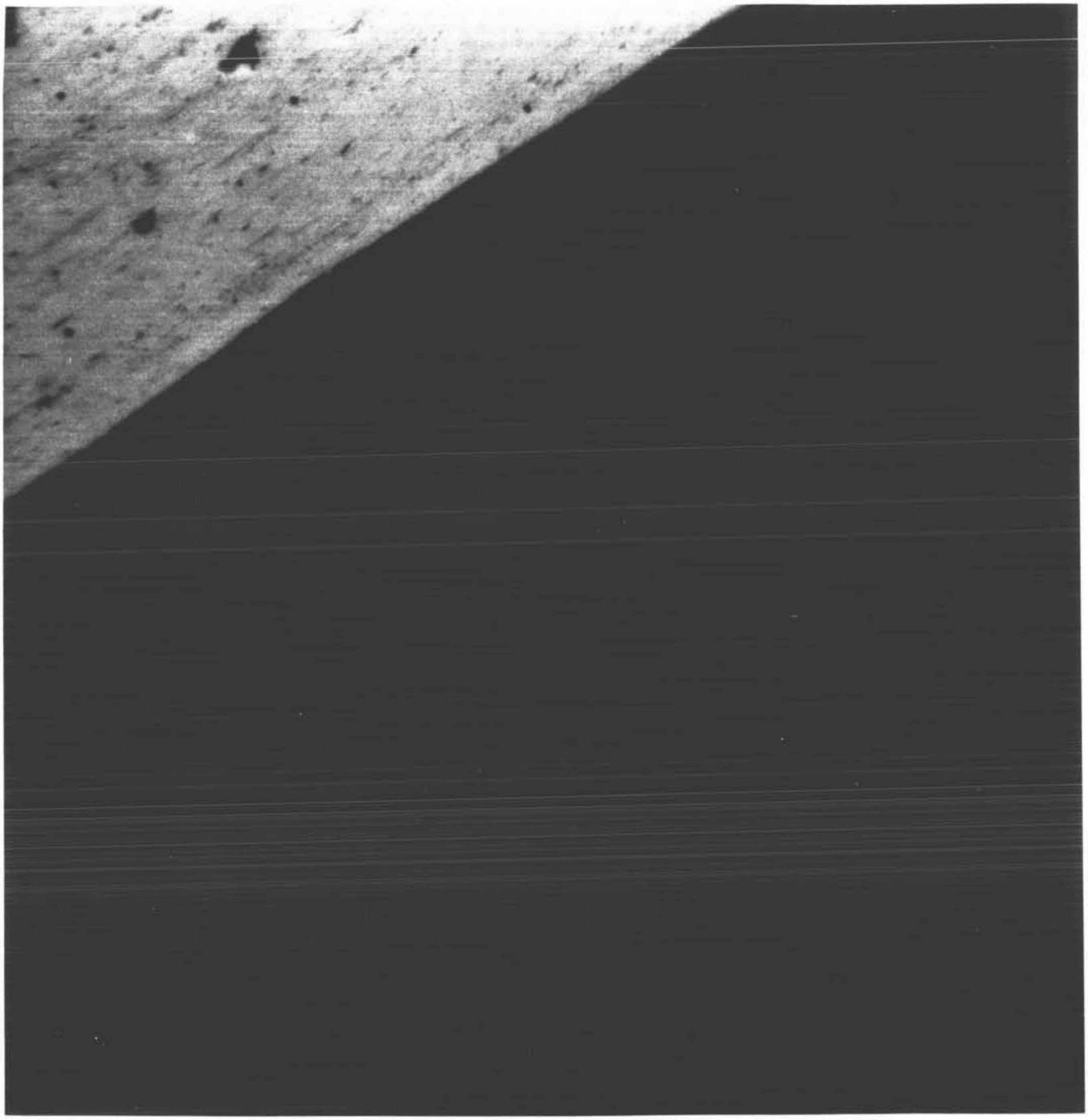
Surveyor I-116



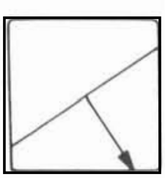
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(116)	162	12 45 06	126	1.74	27.40	F10.1	N	CLR	24356



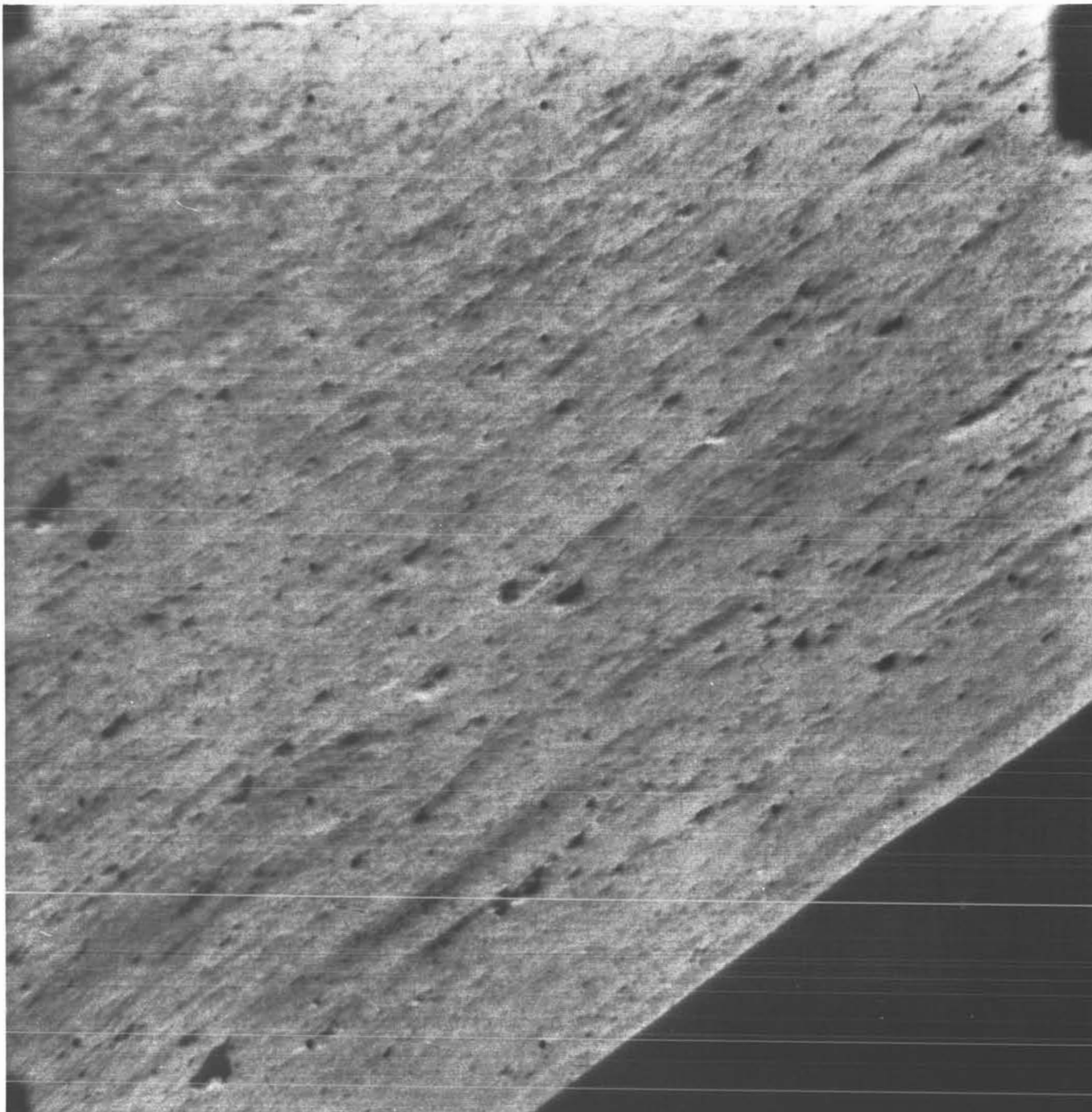
Surveyor I-117



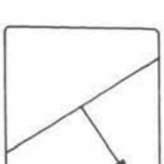
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(117)	162	13 20 40	−153	−13.14	27.40	F 7.5	N	CLR	24376



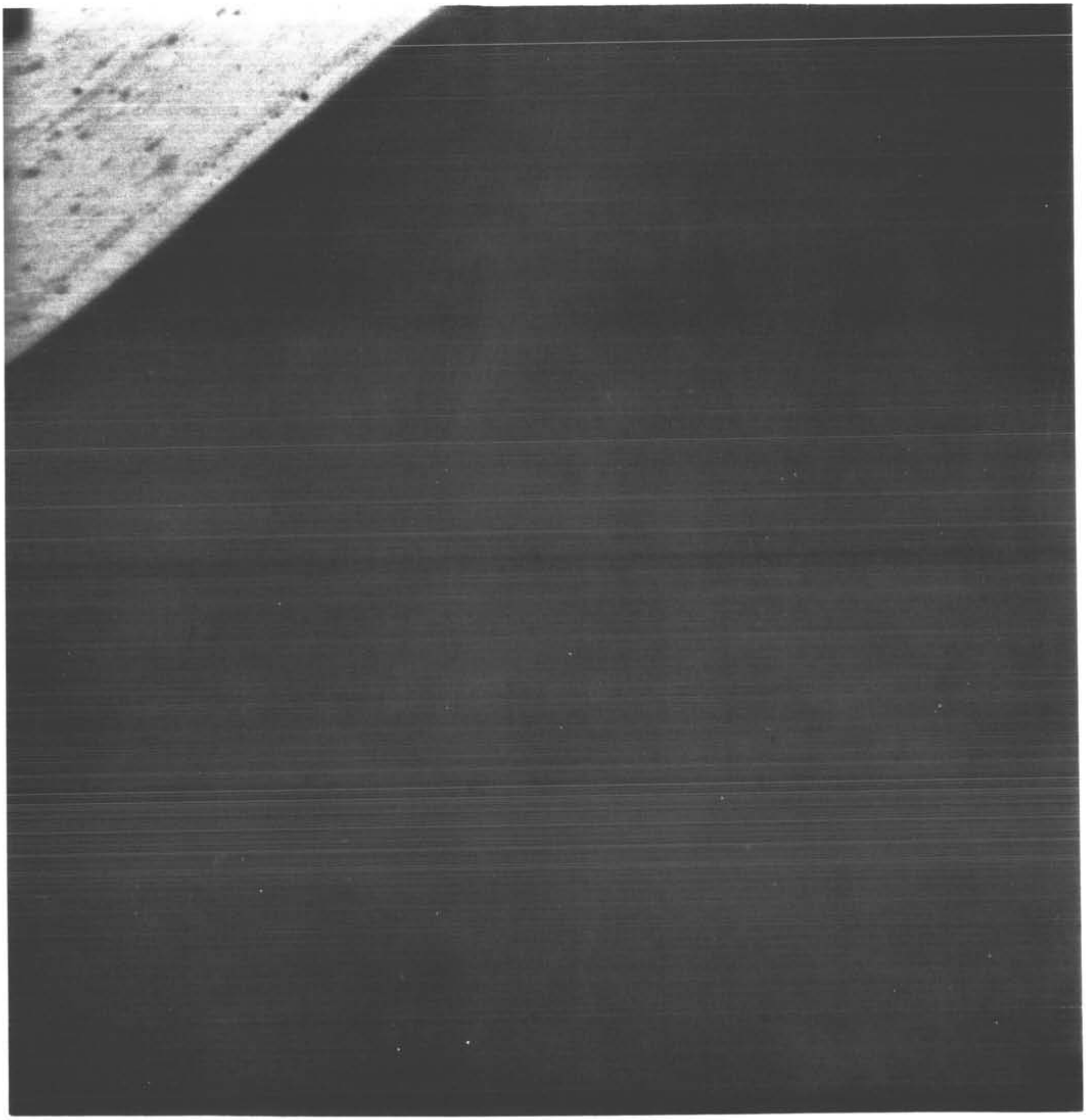
Surveyor I-118



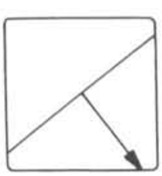
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(118)	162	13 20 49	−150	−18.10	27.40	F 7.5	N	CLR	24400



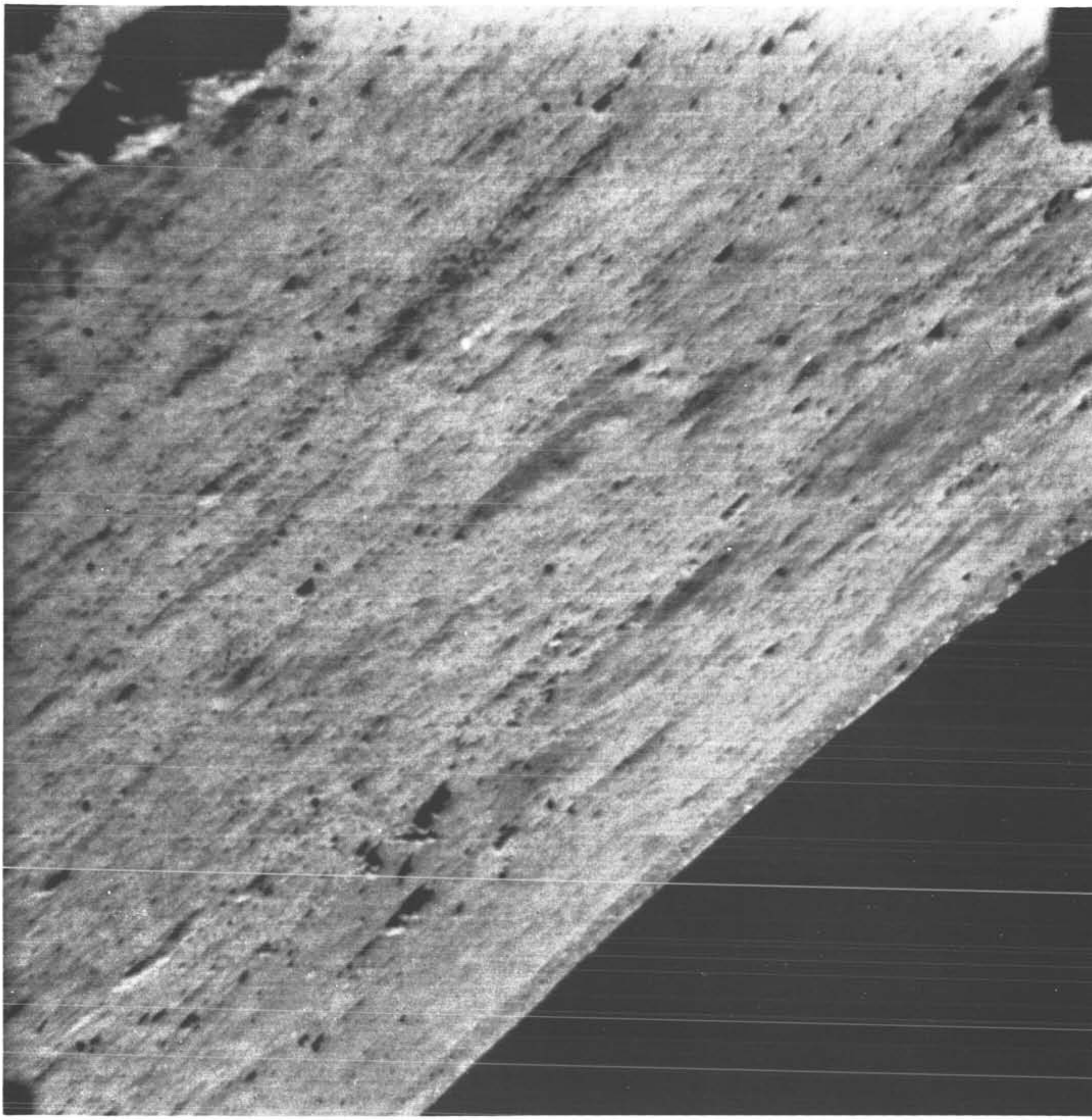
Surveyor I-119



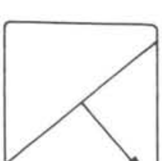
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(119)	162	13 21 49	−147	−13.14	27.40	F 7.5	N	CLR	24412



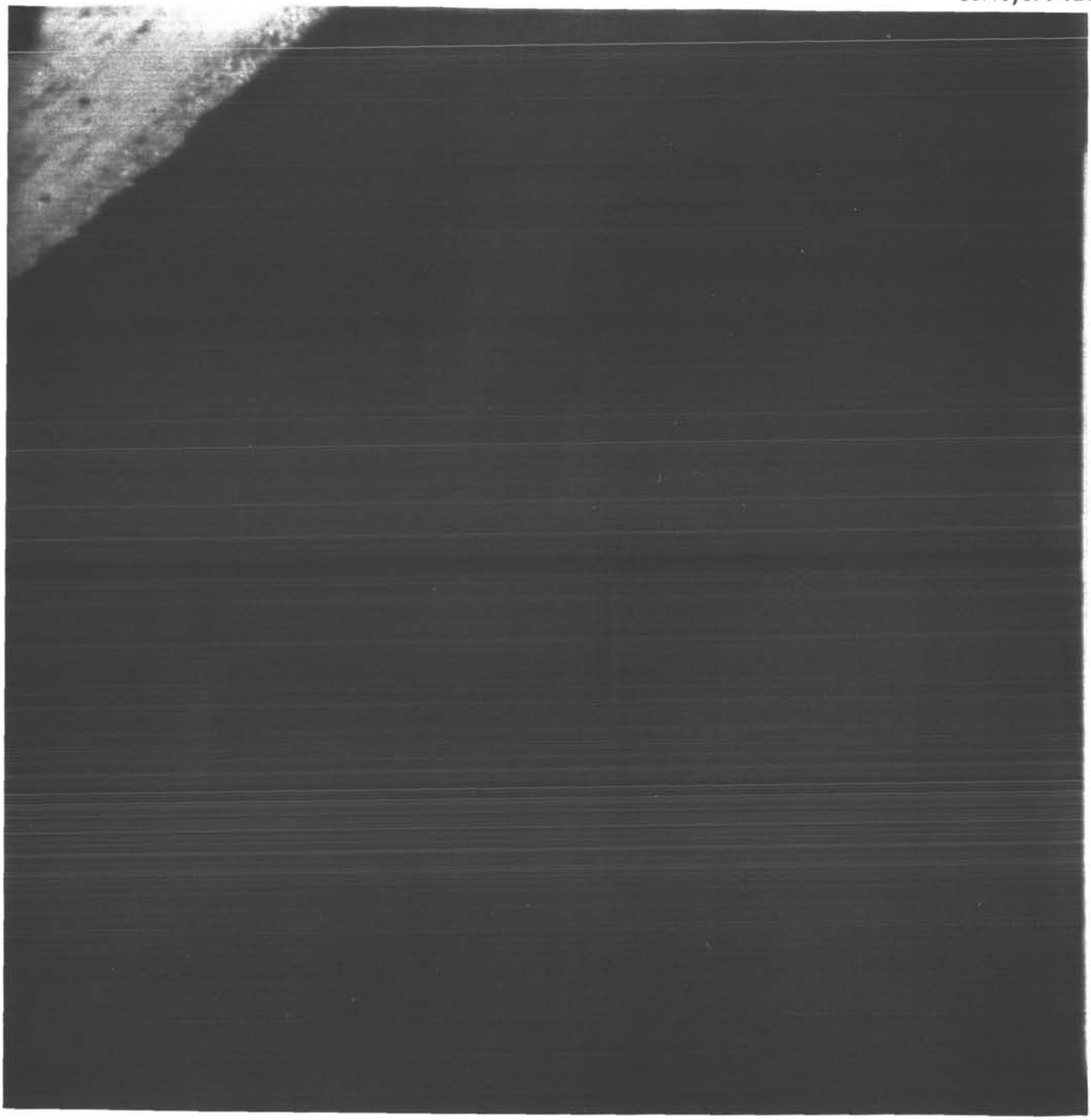
Surveyor I-120



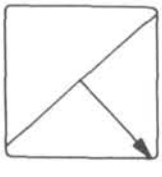
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(120)	162	13 21 59	−144	−18.10	27.40	F 7.5	N	CLR	24414



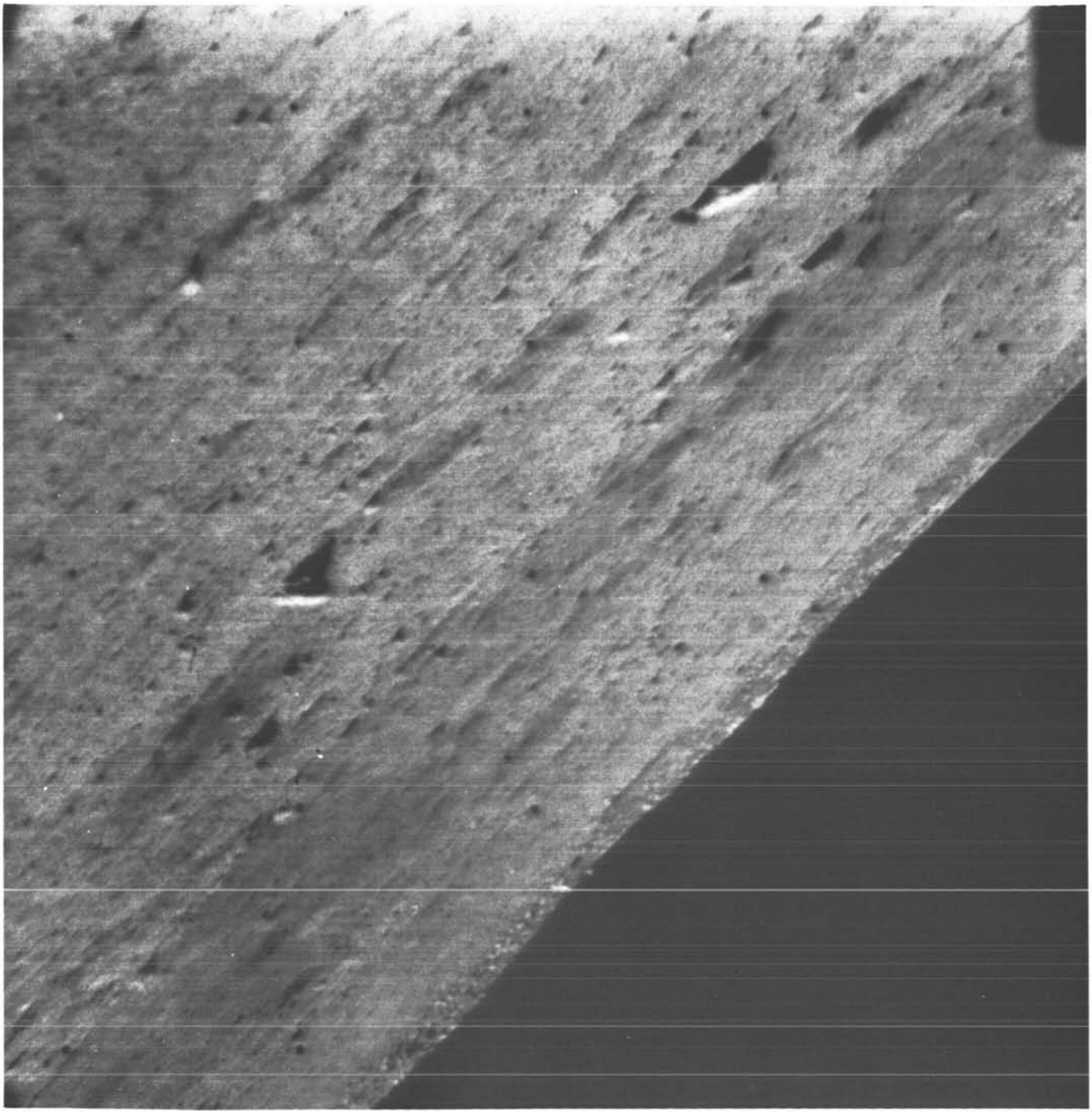
Surveyor I-121



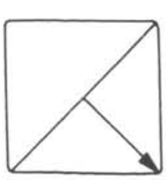
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(121)	162	13 24 32	−141	−13.14	27.40	F 7.5	N	CLR	24427



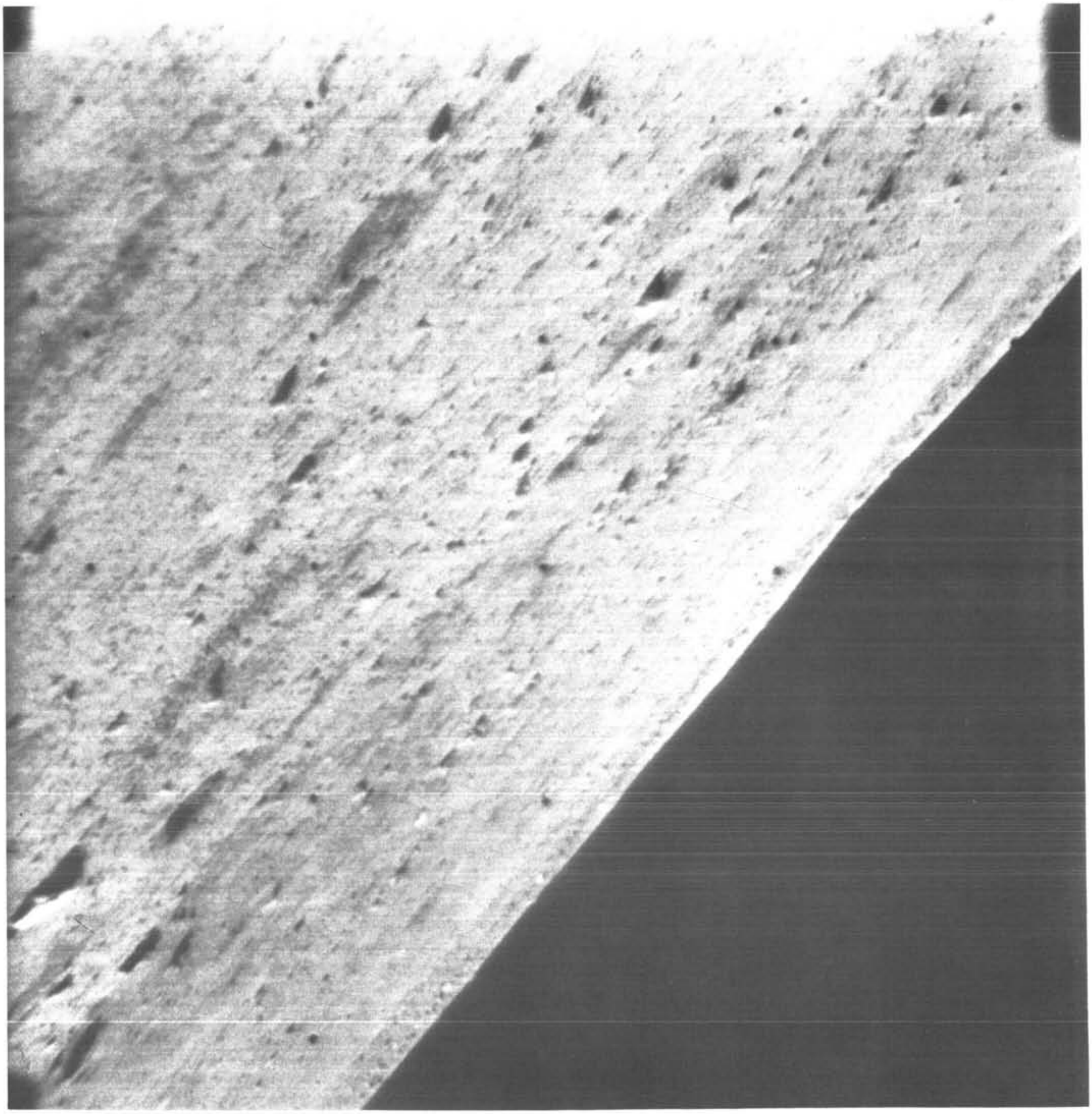
Surveyor I-122



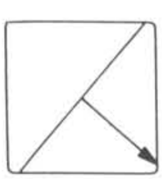
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(122)	162	13 24 40	−138	−18.10	27.40	F 7.5	N	CLR	24431



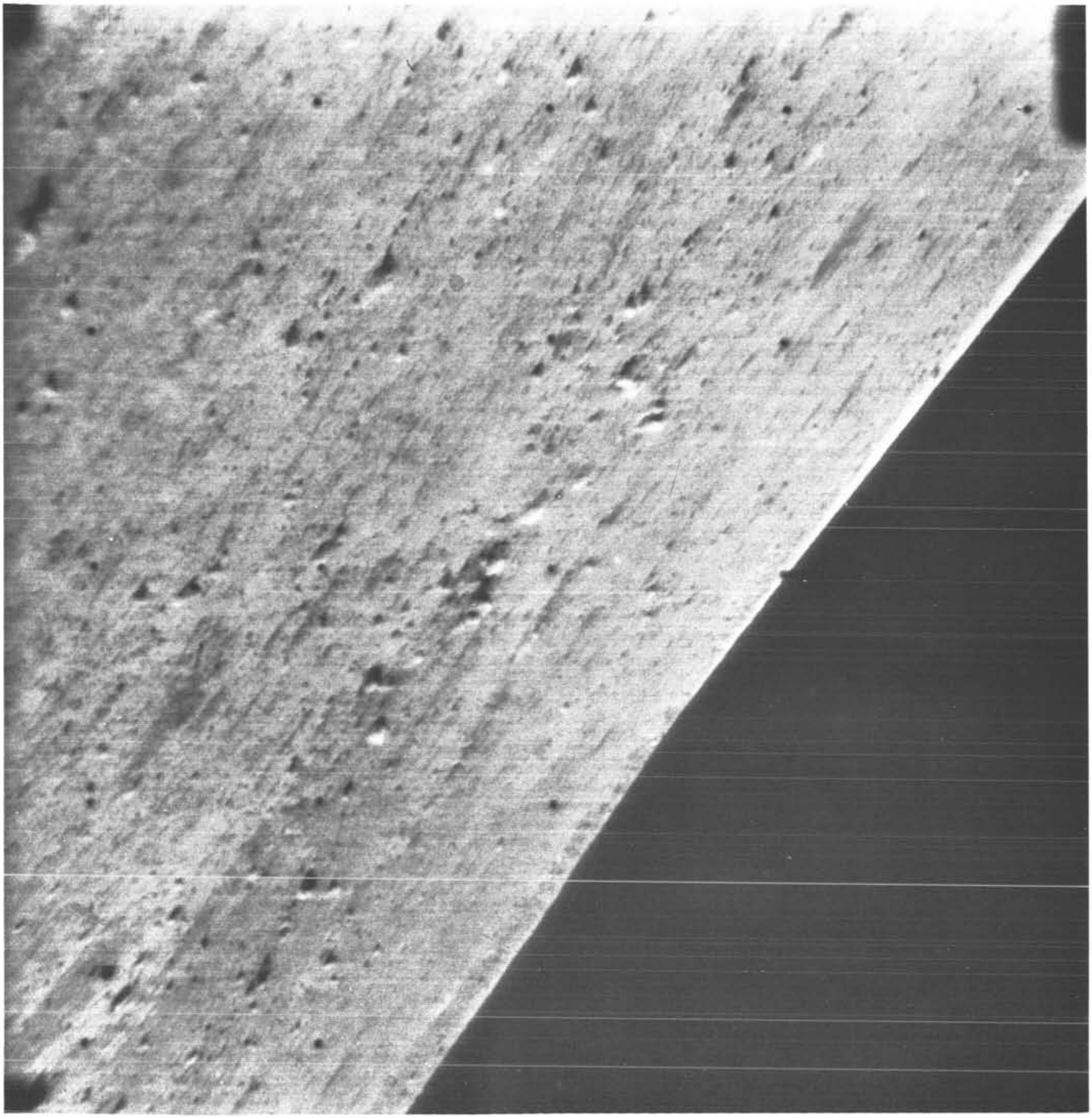
Surveyor I-123



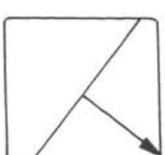
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(123)	162	13 25 48	−132	−18.10	27.40	F 7.5	N	CLR	24445



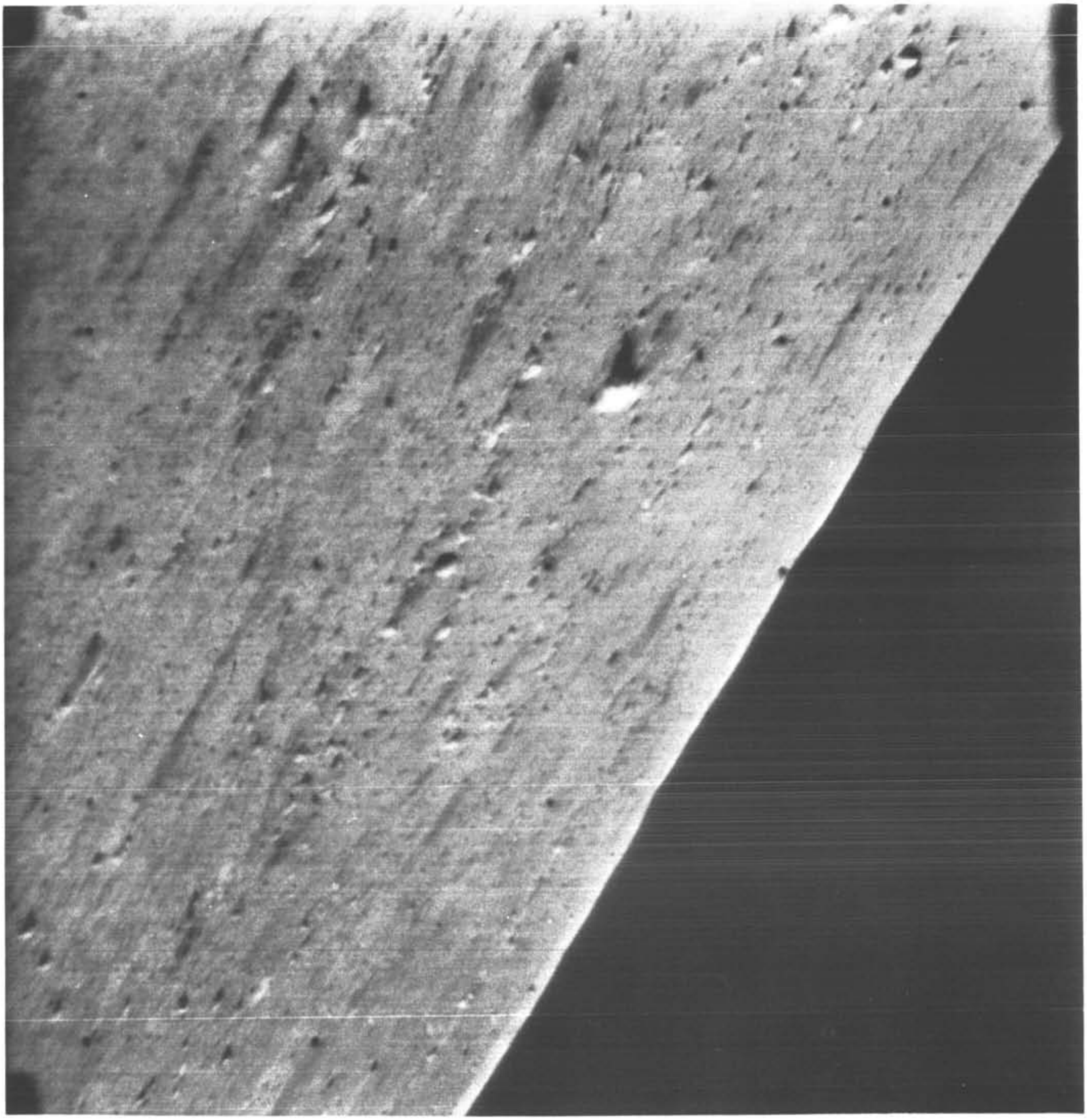
Surveyor I-124



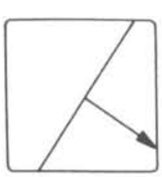
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(124)	162	13 26 56	−126	−18.10	27.40	F 7.5	N	CLR	24461



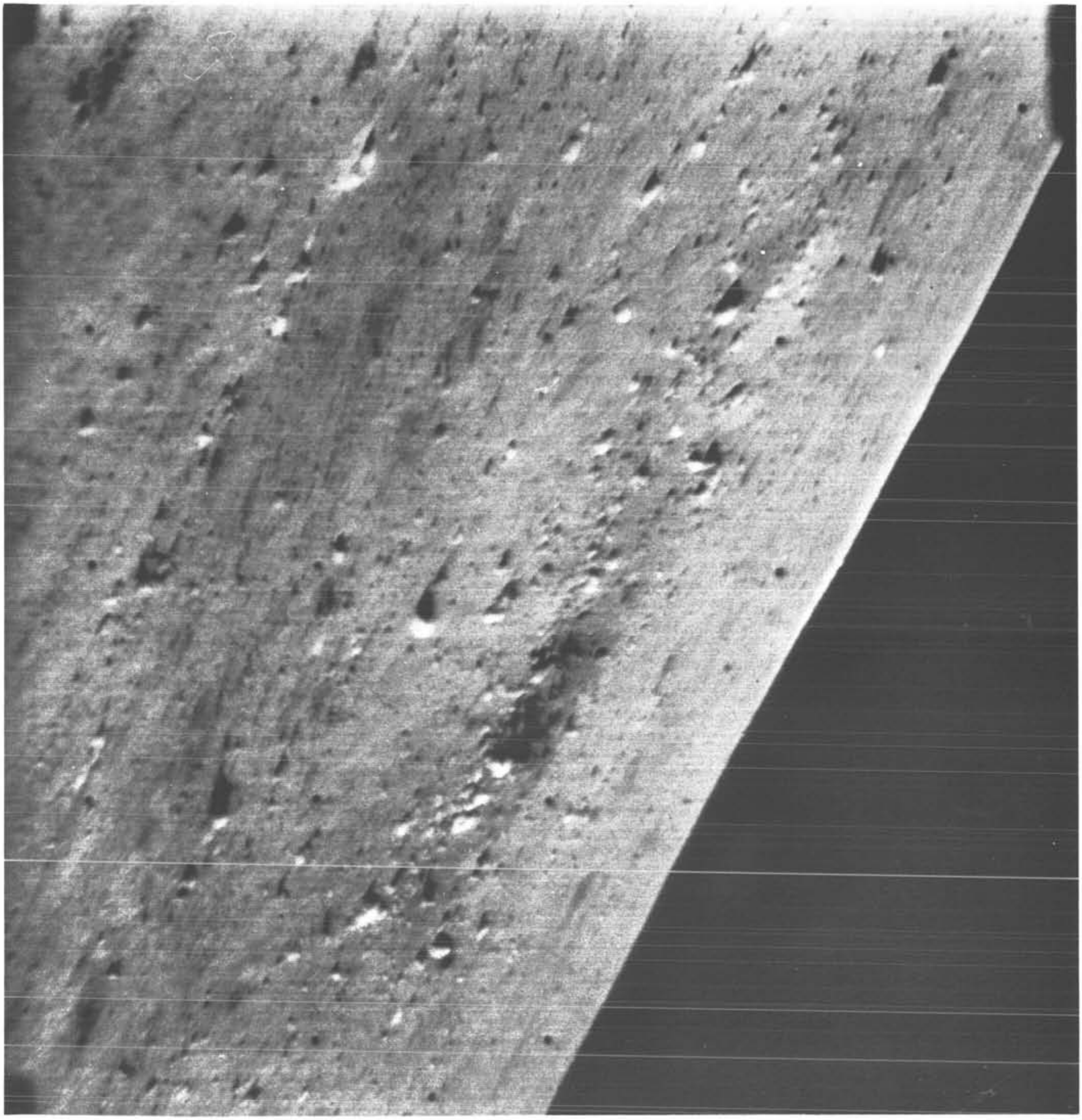
Surveyor I-125



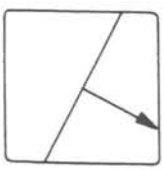
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(125)	162	13 30 12	−120	−18.10	27.40	F 7.5	N	CLR	24476



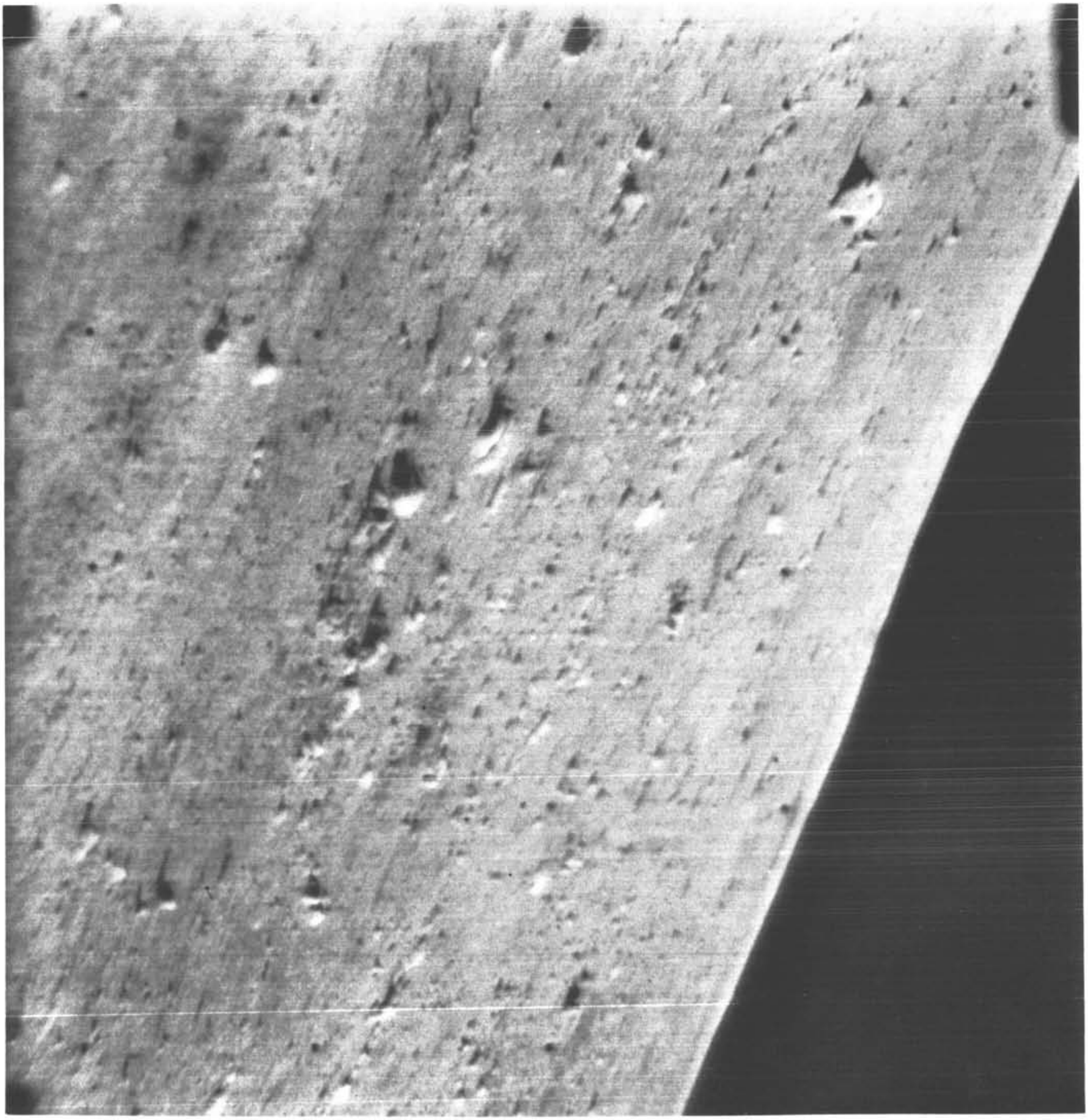
Surveyor I-126



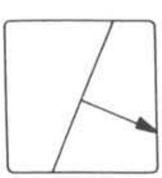
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(126)	162	13 31 20	−114	−18.10	27.40	F 7.5	N	CLR	24512



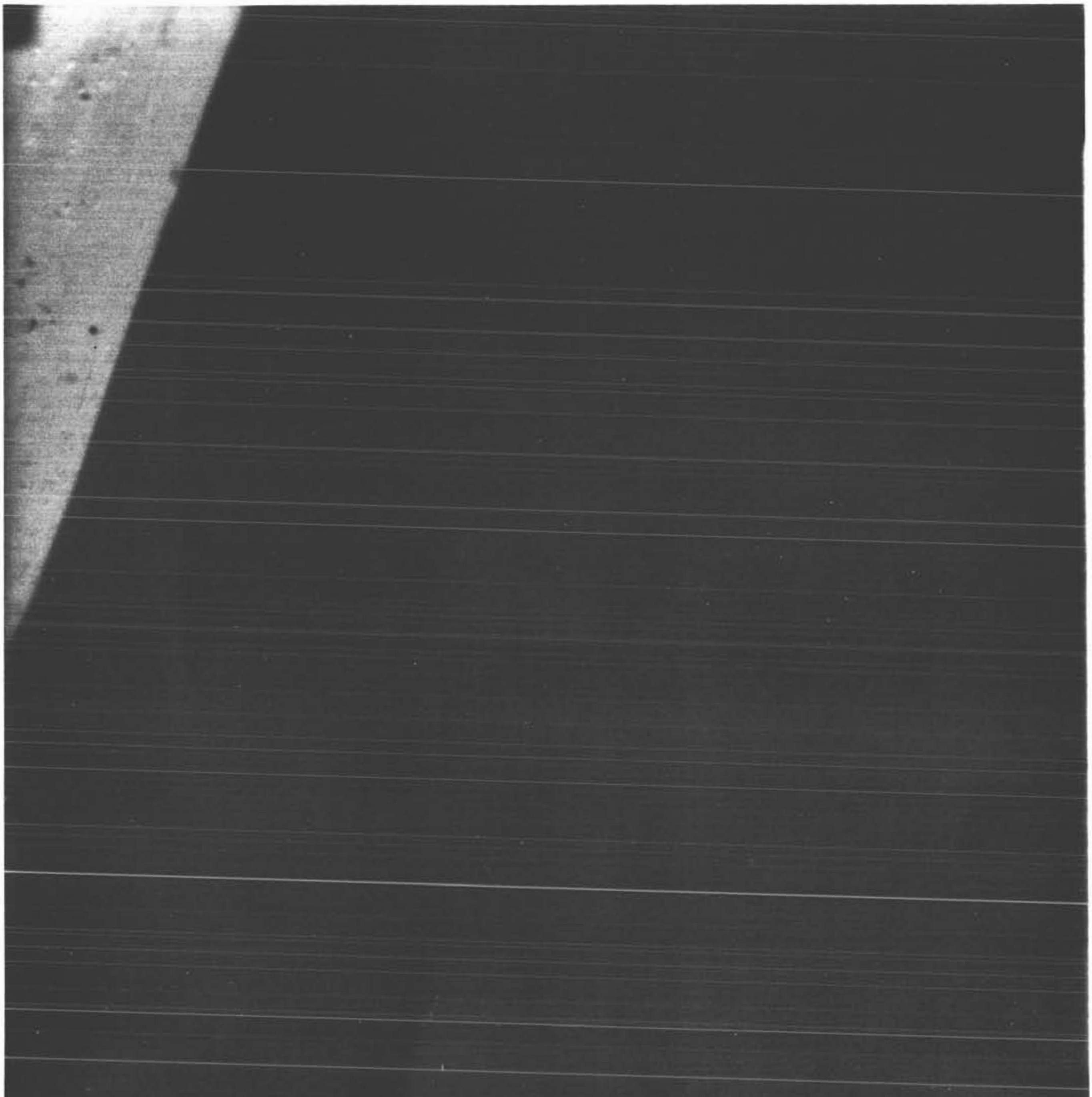
Surveyor I-127



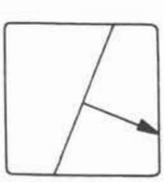
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(127)	162	13 32 27	−108	−18.10	27.40	F 7.5	N	CLR	24526



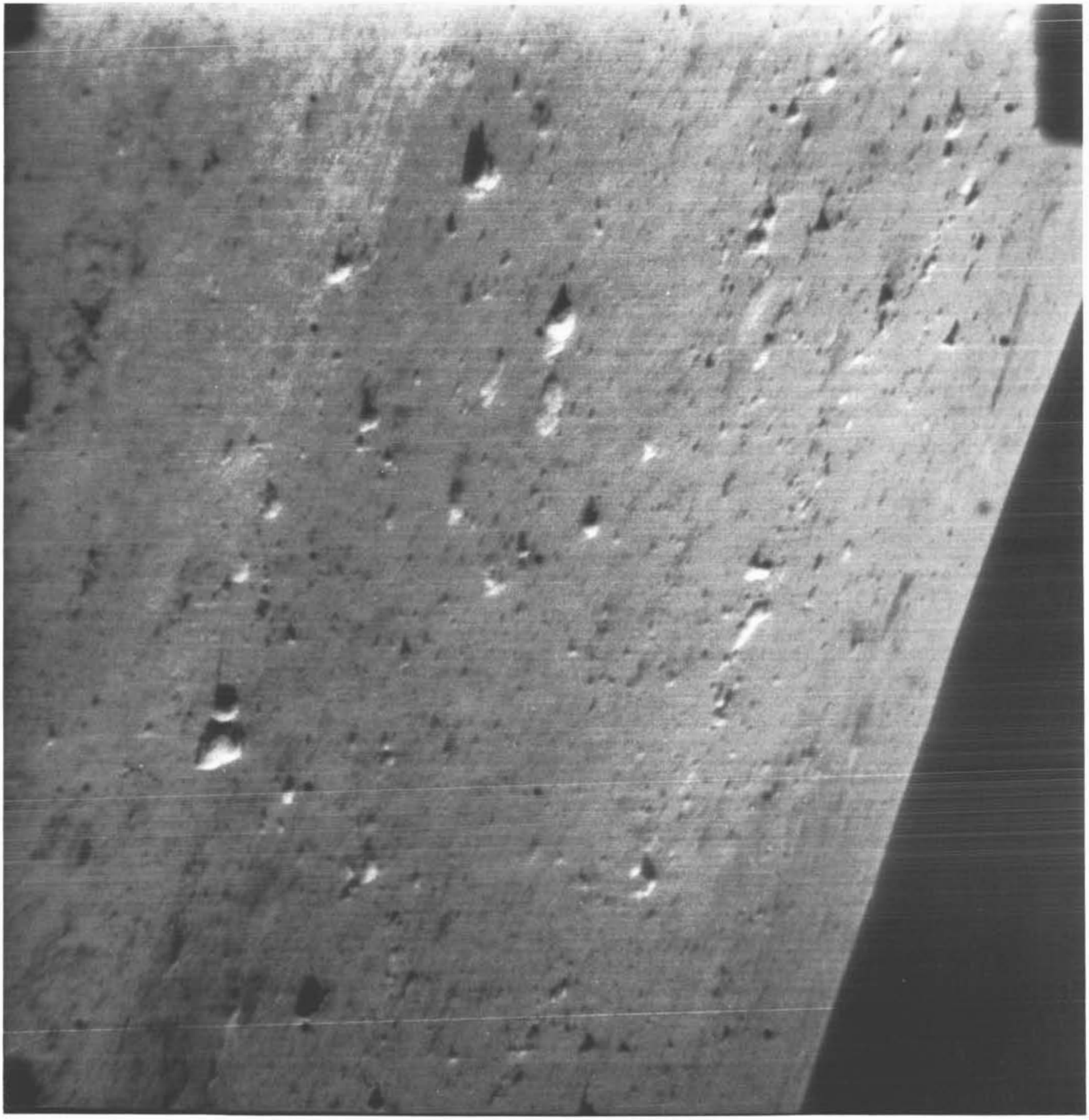
Surveyor I-128



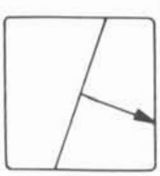
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(128)	162	13 36 04	−105	−13.14	27.40	F10.1	N	CLR	24541



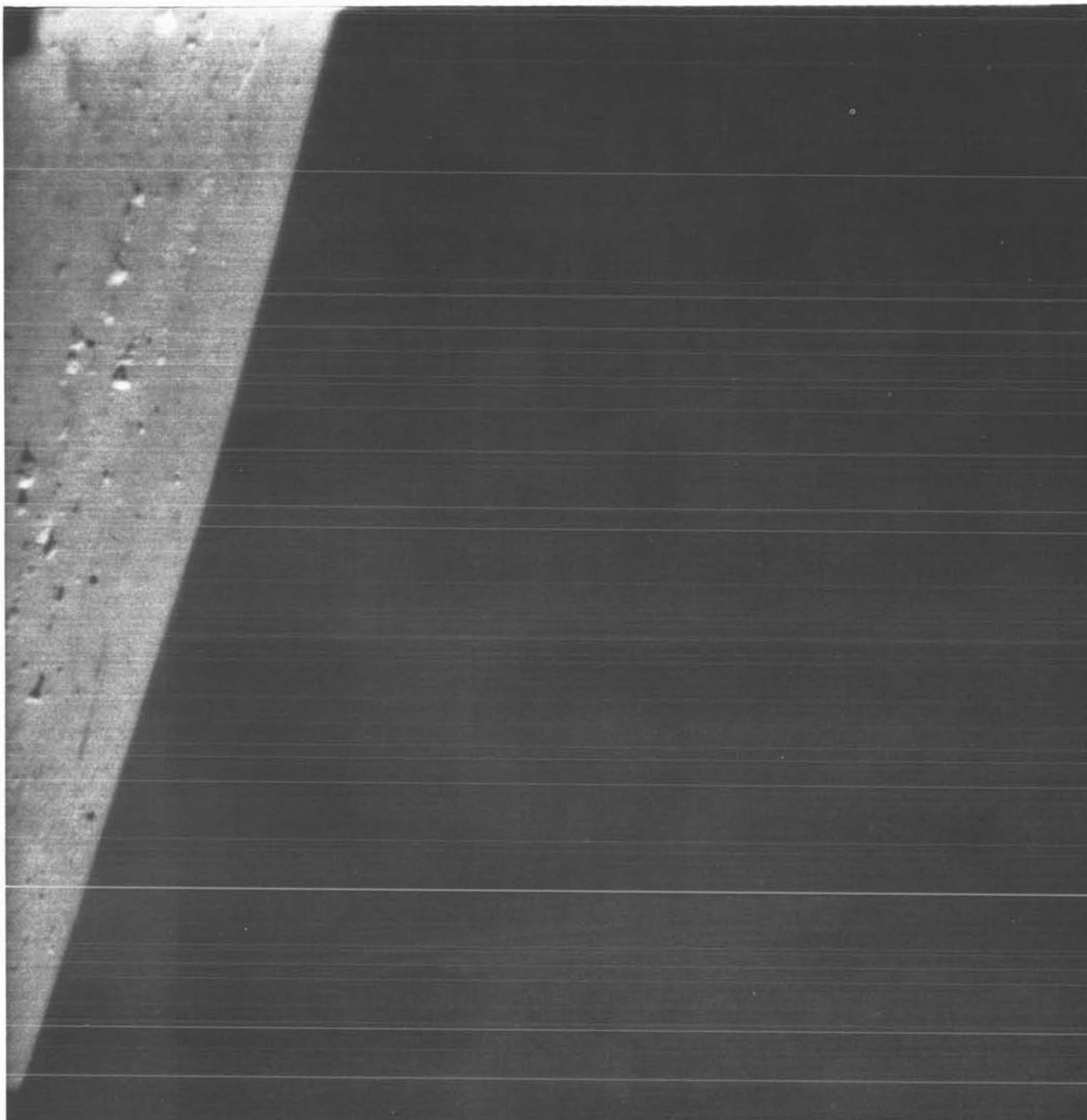
Surveyor I-129



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(129)	162	13 36 13	−102	−18.10	27.40	F10.1	N	CLR	24543

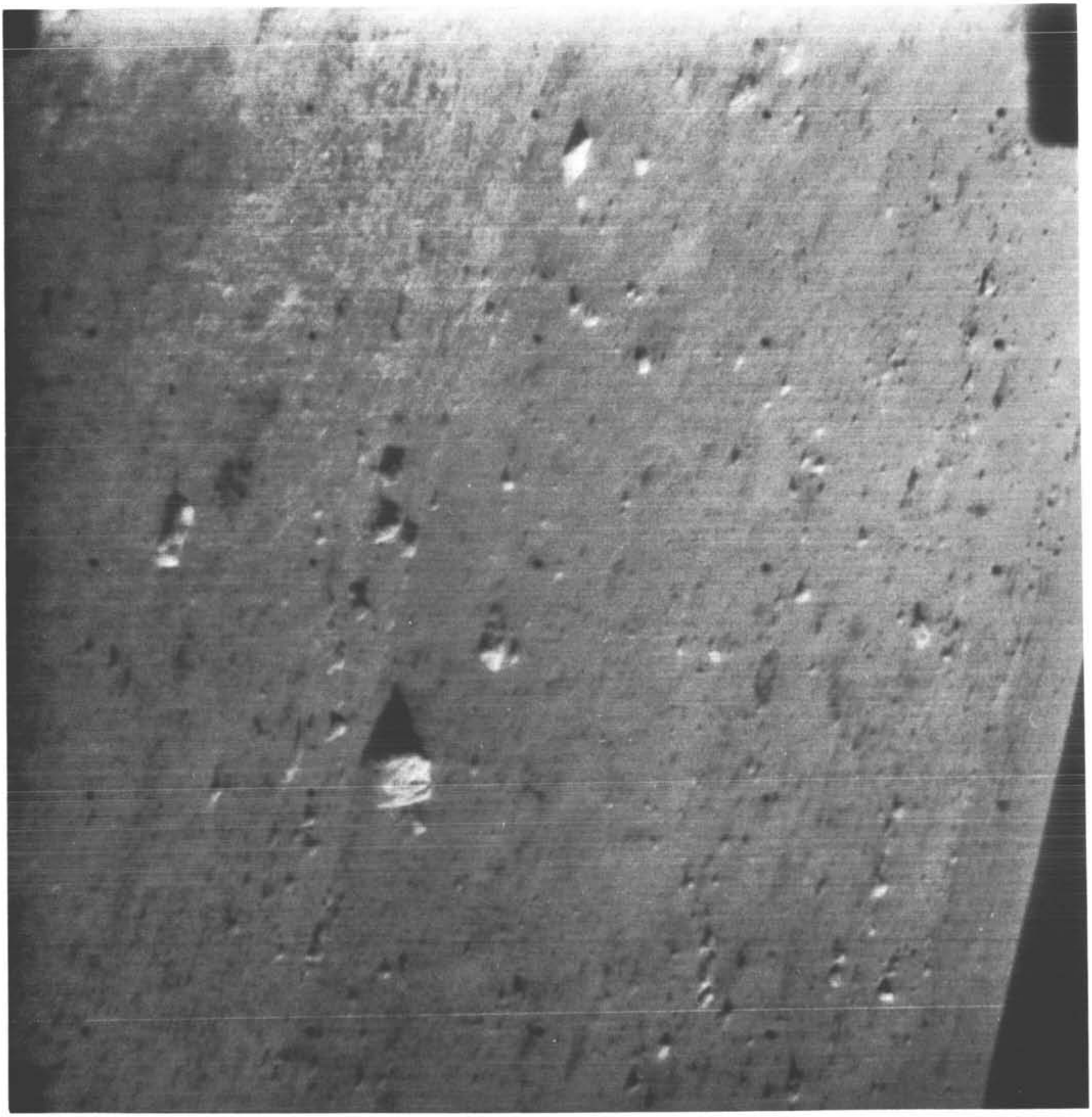


Surveyor I-130

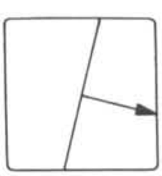


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(130)	162	13 37 12	− 99	−13.14	27.40	F10.1	N	CLR	24555

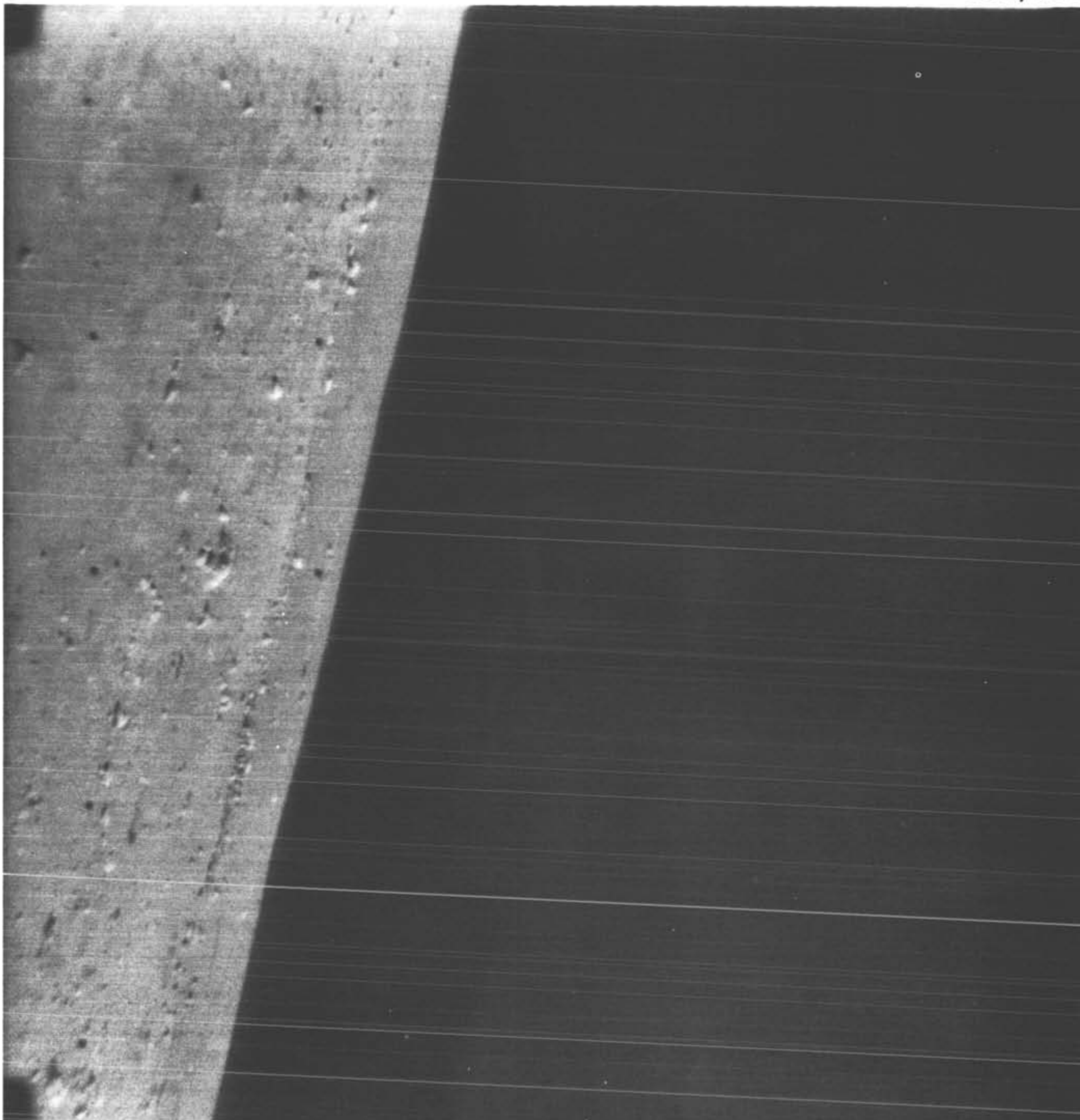
Surveyor I-131



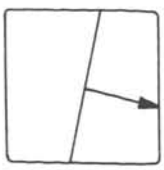
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(131)	162	13 37 20	− 96	−18.10	27.40	F10.1	N	CLR	24557



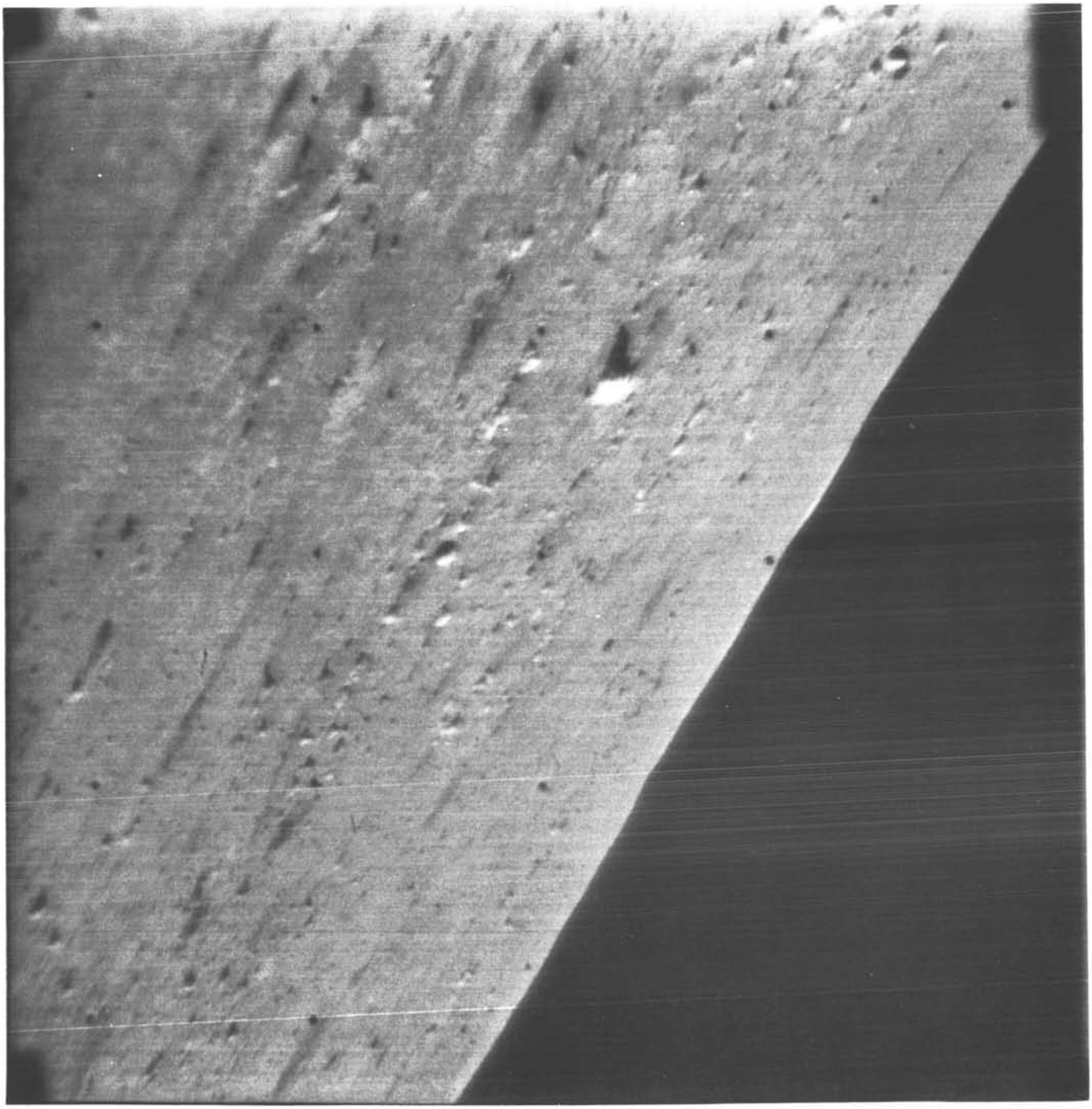
Surveyor I-132



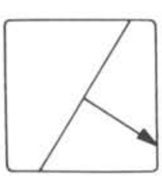
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(132)	162	13 38 19	− 93	−13.14	27.40	F10.1	N	CLR	24571



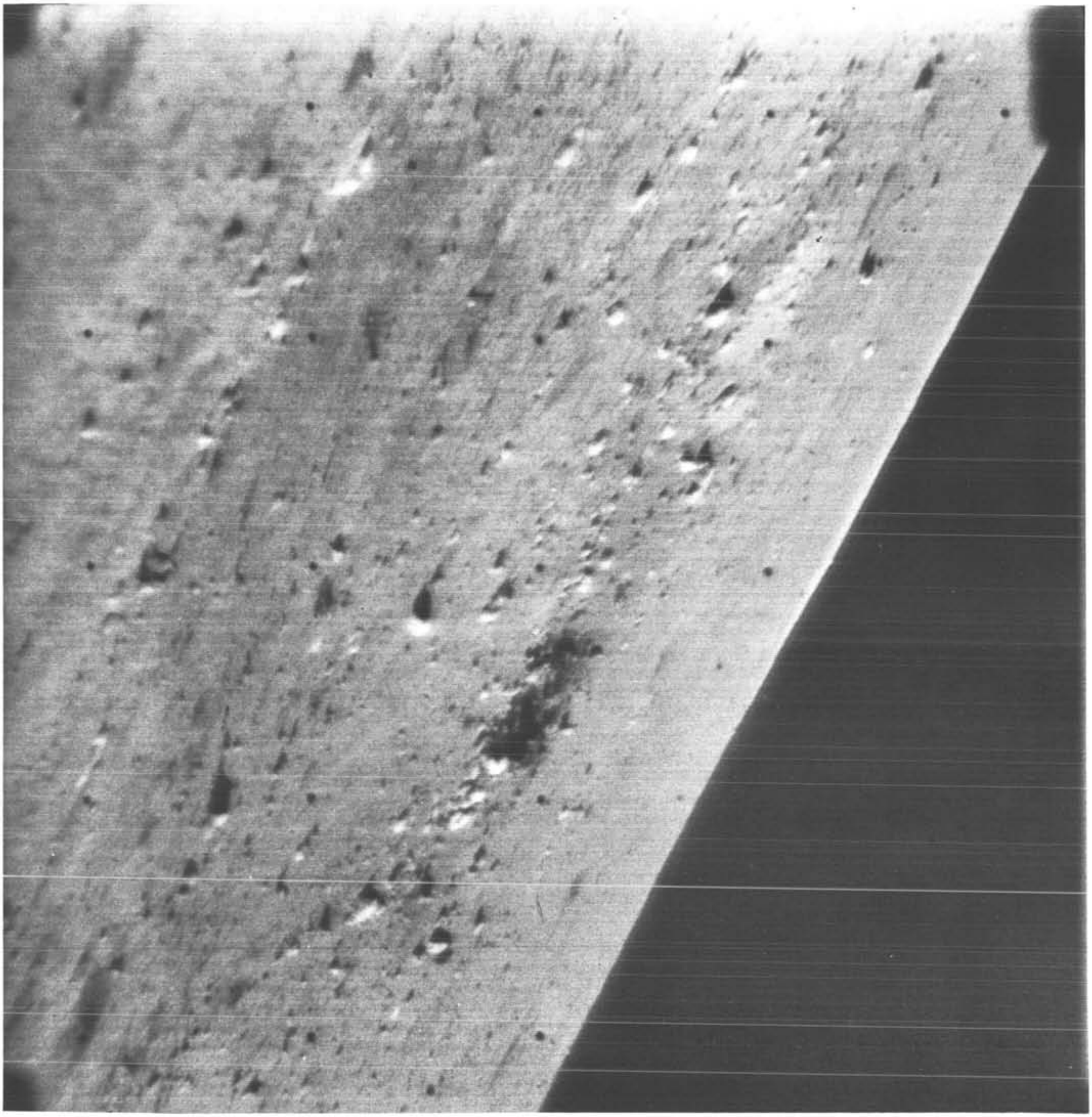
Surveyor I-133



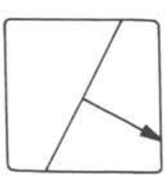
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(133)	162	16 07 50	−120	−18.10	27.40	F 5.8	N	BLU	24734



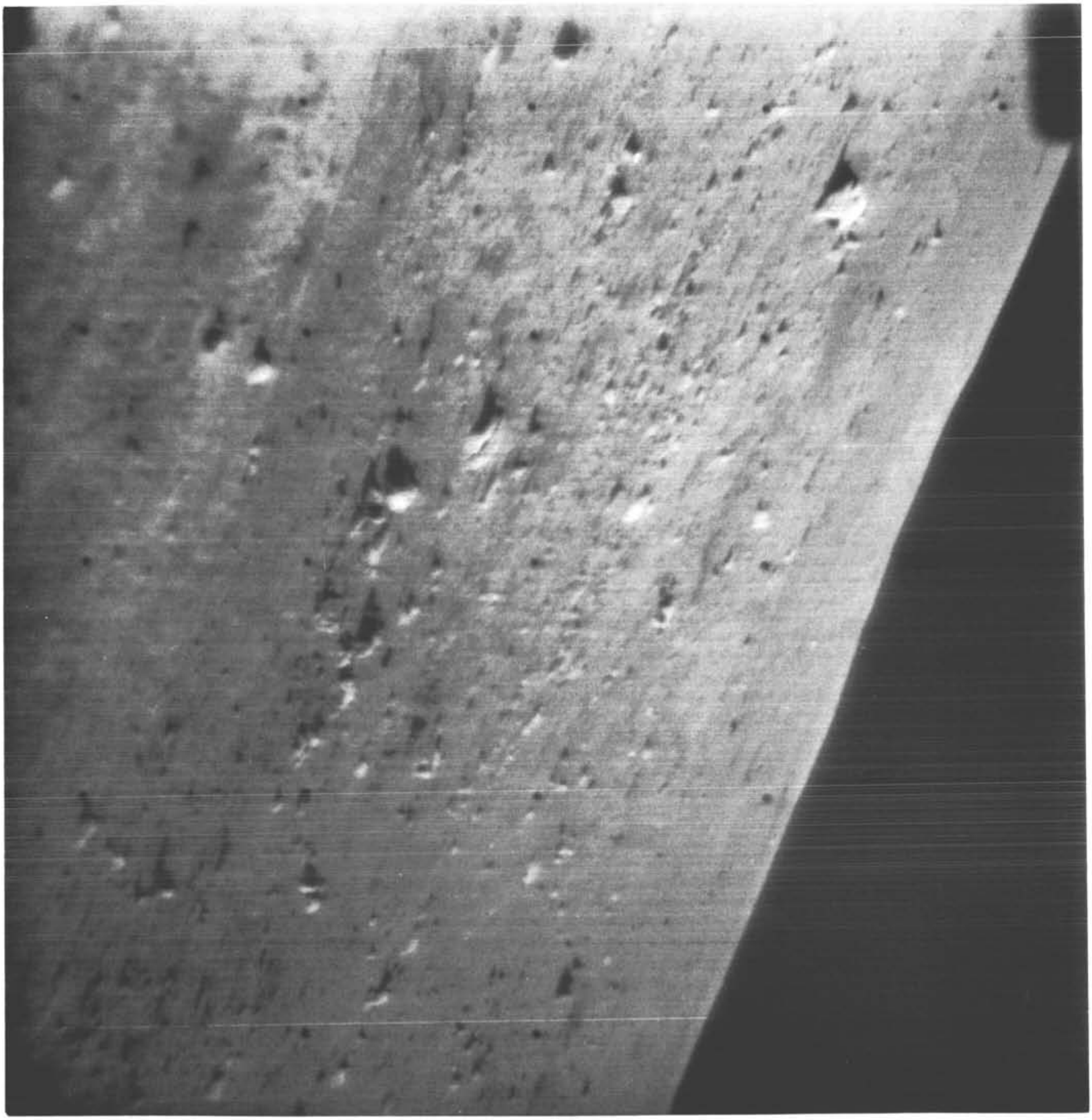
Surveyor I-134



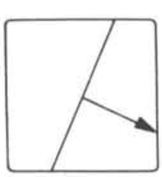
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(134)	162	16 08 59	−114	−18.10	27.40	F 5.8	N	BLU	24750



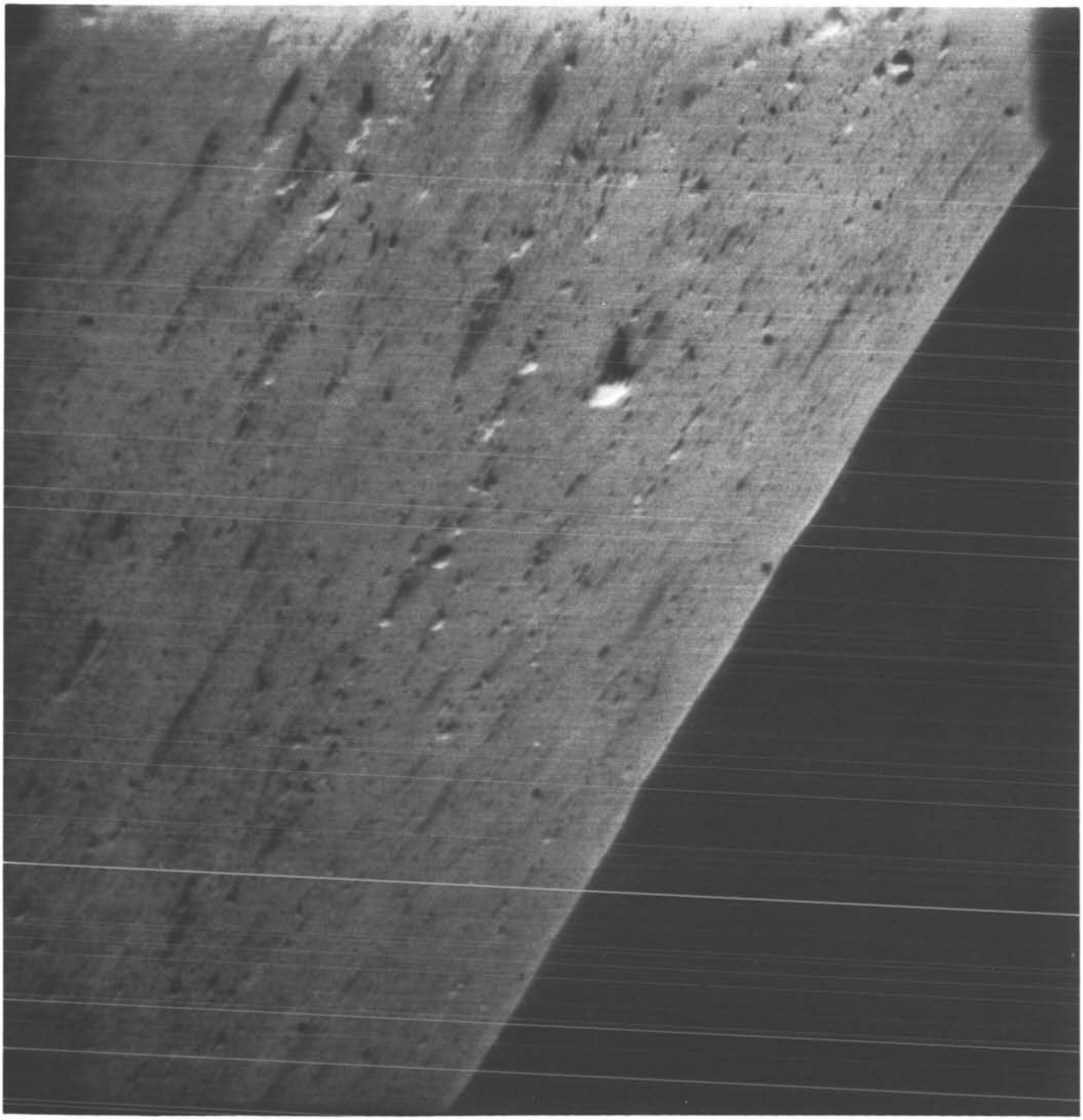
Surveyor I-135



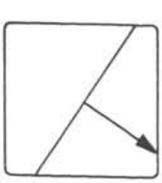
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(135)	162	16 10 07	−108	−18.10	27.40	F 5.8	N	BLU	24764



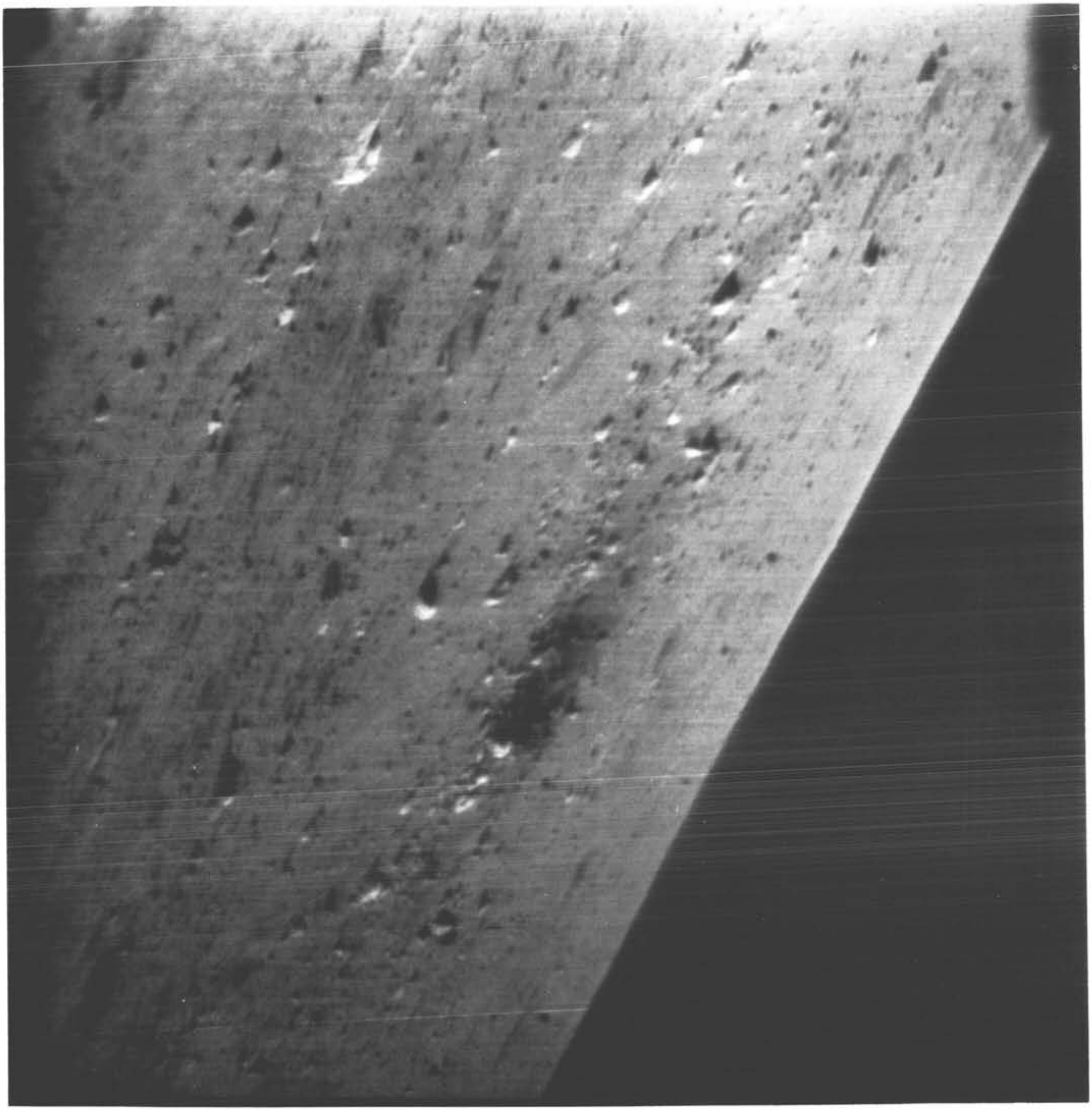
Surveyor I-136



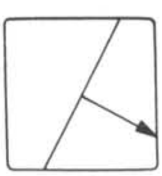
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(136)	162	16 12 19	−120	−18.10	27.40	F 5.8	N	GRN	25001



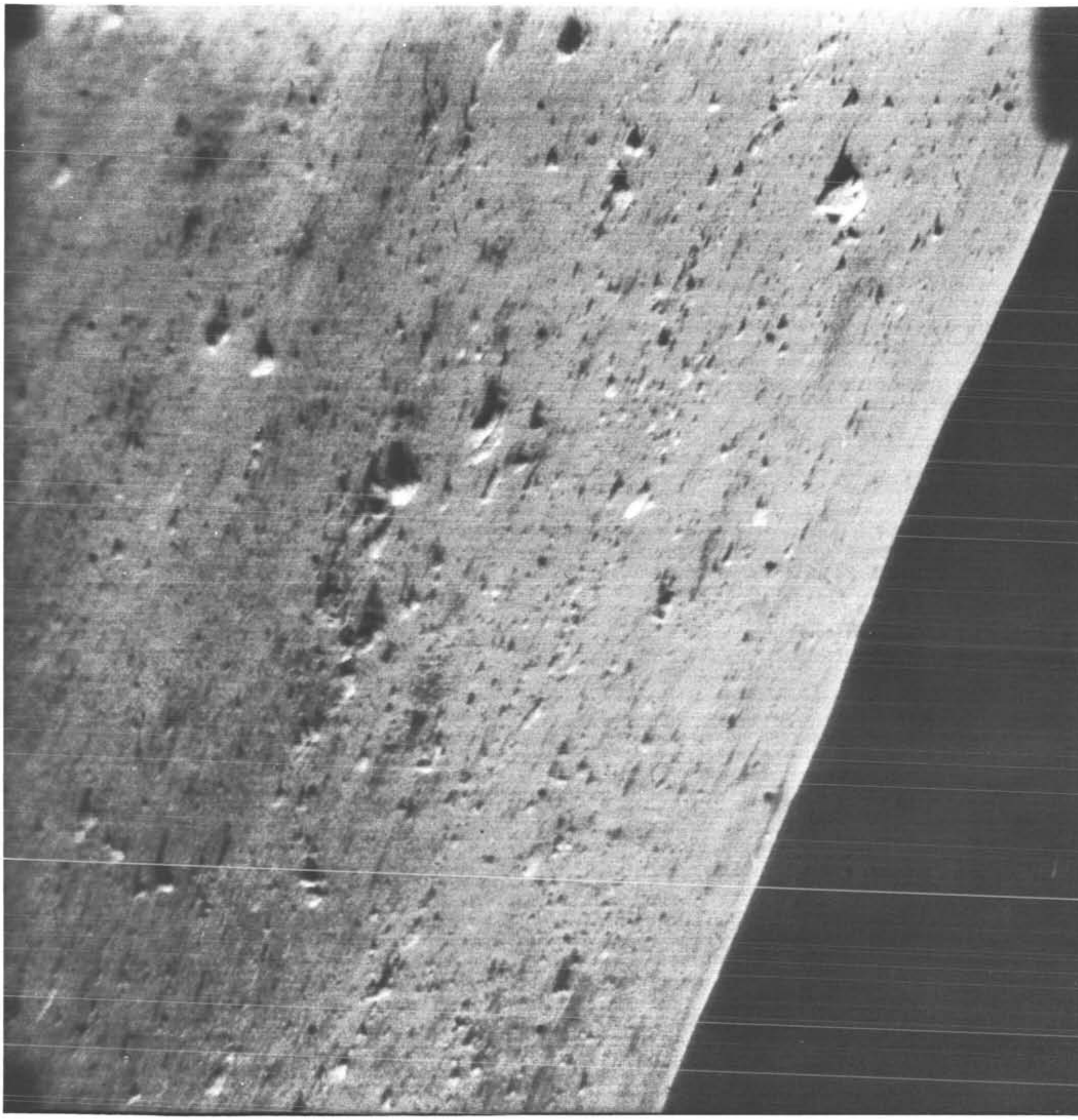
Surveyor I-137



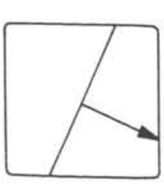
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(137)	162	16 13 26	−114	−18.10	27.40	F 5.8	N	GRN	25015



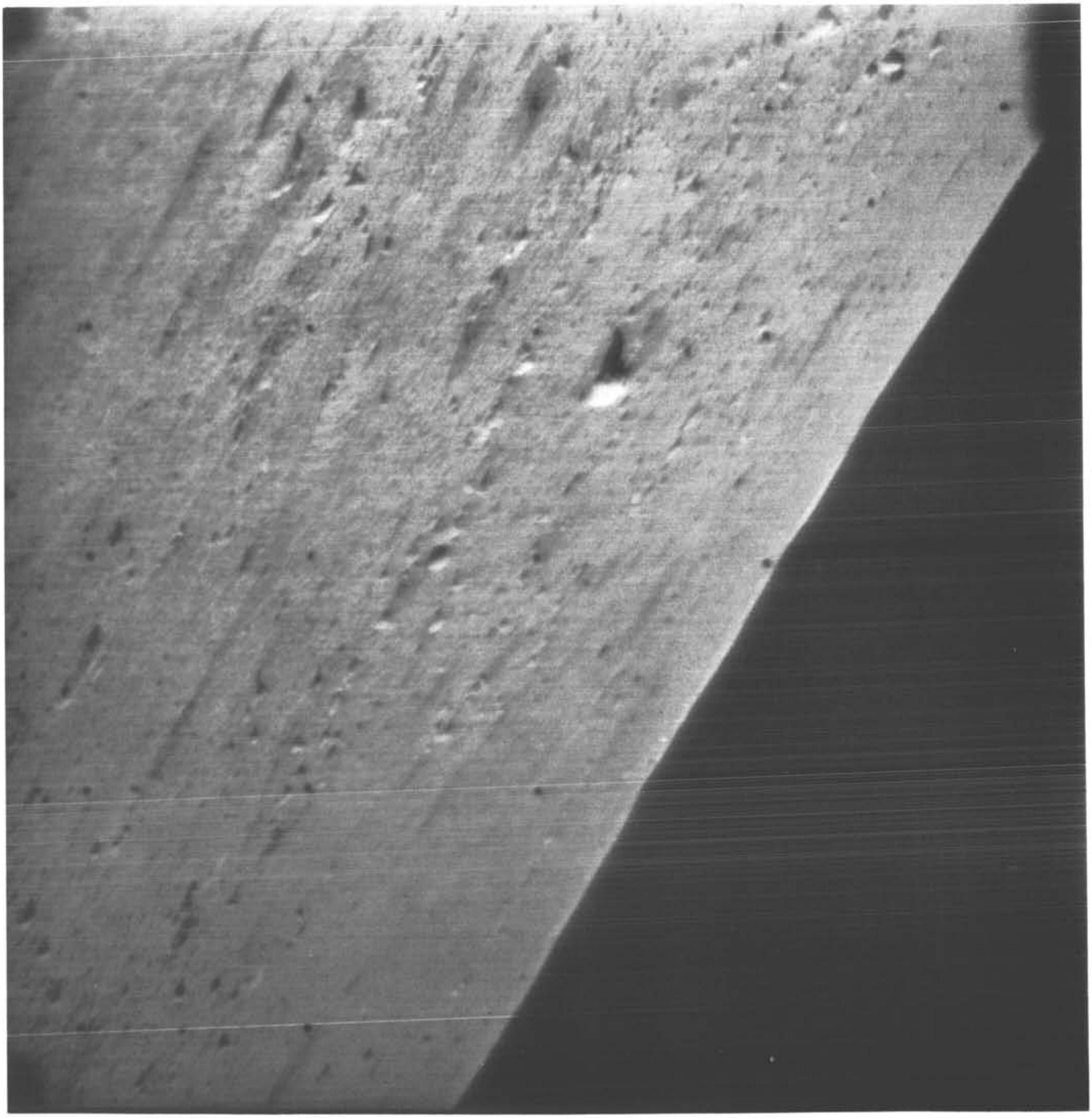
Surveyor I-138



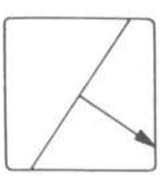
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(138)	162	16 14 35	−108	−18.10	27.40	F 5.8	N	GRN	25031



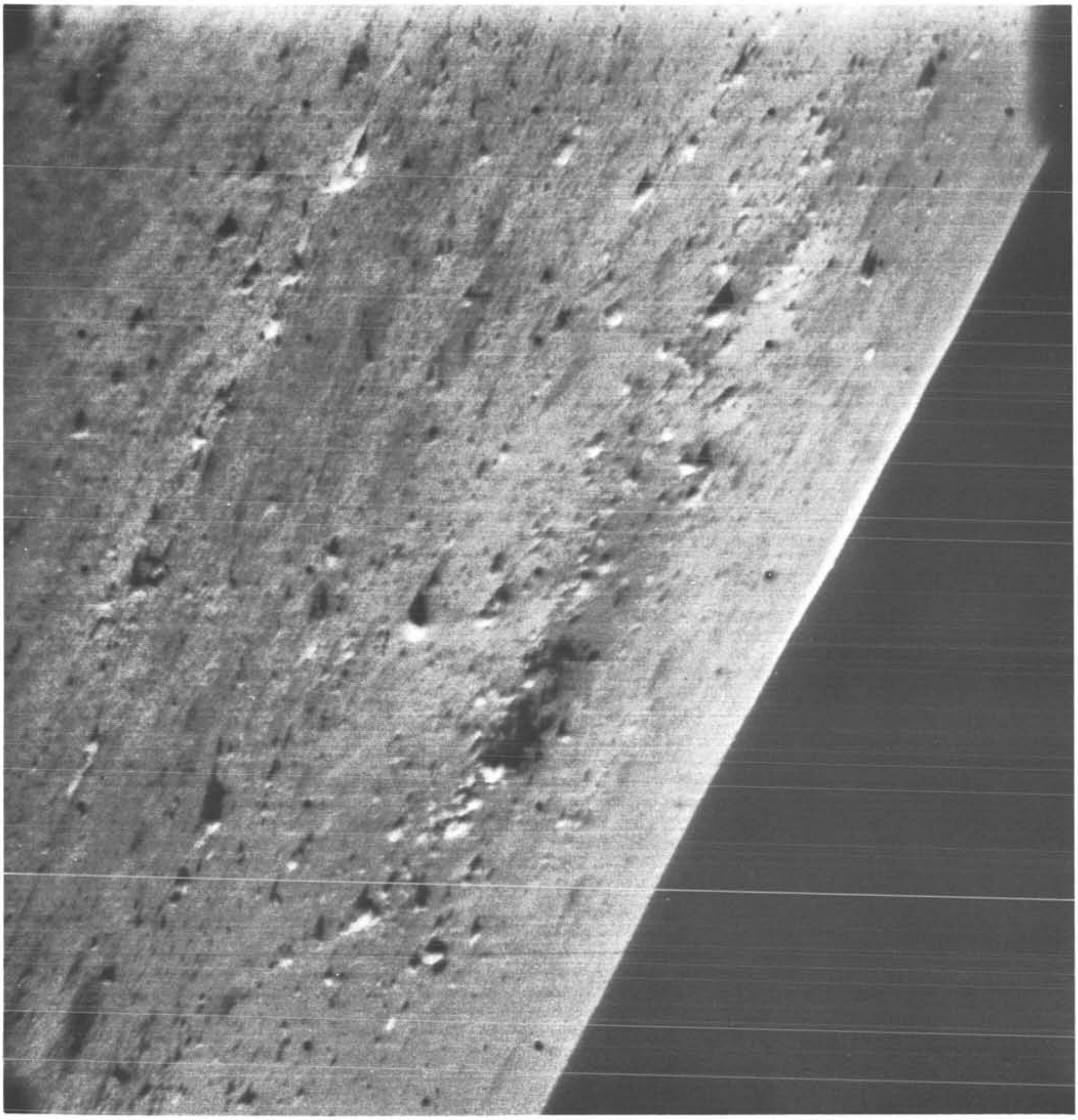
Surveyor I-139



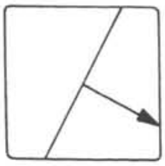
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(139)	162	16 16 55	−120	−18.10	27.40	F 4.0	N	RED	25046



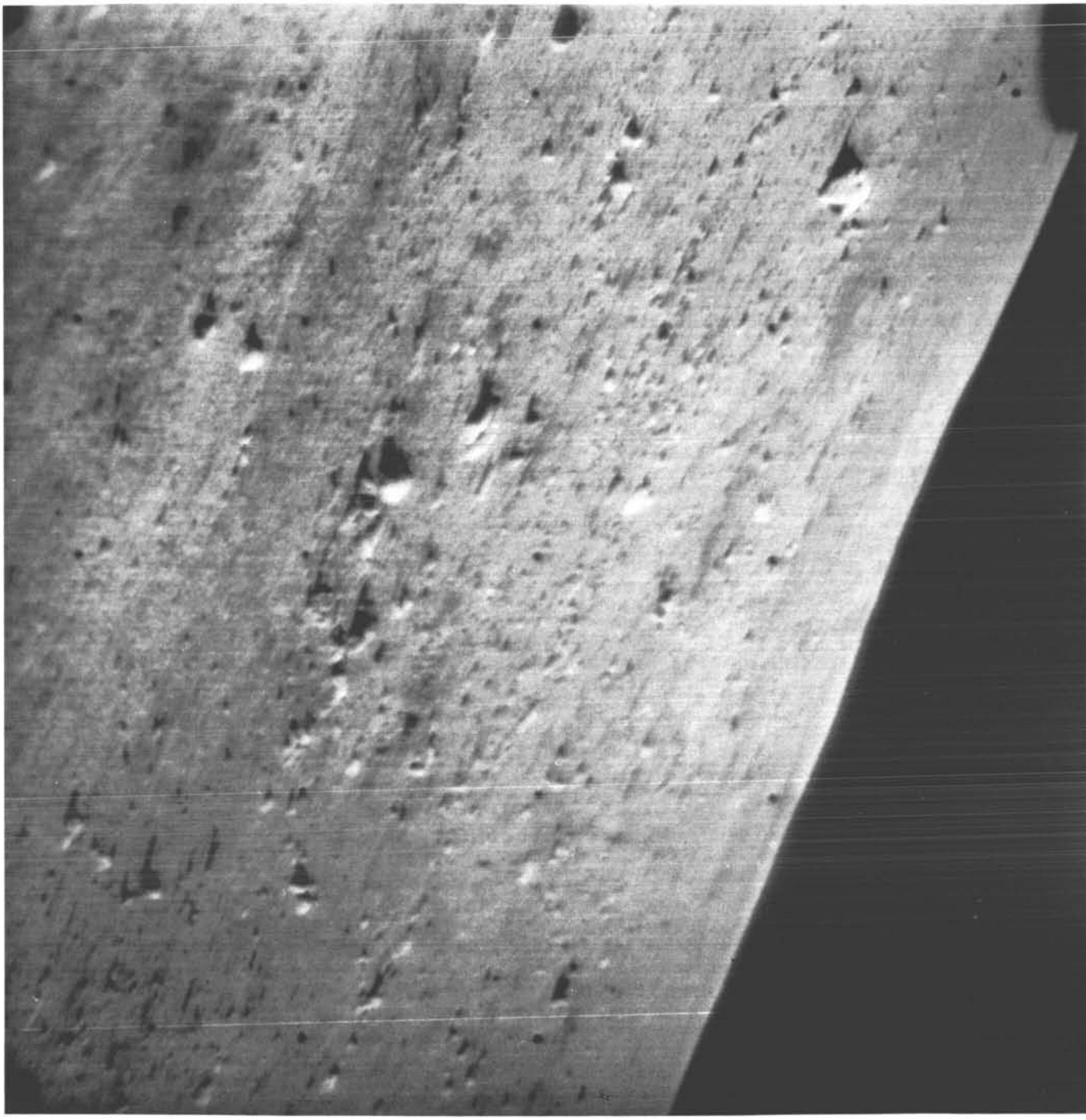
Surveyor I-140



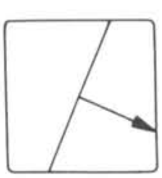
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(140)	162	16 18 03	−114	−18.10	27.40	F 4.0	N	RED	25062



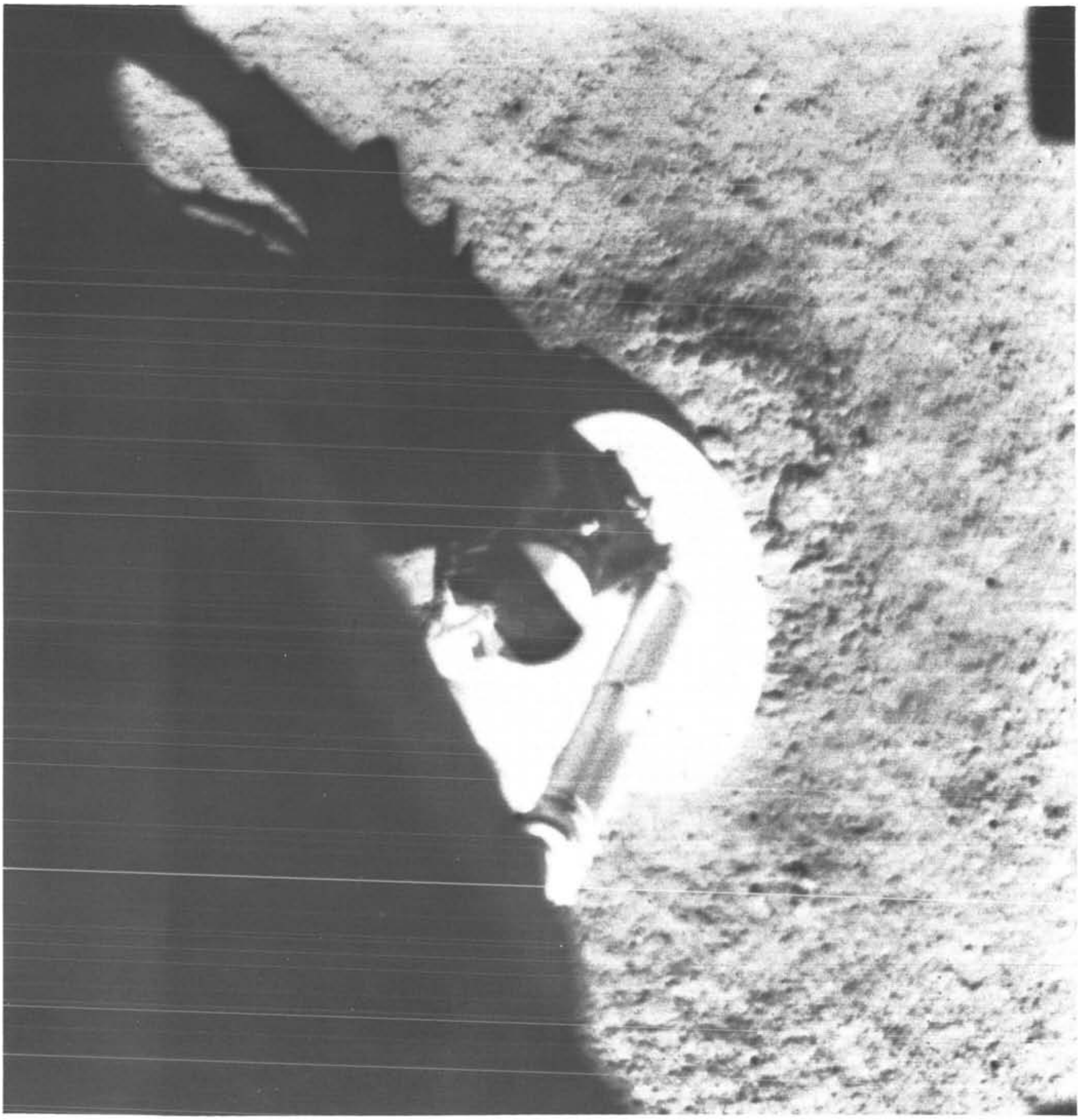
Surveyor I-141



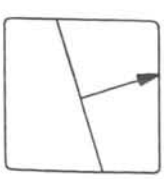
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(141)	162	16 19 11	−108	−18.10	27.40	F 4.0	N	RED	25076



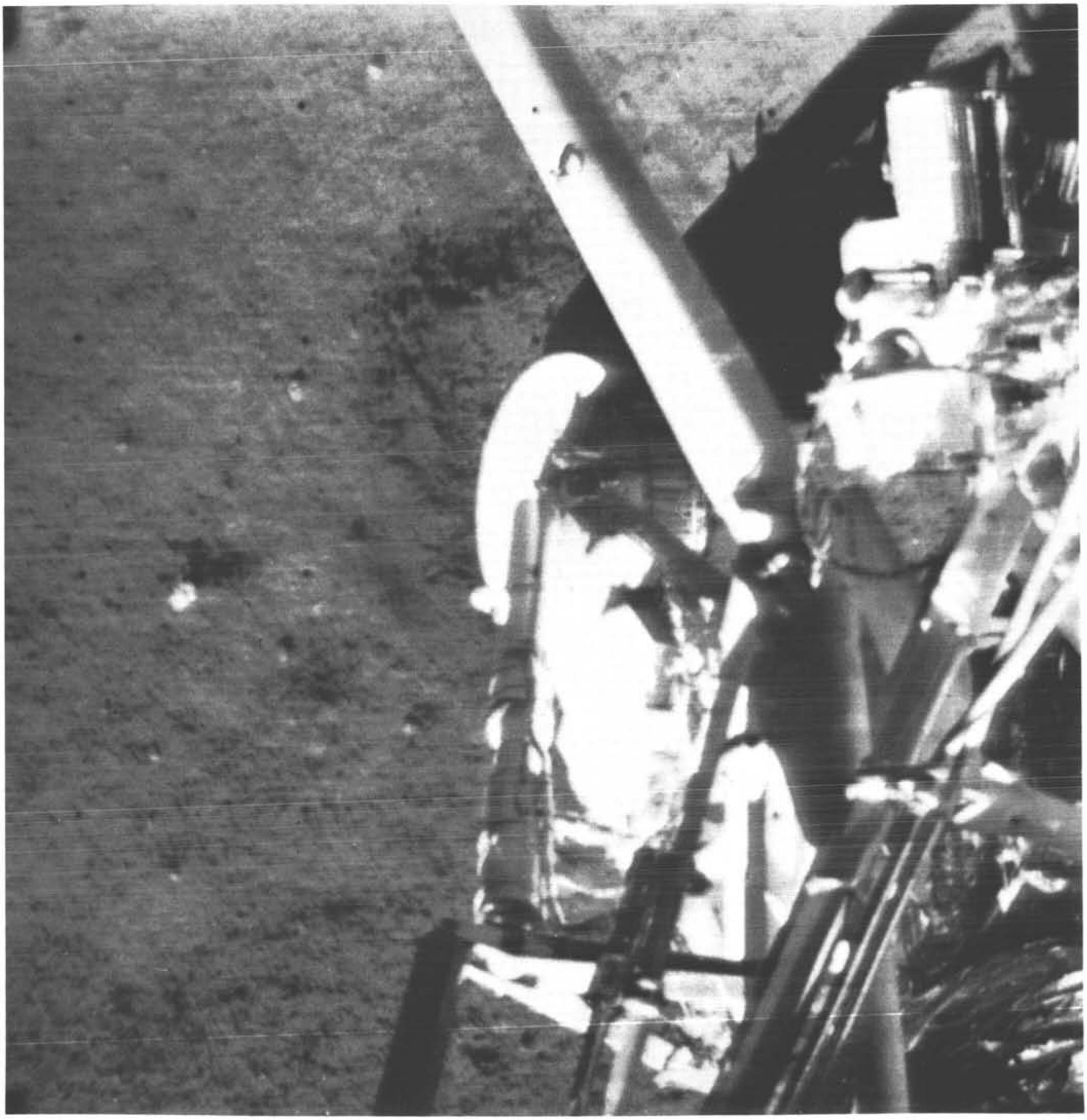
Surveyor I-142



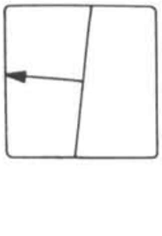
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(142)	162	16 14 15	− 60	−62.74	2.18	F 8.0	W	CLR	25120



Surveyor I-143

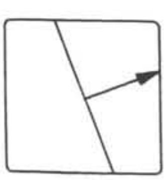


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(143)	162	17 11 13	81	−23.06	2.18	F11.2	W	CLR	25247

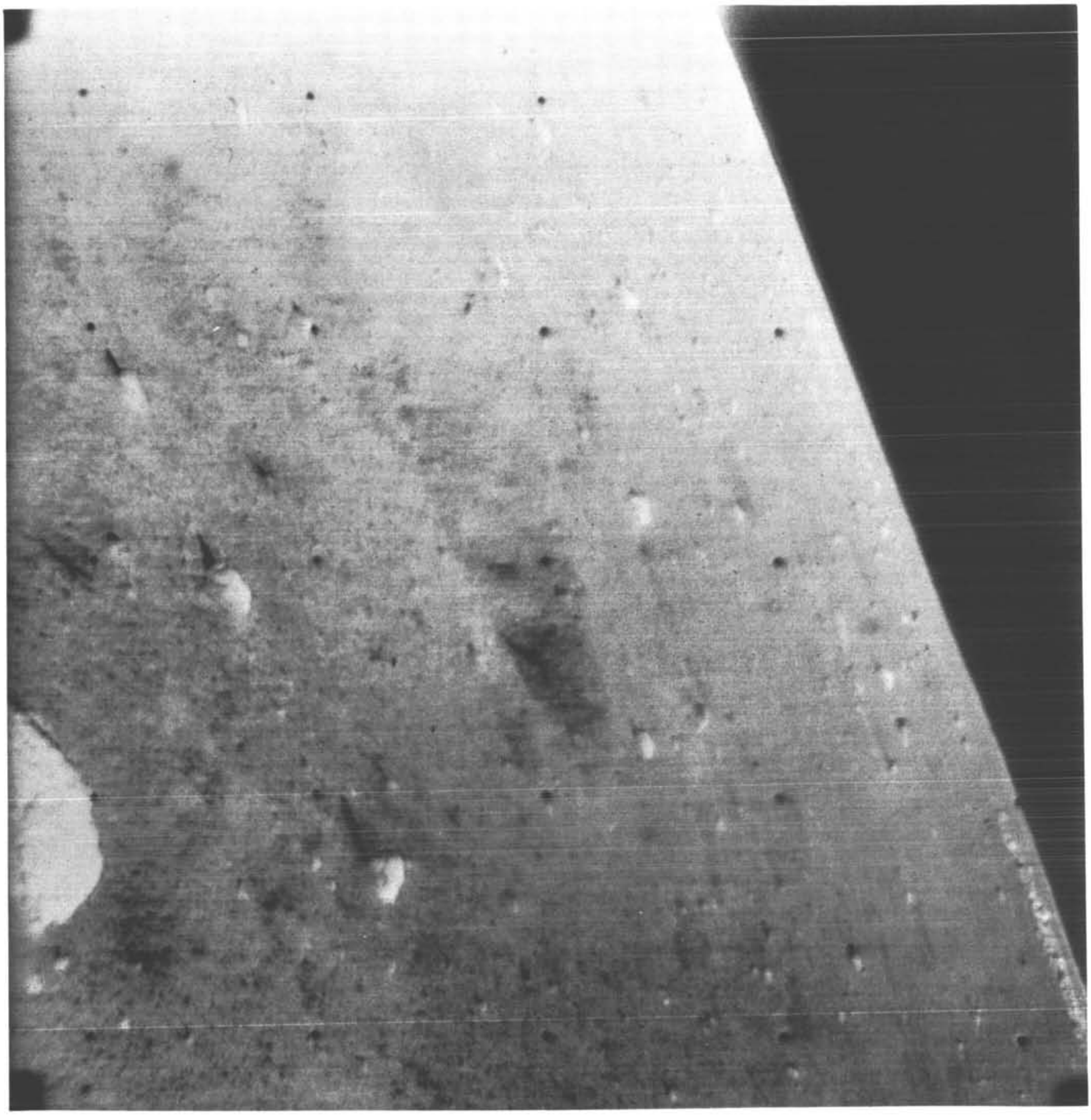


Surveyor I-144

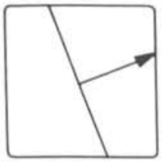
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(144)	163	10 38 06	− 54	−62.74	2.18	F 8.2	W	CLR	30154



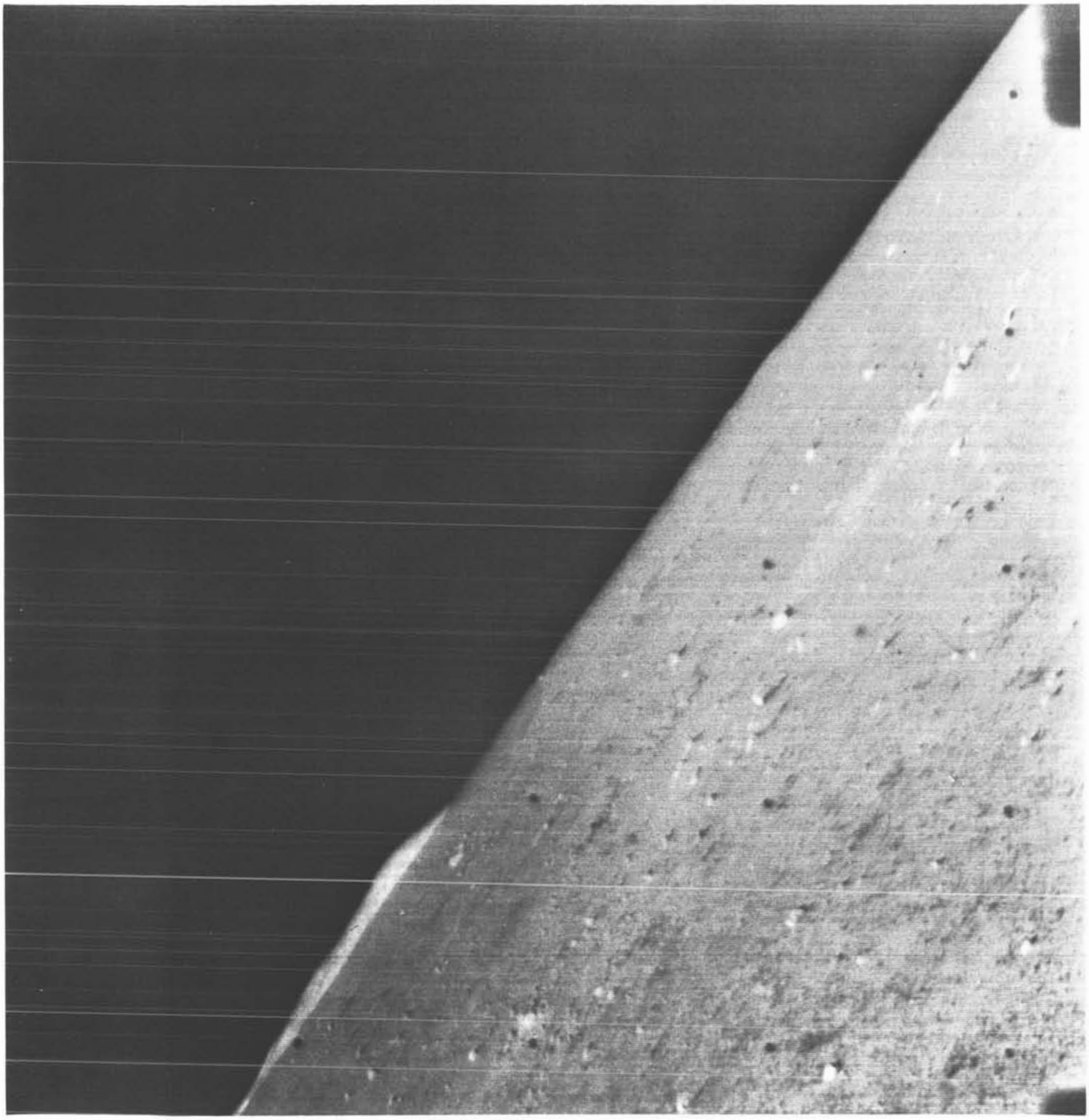
Surveyor I-145



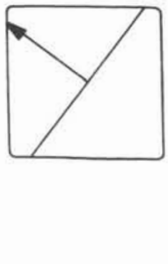
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(145)	163	10 39 43	− 54	− 13.14	2.18	F 8.2	W	CLR	30165



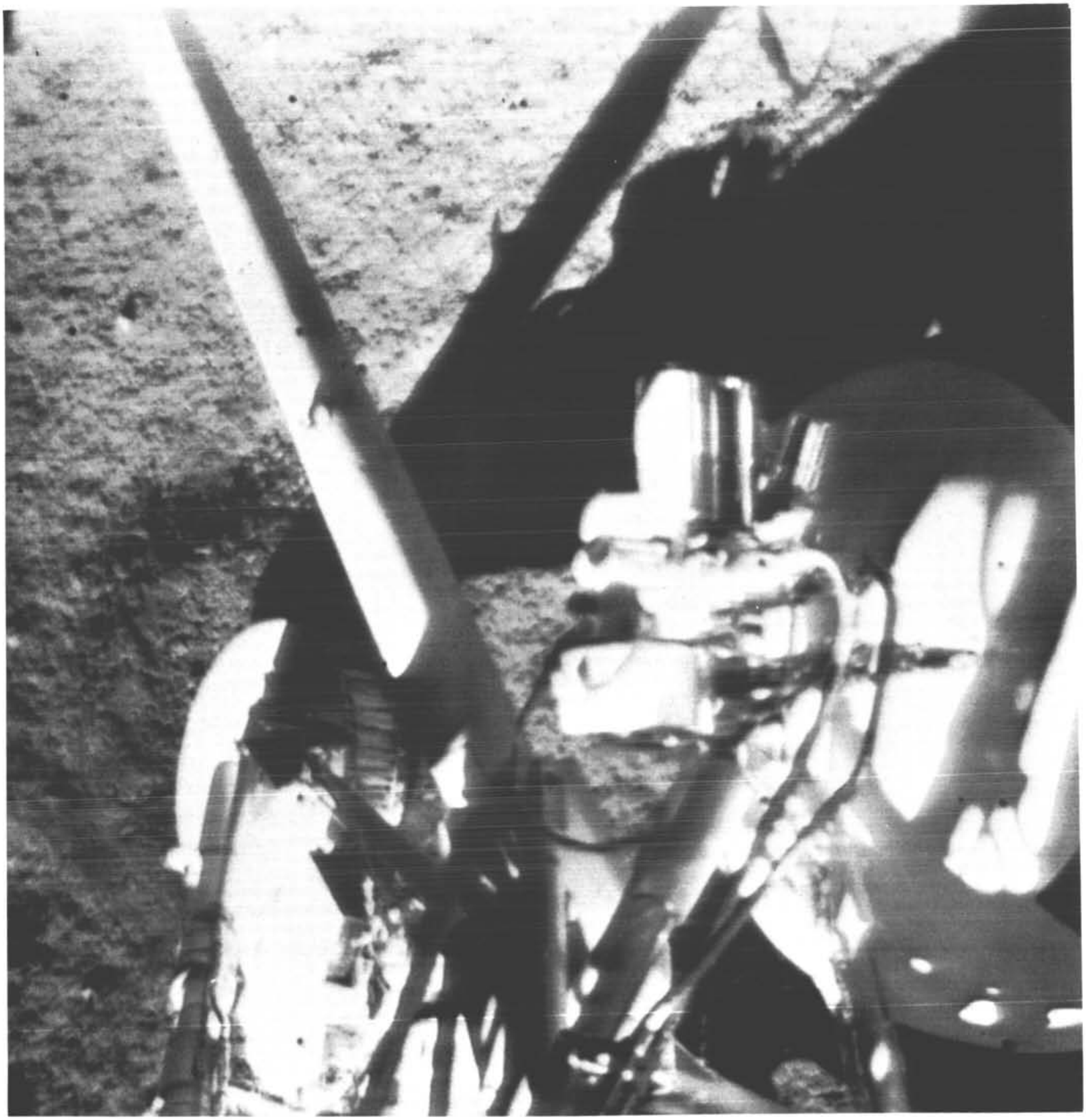
Surveyor I-146



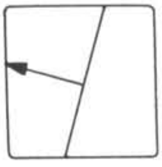
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(146)	163	10 44 34	54	−16.62	2.18	F11.7	W	CLR	30225



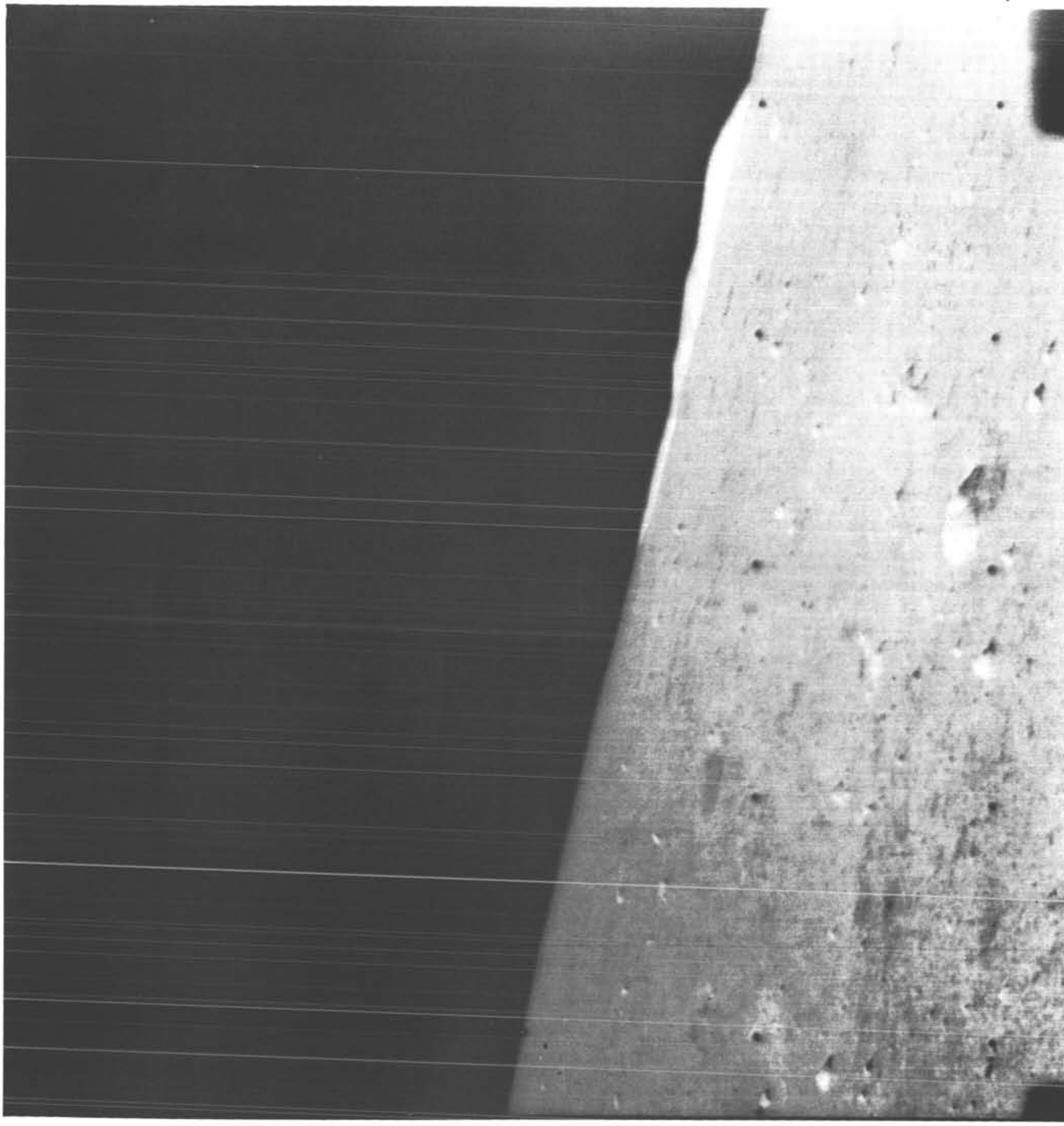
Surveyor I-147



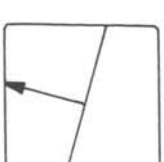
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(147)	163	10 46 17	72	−28.02	2.18	F 8.6	W	CLR	30233



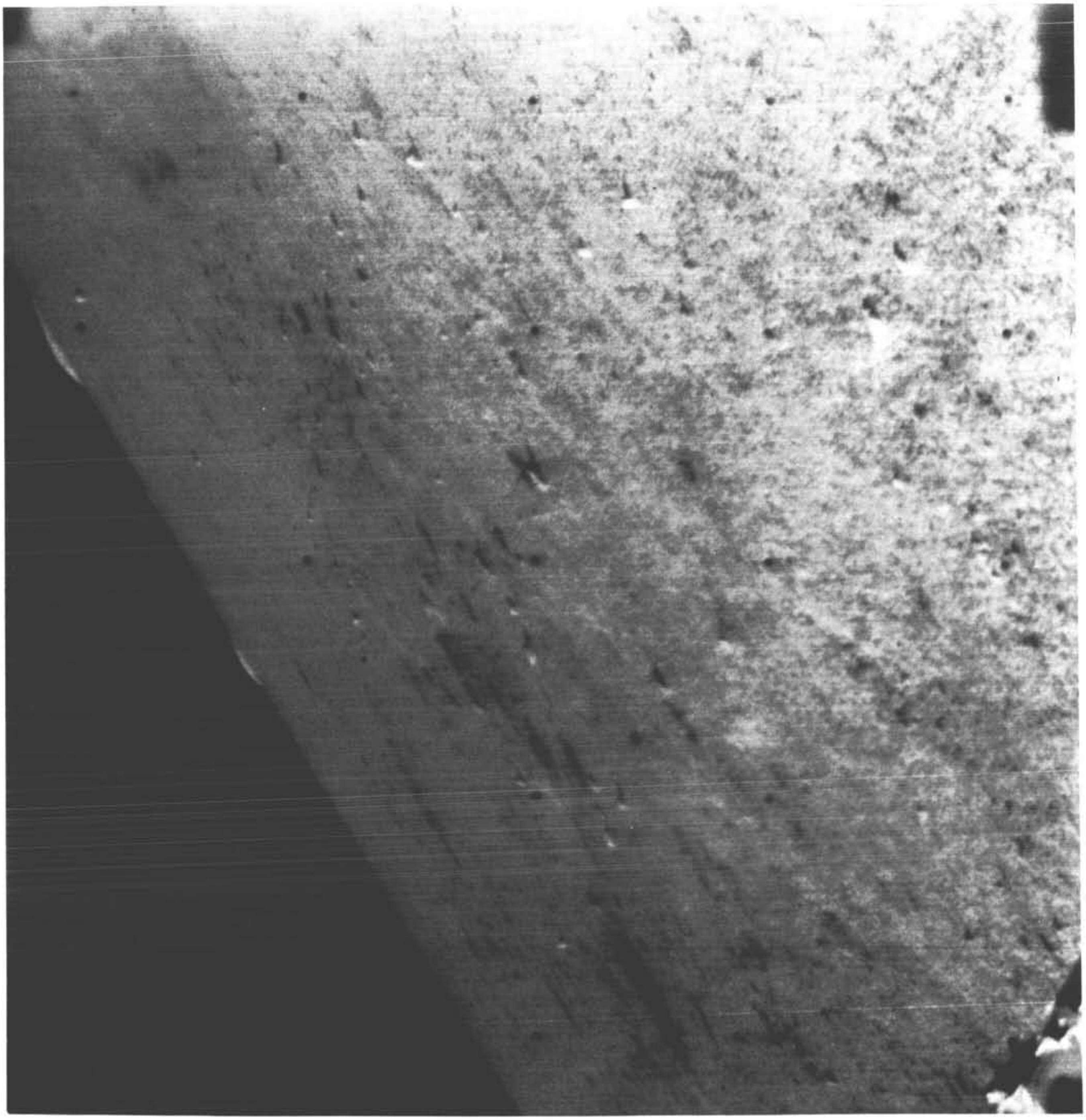
Surveyor I-148



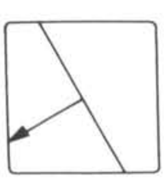
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(148)	163	10 46 39	72	16.62	2.18	F 8.6	W	CLR	30236



Surveyor I-149

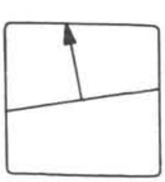


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(149)	163	10 48 06	108	1.74	2.18	F 8.6	W	CLR	30251



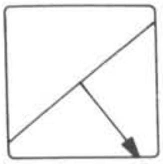
Surveyor I-150

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(150)	163	10 57 42	0	−28.02	2.18	F12.4	W	CLR	30314

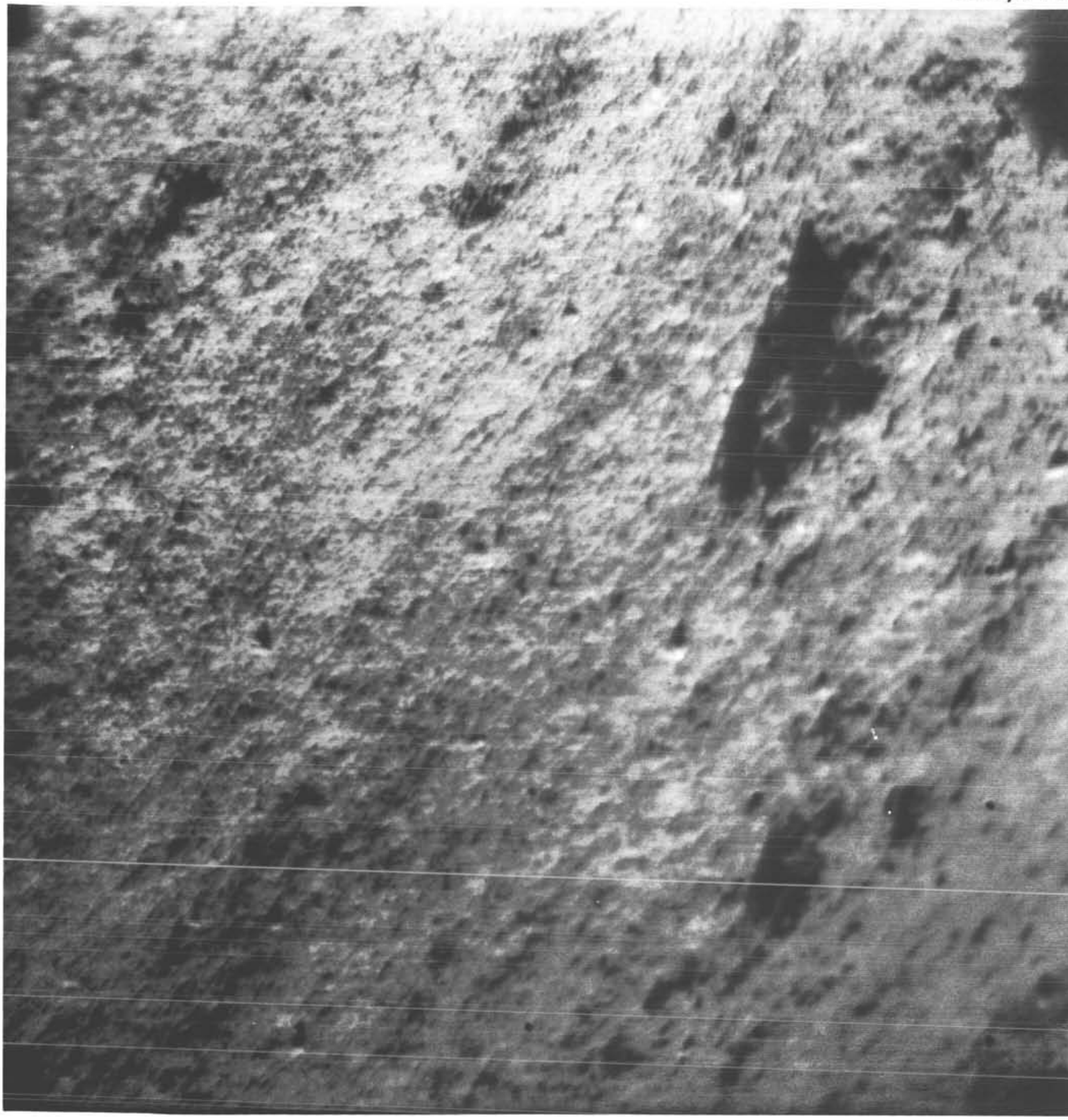


Surveyor I-151

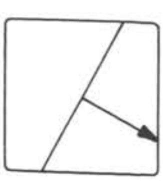
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(151)	163	11 33 05	−147	−42.90	4.63	F 4.0	N	RED	30524



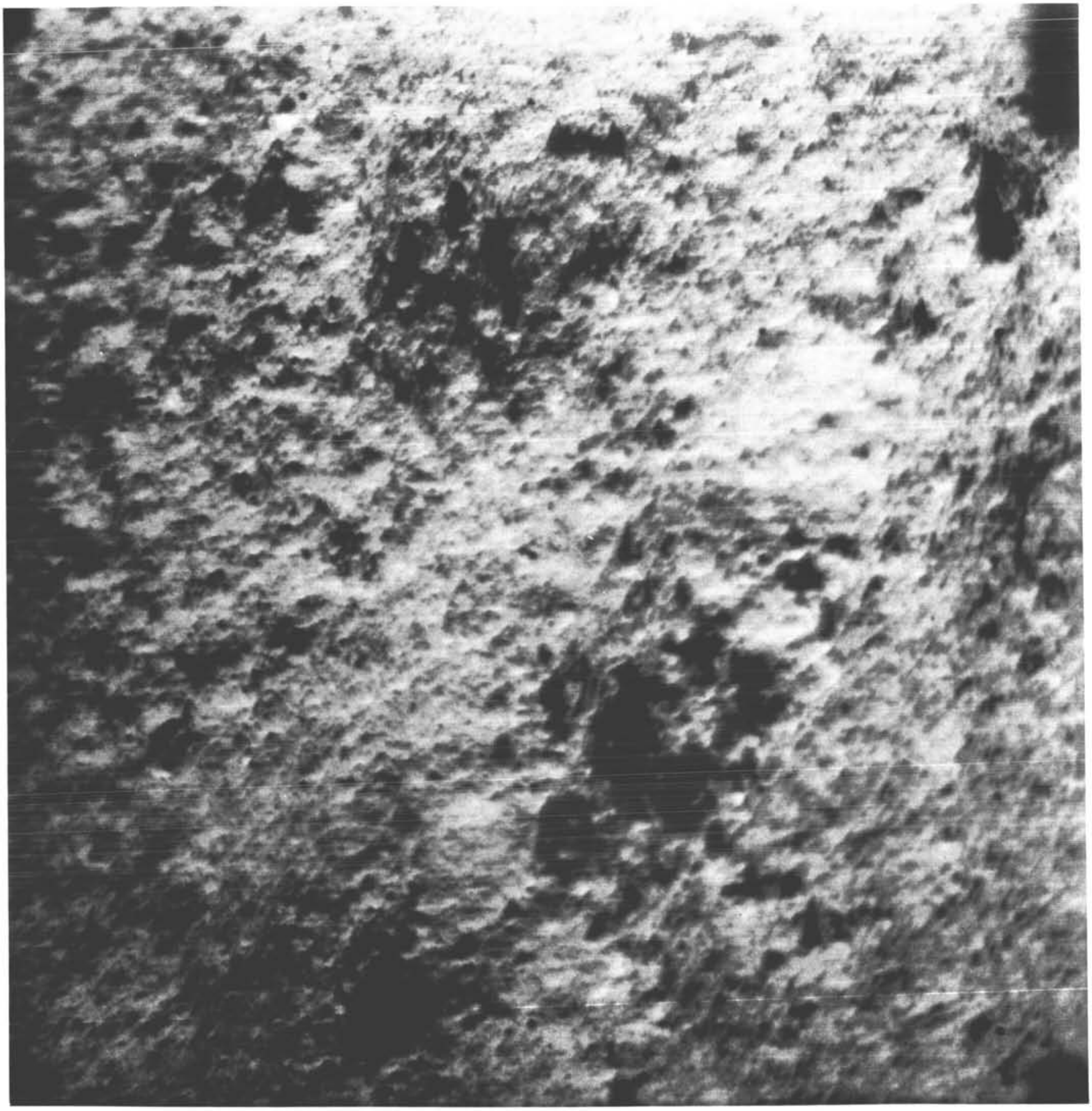
Surveyor I-152



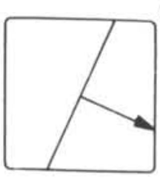
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(152)	163	11 42 50	−114	−28.02	8.48	F 4.0	N	RED	30635



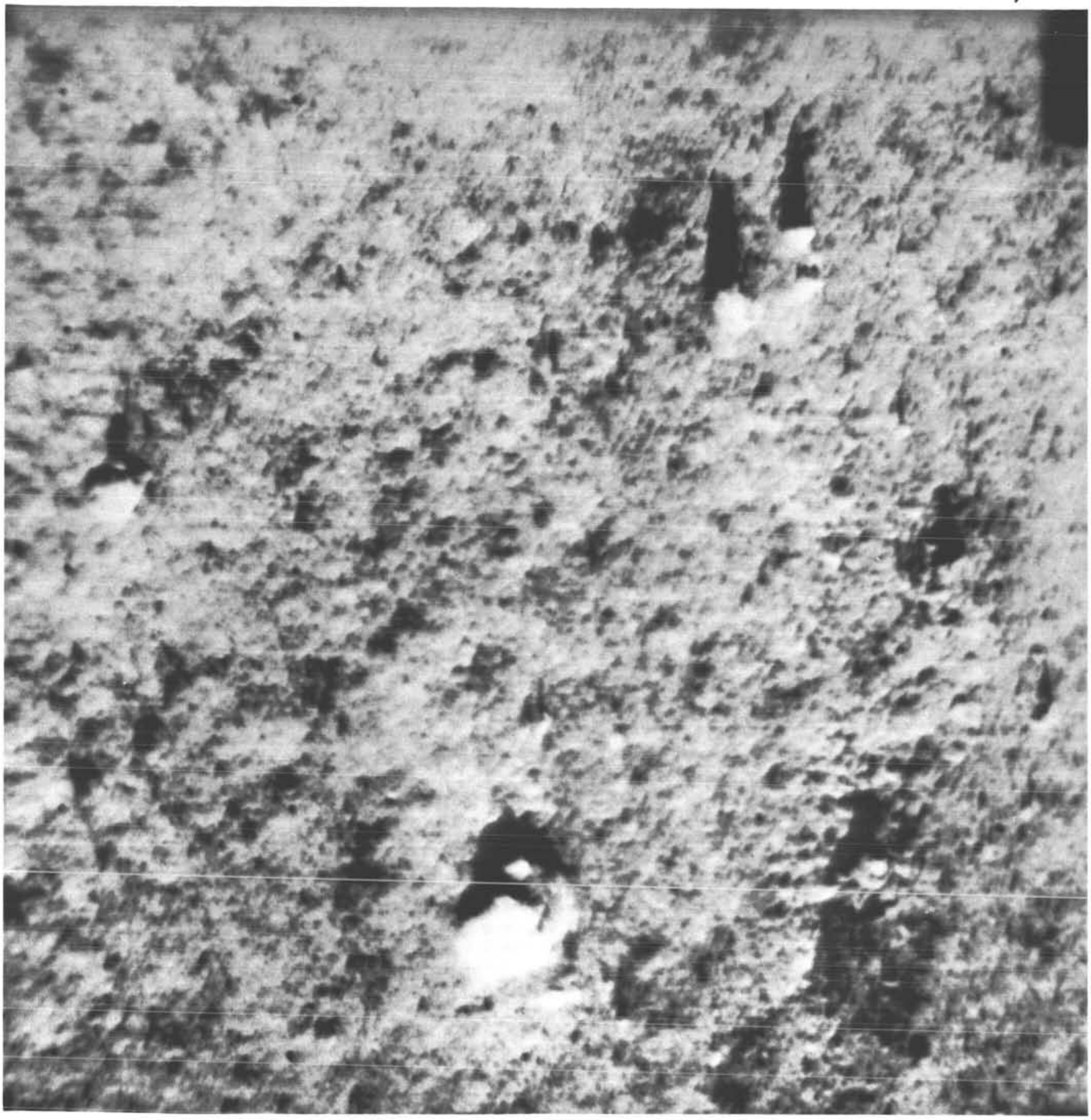
Surveyor I-153



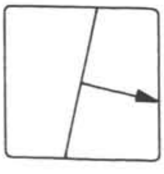
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(153)	163	11 44 16	−108	−37.94	4.63	F 4.0	N	RED	30652



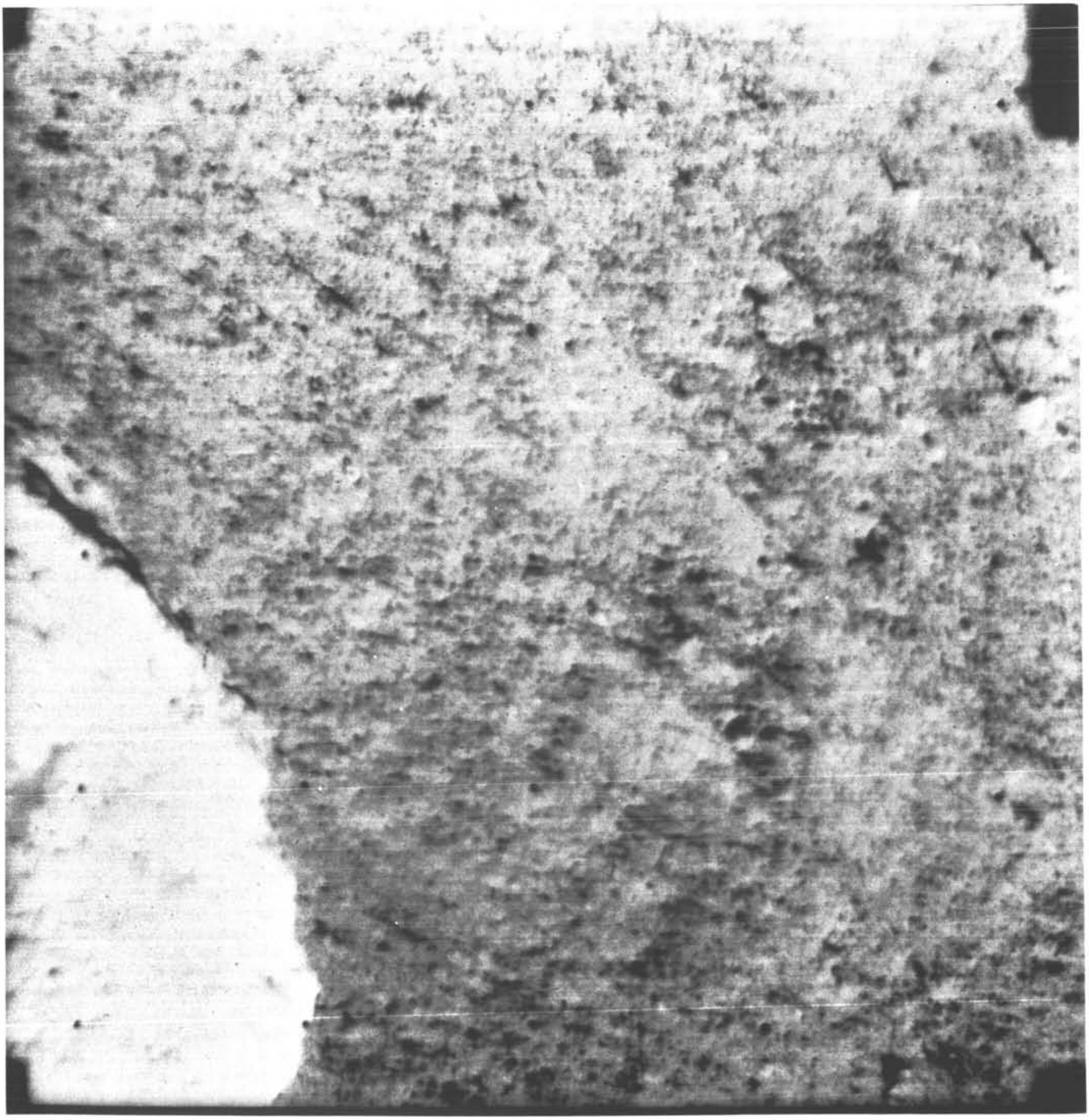
Surveyor I-154



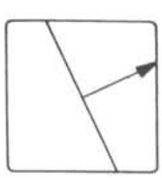
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(154)	163	11 51 32	− 93	−32.98	5.55	F 8.0	N	CLR	30712



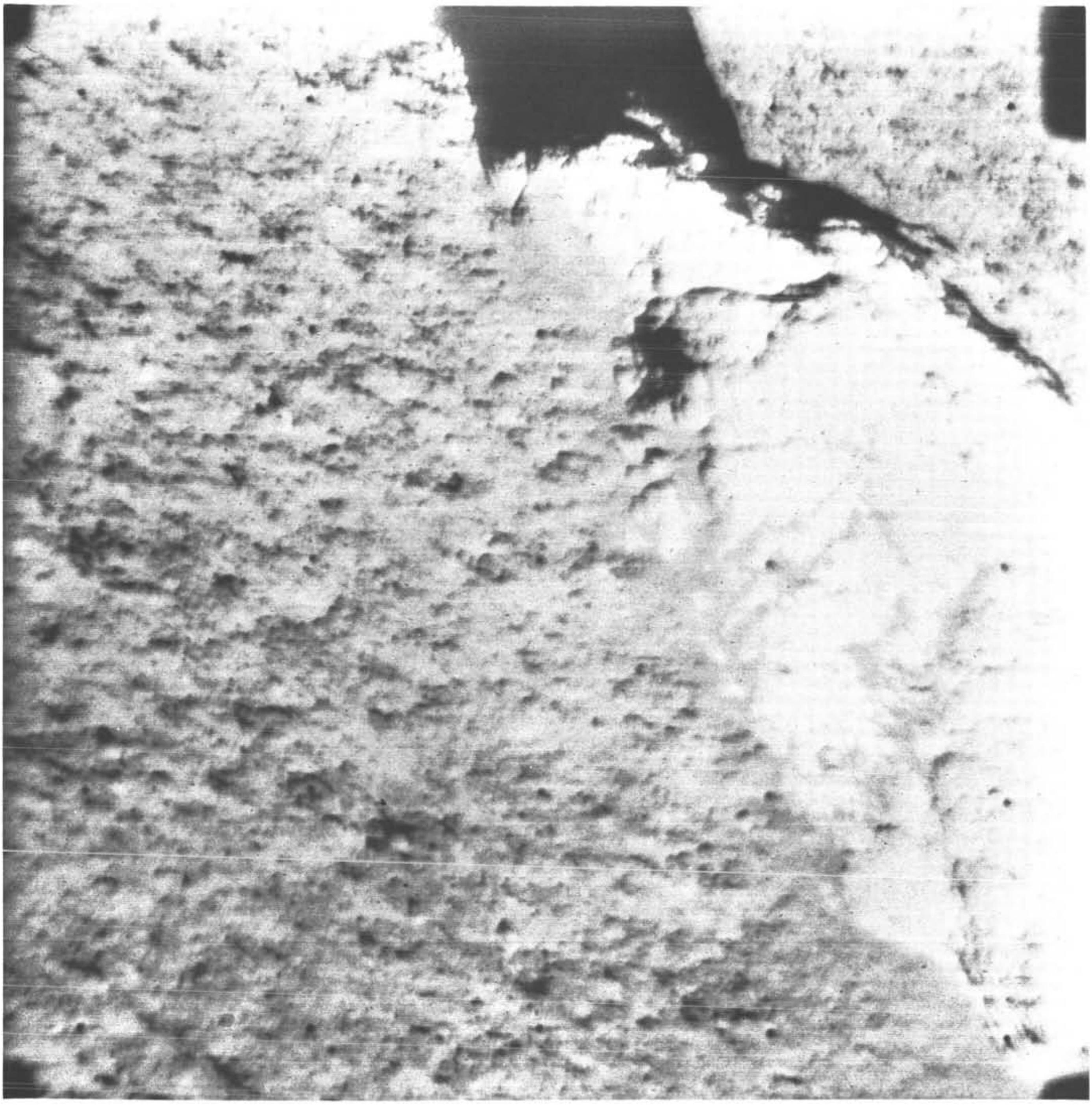
Surveyor I-155



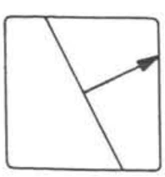
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(155)	163	12 43 34	− 51	−23.06	5.55	F 8.2	N	CLR	37277



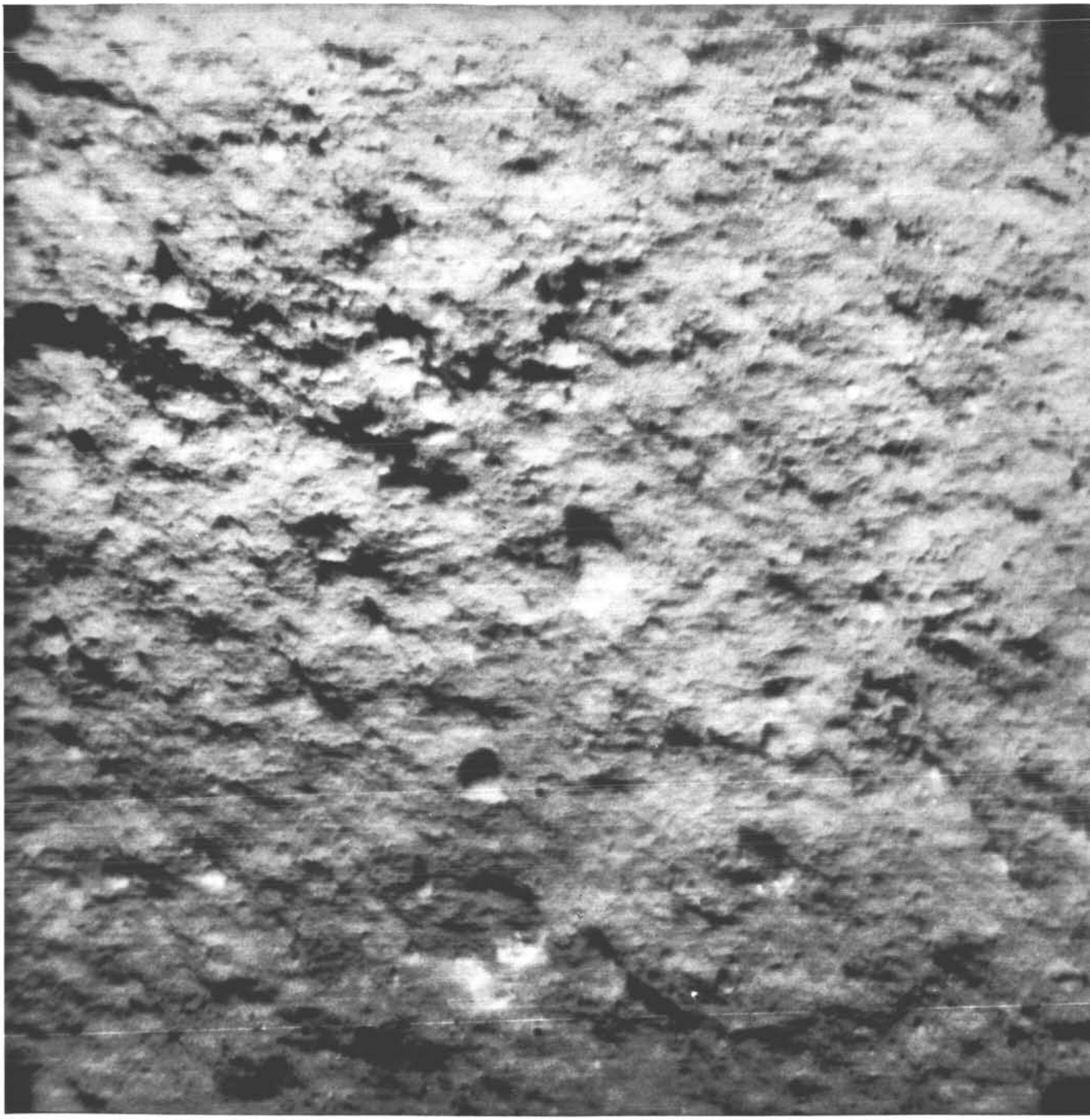
Surveyor I-156



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(156)	163	12 44 06	− 48	−28.02	4.27	F 8.2	N	CLR	37305

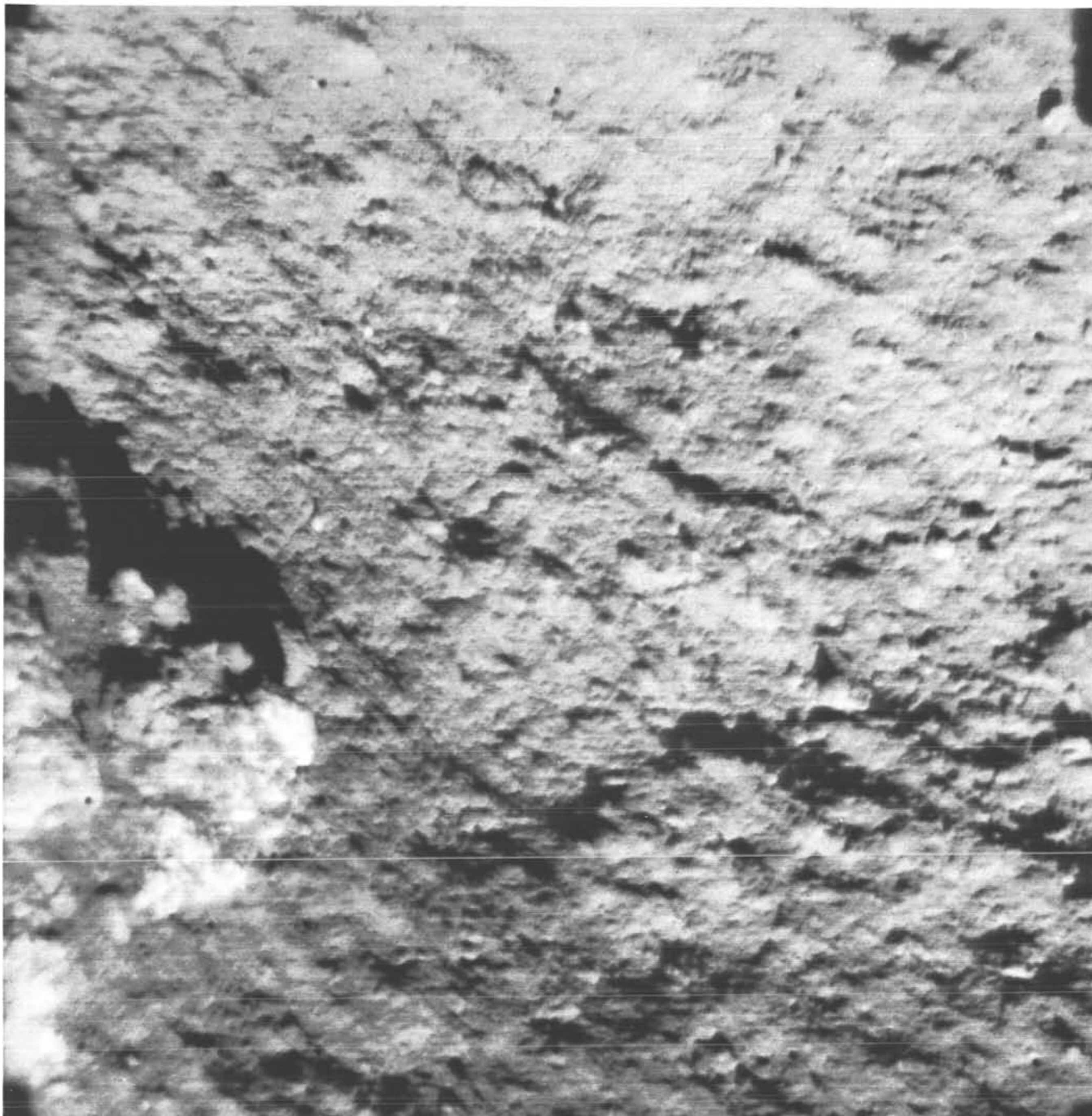


Surveyor I-157



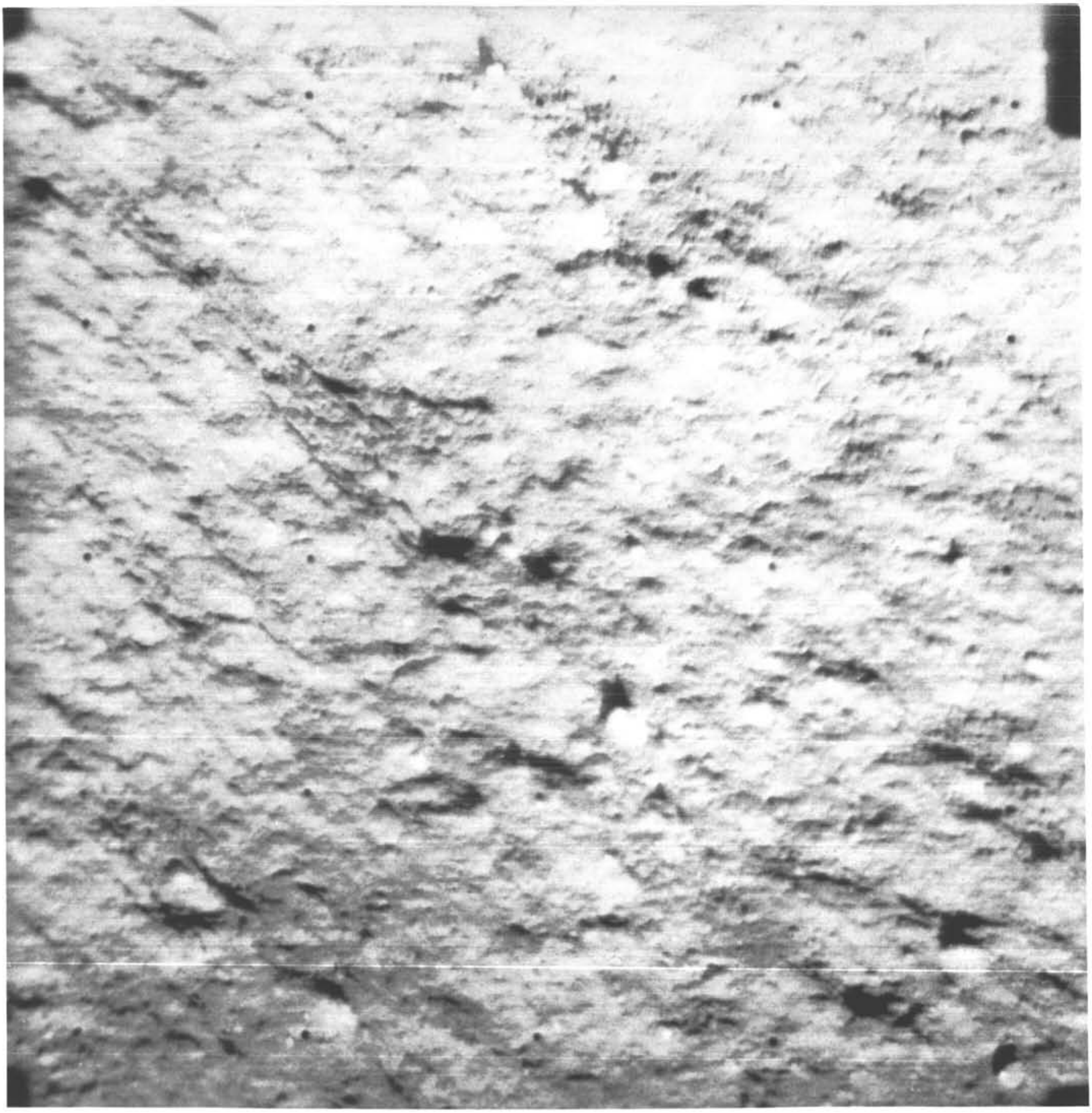
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(157)	163	12 48 31	− 33	−42.90	2.56	F11.1	N	CLR	31167

Surveyor I-158



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(158)	163	12 49 58	− 27	−42.90	2.56	F11.1	N	CLR	31207

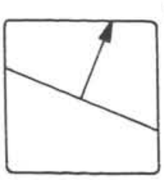
Surveyor I-159



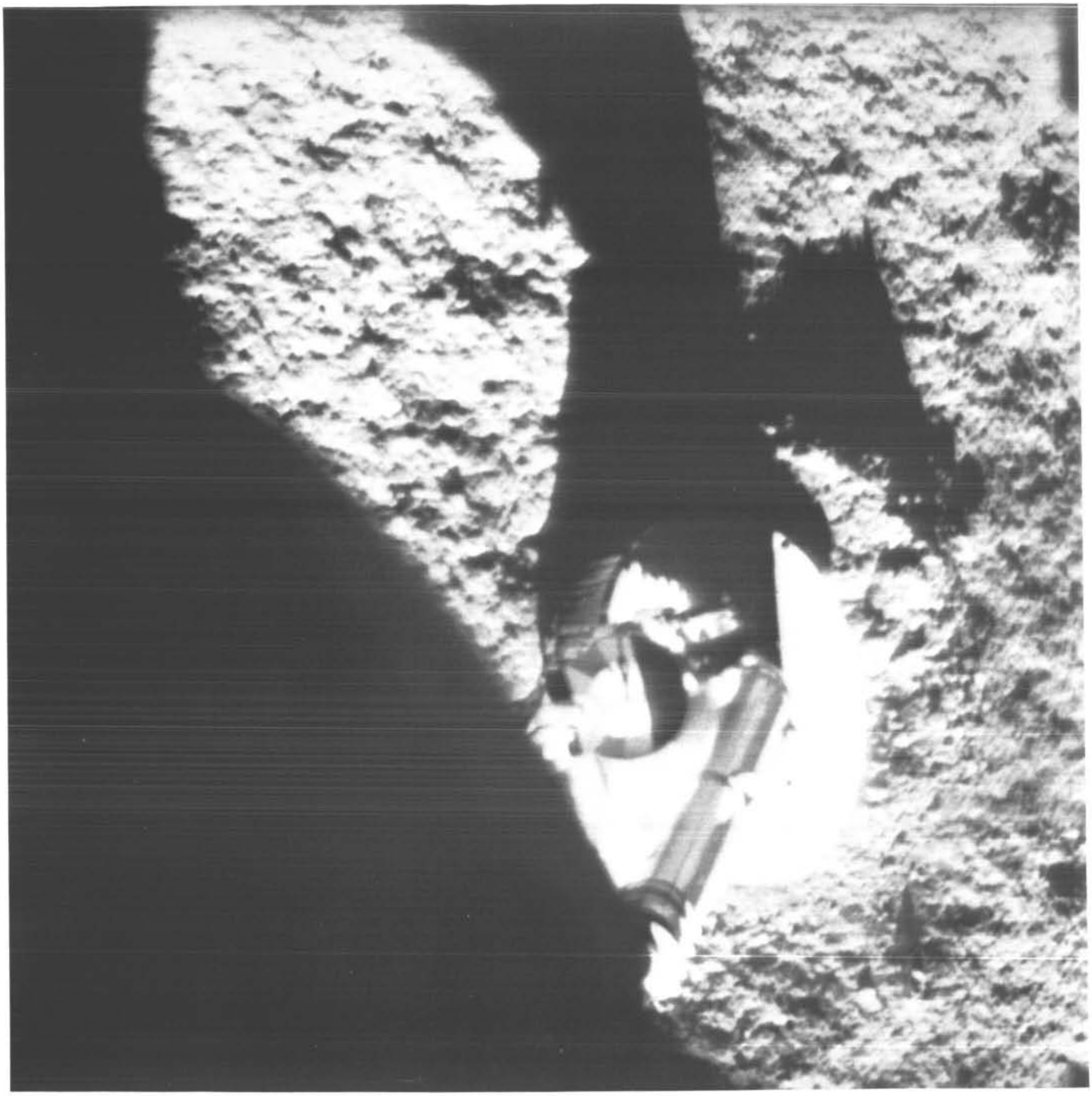
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(159)	163	12 50 59	− 24	−37.94	2.80	F11.1	N	CLR	31222

Surveyor I-160

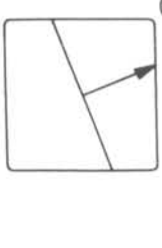
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(160)	163	12 55 42	− 9	−23.06	3.96	F11.1	N	CLR	31272



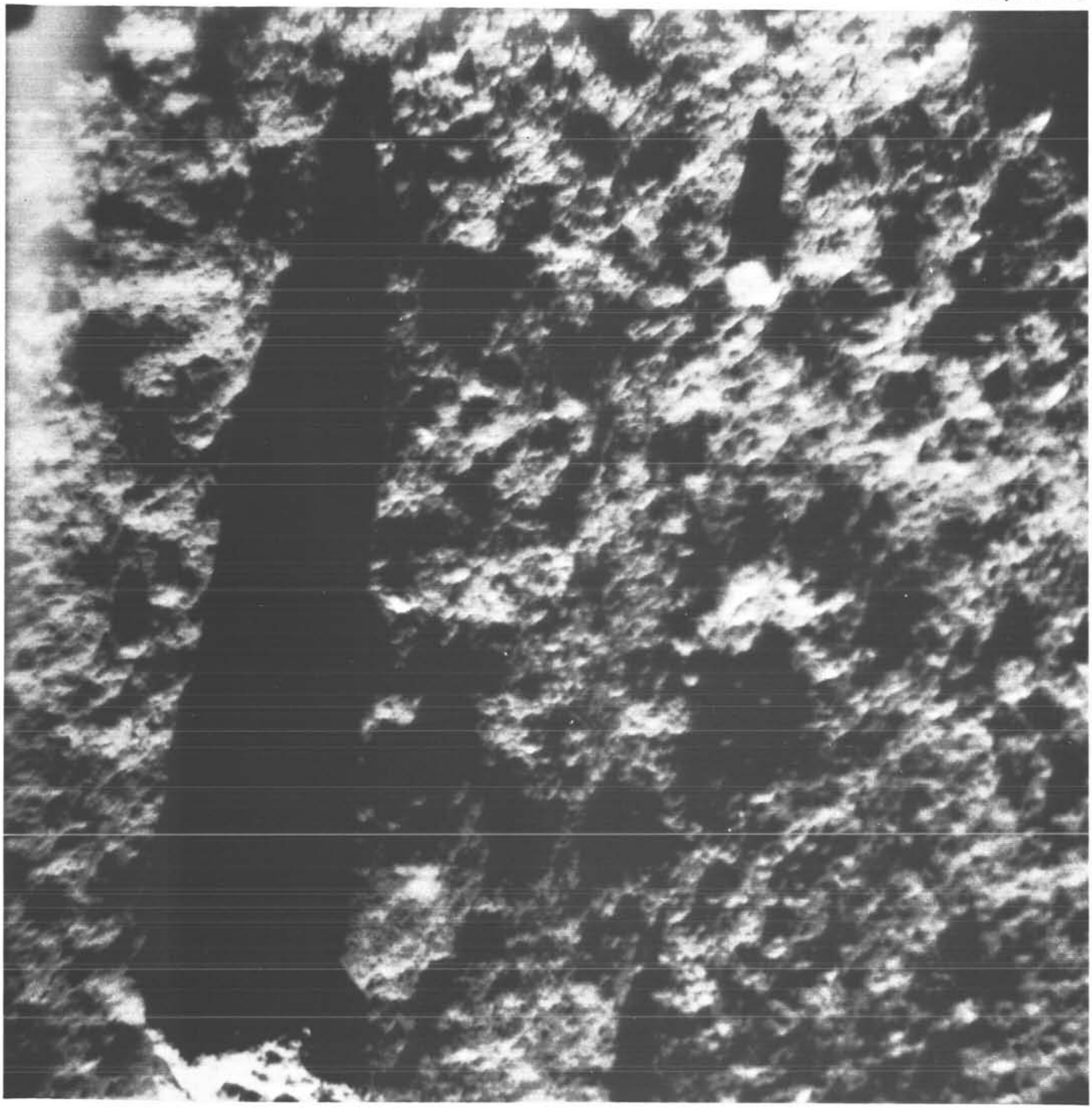
Surveyor I-161



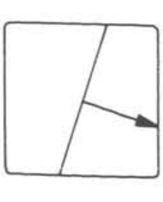
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(161)	164	11 29 58	− 54	−57.78	2.18	F 6.5	W	CLR	32654



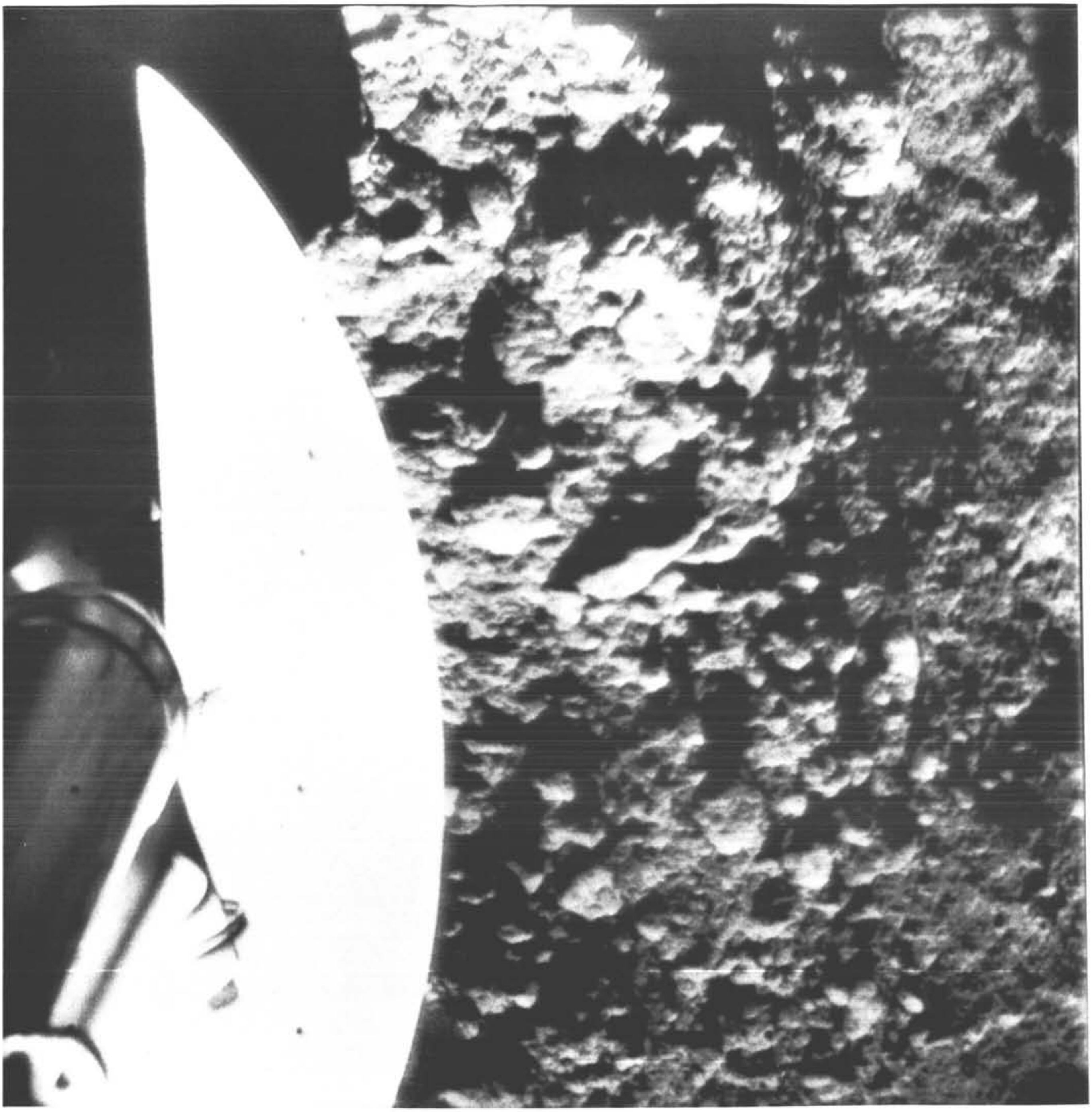
Surveyor I-162



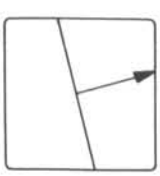
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(162)	164	11 47 12	− 99	−52.82	2.68	F 7.9	N	CLR	32722



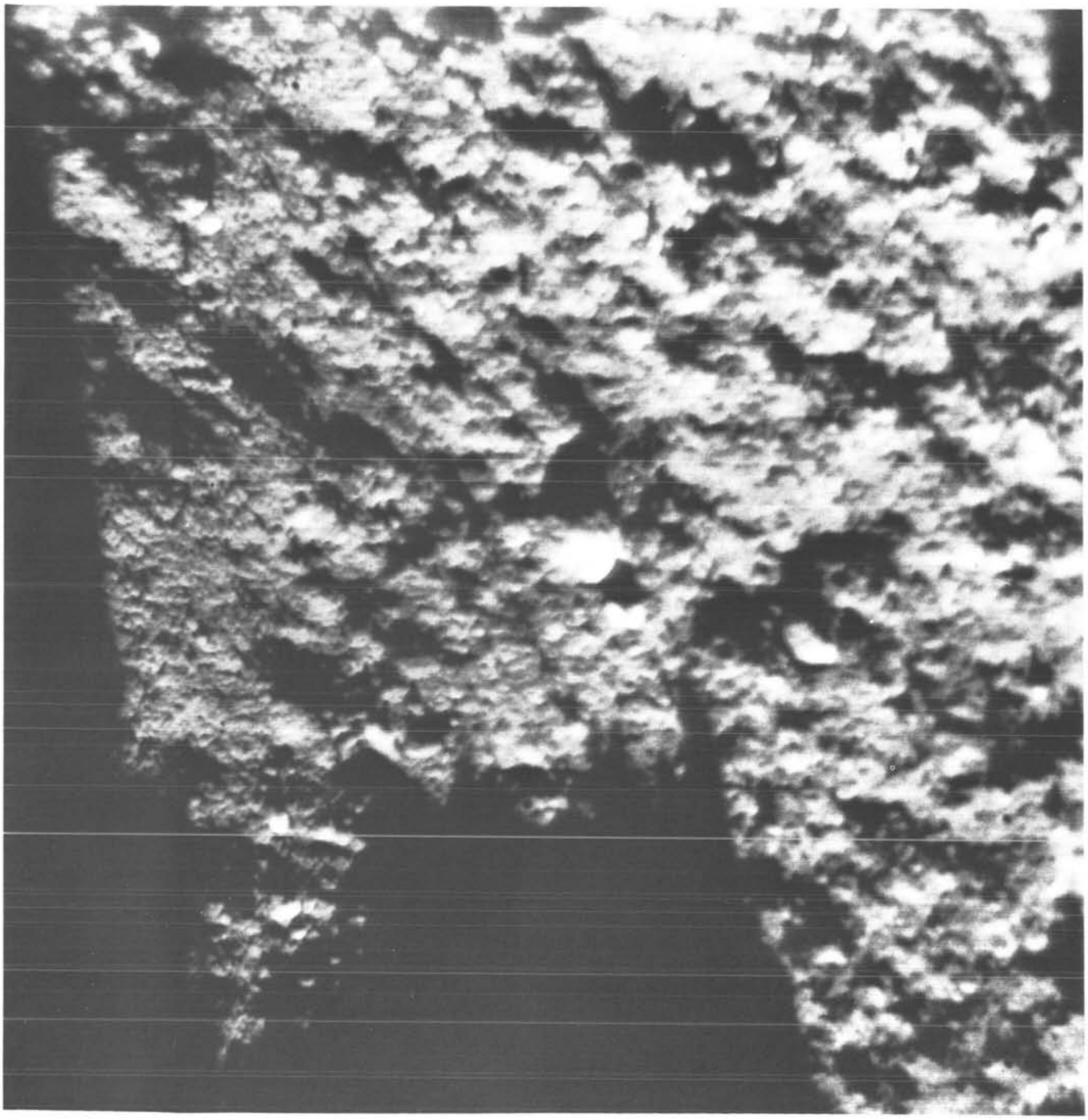
Surveyor I-163



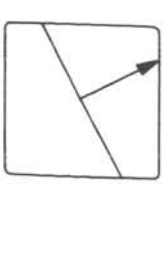
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(163)	164	11 48 56	−63	−57.78	2.44	F 7.9	N	CLR	32730



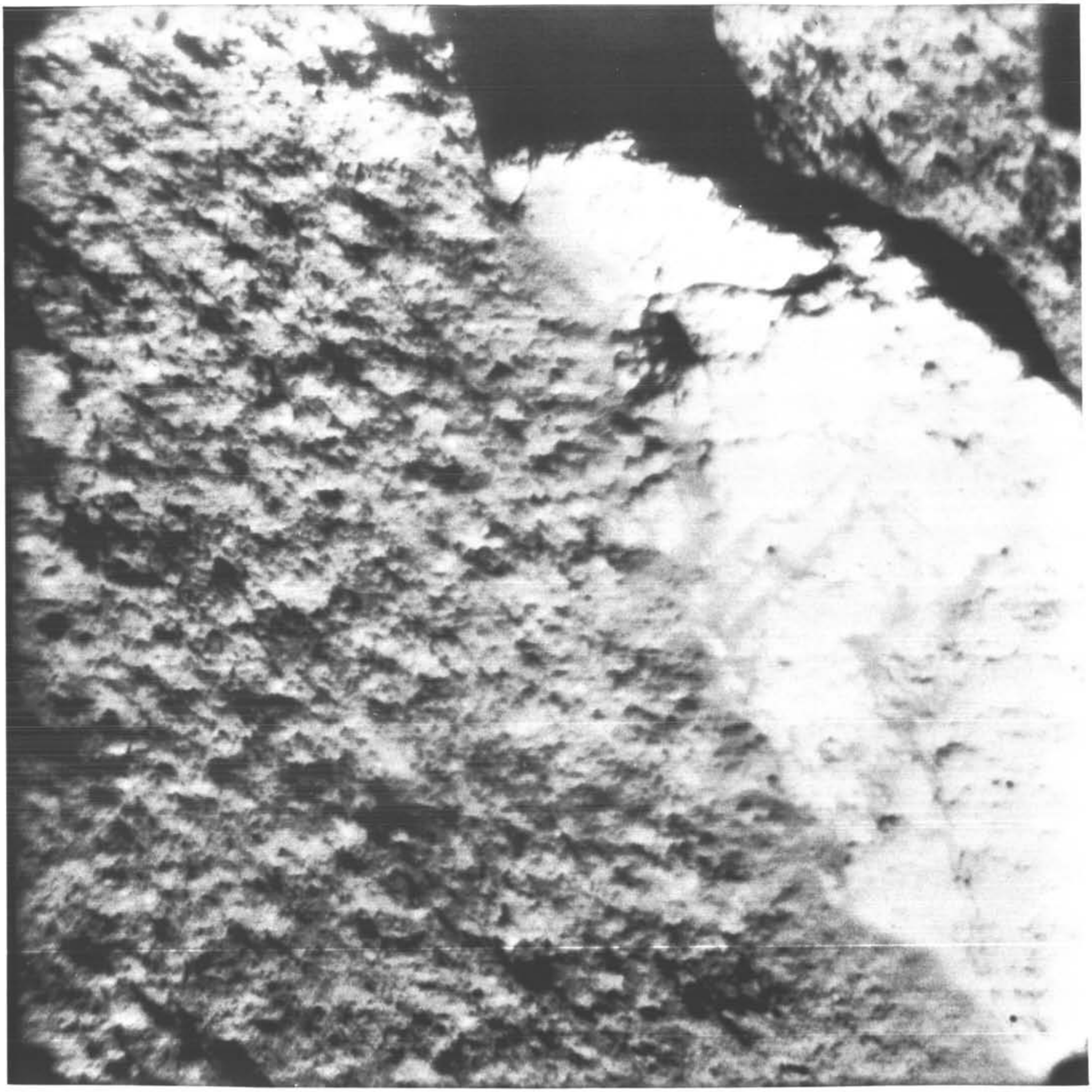
Surveyor I-164



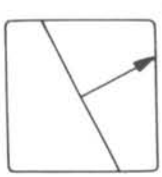
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(164)	164	11 51 46	− 48	−62.74	2.26	F-7.9	N	CLR	32741



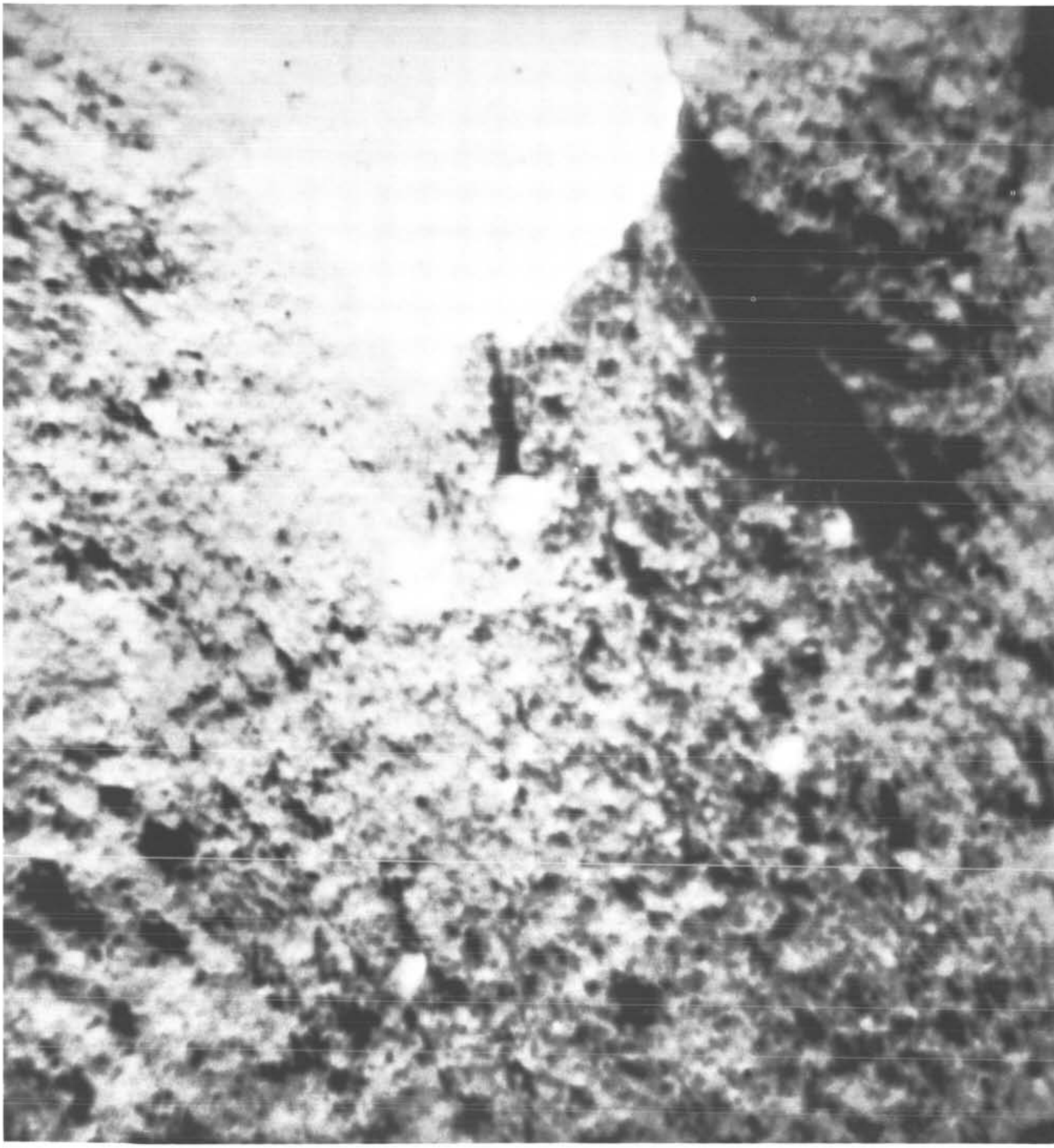
Surveyor I-165



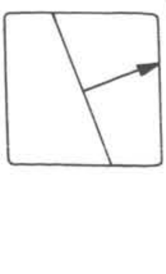
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(165)	164	12 20 32	− 48	−28.02	3.72	F 7.9	N	CLR	33071



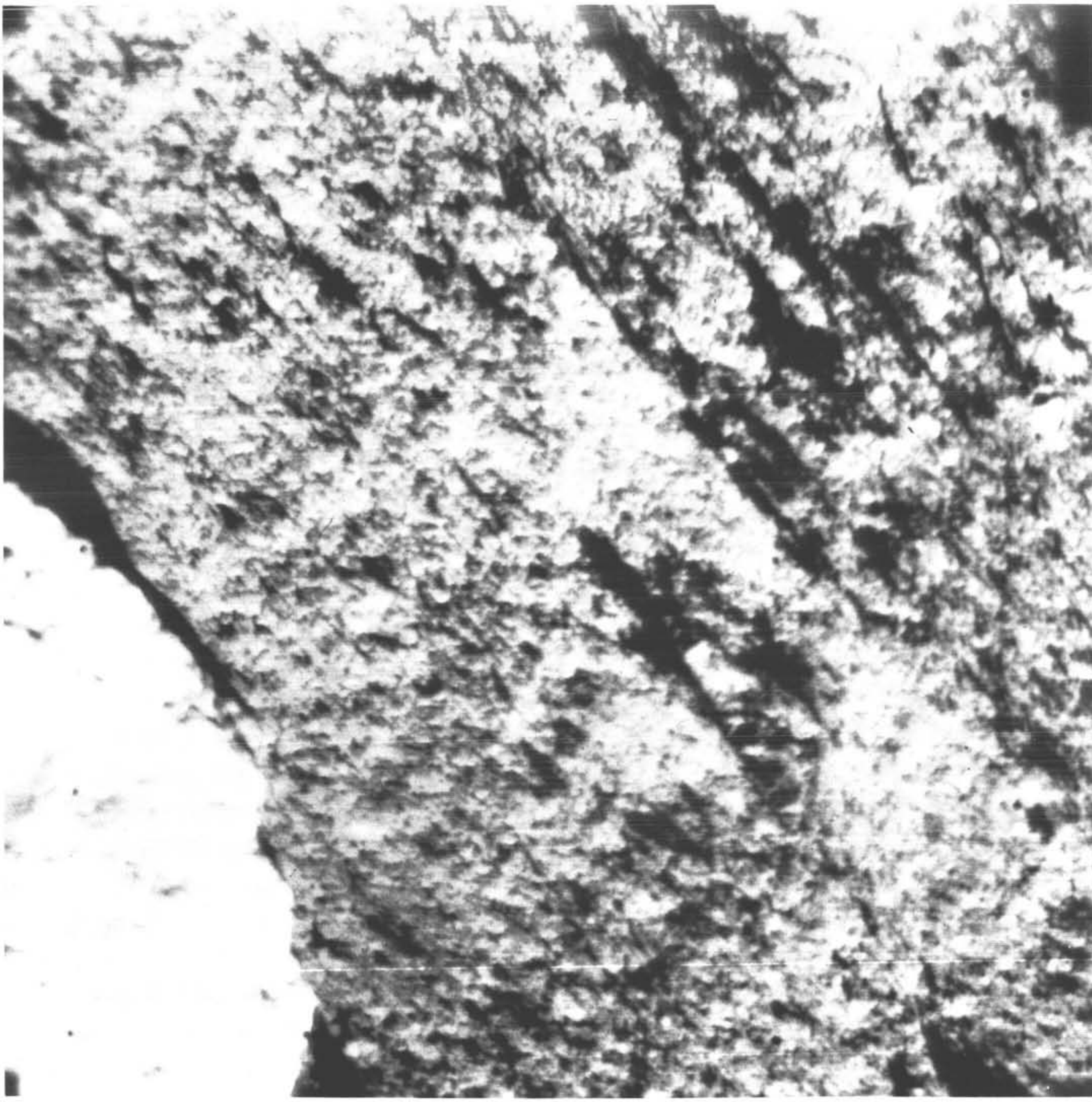
Surveyor I-166



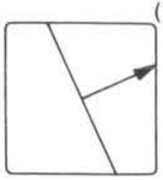
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(166)	164	12 20 59	− 54	−28.02	3.72	F 7.9	N	CLR	33072



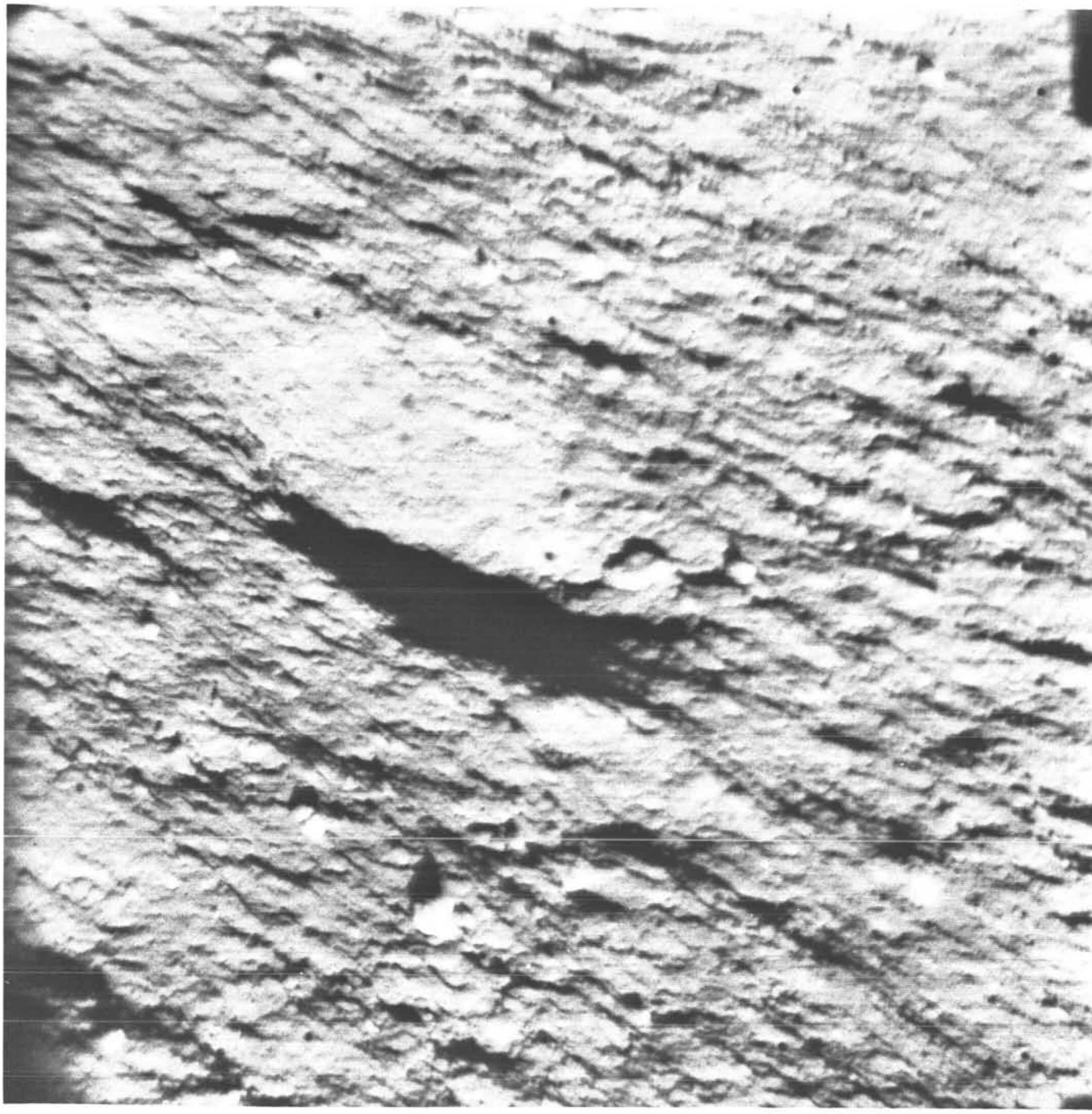
Surveyor I-167



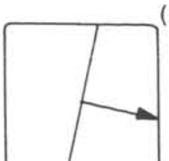
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(167)	164	12 35 16	− 51	−23.06	5.55	F 7.9	N	CLR	33134



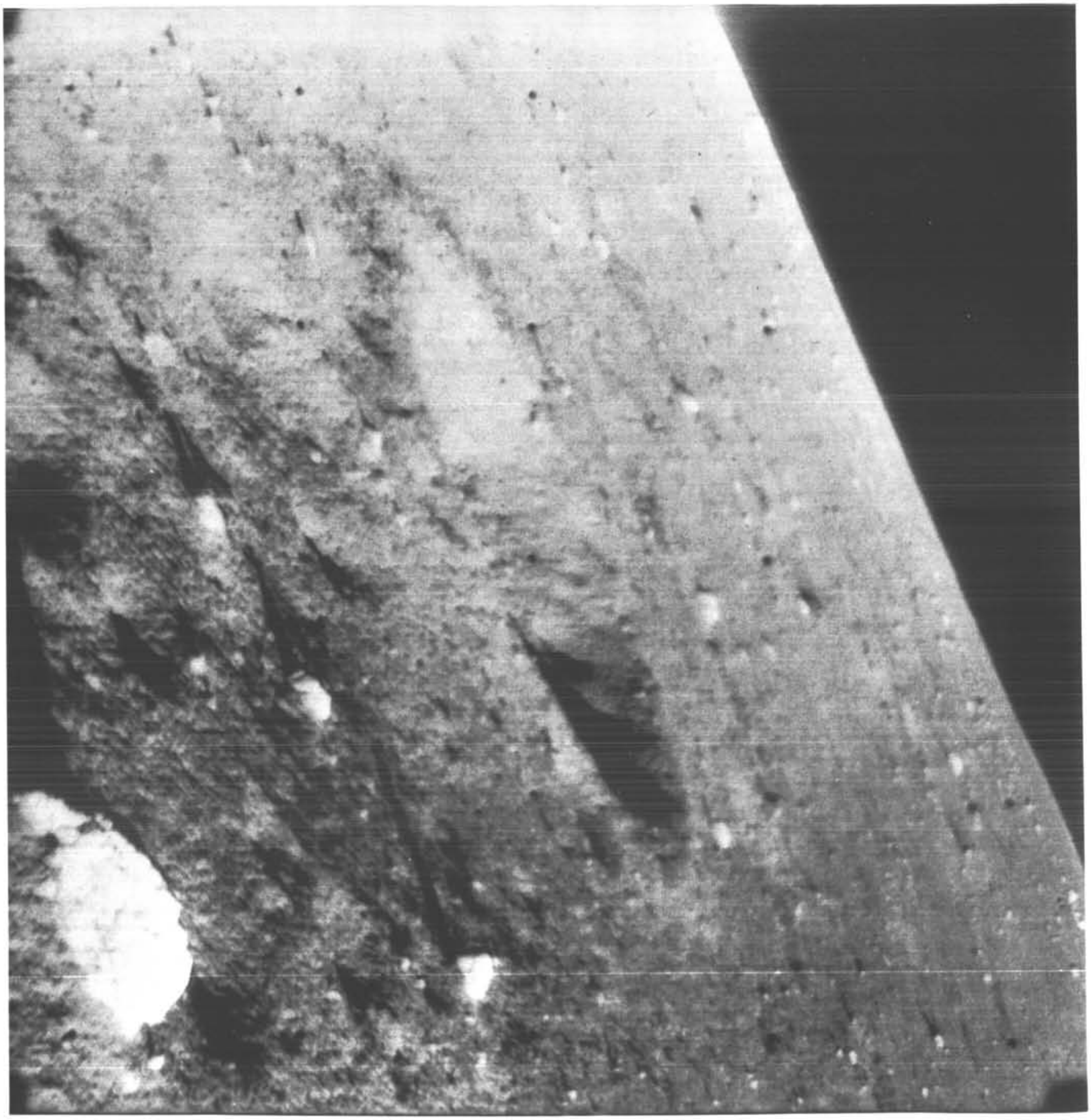
Surveyor I-168



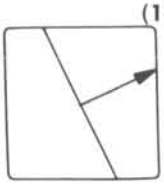
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(168)	164	13 30 01	− 93	−37.94	4.63	F11.0	N	CLR	33221



Surveyor I-169

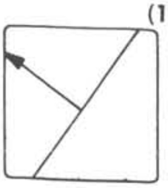


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(169)	164	13 39 55	− 51	−13.14	12.52	F 7.9	W	CLR	33256

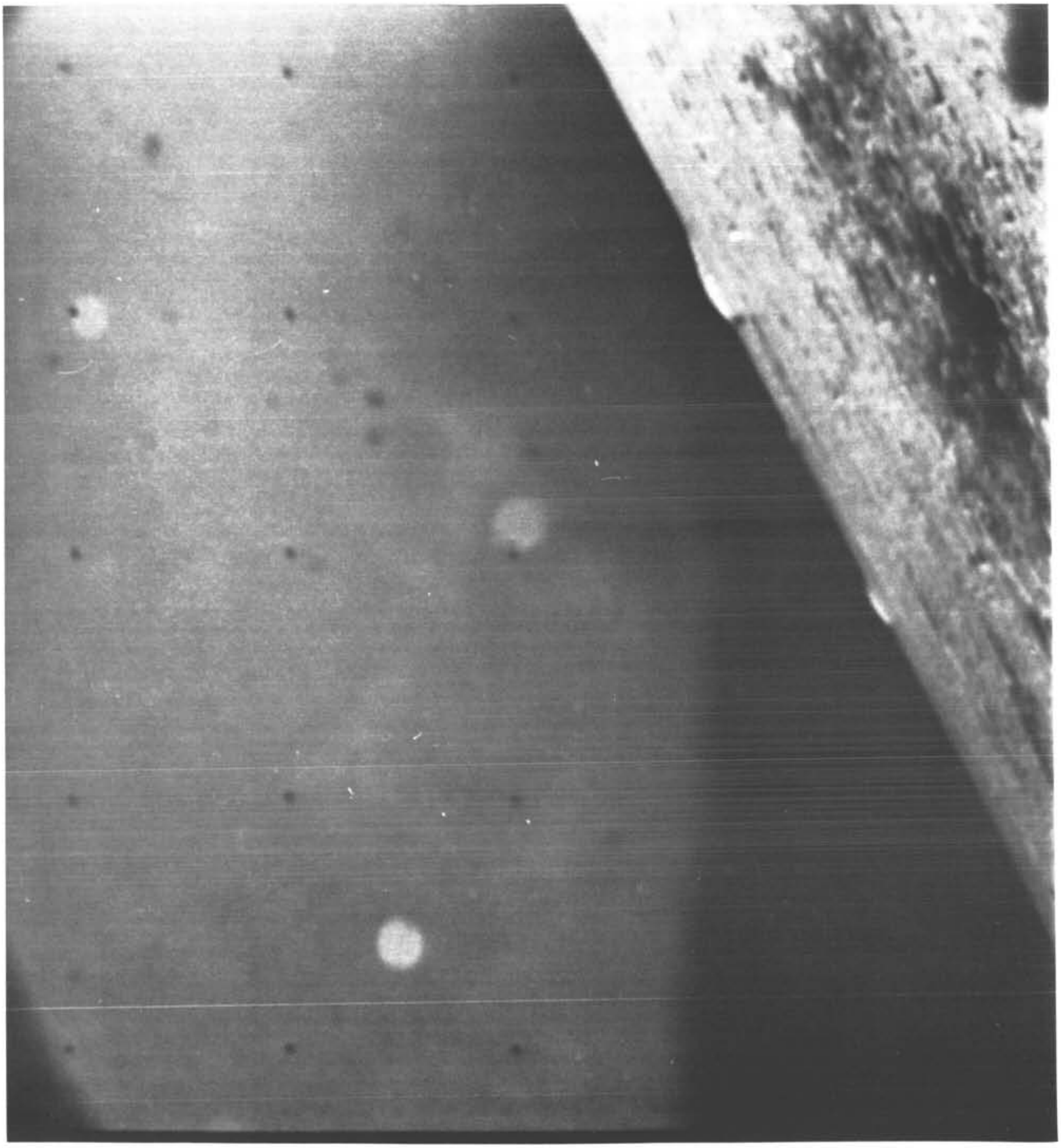


Surveyor I-170

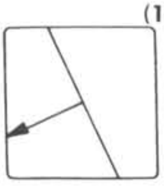
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(170)	164	15 36 58	57	16.62	27.40	F 7.9	W	CLR	33556



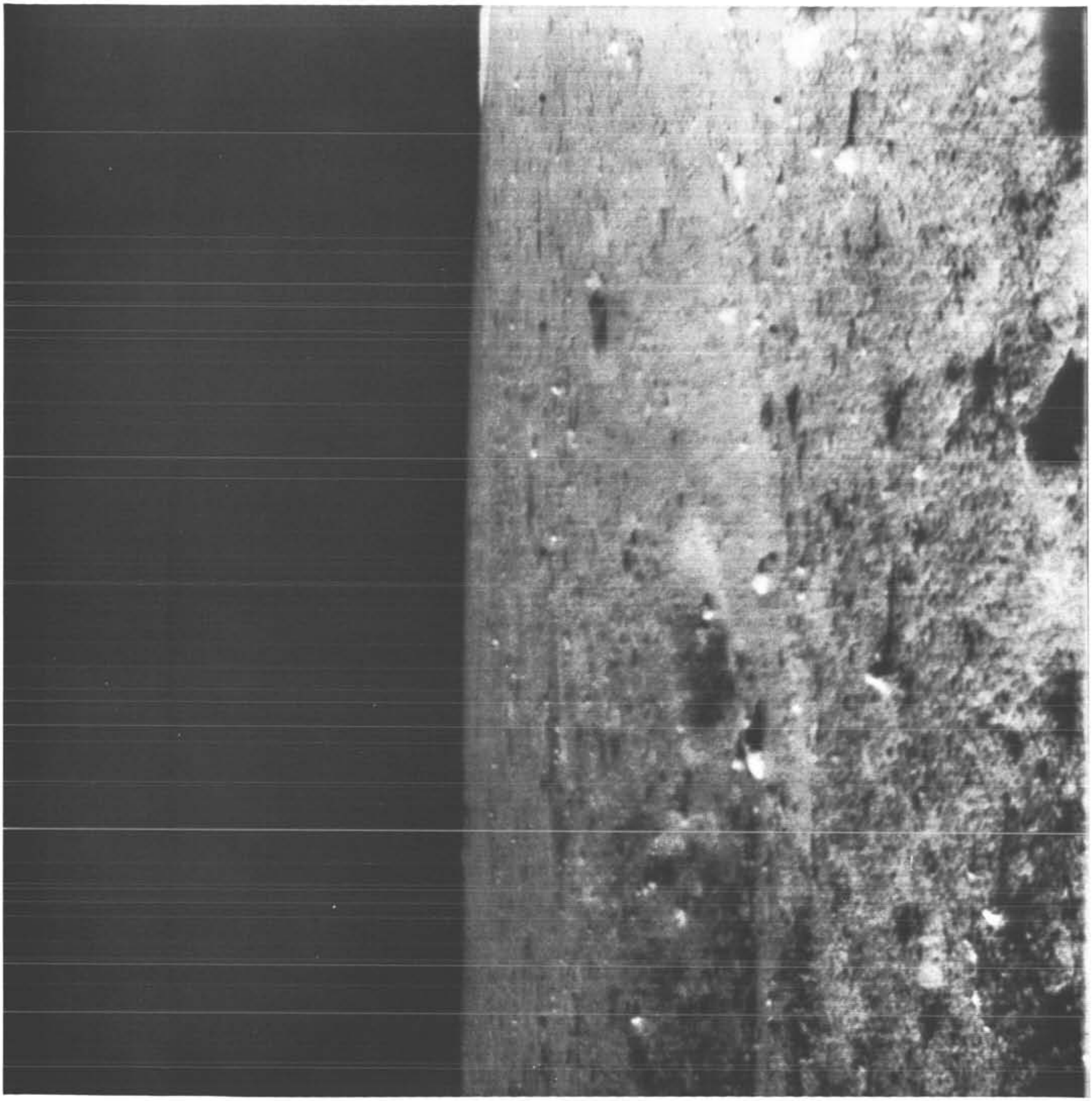
Surveyor I-171



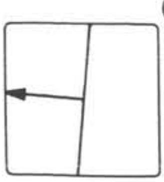
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(171)	164	15 40 05	105	16.62	27.40	F 7.9	W	CLR	33571



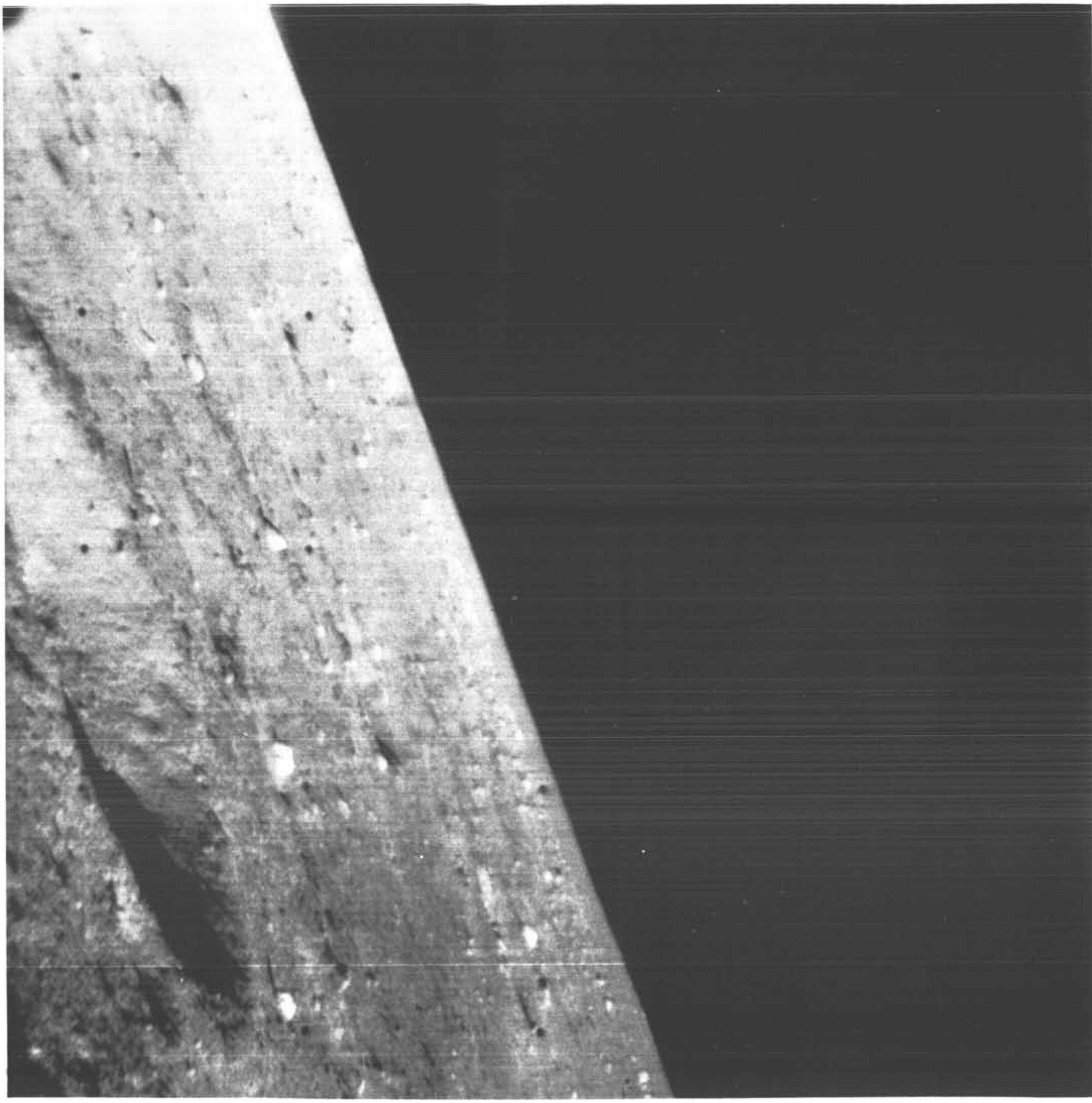
Surveyor I-172



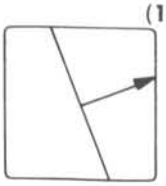
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(172)	164	15 59 12	81	11.66	2.02	F 7.9	W	CLR	33572



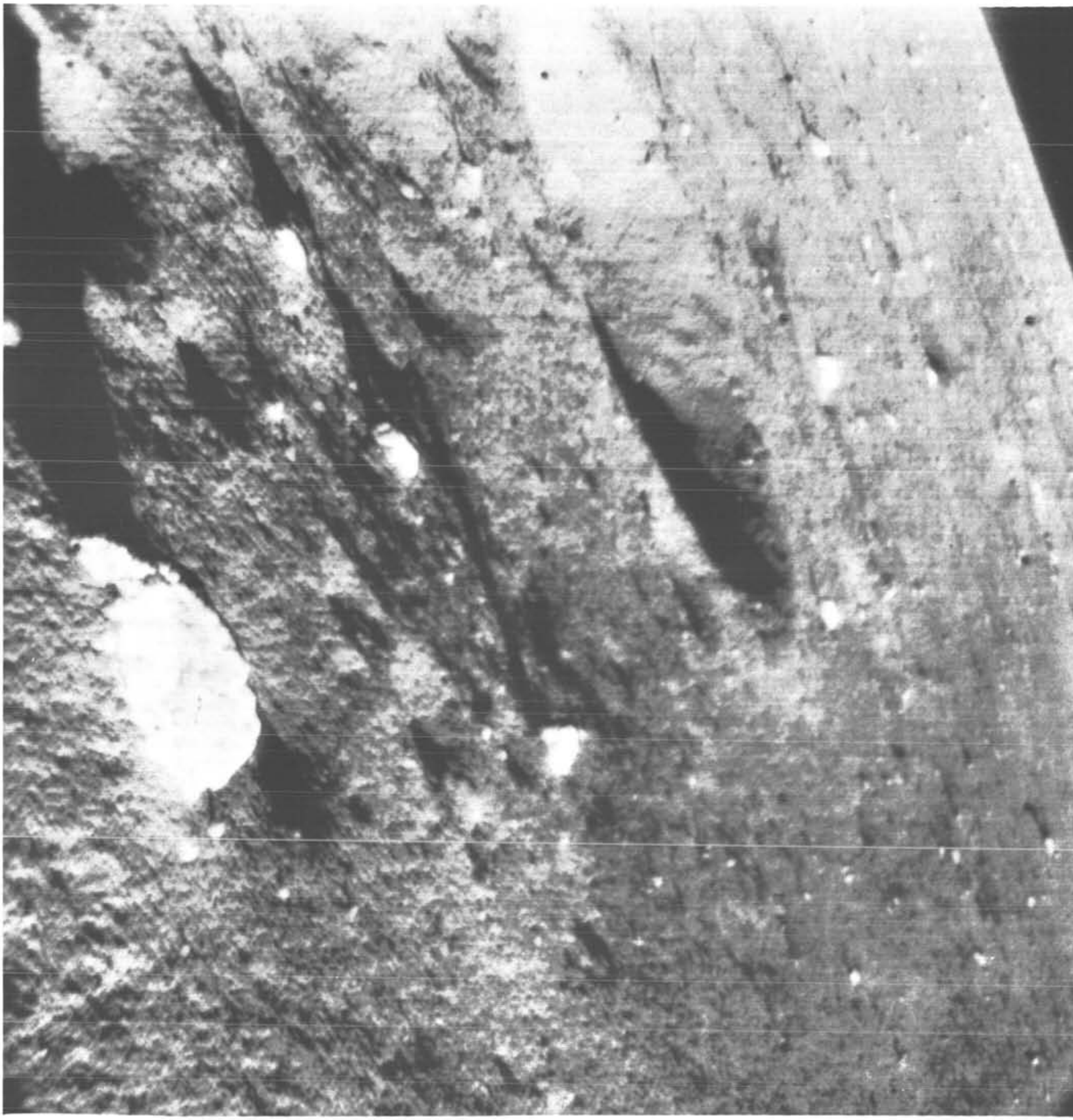
Surveyor I-173



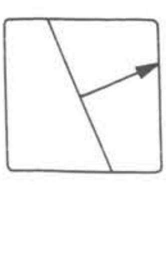
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(173)	164	18 50 59	− 54	− 3.22	2.18	F 7.9	W	CLR	34002



Surveyor I-174

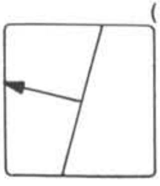


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(174)	164	18 51 06	− 54	−18.10	2.18	F 7.9	W	CLR	34003



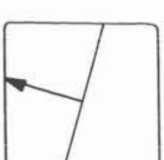
Surveyor I-175

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(175)	164	19 02 50	72	−28.02	2.18	F 7.9	W	CLR	34045

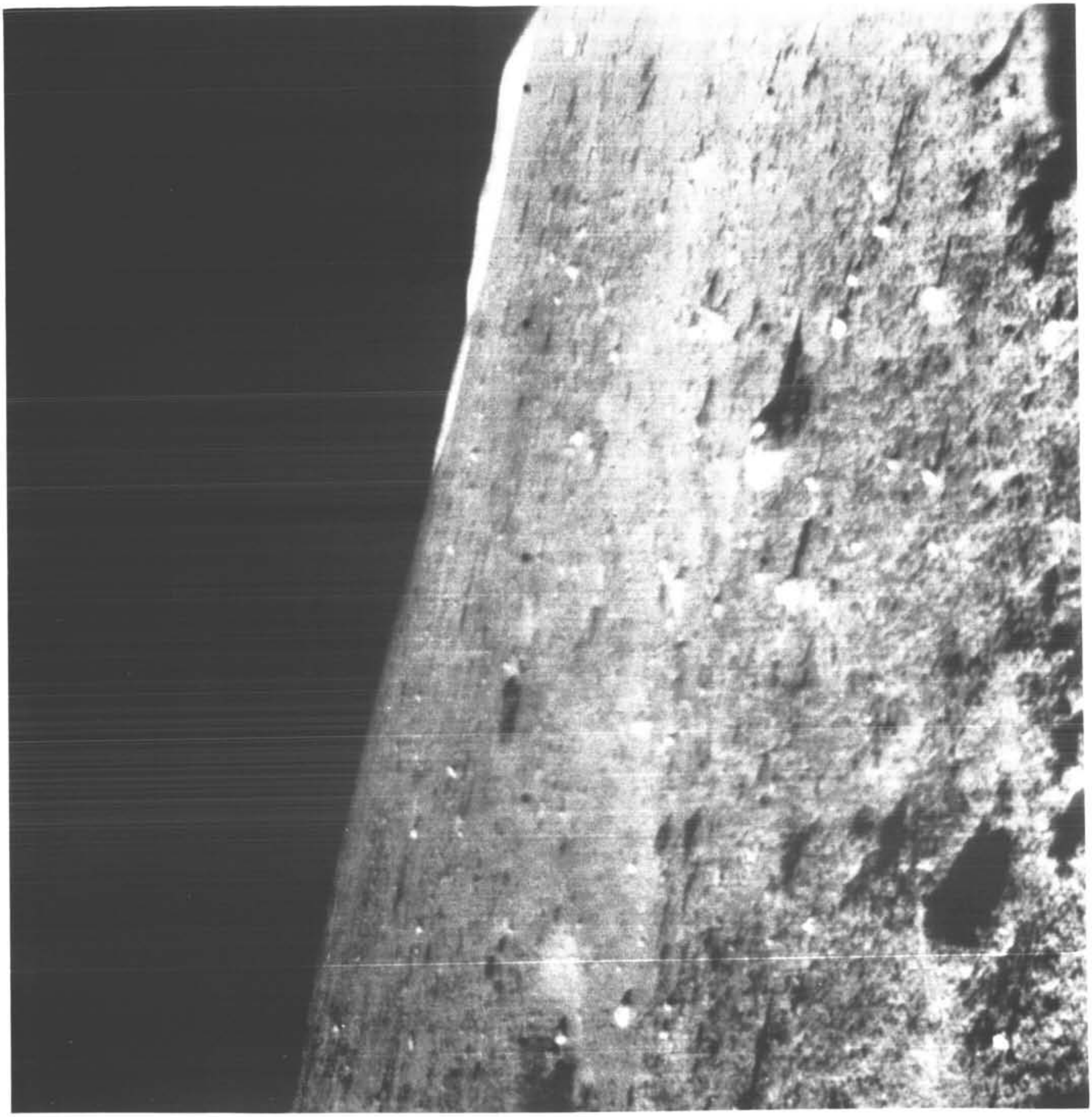


Surveyor I-176

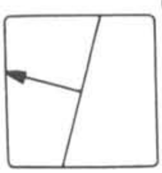
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(176)	164	19 02 57	72	−13.14	2.18	F 7.9	W	CLR	34046



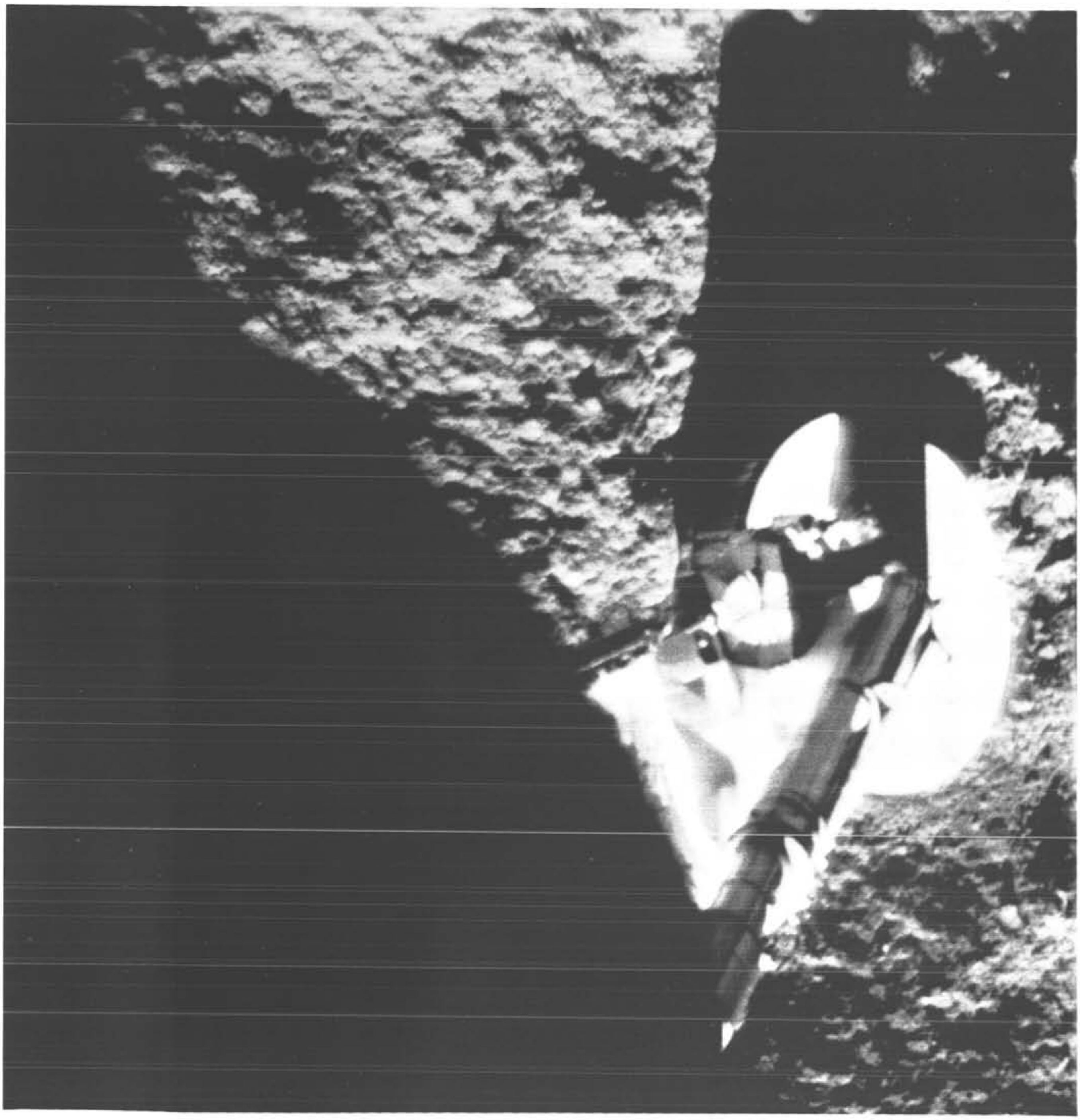
Surveyor I-177



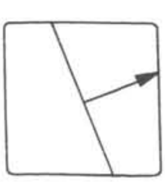
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(177)	164	19 03 10	72	11.66	2.18	F 7.9	W	CLR	34050



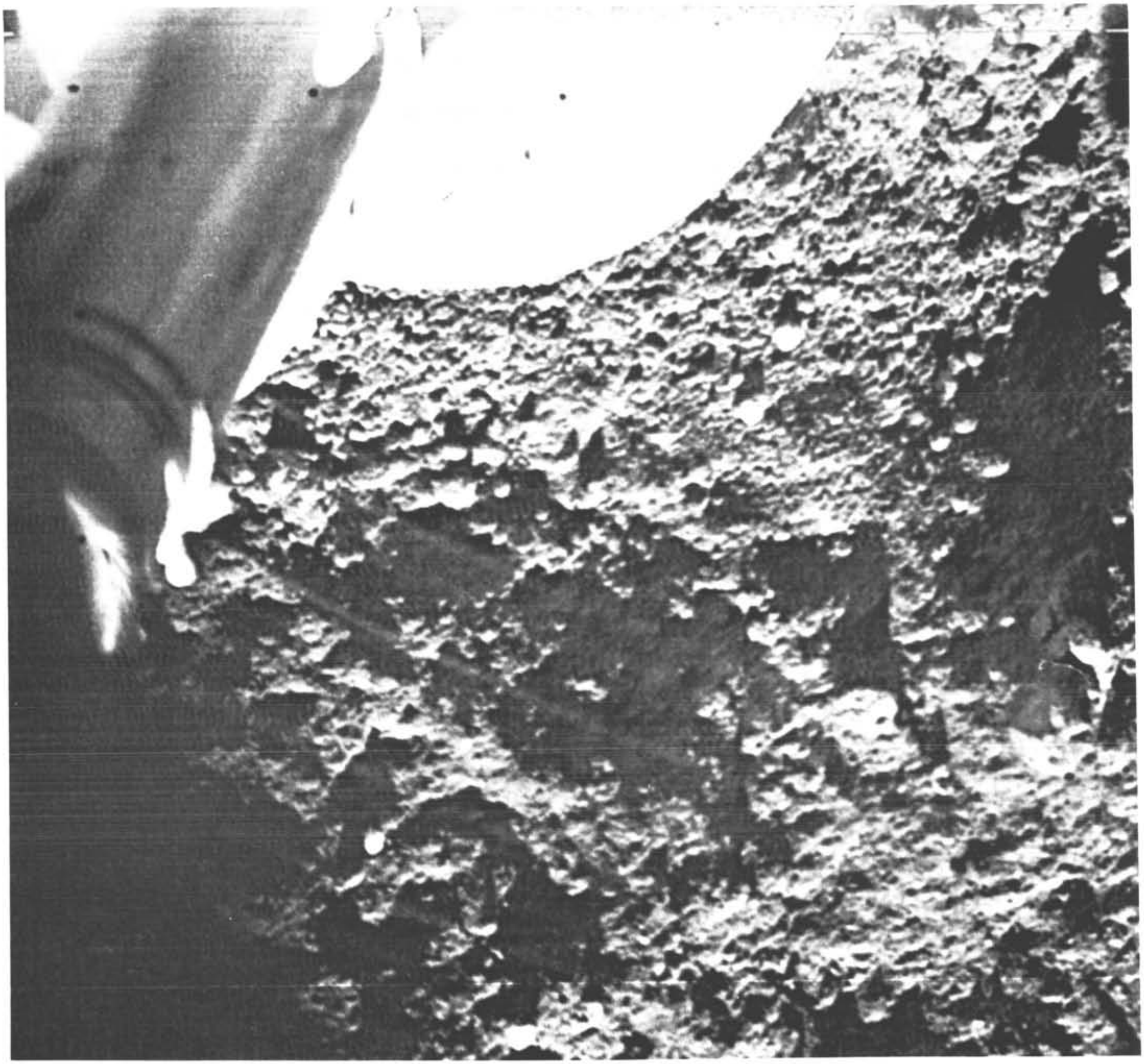
Surveyor I-178



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(178)	164	19 11 43	− 54	−62.74	2.18	F 7.9	W	CLR	34103

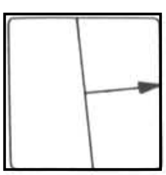


Surveyor I-179

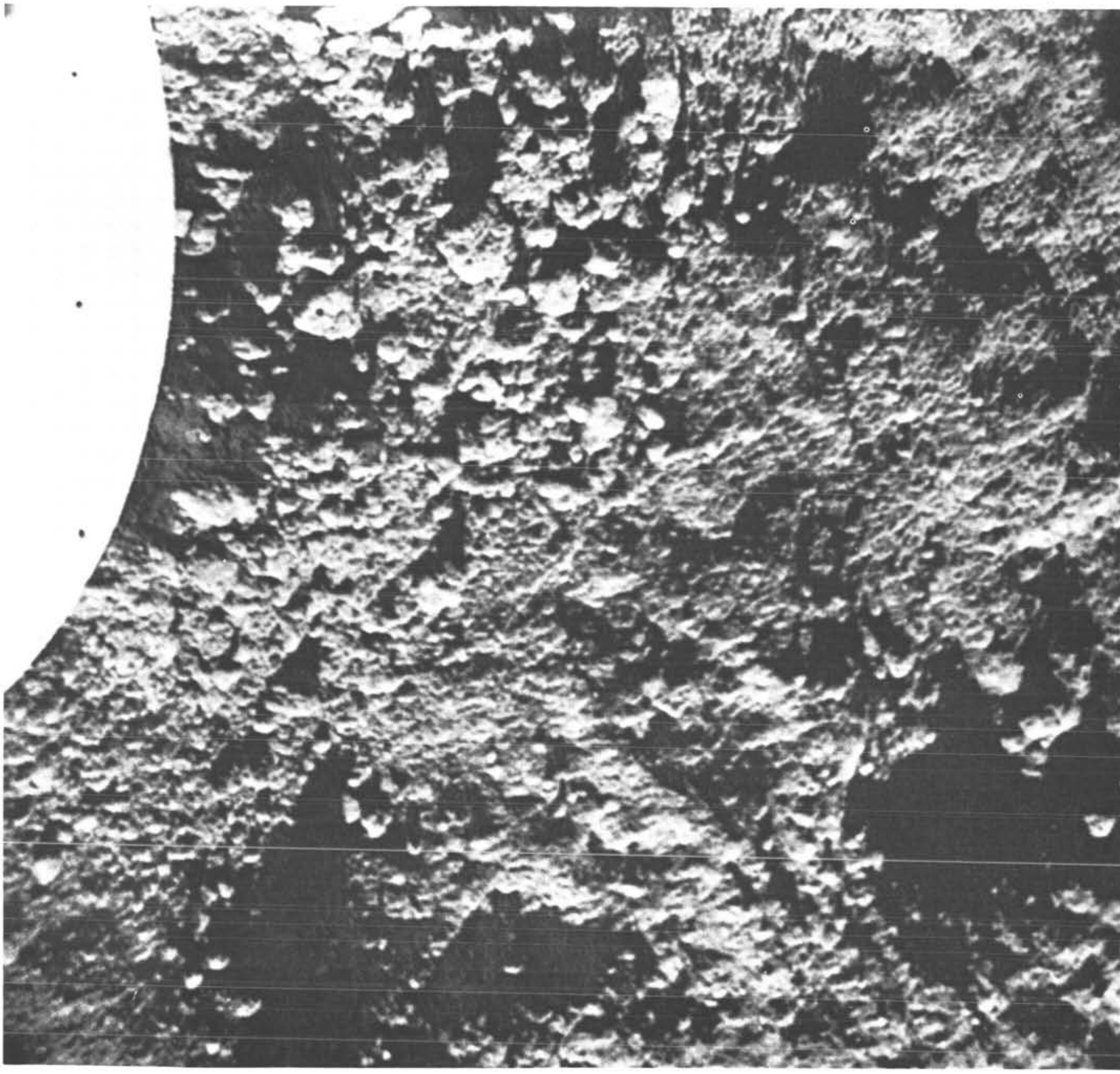


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(179)	164	19 44 15	− 72	−62.74	3.11	F 7.9	N	CLR	34356

Processed

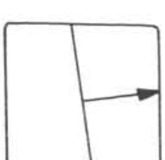


Surveyor I-180

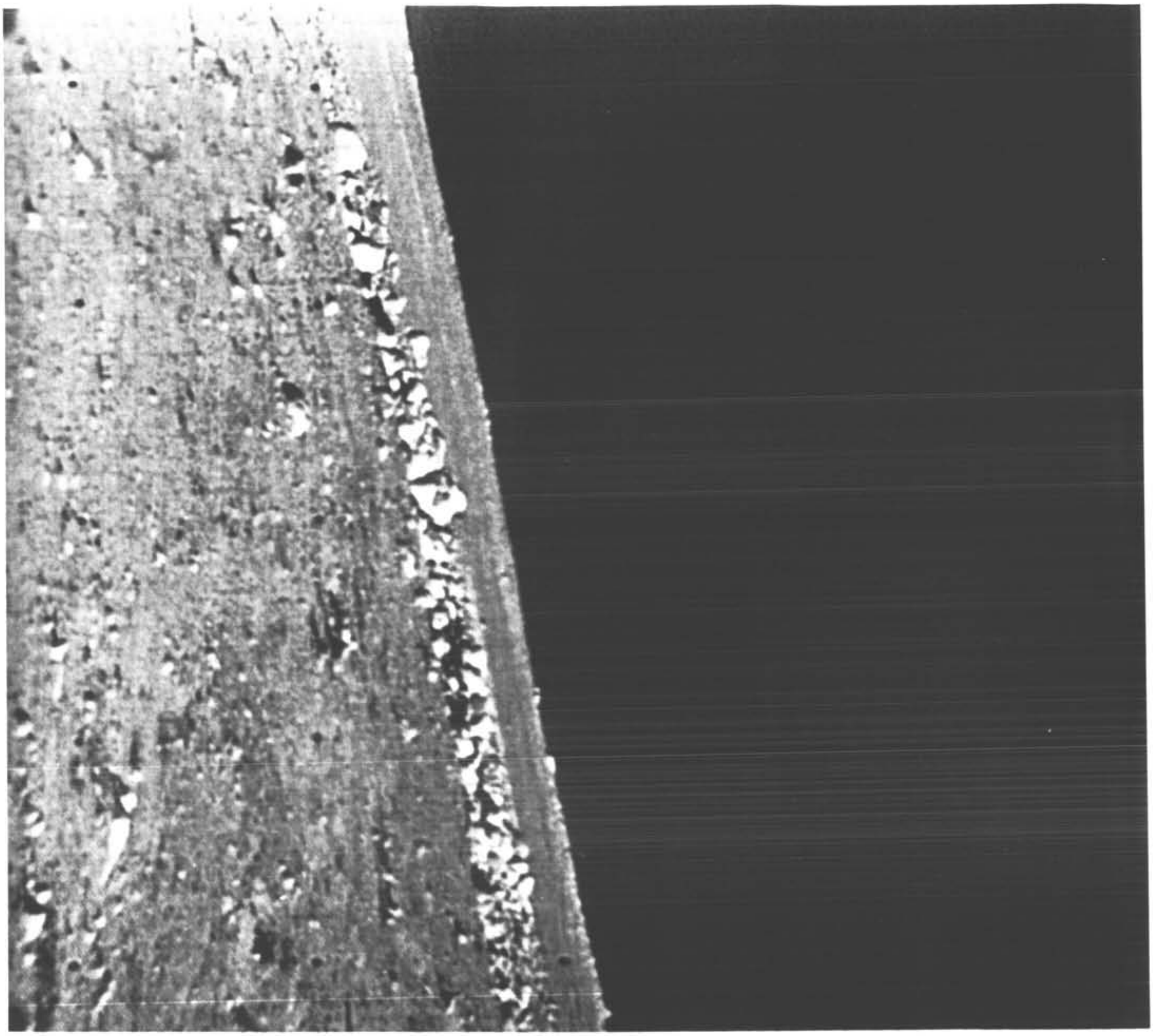


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(180)	164	19 46 35	− 69	−57.78	2.44	F 7.9	N	CLR	34361

Processed

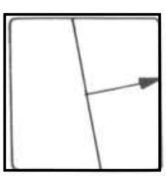


Surveyor I-181

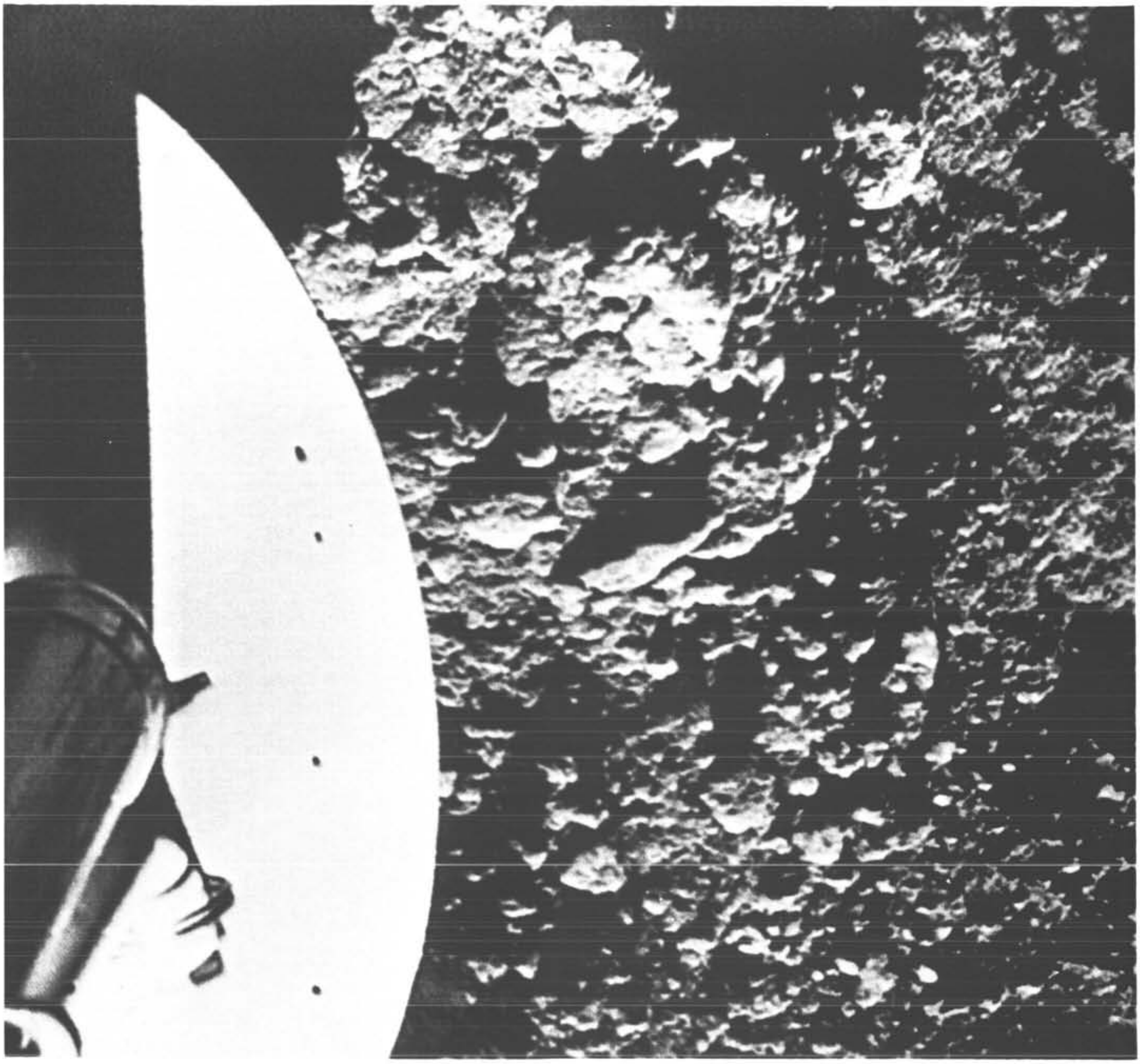


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(181)	164	19 47 18	− 66	− 8.18	27.40	F 7.9	N	CLR	34370

Processed

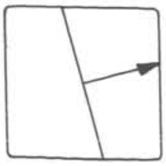


Surveyor I-182

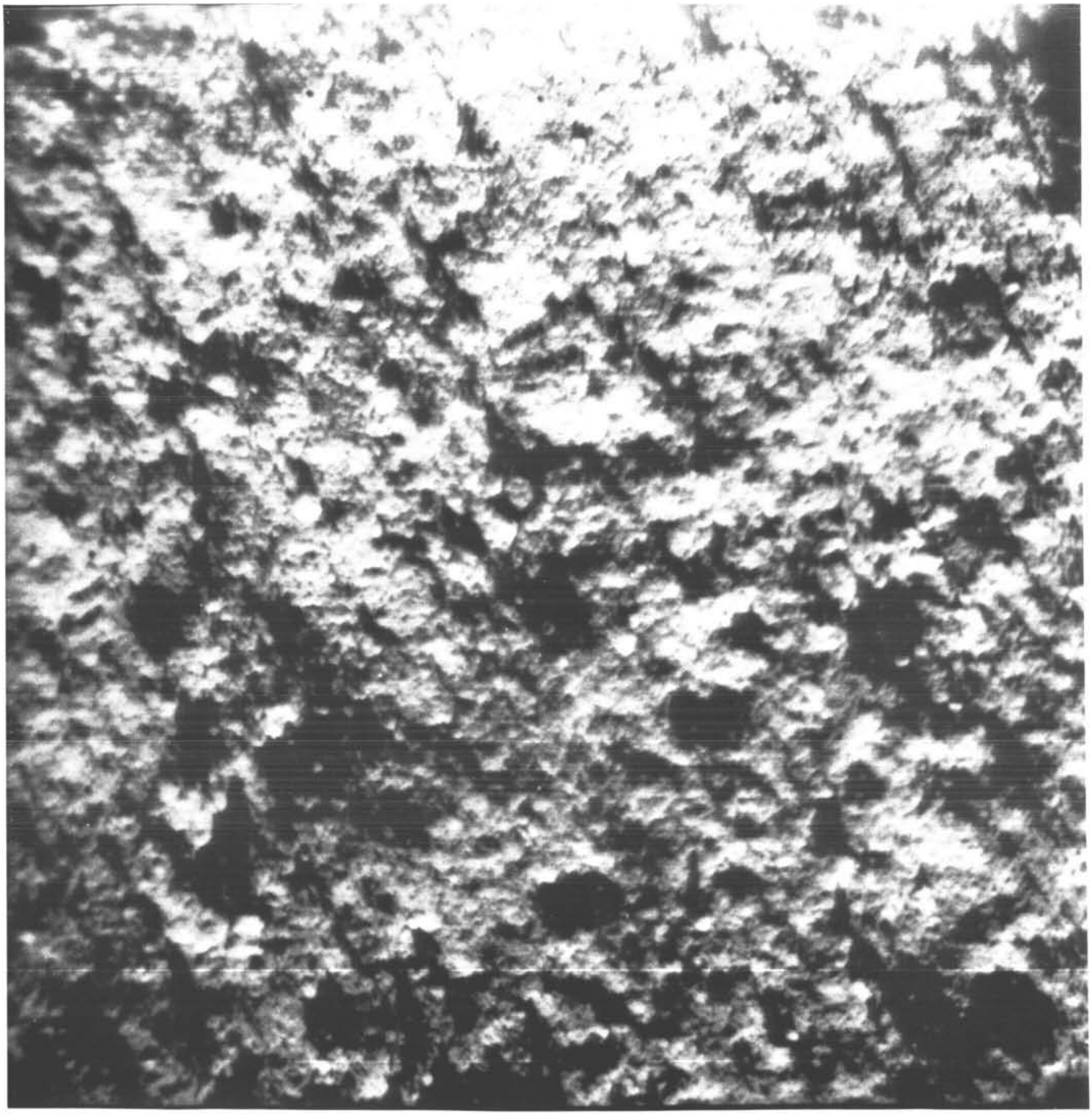


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(182)	164	19 48 02	− 63	−57.78	2.44	F 7.9	N	CLR	34377

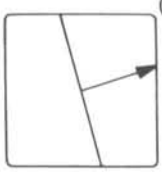
Processed



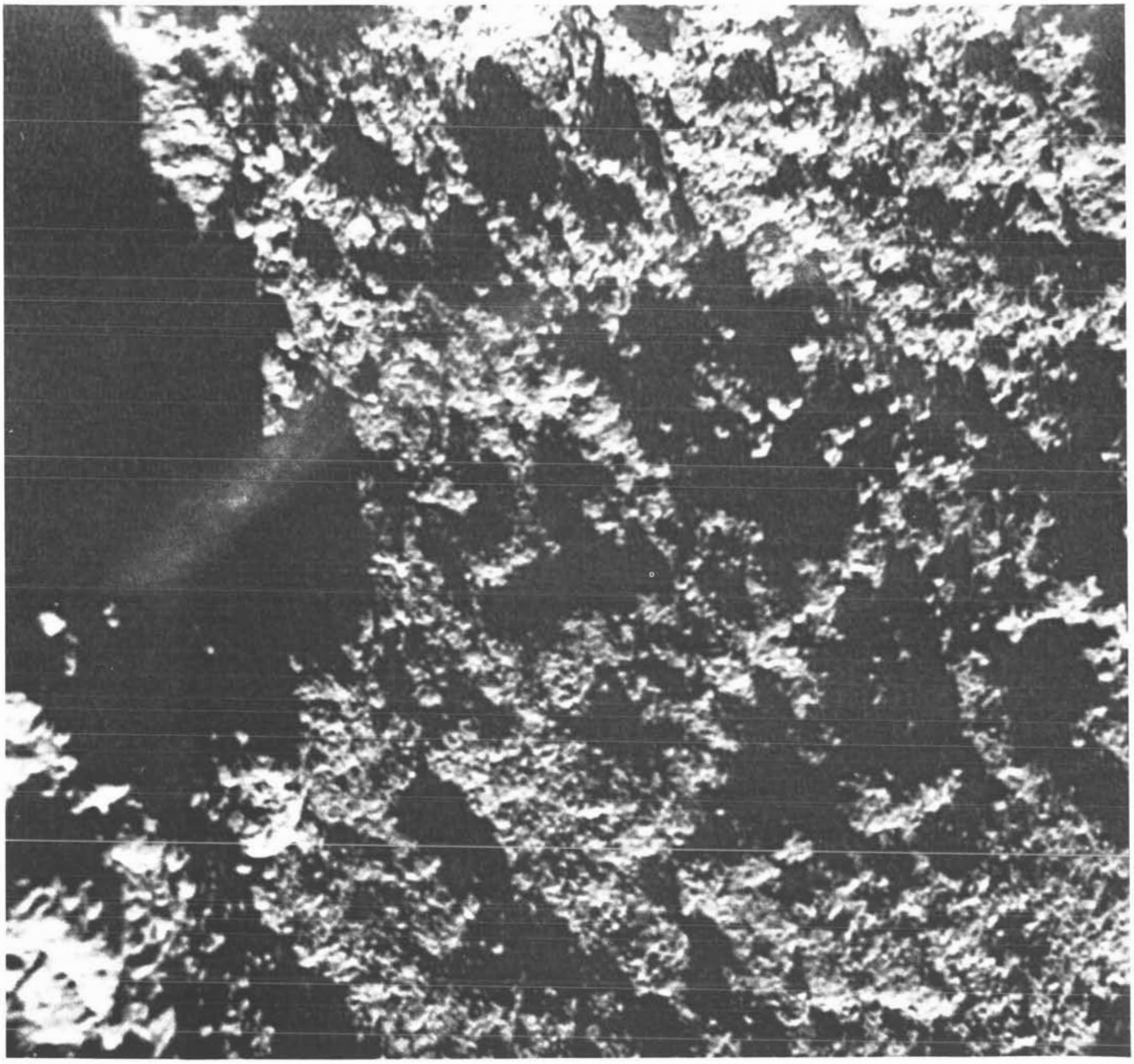
Surveyor I-183



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(183)	164	19 49 05	− 60	−42.90	3.47	F 7.9	N	CLR	34411

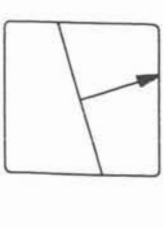


Surveyor I-184

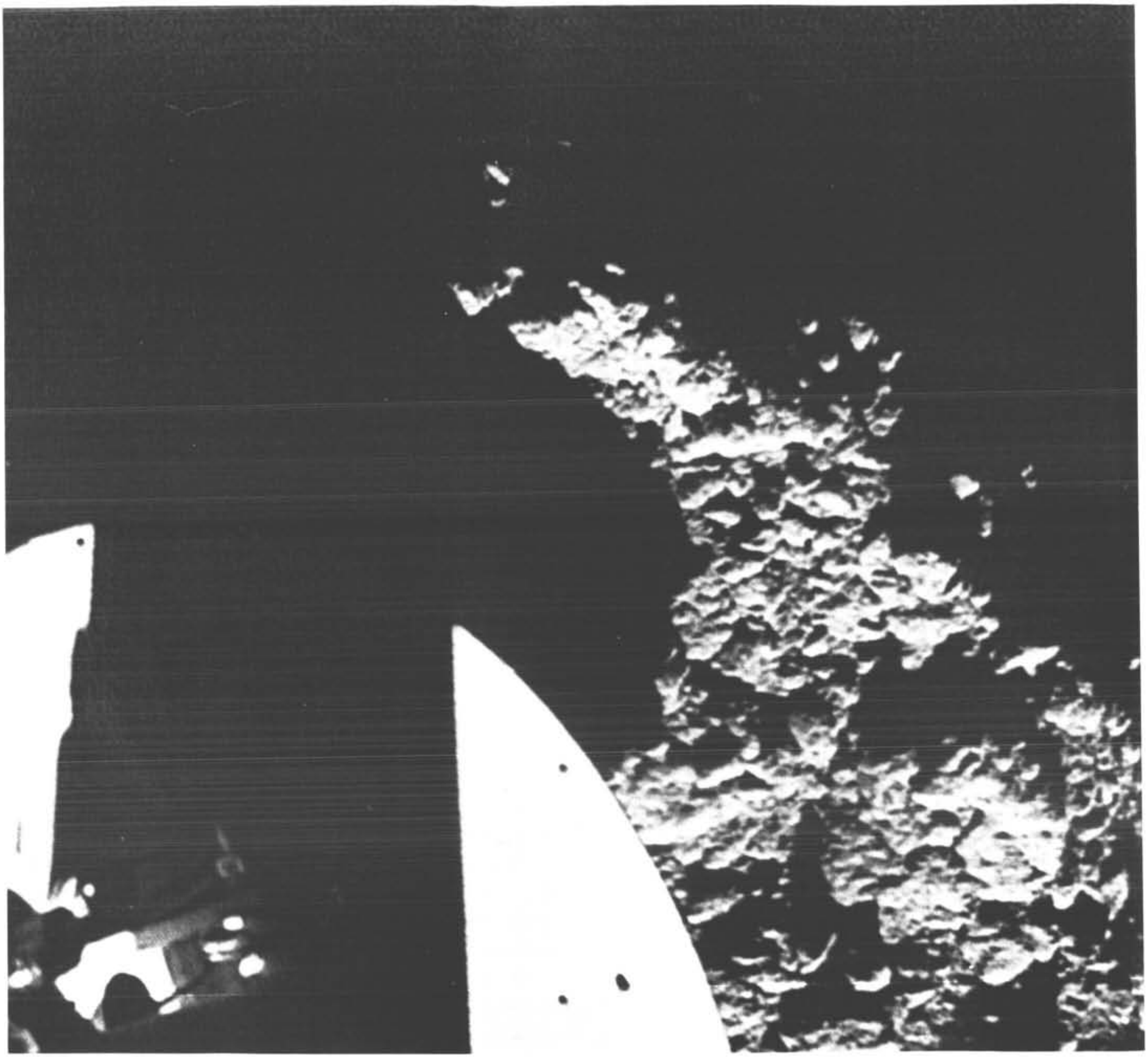


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(184)	164	19 49 12	− 60	−52.82	2.68	F 7.9	N	CLR	34412

Processed

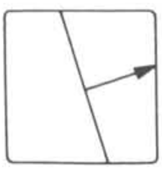


Surveyor I-185

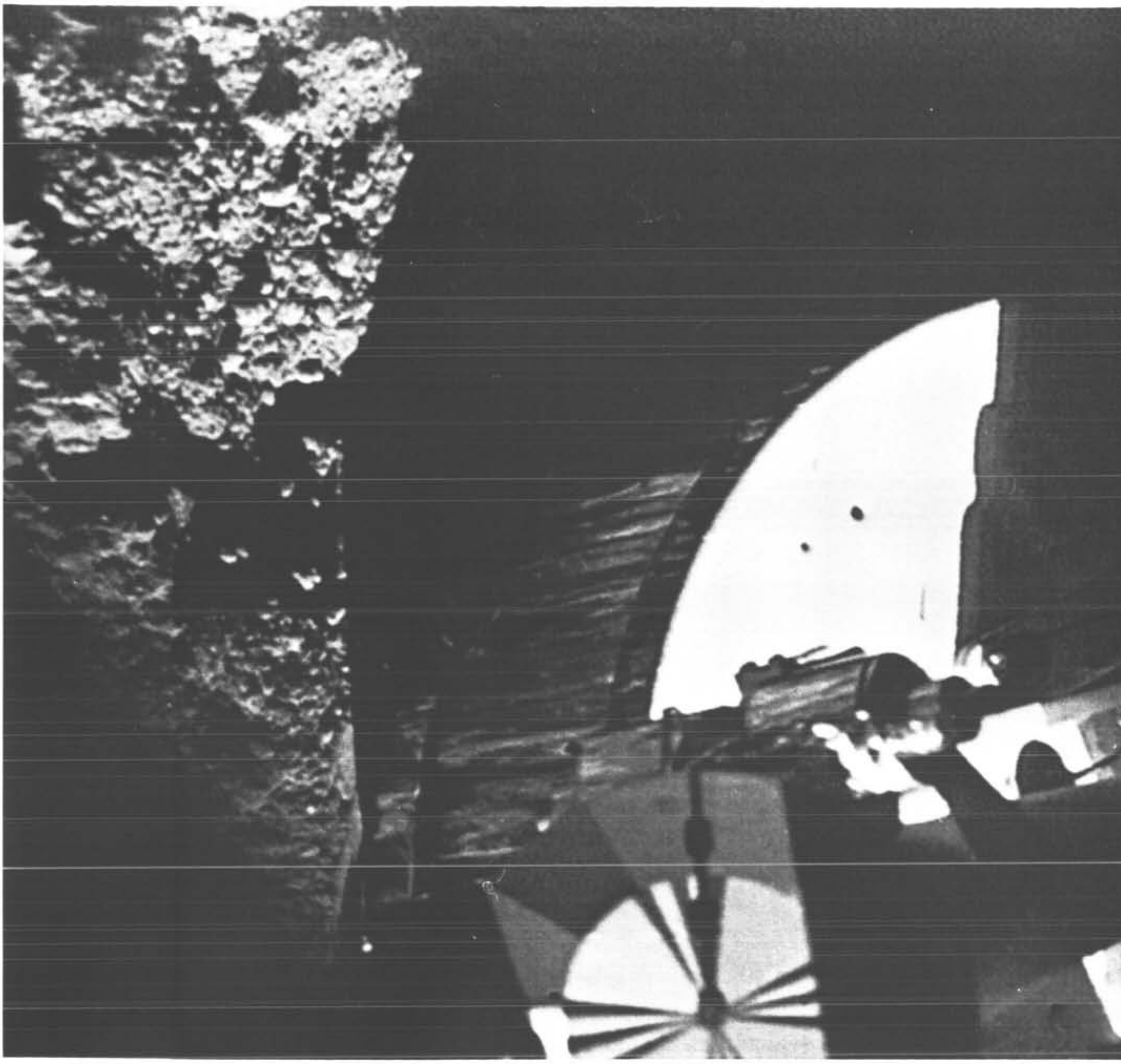


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(185)	164	19 49 28	− 63	−57.78	2.44	F 7.9	N	CLR	34415

Processed

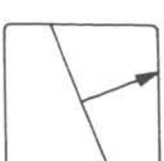


Surveyor I-186

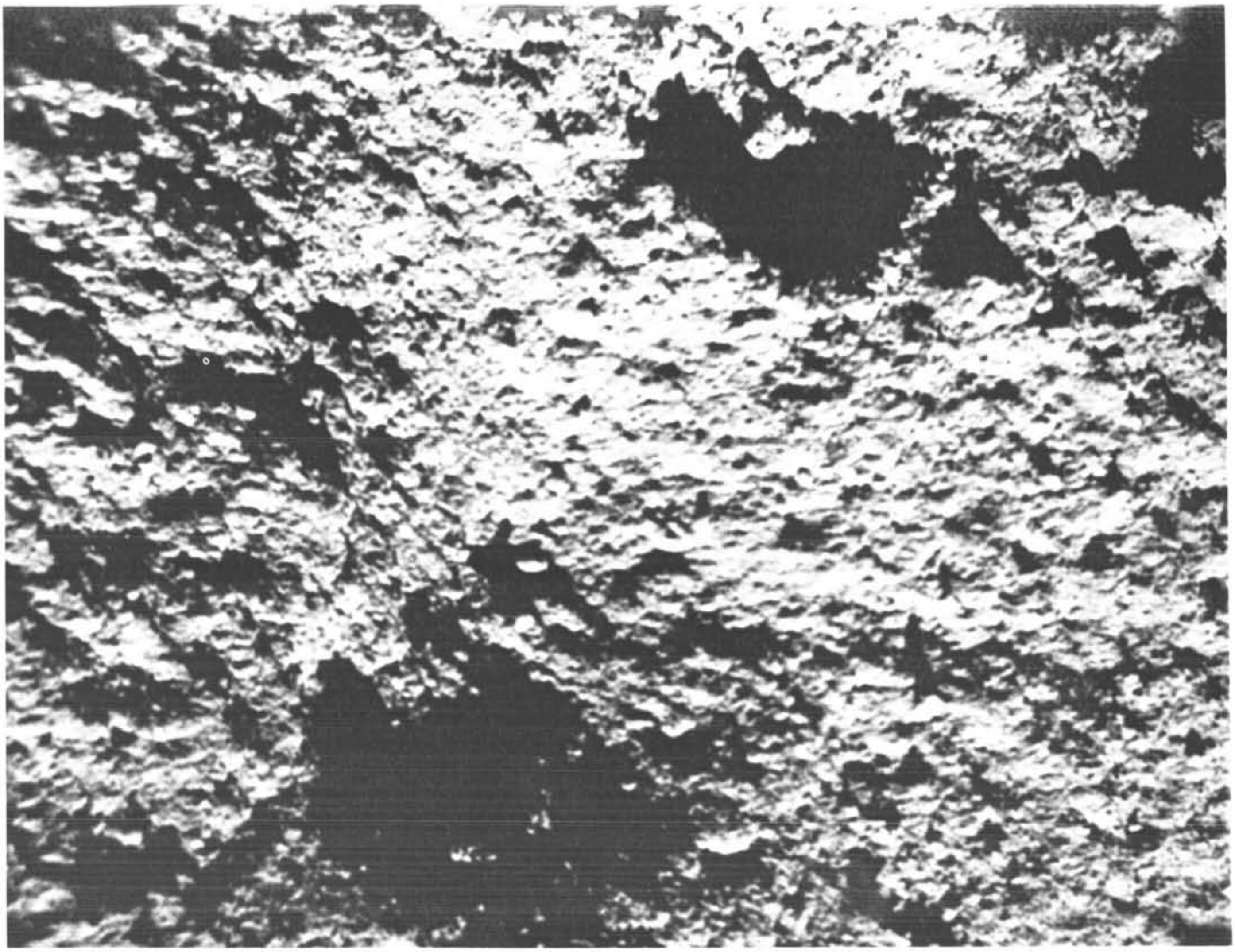


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(186)	164	19 50 44	− 54	−62.74	4.63	F 7.9	N	CLR	34431

Processed

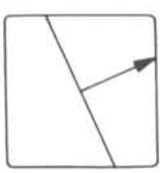


Surveyor I-187

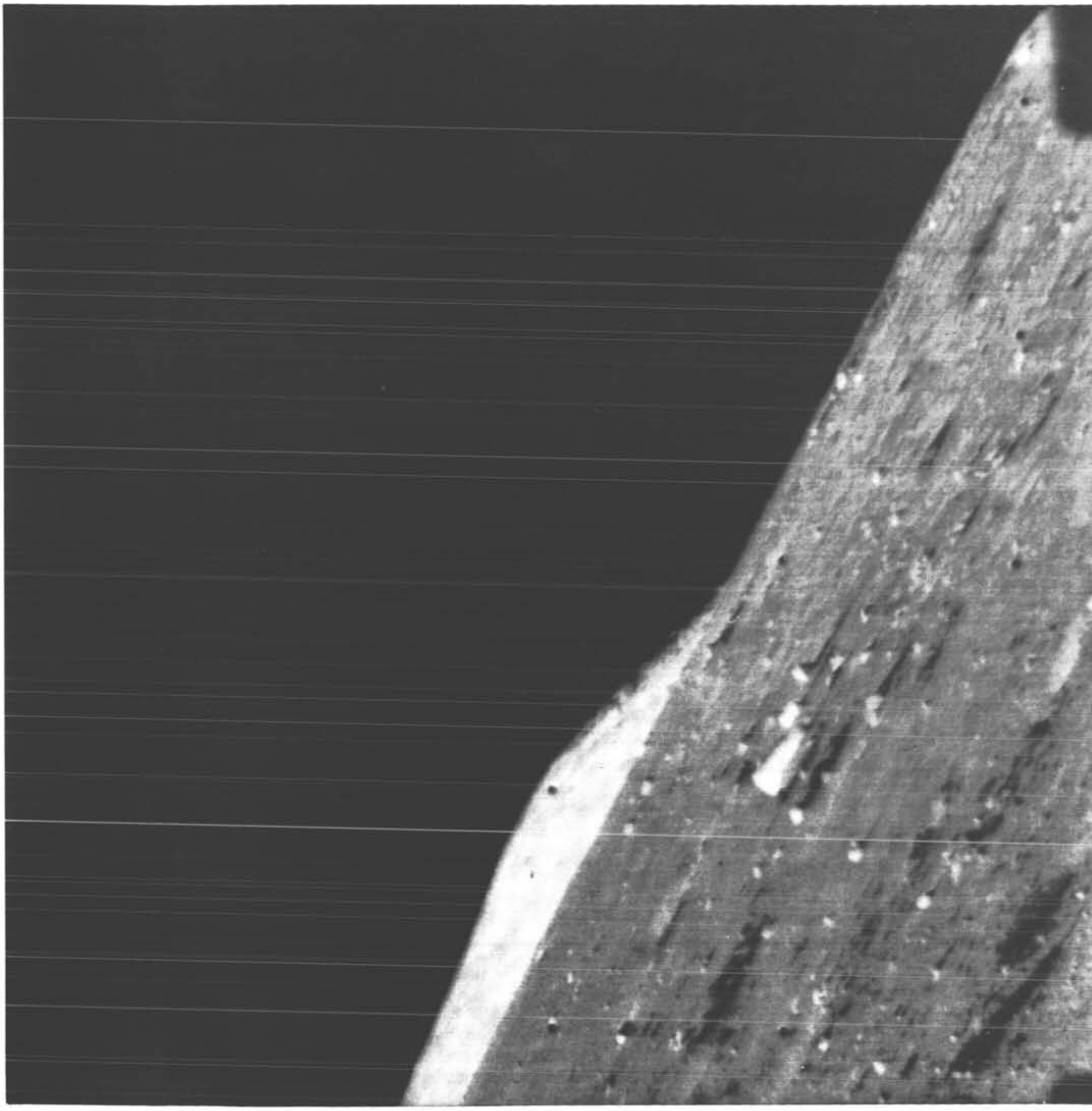


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(187)	164	19 51 58	− 51	−47.86	2.80	F 7.9	N	CLR	34435

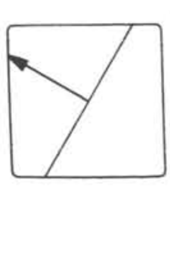
Processed



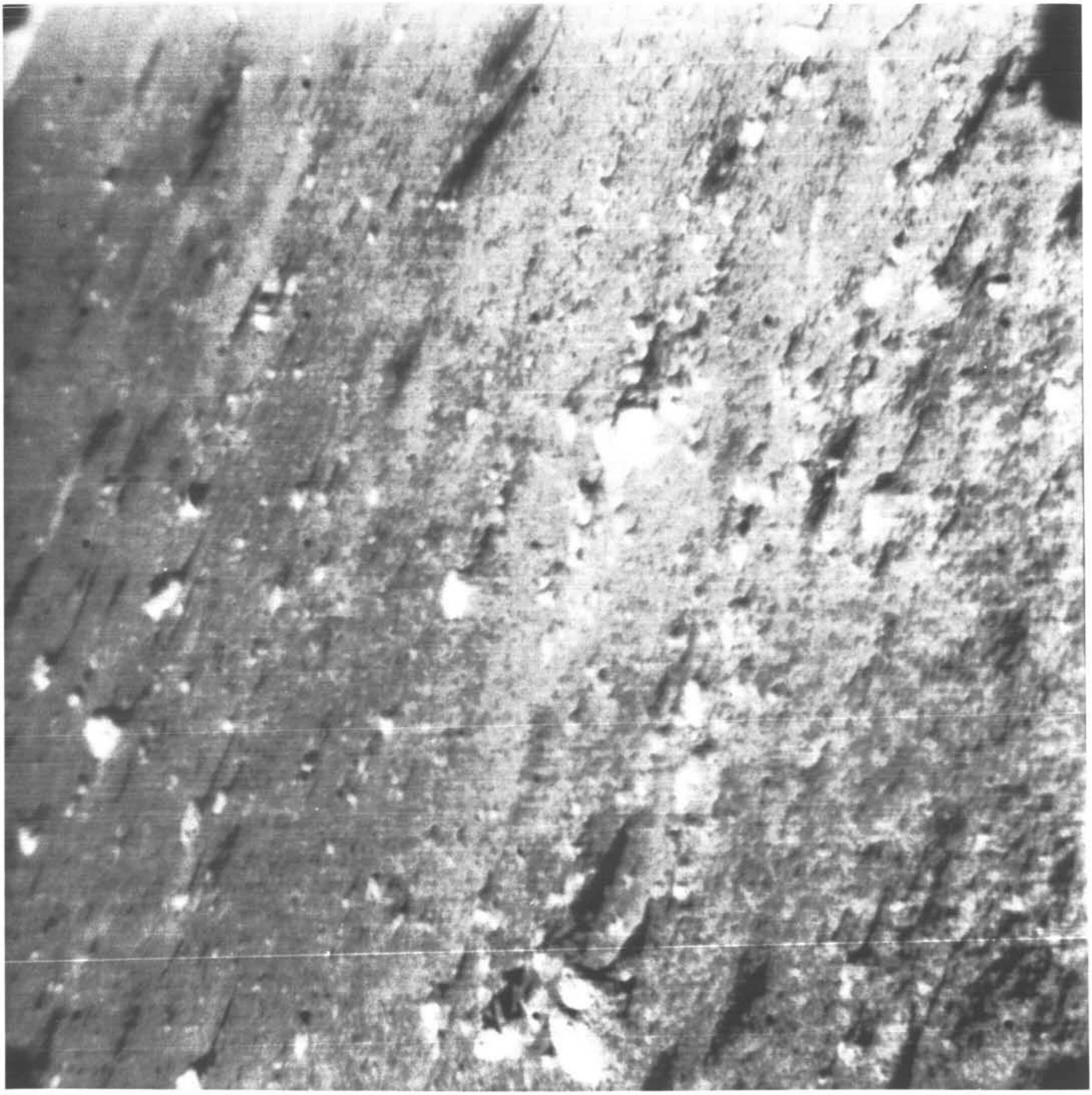
Surveyor I-188



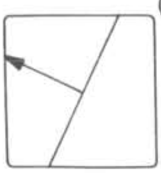
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(188)	164	21 00 41	60	16.62	27.40	F 7.9	N	CLR	35104



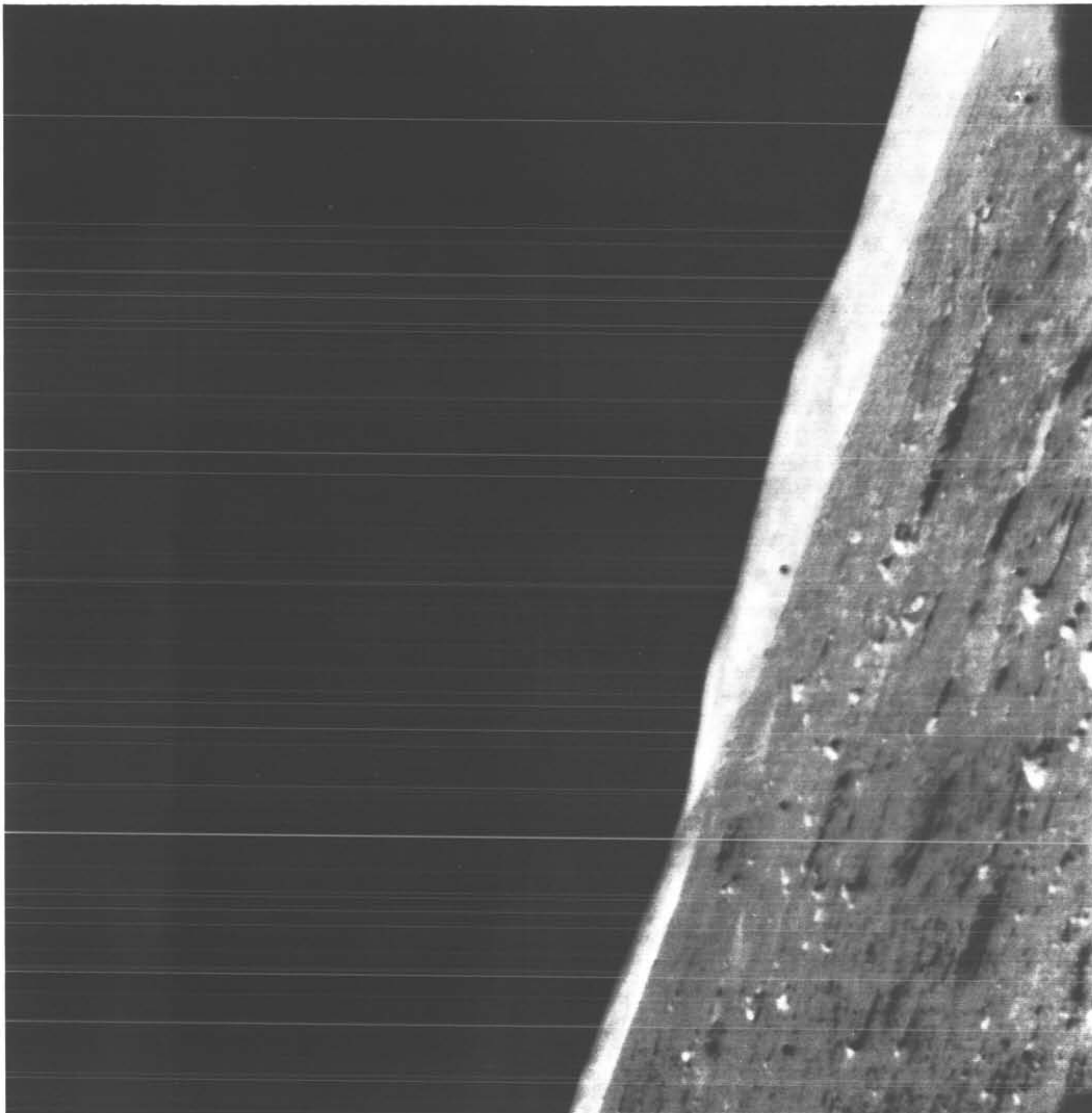
Surveyor I-189



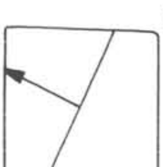
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(189)	164	21 02 40	63	11.66	15.17	F 7.9	N	CLR	35123



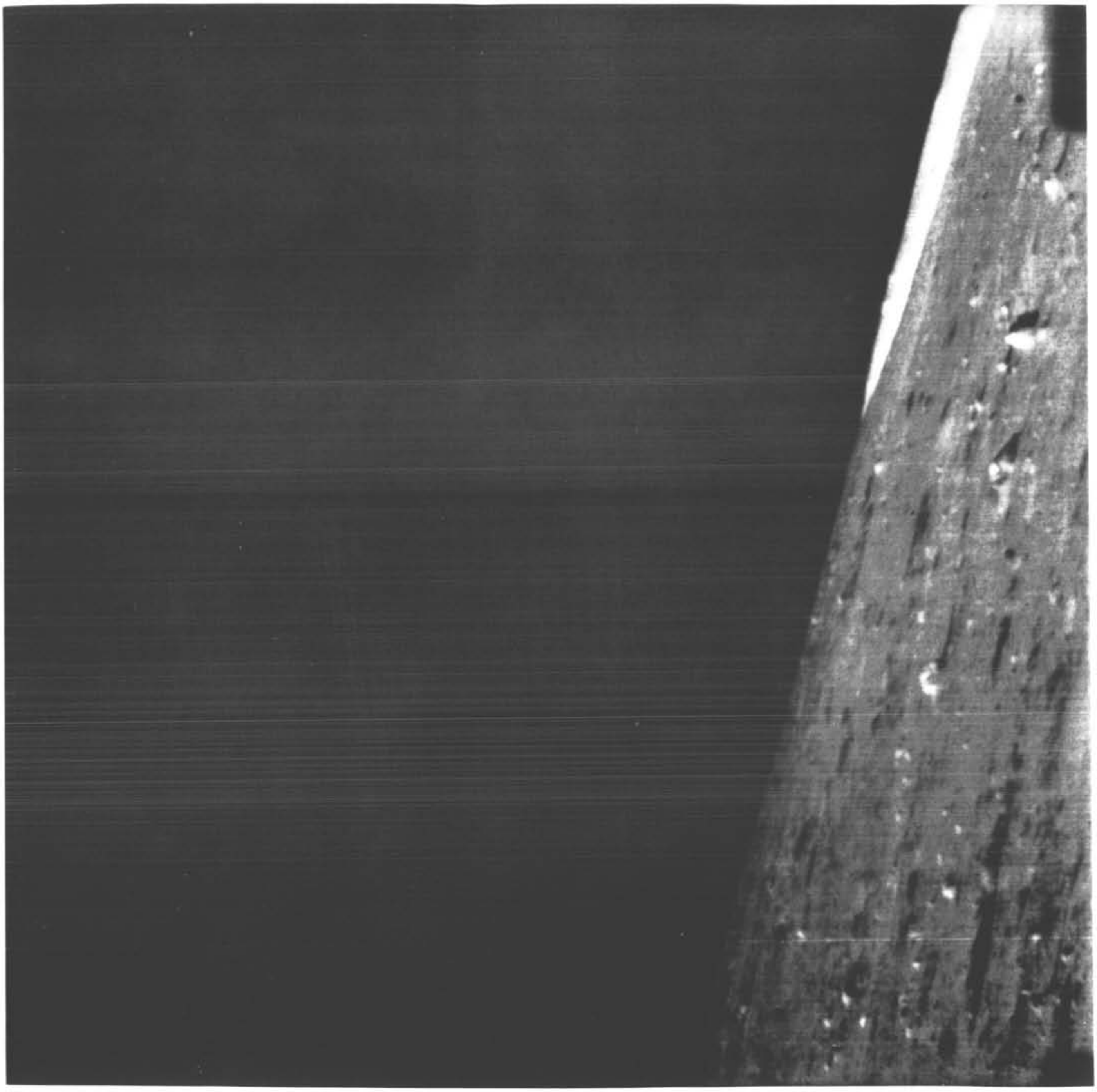
Surveyor I-190



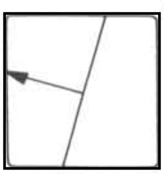
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(190)	164	21 03 12	66	16.62	27.40	F 7.9	N	CLR	35124



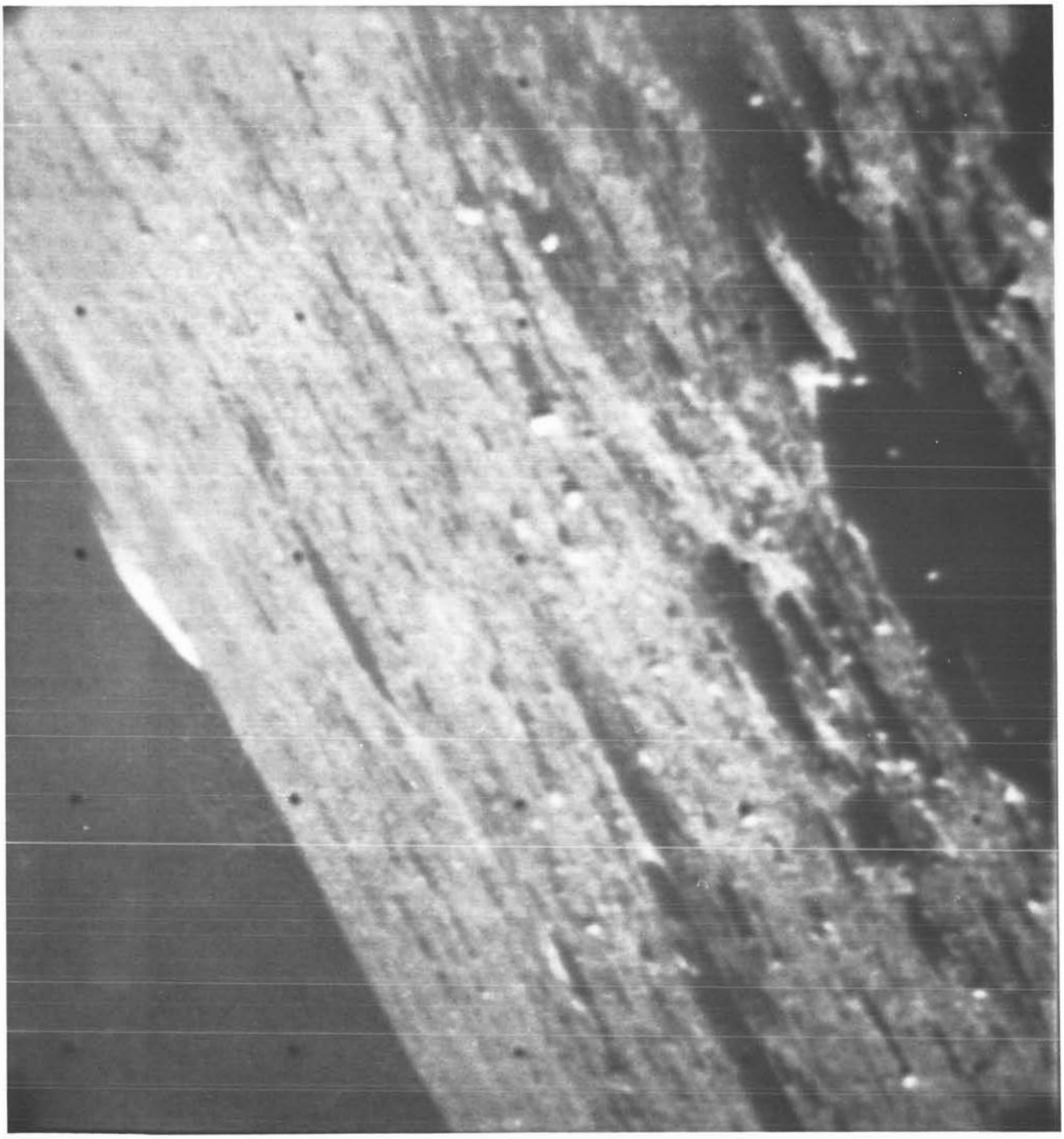
Surveyor I-191



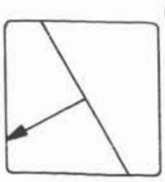
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(191)	164	21 05 54	72	16.62	27.40	F 7.9	N	CLR	35144



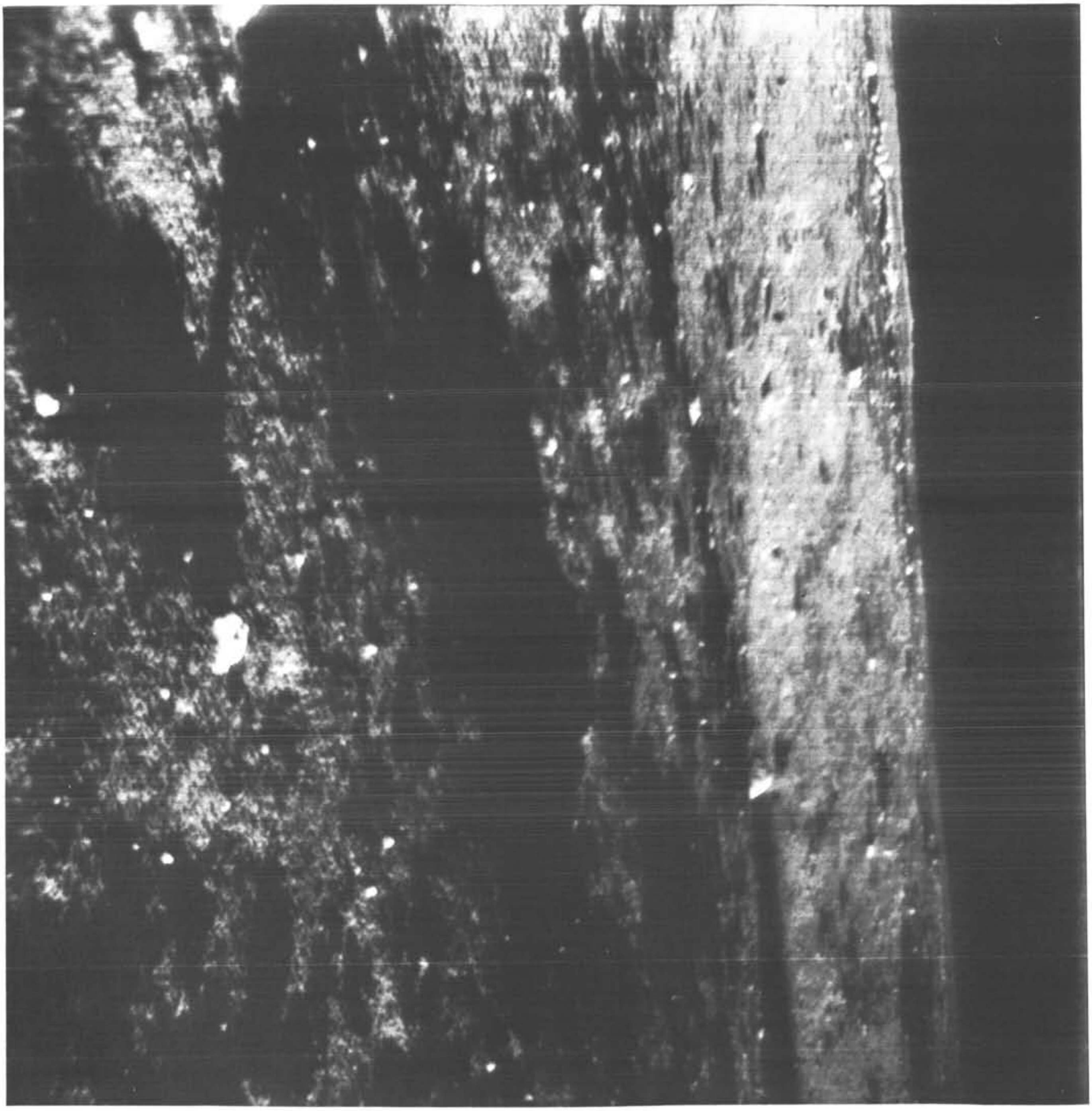
Surveyor I-192



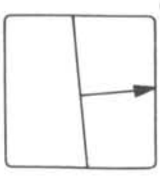
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(192)	164	21 27 22	108	6.70	27.40	F 4.0	N	GRN	35307



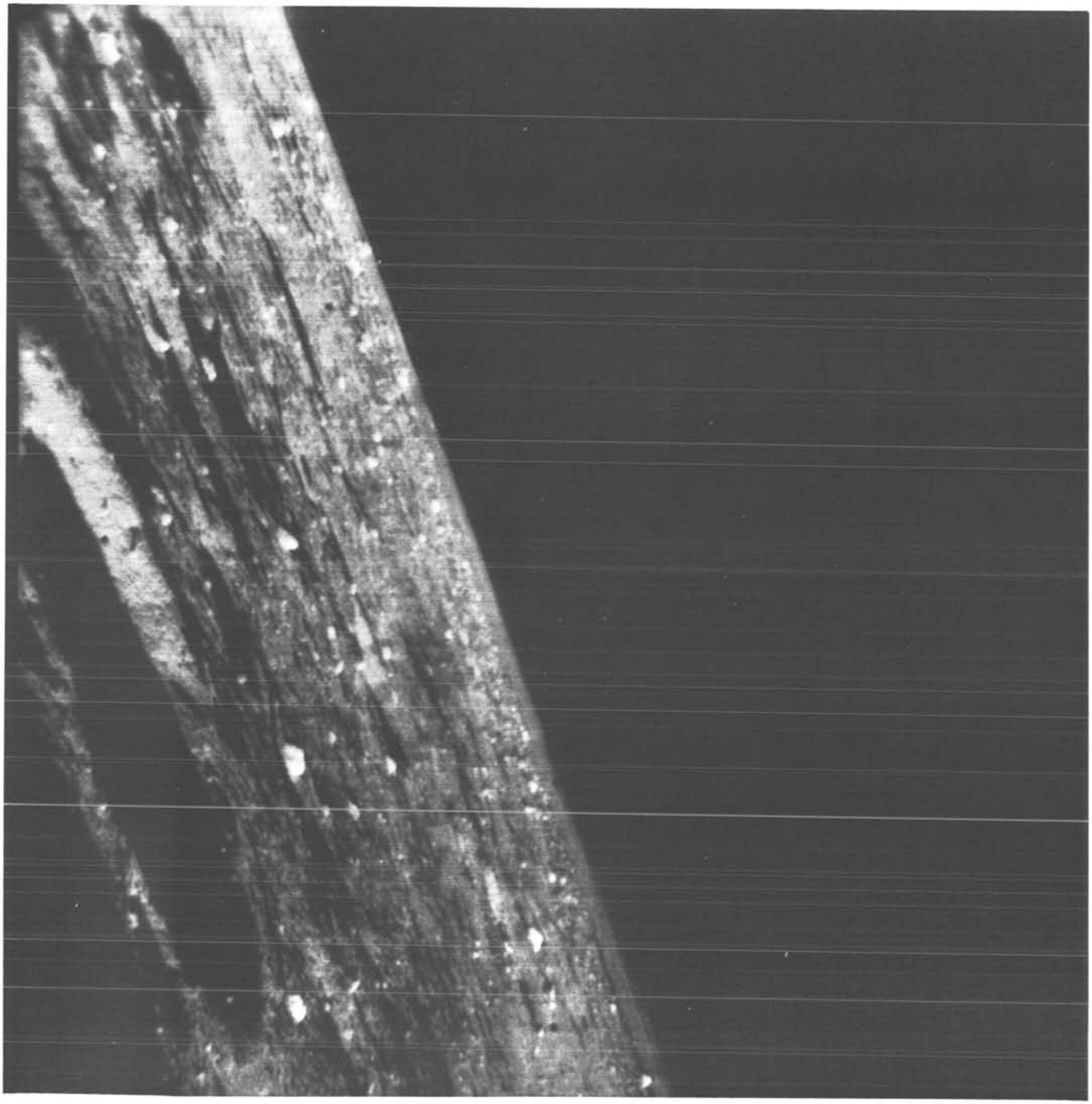
Surveyor I-193



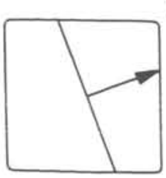
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(193)	165	11 19 36	− 72	−18.10	2.18	F 7.9	W	CLR	35344



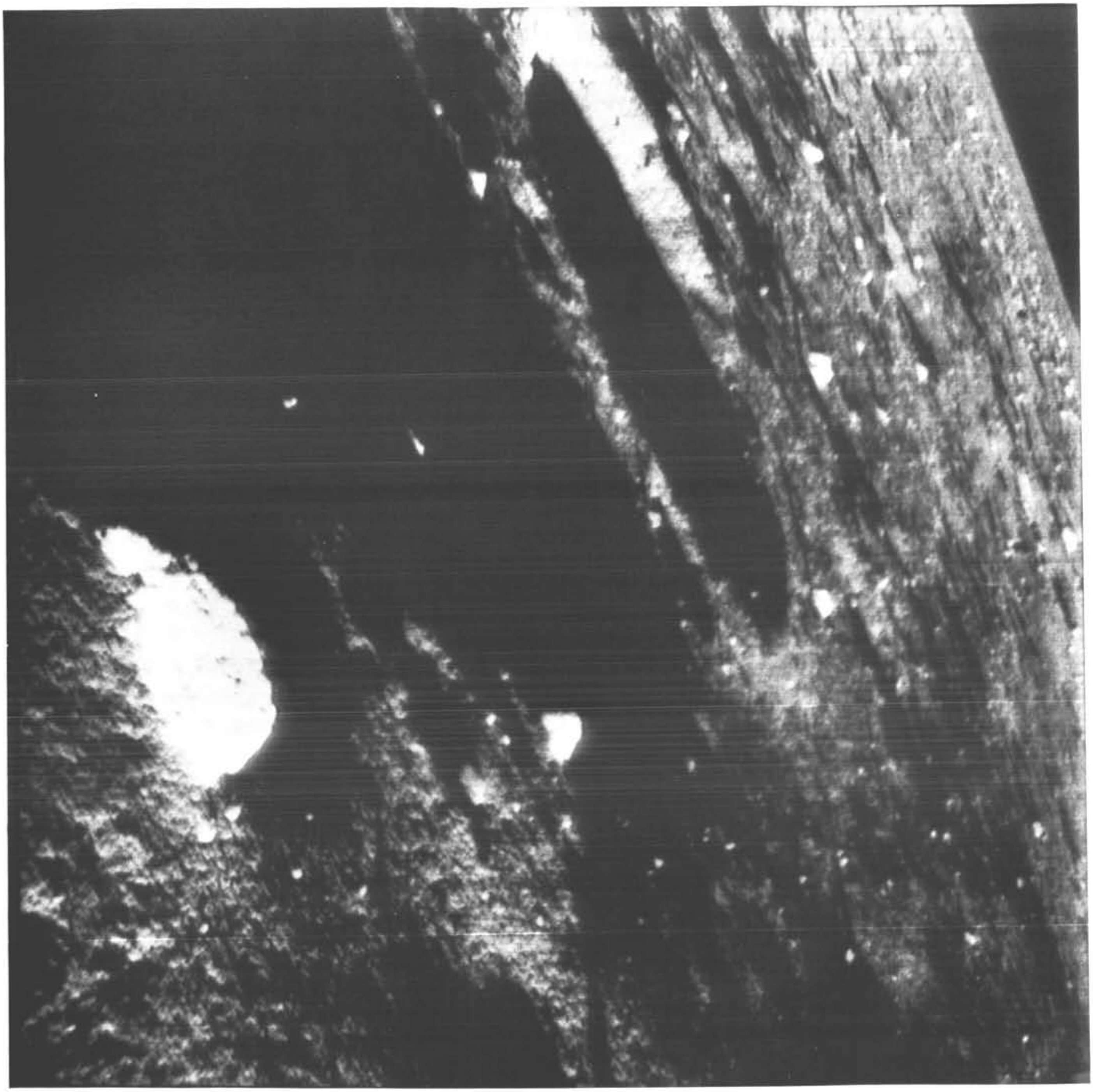
Surveyor I-194



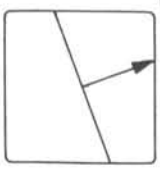
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(194)	165	11 20 09	− 54	− 3.22	2.18	F 7.9	W	CLR	35350



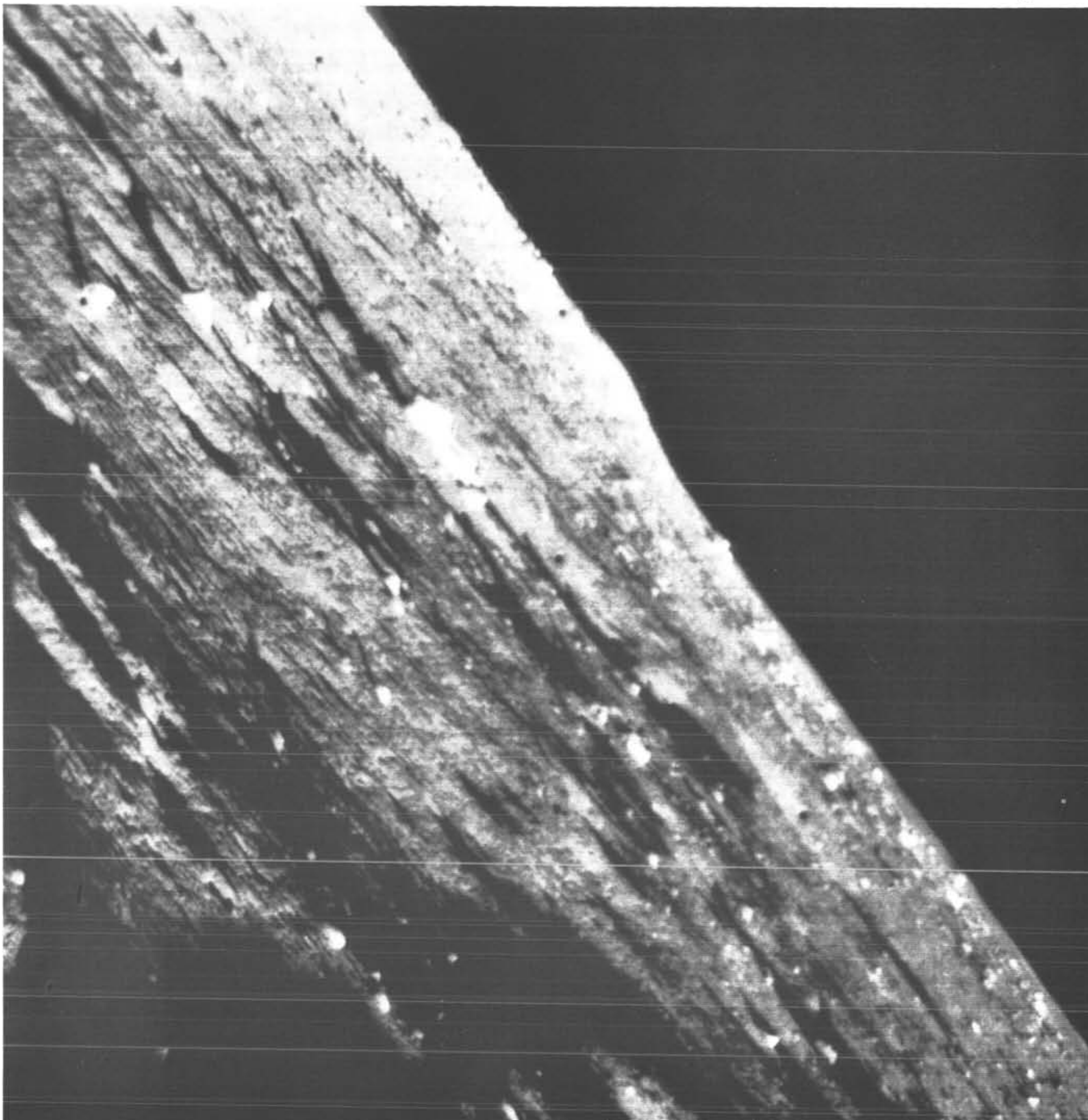
Surveyor I-195



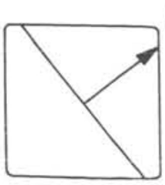
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(195)	165	11 20 17	− 54	−18.10	2.18	F 7.9	W	CLR	35351



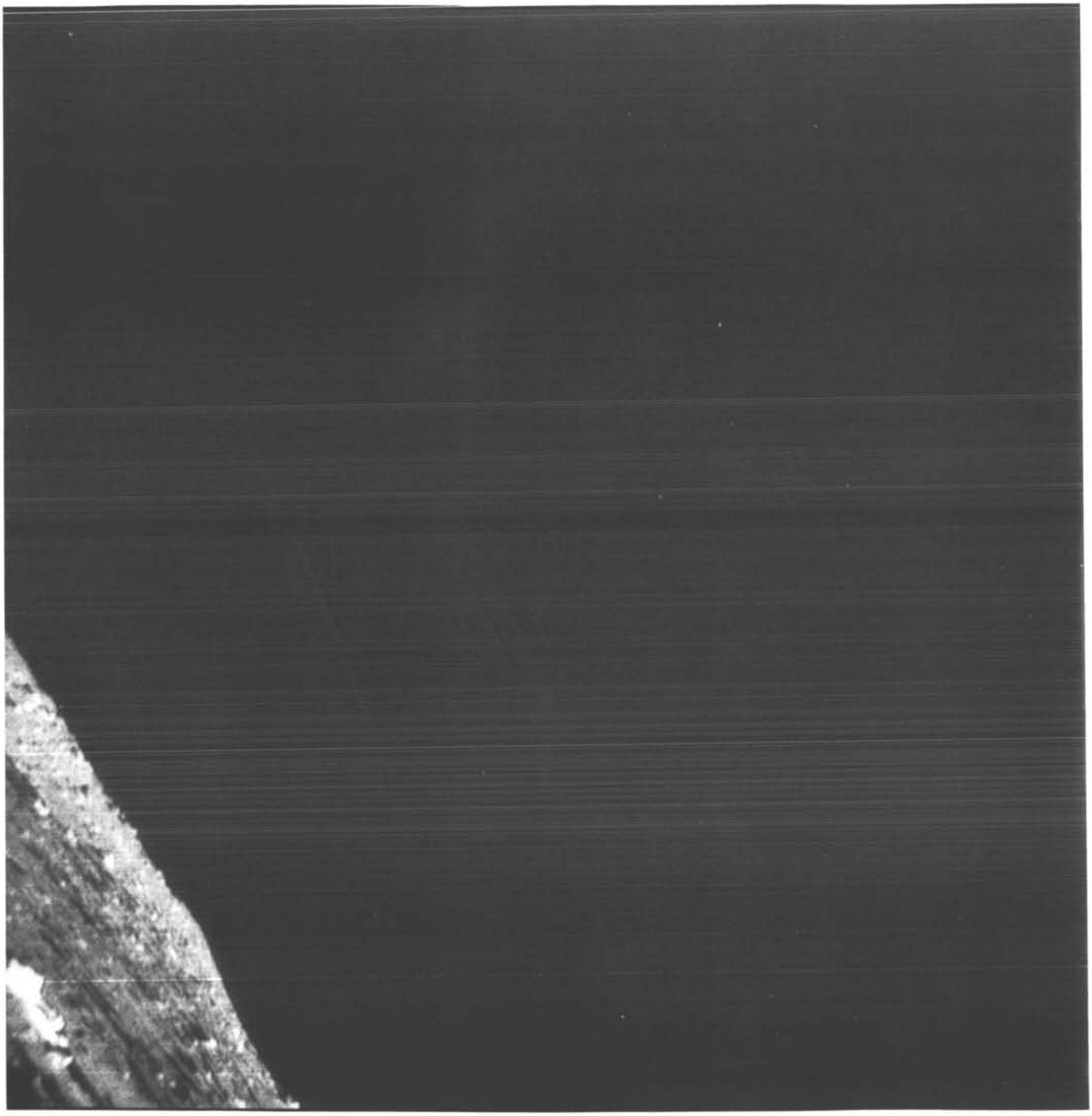
Surveyor I-196



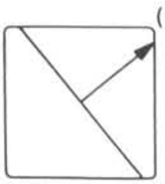
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(196)	165	11 21 07	− 36	− 8.18	2.18	F 7.9	W	CLR	35357



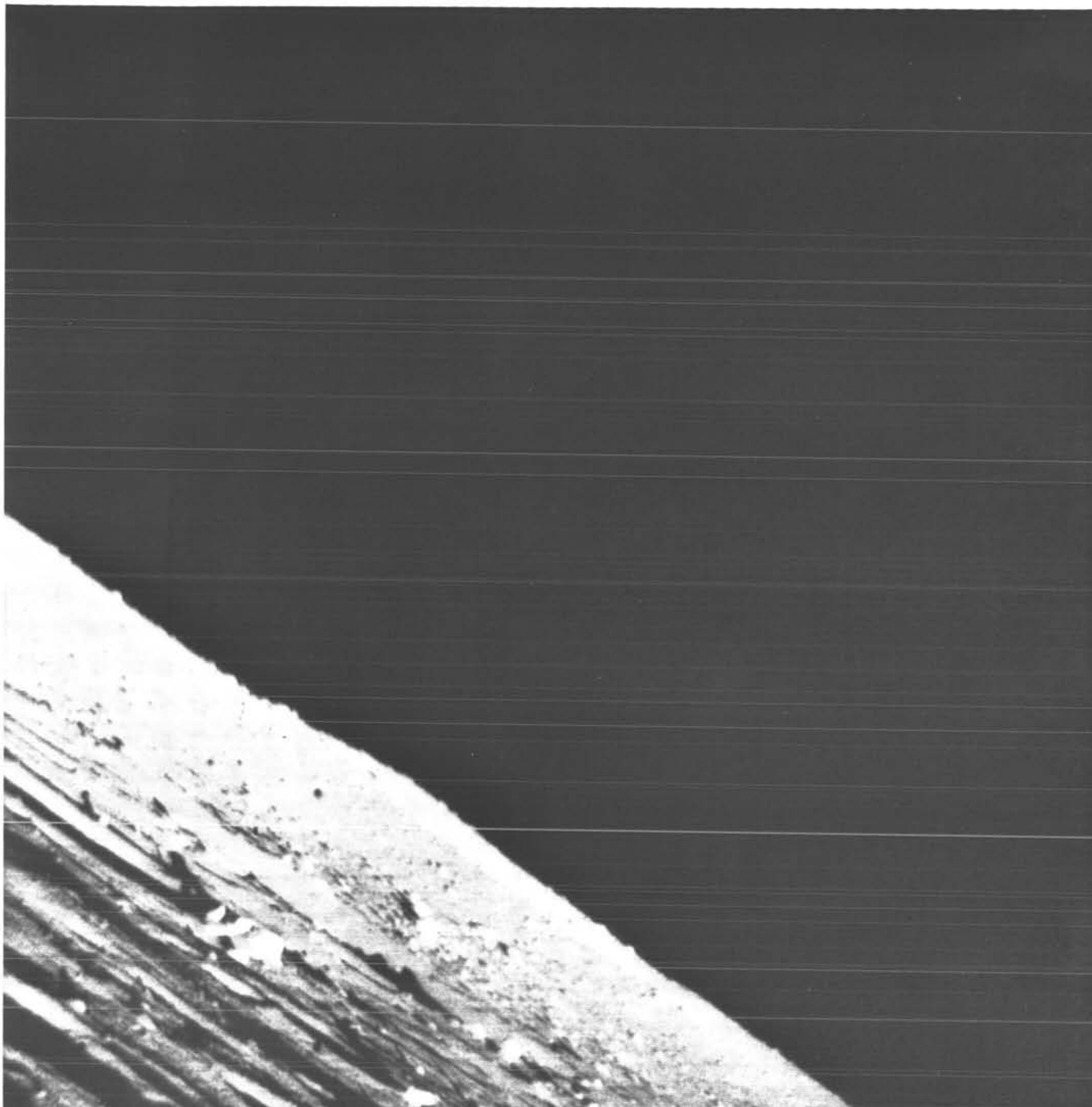
Surveyor I-197



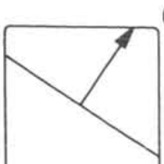
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(197)	165	11 21 34	− 36	1.74	2.18	F11.0	W	CLR	35361



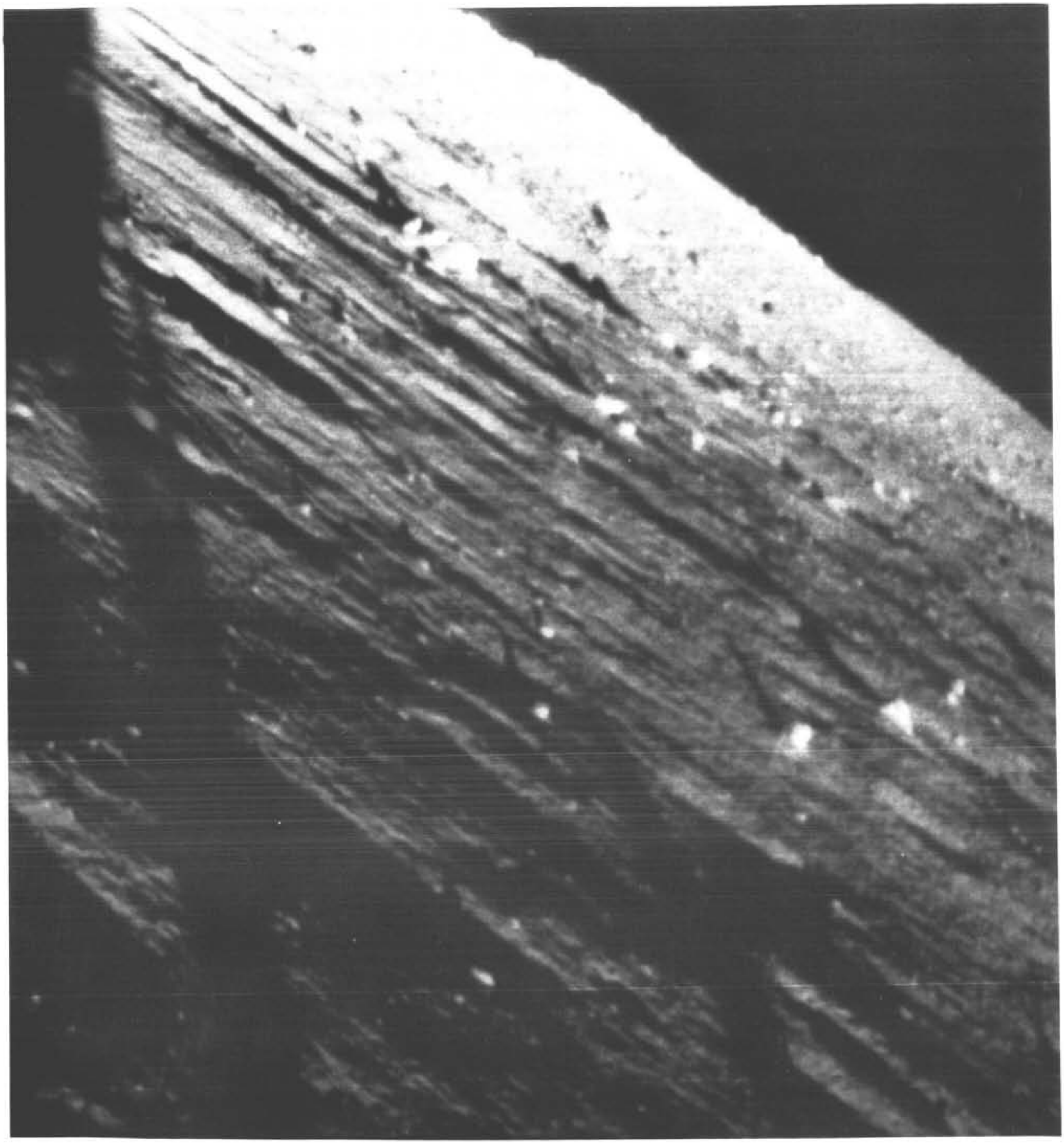
Surveyor I-198



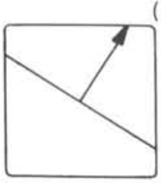
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(198)	165	11 22 11	− 18	6.70	2.18	F11.0	W	CLR	35362



Surveyor I-199

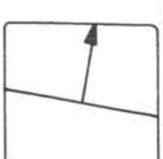


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(199)	165	11 22 18	− 18	− 8.18	2.18	F11.0	W	CLR	35363



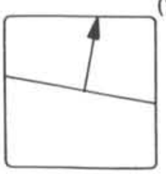
Surveyor I-200

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(200)	165	11 23 12	0	− 3.22	2.18	F11.0	W	CLR	35372

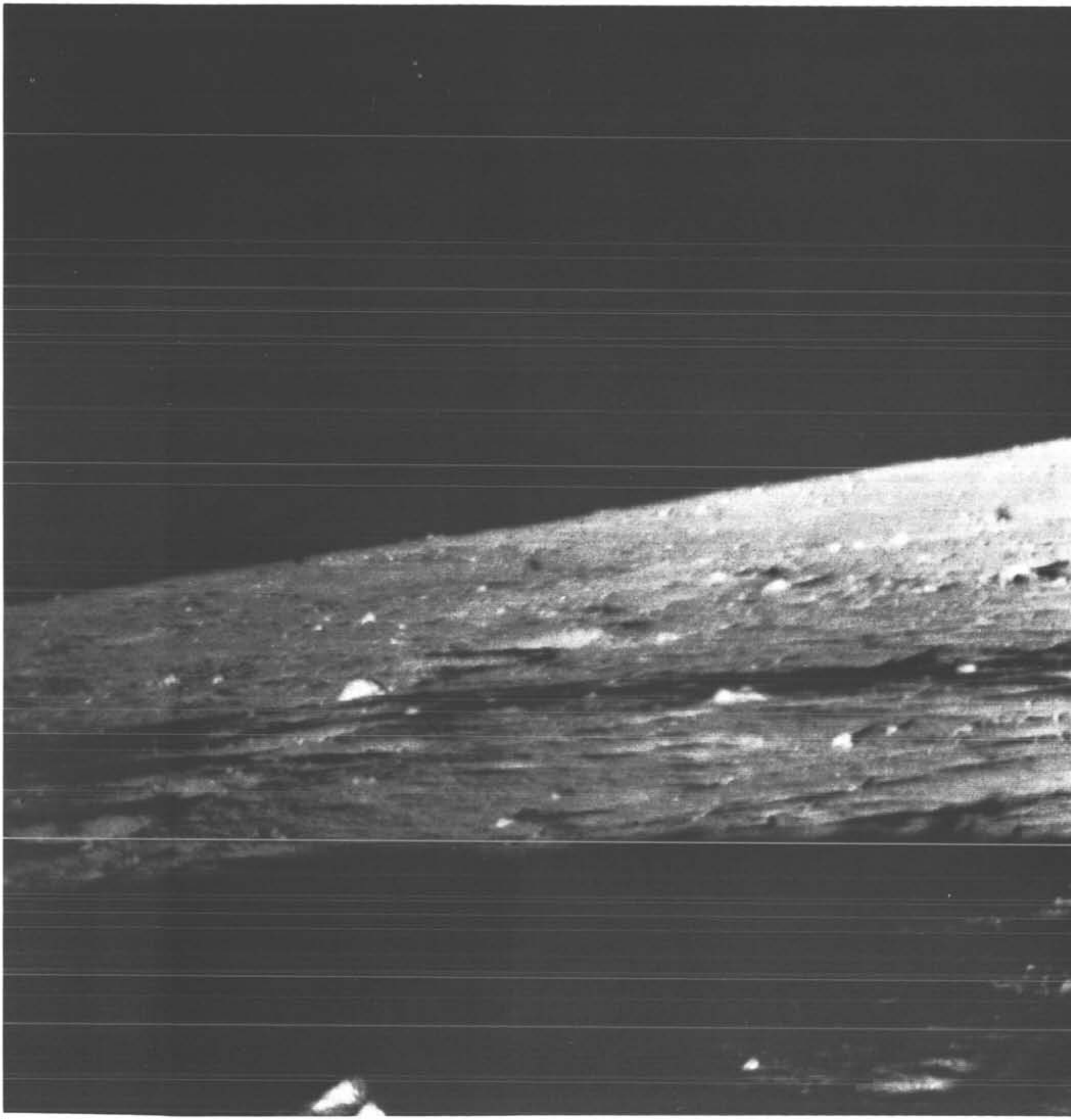


Surveyor I-201

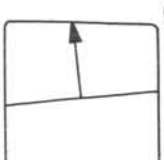
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(201)	165	11 23 19	0	11.66	2.18	F11.0	W	CLR	35373



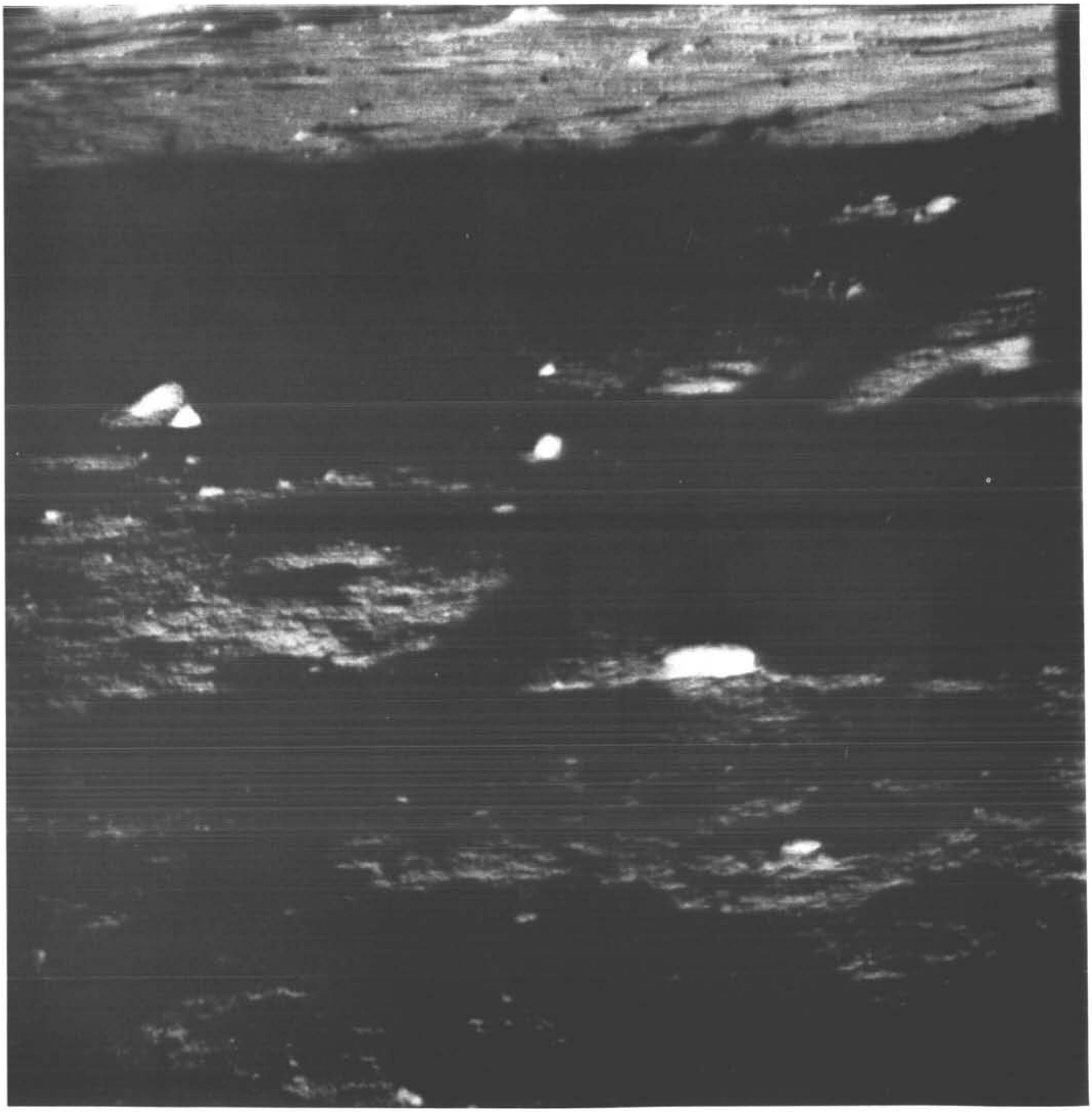
Surveyor I-202



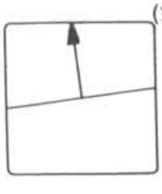
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(202)	165	11 23 42	18	11.66	2.18	F11.0	W	CLR	35376



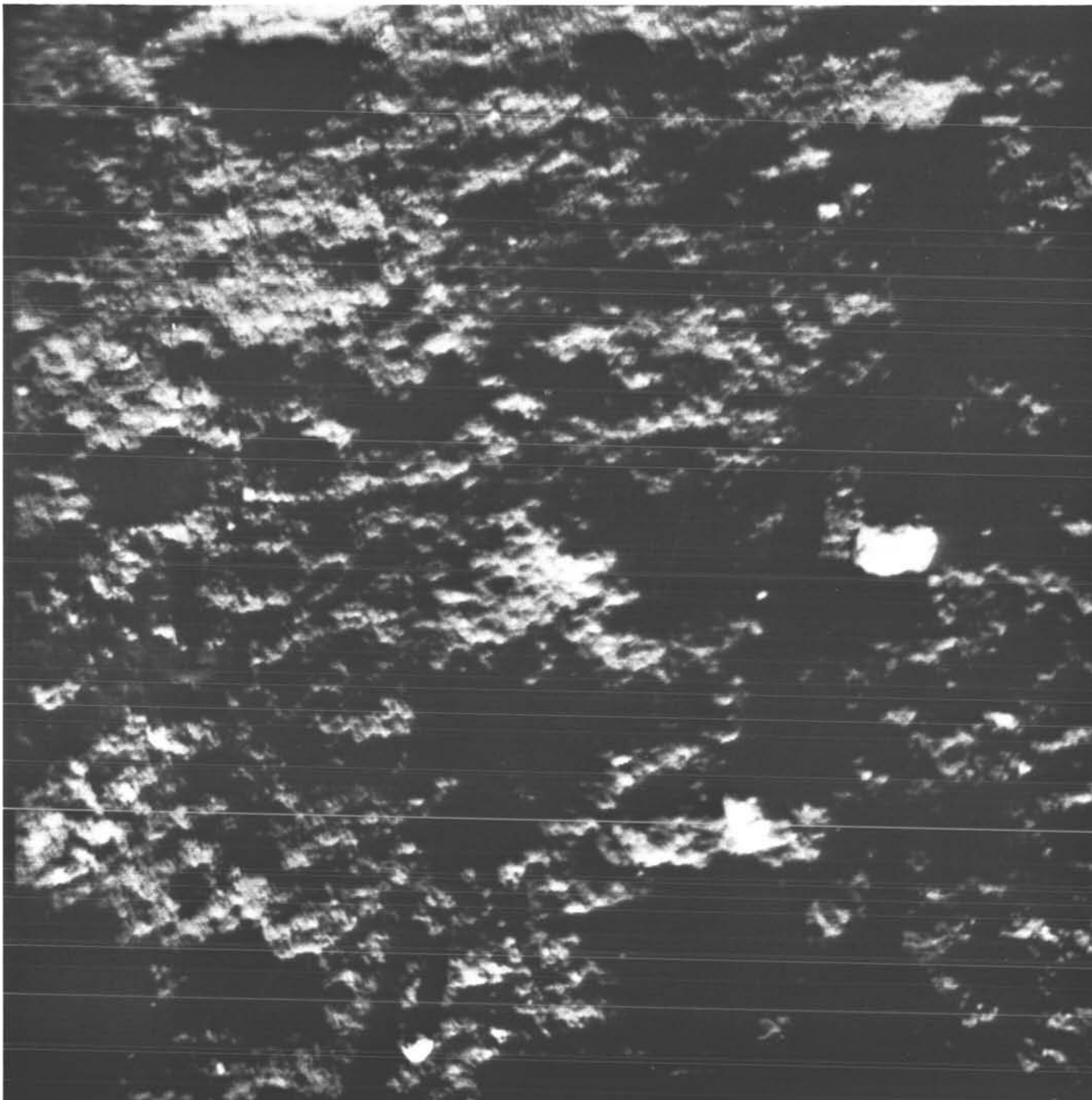
Surveyor I-203



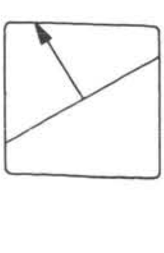
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(203)	165	11 23 50	18	− 3.22	2.18	F11.0	W	CLR	35377



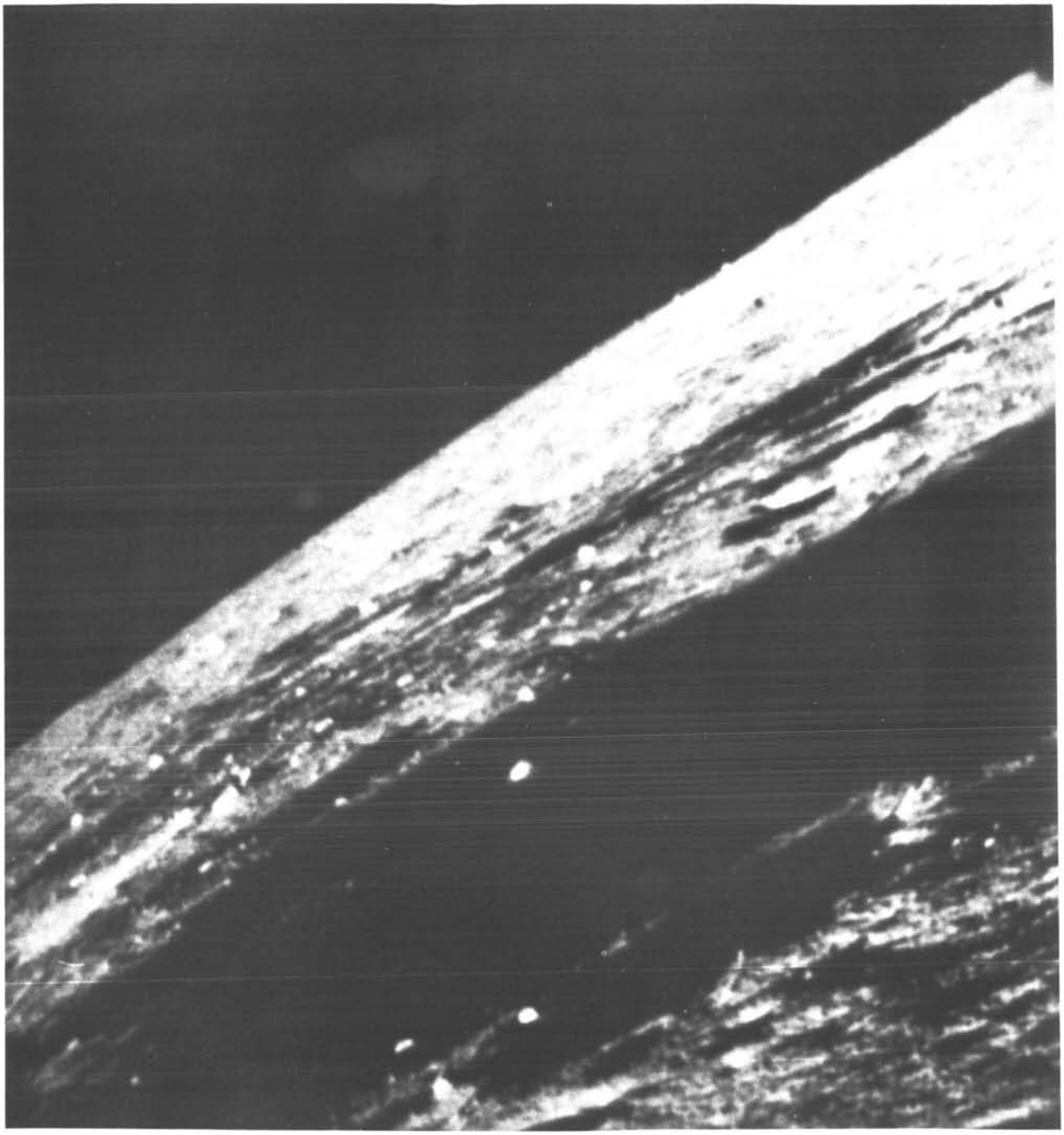
Surveyor I-204



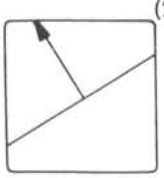
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(204)	165	11 25 28	36	−37.94	2.18	F 7.9	W	CLR	35405



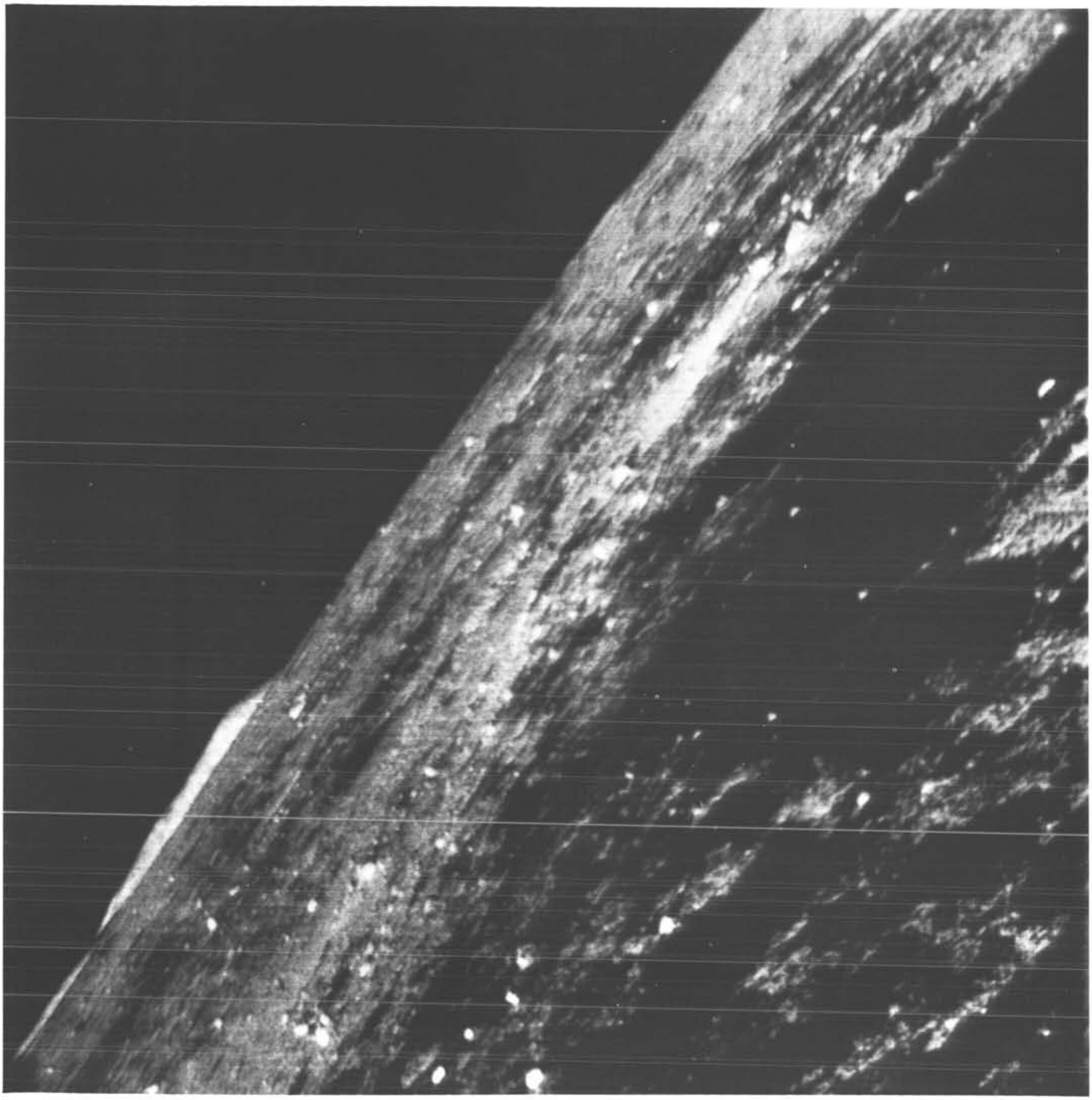
Surveyor I-205



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(205)	165	11 25 49	36	6.70	2.18	F 7.9	W	CLR	35410



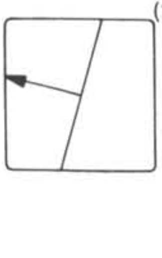
Surveyor I-206



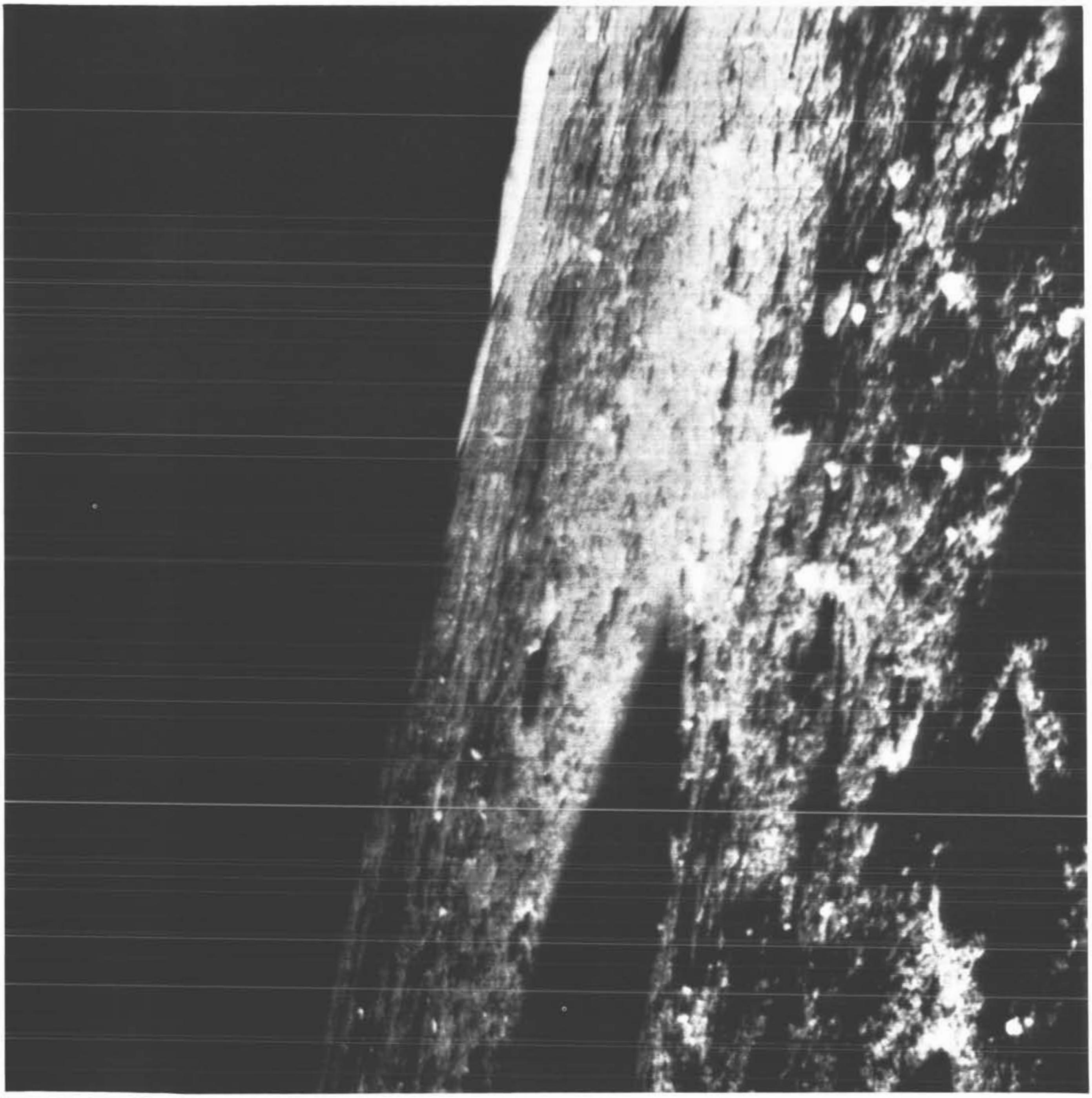
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(206)	165	11 26 11	54	11.66	2.18	F 7.9	W	CLR	35413

Surveyor I- 207

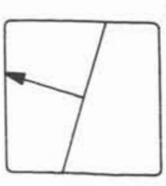
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(207)	165	11 27 56	72	− 8.18	2.18	F 5.5	W	CLR	35423



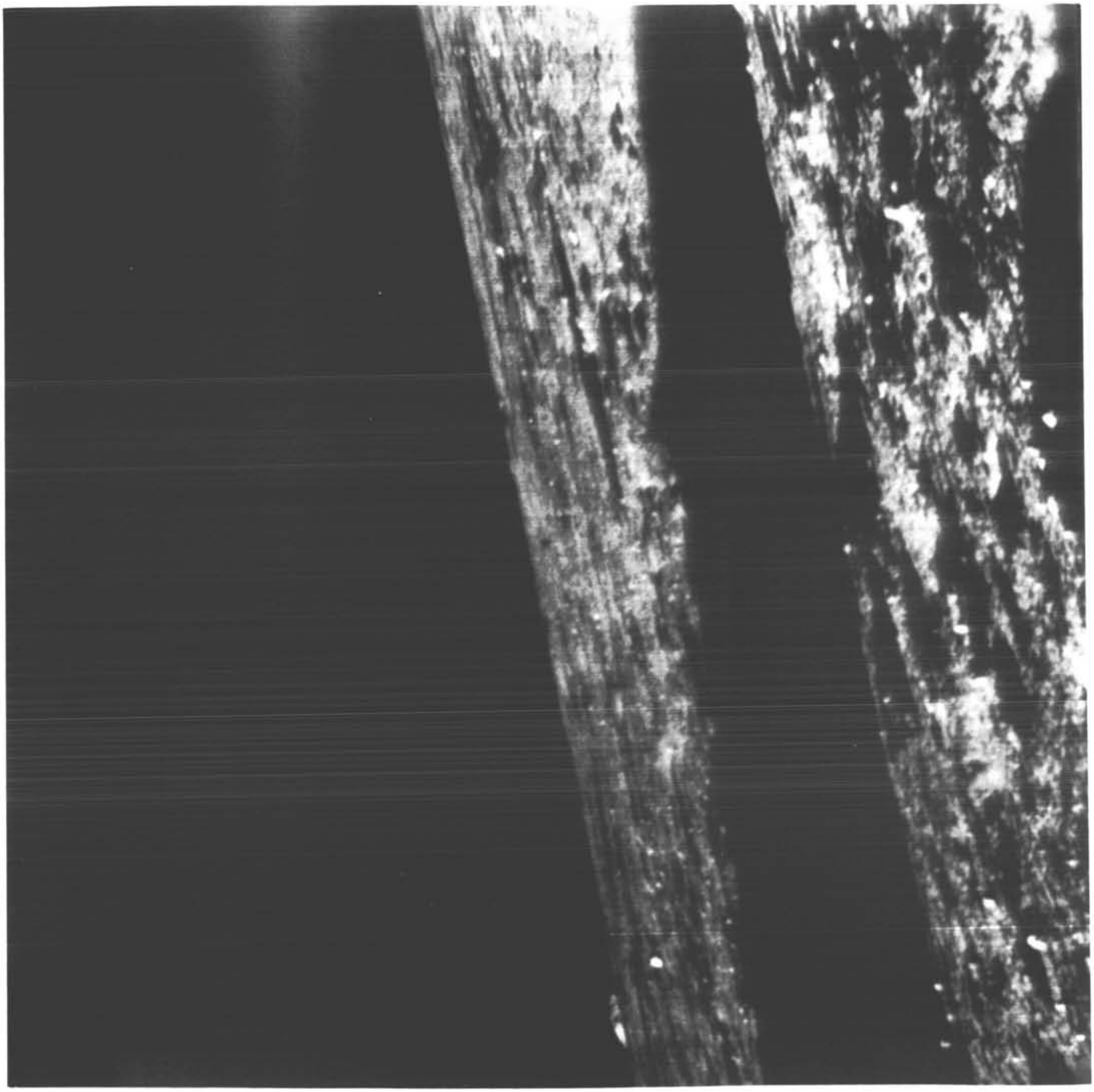
Surveyor I-208



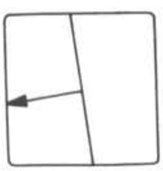
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(208)	165	11 28 11	72	11.66	2.18	F 5.5	W	CLR	35425



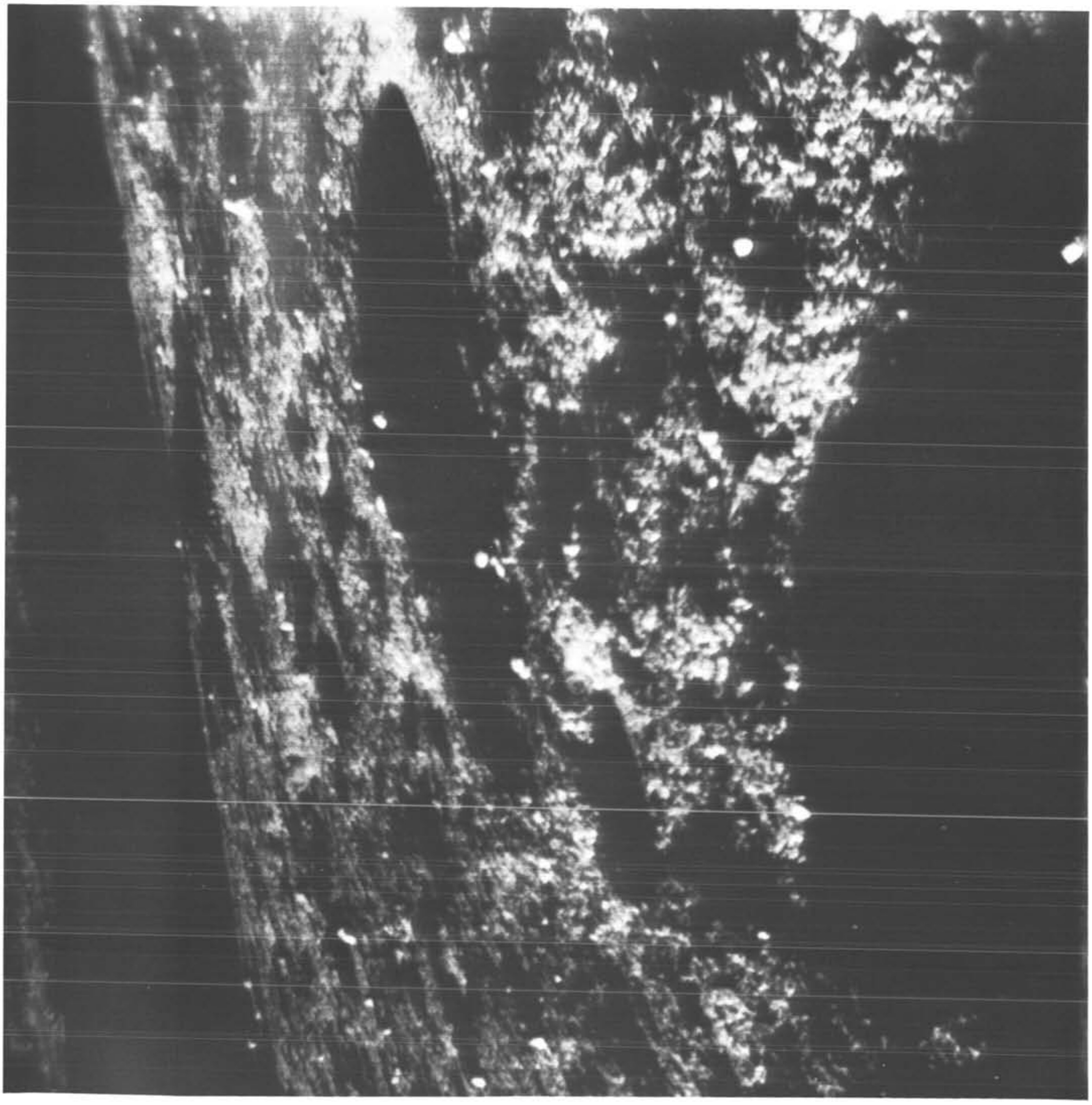
Surveyor I-209



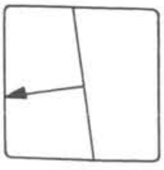
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(209)	165	11 28 34	90	11.66	2.18	F 5.5	W	CLR	35430



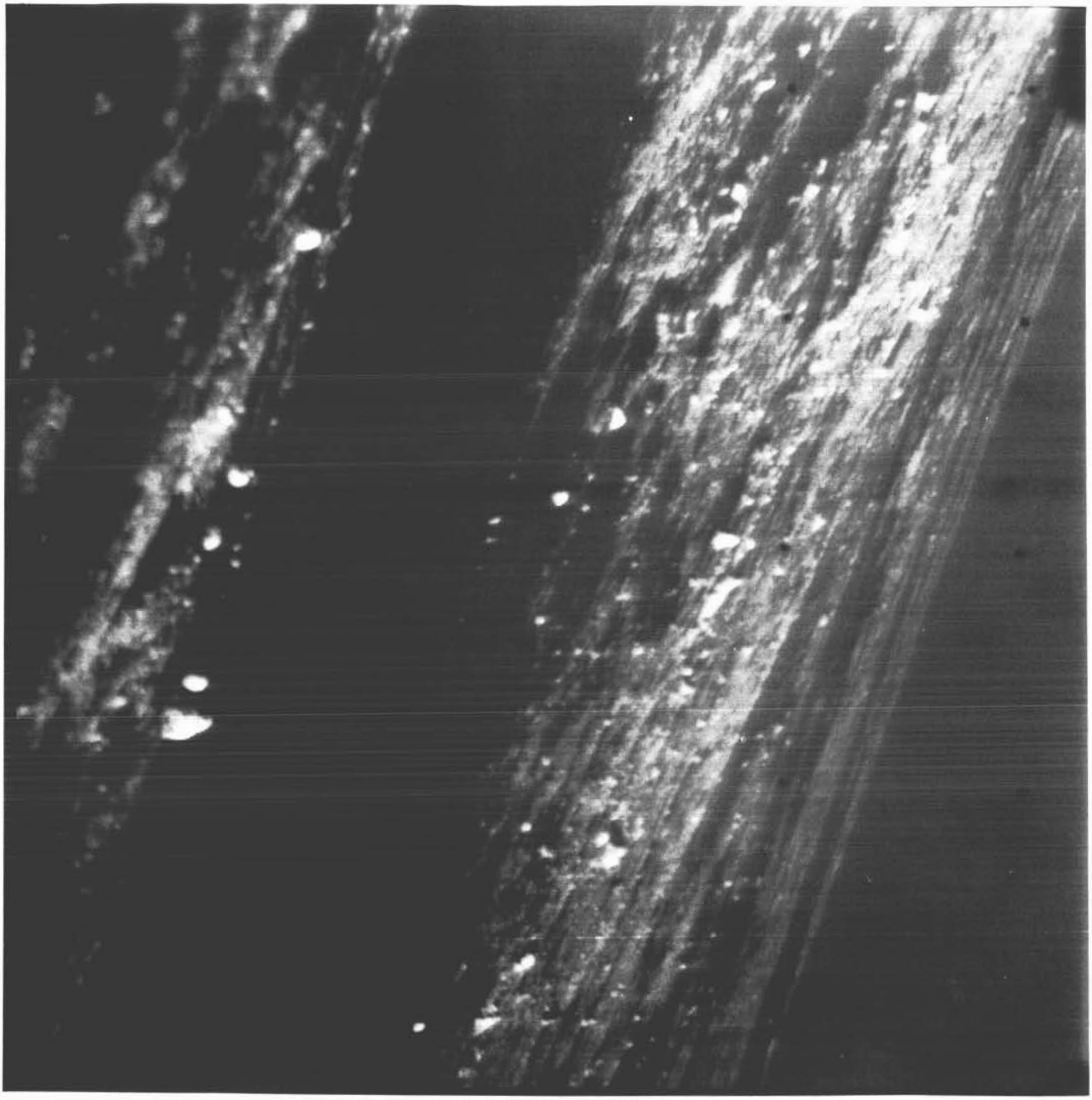
Surveyor I-210



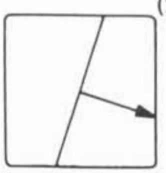
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(210)	165	11 28 41	90	− 3.22	2.18	F 5.5	W	CLR	35431



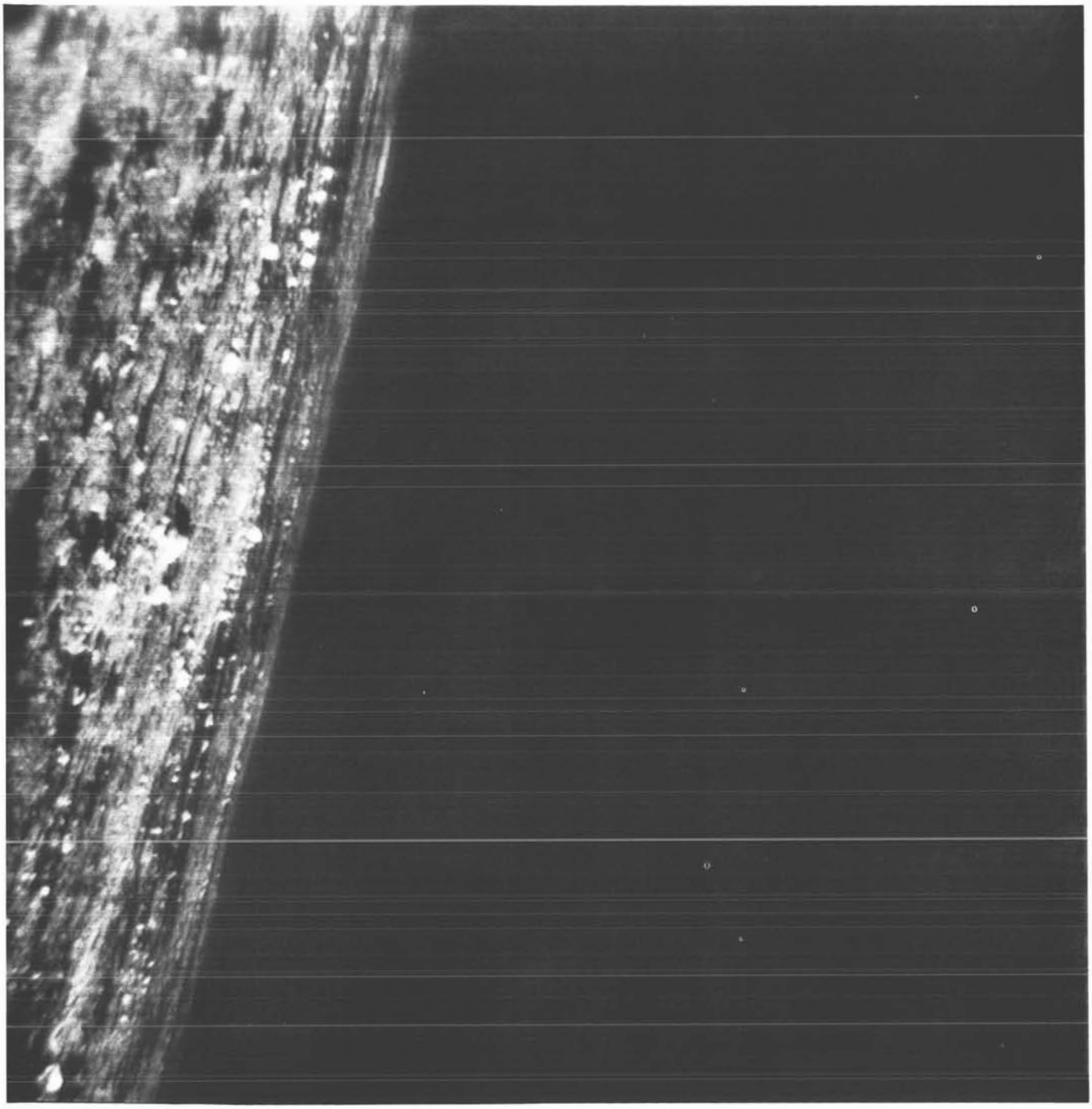
Surveyor I-211



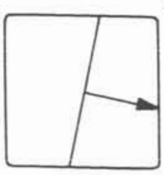
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(211)	165	11 45 38	−102	−18.10	27.40	F 5.5	N	CLR	35560



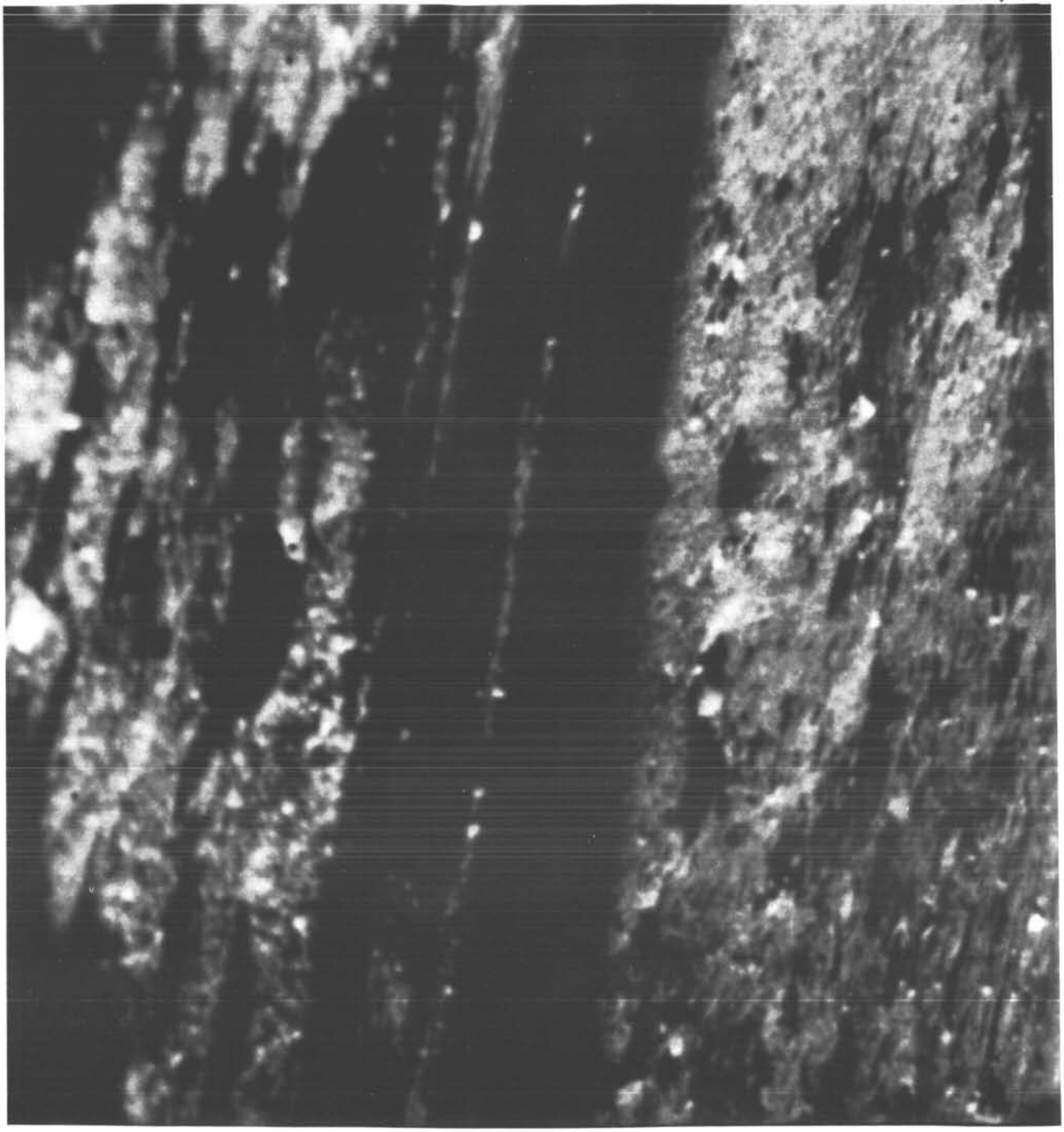
Surveyor I-212



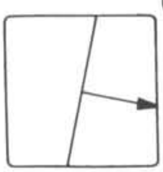
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(212)	165	11 48 06	− 93	−13.14	27.40	F 5.5	N	CLR	35606



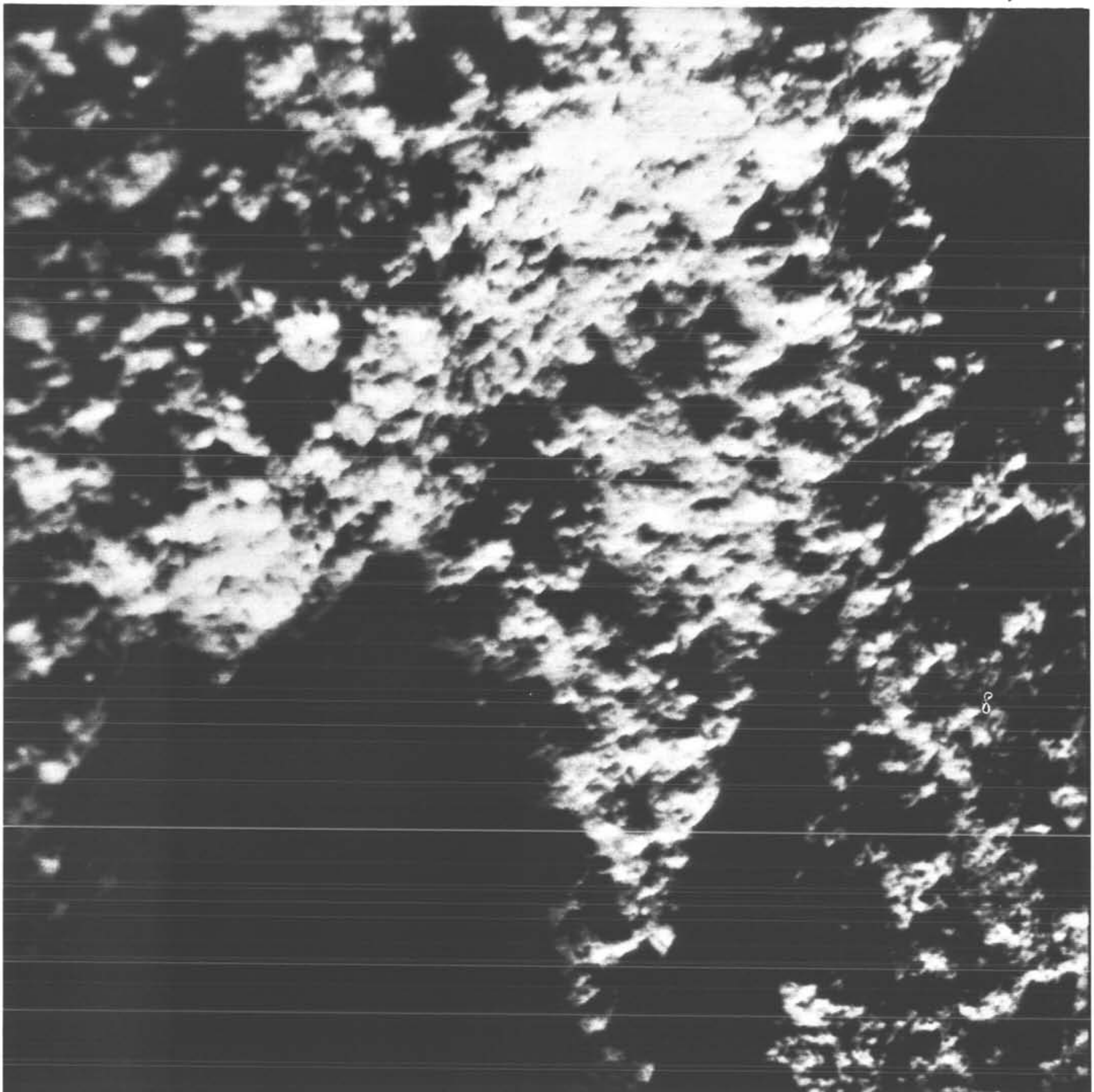
Surveyor I-213



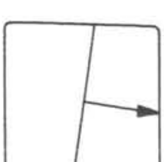
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(213)	165	11 48 18	− 90	−23.06	12.50	F 5.5	N	CLR	35610



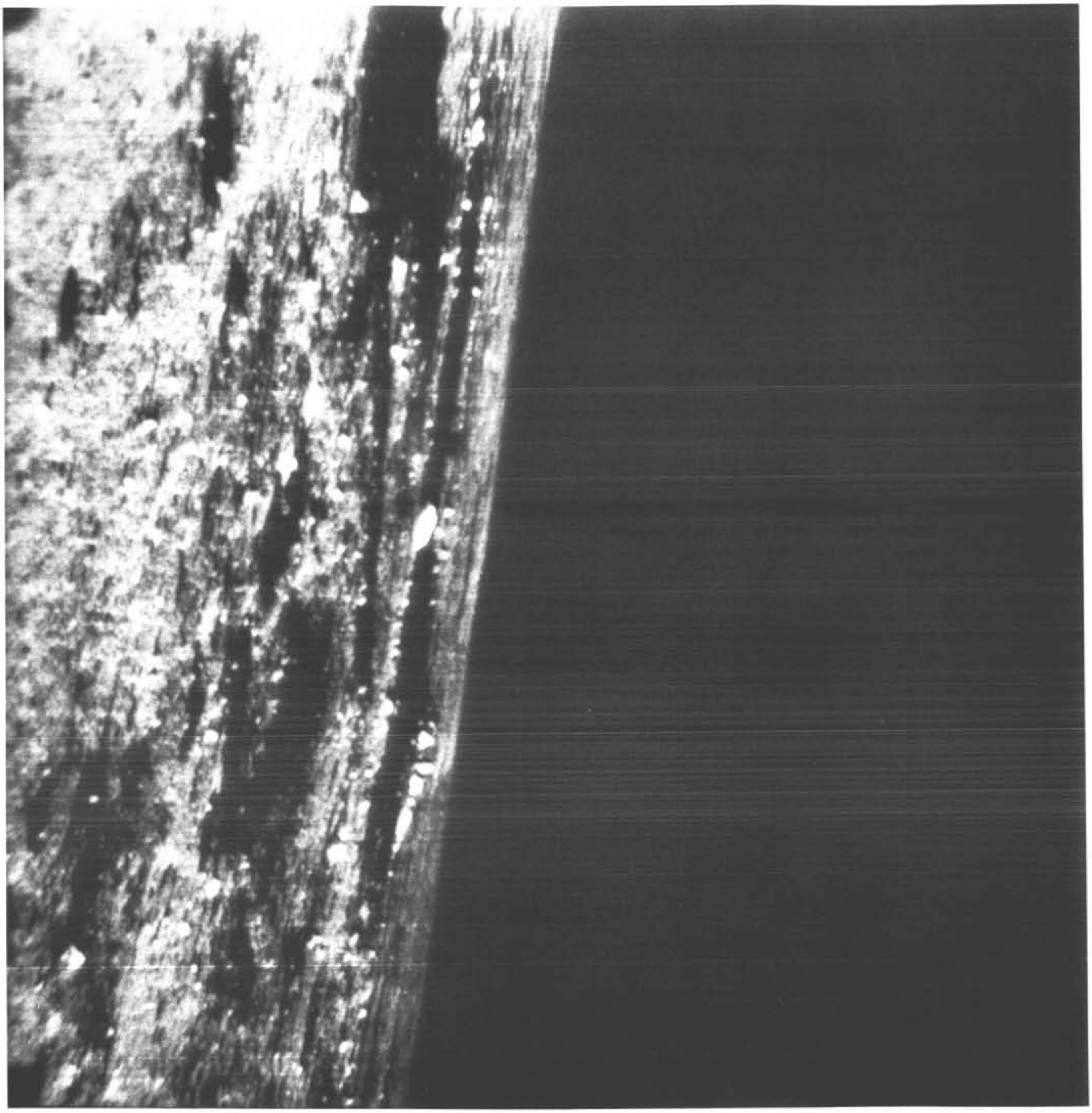
Surveyor I-214



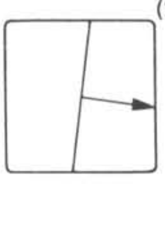
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(214)	165	11 50 25	− 87	−42.90	3.72	F 5.5	N	CLR	35620



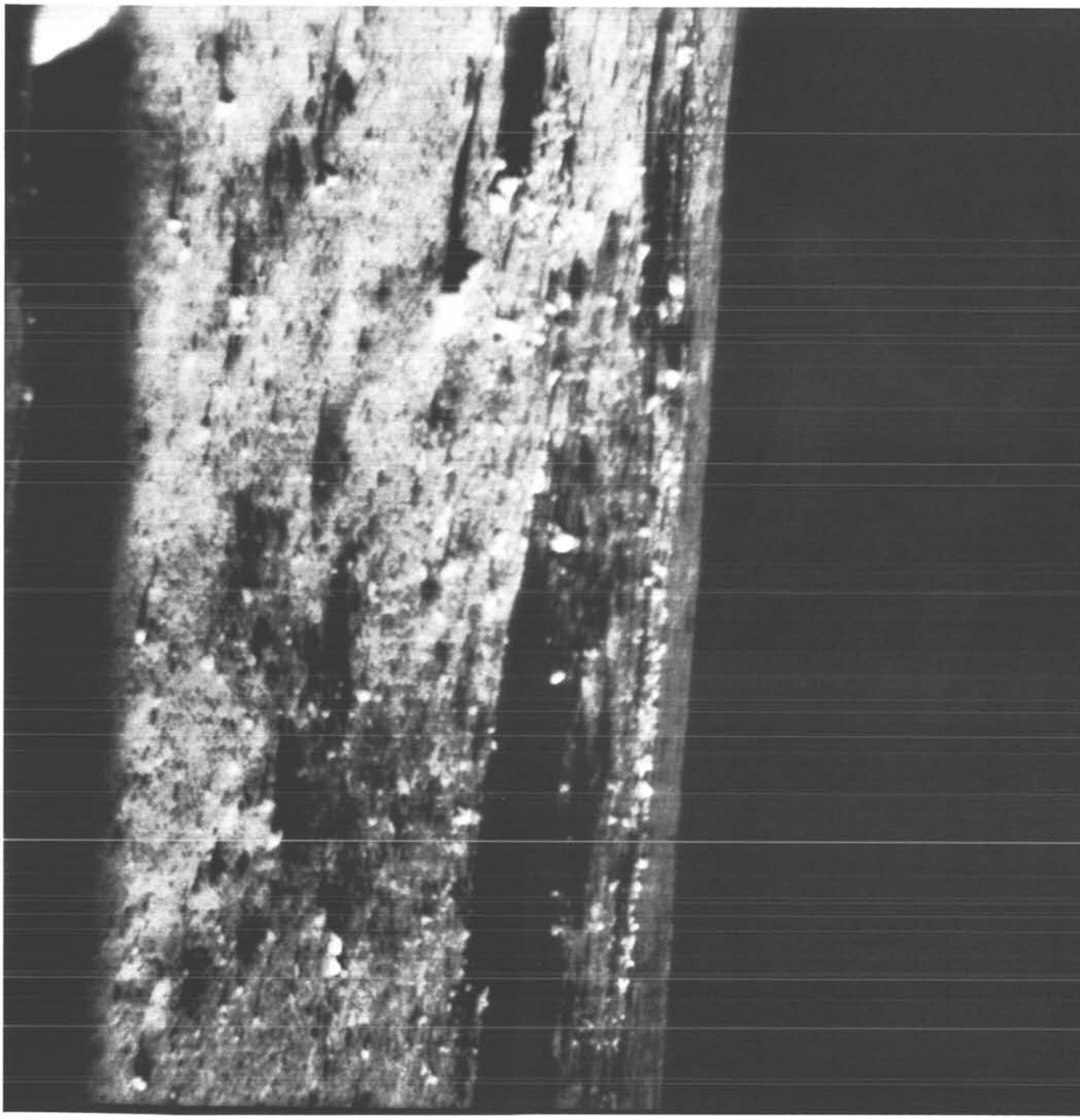
Surveyor I-215



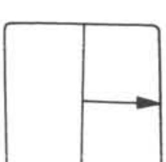
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(215)	165	11 50 45	− 87	−13.14	27.40	F 5.5	N	CLR	35623



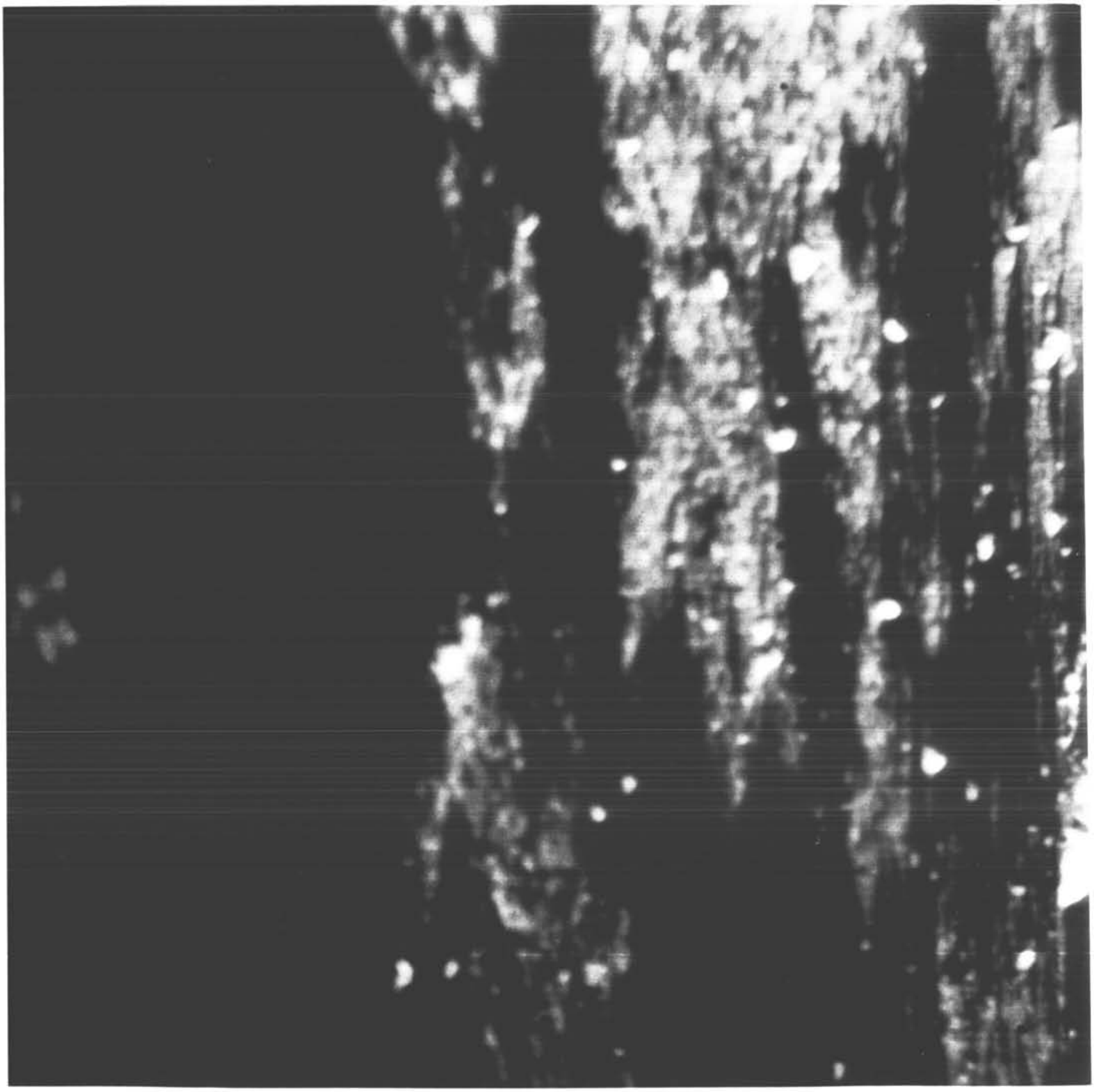
Surveyor I-216



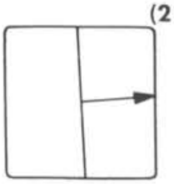
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(216)	165	11 52 03	− 81	−13.14	27.40	F 5.5	N	CLR	35637



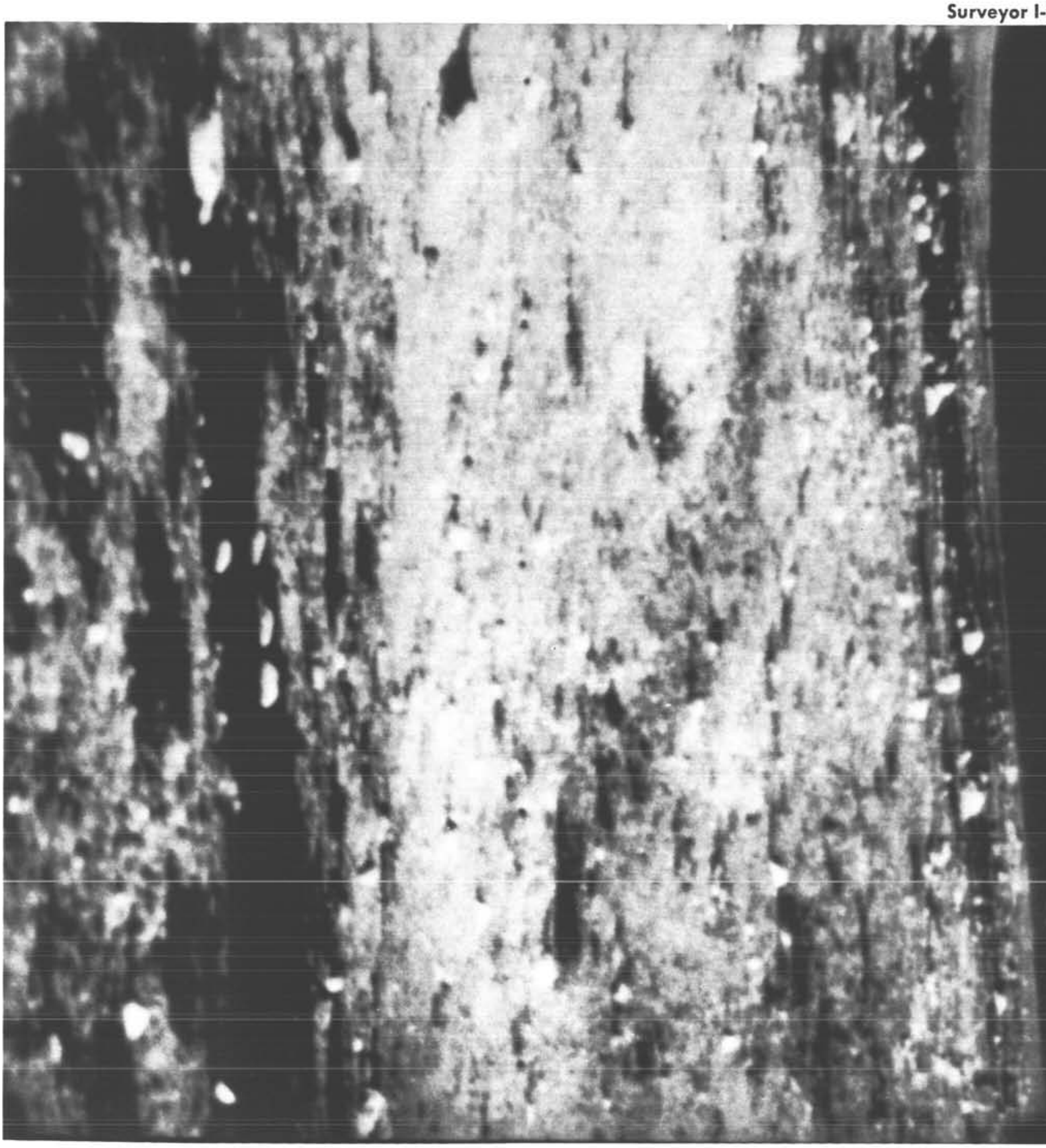
Surveyor I-217



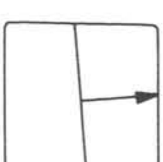
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(217)	165	11 53 22	− 75	−13.14	27.40	F 5.5	N	RED	35653



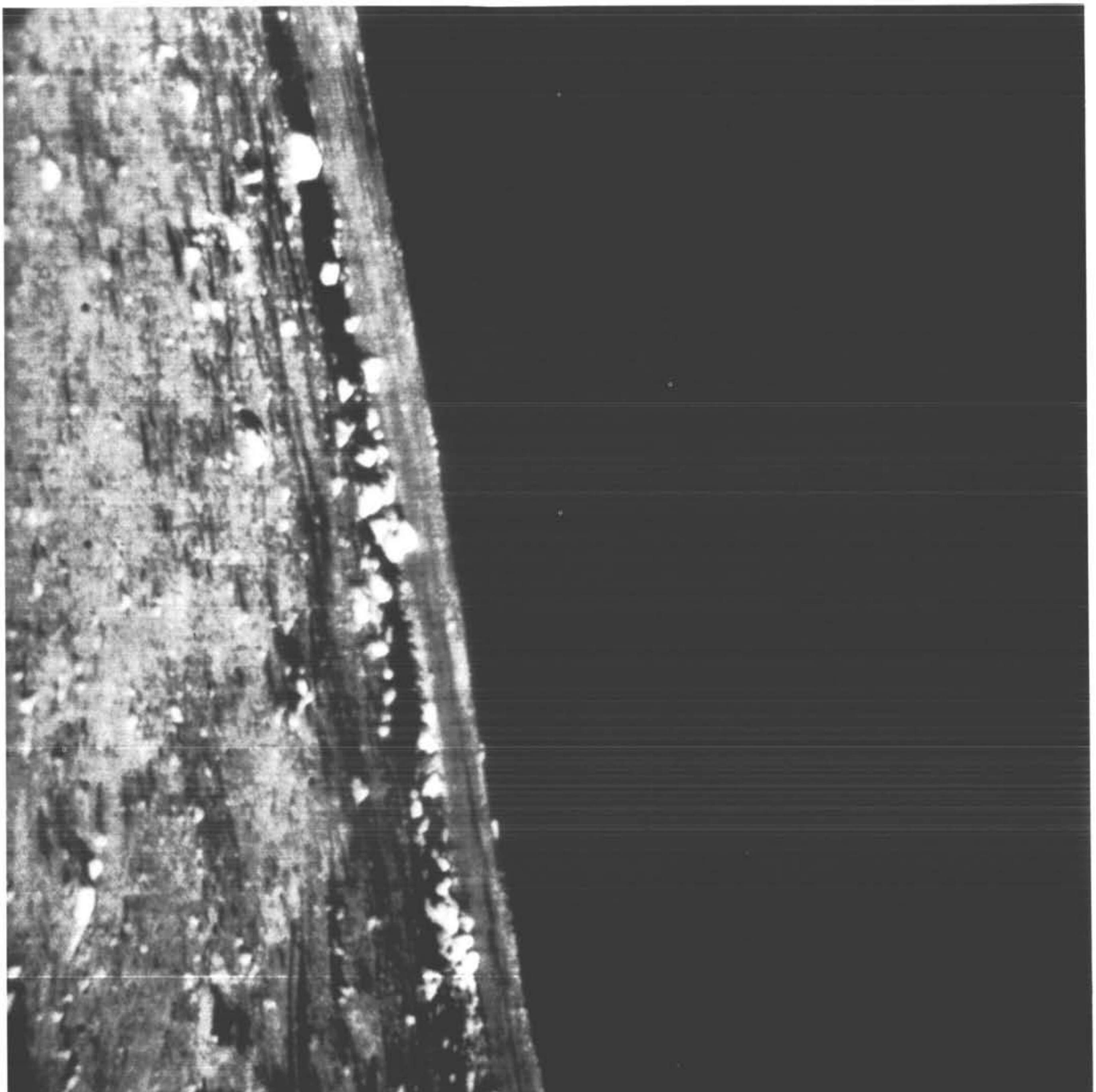
Surveyor I-218



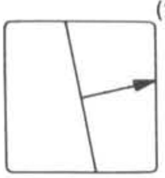
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(218)	165	11 53 29	− 72	−13.14	22.59	F 5.5	N	RED	35654



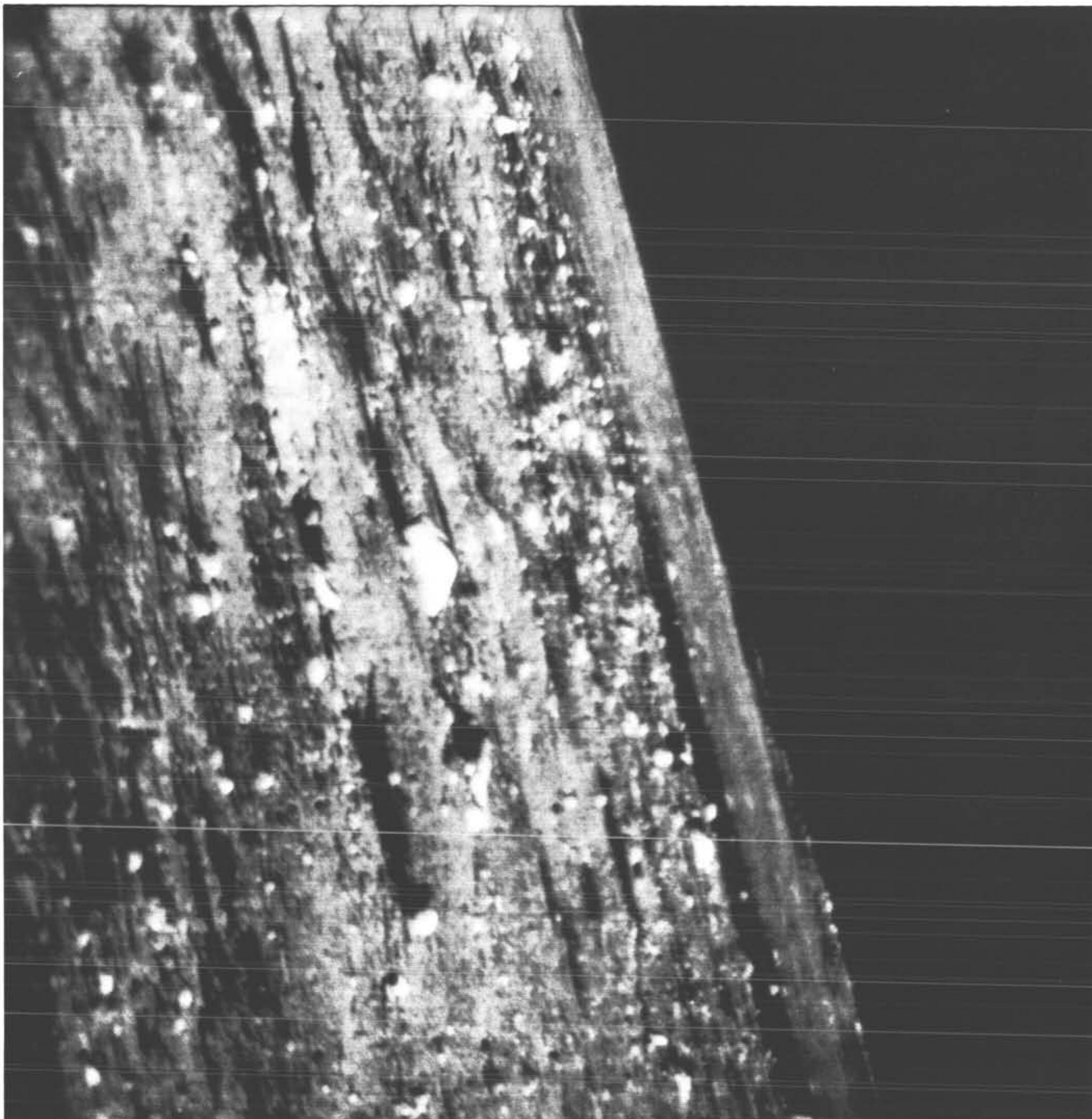
Surveyor I-219



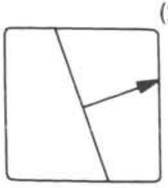
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(219)	165	11 59 06	− 66	− 8.18	22.59	F 4.0	N	GRN	35673



Surveyor I-220

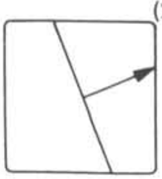


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(220)	165	12 00 40	− 60	− 8.18	27.40	F 4.0	N	GRN	35711

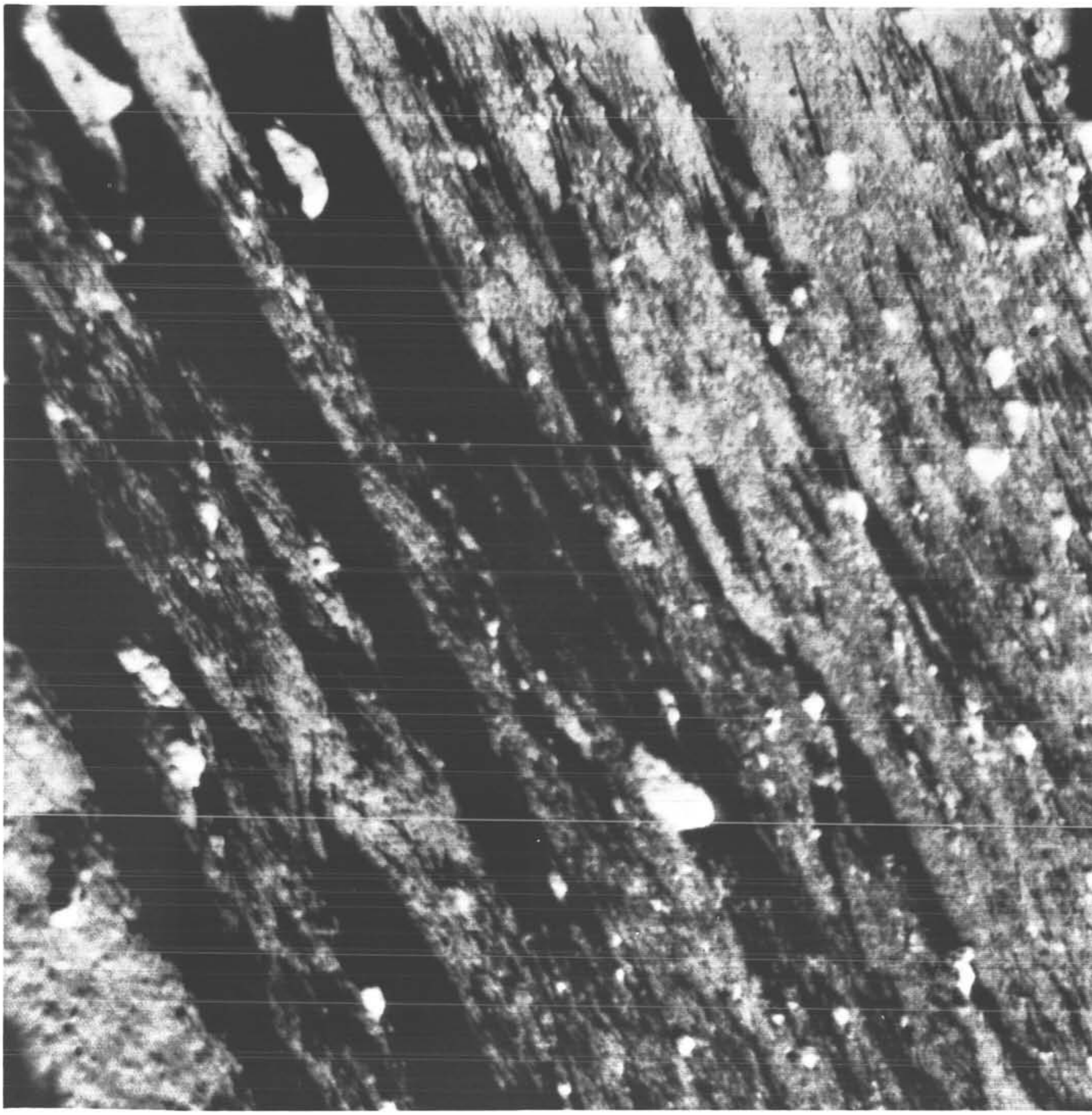


Surveyor I- 221

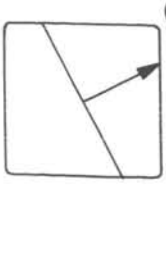
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(221)	165	12 02 15	− 54	− 8.18	27.40	F 4.0	N	GRN	35727



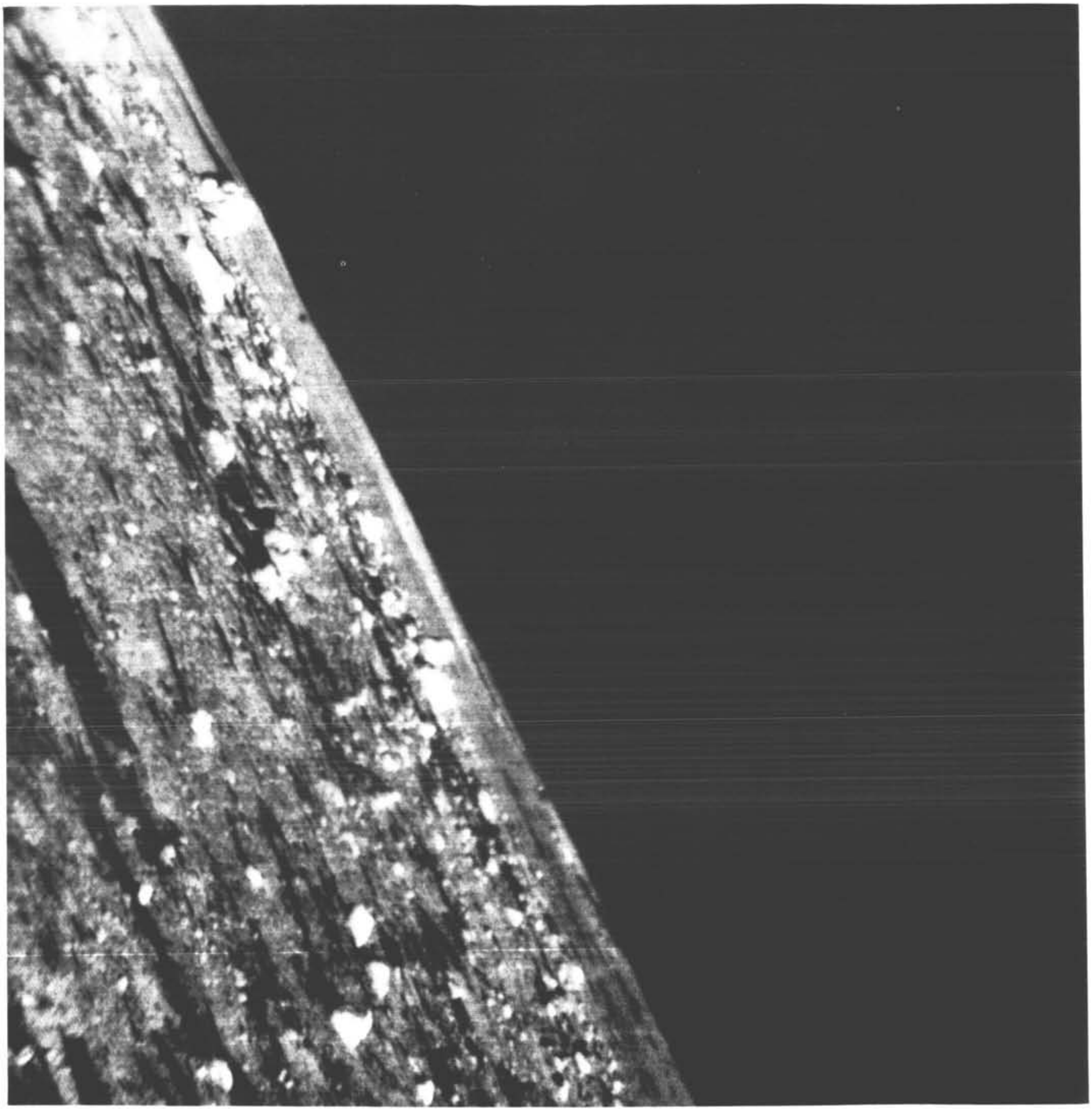
Surveyor I-222



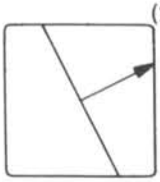
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(222)	165	12 10 54	− 48	− 8.18	22.59	F 7.9	N	CLR	35751



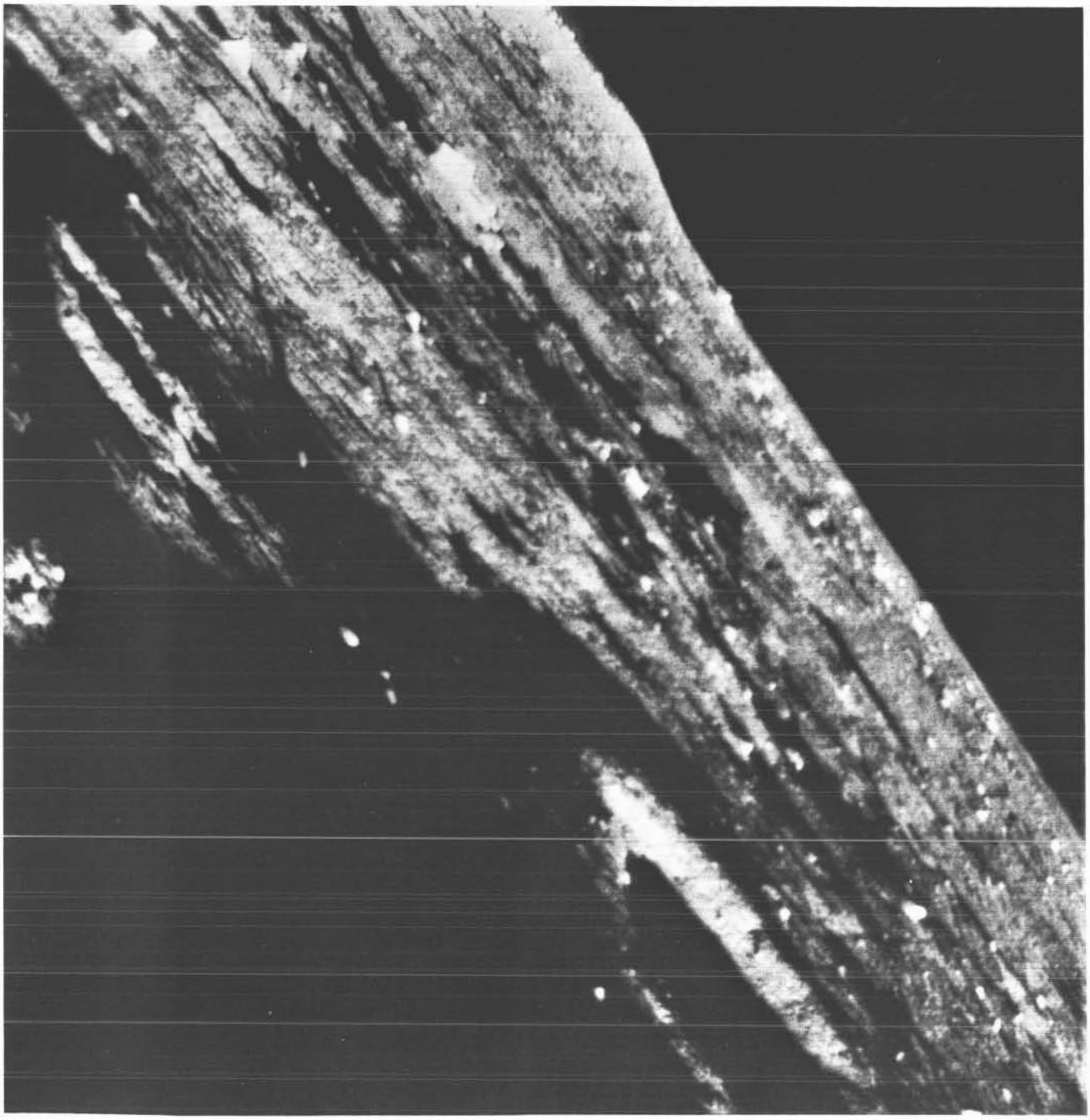
Surveyor I- 223



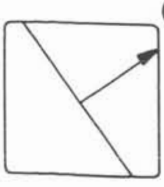
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(223)	165	12 11 20	− 48	− 3.22	22.59	F 7.9	N	CLR	35752



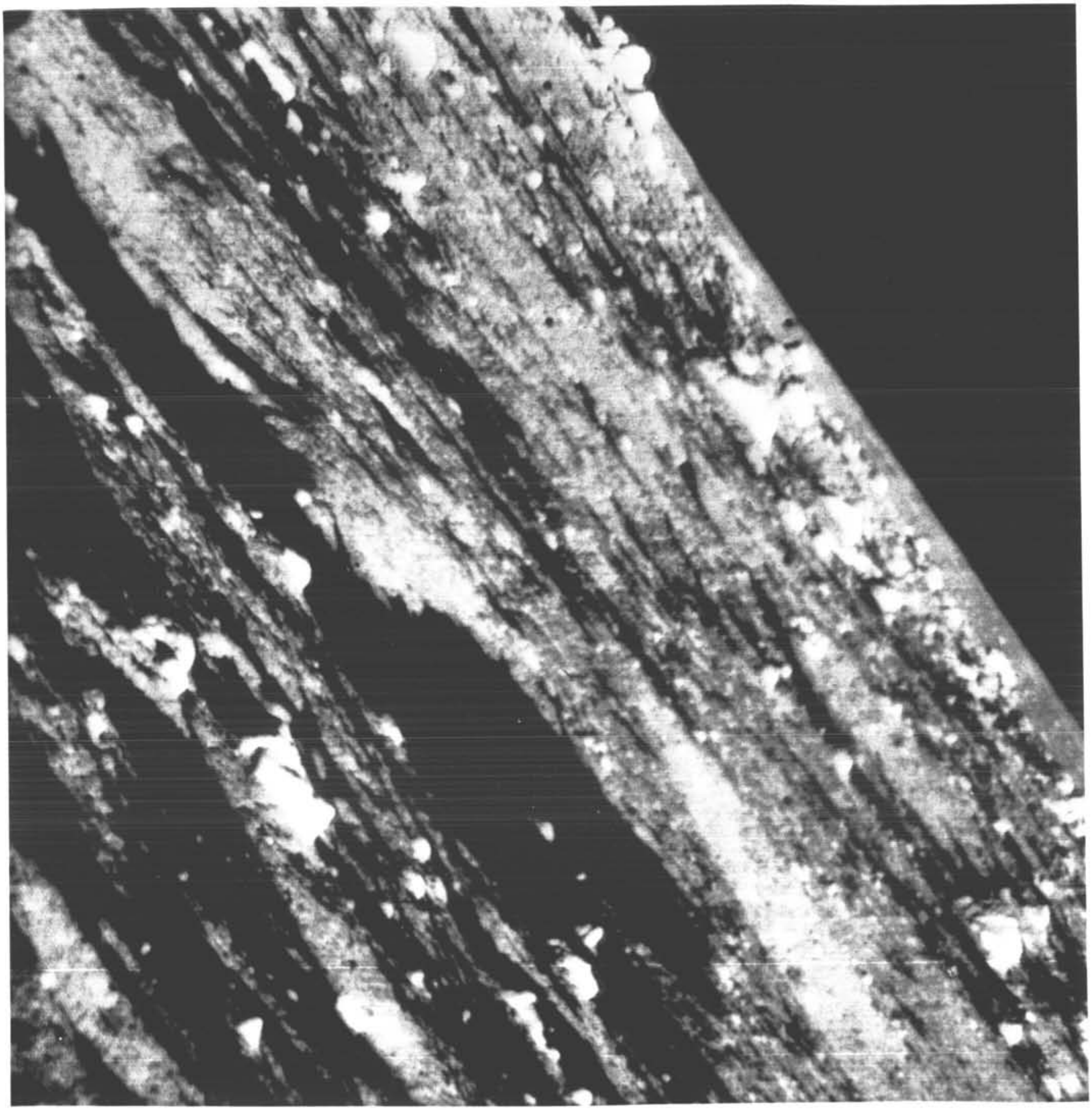
Surveyor I-224



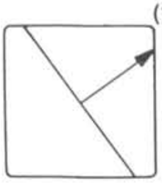
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(224)	165	12 22 30	− 39	− 8.18	27.40	F 8.0	W	CLR	36013



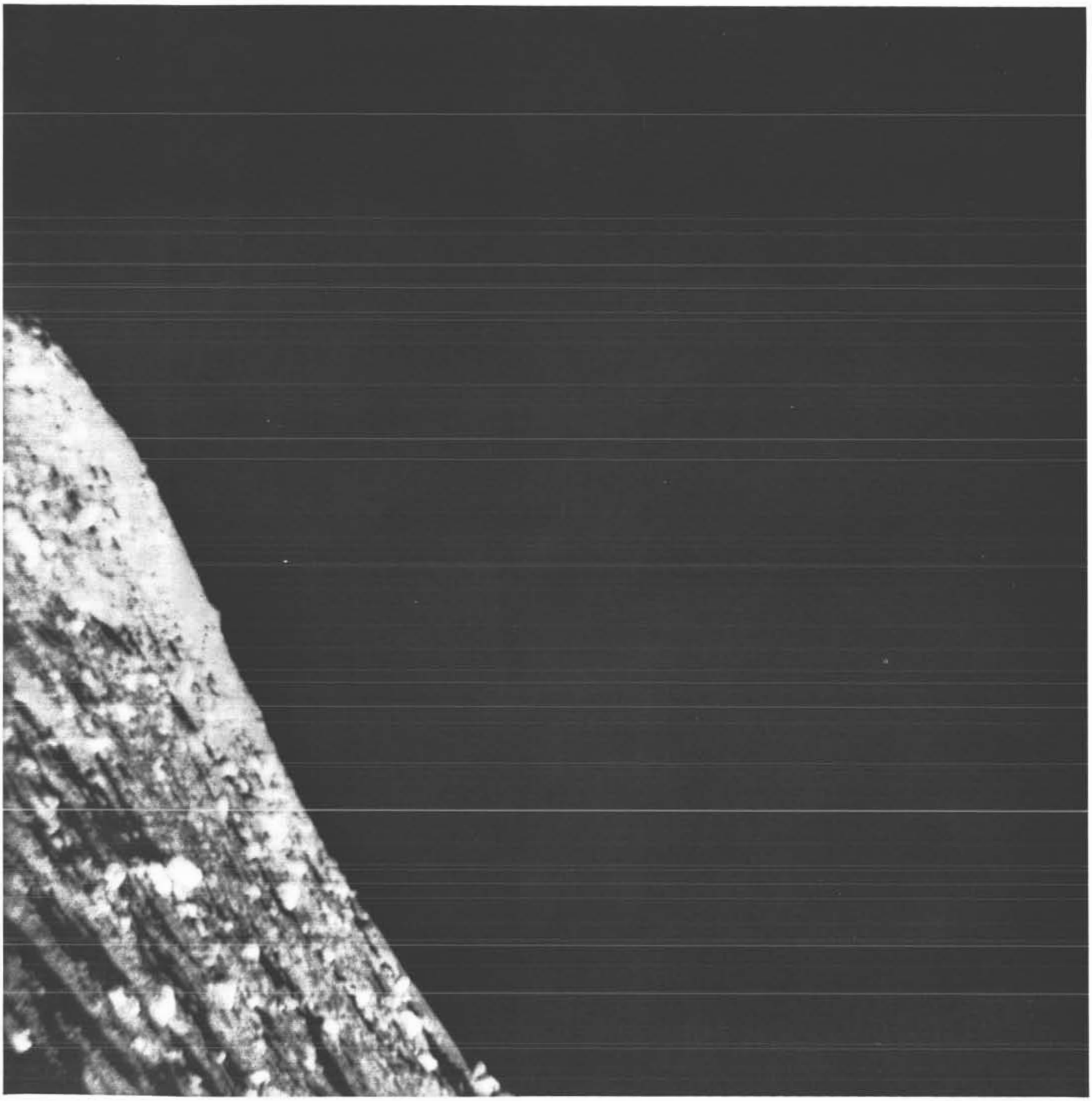
Surveyor I-225



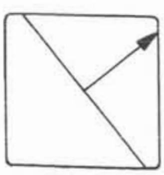
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(225)	165	12 26 24	− 39	− 3.22	22.59	F 7.9	N	CLR	36016



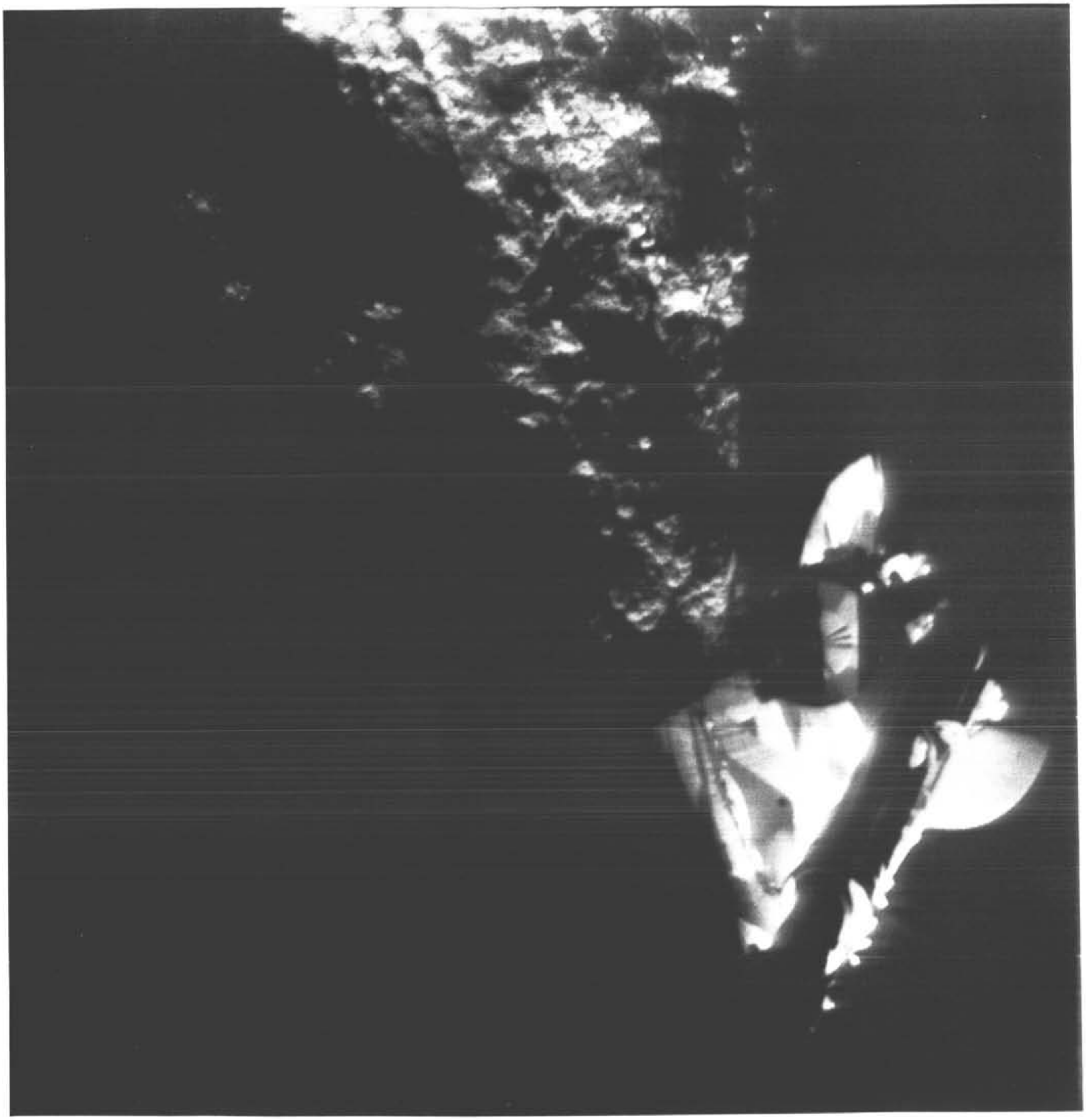
Surveyor I- 226



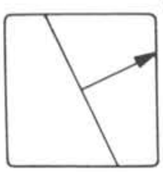
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(226)	165	12 26 55	— 36	1.74	10.30	F 8.0	N	CLR	36017



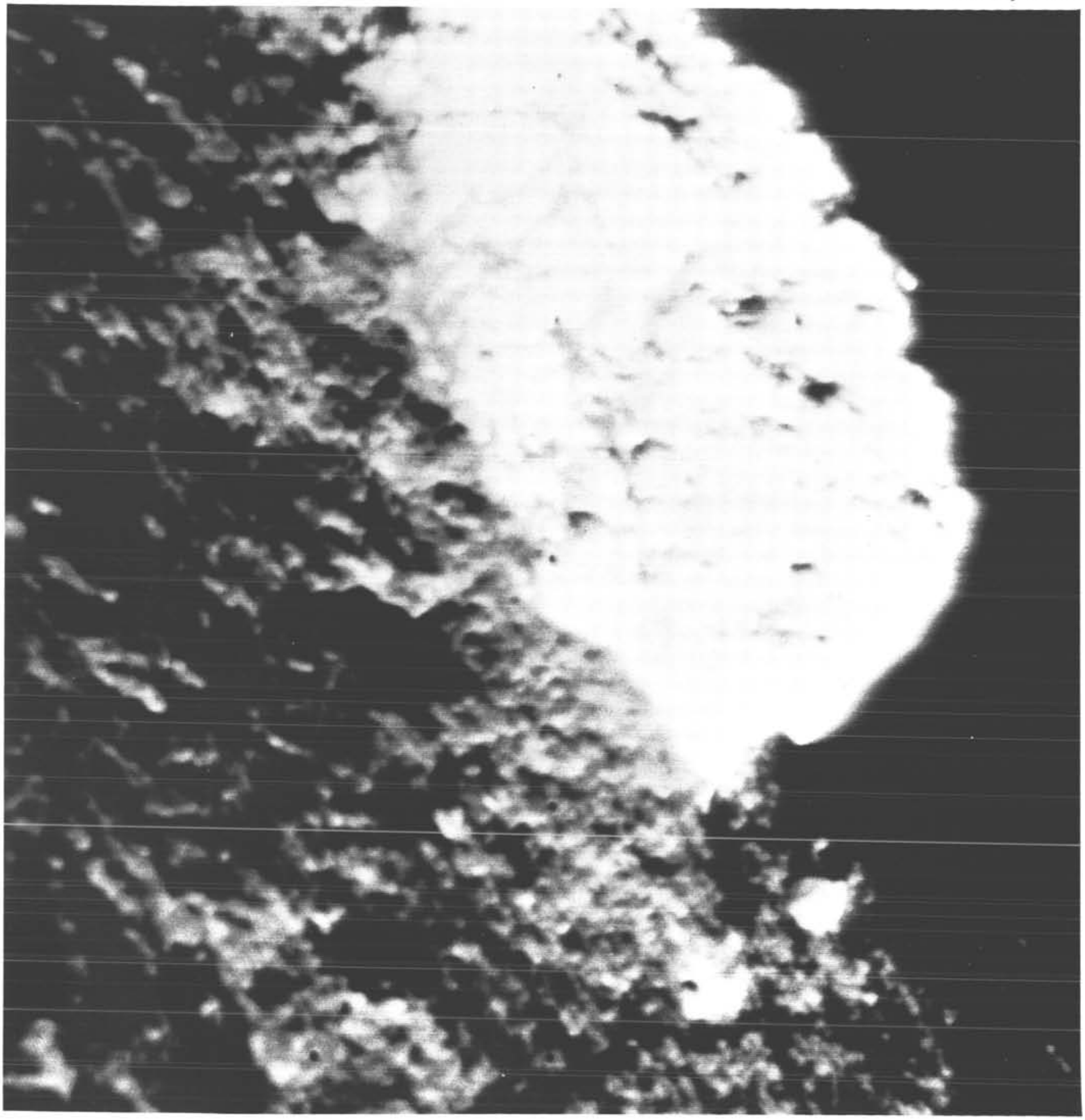
Surveyor I-227



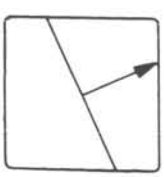
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(227)	165	13 00 35	− 51	−67.00	2.02	F 7.9	W	CLR	36027



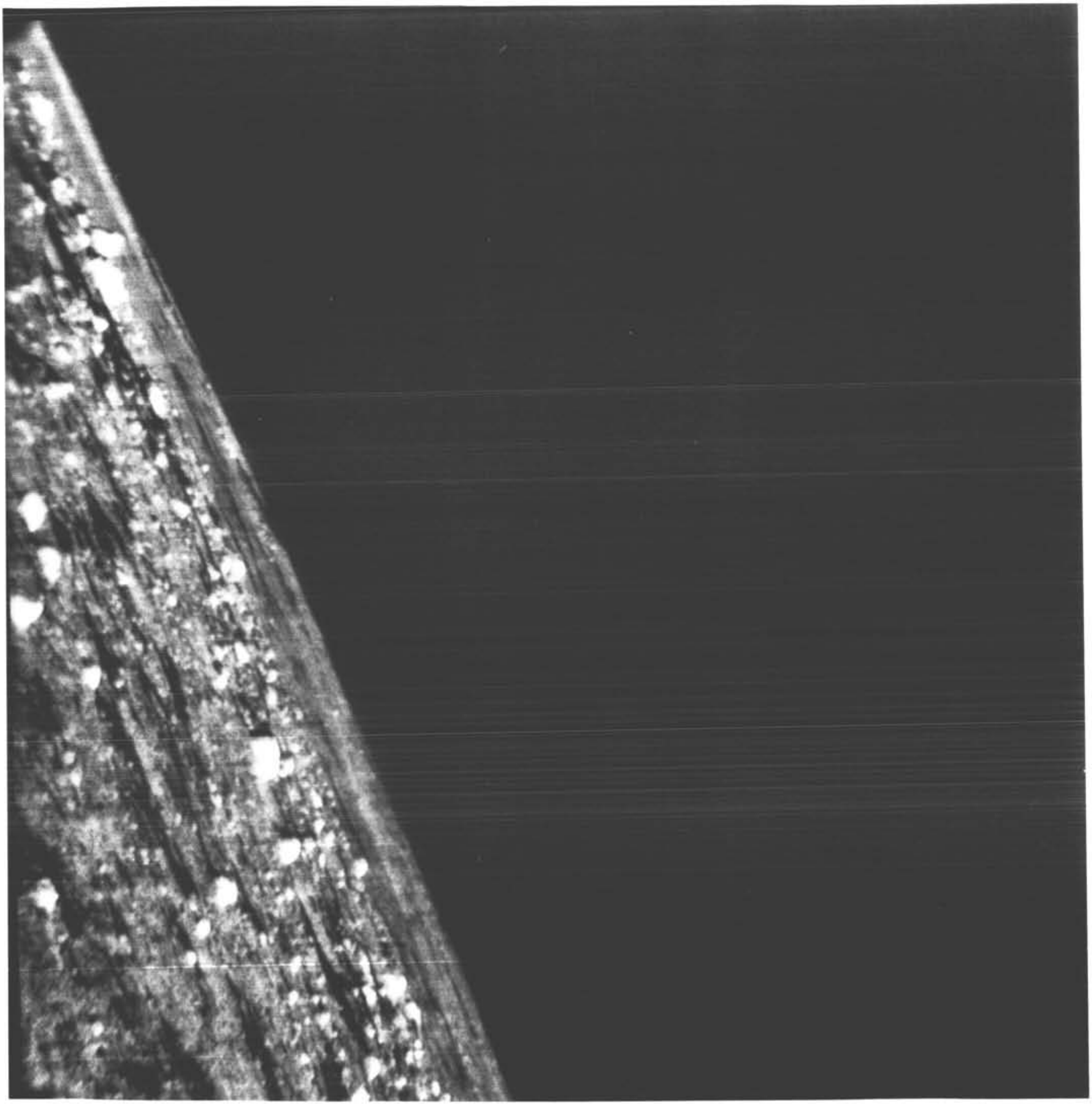
Surveyor I-228



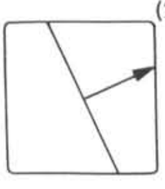
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(228)	165	13 06 34	− 51	−28.02	5.55	F 7.9	N	CLR	36035



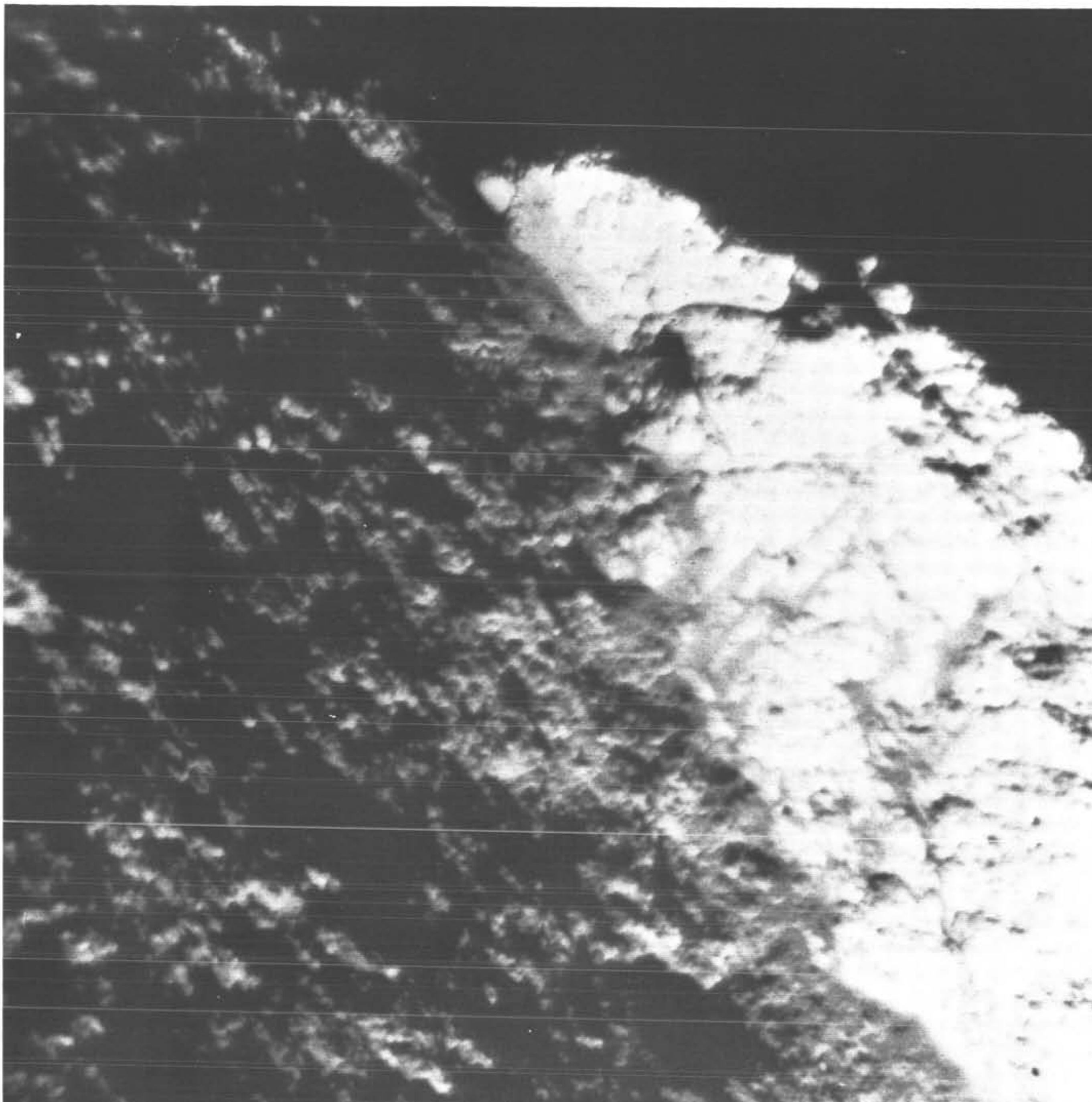
Surveyor I- 229



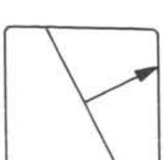
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(229)	165	13 09 24	− 51	− 3.22	22.59	F 7.9	N	CLR	36040



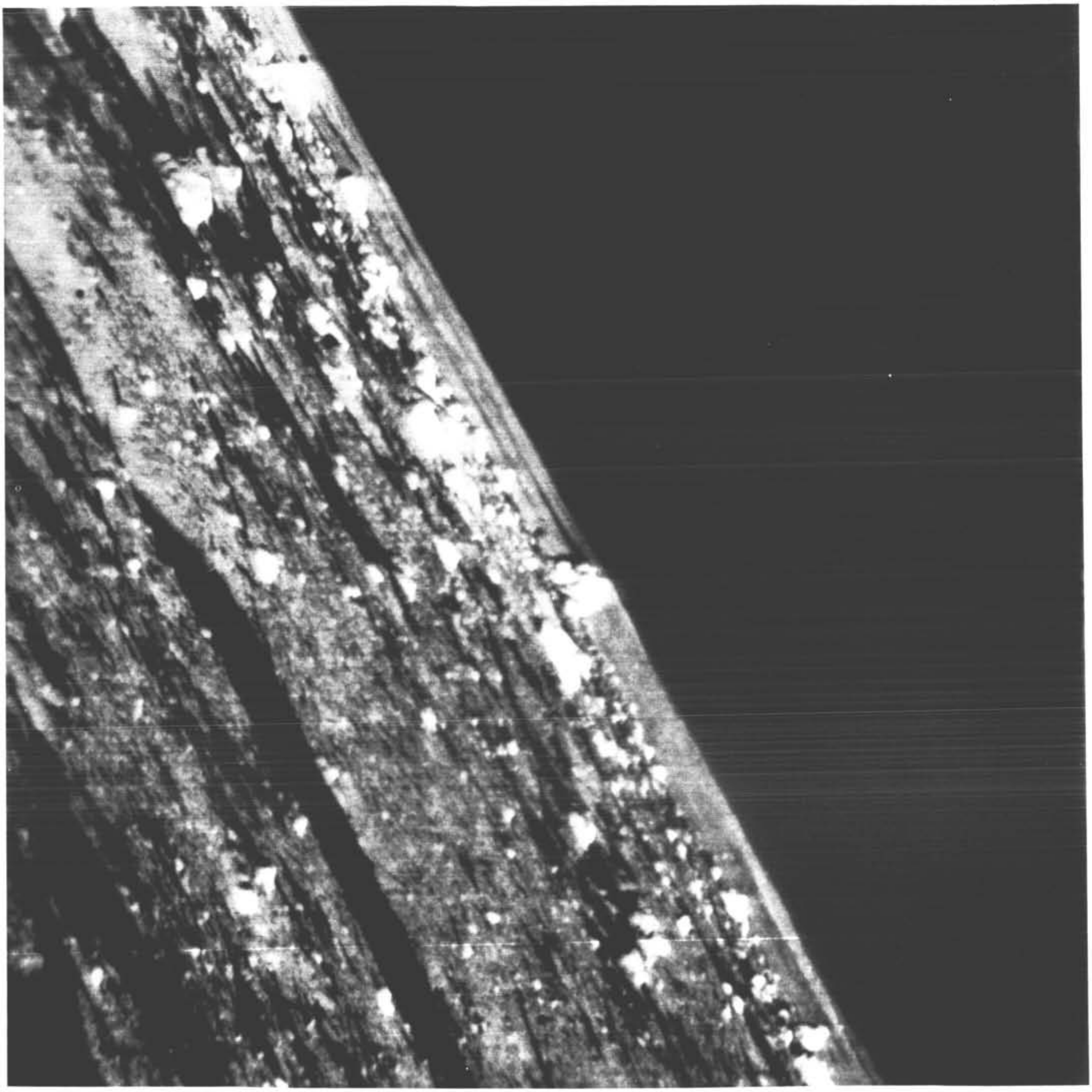
Surveyor I-230



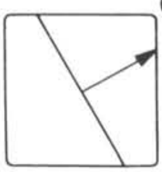
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(230)	165	13 11 45	− 48	−28.02	4.27	F 7.9	N	CLR	36045



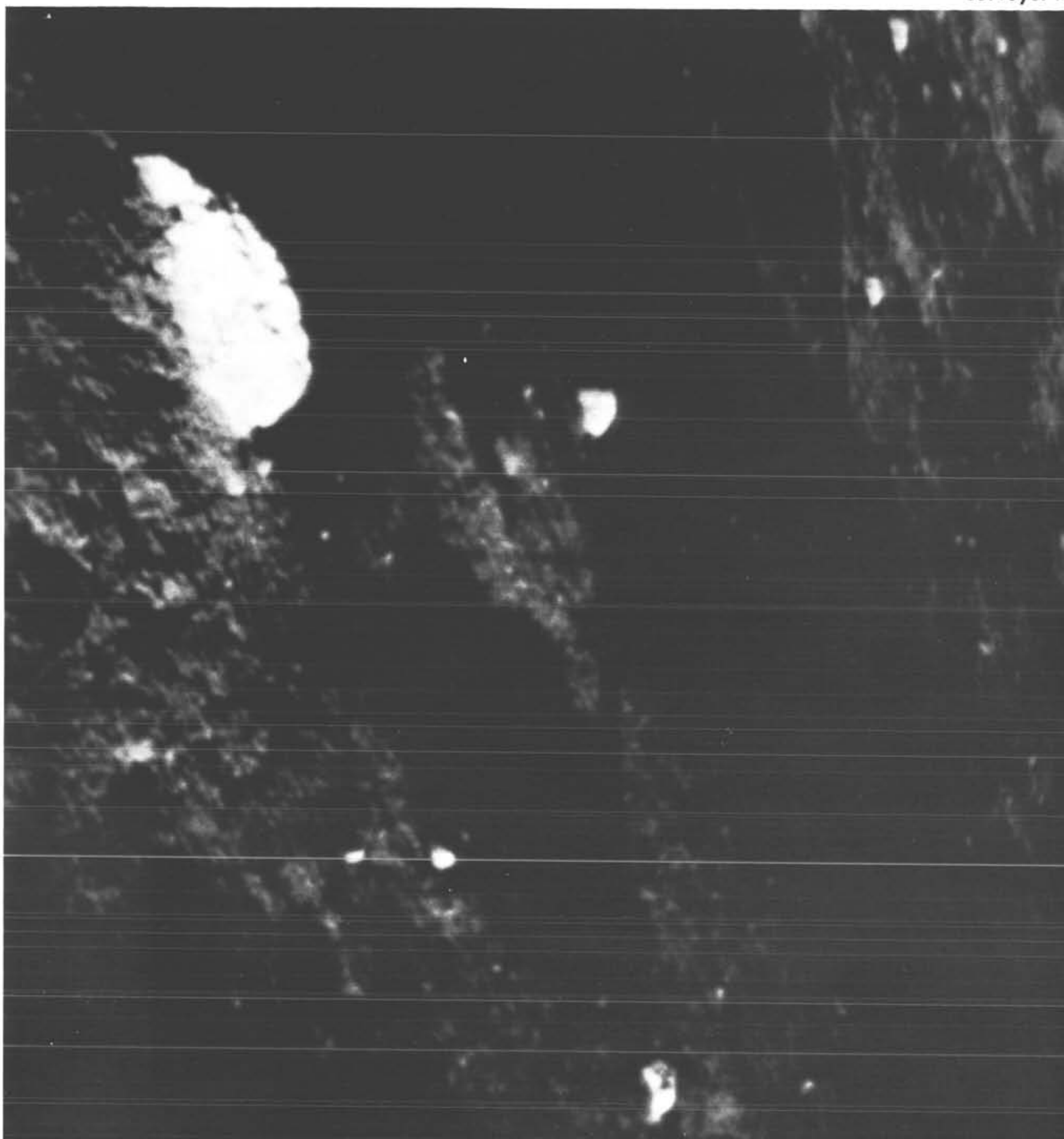
Surveyor I- 231



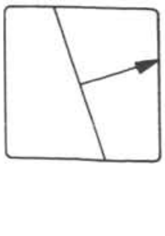
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(231)	165	13 15 16	− 45	− 3.22	22.59	F 7.9	N	CLR	36057



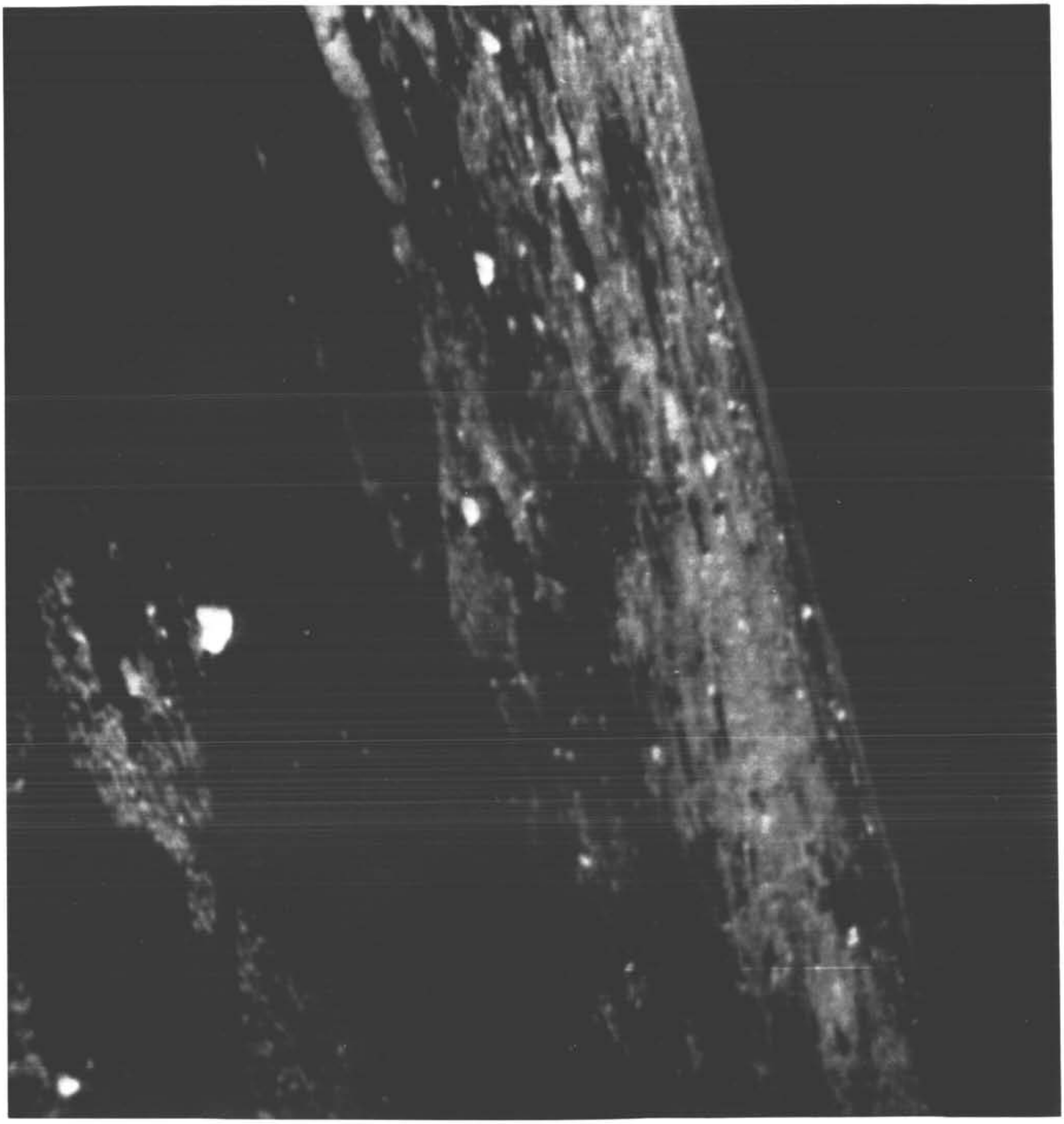
Surveyor I-232



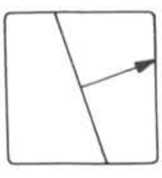
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(232)	165	13 44 19	− 60	−23.06	2.18	F 7.9	W	CLR	36104



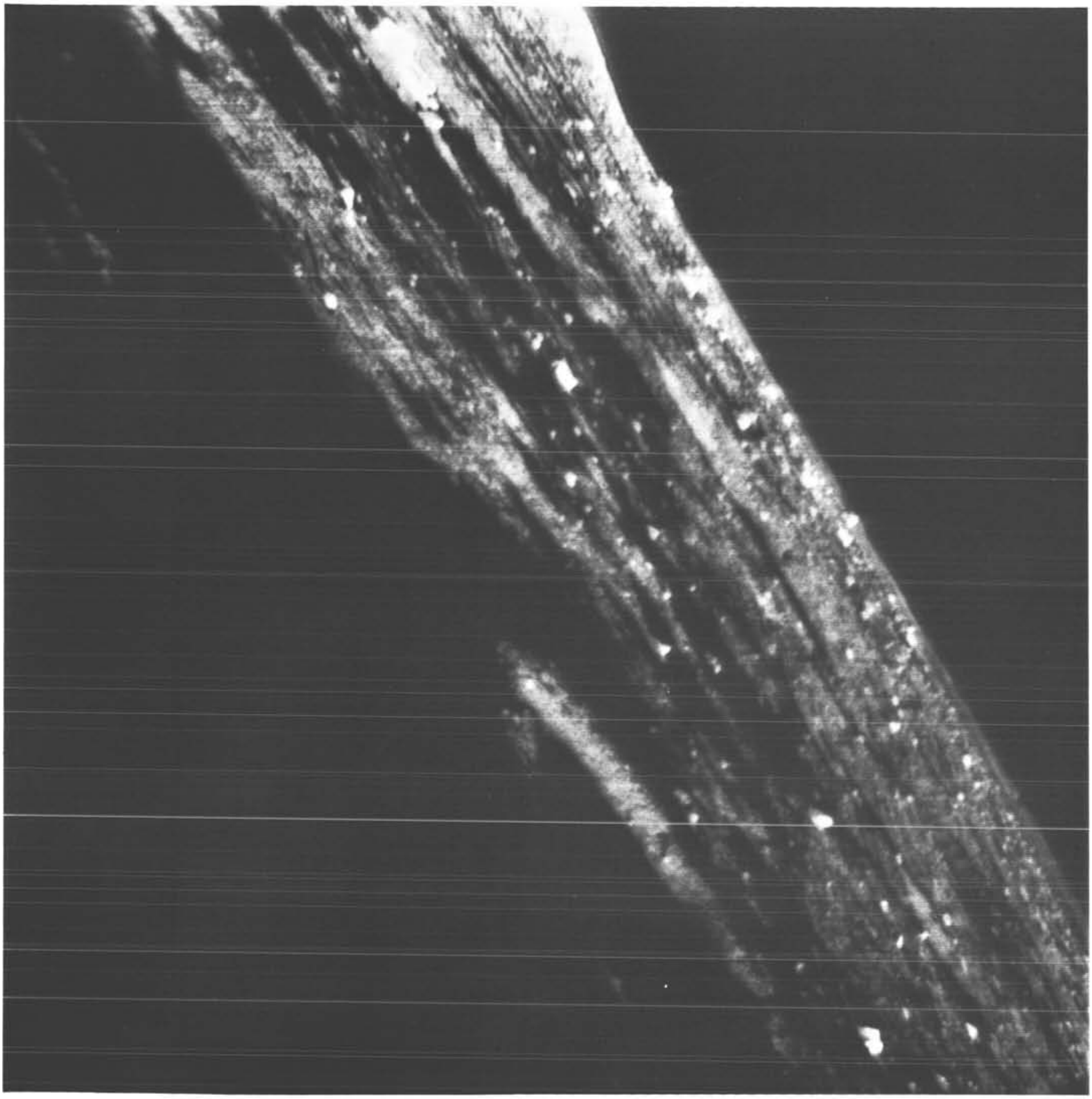
Surveyor I-233



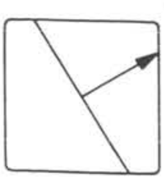
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(233)	165	13 46 34	− 60	−13.14	2.18	F 7.9	W	CLR	36106



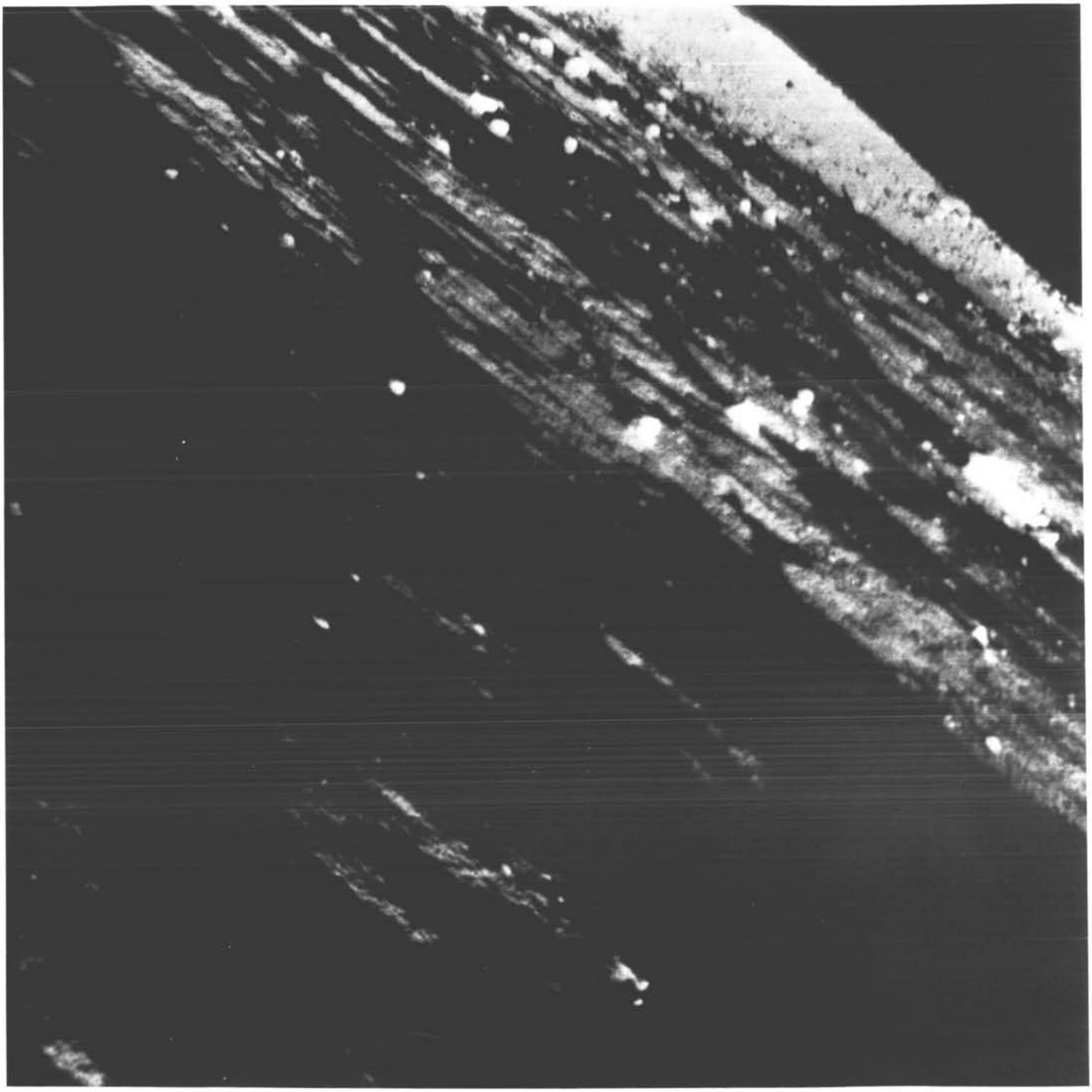
Surveyor I-234



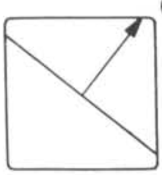
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(234)	165	13 58 27	− 42	− 8.18	2.18	F 7.9	W	CLR	36111



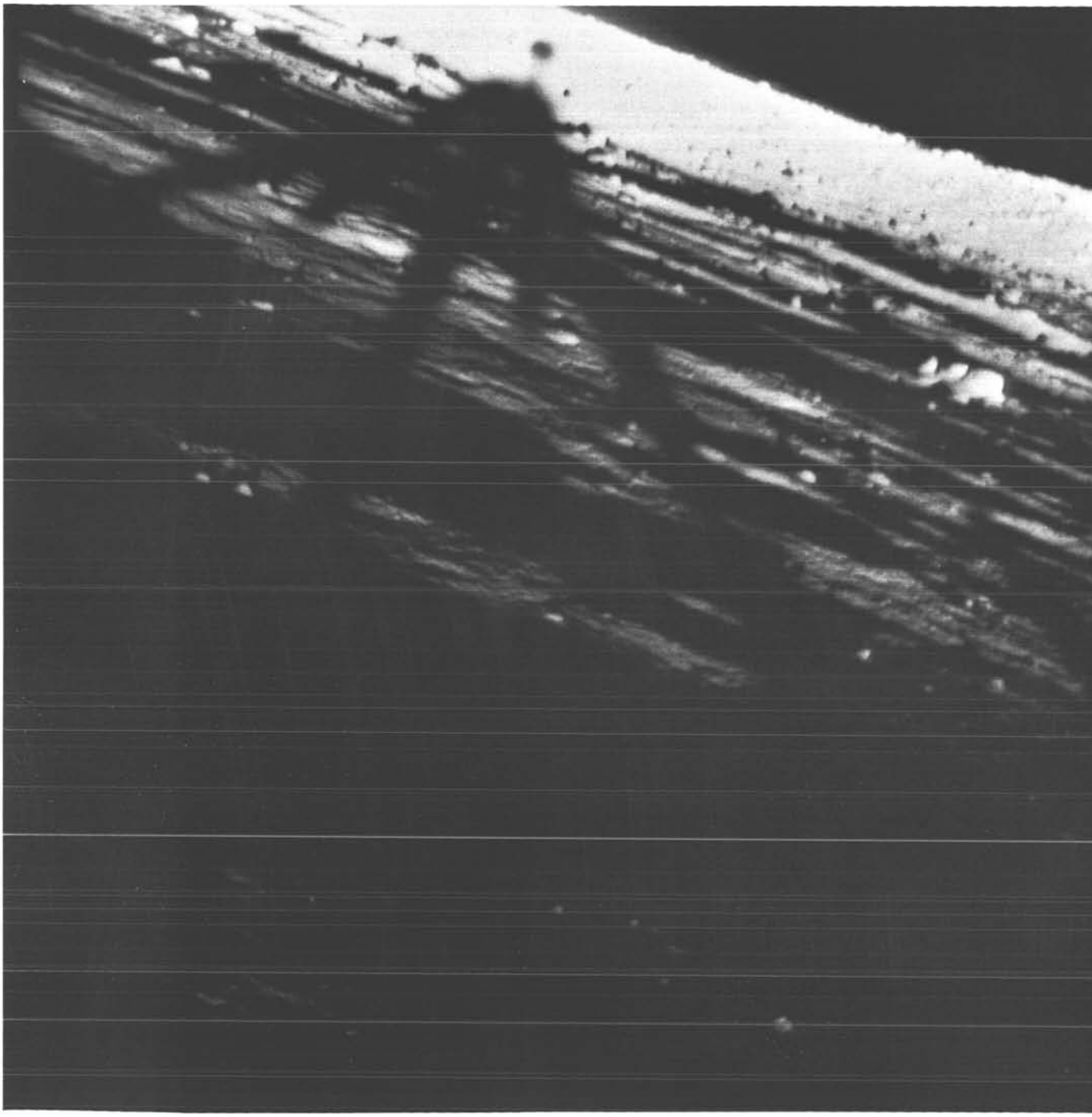
Surveyor I-235



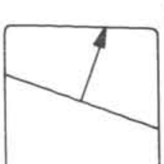
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(235)	165	14 01 33	− 24	− 8.18	2.18	F 7.9	W	CLR	36112



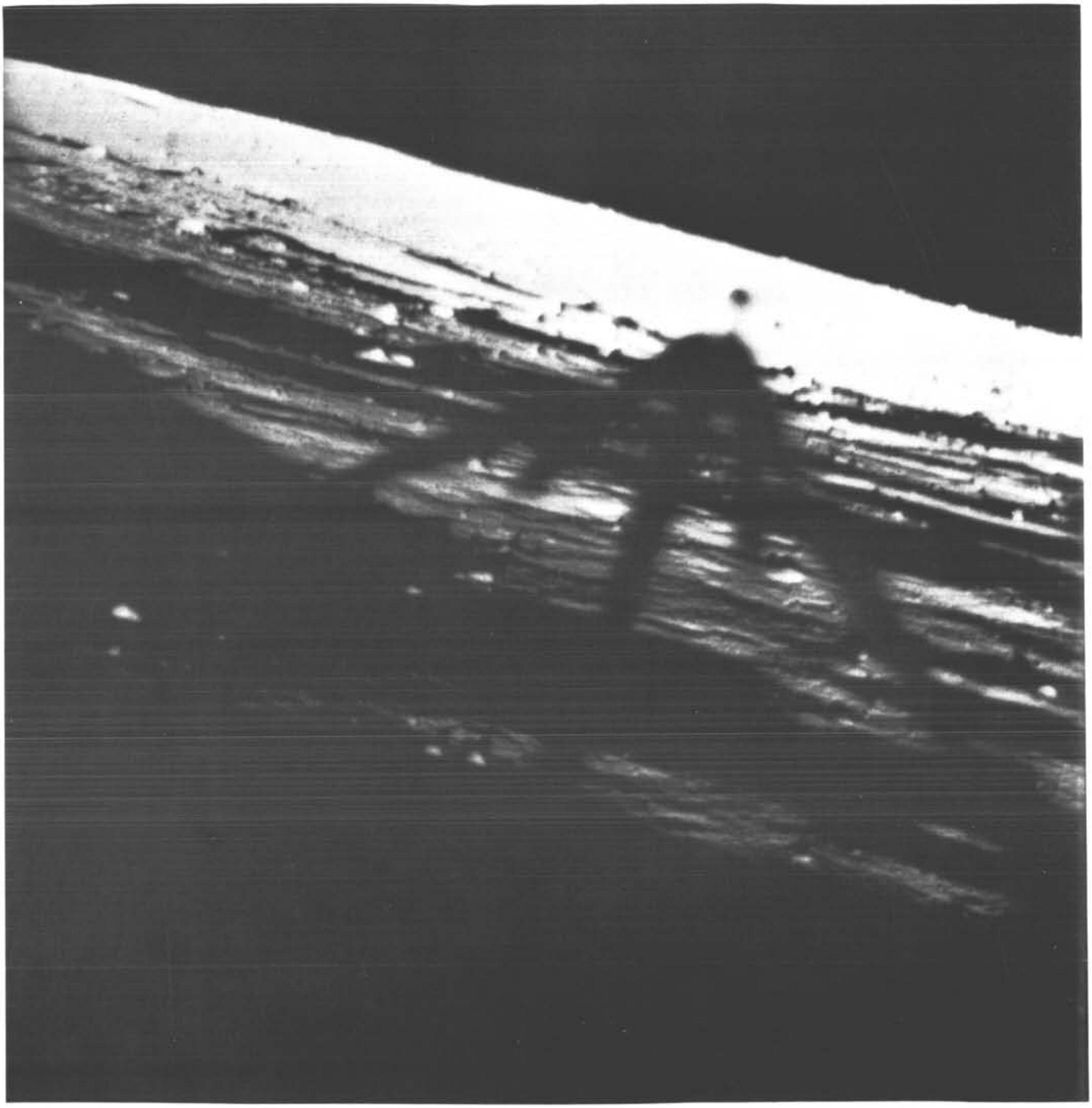
Surveyor I-236



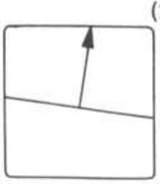
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(236)	165	14 03 47	− 6	− 3.22	2.18	F 7.9	W	CLR	36114



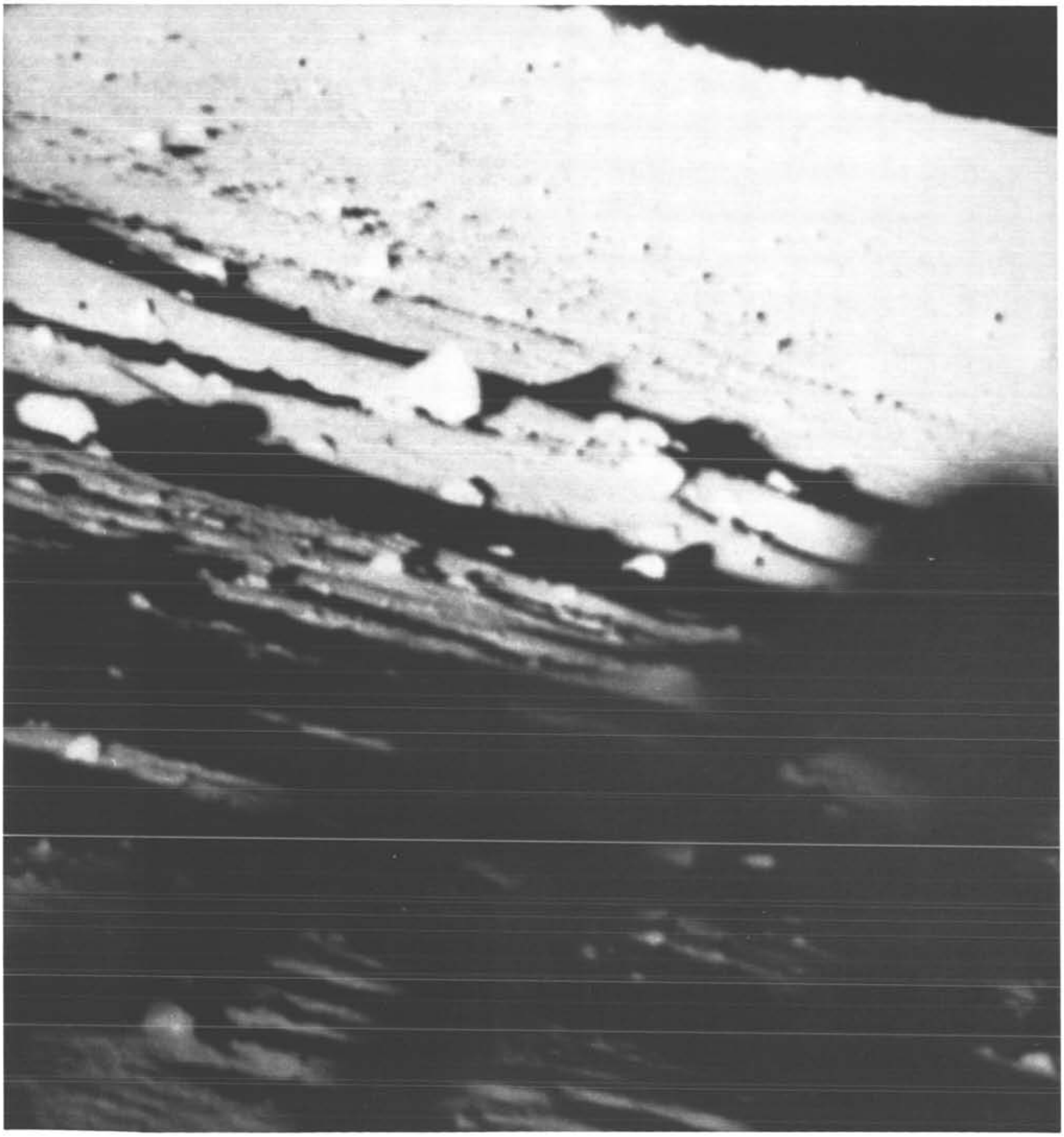
Surveyor I- 237



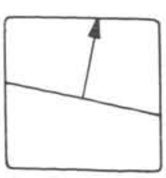
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(237)	165	14 06 39	3	1.74	2.18	F 7.9	W	CLR	36117



Surveyor I-238

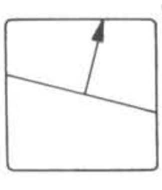


	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(238)	165	14 09 53	0	6.70	27.40	F 7.9	N	CLR	36121

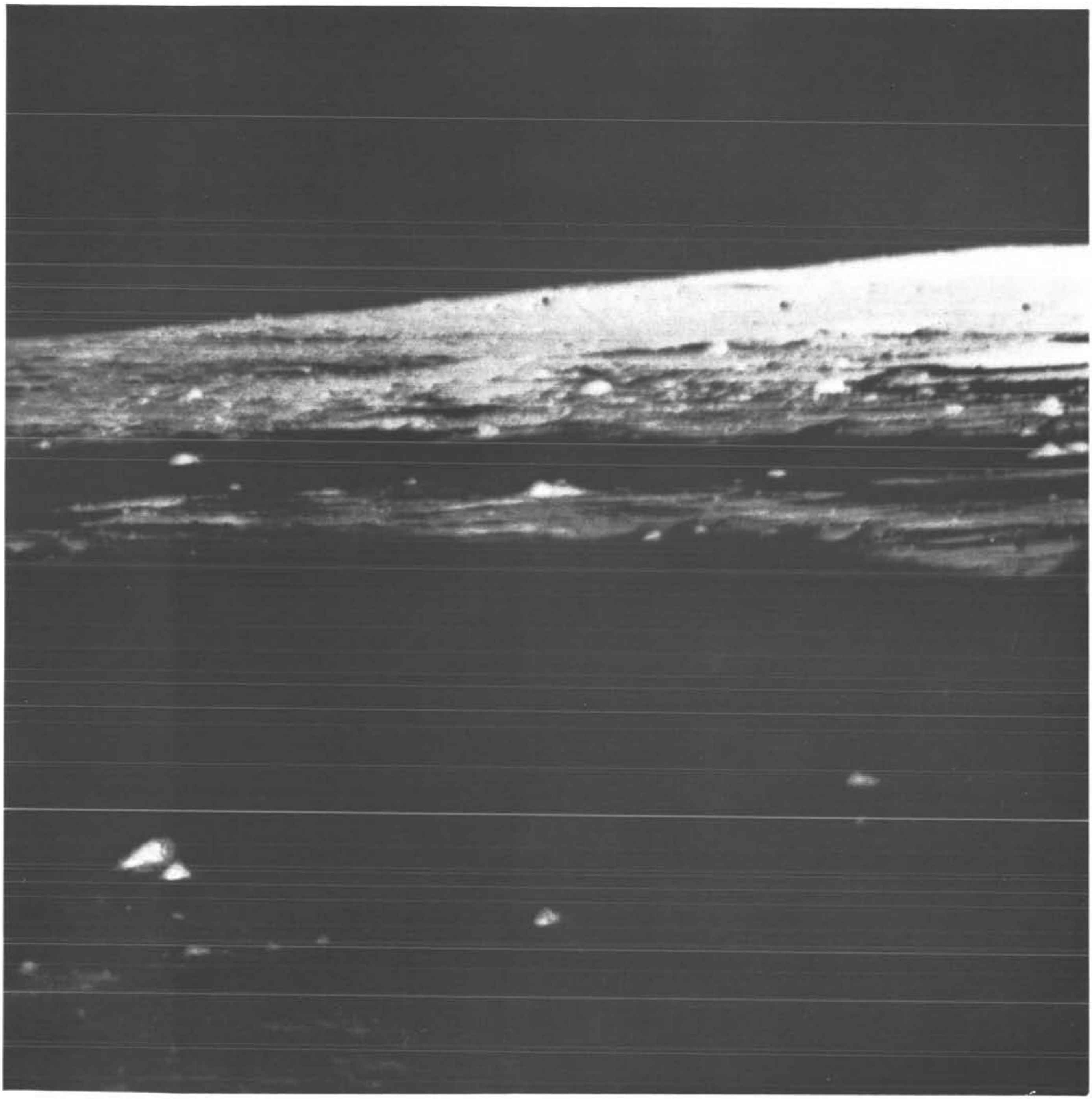


Surveyor I-239

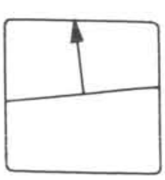
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(239)	165	14 10 35	— 3	6.70	22.59	F 7.9	N	CLR	36122



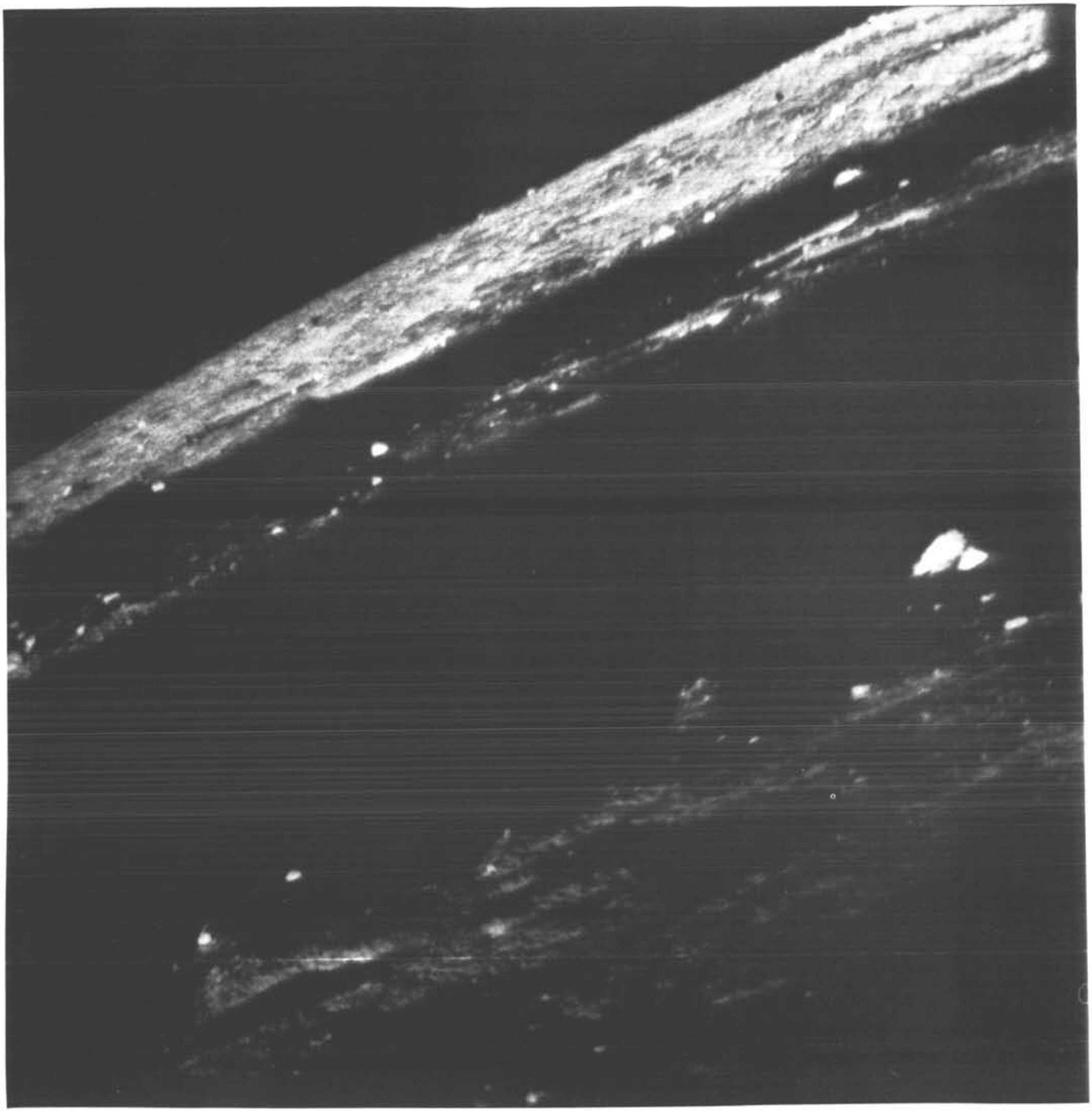
Surveyor I-240



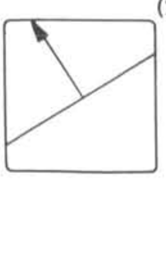
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(240)	165	14 17 47	15	6.70	2.18	F 7.9	W	CLR	36124



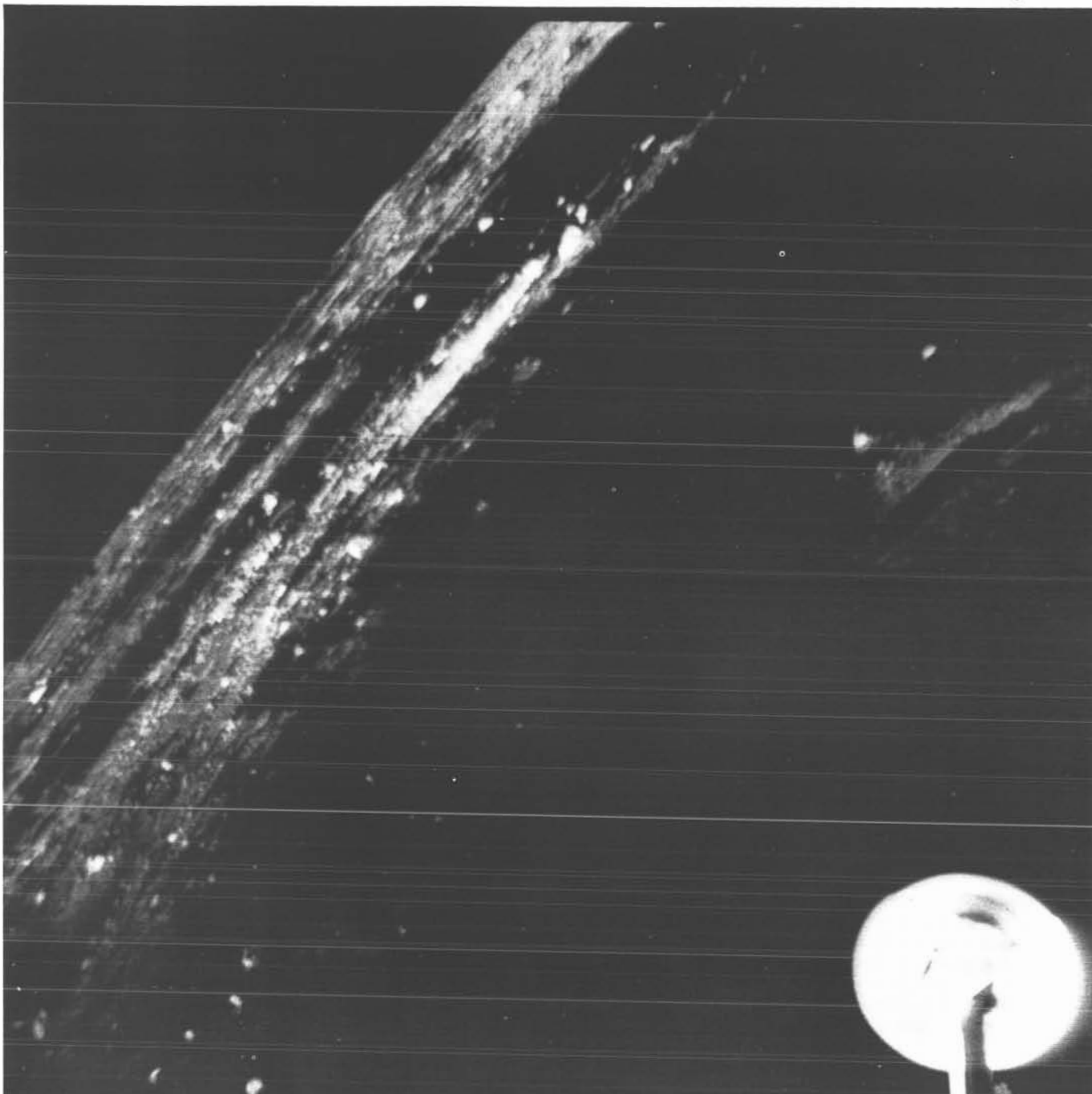
Surveyor I- 241



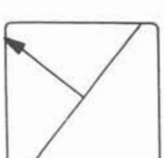
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(241)	165	14 19 34	36	6.70	2.18	F 5.5	W	CLR	36126



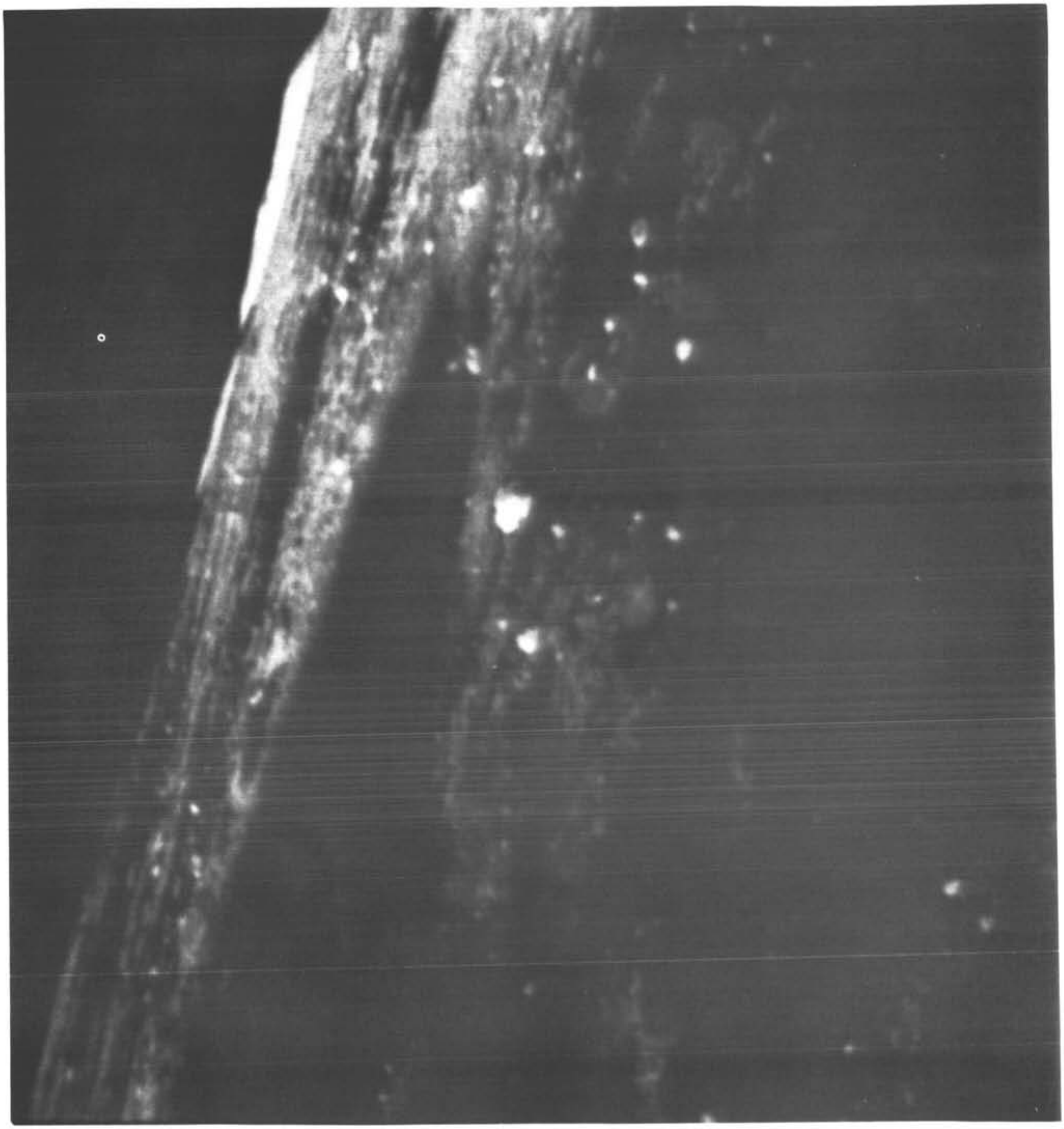
Surveyor I- 242



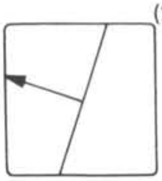
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(242)	165	14 31 39	54	6.70	2.18	F 5.5	W	CLR	36130



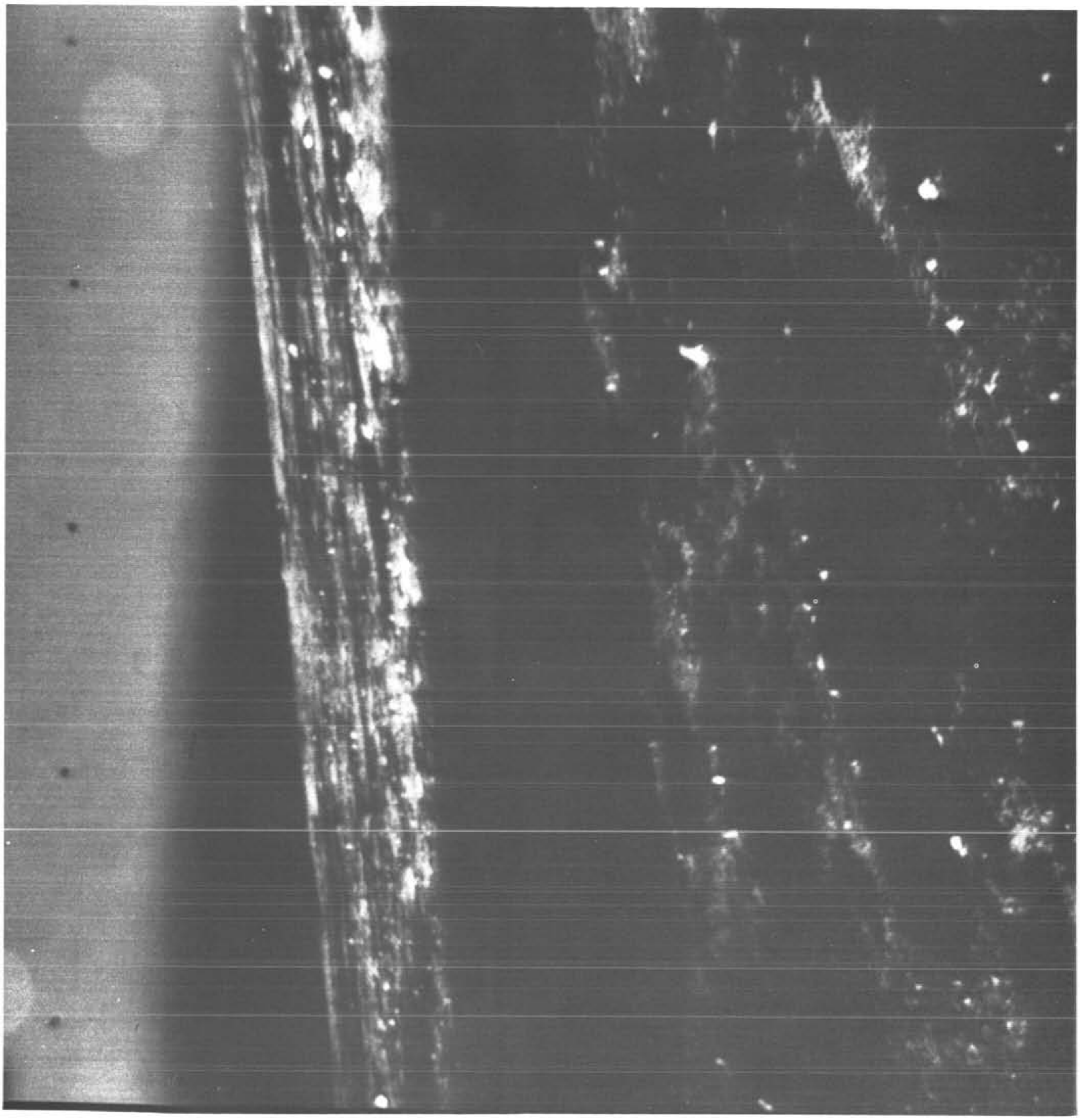
Surveyor I-243



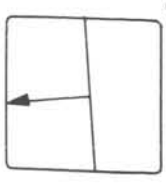
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(243)	165	14 32 18	69	6.70	2.18	F 5.5	W	CLR	36131



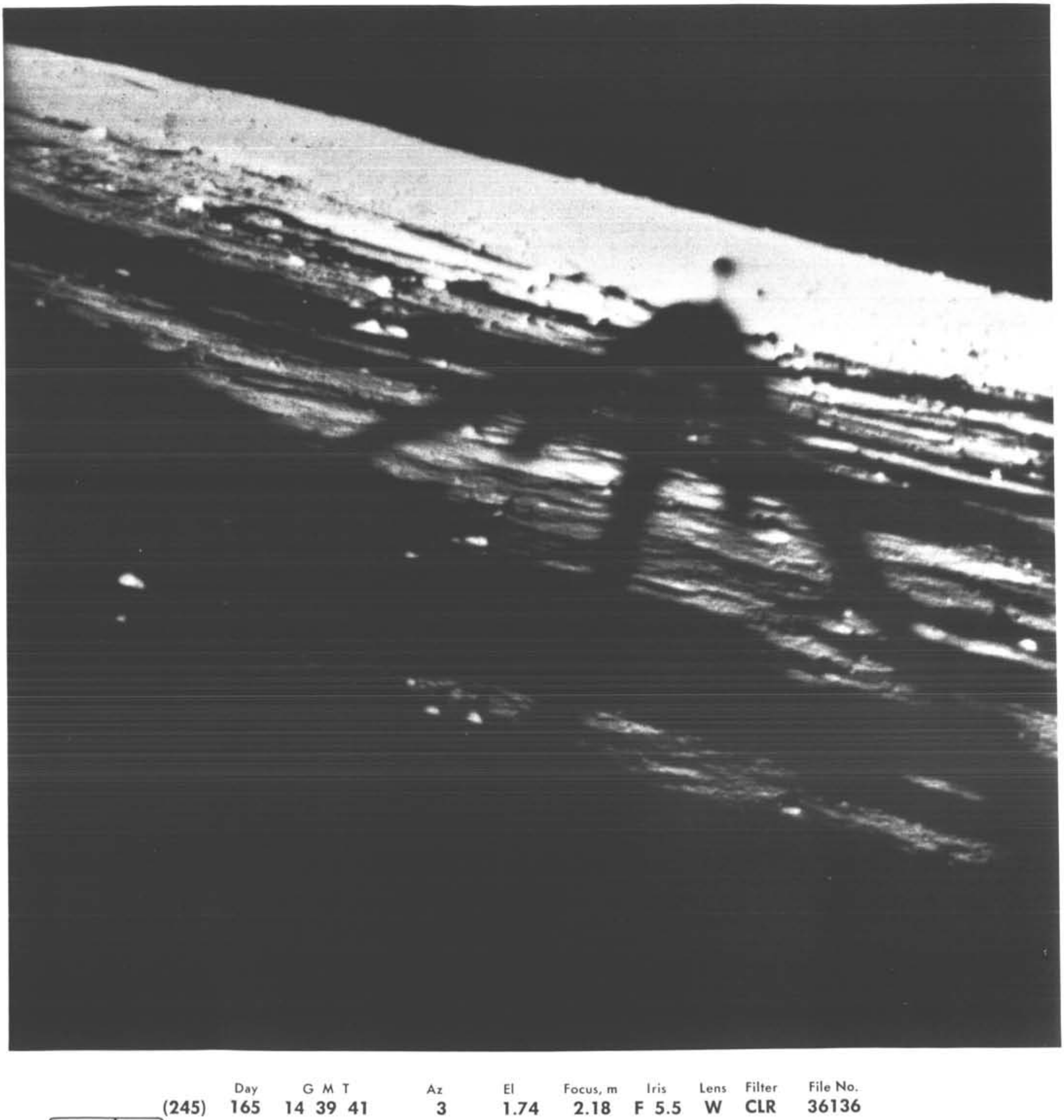
Surveyor I-244



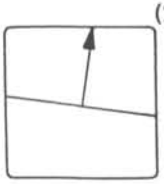
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(244)	165	14 33 29	87	6.70	2.18	F 5.5	W	CLR	36132



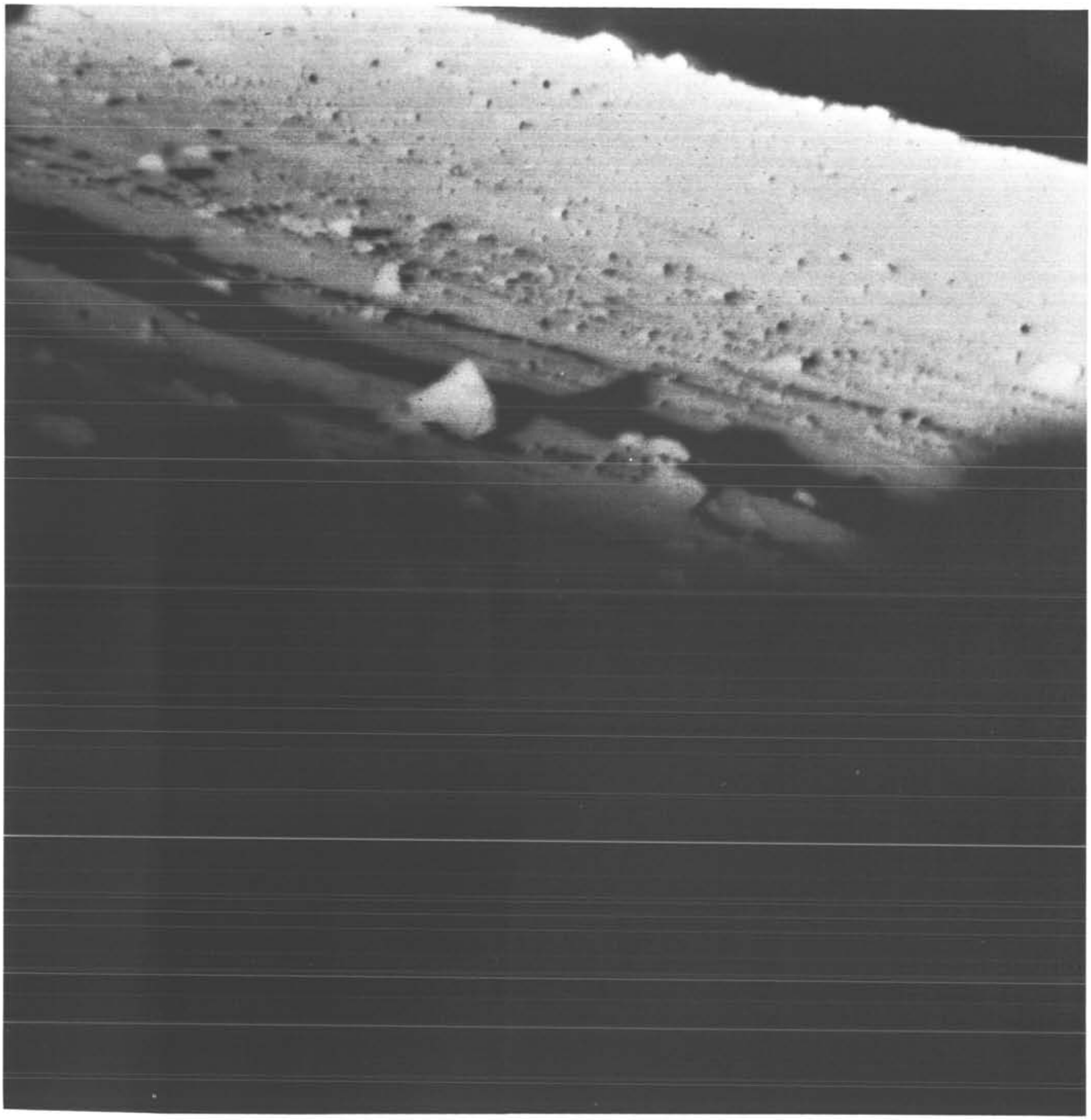
Surveyor I-245



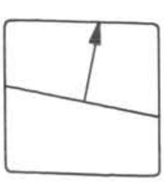
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(245)	165	14 39 41	3	1.74	2.18	F 5.5	W	CLR	36136



Surveyor I- 246

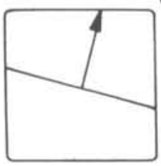


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(246)	165	14 44 44	0	6.70	27.40	F 5.5	N	CLR	36145

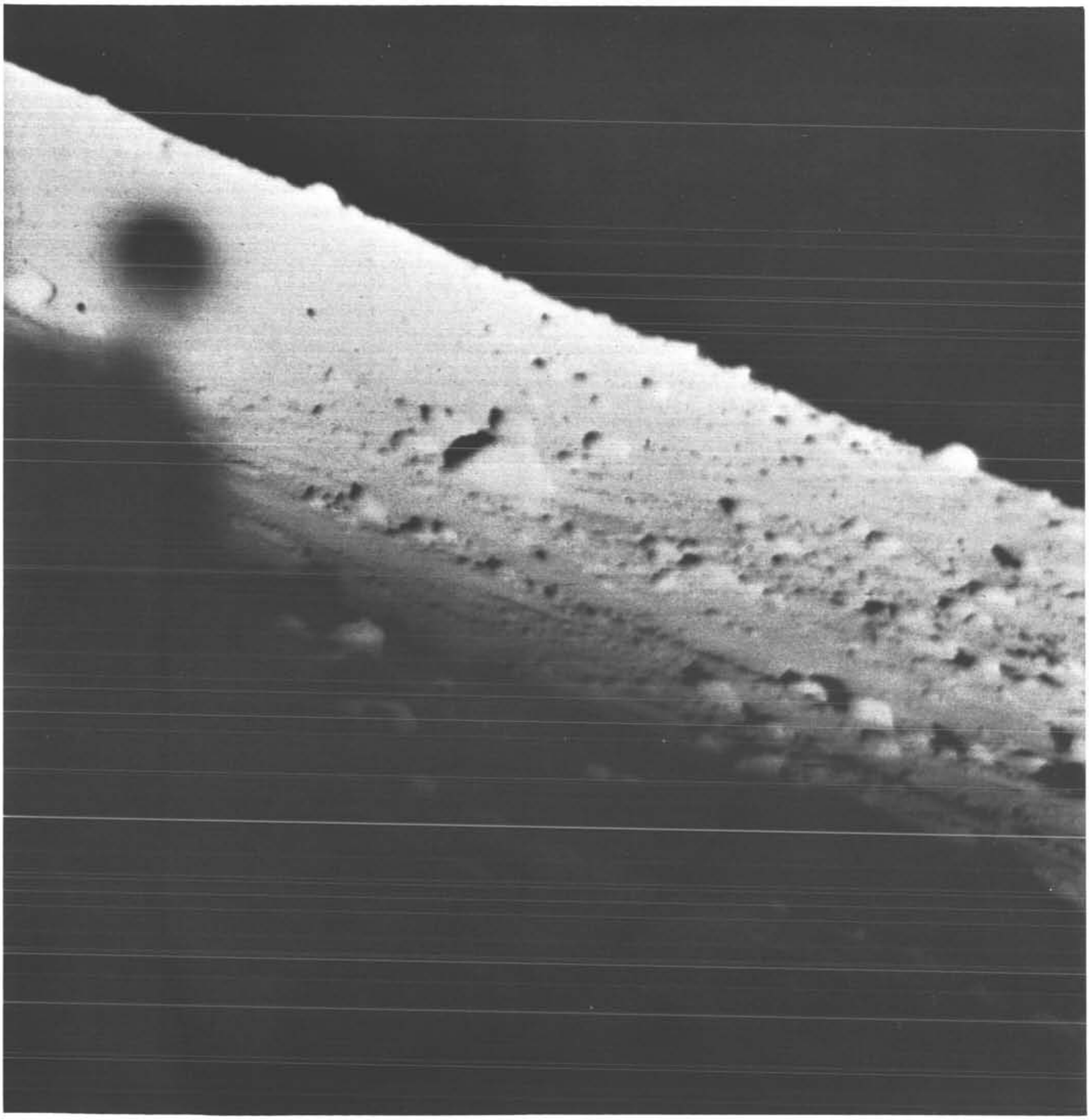


Surveyor I- 247

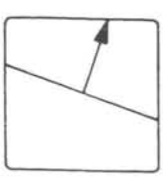
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(247)	165	14 44 57	— 3	6.70	27.40	F 5.5	N	CLR	36146



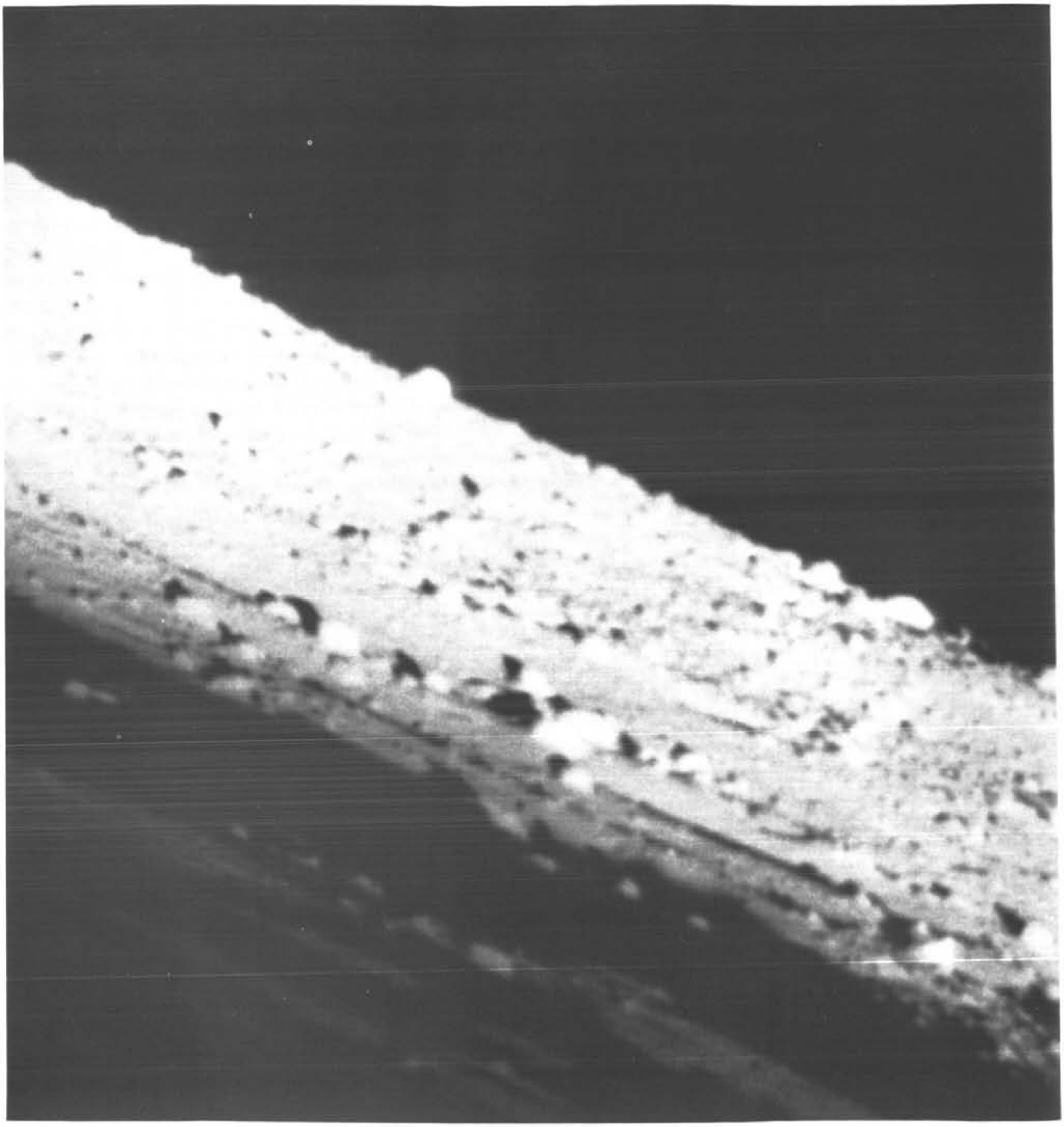
Surveyor I- 248



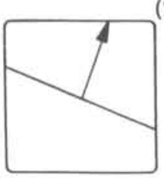
	Day	G M T		Az	El	Focus, m	Iris	Lens	Filter	File No.
(248)	165	14 45 10	—	6	6.70	27.40	F 5.5	N	CLR	36147



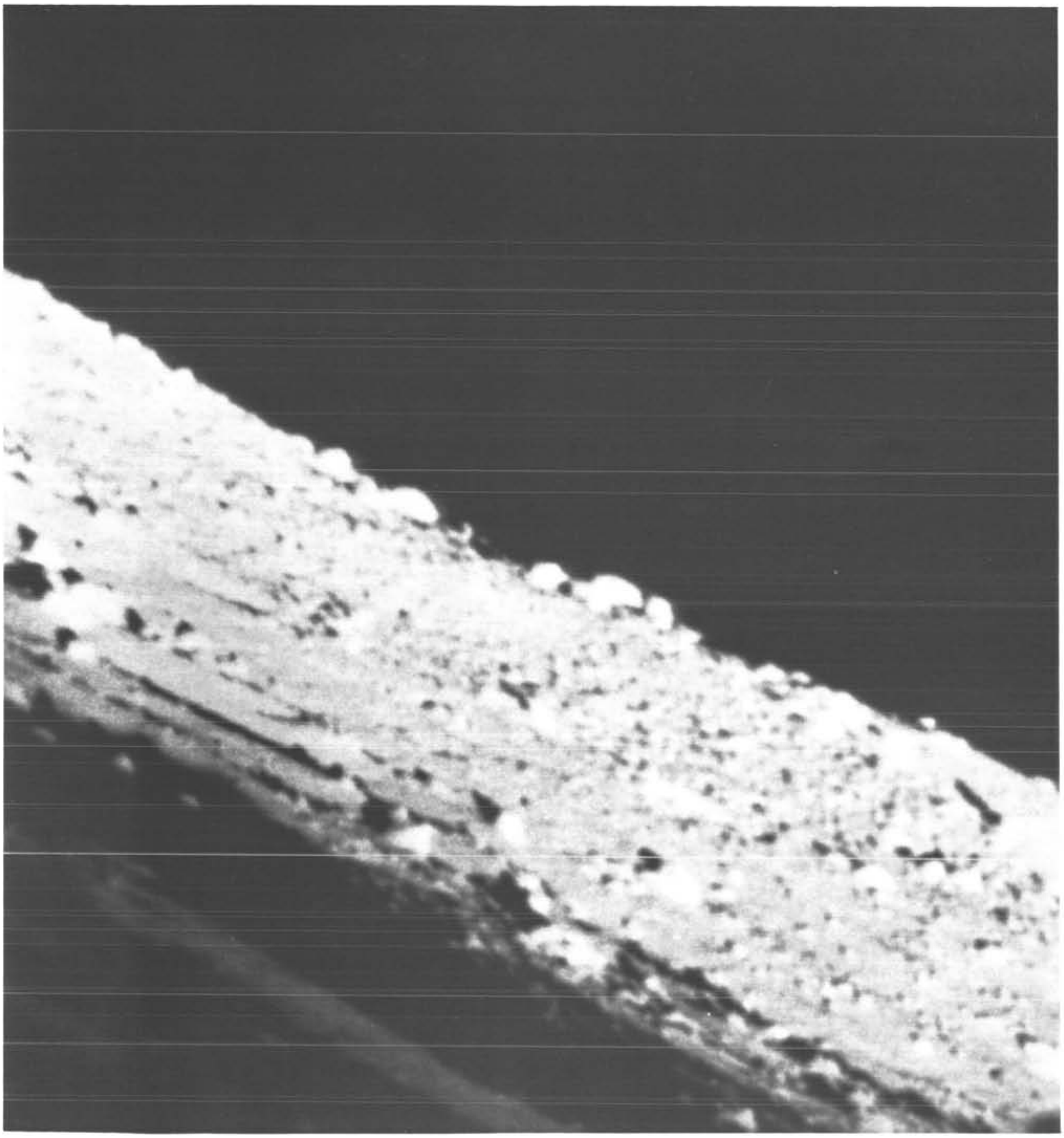
Surveyor I-249



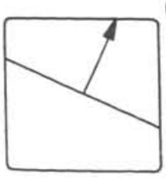
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(249)	165	14 45 23	− 9	6.70	27.40	F 5.5	N	CLR	36150



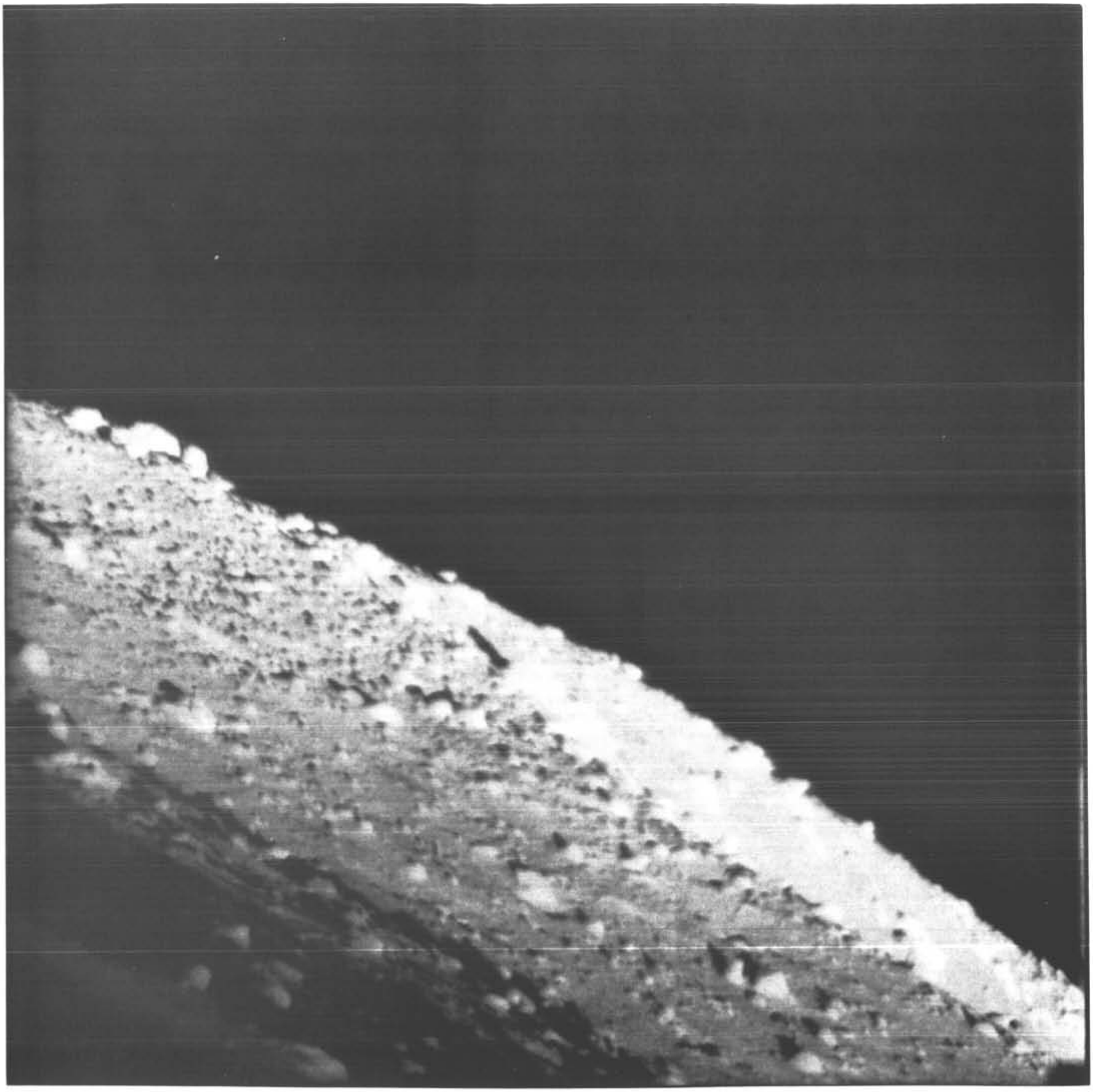
Surveyor I-250



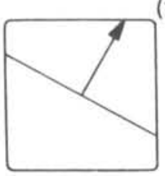
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(250)	165	14 45 36	− 12	6.70	27.40	F 5.5	N	CLR	36151



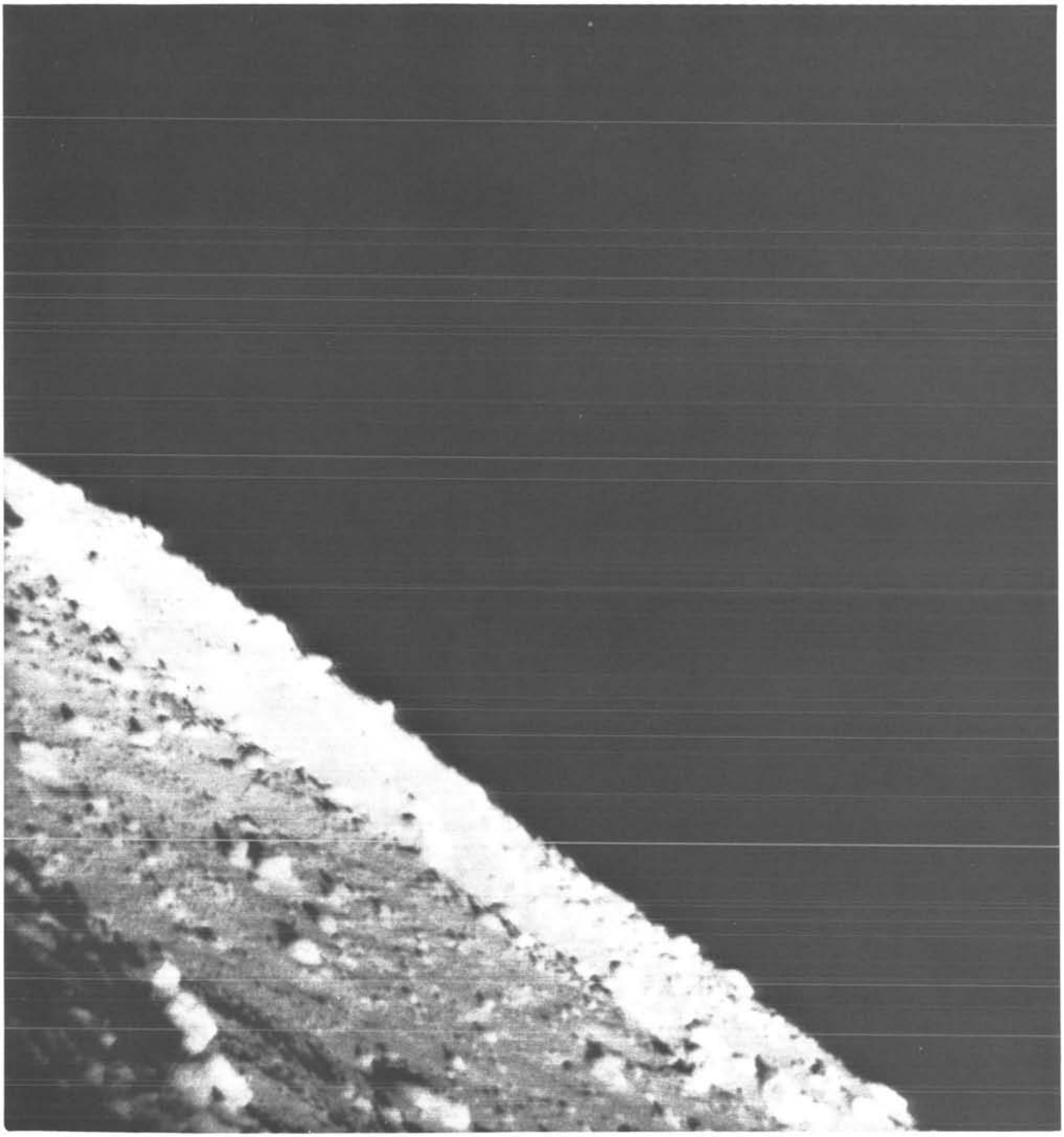
Surveyor I- 251



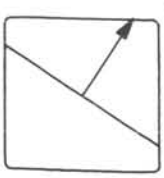
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(251)	165	14 45 49	— 15	6.70	27.40	F 5.5	N	CLR	36152



Surveyor I-252

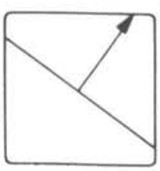


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(252)	165	14 46 02	− 18	6.70	27.40	F 5.5	N	CLR	36153

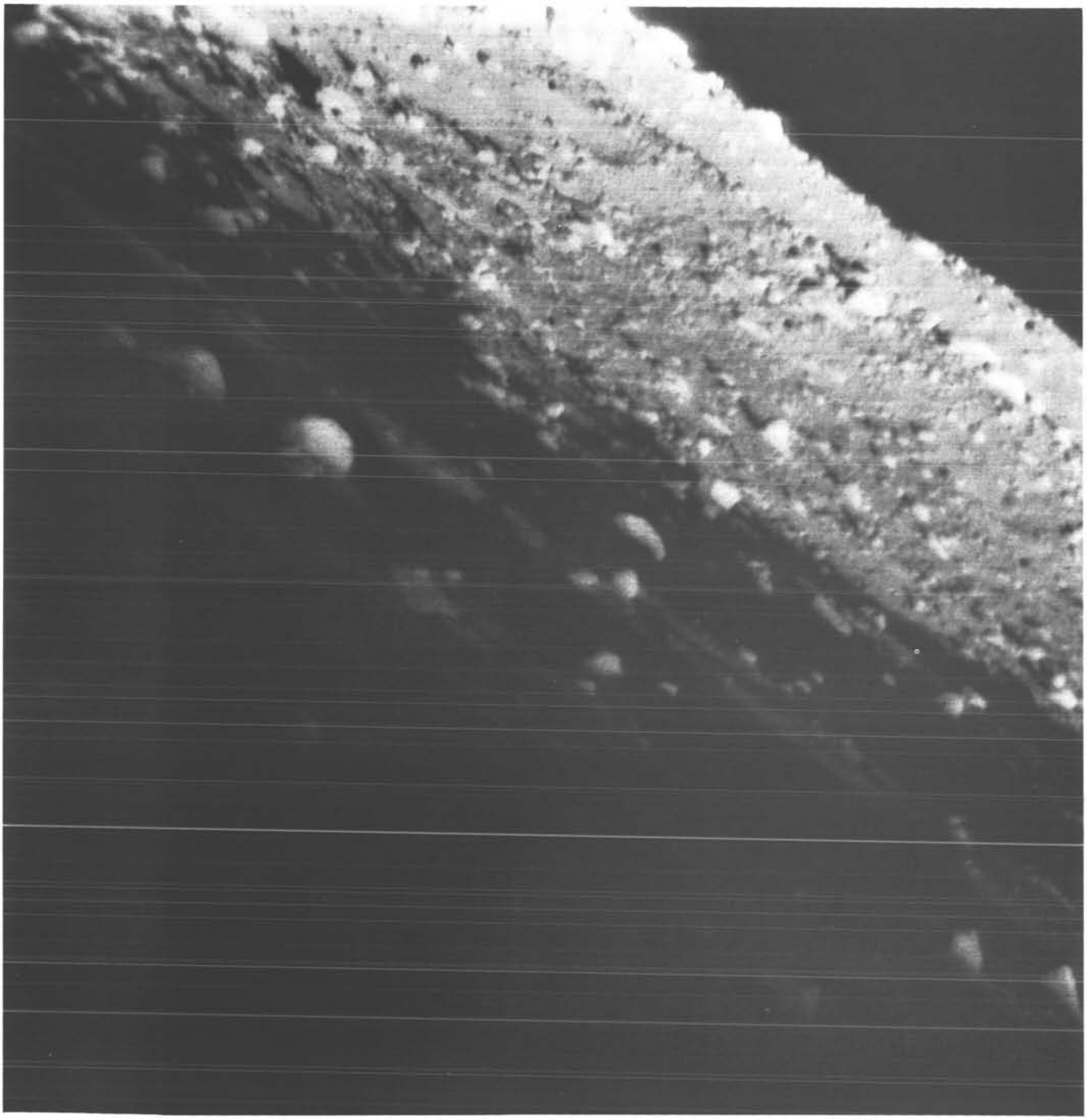


Surveyor I-253

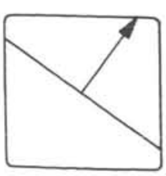
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(253)	165	14 46 16	− 21	6.70	27.40	F 5.5	N	CLR	36154



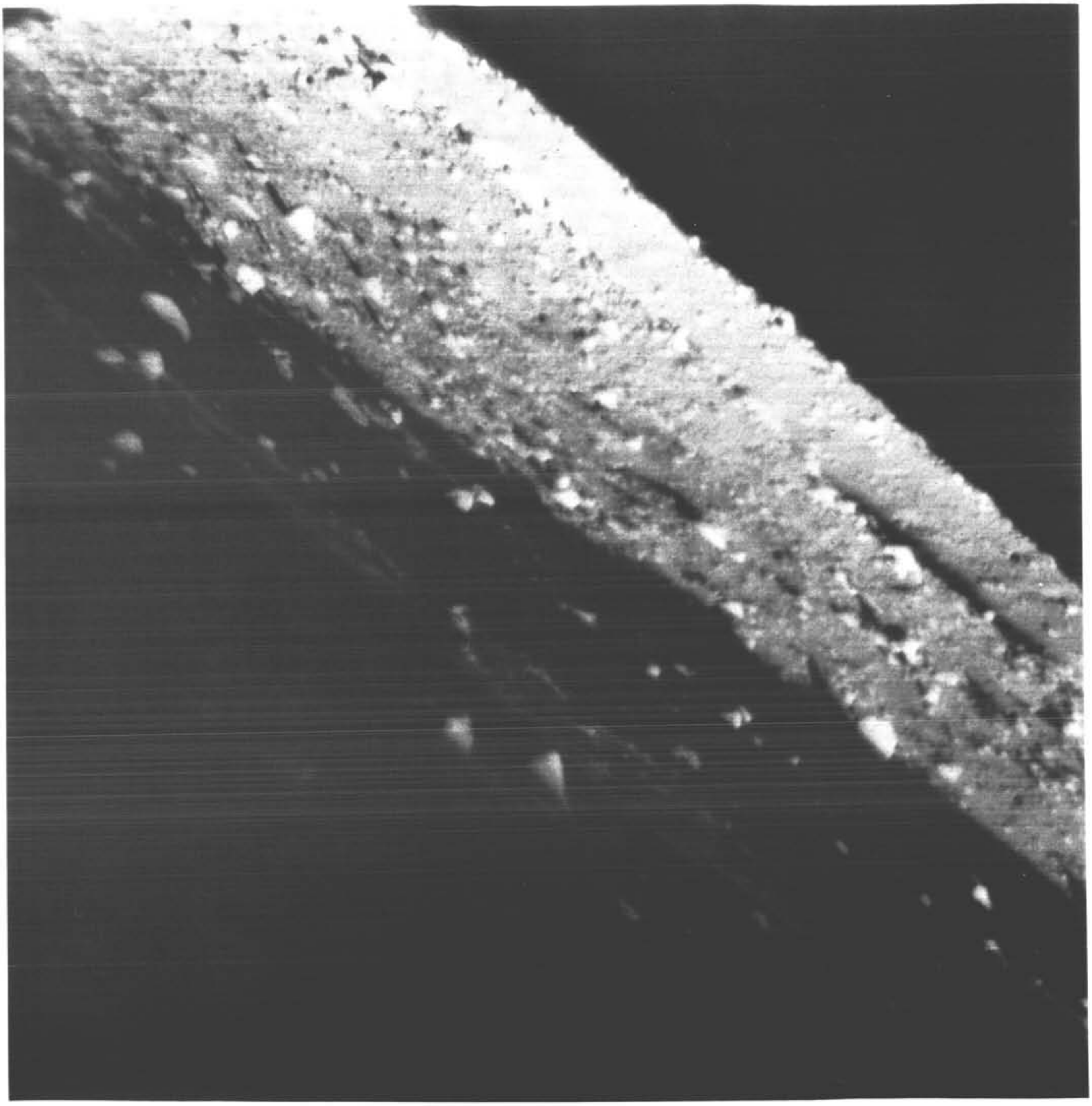
Surveyor I-254



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(254)	165	14 47 02	− 21	1.74	27.40	F 5.5	N	CLR	36155

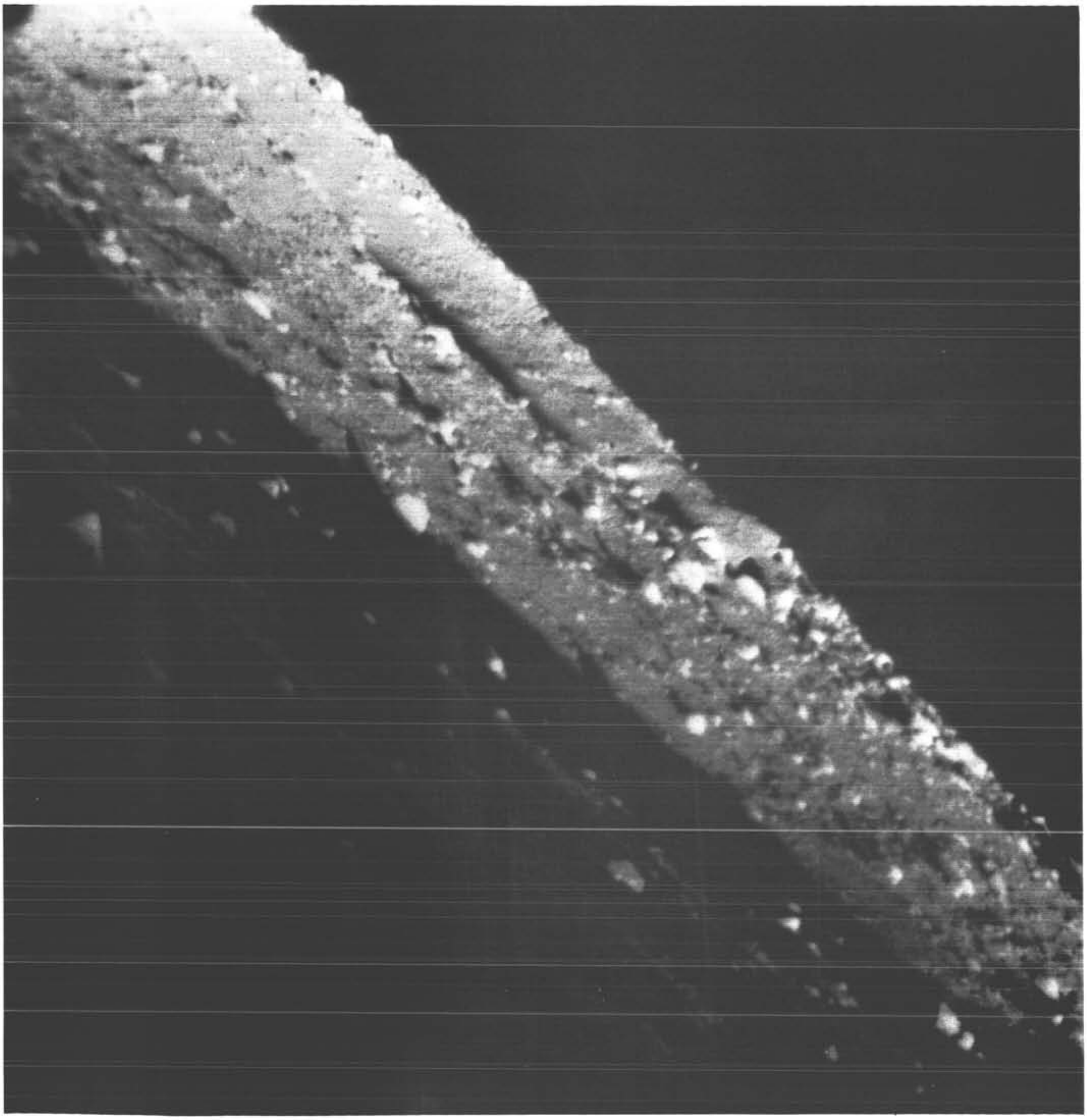


Surveyor I-255

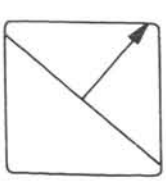


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(255)	165	14 47 25	− 24	1.74	27.40	F 5.5	N	CLR	36156

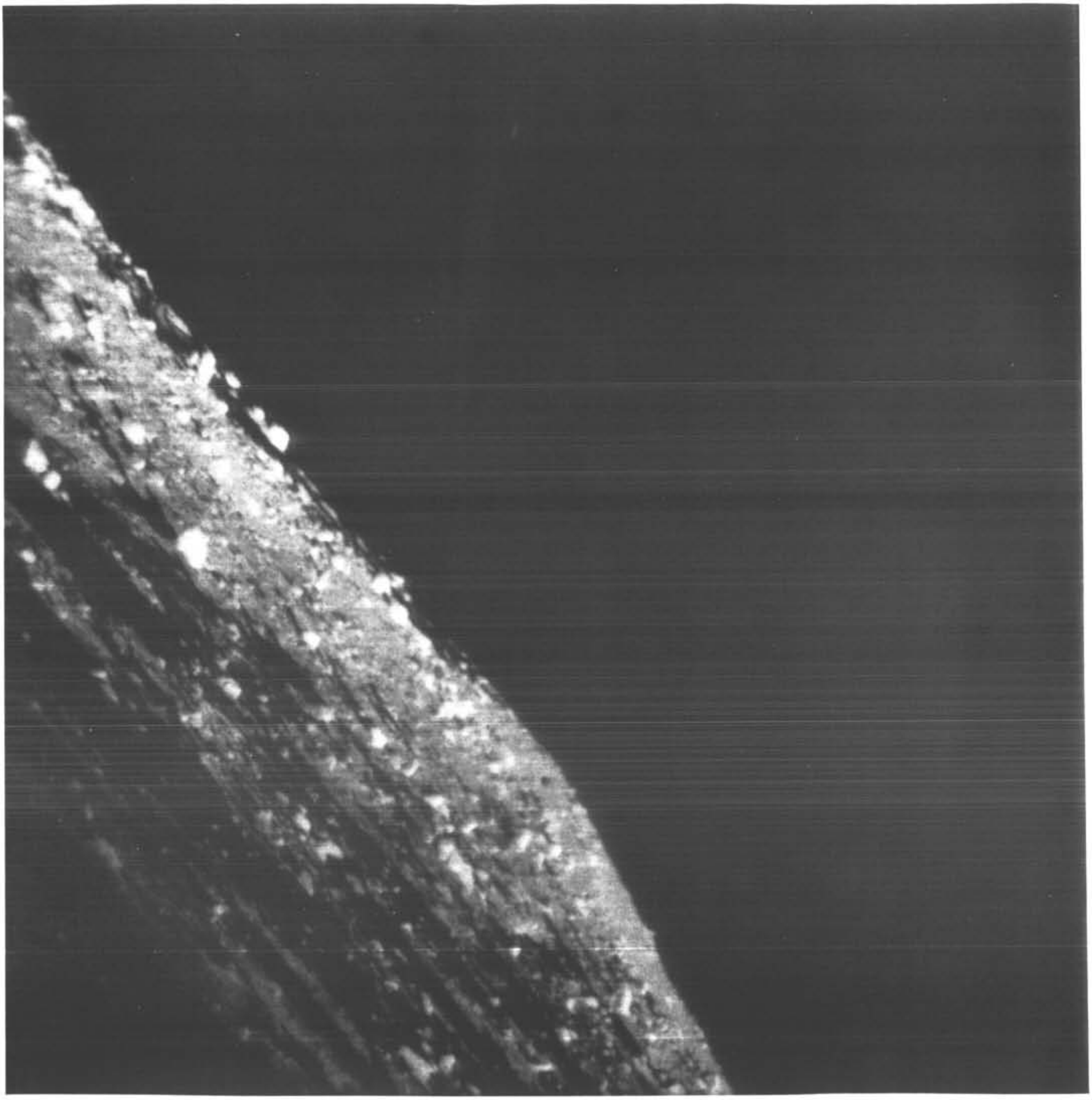
Surveyor I-256



	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(256)	165	14 47 40	− 27	1.74	27.40	F 5.5	N	CLR	36157

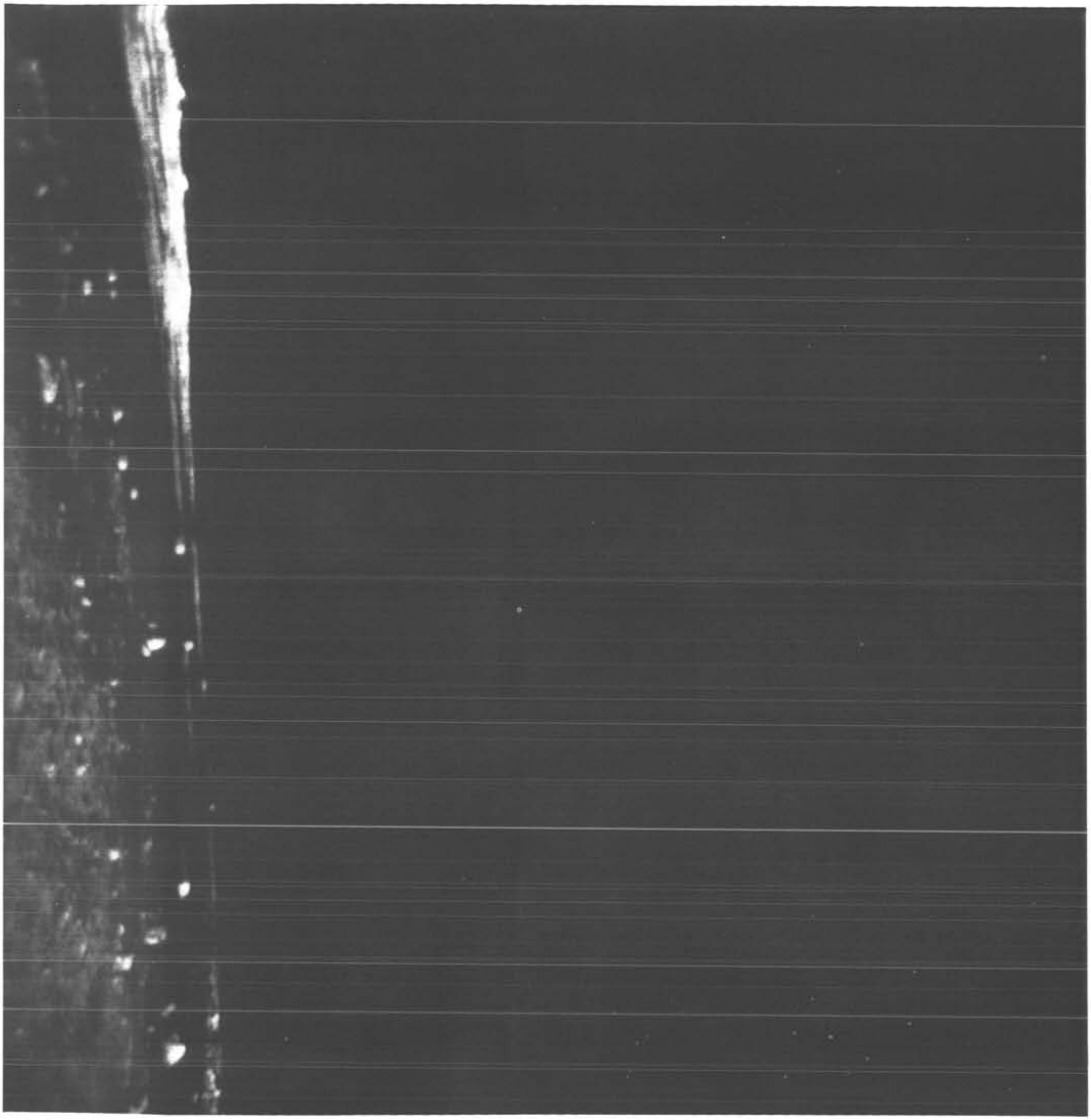


Surveyor I- 257

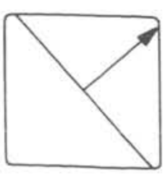


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(257)	165	14 47 54	— 30	1.74	27.40	F 5.5	N	CLR	36160

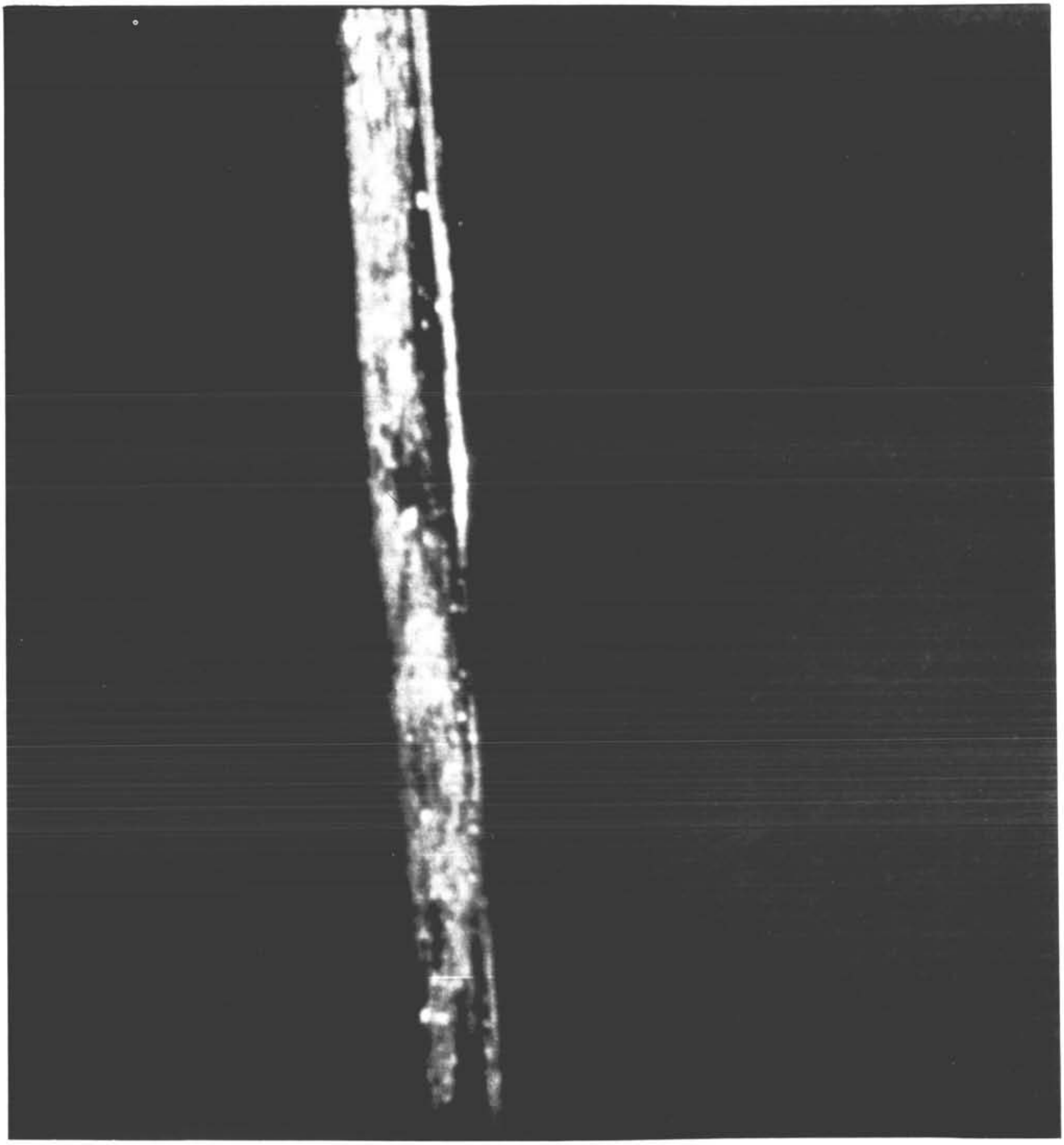
Surveyor I-258



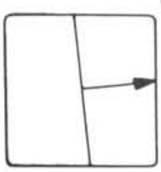
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(258)	165	14 48 12	− 33	− 1.74	27.40	F 5.5	N	CLR	36161



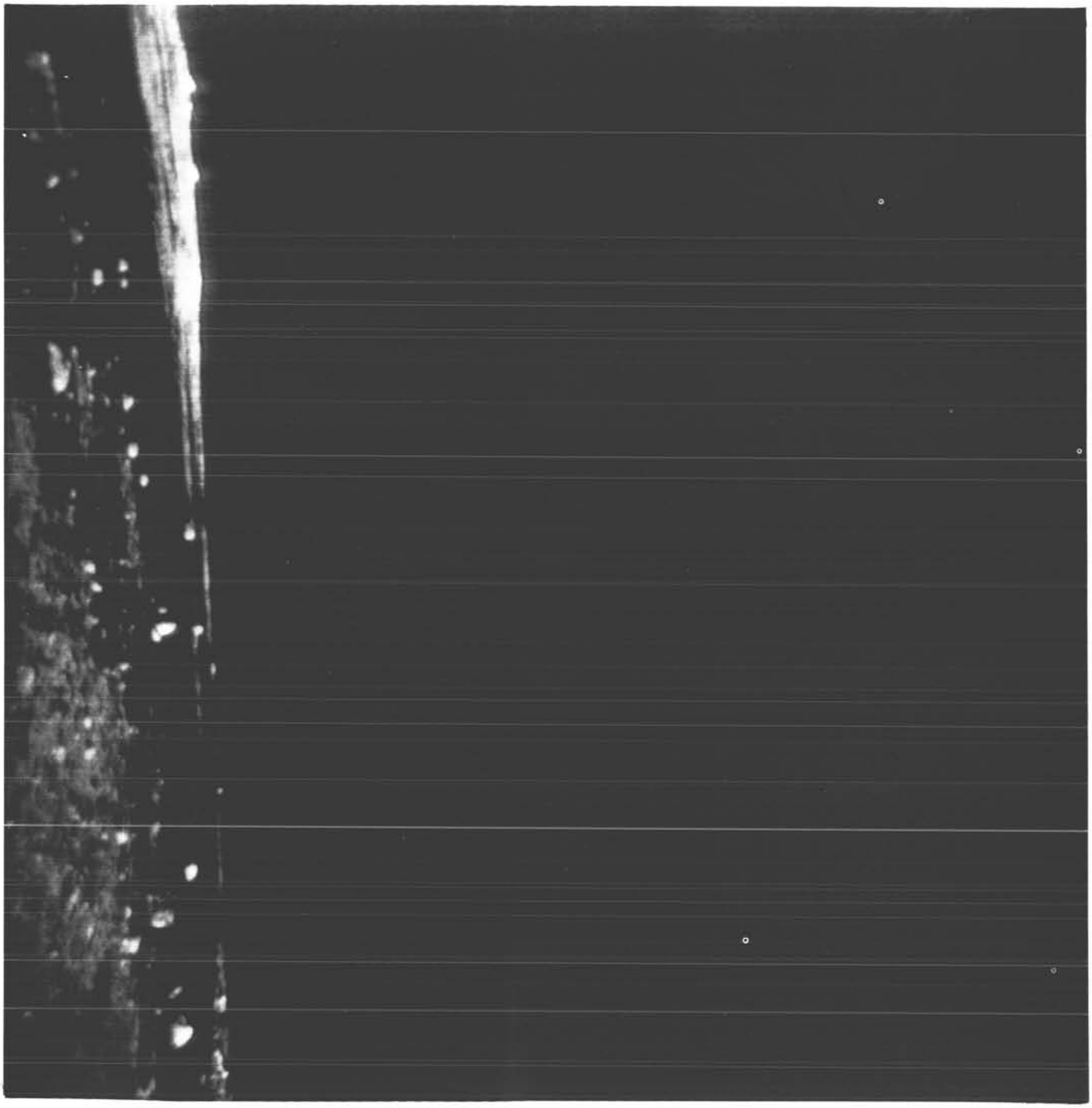
Surveyor I-259



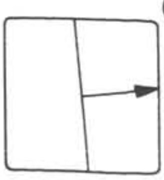
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(259)	165	15 11 11	− 72	− 8.18	2.18	F 4.0	W	CLR	36201



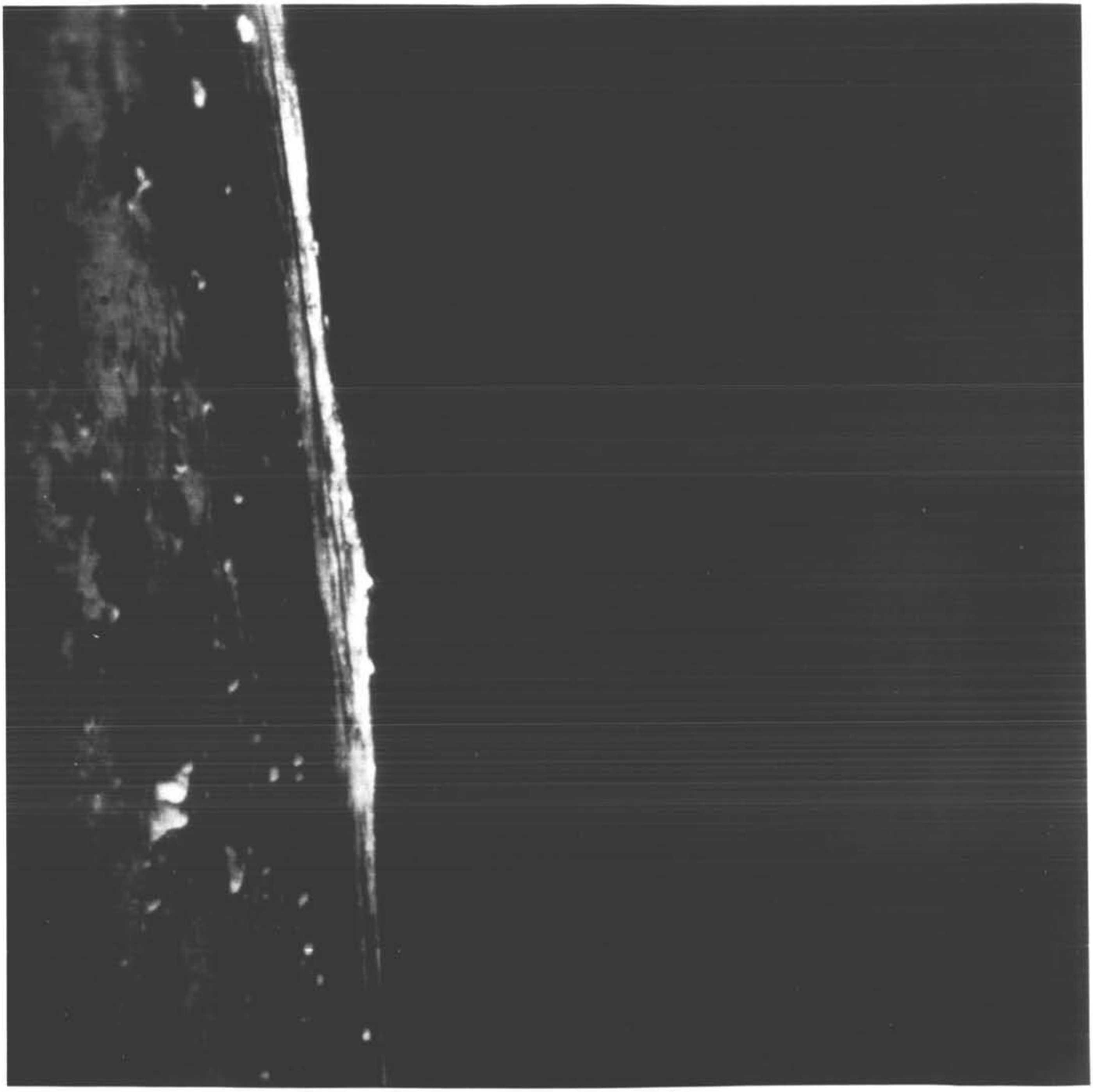
Surveyor I-260



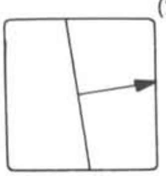
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(260)	165	15 12 50	− 72	− 8.18	27.40	F 4.0	N	CLR	36203



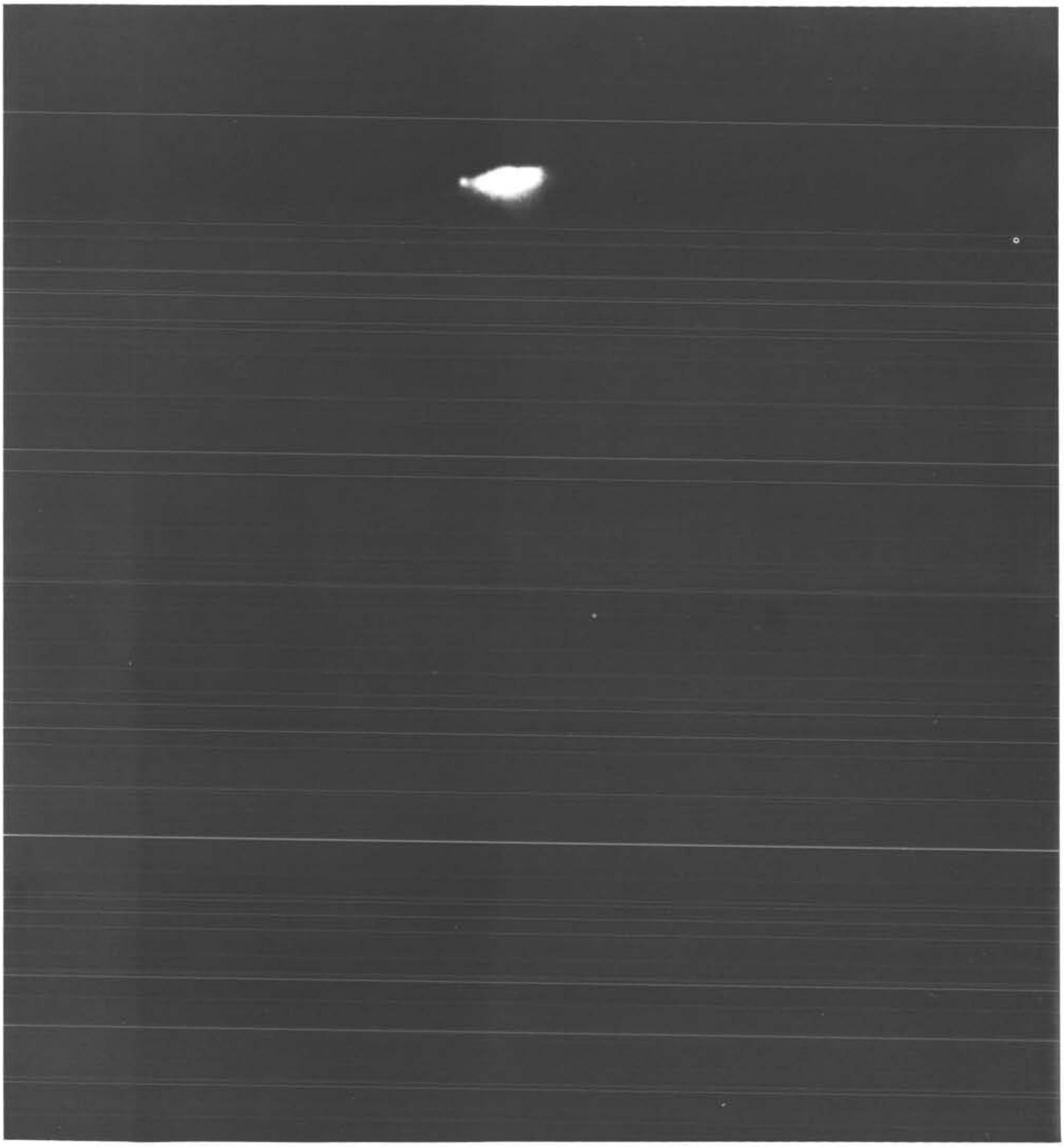
Surveyor I- 261



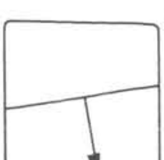
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(261)	165	15 13 46	− 69	− 8.18	27.40	F 4.0	N	CLR	36204



Surveyor I-262

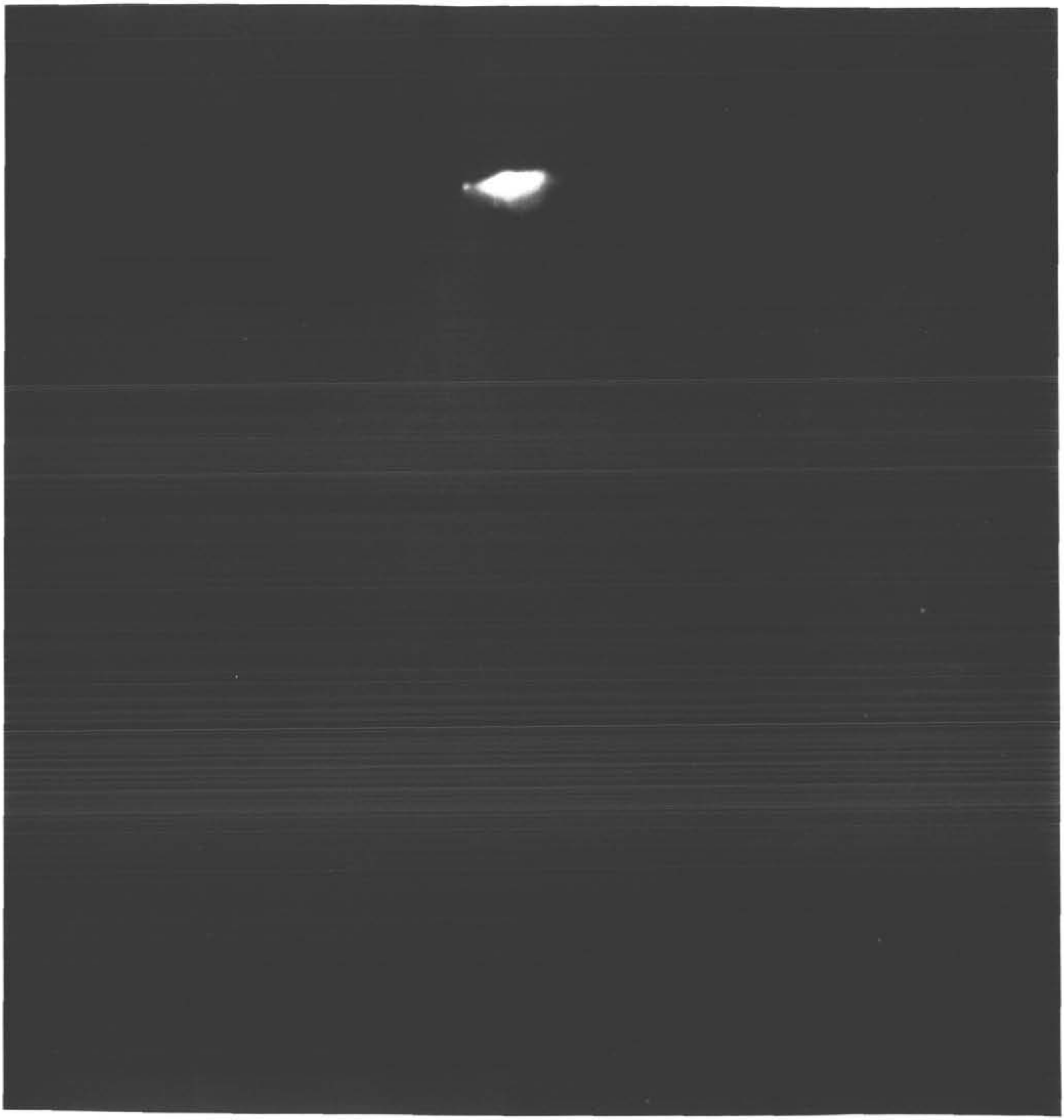


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(262)	165	15 46 11	−183	− 8.18	27.40	F 4.0	N	CLR	36240

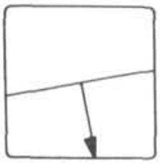


Solar corona

Surveyor I-263

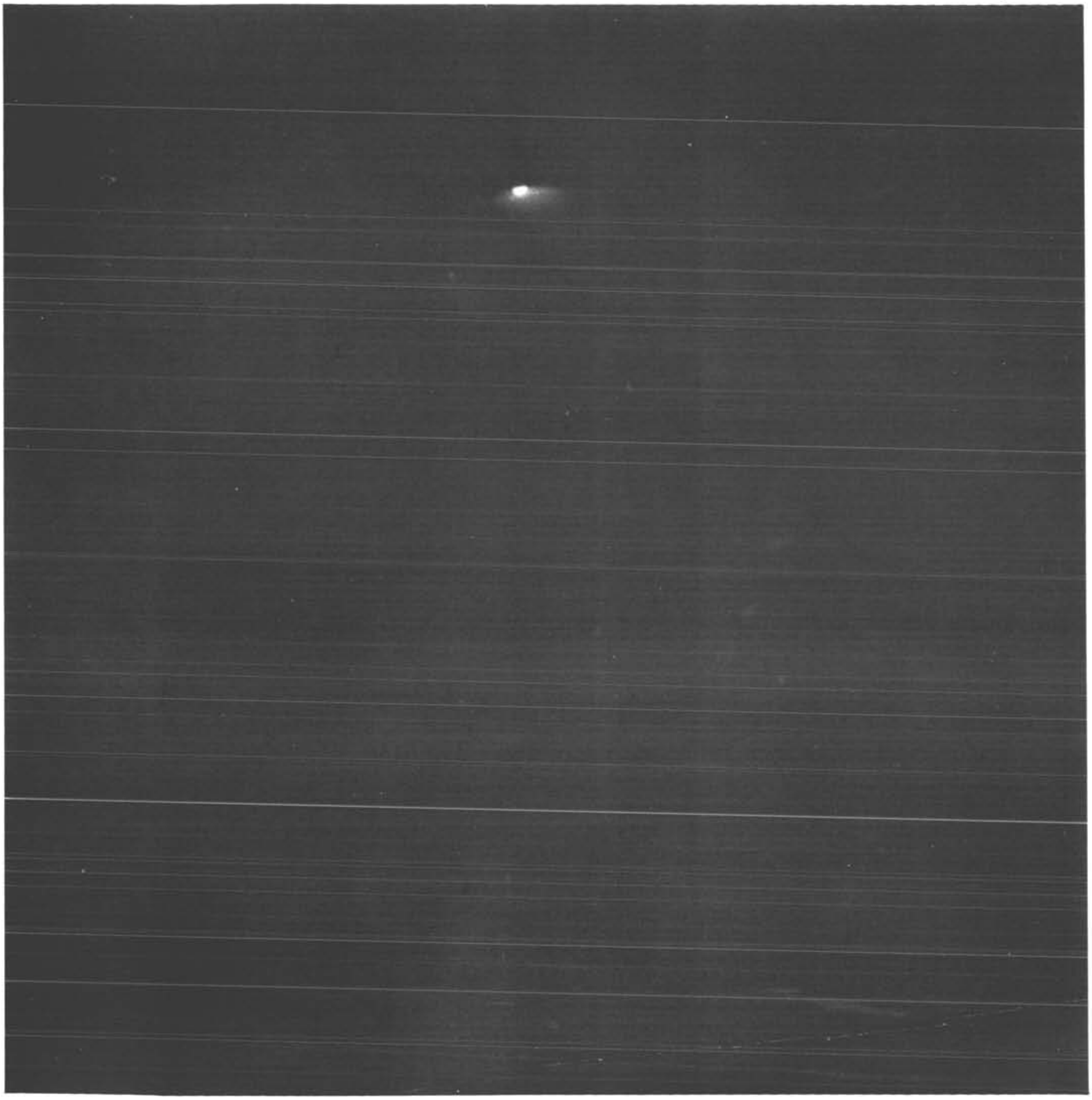


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(263)	165	15 47 53	−183	− 8.18	27.40	F 4.0	N	CLR	36241

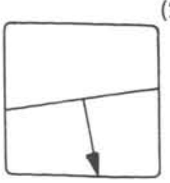


Solar corona

Surveyor I-264

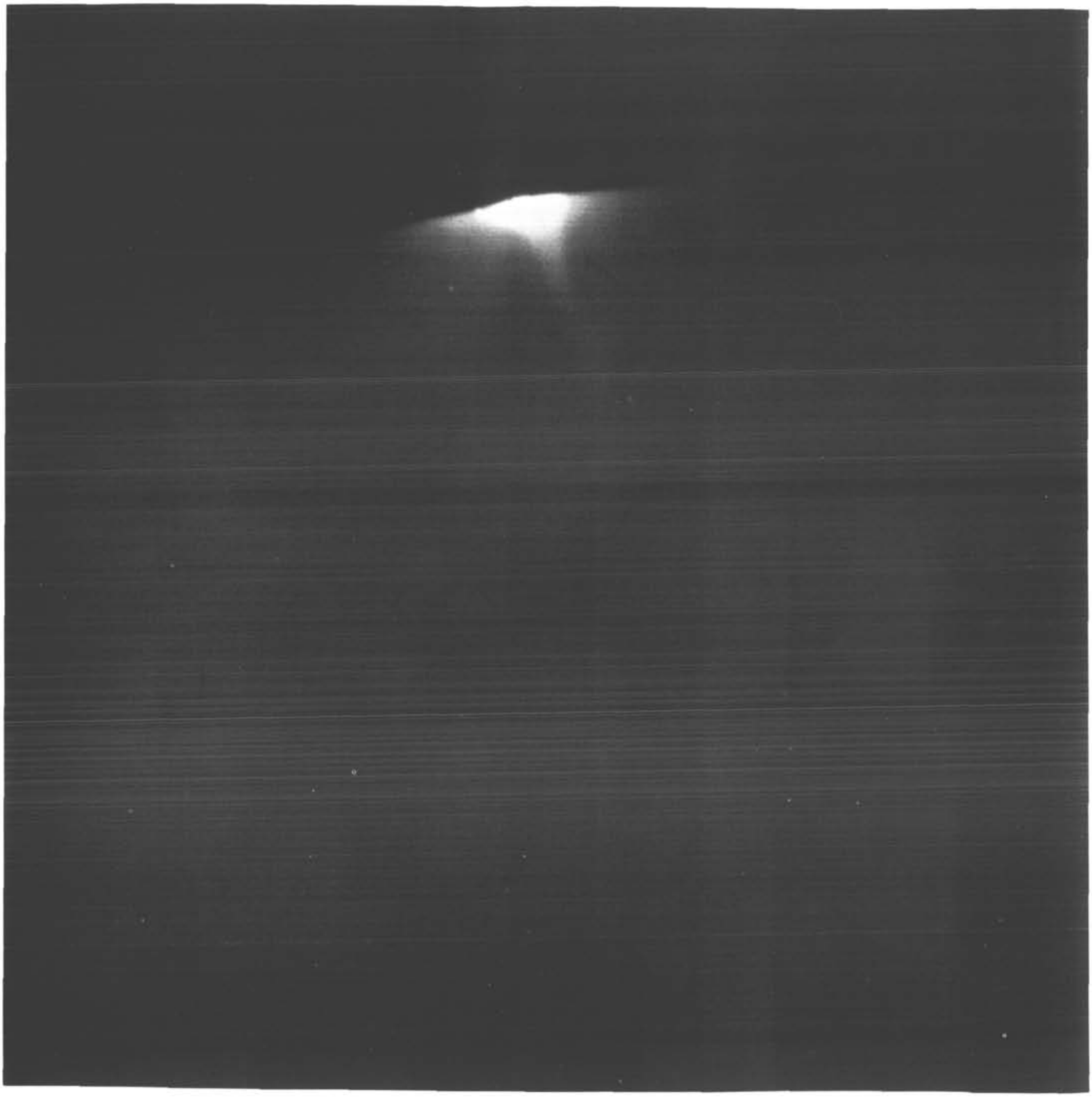


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(264)	165	15 49 08	−183	− 8.18	27.40	F 7.9	N	CLR	36243

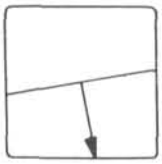


Solar corona

Surveyor I-265

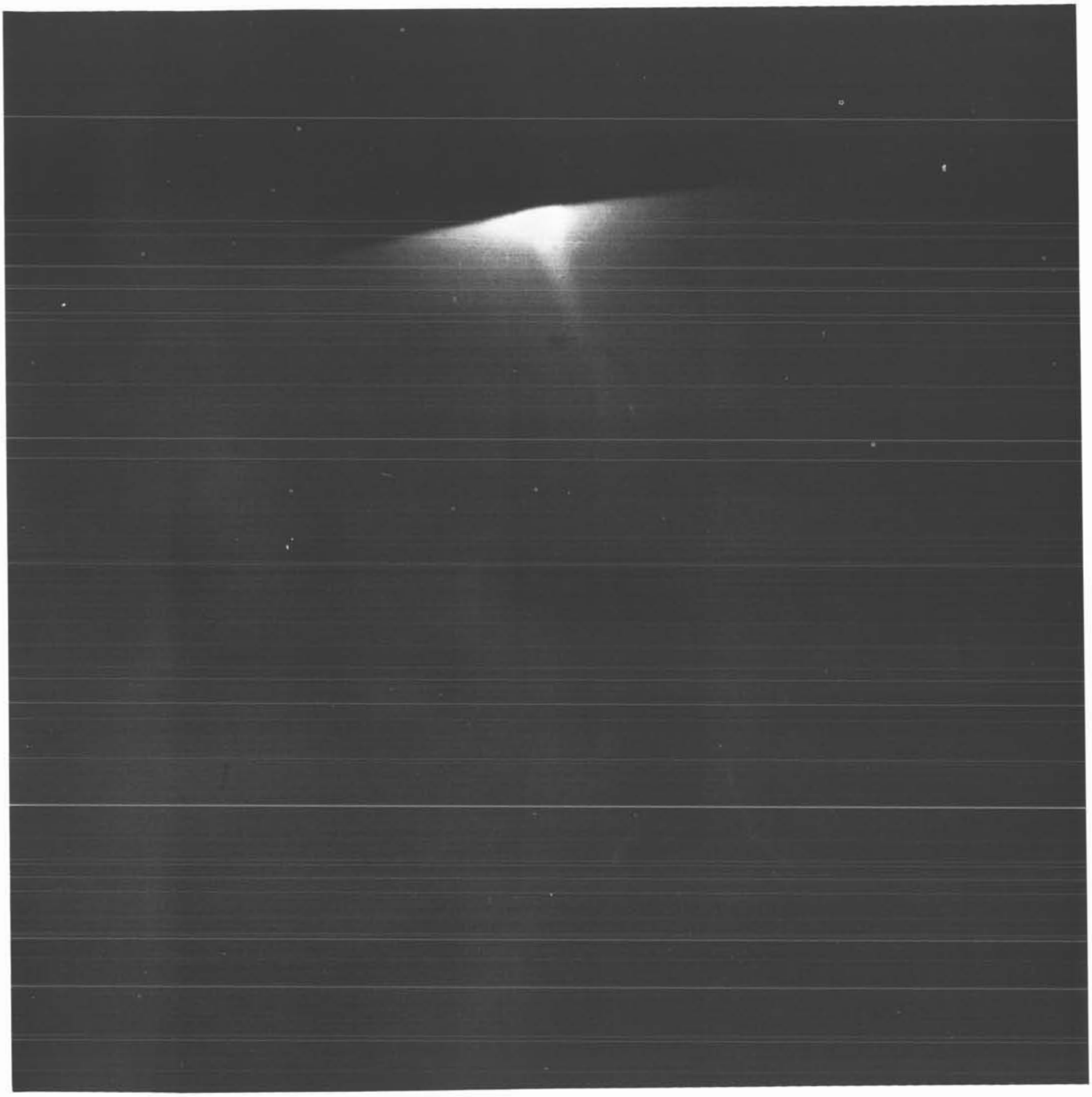


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(265)	165	15 51 33	−183	− 8.18	27.40	F 5.5	N	CLR	36246

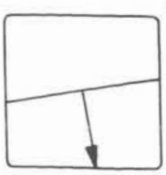


Solar corona, 1-sec exposure

Surveyor I-266

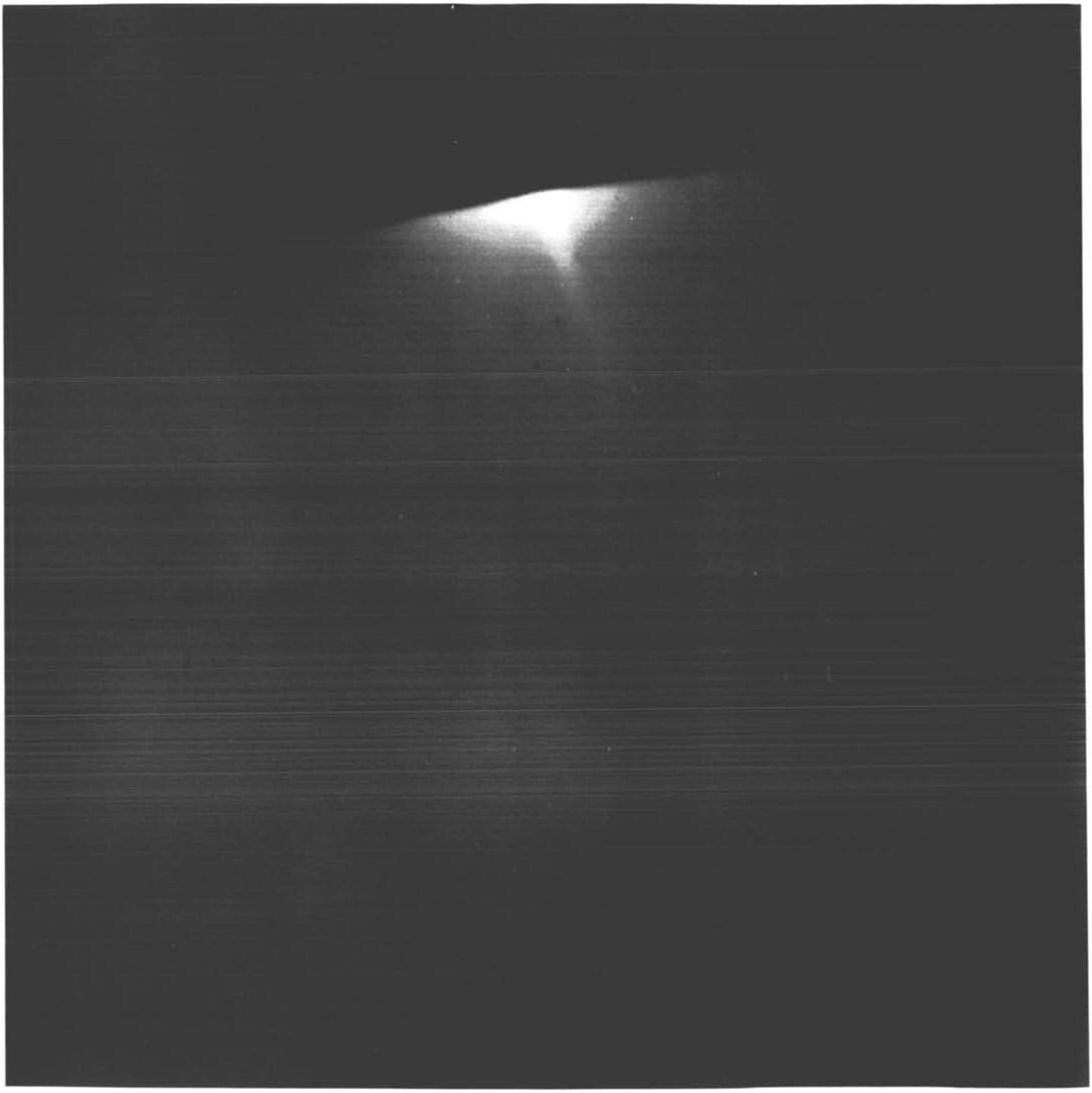


	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(266)	165	16 02 40	−183	− 8.18	27.40	F 4.0	N	CLR	36273

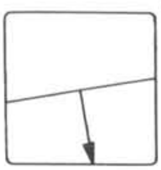


Solar corona, 1-sec exposure

Surveyor i-267

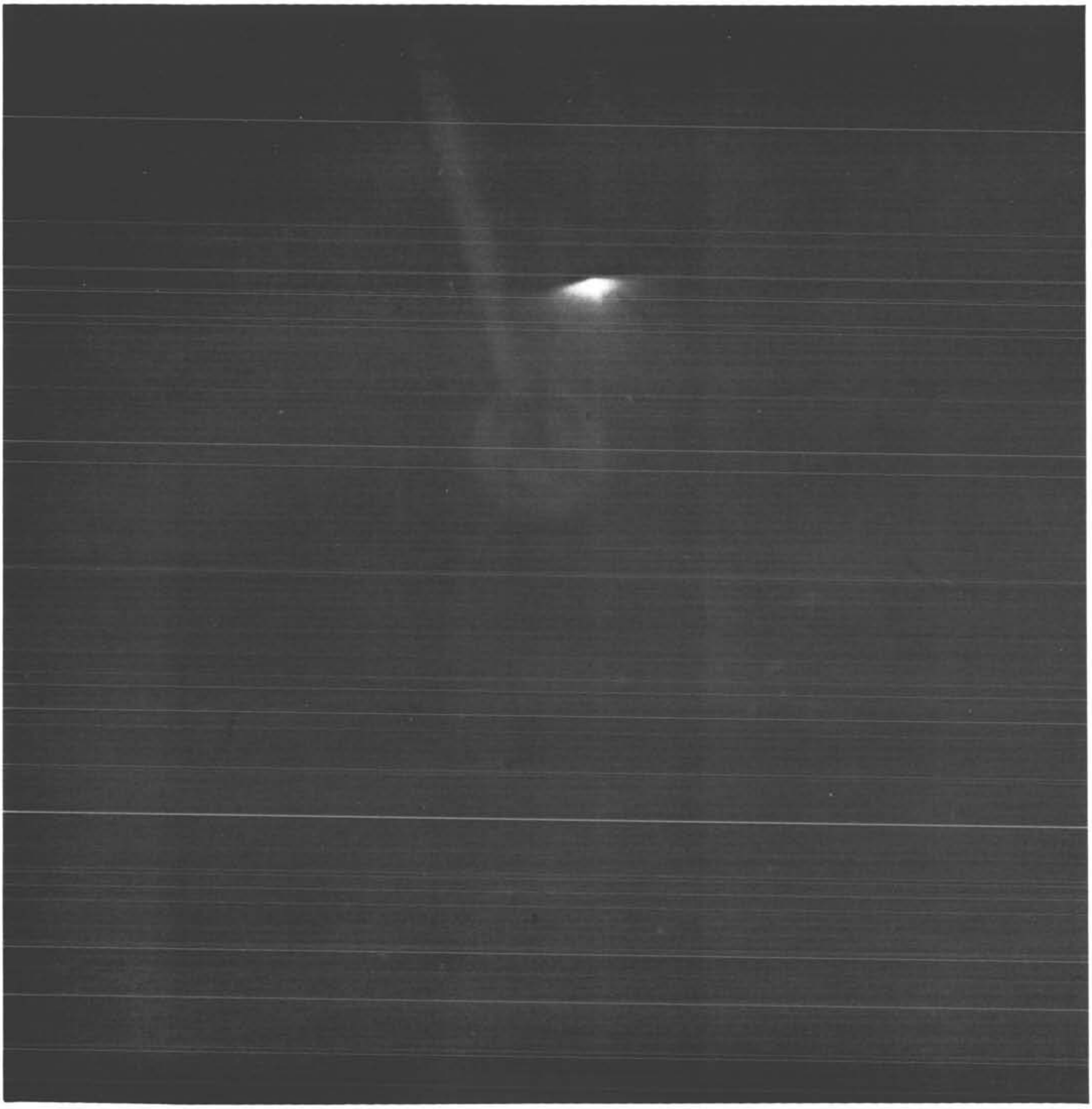


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(267)	165	16 03 22	−183	− 8.18	27.40	F 4.0	N	CLR	36301

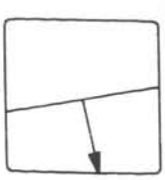


Solar corona, 1-sec exposure

Surveyor I-268

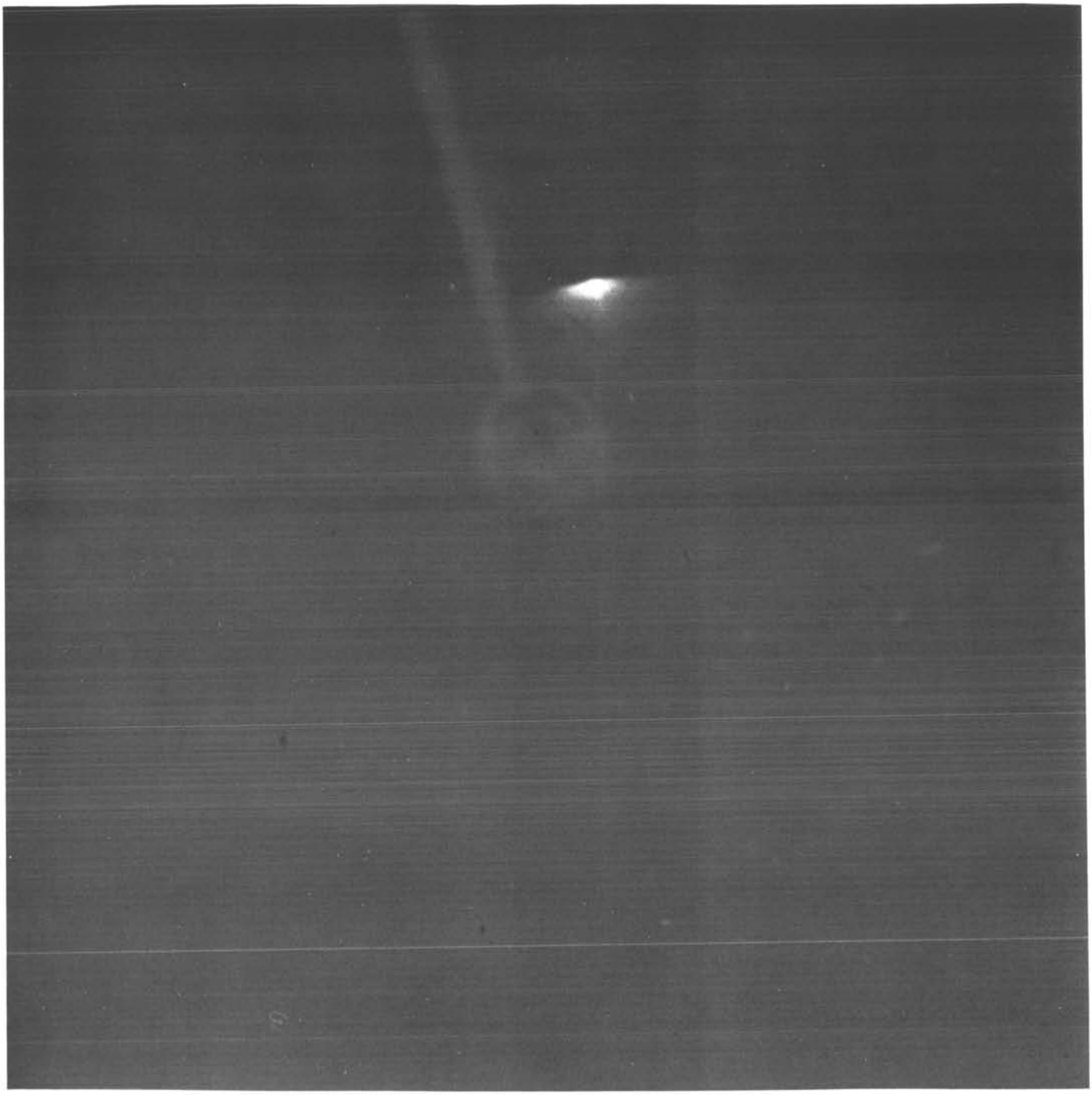


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(268)	165	16 04 28	−183	− 3.22	27.40	F 4.0	W	CLR	36302

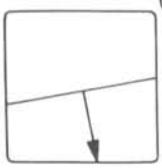


Solar corona, 1-sec exposure

Surveyor I-269

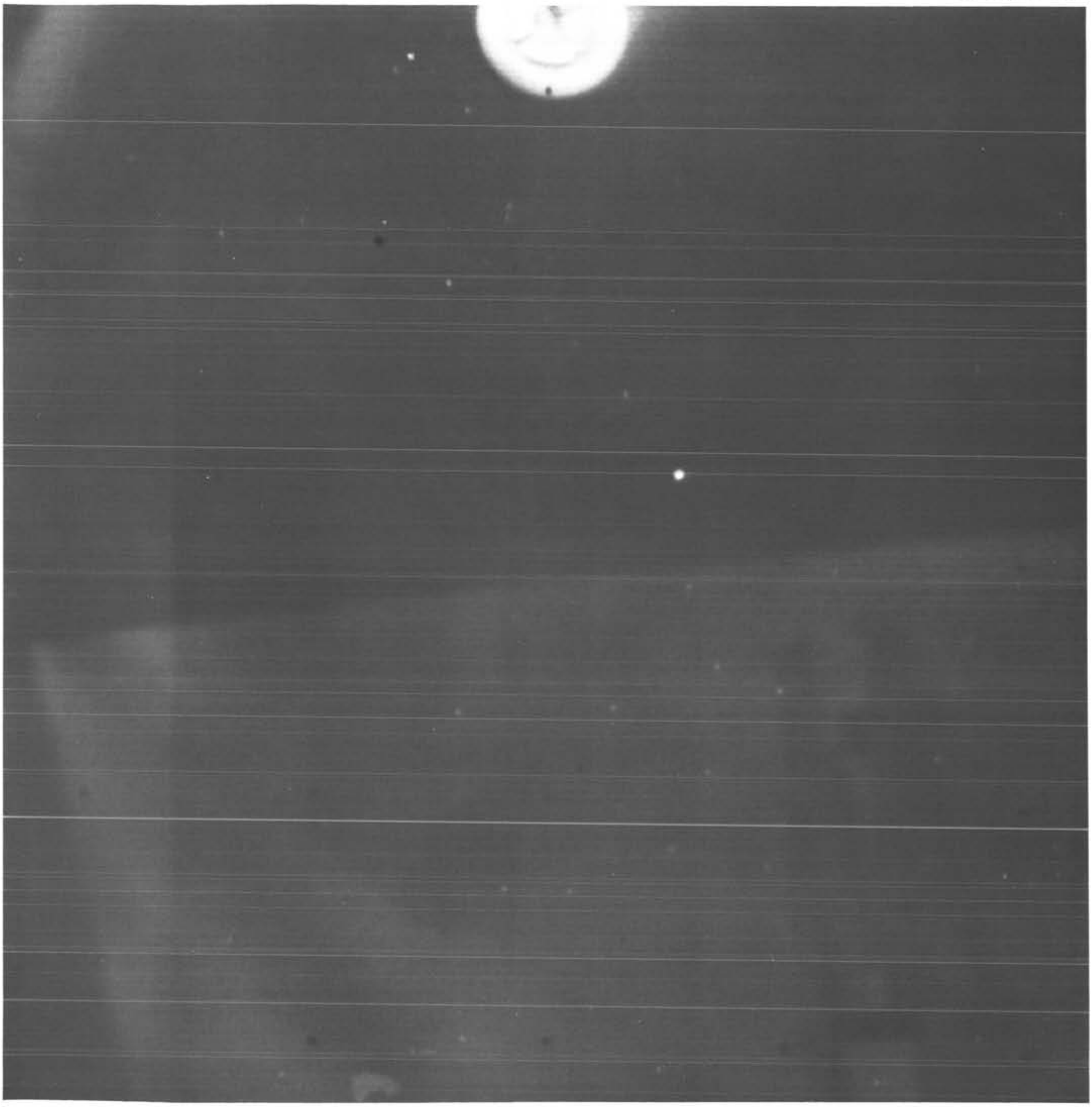


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(269)	165	16 04 53	−183	− 3.22	27.40	F 4.0	W	CLR	36307

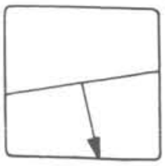


Solar corona, 1-sec exposure

Surveyor I-270

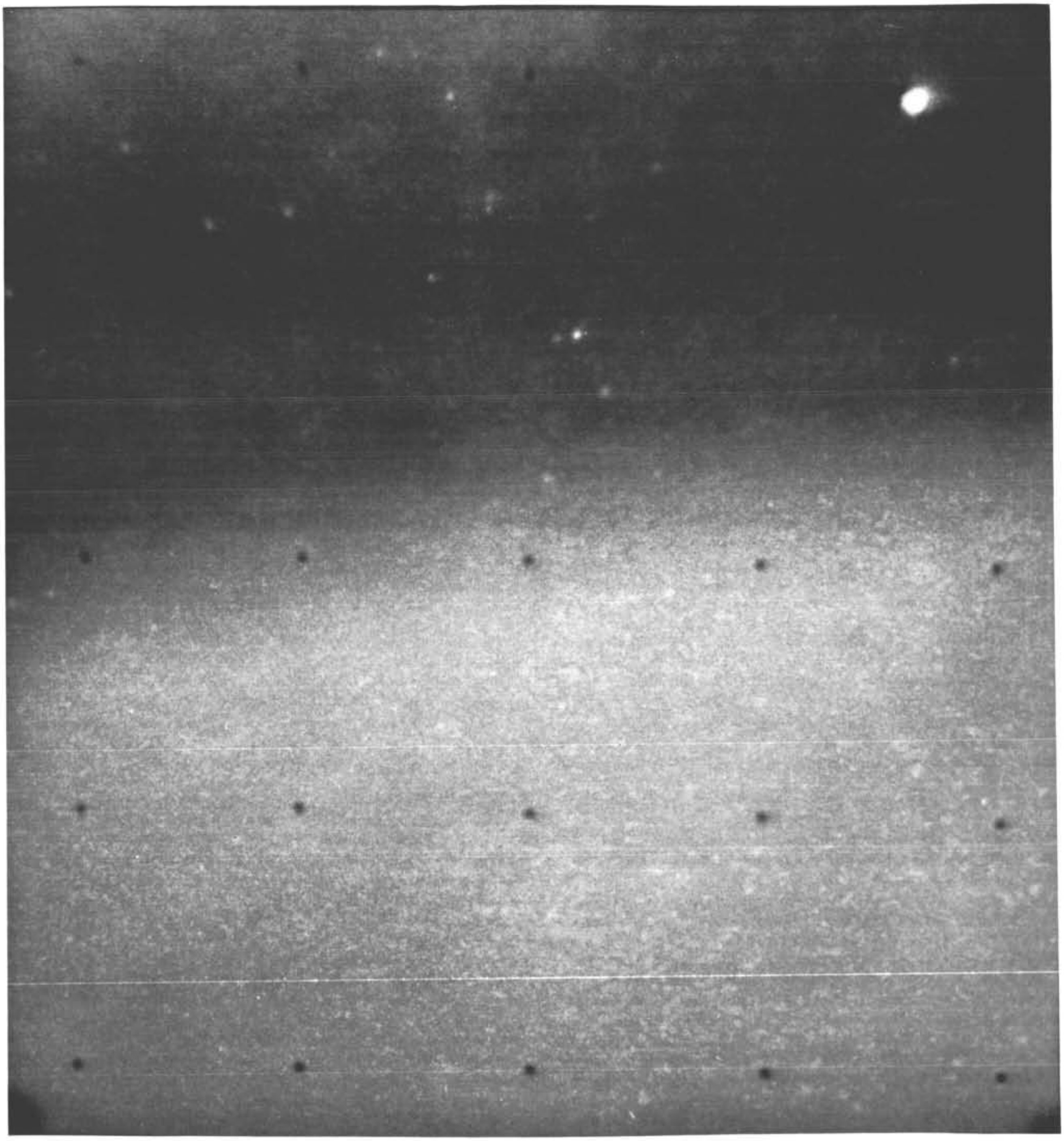


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(270)	165	16 14 22	−183	6.70	27.40	F 4.0	W	CLR	36320

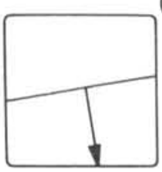


Omni antenna by earthshine,
17 deg above horizon, 30-sec exposure

Surveyor I- 271

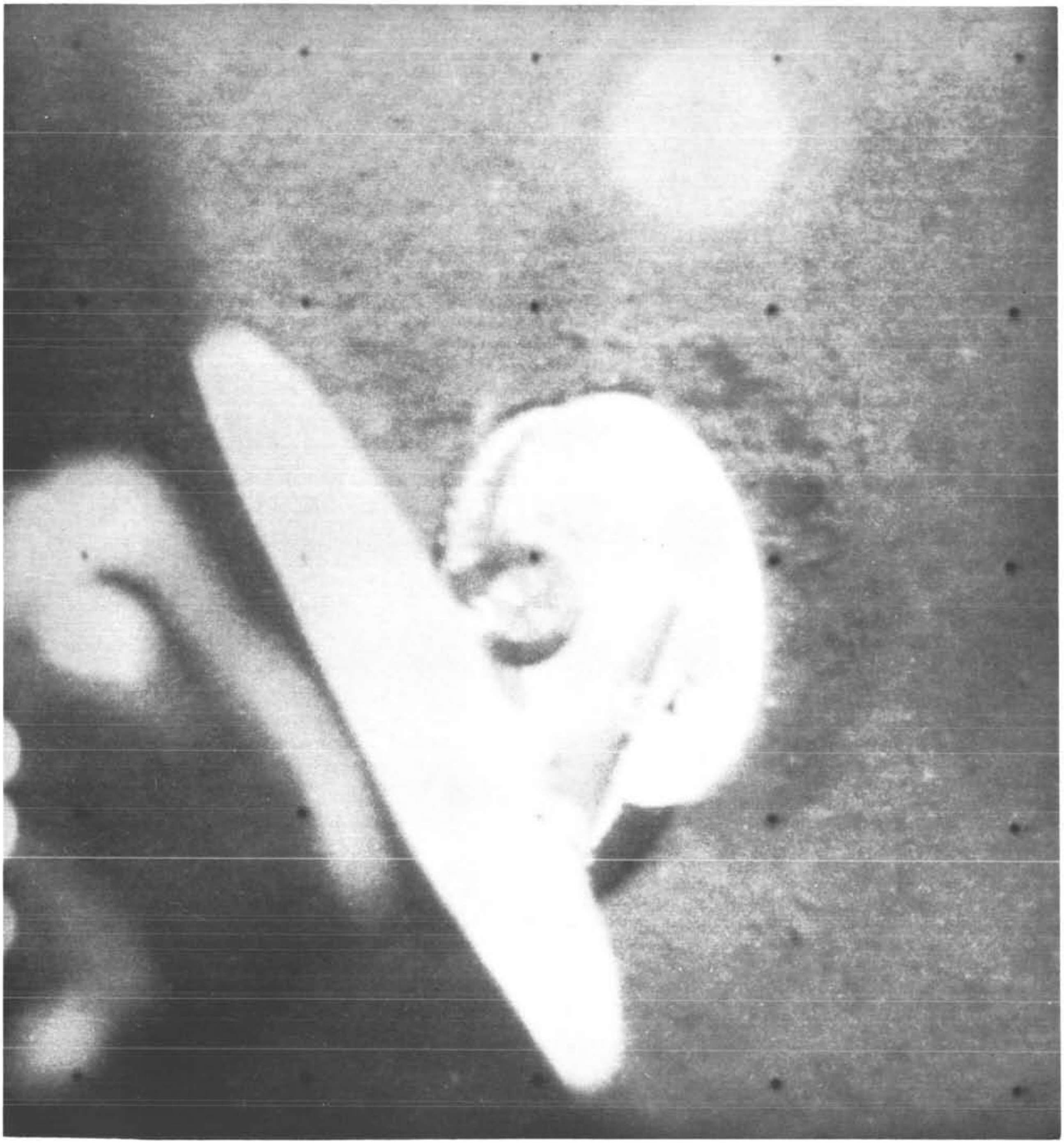


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(271)	165	16 17 22	−183	6.70	27.40	F 4.0	N	CLR	36321

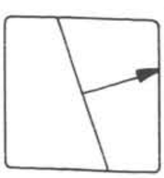


17 deg above horizon, 2-min exposure

Surveyor I-272

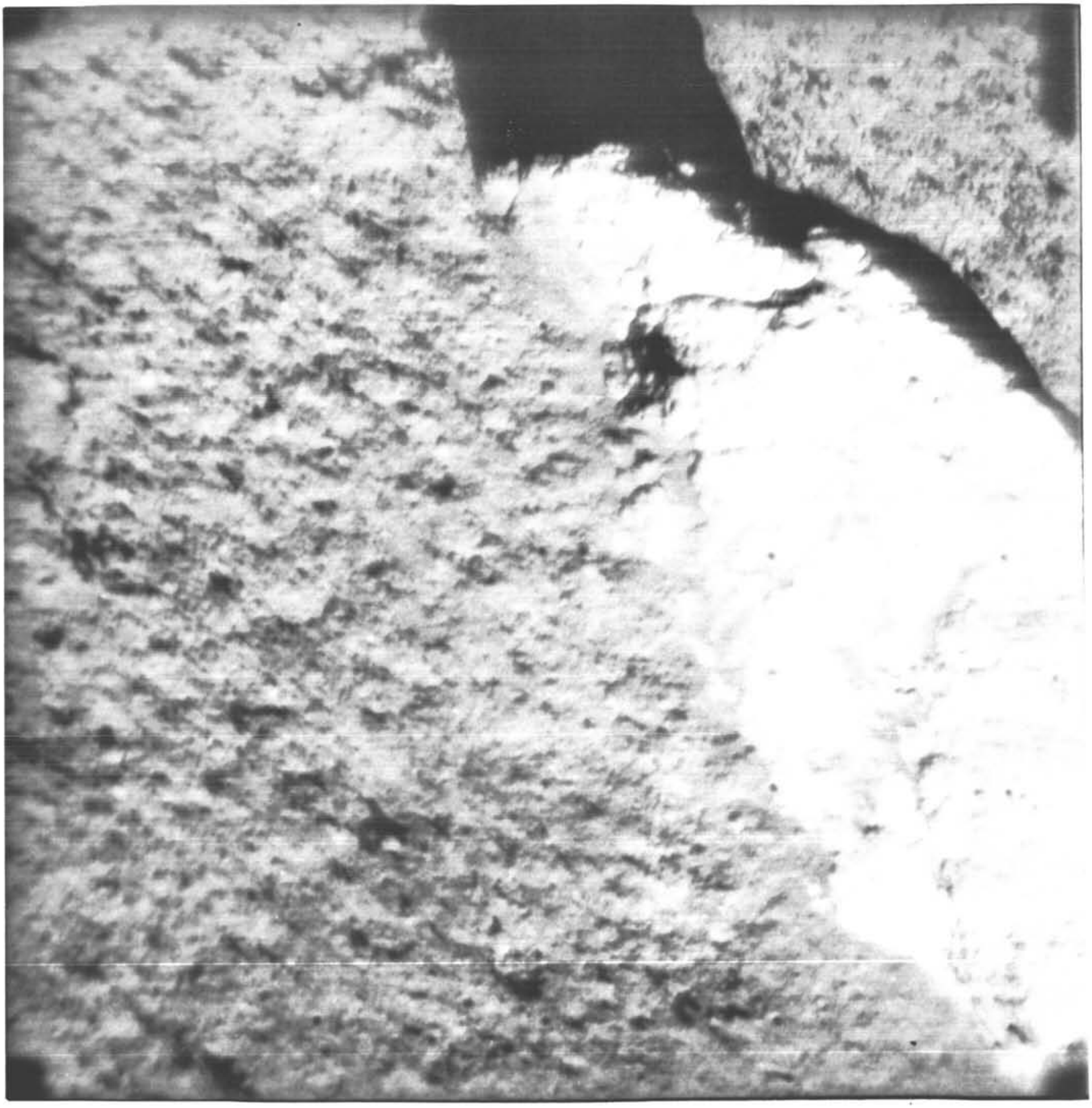


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(272)	165	16 35 54	− 60	−57.78	2.18	F 4.0	W	CLR	36324

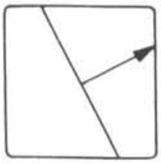


Earthshine, 4 min exposure

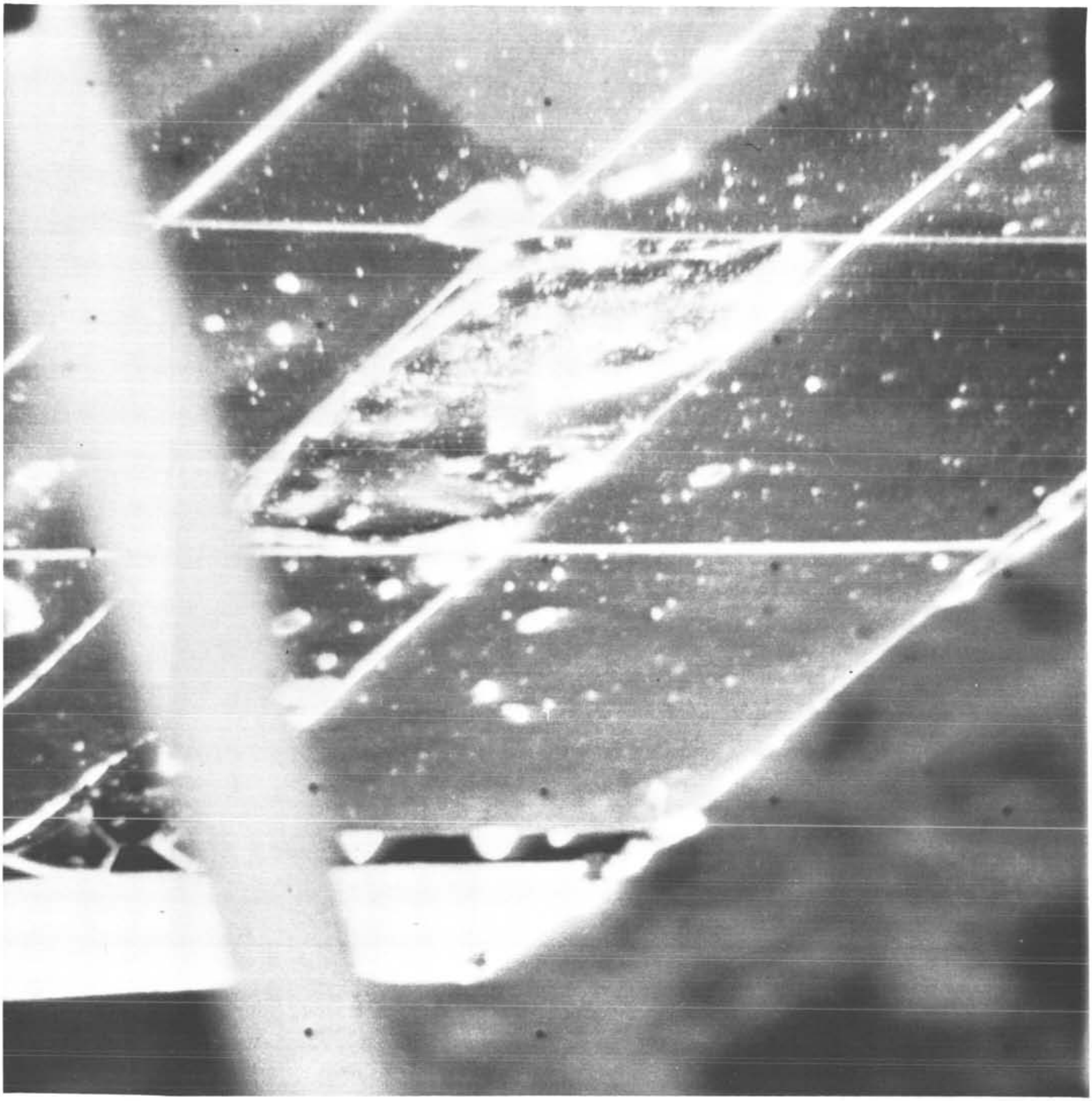
Surveyor I-273



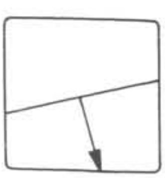
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(273)	193	10 48 11	− 48	−28.02	2.26	F 4.4	N	CLR	37624



Surveyor I-274

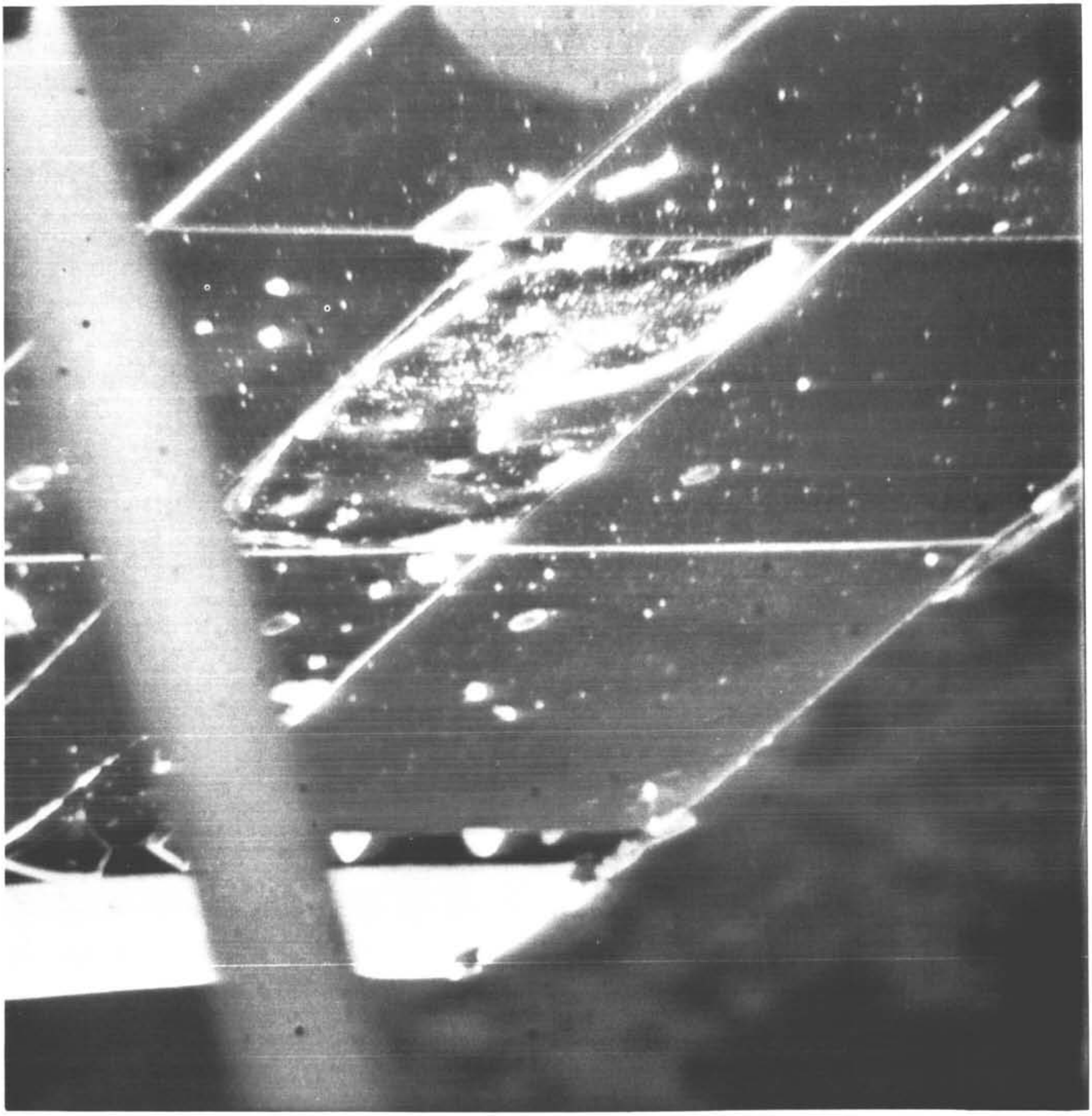


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(274)	193	13 50 49	−177	−32.98	1.23	F	N	CLR	40047

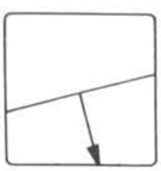


Fractured radiator elements

Surveyor I-275

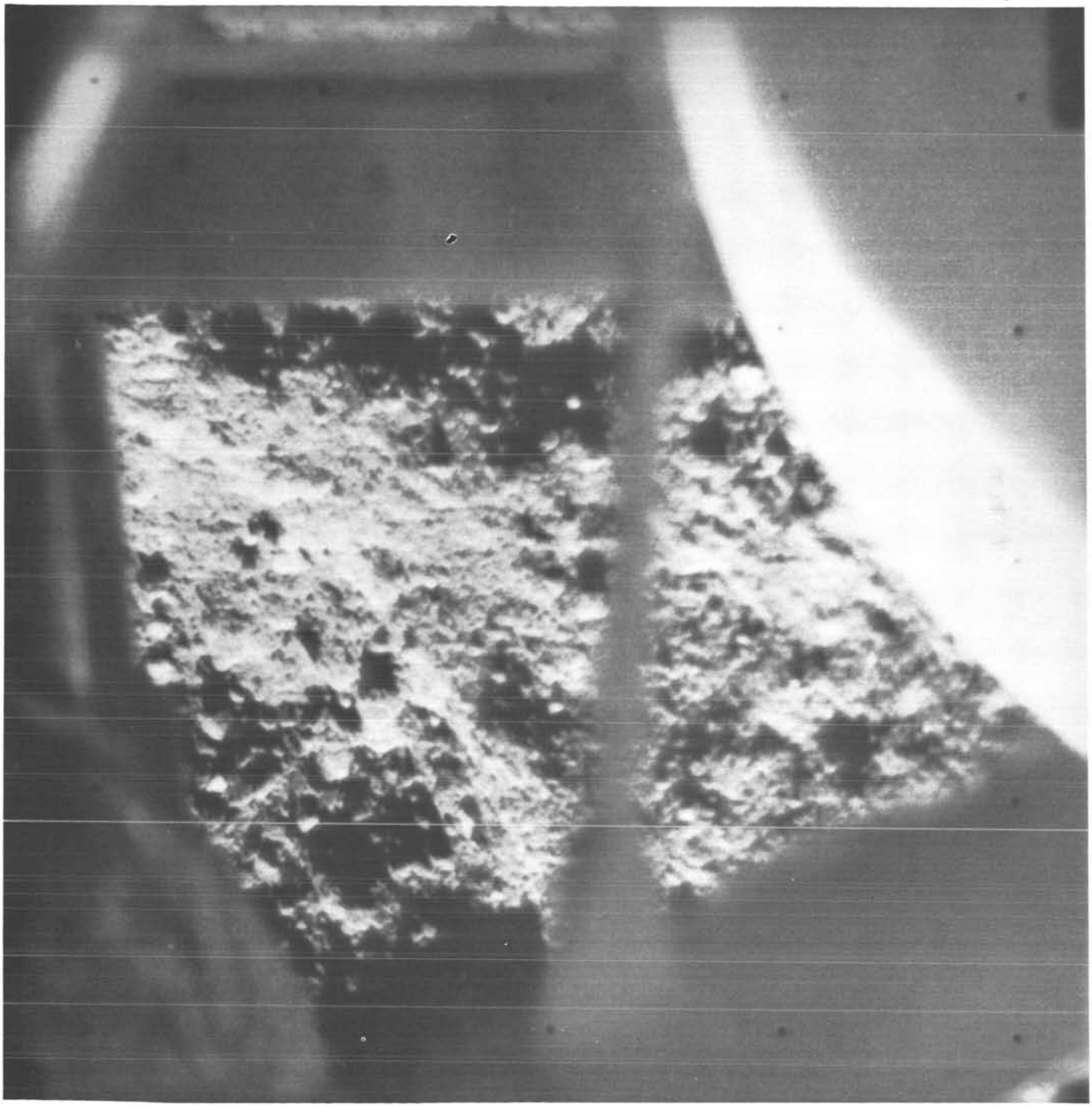


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(275)	193	13 51 31	−177	−32.98	1.23	F .	N	CLR	40051

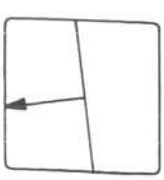


Fractured radiator elements

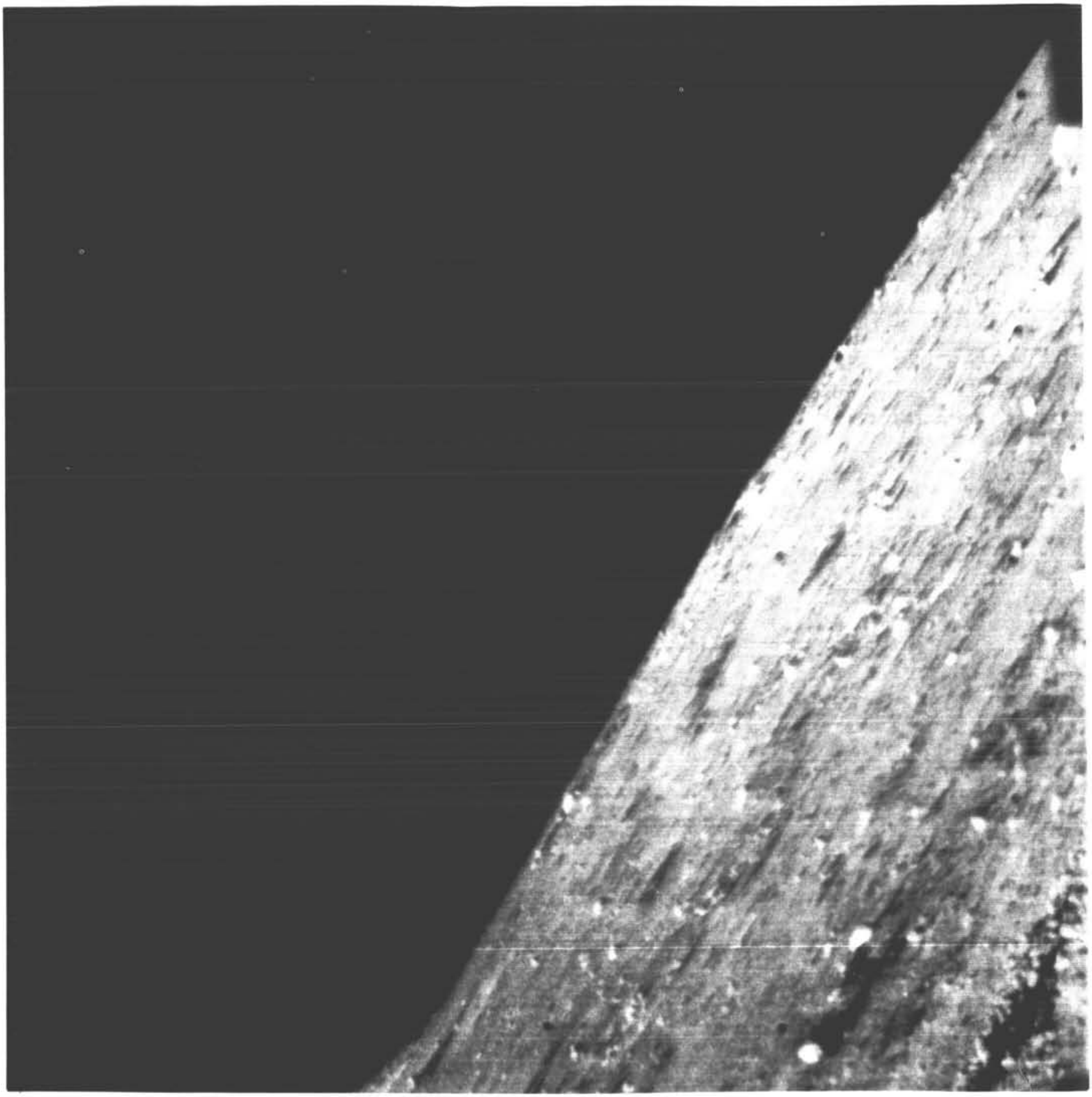
Surveyor I-276



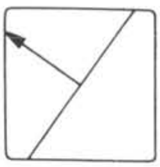
	Day	GMT	Az	El	Focus, m	Iris	Lens	Filter	File No.
(276)	193	20 12 18	90	−47.86	2.18	F 7.5	N	CLR	37641



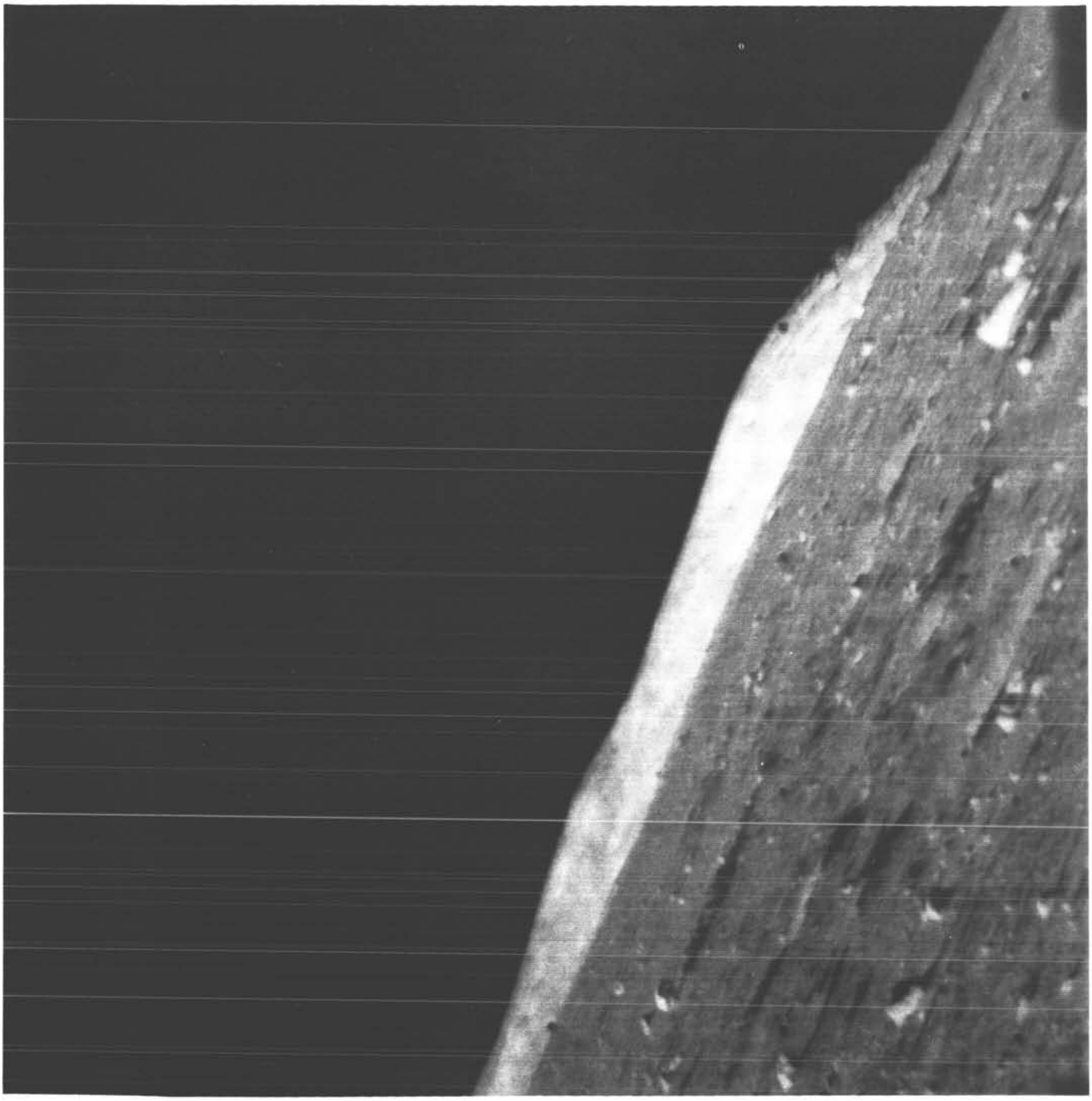
Surveyor I- 277



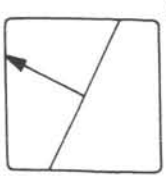
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(277)	194	11 30 23	57	16.62	27.40	F 7.9	N	CLR	40022



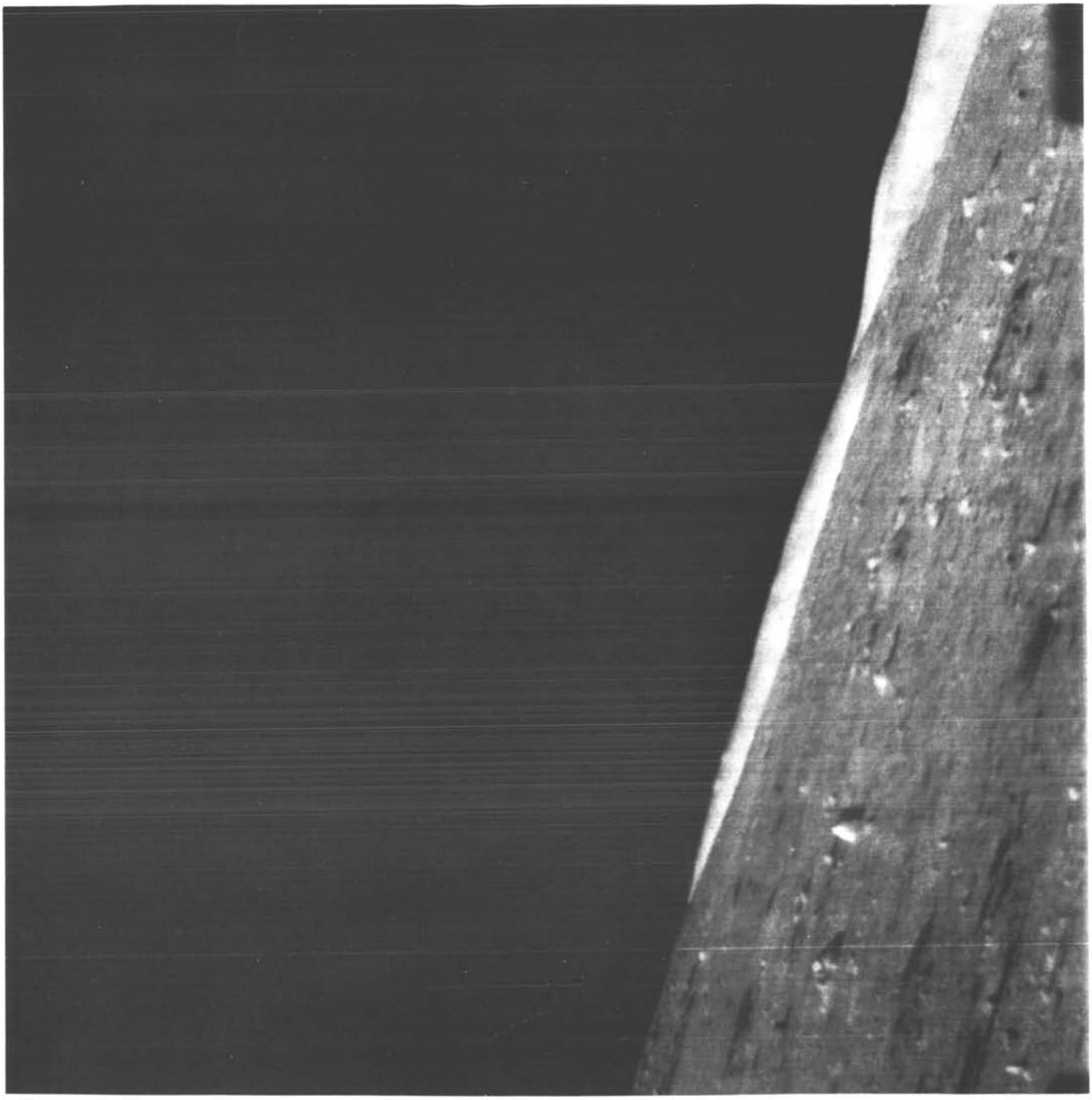
Surveyor I-278



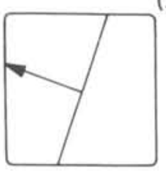
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(278)	194	11 30 42	63	16.62	27.40	F 7.9	N	CLR	40023



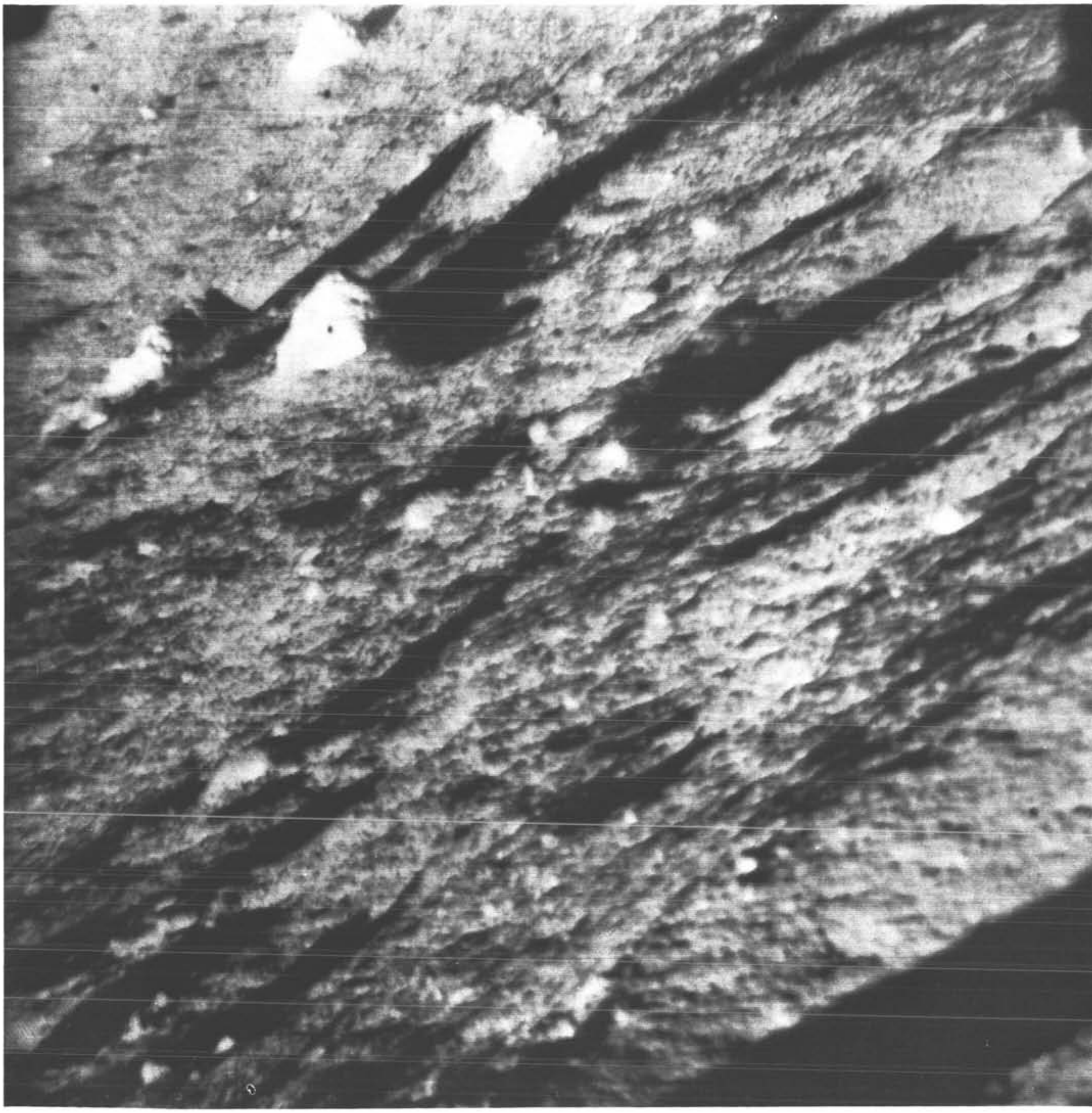
Surveyor I-279



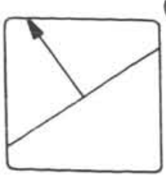
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(279)	194	11 31 03	69	16.62	27.40	F 7.9	N	CLR	40024



Surveyor I-280

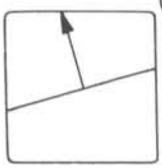


	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(280)	194	11 37 17	39	6.70	15.20	F 7.9	N	CLR	40047

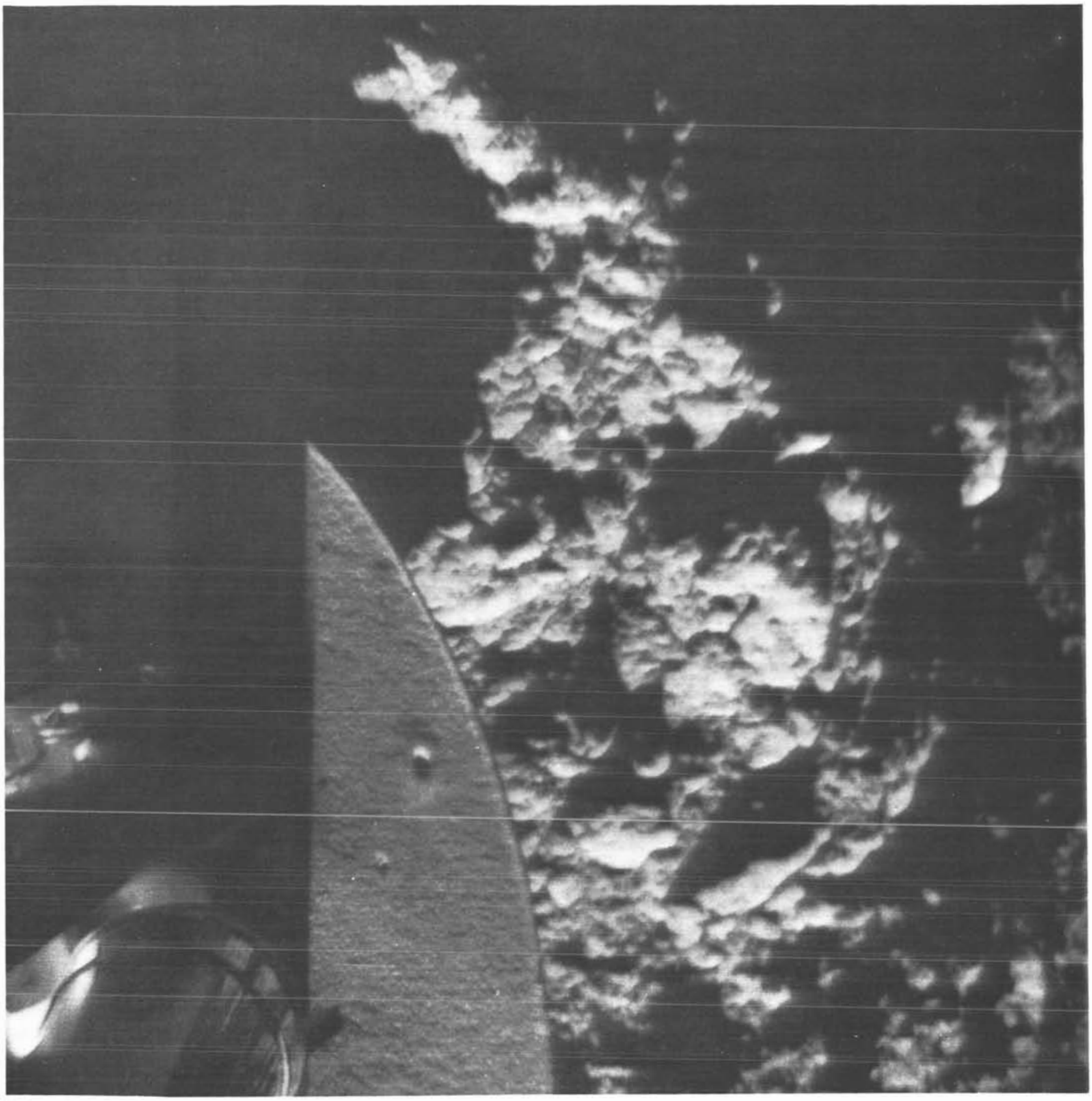


Surveyor I-281

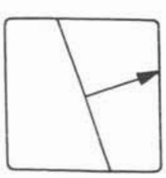
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(281)	194	12 56 03	24	− 8.18	2.18	F 7.9	W	CLR	40271



Surveyor I-282

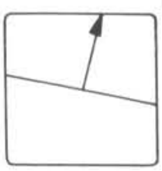


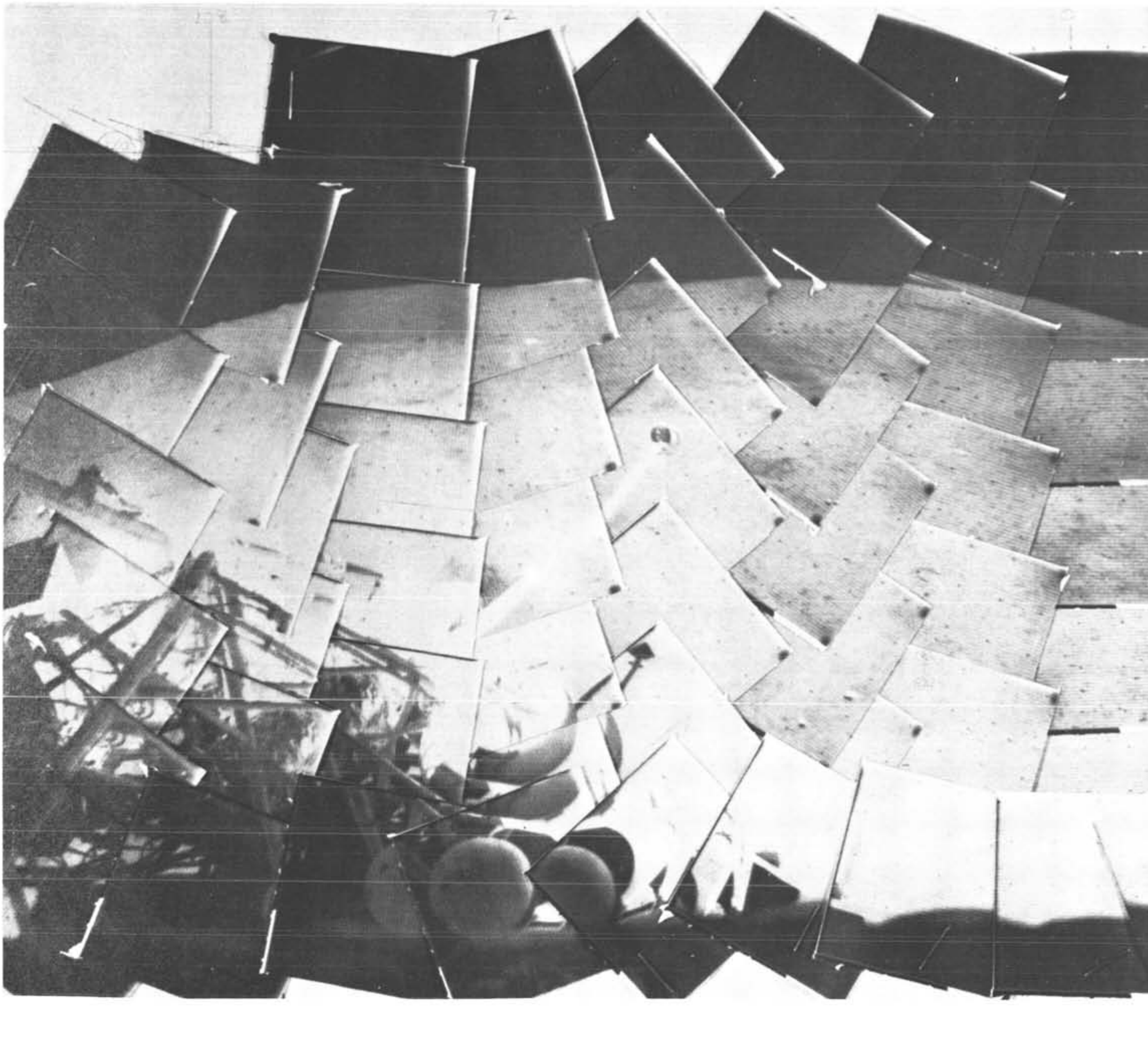
	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(282)	194	15 24 35	− 60	−52.82	2.18	F 7.6	N	CLR	40442



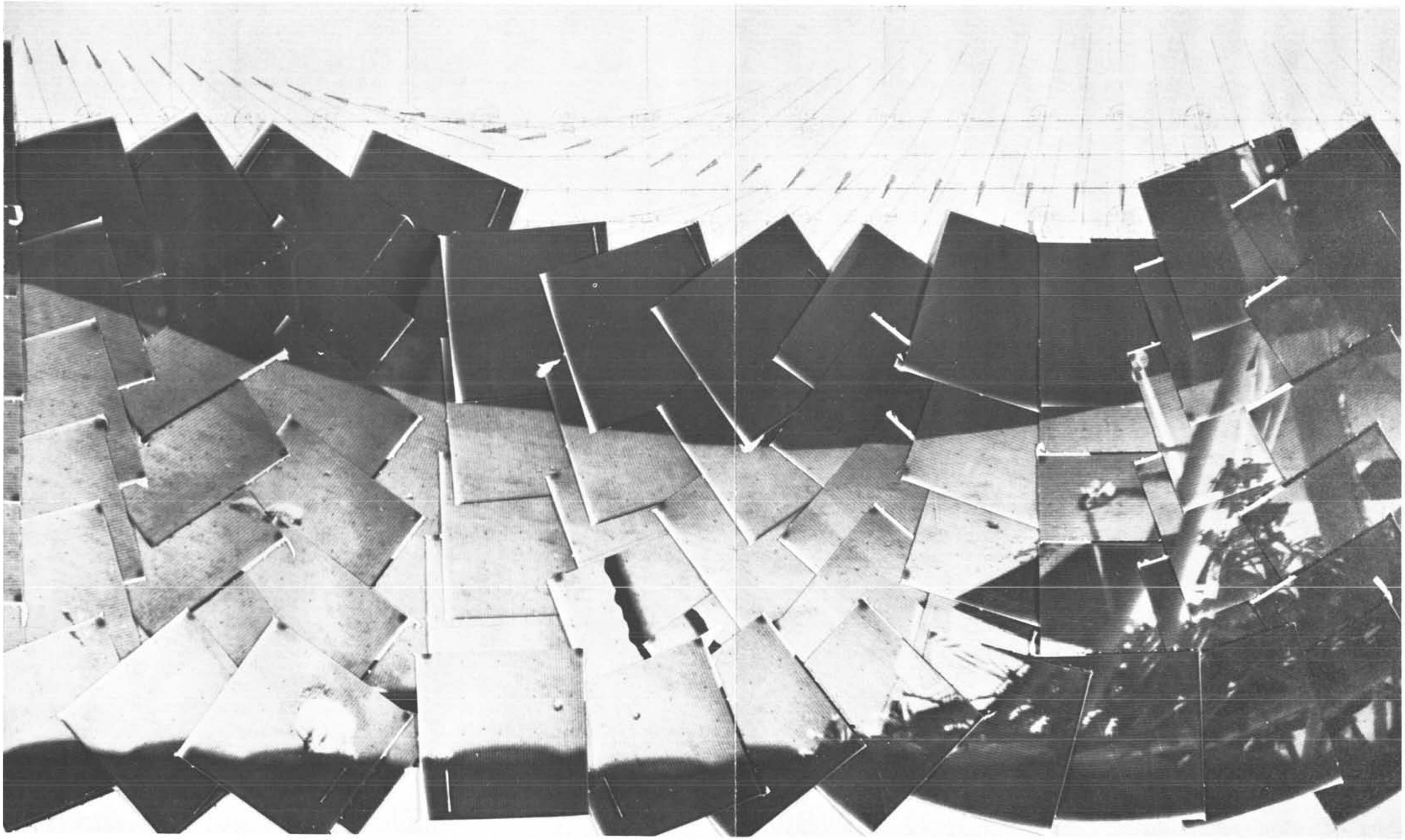
Surveyor I-283

	Day	G M T	Az	El	Focus, m	Iris	Lens	Filter	File No.
(283)	194	15 31 48	0	− 3.22	2.18	F10.5	W	CLR	40452



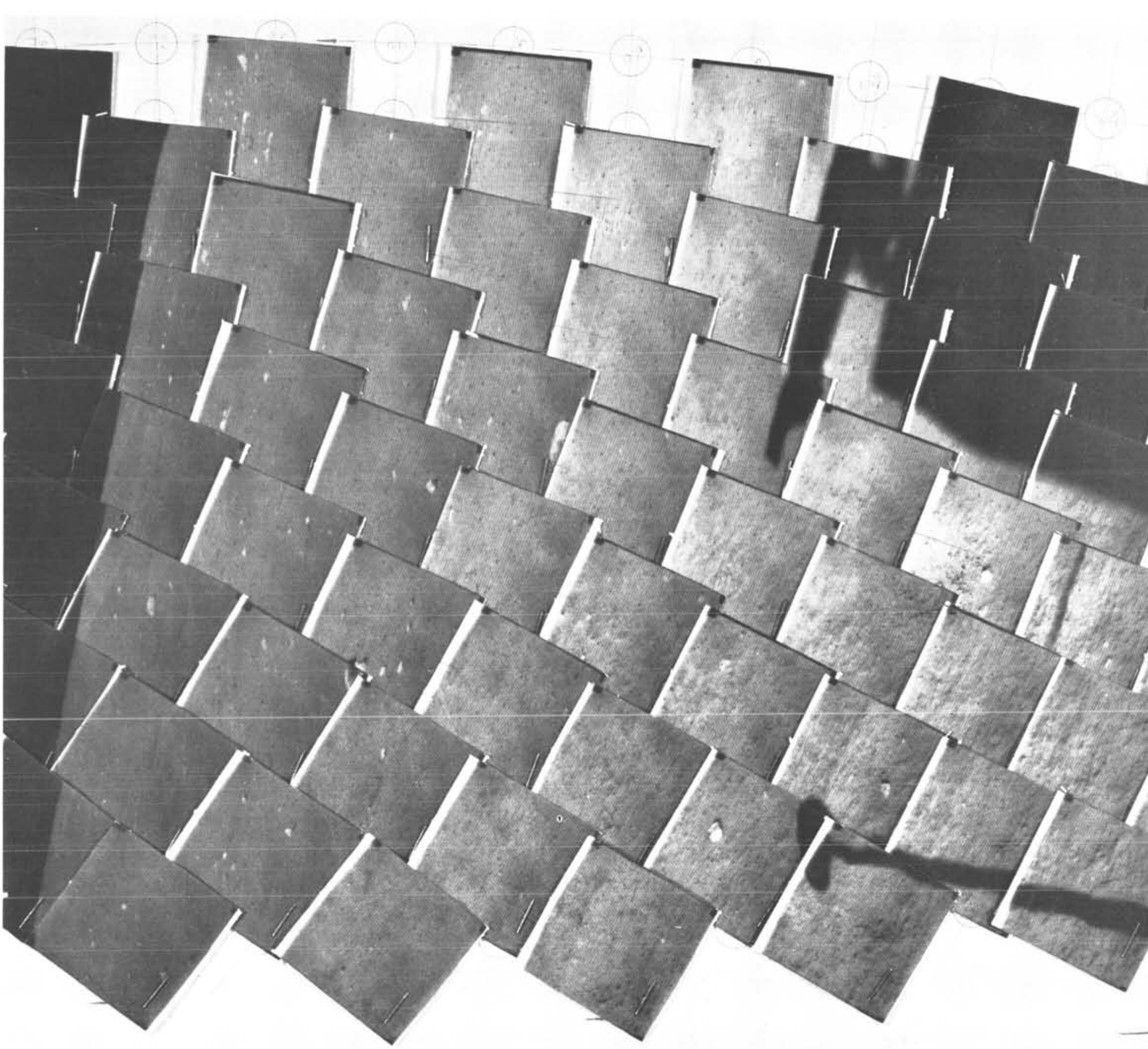


323-1



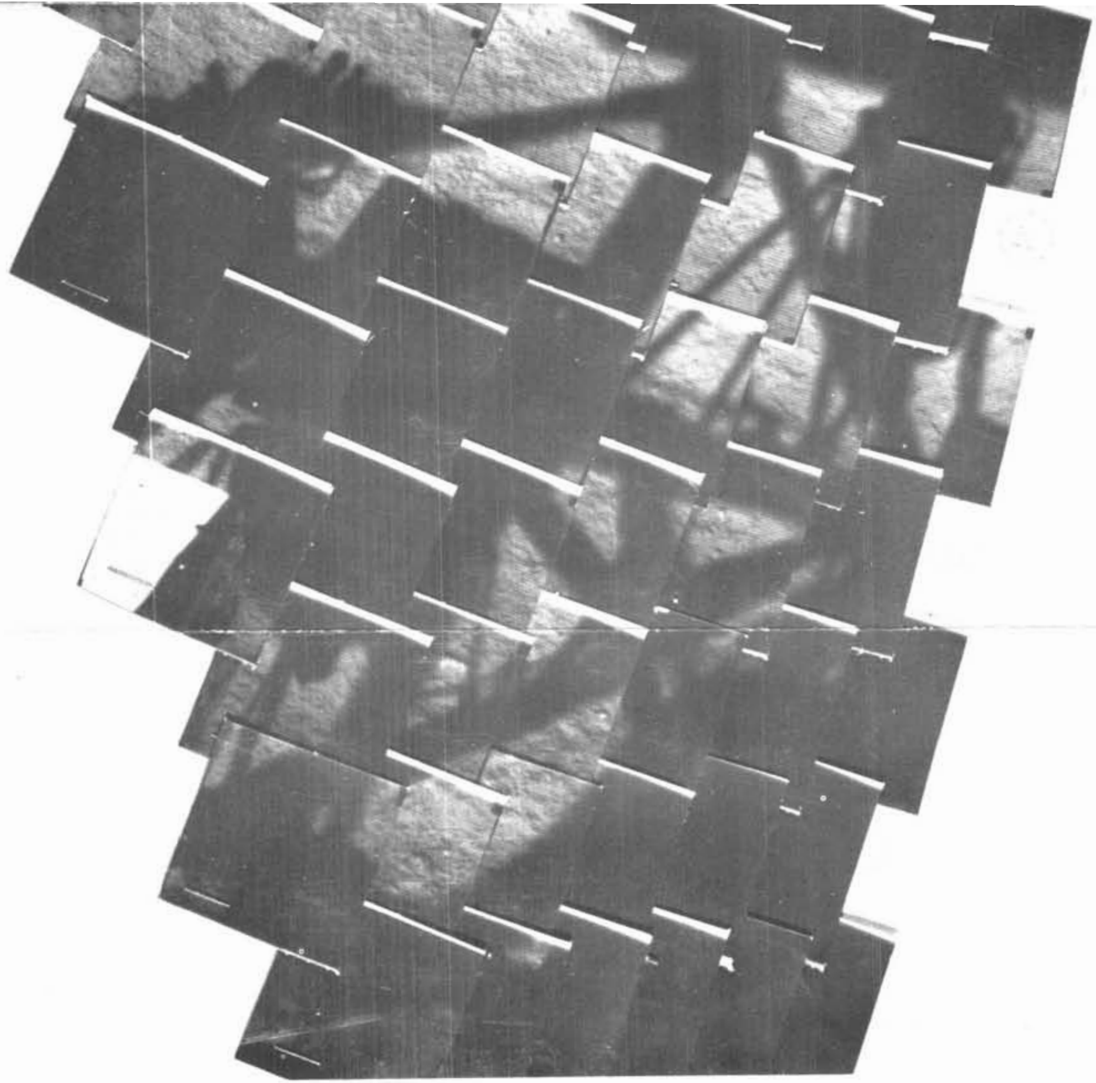
	Day	Azimuth	Focal length	
(1)	157	−220 to +126	Wide angle;	Operations mosaic

323-2



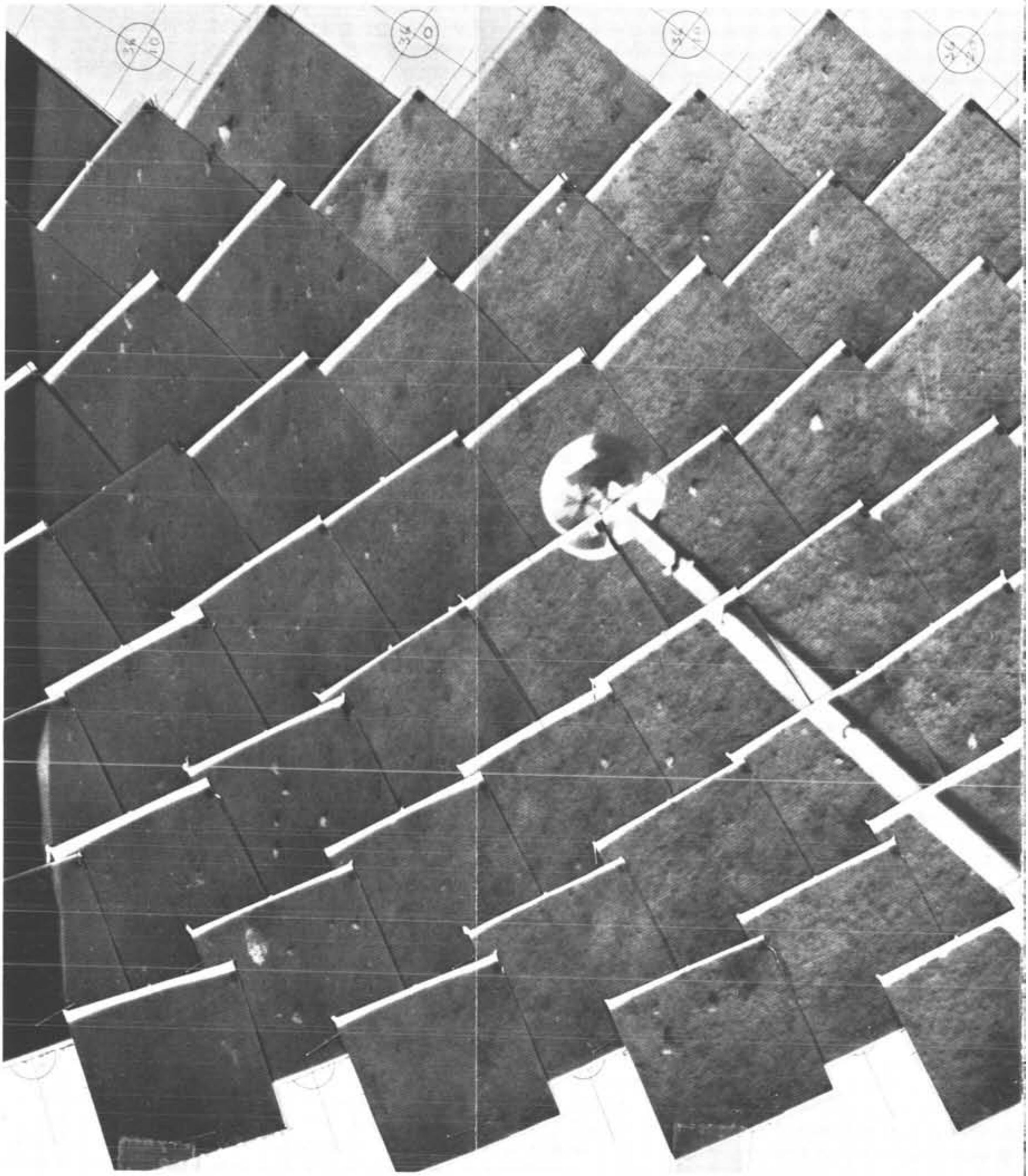
325-1

325-2



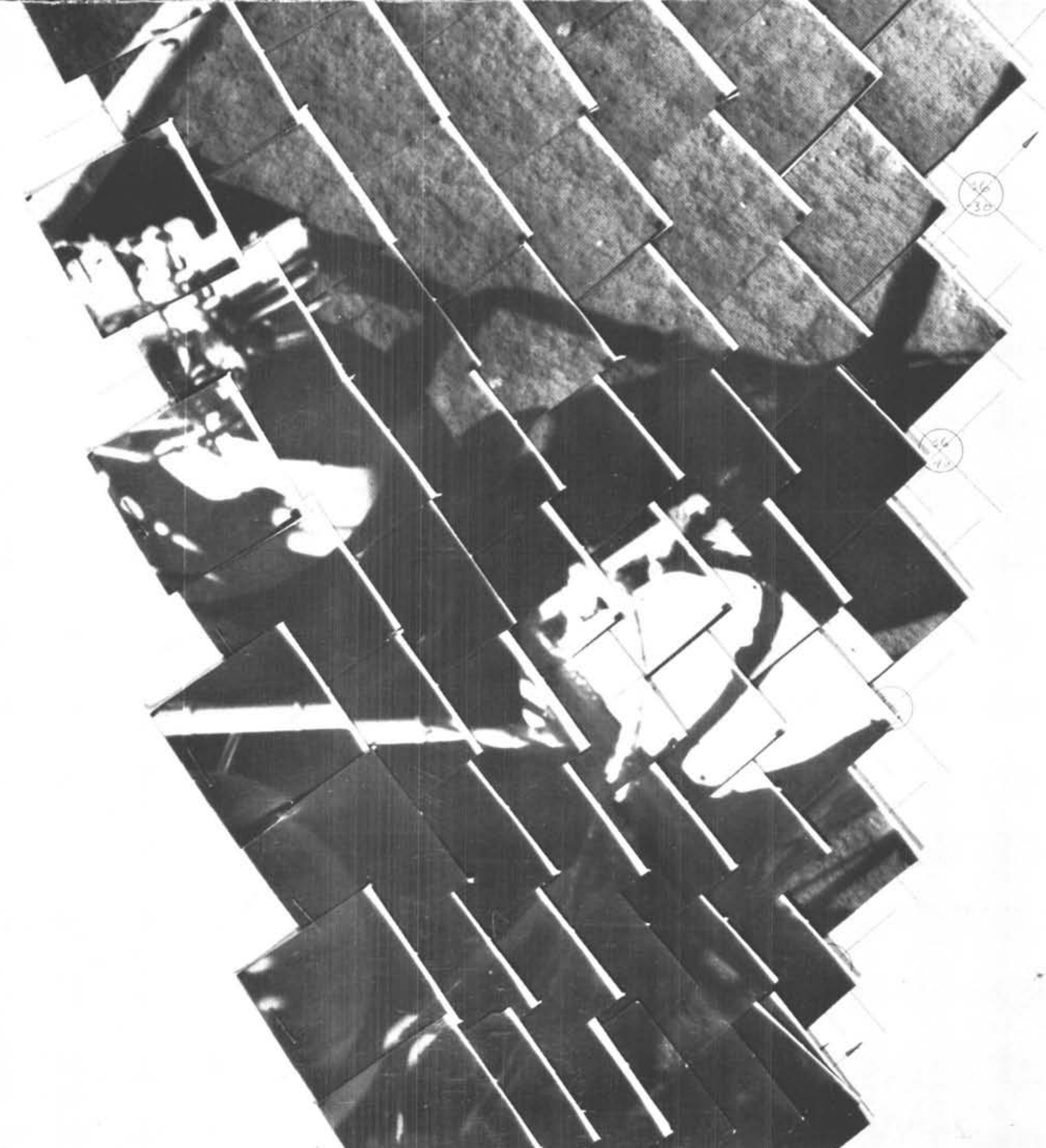
Day Azimuth Focal length

(2) 162 0 to +36 Narrow angle; Operations mosaic

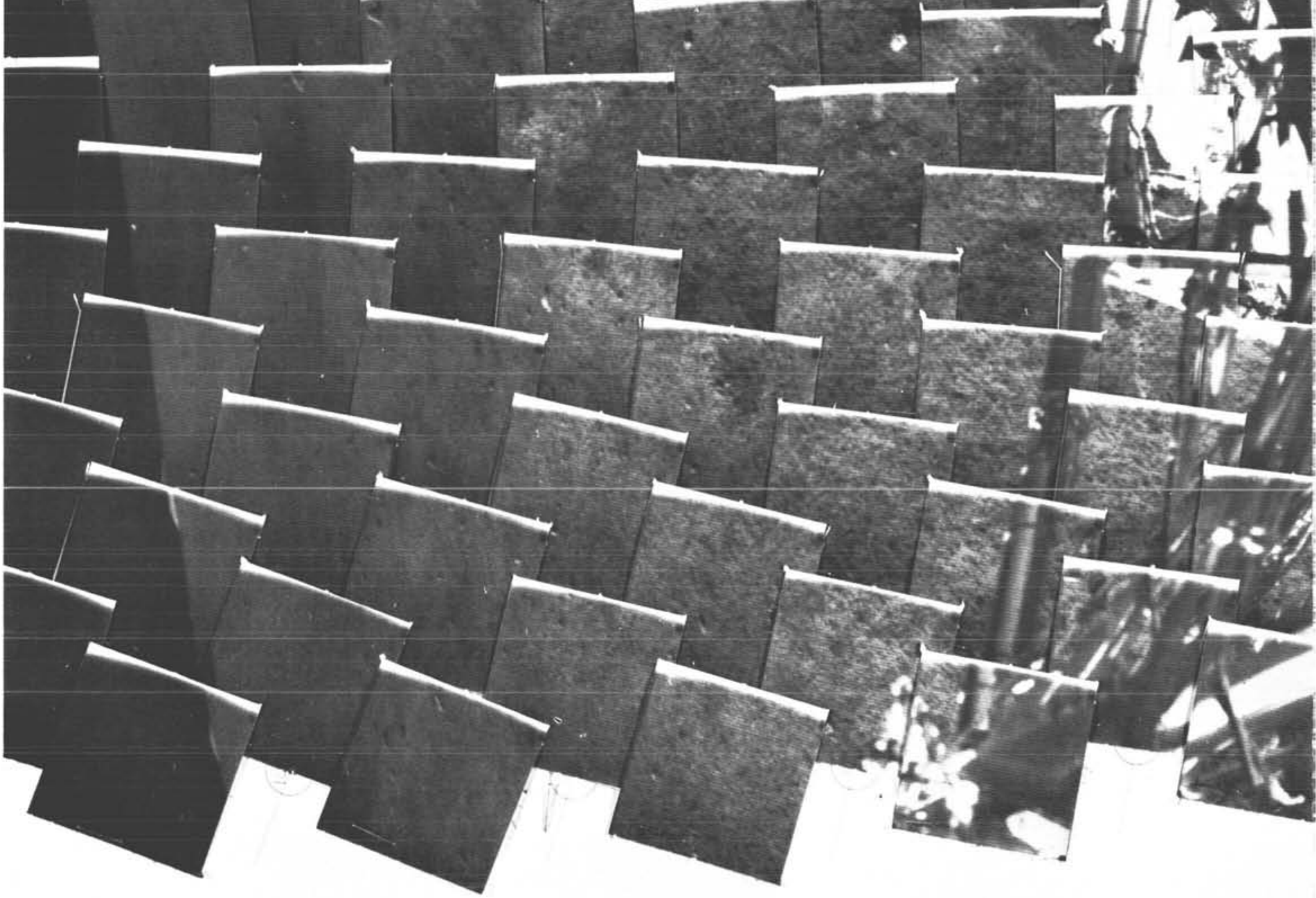


326-1

326-2

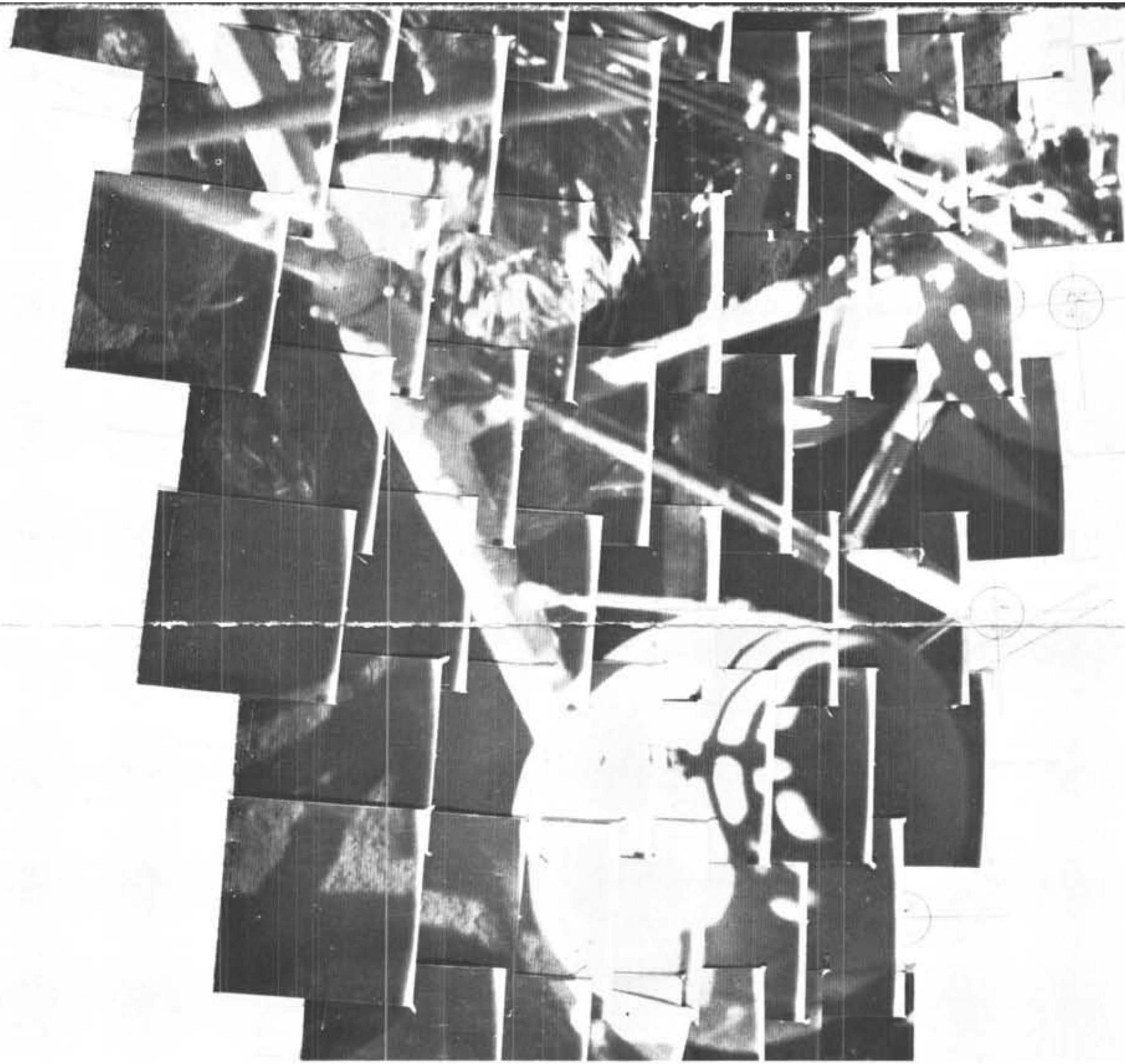


	Day	Azimuth	Focal length	
(3)	162	36 to 72	Narrow angle;	Operations mosaic

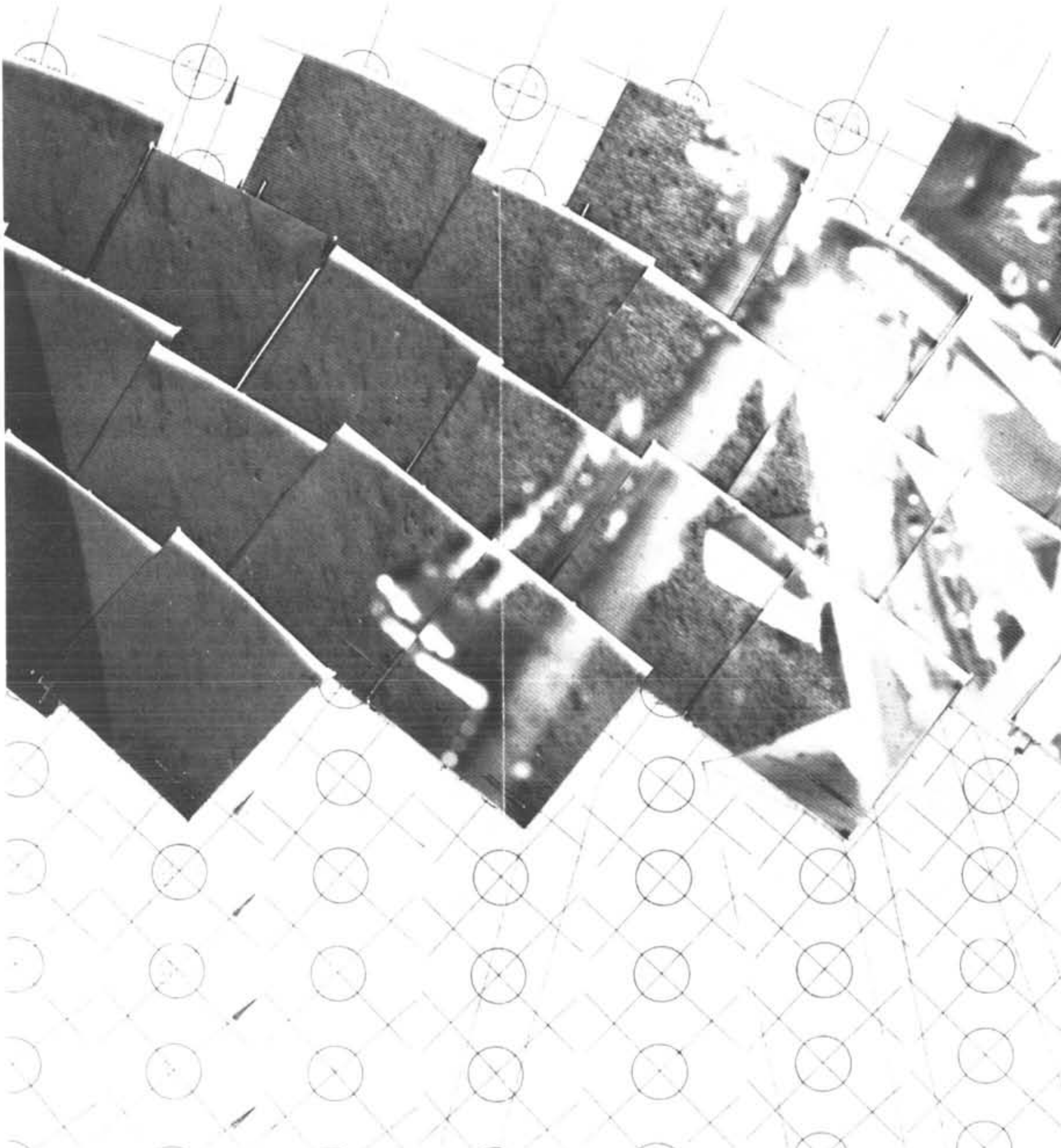


327-1

321-2



Day Azimuth Focal length
(4) 162 72 to 108 Narrow angle; Operations mosaic

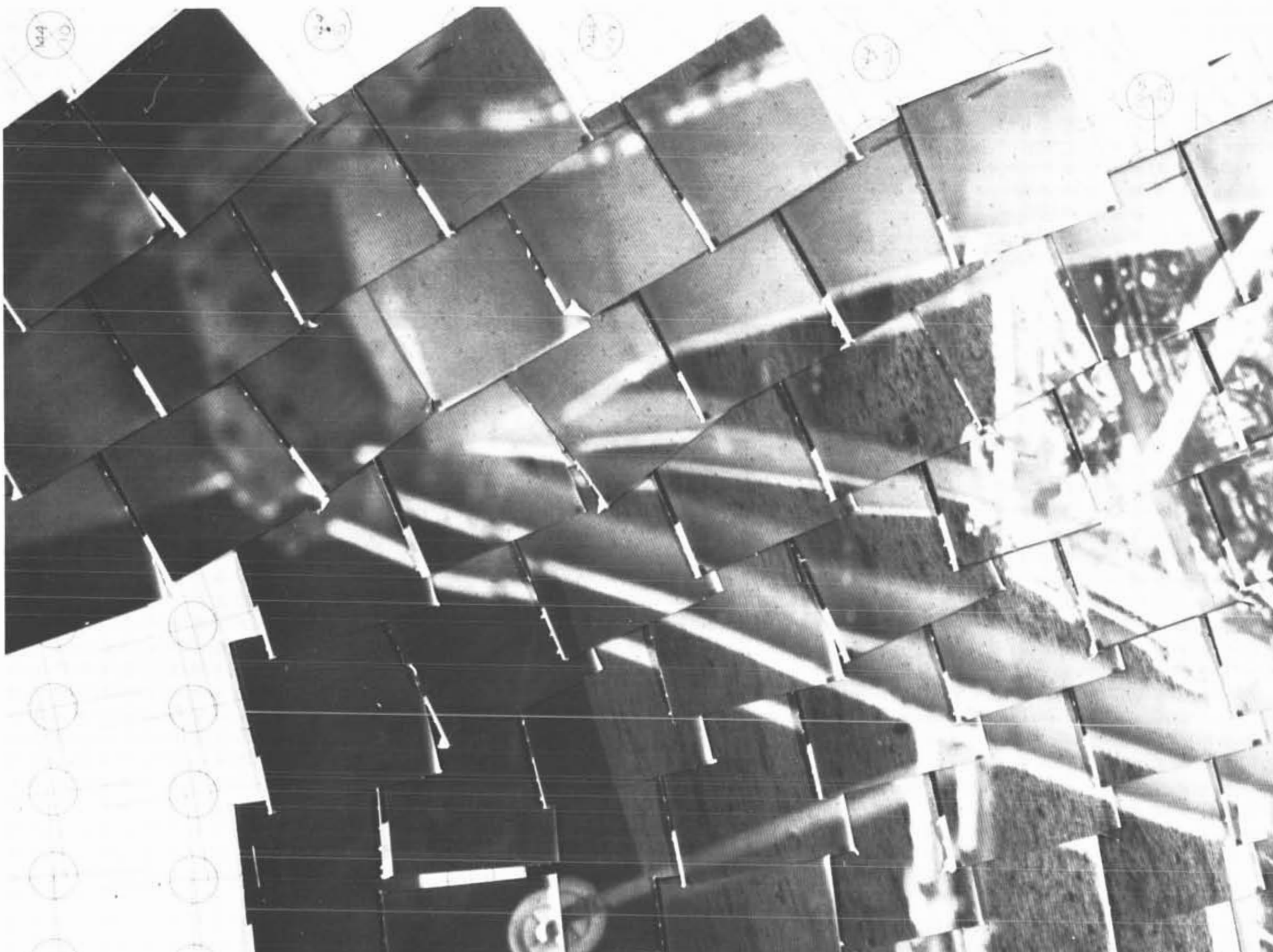


328-1

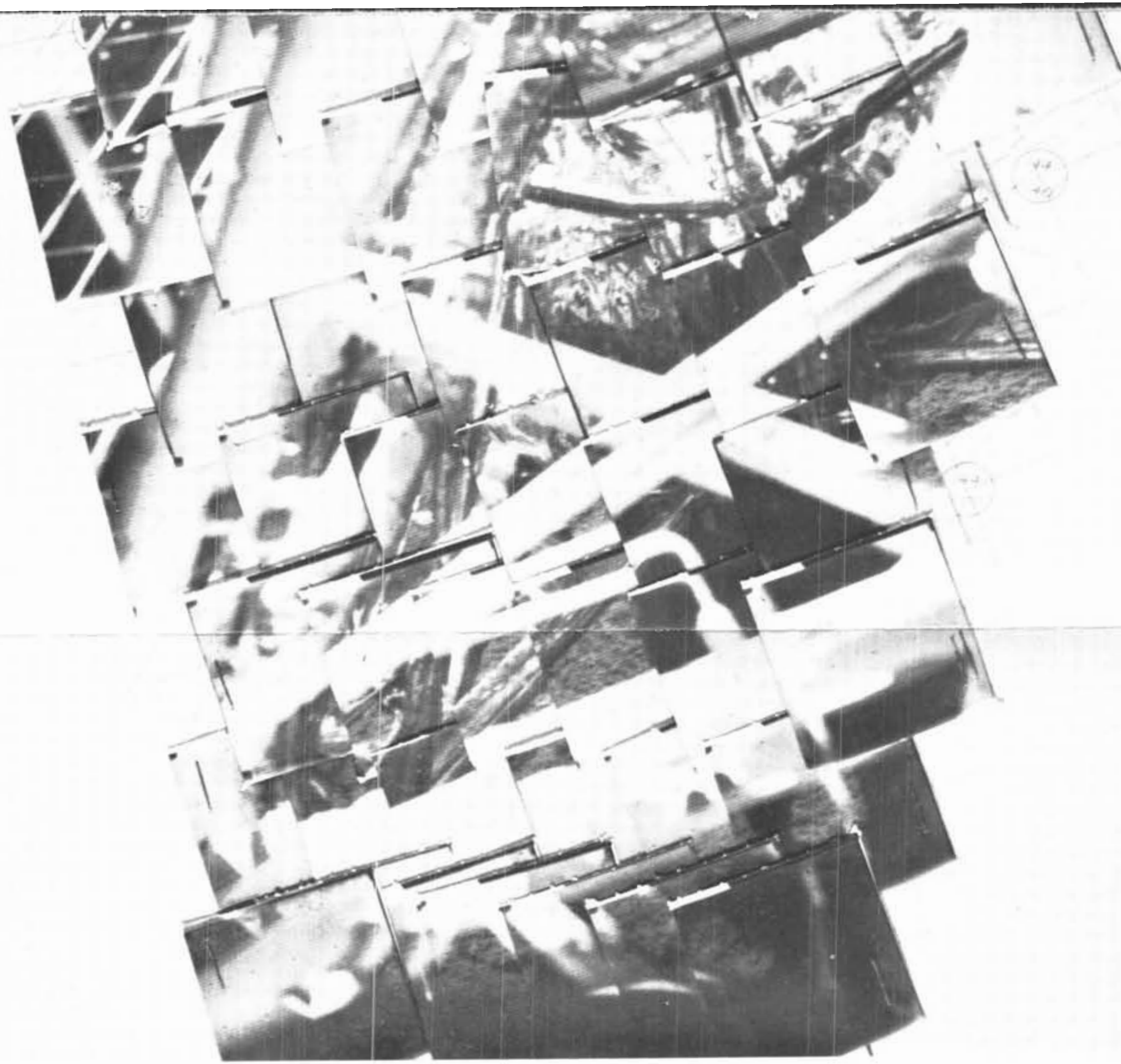
328-2

Day 162; Azimuth 108 to 144; Focal length Narrow angle; Operations mosaic

(5) 162 108 to 144 Narrow angle; Operations mosaic

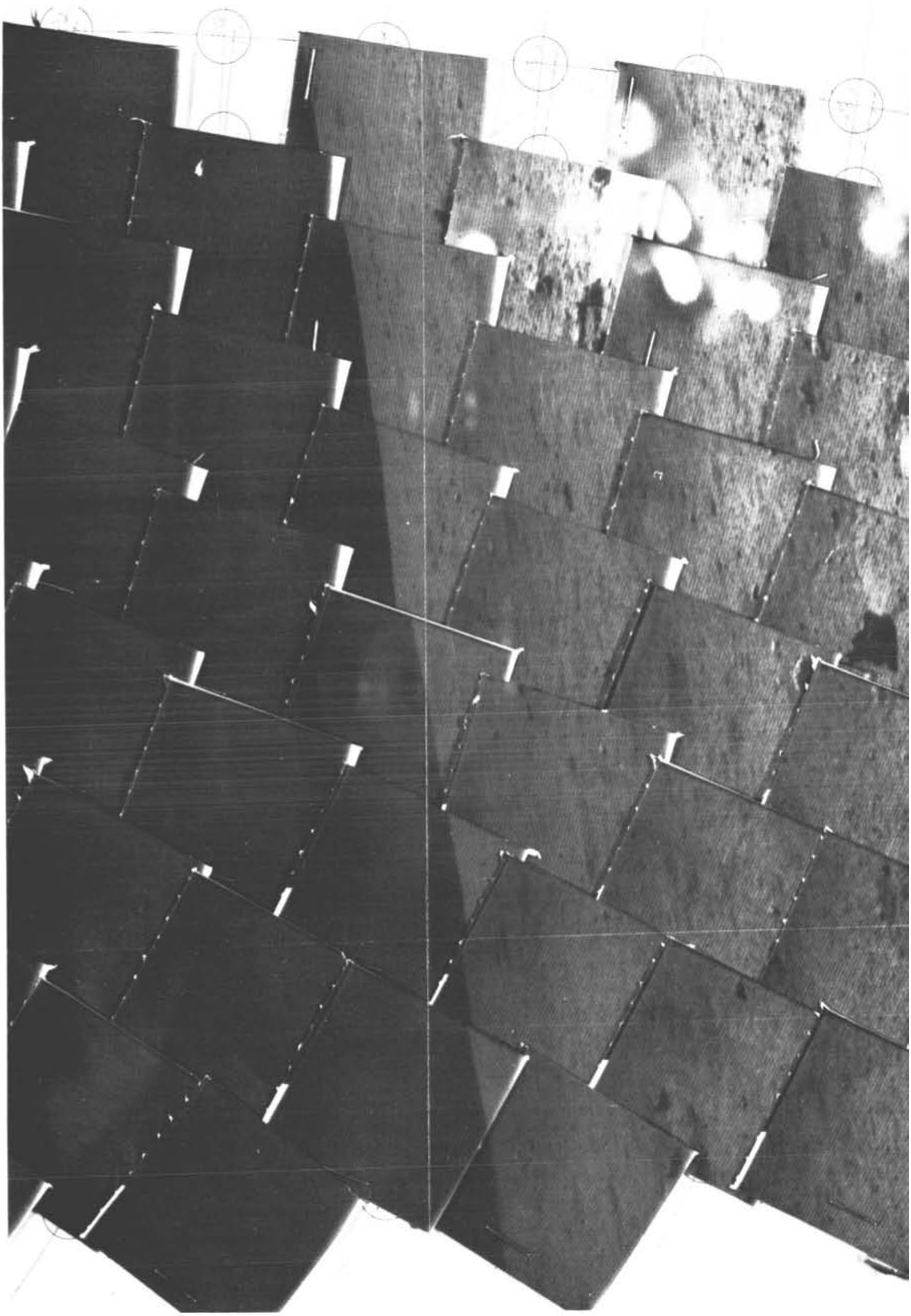


329-1

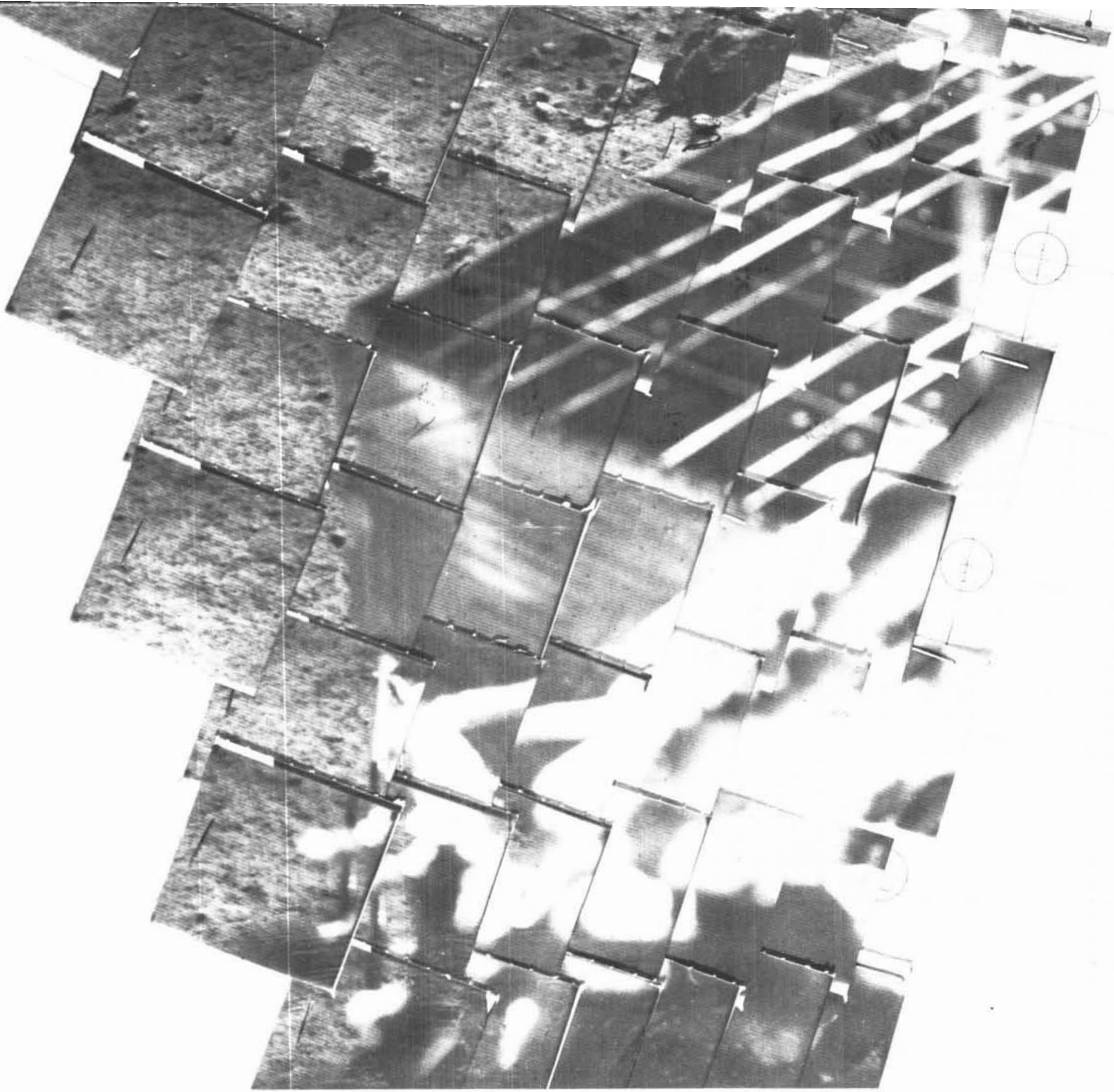


	Day	Azimuth	Focal length	
(6)	162	−216 to −180	Narrow angle;	Operations mosaic

329-2

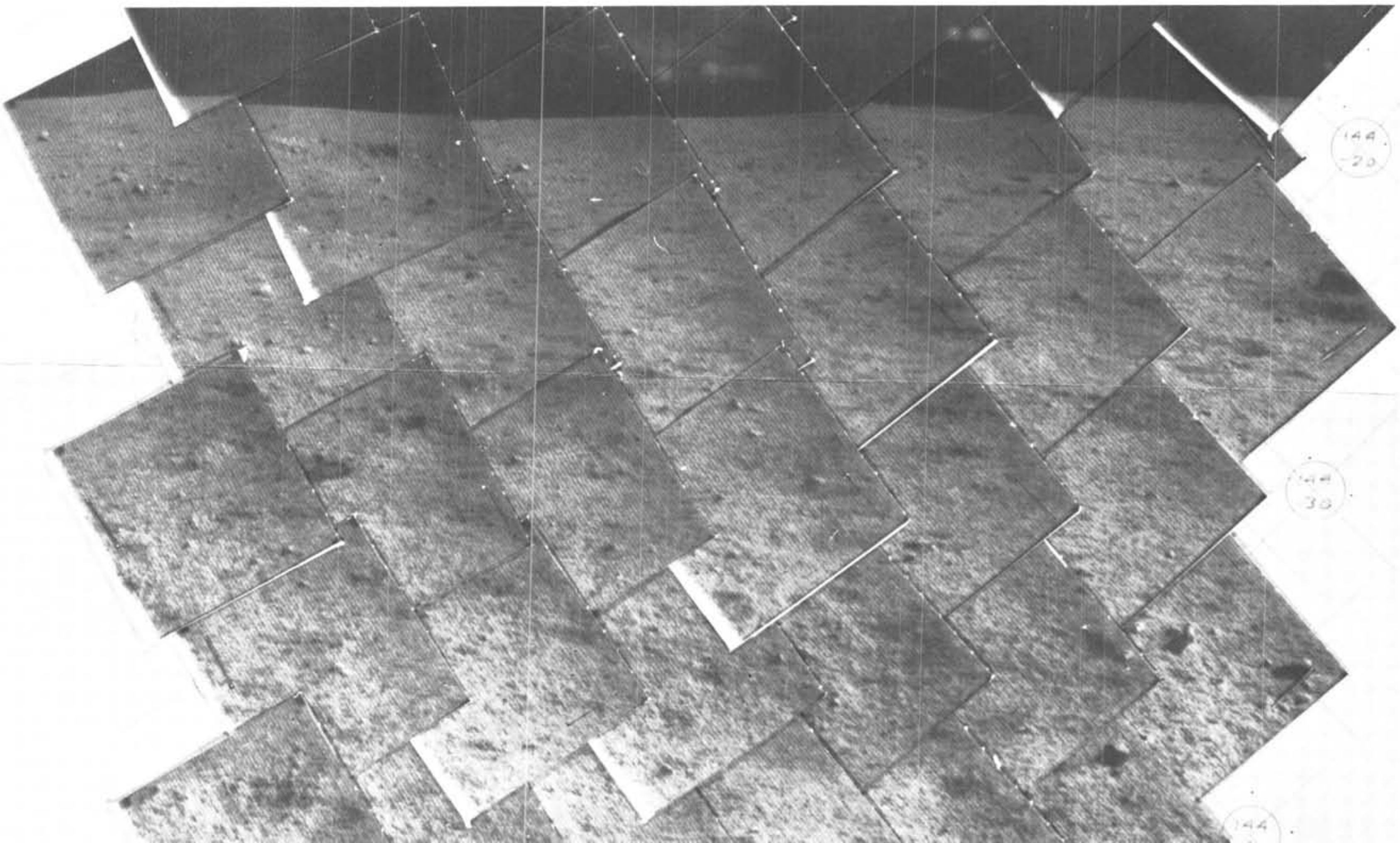


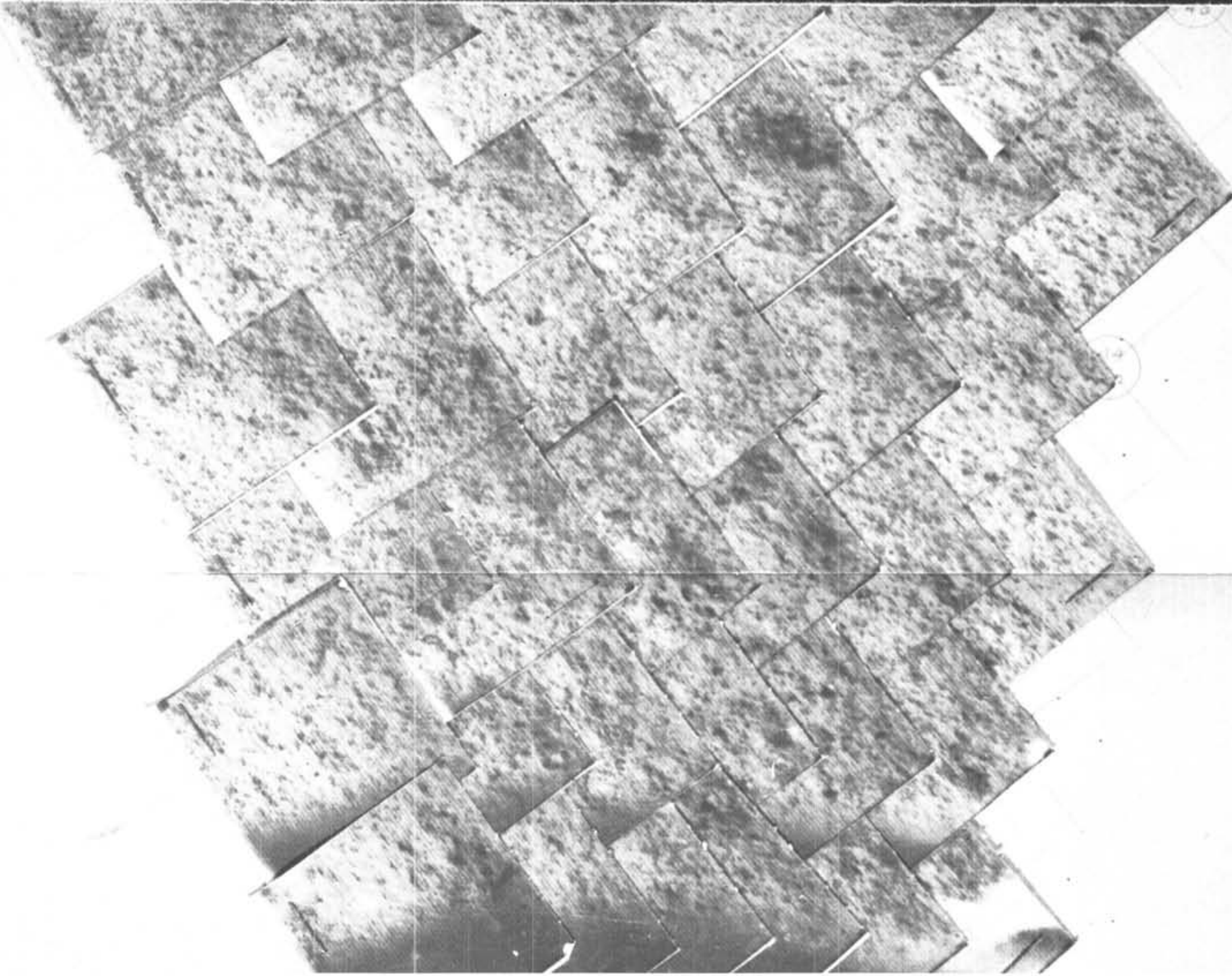
330-2



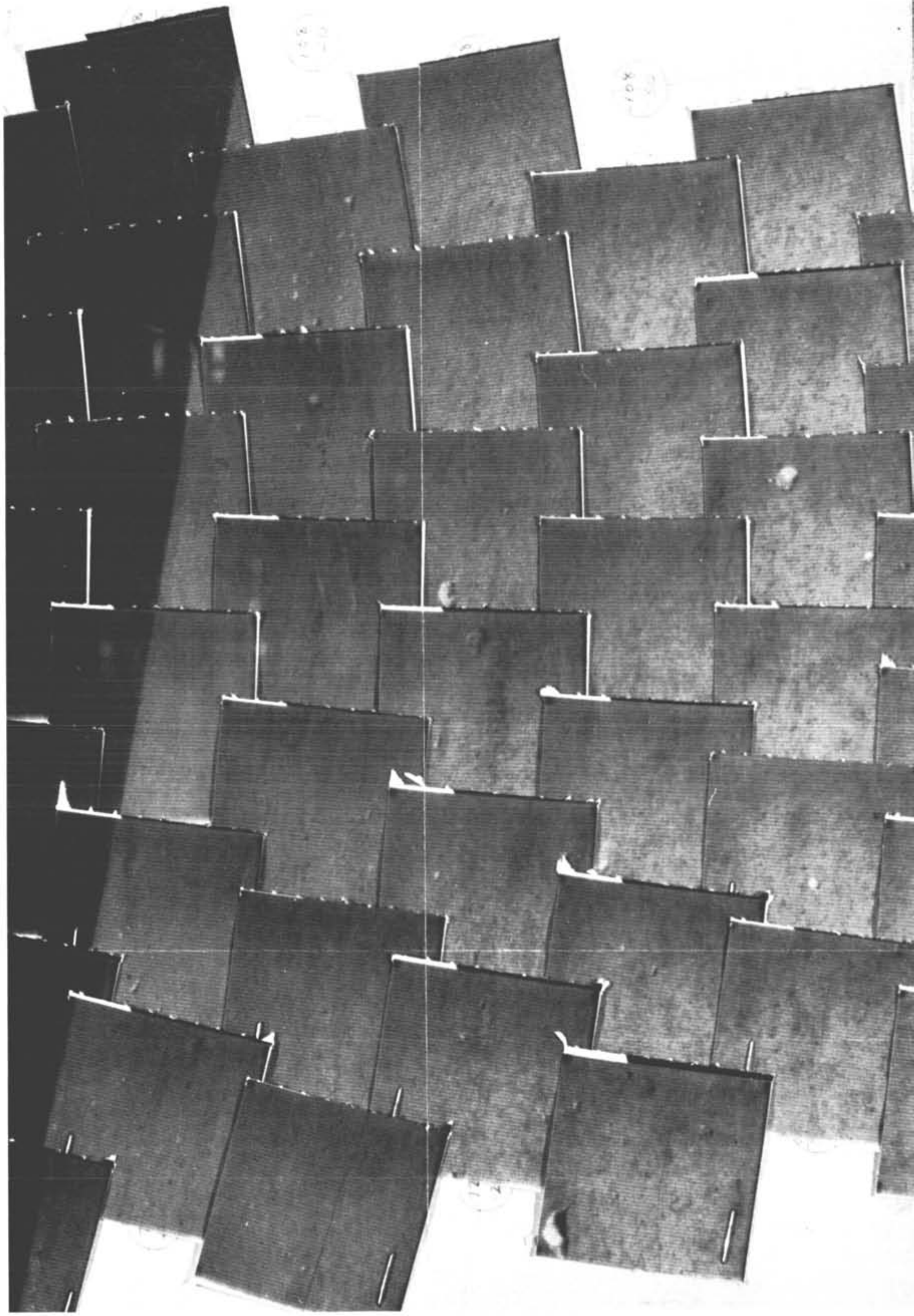
	Day	Azimuth	Focal length	
(7)	161	−180 to −144	Narrow angle;	Operations mosaic

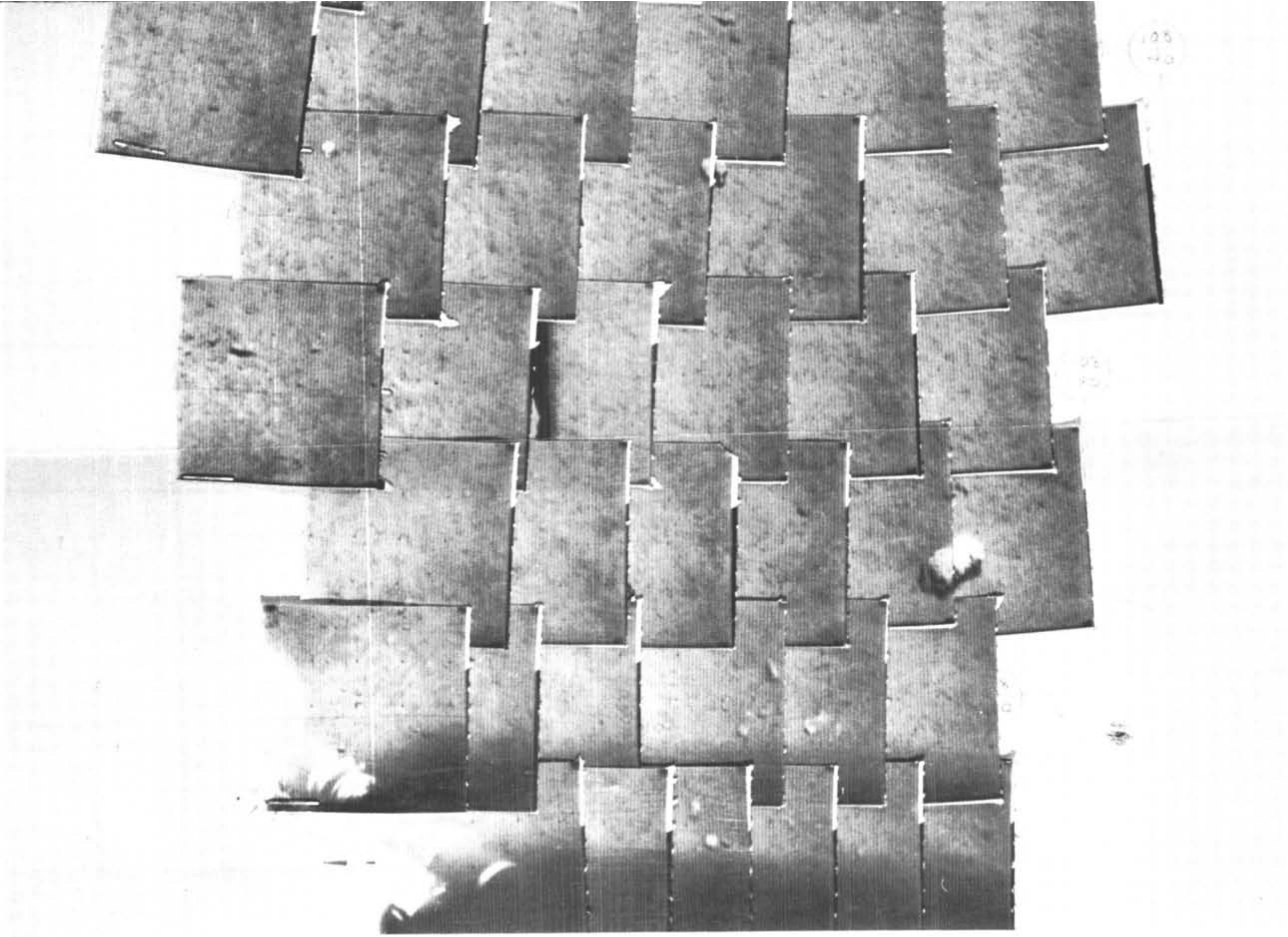
331-1





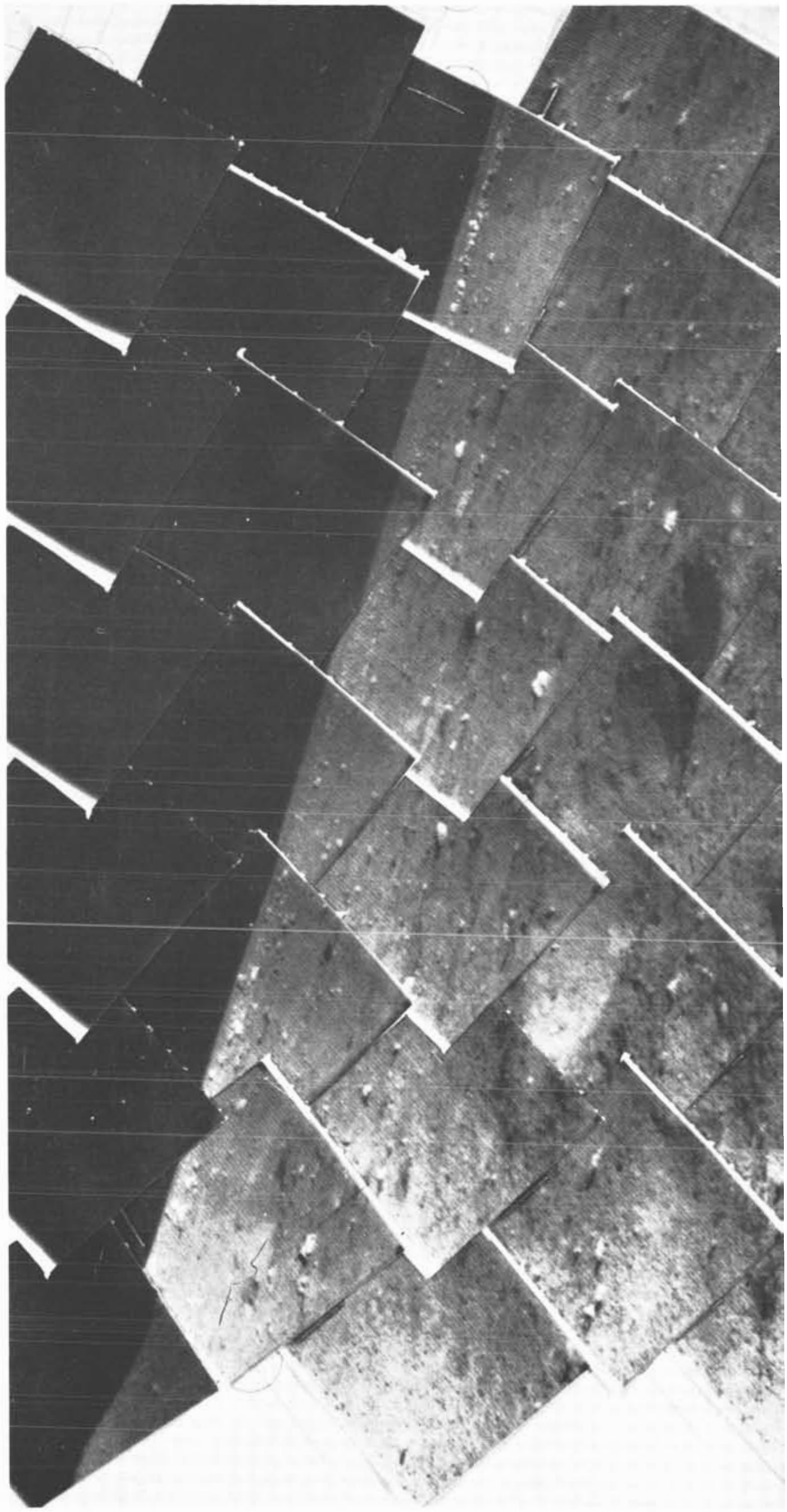
Day Azimuth Focal length
(8) 162 −144 to −108 Narrow angle; Operations mosaic



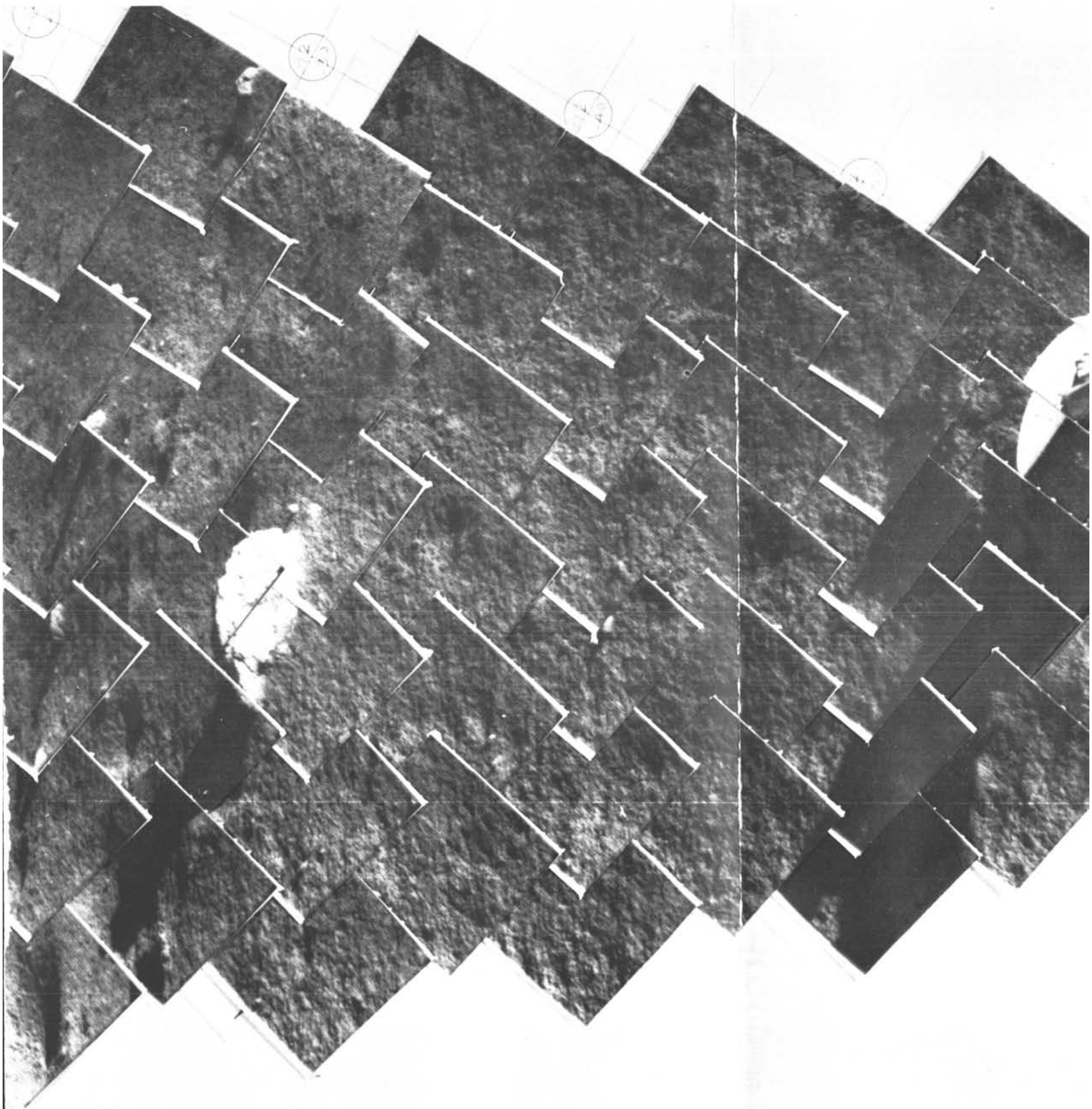


Day Azimuth Focal length
(9) 158 −108 to −72 Narrow angle; Operations mosaic

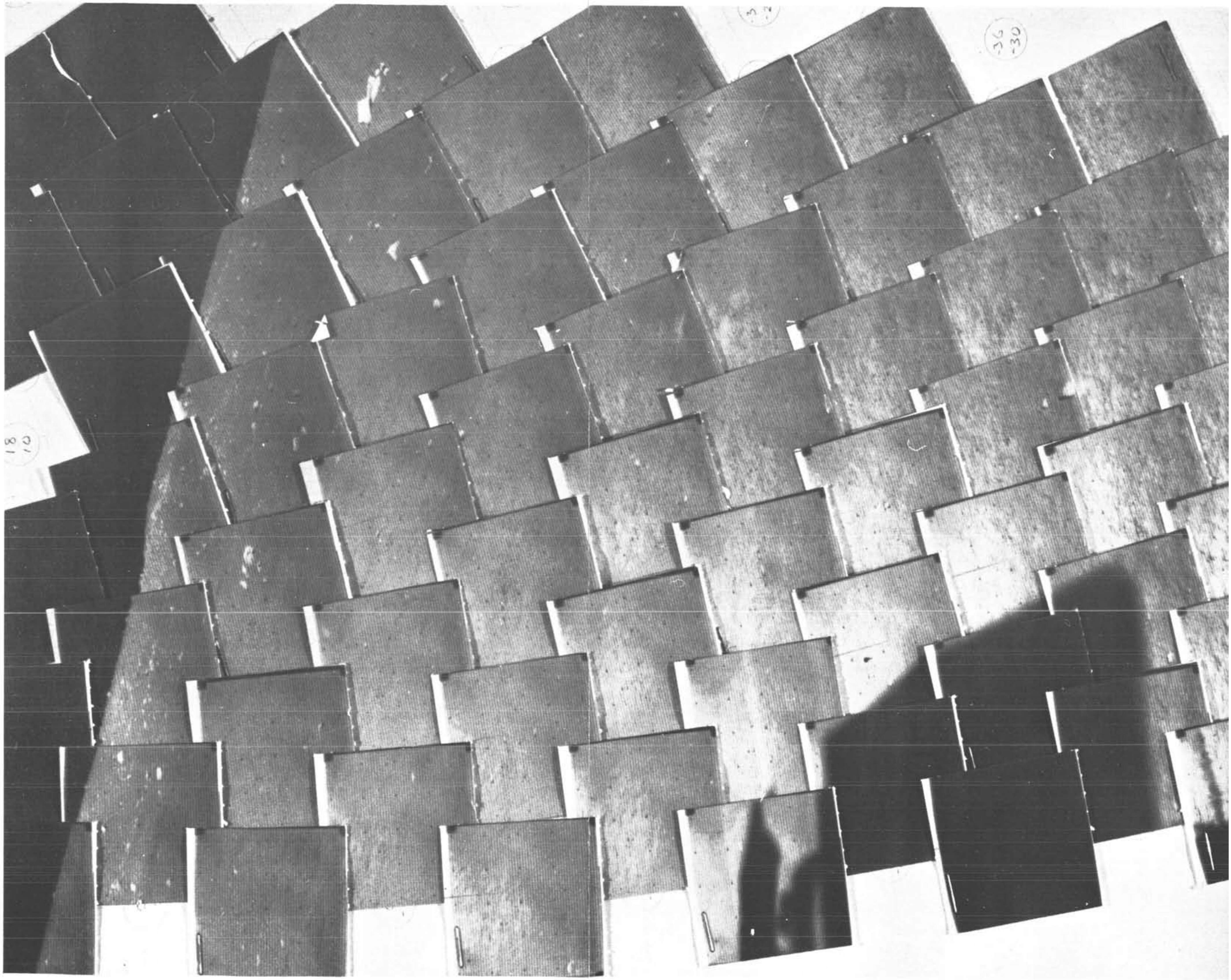
332-2



333-1

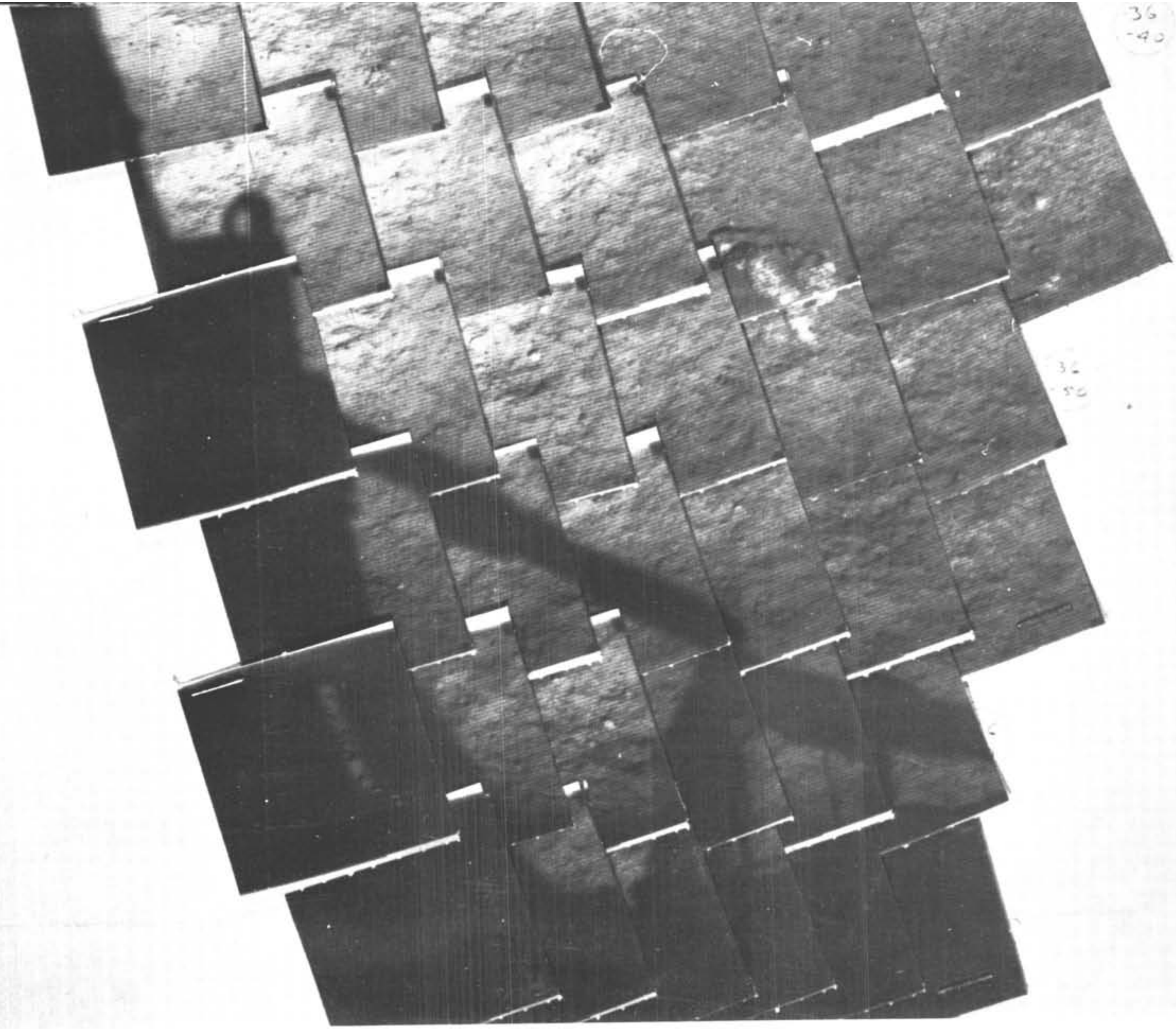


333-2

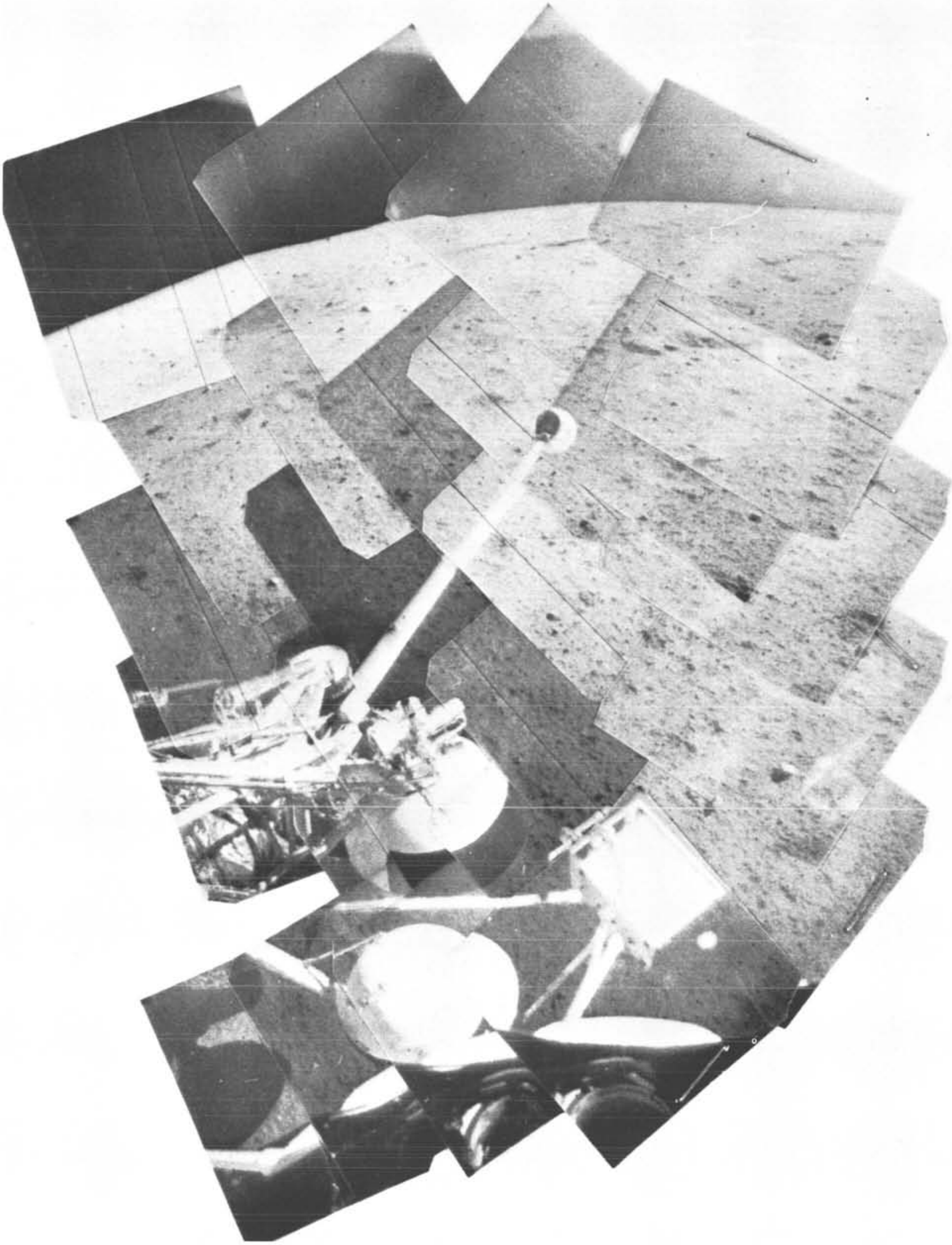


334-2

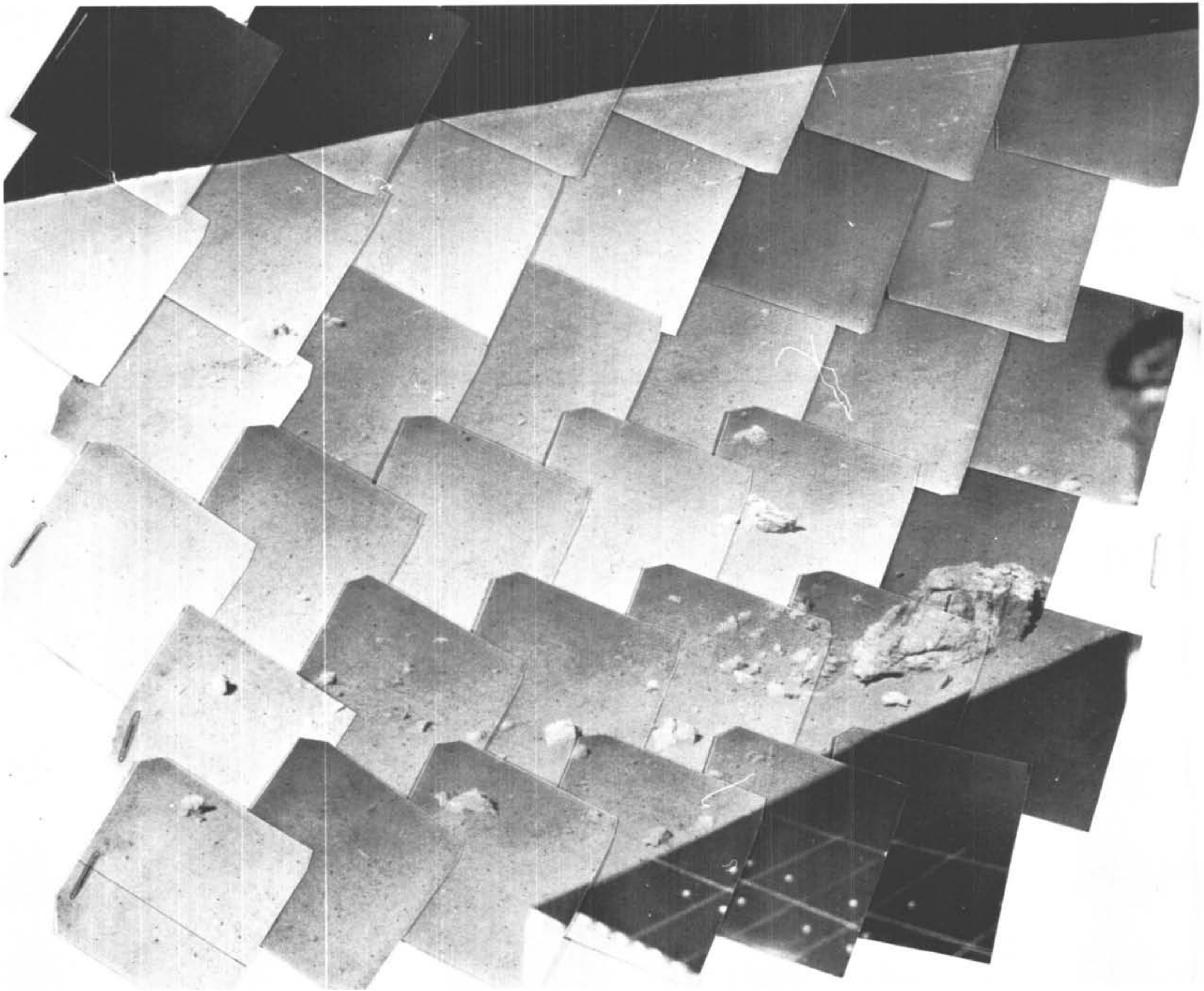
334-3



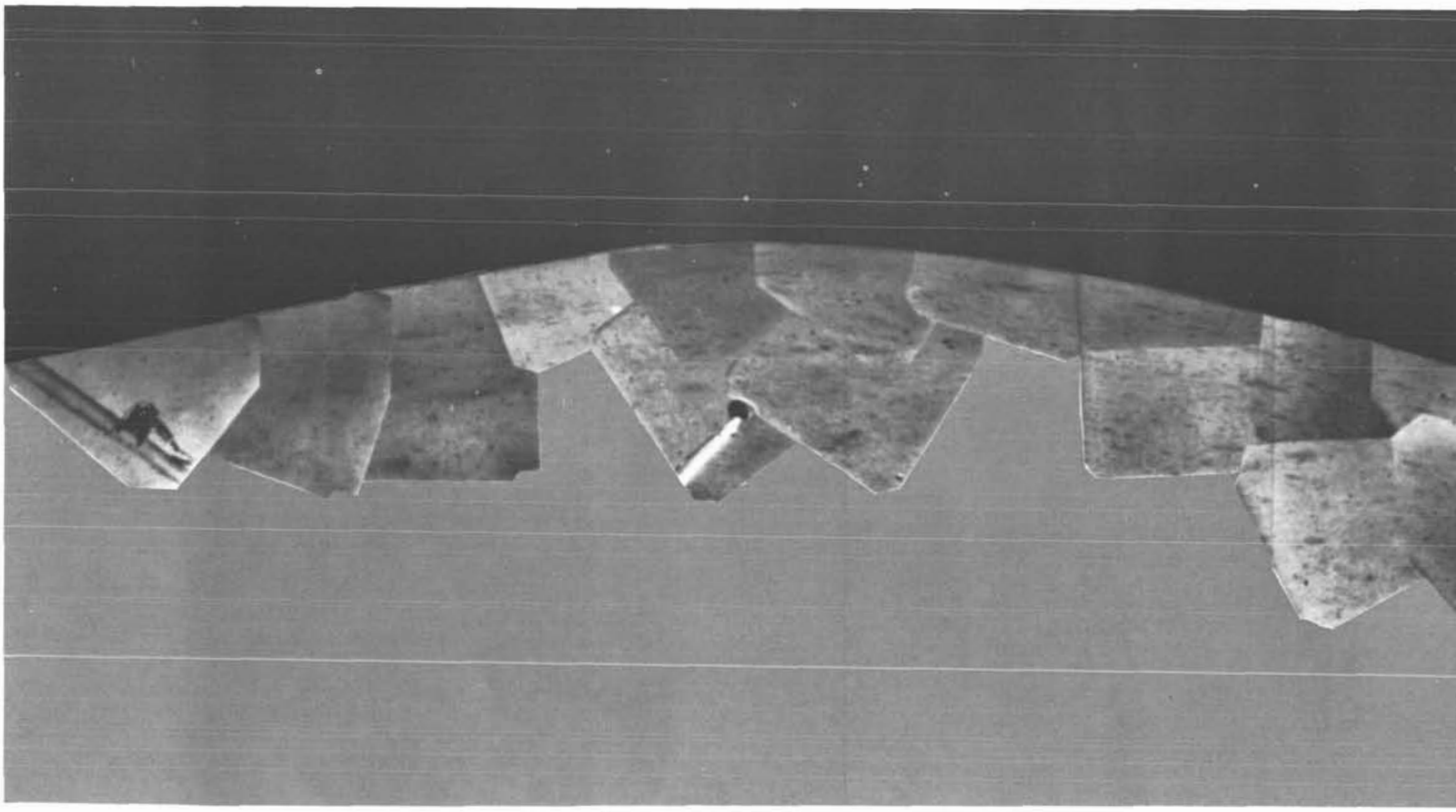
	Day	Azimuth	Focal length	
(11)	162	−36 to 0	Narrow angle;	Operations mosaic



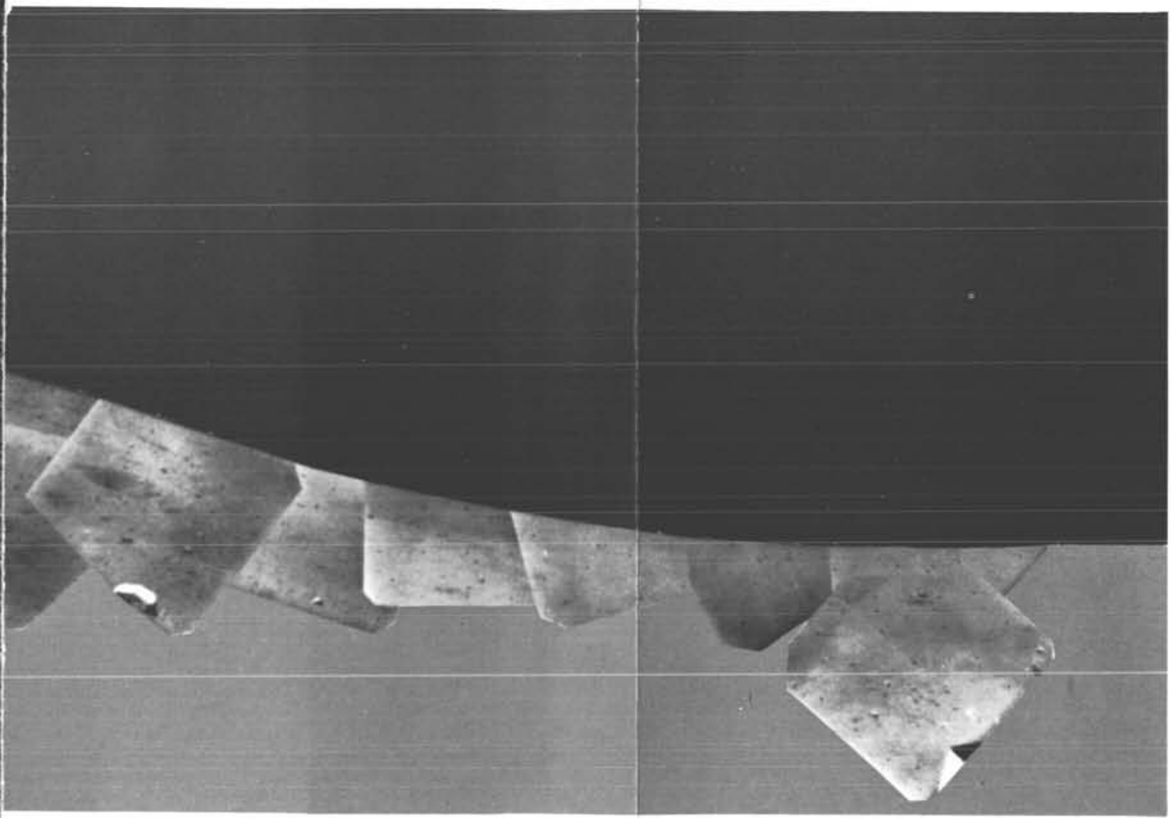
	Day	Azimuth	Focal length	
(12)	**153**	**+24 to +100**	**Wide angle;**	**Semi-improved mosaic**



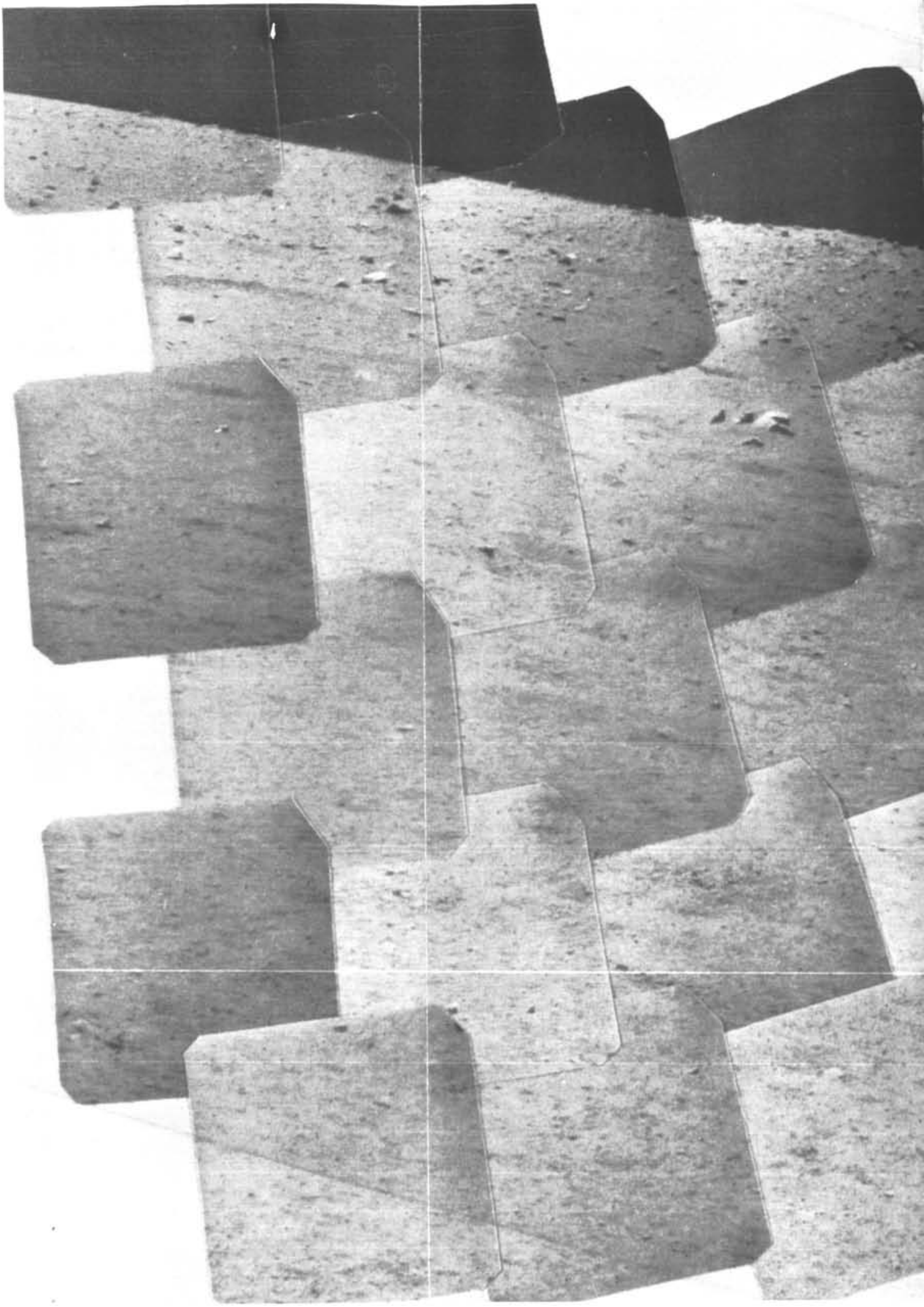
	Day	Azimuth	Focal length	
(13)	154	−177 to −144	Narrow angle ;	Semi-improved mosaic



337-1

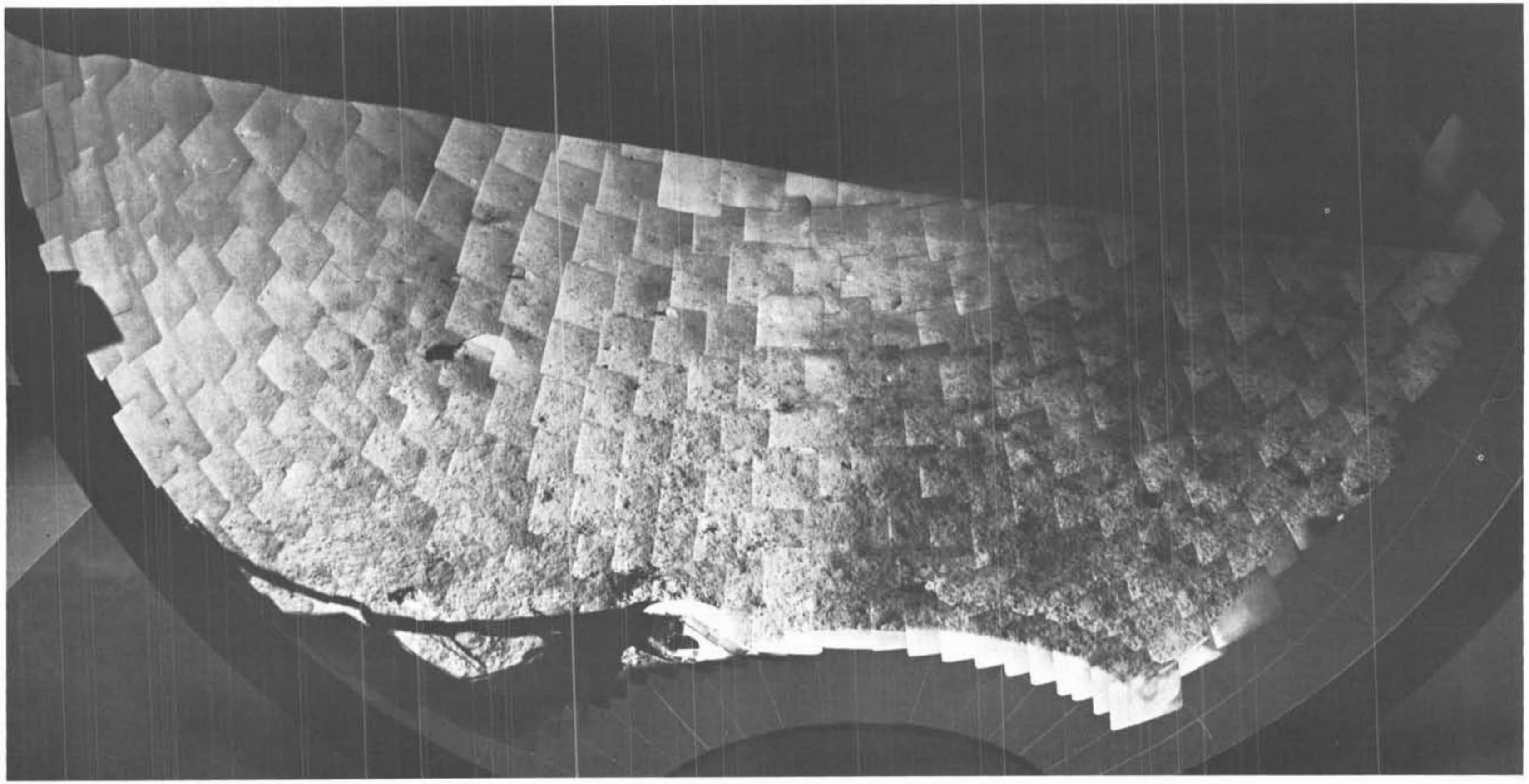


	Day	Azimuth	Focal length	
(14)	156	−156 to +120	Wide angle ;	Semi-improved mosaic (Horizon only)

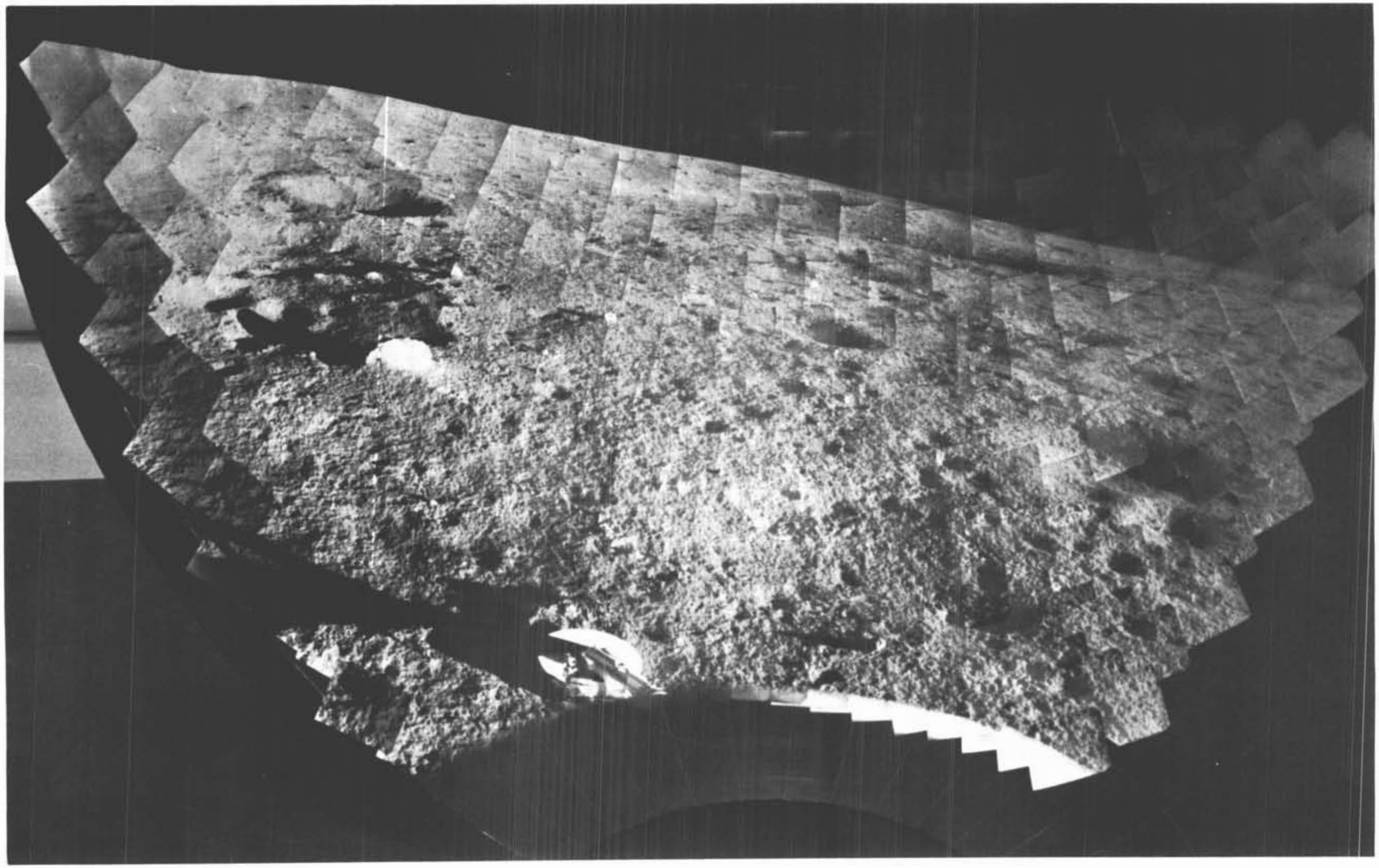


	Day	Azimuth	Focal length	
(15)	156	−36 to 0	Narrow angle ;	Semi-improved mosaic

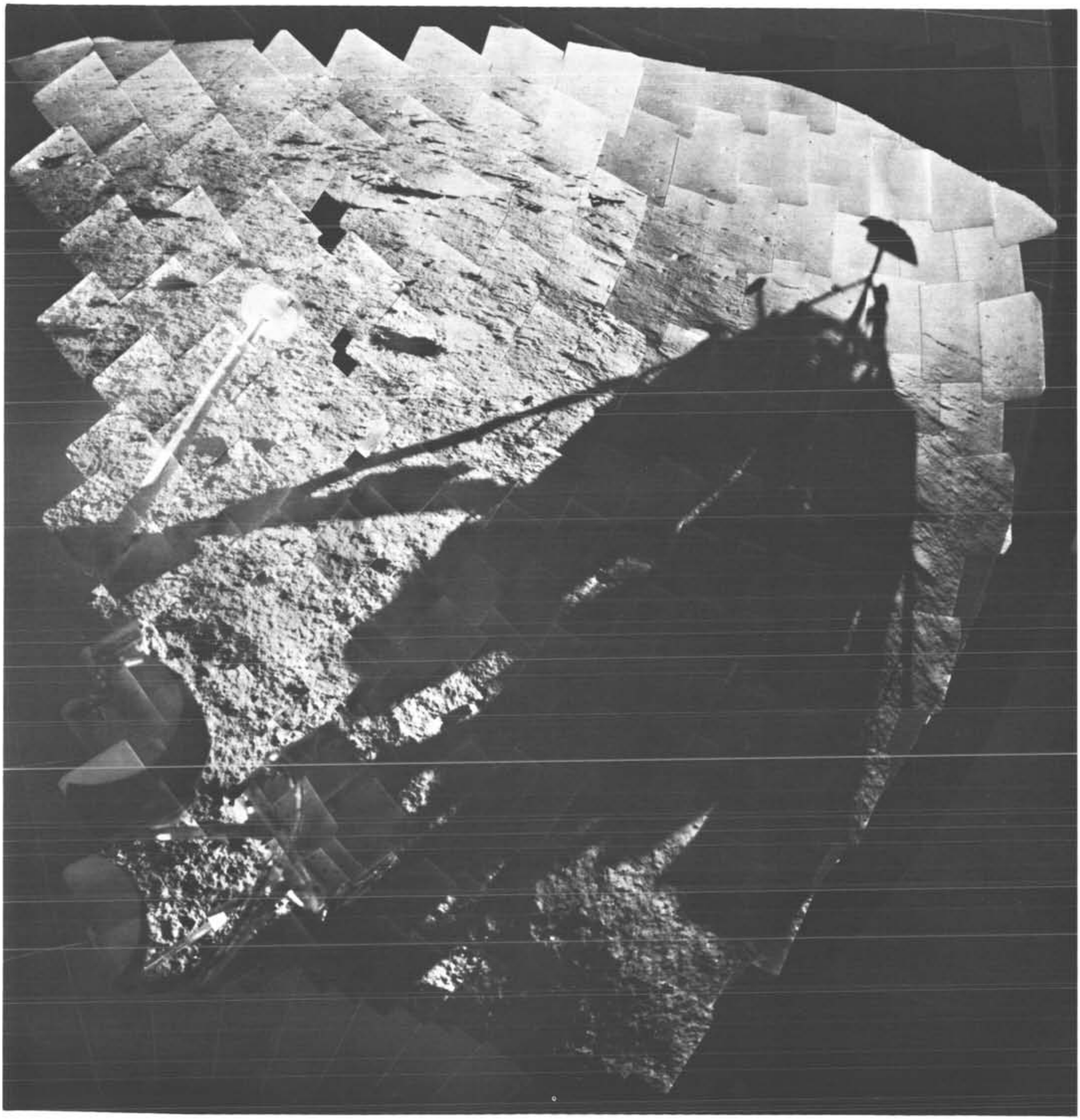
338-2



	Day	Azimuth	Focal length	
(16)	**163**	**−156 to 0**	**Narrow angle;**	**Improved, spherical mosaic**



	Day	Azimuth	Focal length	
(17)	164	−156 to −12	Narrow angle;	Improved, spherical mosaic



	Day	Azimuth	Focal length	
(18)	164	−12 to +69	Narrow angle;	Improved, spherical mosaic

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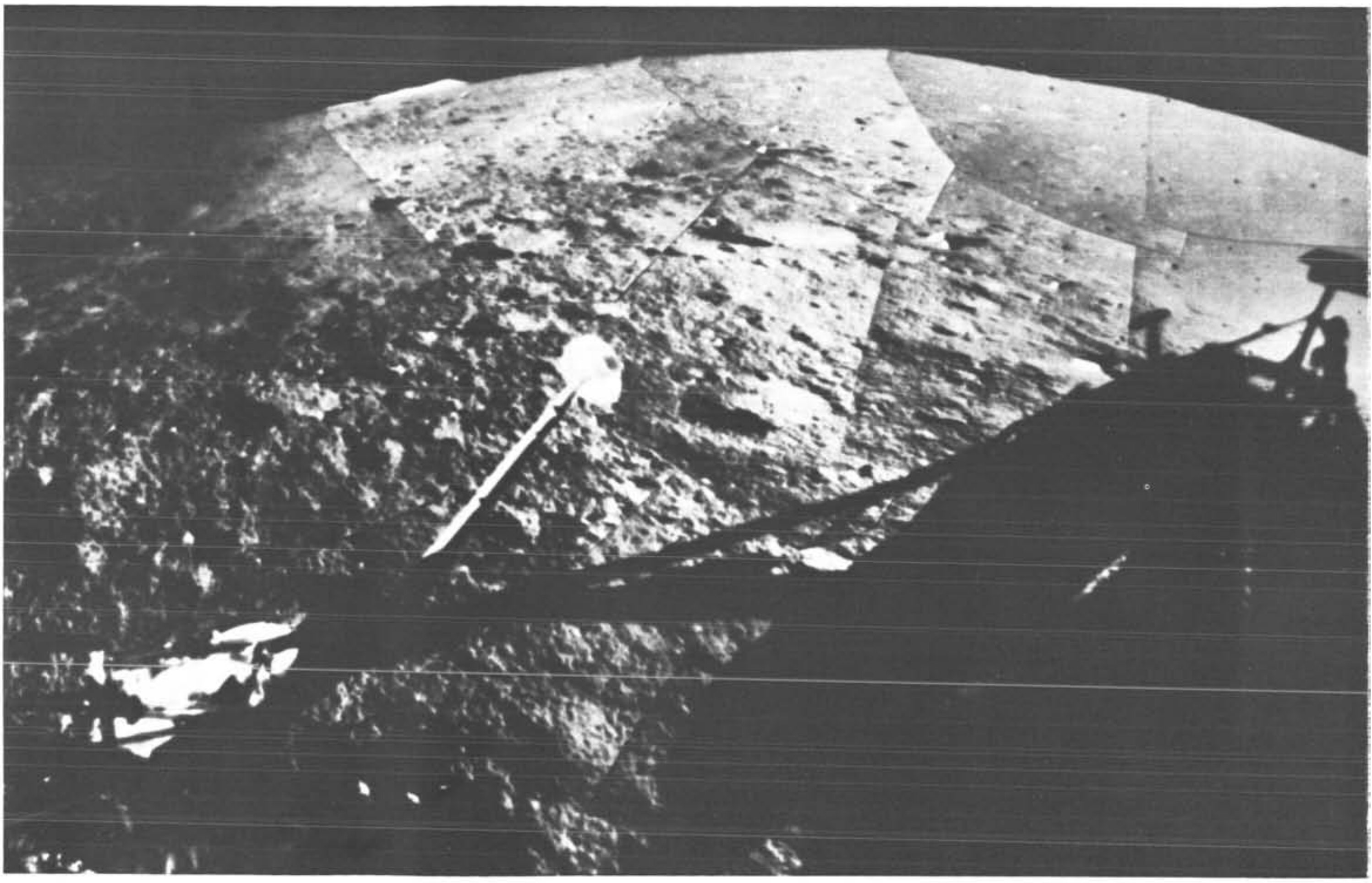
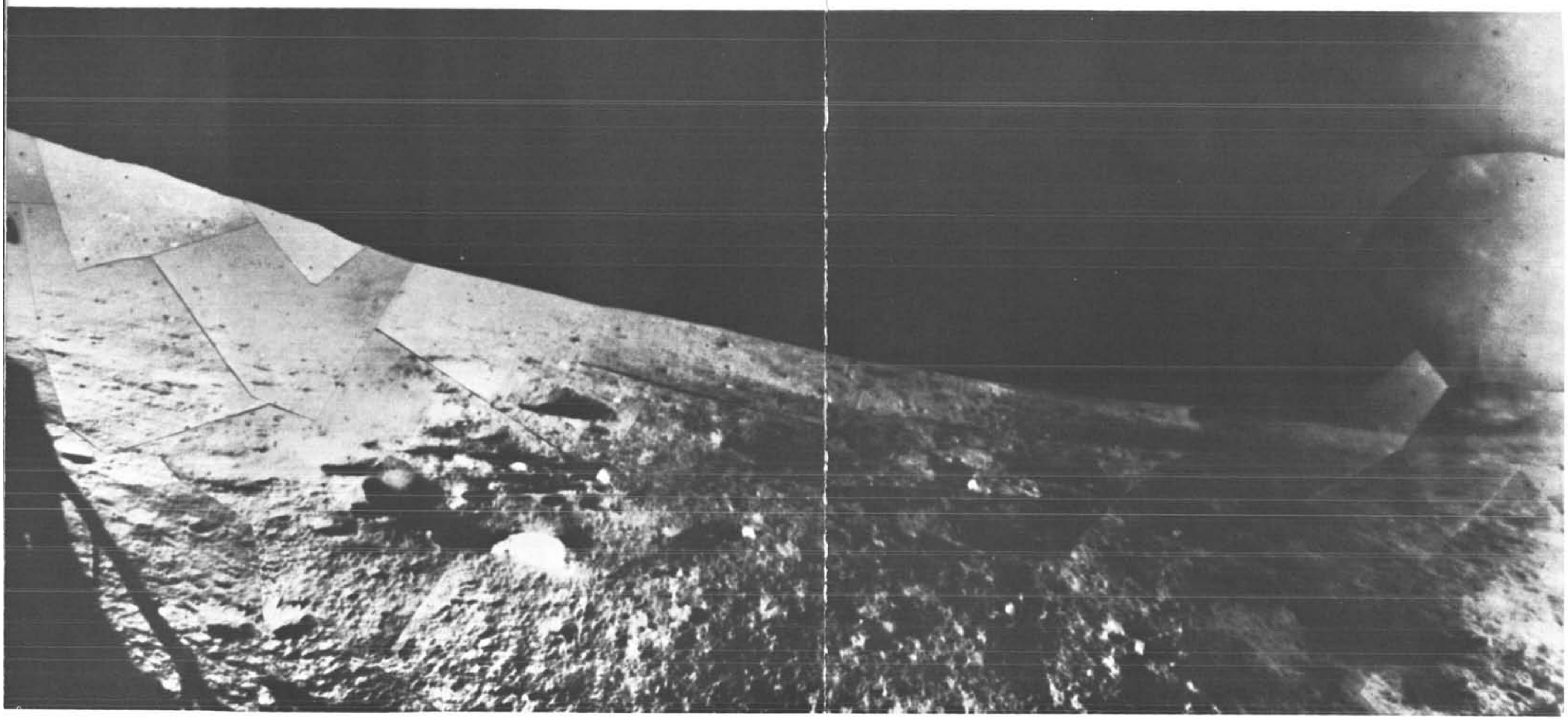
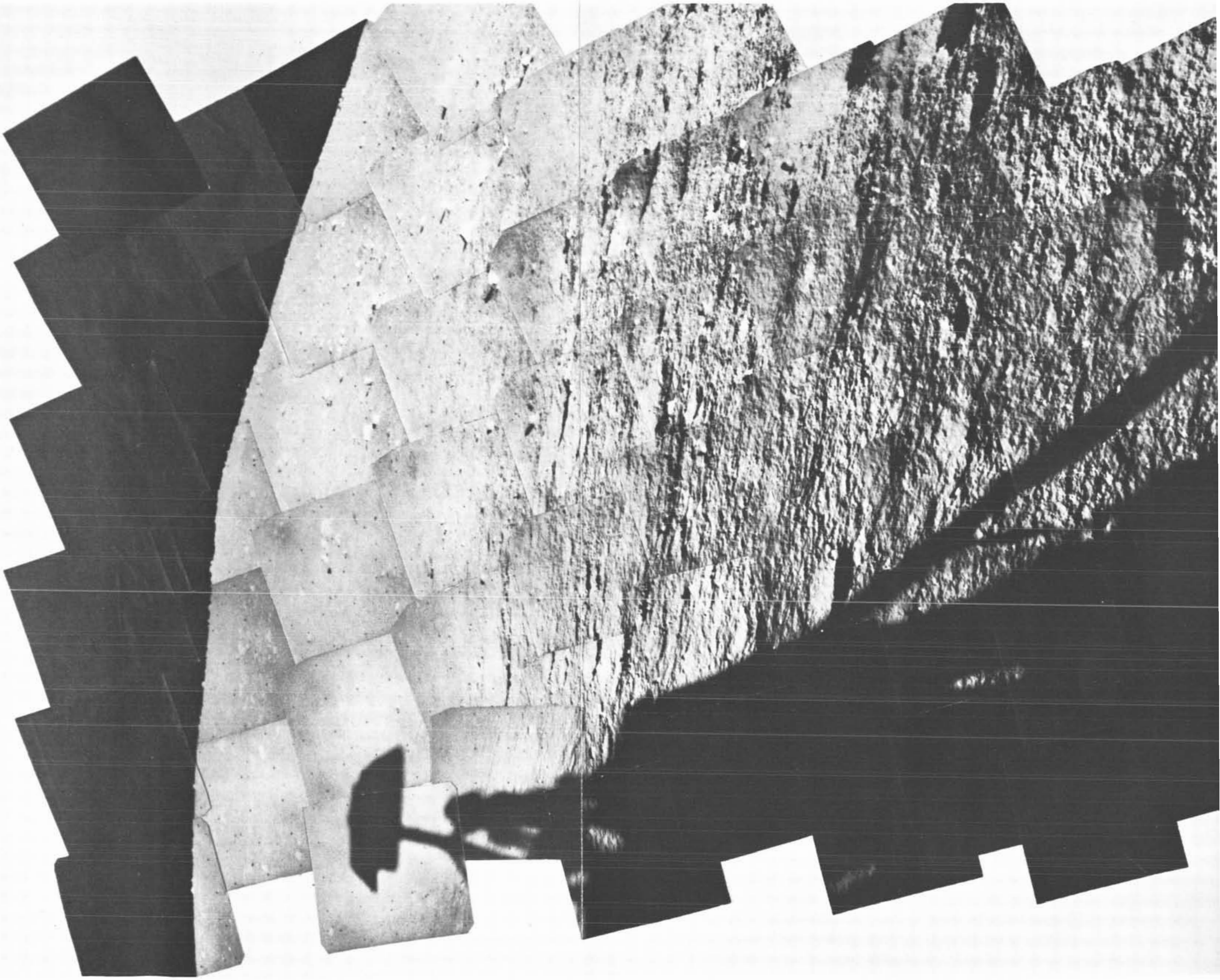


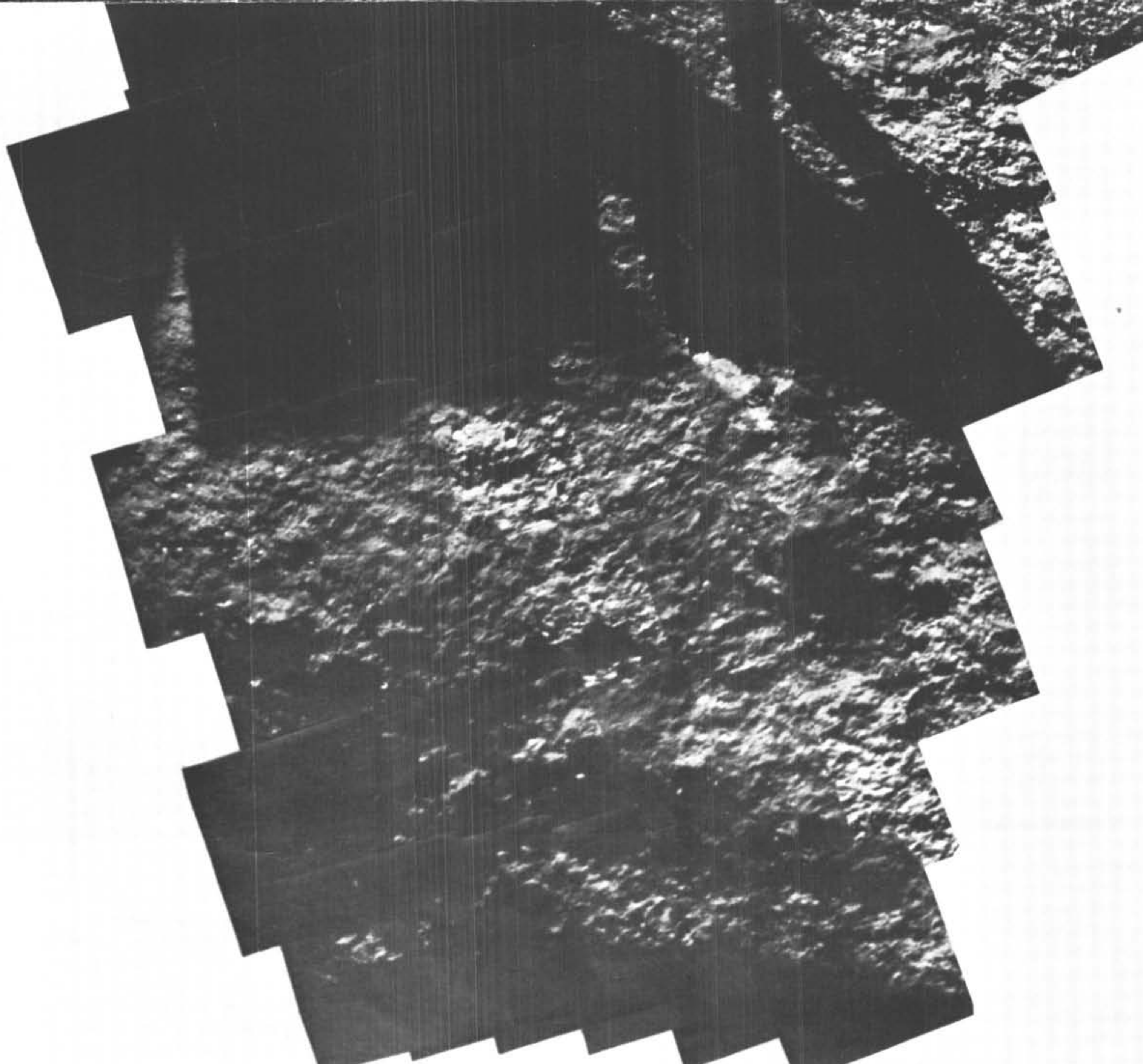
343-1



	Day	Azimuth	Focal length	
(19)	164	−156 to +108	Wide angle;	Improved mosaic (USGS)

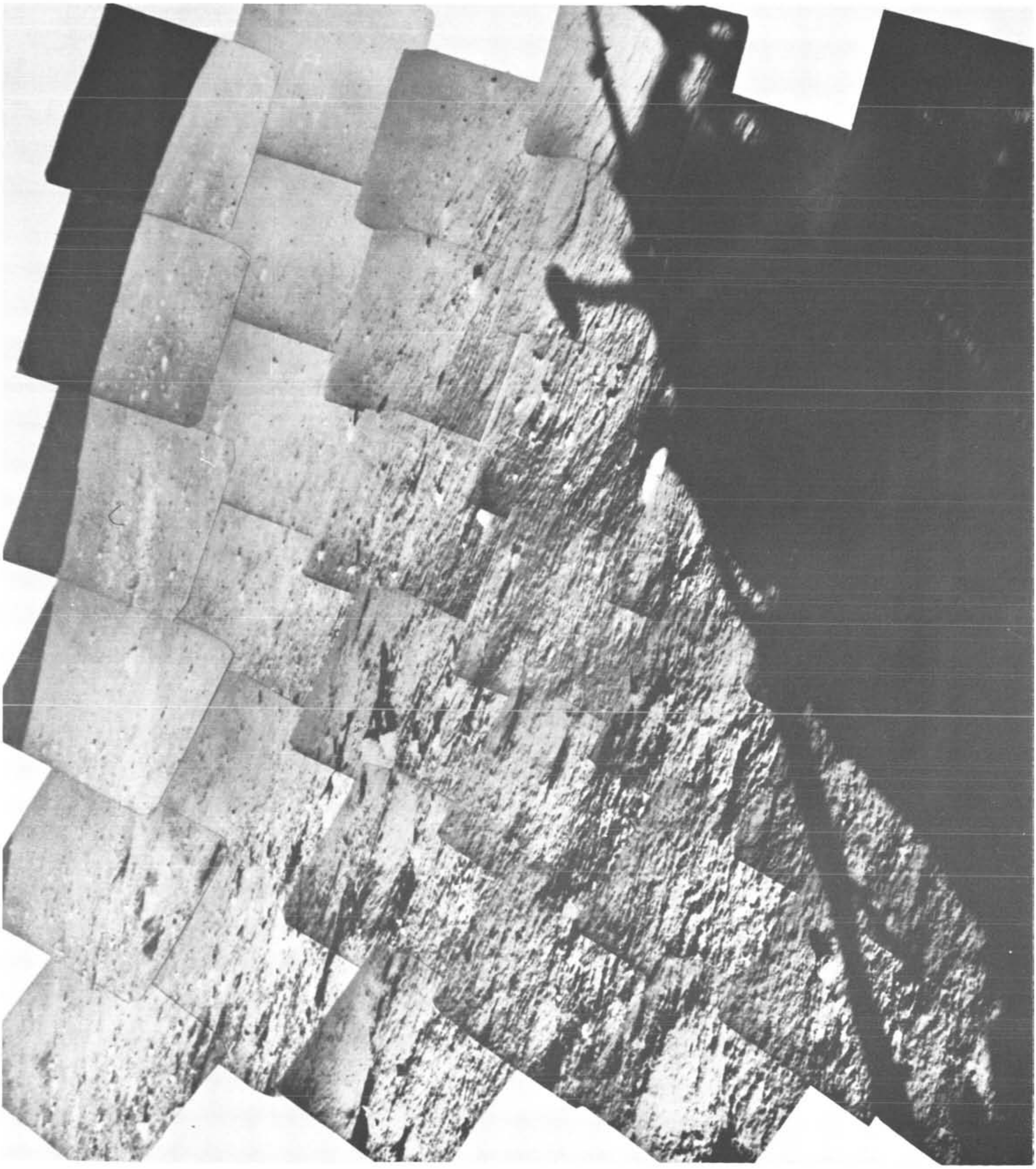
343-2





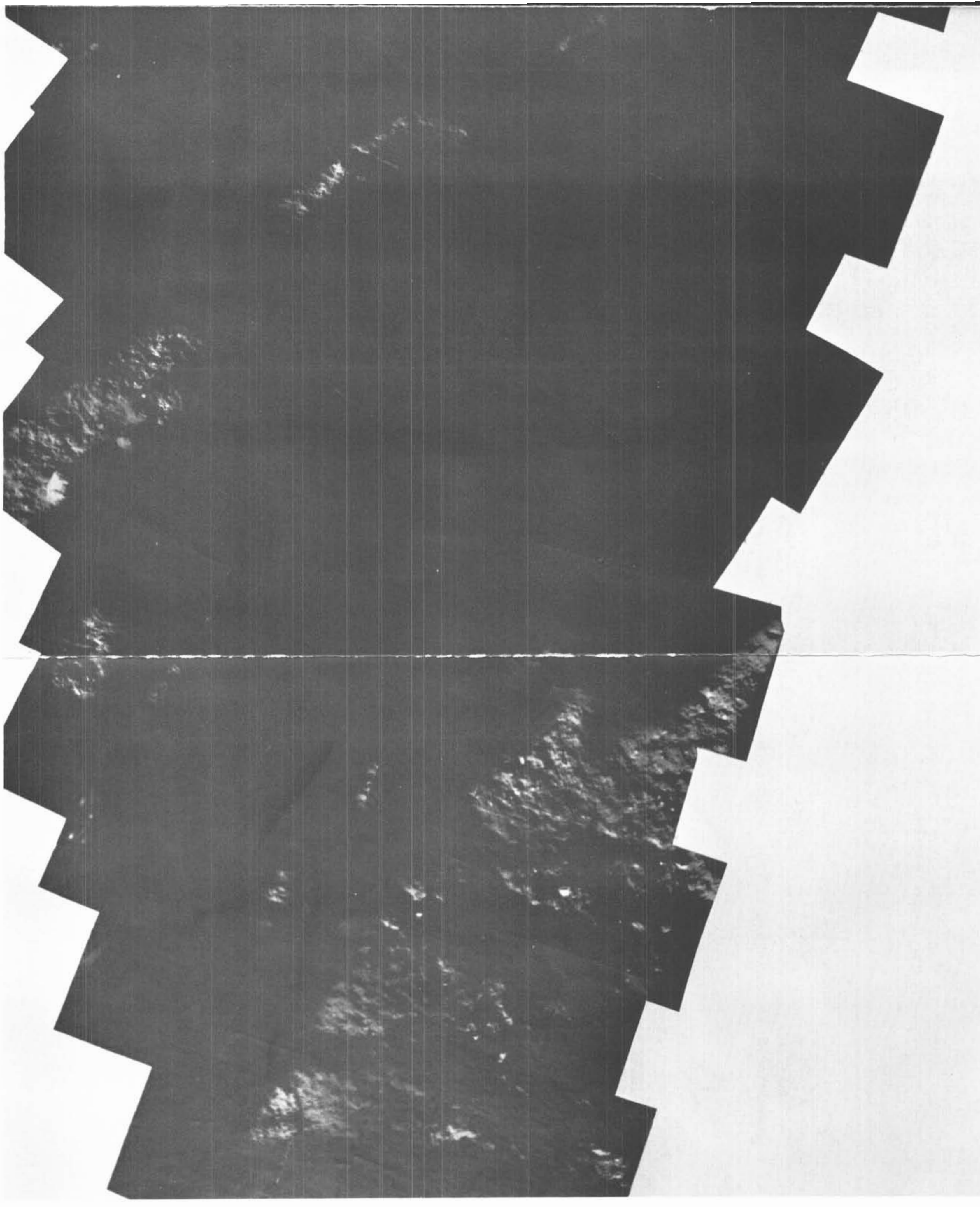
	Day	Azimuth	Focal length	
(20)	164	−36 to 0	Narrow angle ;	Improved mosaic (USGS)

349-3



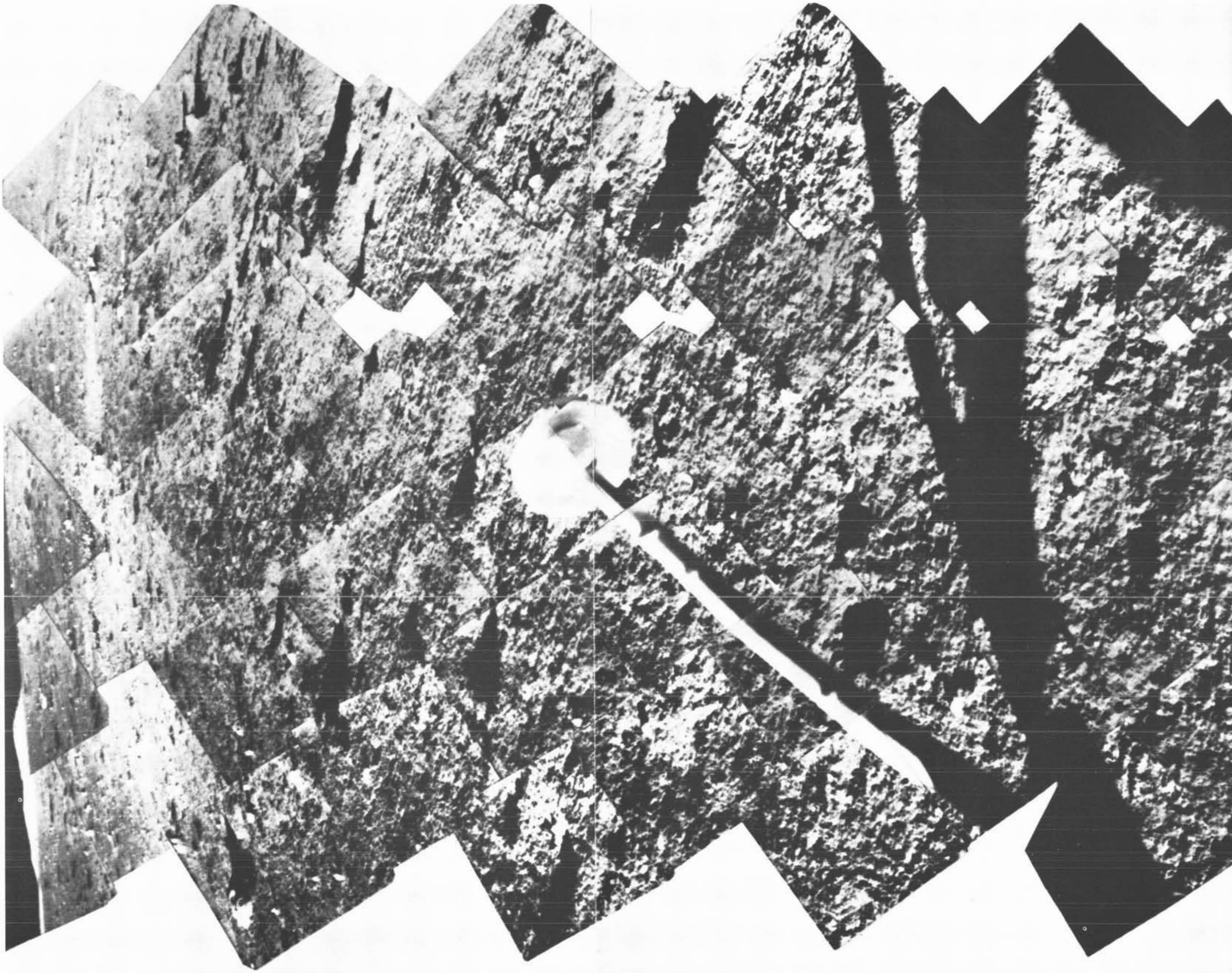
345-1

345-2



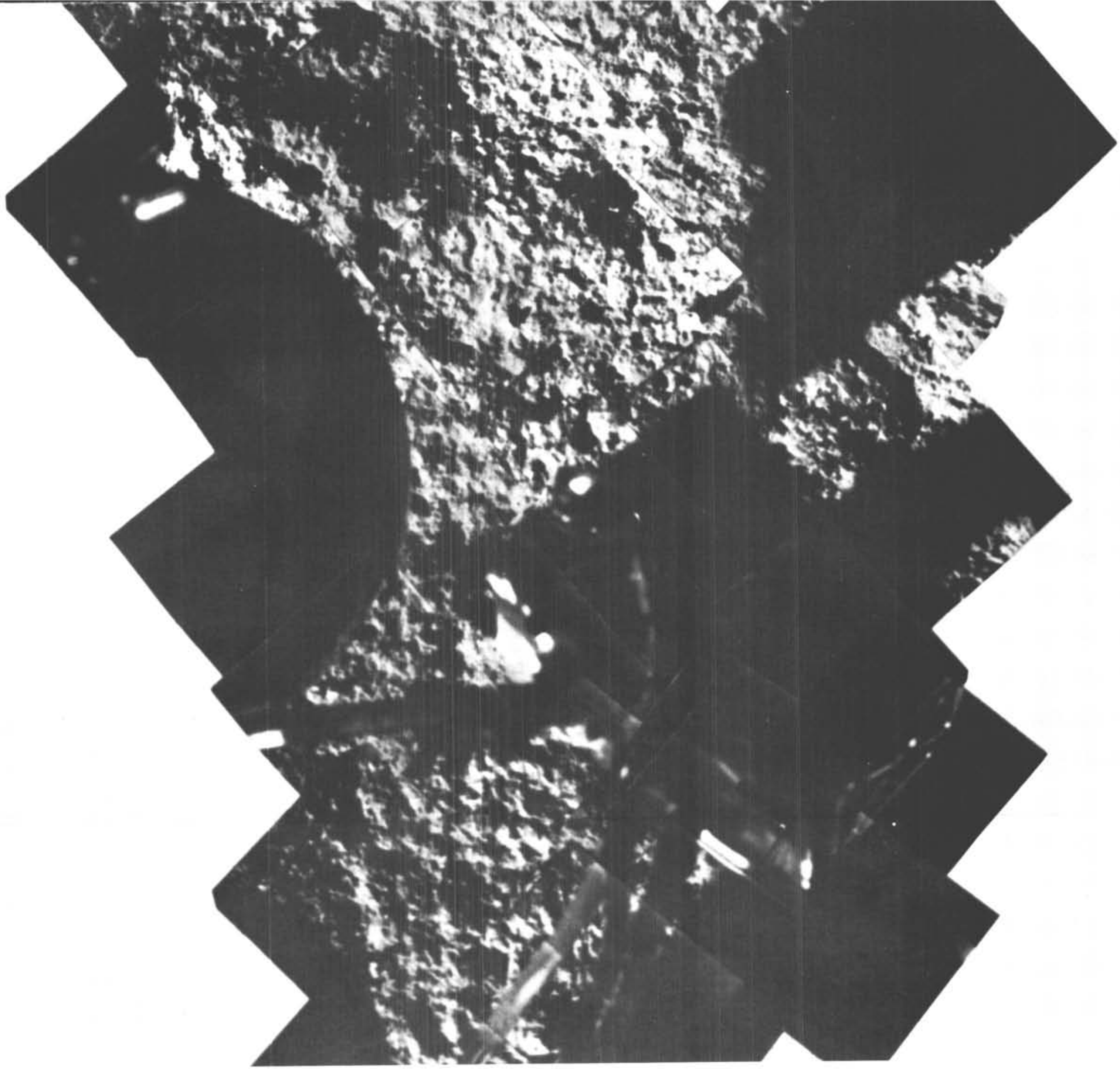
(21) Day 164 Azimuth 0 to +36 Focal length Narrow angle; Improved mosaic (USGS)

345-3

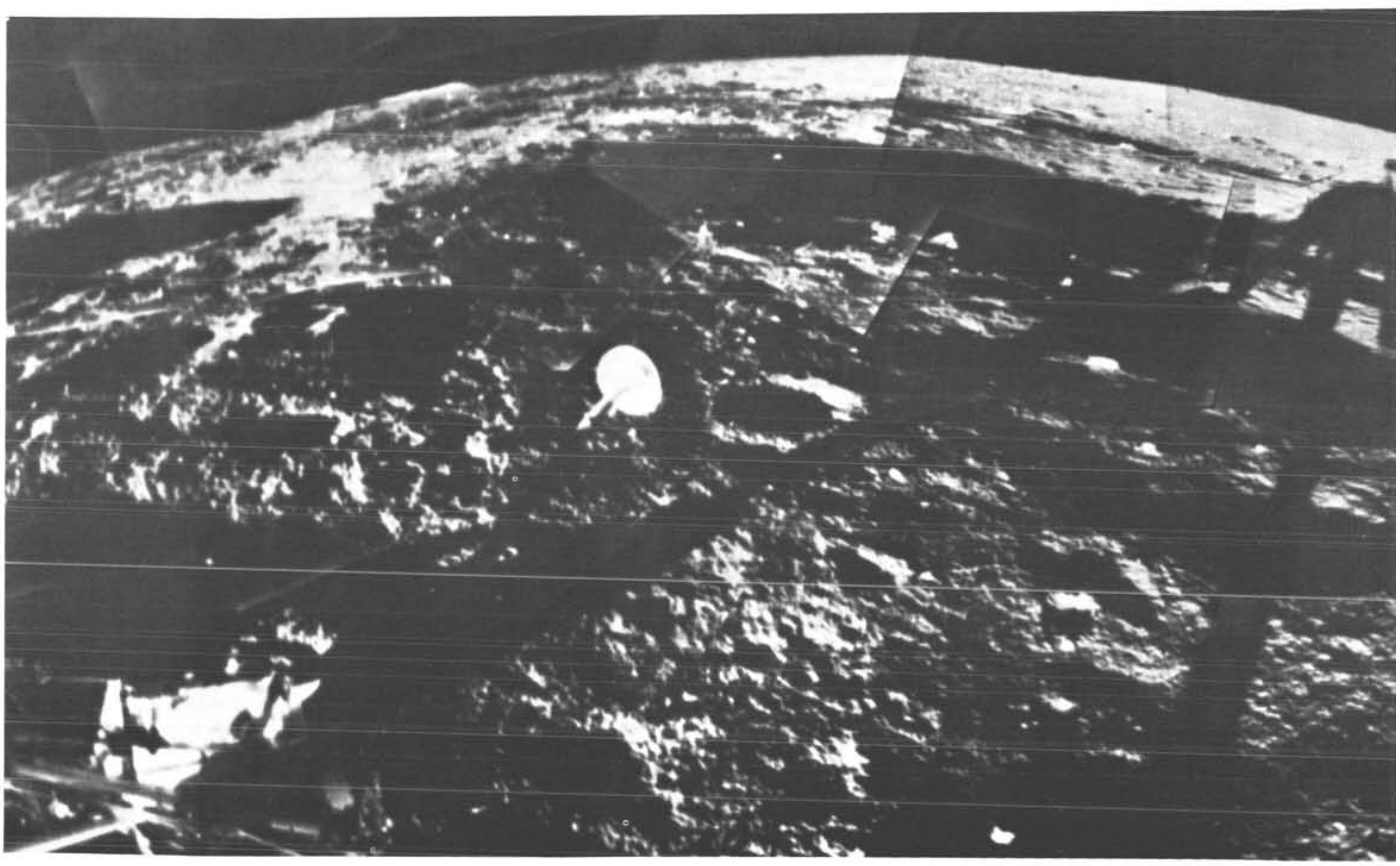


346-2

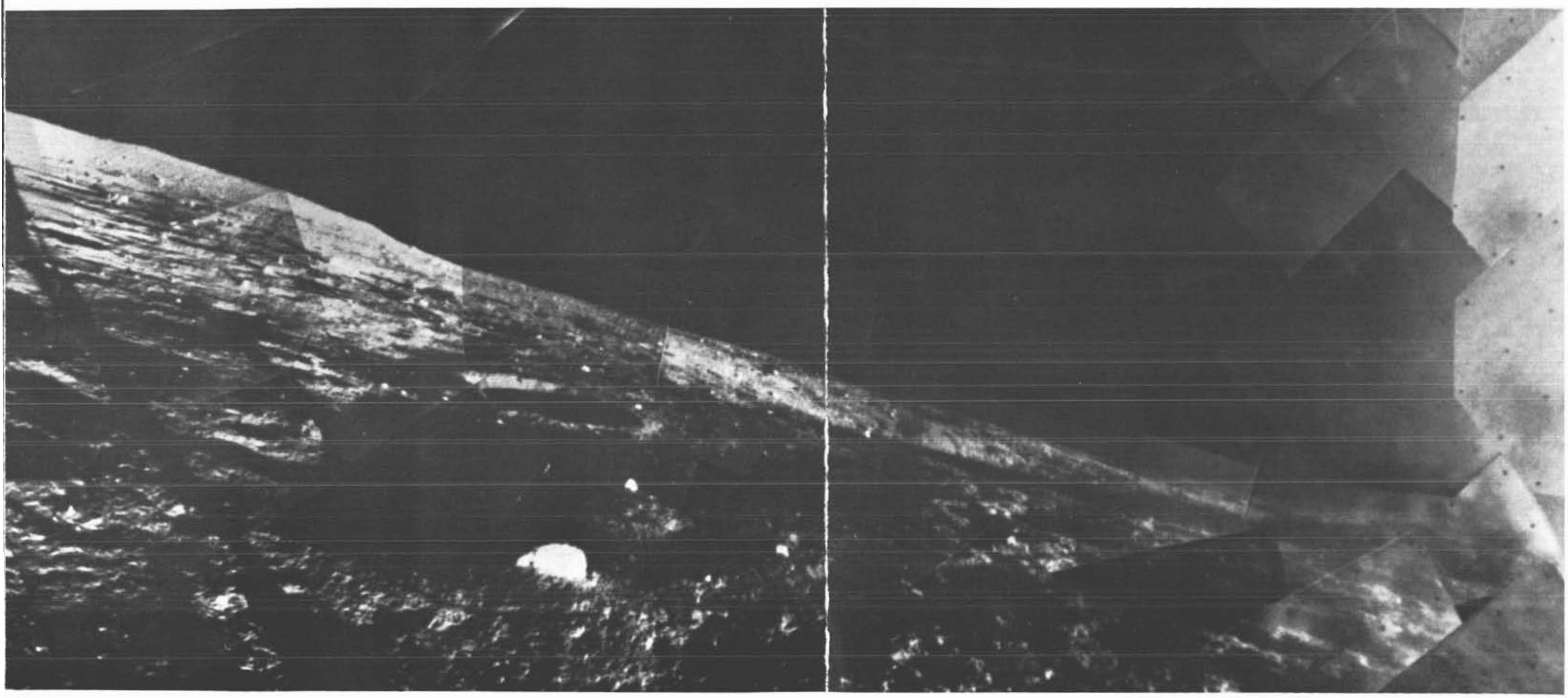
346-3



	Day	Azimuth	Focal length	
(22)	164	36 to 72	Narrow angle;	Improved mosaic (USGS)

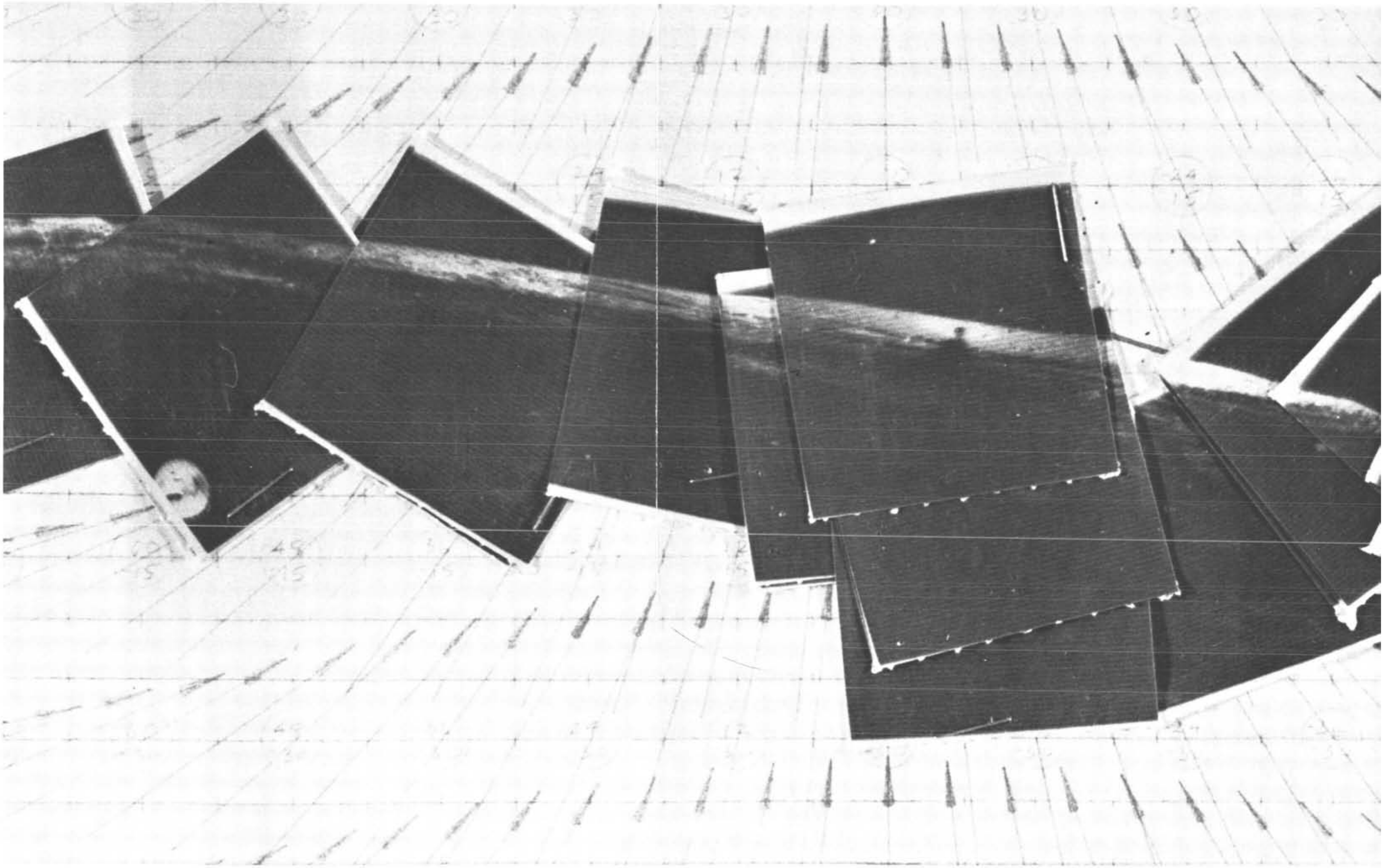


347-1



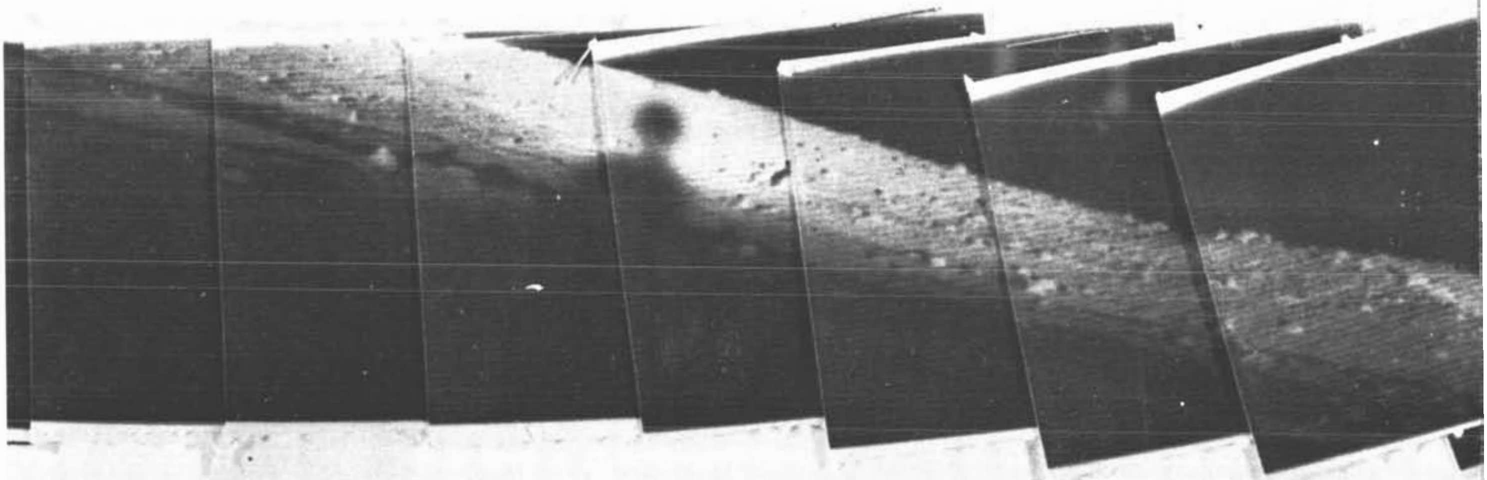
	Day	Azimuth	Focal length	
(23)	165	−156 to +108	Wide angle ;	Improved mosaic (USGS)

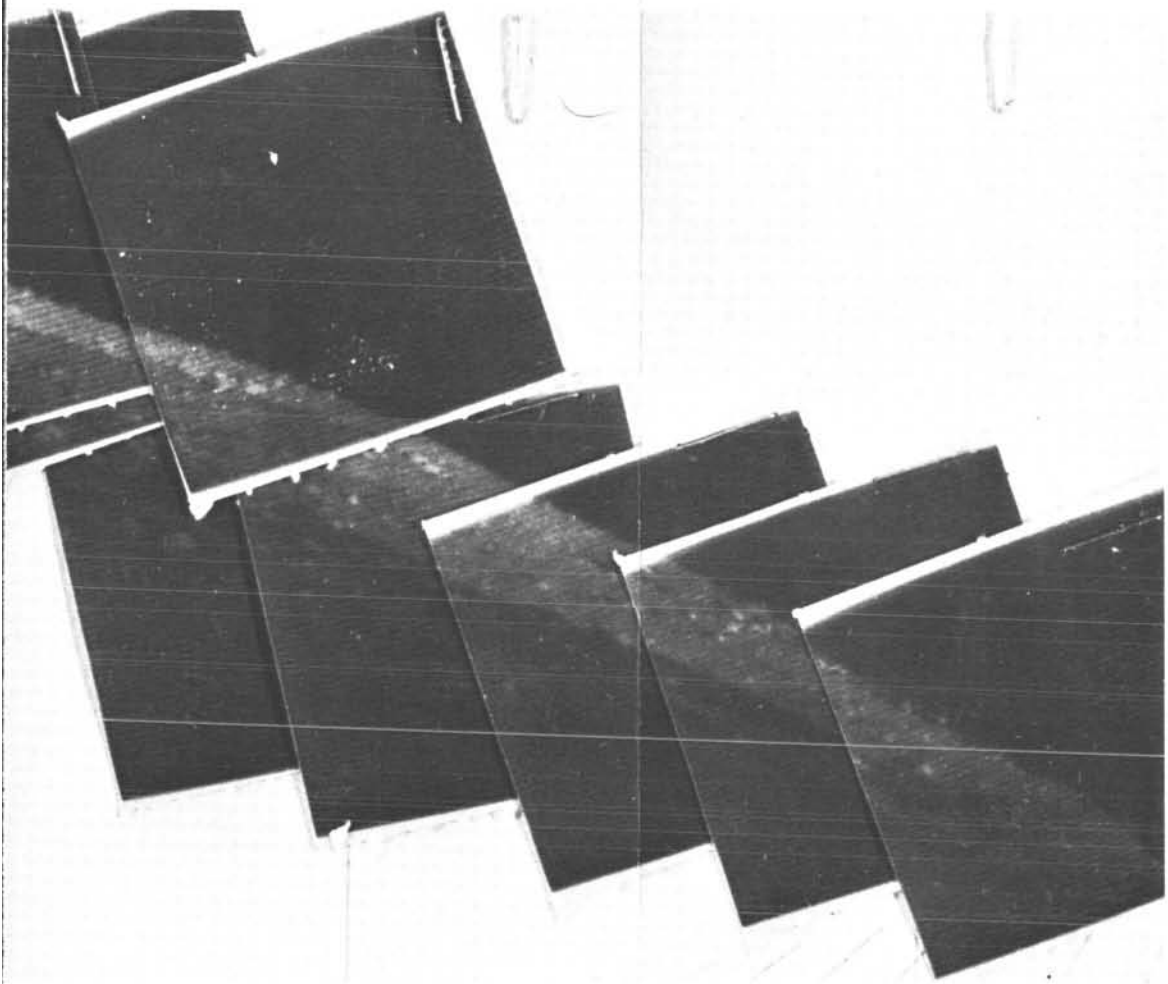
347-2



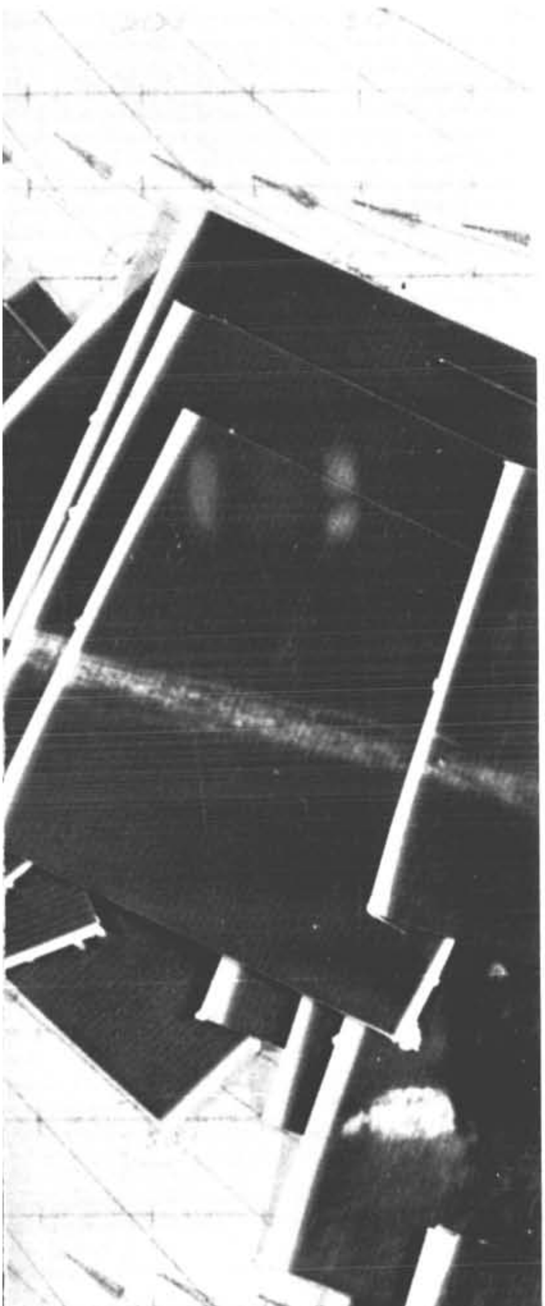
	Day	Azimuth	Focal length	
(24)	165	−80 to +90	Wide angle;	Operations mosaic

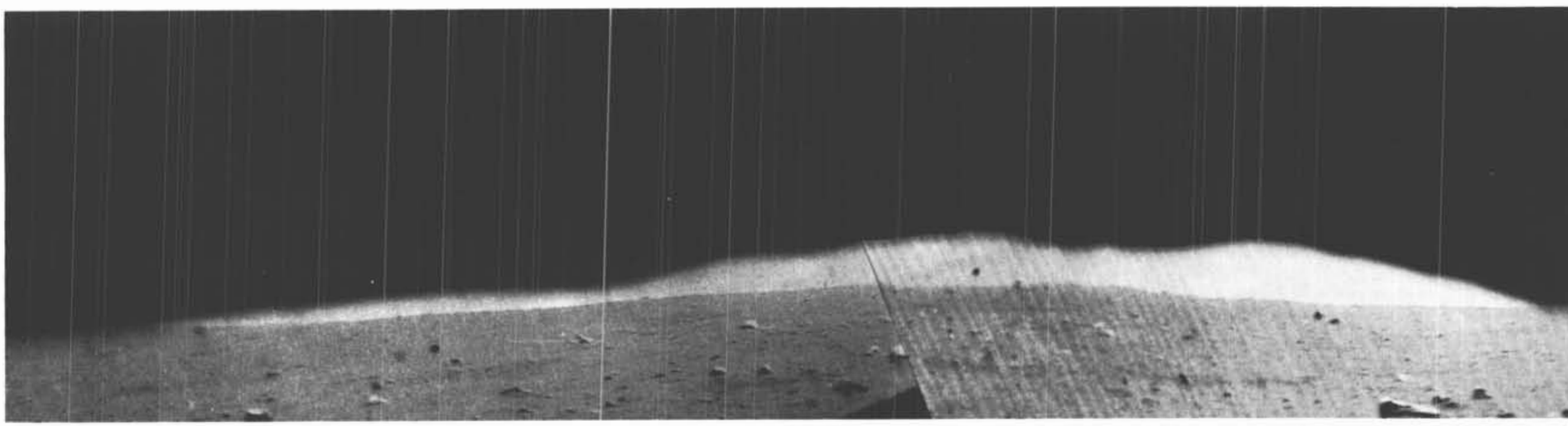
349-2





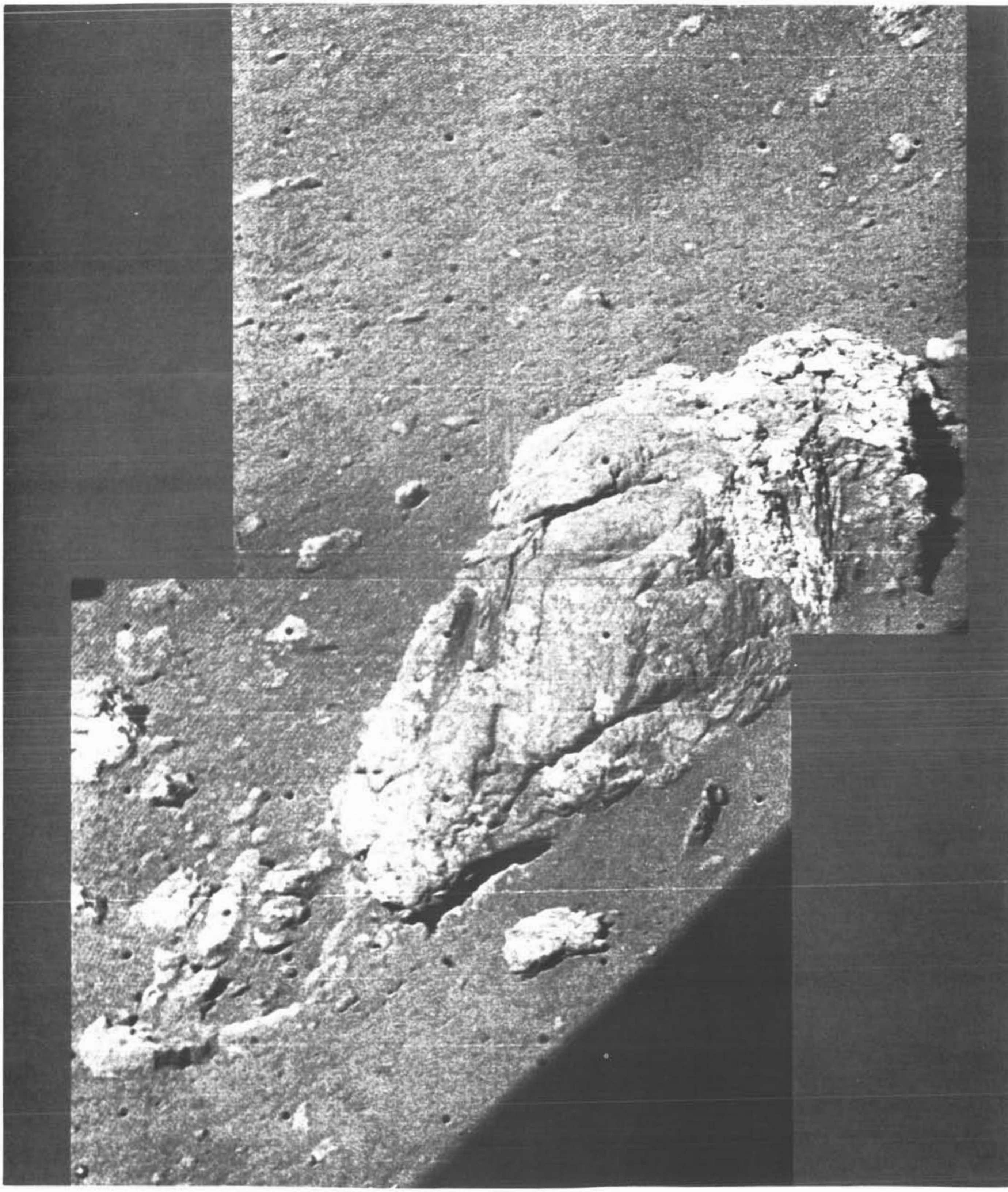
	Day	Azimuth	Focal length	
(25)	165	−36 to +10	Narrow angle;	Operations mosaic



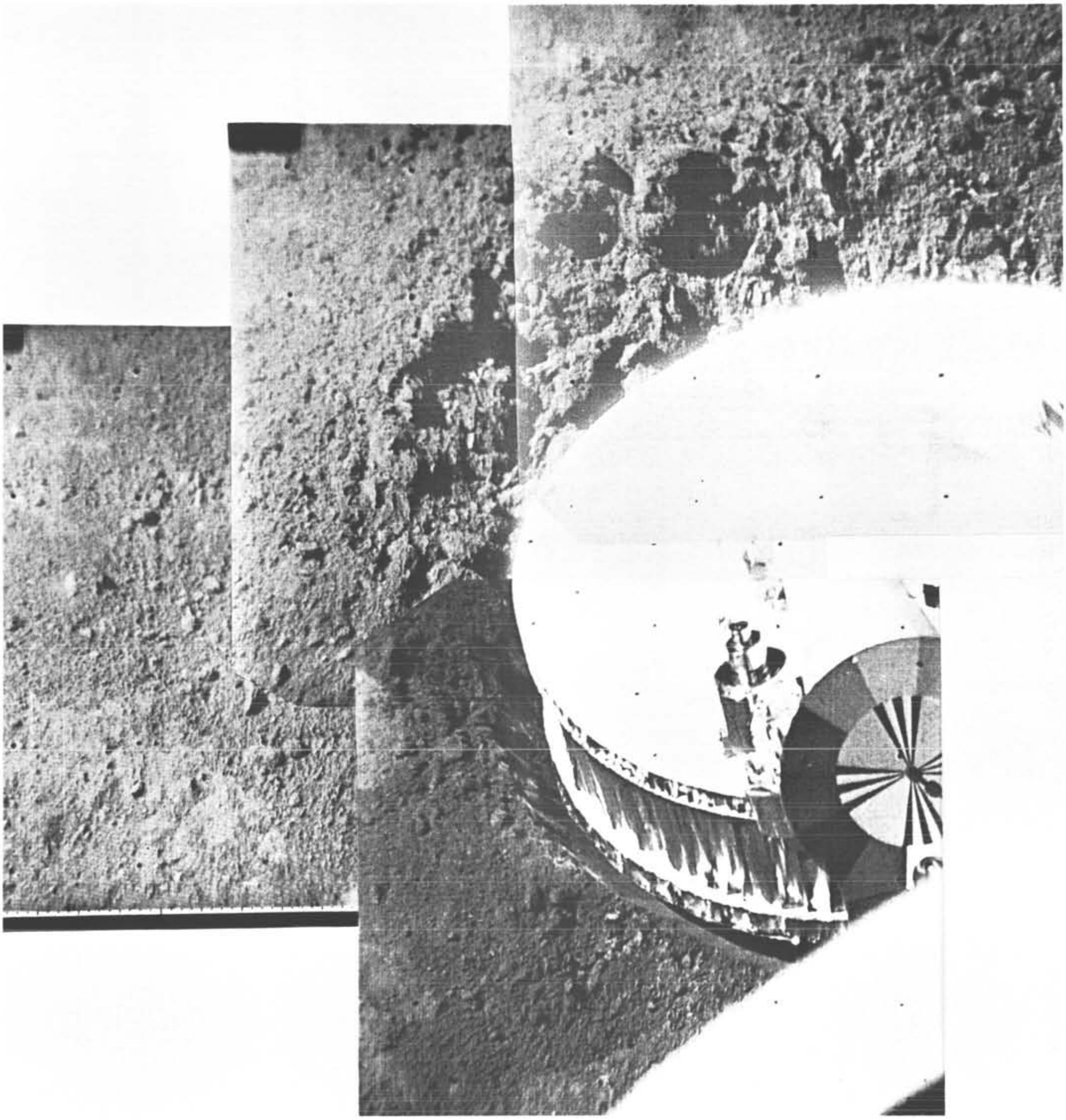


Day | Azimuth | Focal length

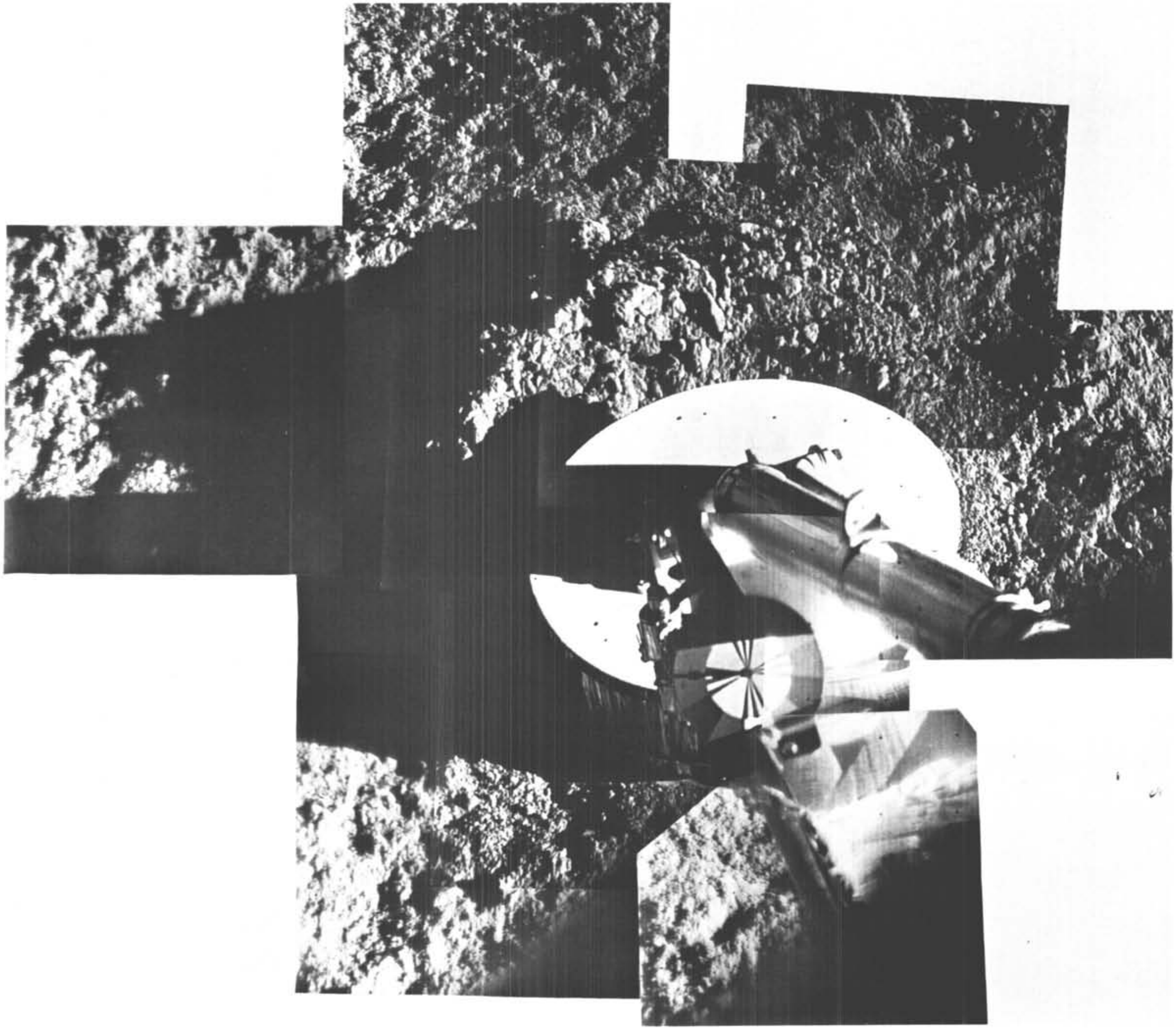
(26) 156 +63 to +69 Narrow angle; Large peak to the northeast



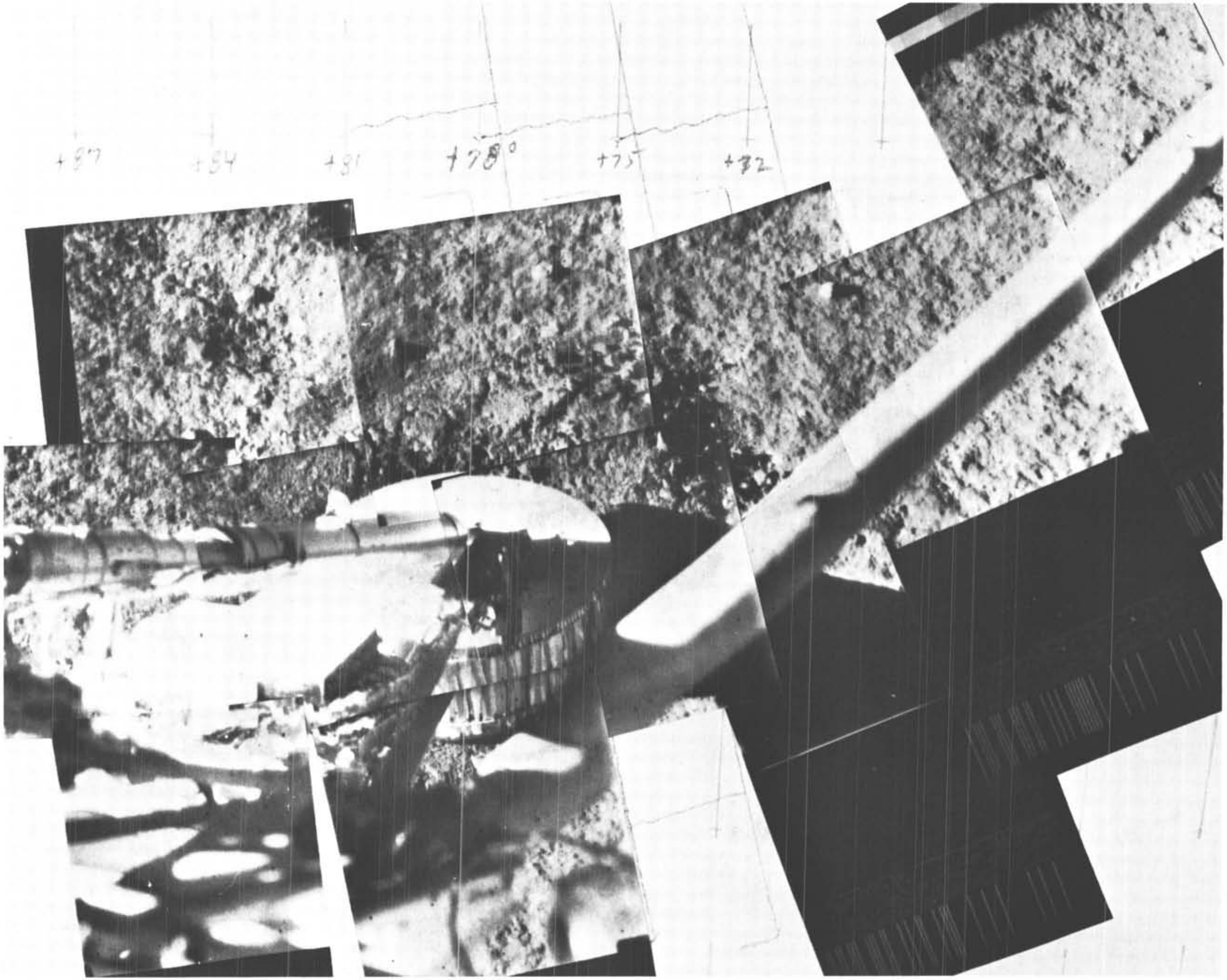
	Day	Azimuth	Focal length	
(27)	154	−168 to −165	Narrow angle;	Rock over compartment A (processed)



	Day	Azimuth	Focal length	
(28)	155	−63 to −51	Narrow angle ;	Footpad No. 2 (processed)



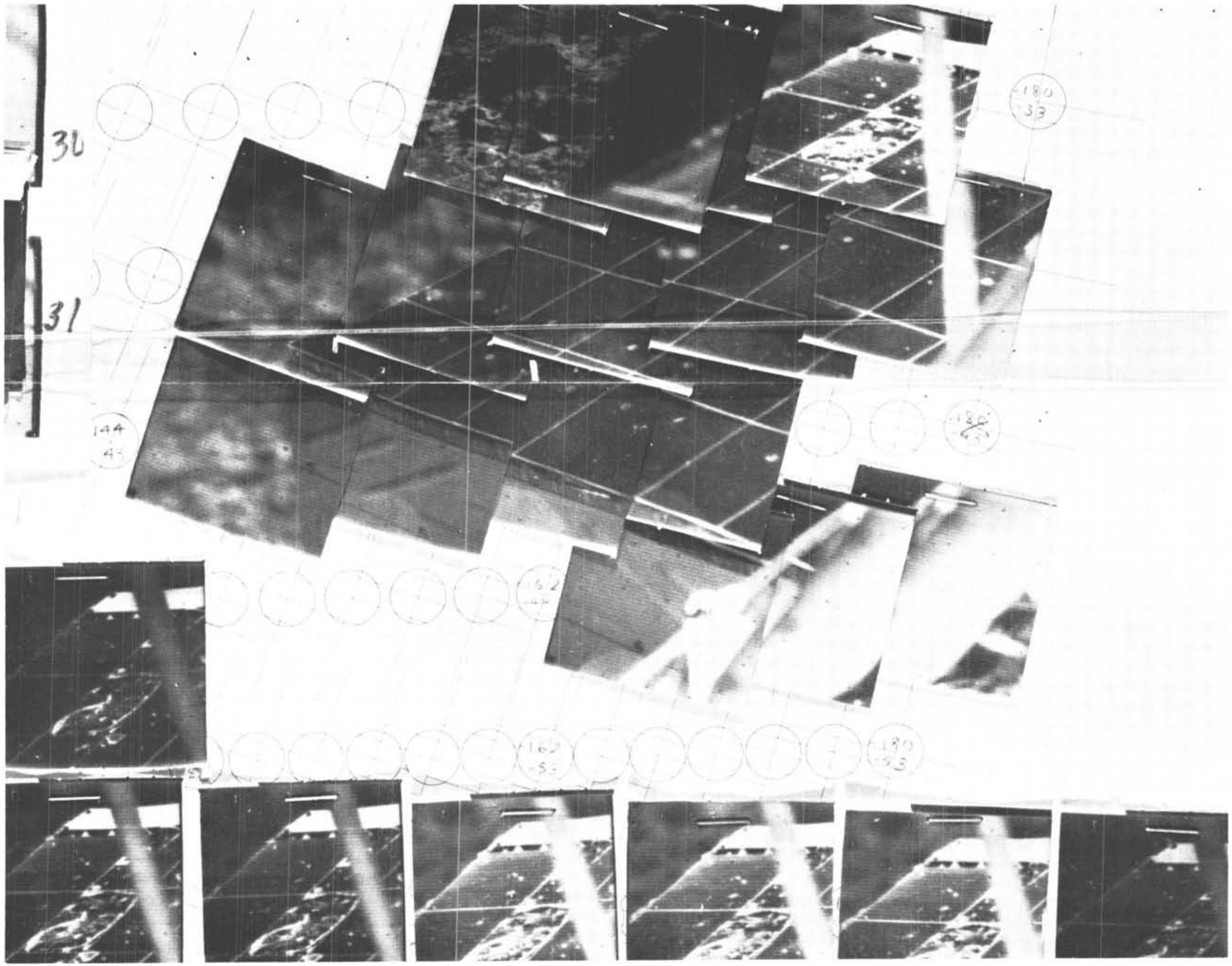
	Day	Azimuth	Focal length	
(29)	164	−75 to −45	Narrow angle;	Footpad No. 2 (some processed photos)



Day 163; Azimuth +66 to +87; Focal length Narrow angle;

(30) 163 +66 to +87 Narrow angle; Footpad No. 3 semi-improved

	Day	Azimuth	Focal length	
(31)	194	+66 to +87	Narrow angle;	Footpad No. 3 semi-improved



	Day	Azimuth	Focal length	
(32)	193	−180 to −156	Narrow angle;	Compartment A fractured radiator element