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Conclusion of Viking Lander Imaging Investigation

Picture Catalog of Experiment Data Record

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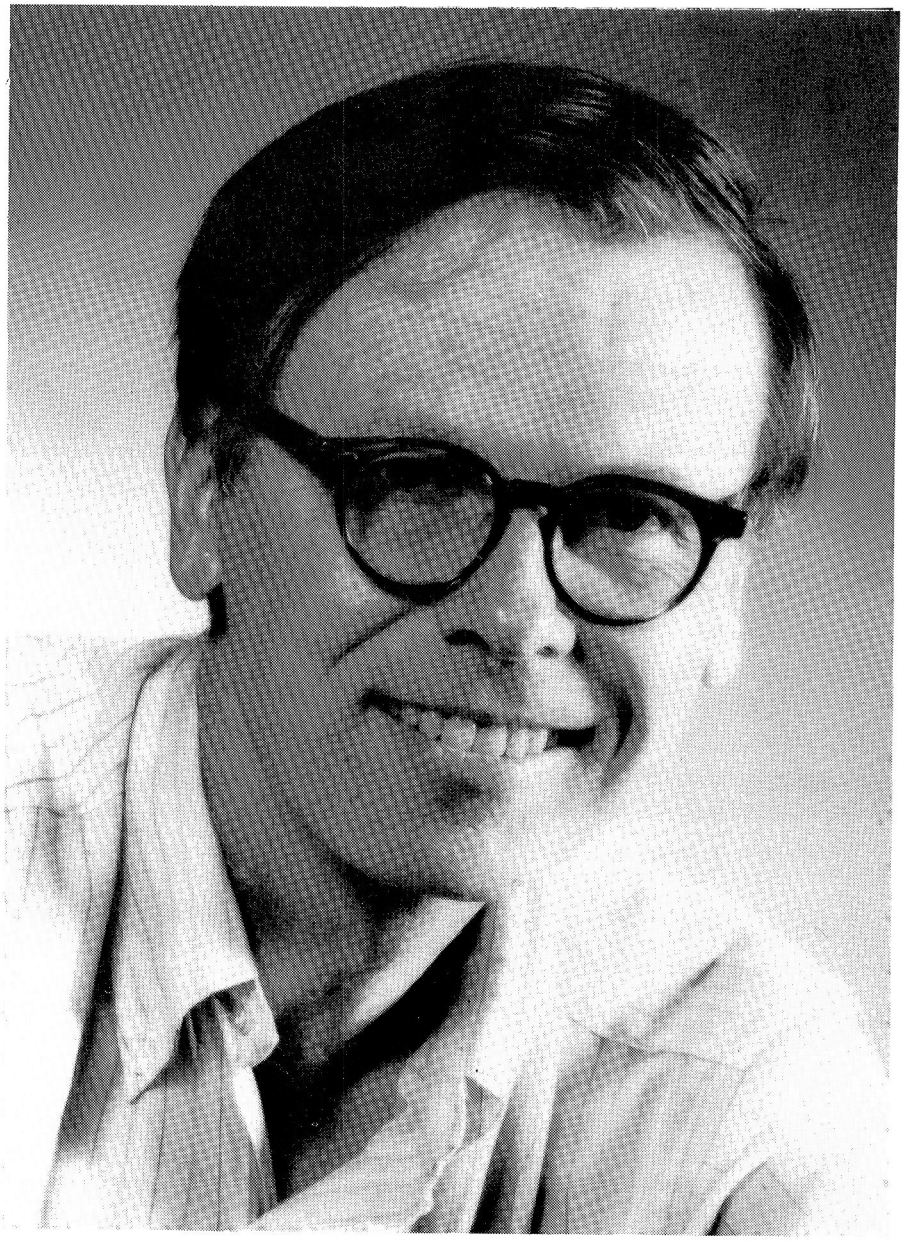


This catalog is dedicated to the memory of Dr. Thomas A. ("Tim") Mutch, without whose spirit of adventure and guidance the Viking Lander Imaging Investigation would not have been what it was.

FOREWORD TO THE FINAL CATALOG

This note is intended primarily for users who are familiar with previous volumes of the Viking Lander Imaging Investigation Catalog. This volume is similar in form and content to the previous volumes, but significant differences in image processing procedures have produced several inconsistencies in format beginning with the images contained here. Therefore, previous users should keep the following points in mind:

1. Due to a bug in processing software, photosensor array (PSA) temperatures are incorrect on the image labels of the photoproduct and EDR tape labels. Correct PSA temperatures are listed in the camera event report sections of this catalog.

2. To simplify the preparation of this catalog, "comment" fields which previously described the purpose of each image have been deleted from the camera event reports. The "mode" and "diode" fields have been corrected from previous catalogs where their content was incorrect, and the layout of the camera event report and several other subsets has been revised for greater accuracy and understanding.

3. Camera event reports in this catalog now include the field, "archive tape/file", a listing of the tape numbers in the proposed NASA Planetary Data Conversion Program which will contain the associated image when that program is complete.

PREFACE

This publication concludes the documentation of images obtained by the Mars Viking Lander Imaging Investigation. Earlier publications, NASA RP-1007 and NASA RP-1068, Volumes I and II, (refs. 1 and 2) have documented previous phases of the mission, which had a duration from the touchdown of lander 1 on July 20, 1976 until it ceased transmitting data on November 5, 1982. Total mission length was 6 Earth years, 108 Earth days.

This volume documents lander 1 images 12J018/935 through 12J194/2238 (the last image taken) and lander 2 images 22I096/967 through 22I150/1212 (lander 2's last image), a period known as the Viking Survey Mission. During this period, a total of 232 images were taken. All are documented here, although 83 were not received on Earth for a variety of engineering and logistical reasons.

The general format of the previous catalogs has been followed. The intent has been to produce an organized, easy-to-follow record, helpful to both the uninitiated and experienced user of lander imagery. Every space project, especially one as long-lived as Viking, develops its own acronyms and vocabulary; every attempt has been made here to avoid or explain project "jargon". The entire digital data set is called the experiment data record (EDR). Photographic products in which the data have not been modified except for simple linear dynamic range expansions ("stretches") are termed EDR photoproducts. This volume contains a small EDR photograph of each image.

A section on terminology is included to assist with the interpretation of the listings and the images. Several diagrams also provide assistance on this subject and another section enables the user to properly decalibrate the data. Computer-generated reports give detailed information about each camera event. This publication will acquaint the user with the imaging data that are available from the Viking Survey Mission and the procedure which should be used to obtain photographic products. As an extra aid to interpretation of the Viking Lander data set, the document PFORM, which is a description of all Viking Lander image products, is included as an Appendix.

A large part of the original text has been repeated from previous catalogs so this volume can be used without reference to them. Although previous authors are not authors of this publication, their prior contributions have been included and are substantial. Robert Tucker was author of the original catalog format. In addition, a number of other individuals should be acknowledged, there are three major groups: the scientists who originally developed the science requirements for the design of the lander camera system and the acquisition of the data; the Lander Imaging Flight Team that, together with these scientists, implemented the mission plan for the lander camera system; and the group that participated specifically in the production of this report material.

The original Viking Lander Imaging Science Team consisted of Thomas A. Mutch, Elliott Levinthal, Alan B. Binder, Friedrich O. Huck, Sidney Liebes Jr., Elliot Morris, James A. Pollack, and Carl Sagan. The Viking Lander Imaging Flight Team during the Extended and Continuation Missions included the

members of the Lander Imaging Science Team, as well as Raymond E. Arvidson, and Kenneth L. Jones. The uplinking group within the team consisted of Deborah G. Pidek, Elizabeth F. Buchan, William C. Eggemeyer, Sven U. Grenander, Edward A. Guiness, and Janet Shields. The downlinking group consisted of Kenneth L. Jones, Mary E. Augostine, Joseph D. Gaunder, Linda Myers, Stephen Peters, Michael Rivero, and Stephen D. Wall.

The Viking LIFT (Lander Imaging Flight Team) for the Survey Mission included Al Britting and Joe Brinkle, in charge of day-to-day operations; Paula Eshe, in charge of scheduling; David Pieri, Project Scientist; Joe Boyce, Project Manager in NASA Headquarters; and George Gianopulos, in charge of JPL activities.

The Image Product Format (PFORM) document was written by Sidney Liebes Jr. The production of report materials and photographic records required the support of the facilities of the Image Processing Laboratory (IPL) at the Jet Propulsion Laboratory under the direction of Susan K. LaVoie. Carol Stanley was responsible for the preparation and revision of all computer-generated reports and listings. Susan M. Salas drafted several figures and assisted with numerous last-minute details; Kathleen Banwart and Beth Schroeder were responsible for typing and manuscript preparation.

CONTENTS

INTRODUCTION

The Viking Mission to Mars consisted of two spacecraft, each comprised of an orbiter and a lander. Each spacecraft was launched by a Titan III/Centaur rocket (the first on August 20, 1975, the second on September 9, 1975) and placed in orbit around Mars on June 19, 1976 and August 7, 1976, respectively. The mission, spacecraft, and preliminary results are described in a special edition of the Journal of Geophysical Research, (Ref. 3). Reference 4 also provides an excellent summary of the Extended Mission.

Viking Lander 1 separated from its orbiter and touched down on the surface of Mars on July 20, 1976 at 1613 hours relative to local Mars midnight. The landing site is on the western slopes of Chryse Planitia at 22.483° N and 47.94° W (aerographic coordinates). Viking Lander 1 faces in a southeasterly direction (141.91° clockwise from north as defined by the side of the lander on which the two cameras are mounted). The lander deck is tilted 3° downward in the direction 285.18° clockwise from north.

Viking Lander 2 touched down at 0948 hours relative to local Mars midnight on September 3, 1976, at a landing site in the Utopia Planitia region at 47.968° N and 225.71° W. It faces in the direction 29.13°. The lander has a tilt of 8.21° downward in the direction 277.7° from north.

Both landers carried the same nine investigations: (The major lander components are detailed in Figure 1) lander imaging (camera systems); biology

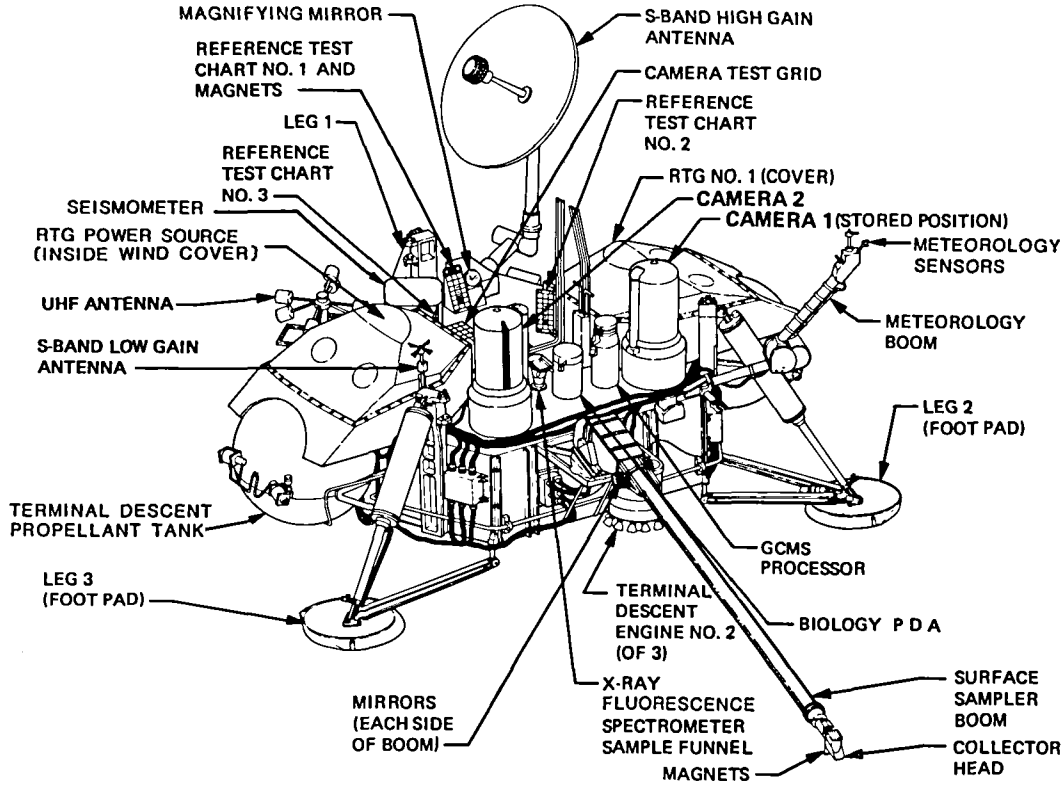


Figure 1. - Major lander components.

(three special-purpose automated experiments); molecular analysis (X-ray fluorescence spectrometer); meteorology (atmospheric pressure, temperature and wind sensors); seismology (seismometer); magnetic properties (various magnets); physical properties (various sensors); and radio science (radio and radar systems). Only imaging, meteorology and radio science experiments produced data for the entire mission.

The Viking Lander Imaging Investigation used a pair of cameras on each of the two landers to characterize the scene at the two sites. Once received on Earth, the digital imaging data were used to reconstruct the images. Sometimes communication strategies resulted in a set of imaging data being received more than once. Selection and merging operations were performed to develop the most error-free record of the data, which is termed the experiment data record (EDR). The data were stored on magnetic tape and converted by means of various recording devices to photographic media. Film negatives were produced and used to make positive transparencies, positive prints and microfiche photographic products.

These photographic products and magnetic tapes constitute the experiment data record of the Viking Lander Imaging Investigation as described here. Also included in this publication are computer-generated camera event reports that list supplemental information about the conditions under which the images were collected and how they were processed and recorded. In addition to these comprehensive reports, additional computer listings group the images in a variety of ways.

Reference 1 presents a catalog of the images obtained during the initial four months of the mission from July 20, 1976 to mid-November 1976. Volume I of Reference 2 presents a catalog of imaging data acquired by Viking Lander 1 between late December 1976 and mid-February 1979. Volume II of Reference 2 presents a catalog of imaging data obtained by Viking Lander 2 between late December 1976 and mid-May 1979. These dates, names and events are shown in relation to each other in Figure 2.

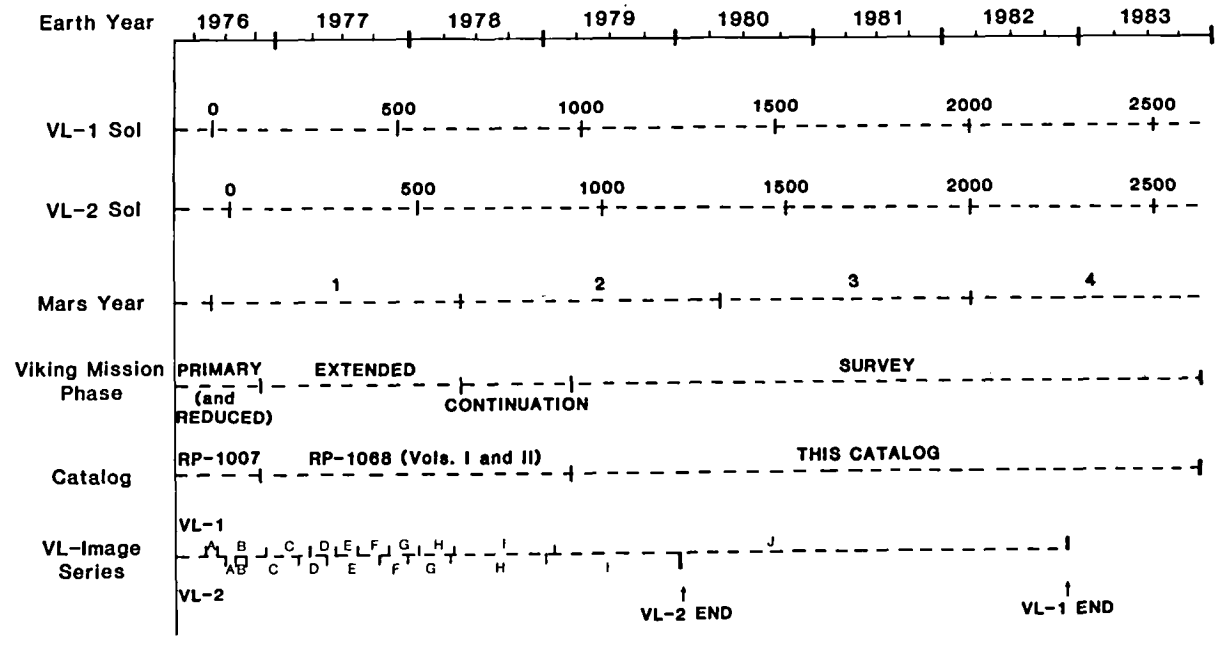


Figure 2. - A comparative diagram of Viking Mission names, dates and events.

ABBREVIATIONS

AZ	azimuth
BB	broadband
bps	bits per second
CACCS	camera-aligned camera coordinate system
CE	camera event
CLR	color
DCS	dark current subtractor
DIGIFAX	digital facsimile printing device
DN	data number
DSN	Deep Space Network
EDR	experiment data record
EL	elevation
FOVLIP	first-order Viking Lander image processing
GCMS	gas chromatograph-mass spectrometer
GMT	Greenwich mean time
IPL	Image Processing Laboratory
IPL PIC ID	Image Processing Laboratory picture (photograph) identifier
IR	infrared
ISDR	intermediate system data record
JPL	Jet Propulsion Laboratory
LACCS	lander-aligned camera coordinate system
LACS	lander-aligned coordinate system
LIFT	Lander Imaging Flight Team
LLD/T	local lander day/time
LLT	local lander time
LSEQ	lander sequencing software

MTIS	mission and test imaging system
MTPS	mission and test photographic system
N	north
PDA	power distribution assembly
POS	positive
PSA	photosensor array
RESTIMG	restore image data
RT	real time
RTG	radioisotope thermoelectric generator
SB	S-band
SDR	system data record
sol	Mars solar day
SUR, SURV	survey
SYS	system
TDR	team data record
TLMP	telemetry processing
TRANS	transparencies
UHF	ultrahigh frequency
UTC	coordinated universal time
VCAM	Viking Continuation Automatic Mission
VEM	Viking Extended Mission
VICAR	video information classification and retrieval
VIS	visible
VL	Viking Lander
VLLOG	Viking Lander logging
VMCCC	Viking mission control and computer center
VSM	Viking Survey Mission
λ	wavelength, μm

IMAGING EXPERIMENT

LANDER CAMERAS

The Viking Lander cameras are facsimile type instruments. A mirror, which nods in elevation and rotates in azimuth, sweeps the field of view over an array of 12 selectable photodiodes (Ref. 5). The pair of cameras on each lander are mounted 0.813 m apart and view the scene from a nominal height of 1.3 m.

Mechanical and Optical Design

The mirror nods on a horizontal axis which itself pivots on a vertical axis. This scanning mechanism provides for vertical scan lines acquired in the direction from low to high elevation. During the vertical scan, the acquisition of picture elements (pixels) is such that the separation between pixel centers equals the azimuth step size in degrees, either 0.04° or 0.12° depending on the command. This results in a 20.48° vertical field of view for a 0.04° azimuth step size and a 61.44° view at a 0.12° step size. The starting and stopping azimuths can be commanded in increments of 2.5° over a range of 342.5° The elevation pointing angle (the center of the elevation scan) can be commanded in 10° increments such that the field of view extends from -60° to 40° relative to the plane of the lander. The light that is reflected by the mirror is imaged by an achromatic triplet lens onto the photosensor array. This lens has an aperture of 9.95 cm and a focal length of 5.37 cm.

Care must be taken in interpreting the images produced by such a camera when the picture elements (pixels) are displayed in a conventional rectilinear coordinate system (as used in the image reconstruction). Straight lines in the original scene are not, in general, reconstructed as straight lines in the resulting image. (The conventional perspective camera preserves straight lines.)

Photosensing and Data Acquisition

Twelve silicon photodiode sensors are command selectable and provide for a selection of spectral response and angular resolution. Interference filters associated with six of the diodes provide for three visual color bands (red, green, and blue) and three near-infrared spectral bands (IR1, IR2, and IR3). These bands have instantaneous fields of view of 0.12°. Four diodes (BB1, BB2, BB3, and BB4) with an instantaneous field of view of 0.04° and nominally associated with the 0.04° step size are placed at different distances from the lens for focus selection (1.9, 2.7, 4.5, and 13.3 m) resulting in an overall depth of field from 1.7 m to ∞. One diode (survey) has no filter and is used for black and white panorama imaging utilizing the 0.12° step size. The Sun diode has a 0.12° instantaneous field of view and a red filter for solar imaging. Figure 3 shows the spectral characteristics of the diodes. The BB (broadband) curve applies to diodes BB1, BB2, BB3, BB4, and survey. Table 1 is a summary of the spatial characteristics of the camera. (See Ref. 5.)

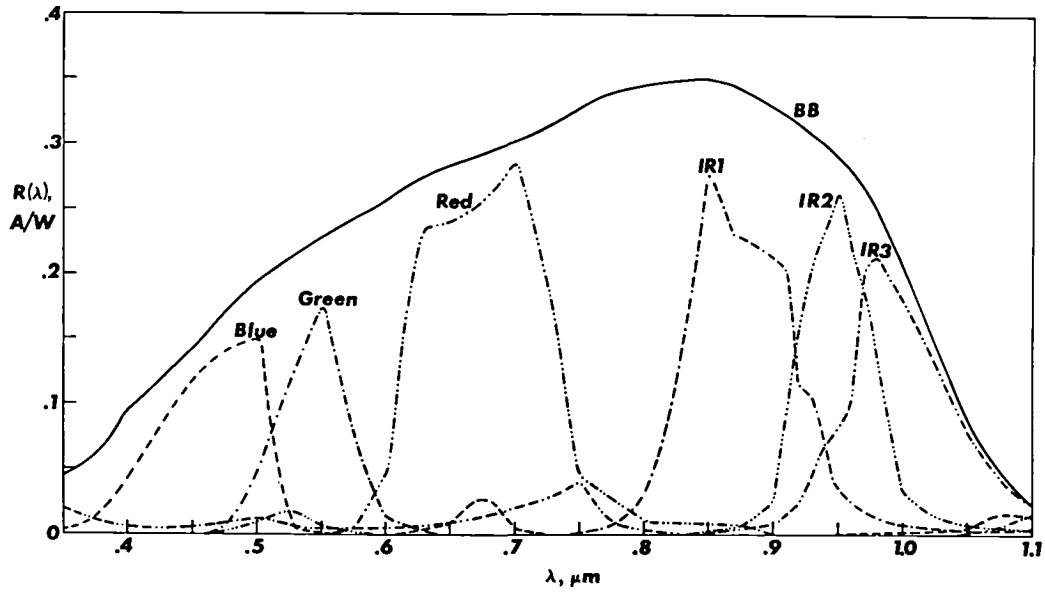


Figure 3. - Spectral response R(λ) characteristics of photosensor array.

Characteristic	Survey	Color and IR	High resolution
Instantaneous field of view, deg	0.12	0.12	0.04
Picture element registration error, deg	±0.036	±0.013	±0.006
Absolute angle error:			
Elevation, deg	±0.3	±0.2	±0.2
Azimuth, deg	±0.15	±0.1	±0.1
Frame width:			
Elevation, deg	61.44	61.44	20.48
Azimuth (min; max), deg	2.5; 342.5	2.5; 342.5	2.5; 342.5
Field of view:			
Elevation, deg	100; from 40° above to 60° below horizon in 10° steps		
Azimuth, deg	342.5; in multiples of 2.5° steps		
Geometric depth of field, m	1.7 to ∞	1.7 to ∞	1.7 to ∞
In-focus distance, m	3.7	3.7	1.9, 2.7, 4.5, and 13.3
Picture elements per line	512	512	512
Bits per picture element	6	6	6
Bits per degree azimuth	2.84×10^4	8.53×10^4	8.53×10^4
Time per degree azimuth:			
Rapid scan, s	1.84	5.52	5.52
Slow scan, min	2.0	6.0	6.0

TABLE 1. - CAMERA CHARACTERISTICS.

An internal light source with four selectable intensities permits calibration information to be gathered before and/or after a scene has been imaged. The calibration data have a camera event label associated with them and are treated in the data management system as a separate camera event. There is also a light source external to the camera in the protective post for use in scan verification.

Multispectral imaging (nominal color or infrared) is accomplished by alternately selecting three diodes (either blue, green, red, or IR3, IR2, IR1) for three vertical scans at each azimuthal position with, nominally, a 0.12^{o} step. The data are thus gathered for each diode, or spectral band, in an interleaved fashion. The data management system separates these interleaved images prior to storage in the experiment data record.

The camera electronics provide a 6-bit pixel value for each point scanned. (This value is later changed to 8 bits after receipt on Earth; see section "Pixel Data Records.") However, before the analog-to-digital conversion takes place, a dark current subtraction is made in which a previously acquired dark current from the photosensor is subtracted from the signal current. Although the option exists to inhibit this subtraction, the option was not implemented for any images during the mission (reference to this option has been deleted from the listings of command parameters). The dark current is evaluated every 64 scan lines; therefore, a noticeable vertical banding effect results in images taken at low gain numbers.

The dynamic range of the 6-bit (64 levels) encoding scheme is extended by using 6 commandable linear gains and 32 offsets. The gains and offsets associated with each camera event are listed in the "camera event reports." Figure 4 (Ref. 5) shows the approximate relationship between the digital pixel values and the photosensor array output voltage for the available gains and offsets. For actual data decalibration, however, the formula in the calibration section should be used.

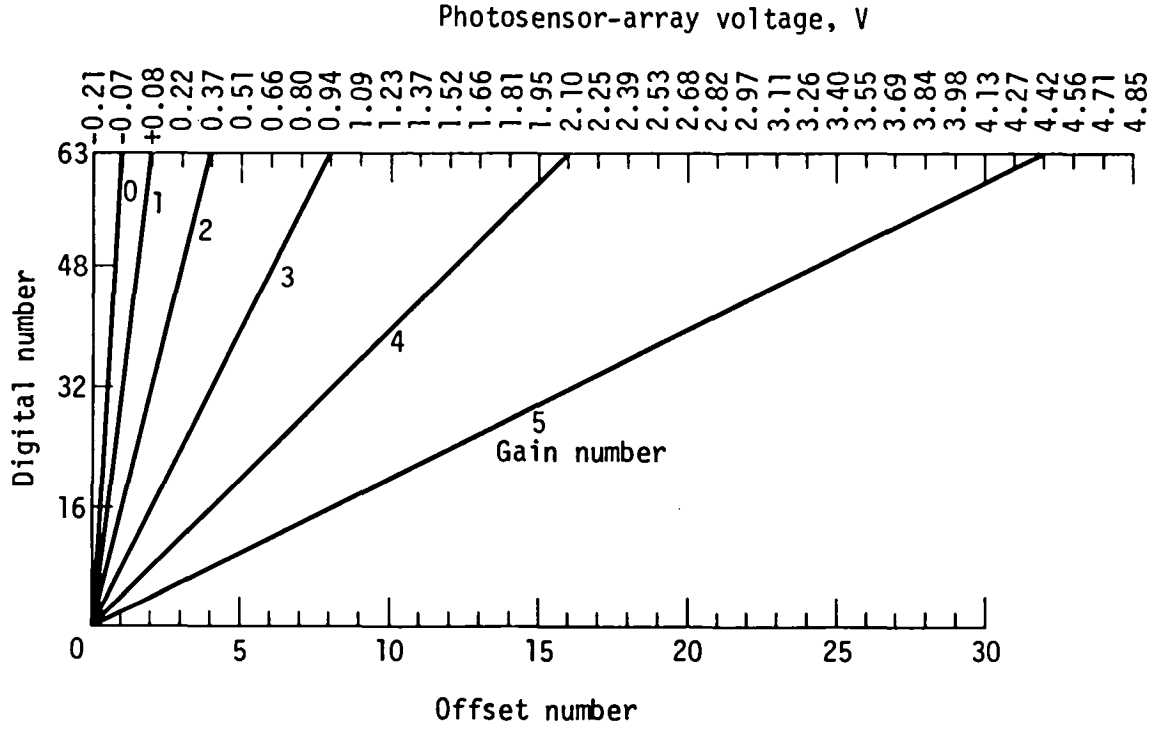


Figure 4. - Camera gains and offsets.

Calibration

Any quantitative use of the Viking Lander camera data must involve consideration of camera calibration. As noted previously, the image products presented are reconstructed with a geometric distortion which must be considered when measurements are taken from them. In addition, geometric calibration data indicate azimuthal "bolt down" and coning errors on the order of 1^{o}. Both geometric and photometric calibration procedures were performed during the development of the camera system. Geometric calibration procedures are given in Reference 6. When radiance levels (pixel data numbers) are to be compared between camera events, radiometric decalibration must be performed. The camera sensitivities are a function of both time and temperature and these effects must be decalibrated if the camera events are widely spaced in either of those parameters. However, neither the EDR image data stored on magnetic tape nor those shown in the EDR photographic products and parameter lists have had any decalibration processing applied to them. Details of the radiometric calibration are described in References 5, 6 and 7.

Reduction to PSA voltage - Pixel data numbers, often referred to as "DN's," are generated in the cameras as numbers determined by the radiance received by the camera, the diode/filter/preamplifier combination (channel) selected, and the selected gain and offset. The voltage generated at the output of the photosensor array ("PSA volts") is a more convenient measure of the radiance of each pixel since it is linearly proportional to the radiance received and the proportionality constant is only dependent on channel, time, and PSA temperature. PSA voltage can be calculated as

$$V = \frac{2^{g} D}{4K_{g}} + K_{co}(O) + K_{o}$$

where

V PSA voltage, volts
g commanded gain number (8 bit, as on EDR tapes)
D pixel data number
O commanded offset number

and K_{g}, K_{co}, and K_{o} are camera-dependent constants as follows (Ref. 5):

Lander	Camera	K_{g}, DN/V	K_{co}, V	K_{o}, V
1	1	444.321	0.14410	0.204
1	2	442.135	.14469	.209
2	1	447.634	.14583	.222
2	2	448.111	.14389	.217

PSA voltages calculated in this way can be compared directly if the camera events involved are not separated widely in either time or PSA temperature. If they are, decalibration must be done as described in the following section. Of course, proper consideration must still be given to different spectral regions, changing surface irradiance, and other factors when interpreting the meaning of the decalibrated data.

Compensation for time and temperature differences using internal calibration - Internal calibration provides a means to test performance of the photosensor array and the associated video processing electronics. As the name implies, this calibration is entirely internal to the camera and requires no outside illumination. The basic idea of the internal calibration is to measure the response of each diode to a reference radiance source so that changes in diode response can be measured and corrected for in the image data. When the calibrate command is issued, a black flag is placed over the lens to prevent outside light from striking the photosensors. Eleven of the 12 photosensors are then commanded on in sequence, and about five lines of data are taken. During this time a small pinlight mounted above the photosensor array is turned on, so that the response of each sensor to both no light and to a controlled source of light is recorded. The Sun diode, channel 4, shows no response to the light.

Calibration sequences have been run for all four cameras during the entire landed mission, and raw data from these are included in the EDR tapes. In addition, the calibration tapes (DN0088 for VL-1 and FN0083 for VL-2) contain reduced calibration data as a function of both PSA temperature and time. The format for this tape differs slightly from the normal EDR tape format. The tape contains only one VICAR label with records 360 characters in length, each containing five 72-character text lines in extended binary coded decimal interchange code (EBCDIC). This text explains the calibration procedure and gives values for constants A_0, A_1 and τ which can be used in the following equation to decalibrate imagery taken at any sol and temperature:

$$V = VX(A_0 + A_1(T))\ (\exp(-t/\tau))$$

where

V equivalent camera voltage at sol 0, temperature DN 30
VX actual camera voltage taken at sol t, temperature DN T
T PSA temperature DN
t sol number for lander in question

PSA temperature DN is the 6-bit number returned by the camera to indicate the internal temperature at the photosensor array and is related to the actual temperature in ^{o}C by

$$^{o}C = 2.089DN - 62$$

Contamination Cover Deploy

There are two transparent protective windows in each camera. The outermost window can be deployed on a "one time only" basis by commanding the camera to move to 340° azimuth; thus, a switch is triggered which causes the window to swing aside. These outer windows were included to provide for the possibility that the window might either be sand-blasted or covered by dust. The cover on camera 1, lander 1, was deployed with CE 11F252 on VL-1 sol 470; the cover on camera 2, lander 2, was deployed with CE 22G255 on VL-2 sol 593. The

covers on the other two cameras are still in place. Interestingly, there was apparently no dust on either window at the time of its deployment.

DATA TRANSMISSION

Several options exist for transmitting the camera data from Mars to Earth. The two major classifications are recorded imaging and real-time imaging. During recorded imaging, camera data are generally acquired in the 16000-bps scan rate and recorded on the lander tape recorder. The option exists, however, to acquire the data at the 250-bps scan rate, buffer it in the data storage memory, and then record it at 16000 bps. Recorded data were then transmitted either to the orbiter via the UHF link at the 16000-bps rate or directly to Earth at 1000, 500, or 250 bps via the S-band link. The data relay from orbiter to Earth has always been selected from an 8000-, 4000-, 2000-, or 1000-bps data rate.

Real-time imaging bypasses the lander tape recorder and is transmitted either directly to Earth via the S-band transmitting system at 250 bps or to an orbiter via the UHF transmitter at 16000 bps.

It is important to note that the camera commanding procedure for recording imaging is different from that for real-time imaging. A result is that the conditions under which rescanning occurs at the end of a camera event differ. There is also the opportunity for blank image lines when the commanded duration of a real-time camera event is shorter than the time required to scan the commanded azimuth range. These blank image lines are added during the ground data handling procedures.

All data returned by the lander are received by the Deep Space Network with tracking stations located in California, Spain and Australia. The data are then transmitted to the Jet Propulsion Laboratory. More than one tracking station may receive the data and more than one transmission from a station to JPL may occur. Thus, several received versions of a camera event (or a portion of a camera event) may occur in the incoming data record. One of the data management tasks is to merge repeatedly received images to recover the most error-free data record.

DATA BASE DEVELOPMENT

The development of the real-time data base begins as the imaging data are received at JPL. The telemetry processing software separates the imaging data from the other science data and forwards it to the first-order Viking Lander imaging processing system as the system data record. Figure 5 shows the flow of the data in the development of the experiment data record. Note that the data processing has been simplified from that used for images recorded in prevous catalogs.

The data collected by the tracking stations are transferred to JPL in the form of an Intermediate System Data Record (ISDR). The IPL program VL STEP 1 removes the imagery data from these tapes and restores any garbled imagery to its proper form (RESTIMG). VL STEP 1 produces a printout of the image labels and a tape of the imaging data. The printout is reviewed for completeness,

and the program VL STEP 2 is run to complete the annotation and format the final EDR tapes.

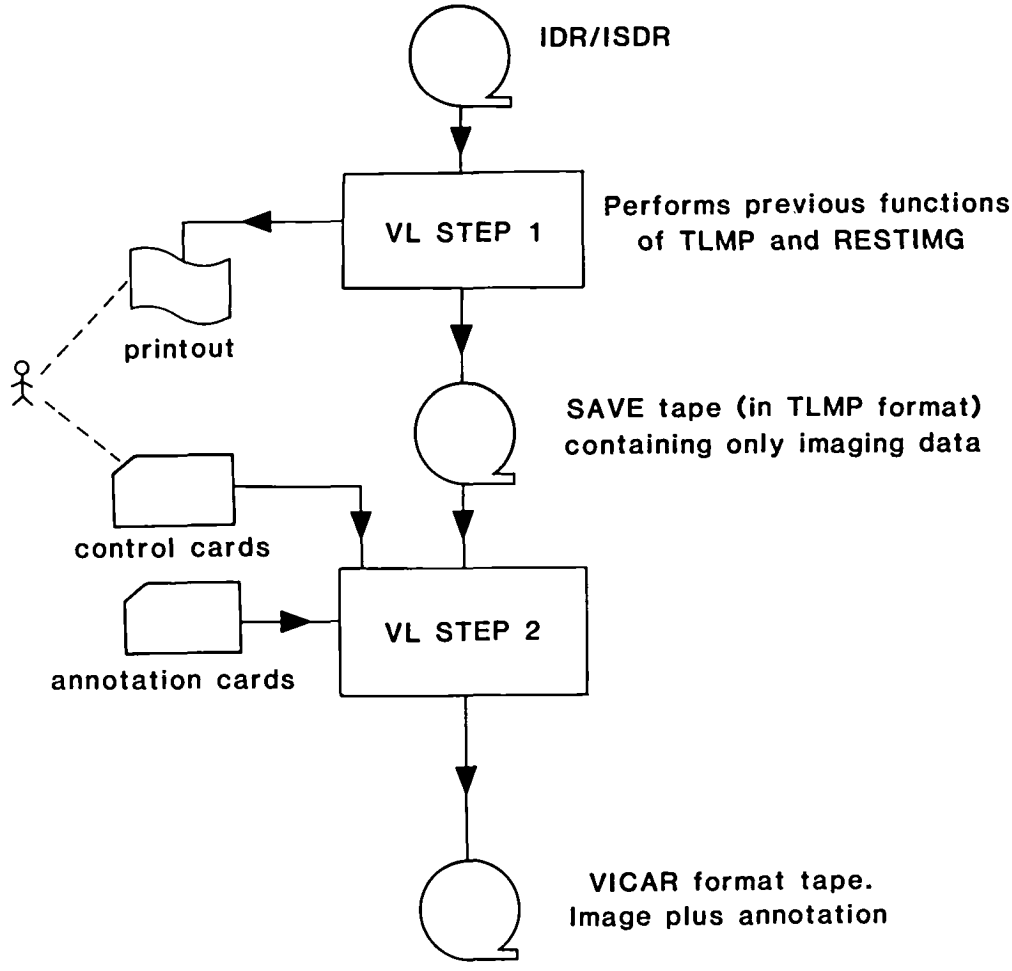


Figure 5. - IPL Data Processing.

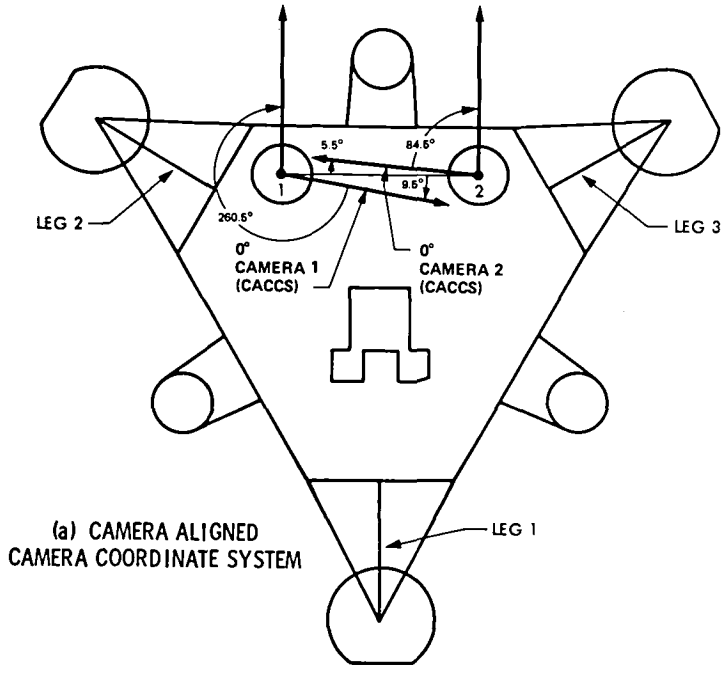
IMAGING EXPERIMENT COORDINATE SYSTEMS, TERMINOLOGY, AND LABELING

This section is intended primarily as a glossary for the parameters listed in the parameter lists and the label information on the images. The material described is common to many of the photographic products. The later sections, which describe these products in greater detail, supplement this glossary.

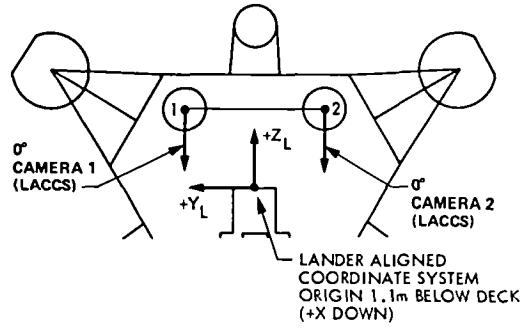
Coordinate Systems

Camera-aligned camera coordinate system - The coordinate system primarily used in this publication is the camera-aligned camera coordinate system (CACCS). The origin of this sytem is at the intersection (nominal) of the rotation axes of the camera mirror. In the CACCS, azimuth angles are measured

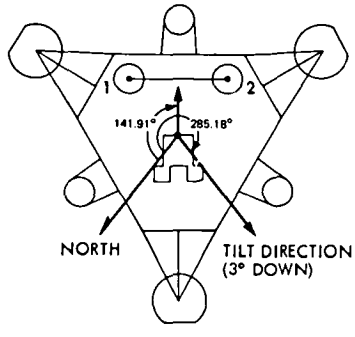
clockwise (viewed from above) from a vector pointing in the general direction of the other camera. For camera 1, this vector passes in back of camera 2, but for camera 2 it passes slightly in front of camera 1. (See Fig. 6 (a).)



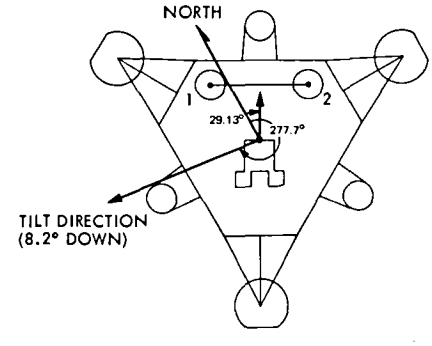
(a) CAMERA ALIGNED CAMERA COORDINATE SYSTEM



(b) LANDER ALIGNED CAMERA COORDINATE SYSTEM



(c) LANDER 1 ORIENTATION



(d) LANDER 2 ORIENTATION

Figure 6. - Camera coordinate systems and orientation of landers.

The CACCS is the reference for the start azimuths and stop azimuths presented in the parameter lists. The cameras are commanded by using the CACCS notation. This system is the reference for the notation which appears on the horizontal scale through the center of each camera view in the skyline drawings. The CACCS system is also referenced by the fiducial annotation on the EDR photographic products. However, this fiducial annotation presents two azimuth angles separated by a slash (/). The first references the CACCS, as just discussed; the second references the lander-aligned camera coordinate system as described in the next section.

The camera elevation angle is measured from the direction perpendicular to the azimuth axis of the camera as described in the section "Center elevation."

Lander-aligned camera coordinate system - The lander-aligned camera coordinate system (LACCS) is referenced in only one situation in this publication. The azimuth entries which appear following the slash (/) at the top of the EDR photographic products reference the LACCS. In the LACCS system, azimuth angles are measured clockwise (viewed from above) from a vector perpendicular to the inter-camera baseline and directed toward the rear of the lander. (See Fig. 6 (b).) Its origin is at the intersection (nominal) of the rotation axes of the camera mirror. LACCS derives its name from its similarity to a commonly used general lander coordinate system, the lander-aligned coordinate system (LACS), which has an origin 1.1 m below the center of the top surface of the lander. (See Fig. 6 (b).)

Lander tilt - The landers are tilted slightly relative to the local gravity vector. VL-1 is tilted 3^{o} downward in the direction 285.18^{o} clockwise from north. (See Fig. 6 (c).) VL-2 has a tilt of 8.21^{o} downward in the direction 277.9^{o} from north. (See Fig. 6 (d).)

Camera Event Command Parameters and Lighting Conditions

The terms in this section relate to the parameters used to command the cameras and the conditions under which the image data are acquired. Common abbreviations and acronyms are shown in parentheses. These parameters appear in the parameter lists, on the photographic products, and in the magnetic tape label records.

Frame count - Frame count is a lander-assigned sequence number which increases by 1 for each camera event. Its starting value is 1 and recycles to 0 after reaching 255. A single letter prefixes this number and increases through the alphabet - the numerical sequence each time reverts to 0 (e.g., A255 goes to B000 and B255 to C000).

Camera event - Camera event (CE) refers to a single executed camera command which is identified by a frame count. It results in the collection of vertical scan lines of camera data.

Camera event label - The camera event label is a 10-character identifier used to designate a camera event. The first character (1 or 2) indicates the lander (VL-1 or VL-2), the second character (1 or 2) indicates the camera on the lander, and the next four characters are the frame count. The three

digits following the slash (/) are the sol on which the camera event occurred. (See Fig. 7.)

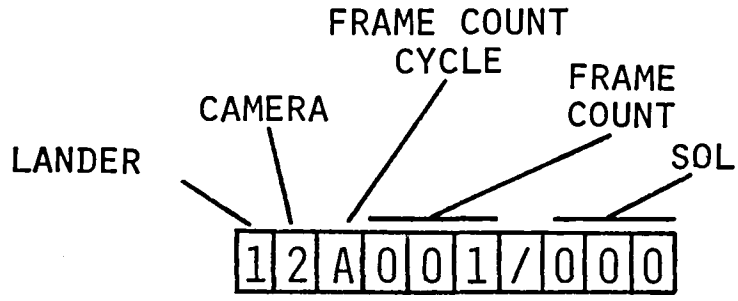


Figure 7. - Format of the VL camera event label.

Mars solar day - The Mars solar day (sol) is considered to have a length of 24 hours, 39 minutes, and 35.25 seconds. Sol 0 is the particular lander's landing day. Sol 0 for VL-1 is July 20, 1976, and sol 0 for VL-2 is September 3, 1976.

Local lander time - Local lander time (LLT) refers to the time after local midnight at the lander on Mars. Generally, it refers to the beginning of a camera event. It is designated in hours, minutes, and seconds (Earth units) in the format HH:MM:SS and often appears preceded by sol separated by a slash.

Diode - As described in the section "Lander Cameras", there are 12 photodiodes in the camera. These diodes are generally referred to by name: BB1, BB2, BB3, and BB4 for the high-resolution broadband diodes; SURV or SUR for the low-resolution broadband diode; BLU, GRN, and RED for the visual color diodes; IR1, IR2, and IR3 for the infrared diodes; and SUN for the diode used in Sun imagery. When the diodes are used in triplet mode (nominally BLU, GRN, RED or IR1, IR2, IR3), a /T is generally appended (e.g., BLU/T). Calibration images are identified by "CAL" in this field, sometimes preceded by the first diode used in the calibration and followed by the light source level.

Azimuth start/stop - The azimuth start and stop entries are the azimuth limits, in degrees, of a camera event. (See "Coordinate Systems.")

Center elevation - Camera events are commanded by specifying the center elevation (ELEV) pointing angle (EPA) of the resulting image. The direction perpendicular to the camera's azimuth axis of rotation is the 0° reference (negative is below, positive above). This value is sometimes followed by the lower and upper limits of the scan in parentheses. Note that this is the commanded elevation and must be adjusted for nonnominal modes.

Step size - The camera step size may be either 0.04° or 0.12° and expresses the angular separation in azimuth between successive scan lines and the angular separation in elevation between successive picture element centers.

Channel - The channel (CHAN) is the camera parameter which determines the diode used in the camera event. The value range is from 0 to 15, but 6, 7, 12, and 15 are left undefined. (See Table 2).

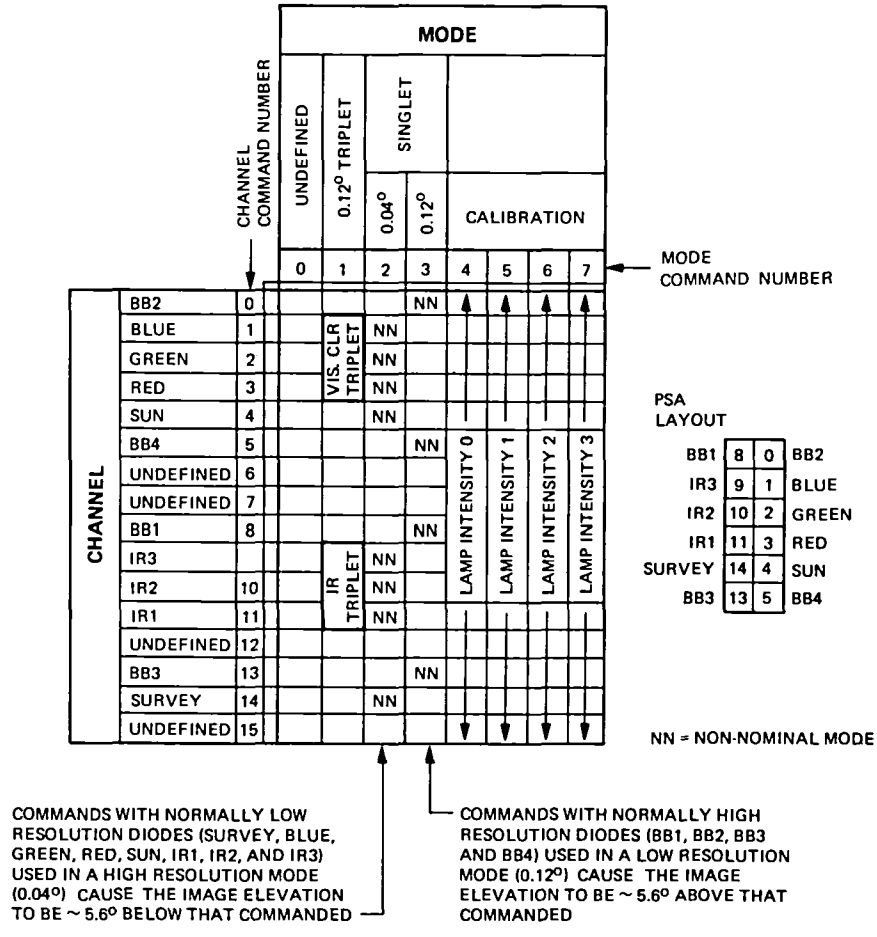


TABLE 2. - CAMERA CHANNELS AND MODES.

Mode - The mode is a camera command parameter which selects the camera scan step size and the choice between a single or triple scan (at each azimuth position). The mode also selects one of four intensity levels of the internal calibration light source. (See Table 2).

Nonnominal modes - Table 2 displays the diode channels and the camera modes. The term nonnominal mode refers to a mismatch between the step size used in a camera event and the instantaneous field of view of the diode channel selected. (See Table 1.) It is important to note that high-resolution diodes (BB1, BB2, BB3, and BB4) used with a step size of 0.12^{o} will cause the elevation of the image to be increased by approximately 5.6^{o}. A low-resolution diode used with a step size of 0.04^{o} will cause the elevation of the image to be decreased by approximately 5.6^{o}.

The term nonnonimal mode is also sometimes used to refer to triplet images other than the normal: BLU, GRN, RED, or IR3, IR2, IR1 scanning.

Offset - There are 32 available commandable offsets of equal voltage steps that can be applied to the sensed radiometric measurements prior to digitization at the camera. The offsets are identified by the numbers 0 to 31. (See Fig. 4.)

Gain - The six commandable camera gains are designated by the integers 0 to 5 and represent decreasing amounts of gain (by factors of 2) as the numbers increase from 0. (See Fig. 4.)

Data path - Two indicators separated by a slash are used to describe the data transmission path from the cameras to Earth. The first is either REC or RT indicating, respectively, that the data were recorded on the lander for later transmission or transmitted in real time as the camera scanned. The second (UH or SB) indicates whether the data went to the orbiter via the UHF link or directly to Earth via the S-band link.

Scan rate - The camera has two scan rates: 16 000 bps and 250 bps. The parameter reflects this rate with an entry of 16K or 250.

Photosensor array temperature - The photosensor array temperature (PSA TEMP) is a value in the range 0 to 63 (DN) which indicates the temperature of the camera's photosensor array. It is expressed in the EDR data as an average over the duration of a CE and may be shown either on a scale of 0 to 63 or converted to degrees Celsius by the following formula:

$$^{o}C = 2.089DN - 62$$

Solar azimuth and elevation - The azimuth and elevation of the Sun (SOLAR AZ/EL) are expressed in the "local horizon system" wherein the zenith is at 90^{o} elevation and the horizon (perpendicular to the local gravity vector) is at 0^{o} elevation. Azimuth is measured in the clockwise direction (viewed from above) with 0^{o} directed toward the north.

Antisolar azimuth and elevation - The azimuth and elevation of the antisolar vector (ANTISOLAR AZ/EL) is given in the CACCS which acquired the image referenced. The direction is that of a vector from the Sun through the camera to the surface.

Event time - The day of year and time of the beginning of a camera event are listed on most photographic product labels. Although labeled as GMT, the value indicated is that of UTC. The elements - day, hour, minute, and second - are in the format DDD/HH:MM:SS. On some photographic products, the colons are replaced by periods. The year is not included in the label.

Dust - The capability exists on the camera to direct a discharge of CO_2 across the outer surface of the protective outer window of the camera prior to executing a camera event. This dusting (D) was done several times in the early days of the Primary Mission.

Rescan - There are three different conditions which can result in rescan (R) as follows:

(1) Rescan command bit: A rescan command bit can be set for a camera event; this results in the camera rescanning at the stop azimuth for a time (RESCAN.DT) determined by a command stored in the data base of the lander's on-board computer. Such CE's are identified by the appearance of the word RESCAN (or R) in their parameter entries.

(2) RTI camera events: If the event duration listed in the lander's real-time imaging tables is longer than the time required to scan the commanded azimuth range, the extra time is consumed in rescanning of the last azimuth position.

(3) Recorded camera events: For the recorded CE's, rescanning was used in connection with the assignment of an extra time allocation in recorded imagery to allow for the tape recorder run up and reversal. This generally resulted in less than 12 rescan lines. Most photographic products list the first camera scan line which represents a rescan line and the total number of such rescan lines. The total is calculated by subtracting the line number of the first rescan line from the last rescan line and adding one. This step uses the designated line numbers returned with the data. Transmission errors may have reduced the actual amount of data received in some cases.

Data Receipt Parameters

The parameters given in this section relate to the receipt, storage, and film conversion of the imaging data. The parameter data in these categories are separately indicated for each member of a triplet camera event. These parameters appear in the parameter lists, on the photographic products, and in the magnetic tape label records.

Data record - The final imaging data may come from either the system data record, the intermediate system data record, or a composite (COMP) of the two. An entry is made under data record to reflect this source.

Data link - Some photographic products list (under data link) the processing stage, or path, of an image during the development of the EDR data base. This is specified as "RAWEDR" for the final EDR versions of the images.

Scan lines - The total number of vertical scan lines stored in the data system is listed under the heading SCAN LINES or LINES TOTAL. It is determined by dividing the commanded azimuth range by the step size and then adding the total number of rescan lines.

Missing lines and gaps - Camera scan lines not received due to transmission errors appear as black lines in positive photographic products (Pixel value = 0). The total number of missing lines and the number of image gaps they cause are listed on some photographic products.

Average data number value - The average data number value (AVE DN VALUE) is the arithmetic mean of the digital value of all received pixels for an image.

Standard deviation - The standard deviation entry is the standard deviation (STAND DEV) of the distribution of digital values of all received pixels for an image.

EDR tape and file number - The identification number of the VICAR format magnetic tape containing the EDR data for each image is specified on most photographic products. The data file position is included with it. In some cases EDR tape and file number (EDR TAPE/FILE) identification is referred to as the VICAR tape and file number.

Segment - Many images have been divided into segments (SEG) to facilitate film conversion. (See section "127-mm (5-in.) Photographic Products.") In certain contexts the entire image may be called a segment, such as for small images not requiring division for film conversion.

Segment azimuth, elevation, and step size - The segment azimuth, elevation, and step size (SEGMENT AZ/EL/STEP SIZE) entry indicates the azimuth and elevation of the upper left corner of a segment of an image (or the entire image if unsegmented). The azimuth is expressed in degrees in the CACCS. Elevation is measured relative to the camera's horizontal (perpendicular to the azimuth axis). Negative values indicate below the horizontal; positive, above. This elevation value incorporates the $\pm 5.6^{\circ}$ shift for nonnominal commands. The stepsize is either 0.04° or 0.12°.

Image Processing Laboratory picture identifier - The Image Processing Laboratory picture (photograph) identifier (IPL PIC ID) is a 15 character date-related descriptor which uniquely identifies a photographic product processed at the JPL Image Processing Laboratory. It contains four subfields which are separated by slashes: year, month, day of month, and time of day. Where an image has been subdivided to facilitate film conversion each segment has its own IPL PIC ID.

Photographic Product Fiducial Annotation

There are three types of fiducial scales which identify the pixel positions on the EDR photographic products. (See Fig. 8.)

The innermost set (closest to the image) is called the IPL line number in the vertical direction and the IPL sample number in the horizontal direction. The scale exists on all four sides of the image. The pixel in the upper left corner (of segment one) has the coordinate 1,1. The IPL line number increases (1 to 512) in the downward direction and the IPL sample number increases from left to right. The fiducial separations denote increments of two.

The second (middle) fiducial scale is identified as the camera scan sample number in the vertical direction and the camera scan line number in the horizontal direction. The camera scan sample number has an origin of 0 at the bottom and increases upward to 511 at the top of the image. The camera scan line increases from left to right. The fiducial separation denotes increments of two. This scale only appears at the left side and at the top of the image.

The outermost fiducial scale denotes azimuth in the horizontal direction and elevation in the vertical direction. The elevation is expressed in degrees, where 0° is perpendicular to the camera azimuth axis. The elevation scale on nonnominal mode images is properly adjusted for the vertical displacement associated with such images. Two azimuth identifiers are given for the horizontal scale; the first references the CACCS, the second references the LACCS. (See section "Coordinate Systems.") The two values are separated by a slash (/) and increase from left to right. The fiducial separation is 0.2° on images of 0.04° step size and 0.5° on images of 0.12° step size. This scale appears only at the left side of the image and at the top of the image.

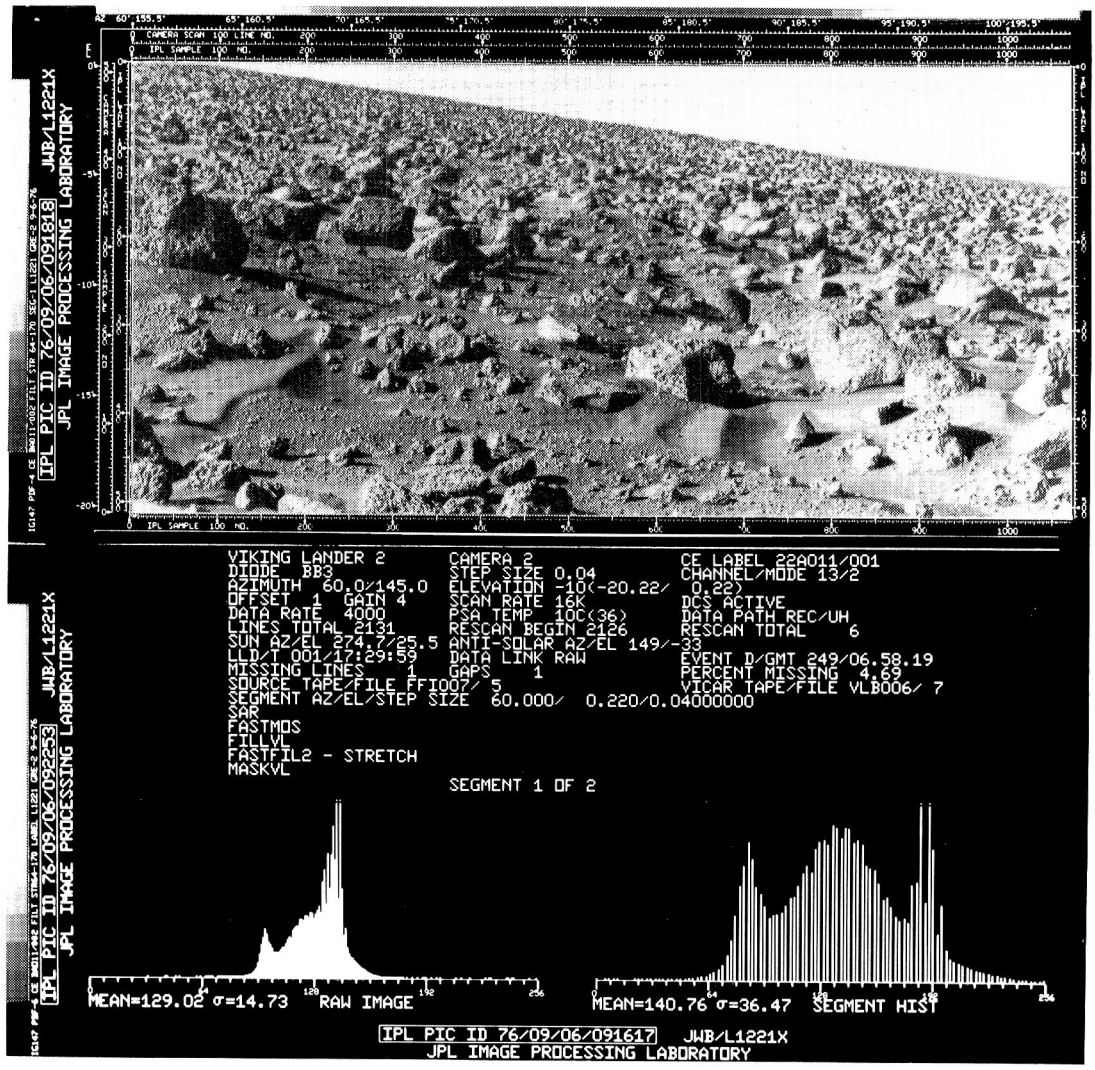


Figure 8. - EDR photographic product format.

The horizontal scales, IPL sample number and camera scan line number, increase across the photographic product segment boundaries of segmented images. This can be seen in Figure 8 which is the first of two picture segments and begins at IPL sample number 752.

EXPERIMENT DATA RECORD PROCESSING AND PHOTOGRAPHIC PRODUCTS

The experiment data record contains all imaging data received from lander 1 and lander 2. The data base described in the section "Data Base Development" forms the input to the EDR processing.

The media for the distribution of the EDR's are as follows:

127-mm (5-in.) strip contact prints
Magnetic tape
102- by 152-mm (4- by 6-in.) microfiche cards

127-mm (5-in.) PHOTOGRAPHIC PRODUCTS

The EDR images for VL-1 and VL-2 have been transferred from digital data to 127-mm (5-in.) film. Strip contact prints, positive transparencies, and a duplicate negative are made from the original negative. Because of size limitations imposed by the film conversion equipment, many of the images had to be segmented when converted to film.

The photographic products have a maximum of 901 data points in the horizontal direction. Where images are more than 901 pixels wide, they are segmented such that there is a minimum of 150 pixels of overlap, and each segment contains a full 901-pixel width. All images are 512 pixels high. Annotation, fiducial marks, and other identifications add to the size of the images.

A segment of size 901 pixels by 512 pixels results in an image area of 99 mm by 56 mm. Such a photographic product has an overall size of 108 mm by 80 mm. The pixel size is 0.11 mm.

The image data are operated upon to provide a contrast-enhanced image which will maximize the use of the grey scale of the photographic products. However, no digital filtering, geometric correction, or radiometric normalization has been applied.

The photographic products were prepared as a series of roll products. Camera events are, without exception, in order by frame count on these rolls, exactly as presented in the EDR image section of this catalog. The National Space Science Data Center currently has negative roll products which correspond to the list in Tables 3A and 4A. Some users may prefer to order a complete roll instead of individual photographic products. Requests should be directed to the same address as that given on page 26 and in the Viking Lander Imaging Camera Order Form at the back of this volume.

TABLE 3A. - VL-1 EDR PHOTOPRODUCT ROLLS.

VL-1 roll number	First camera event	Last camera event
1	12A001/000	11A086/012
2	11A087/013	12A177/028
3	12A178/029	12A252/031
4	11A253/032	12B087/040
5	11B088/040	11B198/102
6	11B199/115	11C027/182
7	11C028/182	12C155/232
8	11C156/232	11D004/271
9	11D005/271	12D147/306
10	12D148/306	11E075(IR3)/349
11	11E075(IR2)/349	12E190(GRN)/379
12	12E190(RED)/379	11F032/396
13	12F033/396	12F102/408
14	12F103/408	12F183/435
15	12F184/437	11G075/488

TABLE 3A. - VL-1 EDR PHOTOPRODUCT ROLLS (Cont.).

VL-1 roll number	First camera event	Last camera event
16	11G076/488	12H006/551
17	11J007/552	11H212/619
18	11H213/619	12I089/721
19	12I090/721	11I207/841
20	12I208/849	12J017/921
21	12J018/935	12J079/1387
22	12J080/1395	11J130/1765
23	11J131/1772	11J161/1994
24	11J162/2001	11J182/2149
25	12J183/2156	12J194/2238

TABLE 4A. - VL-2 EDR PHOTOPRODUCT ROLLS.

VL-2 roll number	First camera event	Last camera event
1	22A001/000	22A087/012
2	22A088/013	21A173/022
3	21A174/023	22A255/030
4	22B000/031	22B077/309
5	22B078/040	22B179/048
6	22B180/049	21C004/054
7	22C005/055	21C070/061
8	21C071/073	21D018/188
9	22D019/188	22D213/245
10	22D214/245	22E085/329
11	22E086/329	21E142/365
12	22E143/365	22F007/408
13	22F008/409	22F140/449
14	22F141/449	22G052/508
15	21G053/508	21G212/560
16	21G213/560	22H066/626
17	21H067/626	21H146/696
18	22H147/701	21H225/780
19	22H226/780	22I095/960
20	22I096/967	22I150/1212

MAGNETIC TAPE STORAGE

Tables 3B and 4B list the data contents of digital tape records for the landers. The range of camera event identifiers is listed for each tape. For those camera events that are triplets, the images are stored on tape in blue, green, red, or IR3, IR2, IR1 order. This is the order in which the successive scan lines are acquired. Although the triplet images were acquired in an interleaved manner, they are stored on the tapes as three separate images. The calibration tapes, DN0088 for VL-1 and FN0083 for VL-2, have a slightly different format and are discussed in the section "Calibration." Note that copies of these tapes (which reside in the various NASA Regional Planetary Image Facilities) will be numbered, for example, DNX001, where X indicates the copy number.

TABLE 3B. - VL-1 EDR TAPE SUMMARY.

Tape number	First camera event	Last camera event	Number of files on tape
DN0024	11B199/115	11B230/166	32
DN0025	12B231/167	12C003/175	31
DN0026	12C004/175	12C028/182	47
DN0027	12C029/182	11C058/192	50
DN0028	11C059/192	11C078/204	44
DN0029	12C079/204	11C098/208	42
DN0030	12C099/209	12C122/211	32
DN0031	11C123/218	12C146/222	32
DN0032	11C147/224	12C176/240	46
DN0033	11C177/240	12C207/259	37
DN0034	11C208/260	11C231/269	32
DN0035	11C232/269	11D004/271	49
DN0036	11D005/271	11D030/280	38
DN0037	11D031/280	11D035/282	05
DN0038	12D036/282	11D058/288	27
DN0039	11D059/288	12D087/295	45
DN0040	12D088/295	12D125/302	40
DN0041	11D126/302	12D152/306	35
DN0042	11D153/307	11D193/321	41
DN0043	12D194/321	12D216/324	41
DN0044	12D217/324	11D249/328	59
DN0045	11D250/328	11E029/342	56
DN0046	12E020/342	12E048/343	33
DN0047	12E049/343	12E076/350	48
DN0048	11E077/350	11E110/360	34
DN0049	12E111/362	12E129/367	35
DN0050	12E130/367	11E131/367	04
DN0051	11E132/367	12E163/372	54
DN0052	12E164/372	12E189/379	46
DN0053	12E190/379	11E219/386	44
DN0054	12E220/386	11E243/390	46
DN0055	11E244/390	12F009/391	60
DN0056	12F010/391	12F040/396	45
DN0057	11F041/396	11F050/399	18
DN0058	11F051/399	12F072/403	36
DN0059	12F073/403	12F106/408	44
DN0060	11F107/408	12F144/426	50
DN0061	11F145/427	11F174/433	56
DN0062	12F175/433	12F203/441	45
DN0063	11F204/441	11F246/470	53
DN0064	11F247/470	11G009/470	31
DN0065	11G010/470	11G034/474	59
DN0066	11G035/474	11G076/488	54
DN0067	11G077/488	11G116/506	48
DN0068	11G117/506	12G150/511	54
DN0069	12G151/511	11G187/526	55
DN0070	11G188/526	11G226/542	53
DN0071	11G227/542	11G252/550	44
DN0072	12G253/550	11H025/558	58

TABLE 3B. - VL-1 EDR TAPE SUMMARY (Cont.).

Tape Number	First camera event	Last camera event	Number of files on tape
DN0073	11H026/558	11H068/579	51
DN0074	11H069/579	11H114/595	48
DN0075	11H115/595	11H160/611	46
DN0076	11H161/611	11H183/611	59
DN0077	11H184/611	11H212/619	39
DN0078	11H213/619	11I003/651	51
DN0079	11I004/652	11I040/656	45
DN0080	11I041/660	12I073/693	47
DN0081	11I074/697	11I106/730	47
DN0082	11I107/734	12I137/764	45
DN0083	12I138/764	12I165/801	38
DN0084	12I166/801	12I193/836	36
DN0085	11I194/838	11I230/897	43
DN0086	11I231/901	11J013/921	49
DN0087	11J014/921	12J017/921	18
DN0088	Radiometric calibration data for VL-1		
DN0089	11J018/935	11J045/1136	32
DN0090	11J046/1143	11J062/1261	33
DN0091	12J063/1268	12J079/1387	37
DN0092	11J080/1395	11J096/1513	23
DN0093	11J097/1520	11J130/1765	48
DN0094	11J131/1772	11J150/1913	26
DN0095	11J151/1920	11J161/1994	25
DN0096	11J162/2001	11J172/2075	19
DN0097	12J173/2082	11J182/2149	16
DN0098	12J183/2156	12J194/2238	18

TABLE 4B. - VL-2 EDR TAPE SUMMARY.

Tape Number	First camera event	Last camera event	Number of files on tape
FN0031	21C071/073	22C110/132	44
FN0032	22C111/132	21C136/145	38
FN0033	21C137/145	22C172/158	42
FN0034	21C173/159	22C197/161	37
FN0035	21C198/161	22C234/173	43
FN0036	22C235/173	22D011/184	43
FN0037	21D102/184	21D039/193	40
FN0038	22D040/193	22D072/200	41
FN0039	22D073/200	22D095/207	35
FN0040	21D096/207	21D122/215	57
FN0041	21D123/215	21D156/219	46
FN0042	21D157/219	21D195/233	45
FN0043	21D196/234	21D232/257	45
FN0044	21D233/257	21E014/281	46
FN0045	22E015/281	22E038/293	28
FN0046	22E039/293	21E072/317	46

TABLE 4B. - VL-2 EDR TAPE SUMMARY (Cont.).

Tape Number	First camera event	Last camera event	Number of files on tape
FN0047	22E073/317	21E106/341	48
FN0048	21E107/341	21E140/354	46
FN0049	22E141/354	22E169/377	51
FN0050	22E170/377	22E204/388	57
FN0051	21E205/388	22E233/405	47
FN0052	22E234/405	22F012/410	55
FN0053	22F013/410	22F019/413	13
FN0054	22F020/413	22F034/414	31
FN0055	22F035/415	21F062/420	28
FN0056	21F063/420	22F091/431	59
FN0057	21F092/431	22F134/447	49
FN0058	22F135/448	22F161/455	41
FN0059	22F162/455	21F195/476	48
FN0060	21F196/478	21F238/482	51
FN0061	21F239/482	21G008/488	52
FN0062	22G009/489	22G048/503	42
FN0063	21G049/503	21G078/520	32
FN0064	21G079/520	21G104/525	28
FN0065	22G105/525	21G132/543	40
FN0066	21G133/543	22G144/552	14
FN0067	22G145/553	22G176/557	42
FN0068	21G177/557	21G200/559	54
FN0069	22G201/559	21G233/584	51
FN0070	22G234/587	21H007/593	48
FN0071	22H008/593	21H041/598	48
FN0072	22H042/600	22H079/629	42
FN0073	21H080/629	21H104/639	31
FN0074	22H105/640	21H138/683	38
FN0075	21H139/683	22H169/720	37
FN0076	21H170/720	21H193/743	28
FN0077	22H194/743	21H224/779	39
FN0078	22H225/780	22H254/856	32
FN0079	22H255/856	22I025/872	41
FN0080	22I026/872	22I059/898	42
FN0081	22I060/910	22I080/959	45
FN0082	21I091/960	22I095/960	7
FN0083	Radiometric calibration data for VL-2		
FN0084	22I096/967	22I104/1029	27
FN0085	22I105/1030	22I109/1050	11
FN0086	22I110/1050	22I120/----	11
FN0087	22I121/1145	22I132/1180	20
FN0088	22I133/1186	22I150/1212	22

Label Records

The magnetic-tape label records are a series of records at the beginning of each image file on magnetic tape which contain parameter information for the associated image. The length, in characters, of the physical label

records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. Each physical label record can be thought of as five logical records of 72 characters with the remaining character positions blank when the image size is greater than 360. Each logical record represents one line of text data as shown in Figure 9. The number of lines of label information is variable.

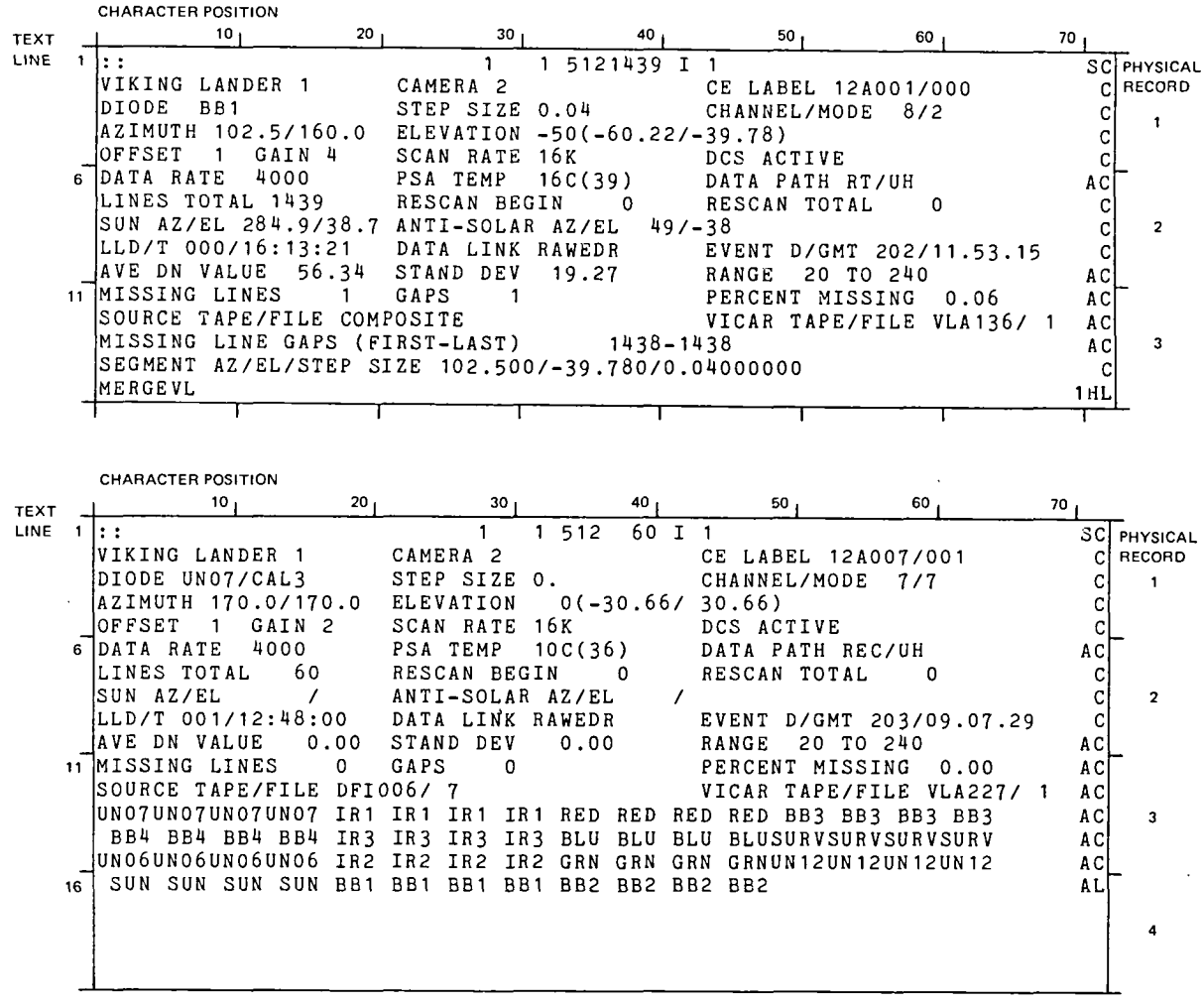


Figure 9. - VICAR label format.

If an image is the result of a merging operation, this is indicated by the entry "MERGEVL" on a separate text line. If any image has vertical scan lines missing, the gaps are noted in the following manner: The notation "MISSING LINE GAPS (FIRST-LAST)" appears followed by up to three number pairs indicating the extent of the gaps. (See top part of Fig. 9.) If more than three gaps exist, the additional number pairs are indicated on subsequent text lines (6 pairs per text line). Calibration images list the diode used in each calibration scan as seen in the bottom part of Figure 9. Where the number of label lines is not a multiple of five, the extra logical record positions are left blank. Note that the last character position (72) in each line contains a C (Continuation) for all lines except the final line which contains an L. Some lines contain the characters S, A, or H in position 71. These lines do

not appear in the picture format seen on the 127-mm (5-in.) photographic products and microfiche.

The first line shown in the top part of Figure 9 is flagged with an S in character position 71. It is called the VICAR system label and contains the vertical size (in pixels) of the image (512) in character positions 33 to 36, and the horizontal size of the image in positions 37 to 40. The I 1 appearing in positions 42 and 44, respectively, indicates that the data are single byte (8 bits) integer data. All characters are represented in the extended binary coded decimal interchange mode (EBCDIC).

Pixel Data Records

The length of the image records is equal to the number of pixels in a horizontal image line. The image data have been changed from a 6-bit format to an 8-bit format by shifting the bits of each pixel two binary positions to the left and zero-filling the two rightmost bit positions. No operations have been applied to the tape data such as contrast enhancement, geometric correction, or radiometric correction.

LABELING

Most elements of the labels on EDR products are described in the section "Imaging Experiment Coordinate Systems, Terminology, and Labeling." One additional field exists, the source tape and file. It indicates where the corresponding SDR or ISDR data are stored. This data record is not distributed. The field contains the word COMPOSITE when two data sources were merged to produce an EDR image. (See the section "Data Base Development.")

PHOTOGRAPHIC PRODUCT PROCUREMENT

The EDR photographic products are available from the National Space Science Data Center, Code 601.4, Goddard Space Flight Center, Greenbelt, Maryland 20771. An order form is included at the back of this volume.

The primary identifier for the requisition of these photographic products is the Image Processing Laboratory picture identification. This identification and the project name (VIKING) must be supplied when placing orders. The section "Selection of Camera Event Parameter Lists" describes the listings in the EDR which cross-references the camera event labels to IPL PIC ID's. Additional descriptive material may be helpful in indicating the item requested, such as the camera event label and the specification "Viking Lander EDR."

TEAM DATA RECORD

In addition to the VL-1 experiment data record that appears in the last main section of this report as the complete and primary record of the data, a team data record of 127-mm (5-in.) photographic products also exists. (See Ref. 6.) The TDR consists of those camera events from the EDR thought to be of most general interest. It excludes such things as specialized photometric

series, calibration and scan verification events, and the Sun imagery. The processing parameters for the camera events in the TDR have been individually chosen to create photographic products of the highest scientific quality. For a given camera event, the TDR is, in general, segmented differently from the EDR. Therefore, there is not a one-to-one correspondence in the scene coverage for the respective photographic products.

SELECTION OF CAMERA EVENT PARAMETER LISTS

The computer-generated CE parameter lists described in this section provide a detailed description of the conditions under which the camera event data were acquired, the completeness of the receipt of the data on Earth, and their storage location on photographic products and magnetic tape.

The data fields are primarily those described in the section "Imaging Experiment Coordinate Systems, Terminology, and Labeling." There is a comprehensive parameter list for each lander and a selection of other lists which present only a limited amount of information but divide the camera events into a variety of classes and sequences. All camera events appear in camera-event order except those described in (7) and (8) in subset lists and IPL picture identifiers.

CAMERA EVENT REPORTS

The camera event reports are comprehensive presentations of the parameters for the camera events. The reports are presented with multiple-line item entries for each camera event, blocked in a manner to maximize readability. The primary line for each CE describes the time the camera event was executed, the camera command information, and the lighting conditions. This is followed by either one line (for singlets) or three lines (for triplets) of information about the image data stored for the CE. This line (or lines) is identified by the diode and indicates the number of data lines in the image, the completeness of its pixel statistics, and information about its storage on magnetic tape and photographic products. The diode indicator is followed by an asterisk if the image has been used in the generation of the TDR.

SUBSET LISTS

There are 9 parameter subset lists which separate the camera events by diode and other special classifications. (A number of subsets were not commanded to both landers during this final phase of the mission, so inconsistencies in format exist. For the same reason, some subsets listed in previous catalogs have been deleted entirely.) The subsets are as follows:

(1) The "camera events not received" subset lists those camera events which were lost because of a variety of engineering and logistical reasons (e.g., no tracking station available). These camera events have been removed from all other subset listings.

(2) The "high-resolution camera events in event order" subset contains all broadband diode (BB1, BB2, BB3, BB4) CE's taken at the normal 0.04^{o} step size.

(3) The "survey camera events" subset contains all CE's which were acquired by using the survey diode at 0.12^{o} step size.

(4) The "Sun imagery camera events" subset identifies all images acquired by using the Sun diode. Note that this subset contains both nominal (0.12^{o} step size) and nonnominal (0.04^{o} step size) images. Most Sun imagery is done by using nonnominal commands.

(5) The "calibration and scan verification camera events" subset contains all calibration mode camera events and all scan verification camera events (BB1 at 0.12^{o} step size) as described in the section "Photosensing and Data Acquisition." The list is divided into camera 1 and camera 2. The entire mission is included in this report.

(6) The "visual color triplet and infrared triplet camera events" subset shows all CE's acquired by using the three visual color diodes (RED, GRN, BLU) in triplet scan mode.

(7) The "high-resolution camera events sorted by 10^{o} boxes of Sun AZ/EL" subset is not included in Reference 1. This list enables the user to rapidly locate images acquired under the same lighting geometries and is useful both for studying changes in the surface and for locating stereoscopic pairs. The entire mission is included in this report.

(8) The "color, IR, and survey camera events sorted by 10^{o} boxes of Sun AZ/EL" subset is the same as (7) except that the list includes color triplets, IR triplets, and survey camera events.

(9) The "elevation coverage chart" lists camera events in elevation interval order. The graphic overlay presented in previous volumes has been deleted.

IPL PICTURE IDENTIFIERS (EDR ORDER NUMBERS)

The lists of IPL picture (photograph) identifiers show the identification numbers for the experiment data record picture segments. These numbers are those to be used when requesting EDR photographic products from the National Space Science Data Center.

The photographic products for each diode image of triplet camera events are separately identified. Several IPL PIC ID's are listed for those images which have been segmented to facilitate film conversion.

VIKING LANDER 1
EXPERIMENT DATA RECORD

VL-1 PARAMETER LISTS

VL-1 CAMERA EVENT REPORT

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP / DATA RECORD	ELEV. POINT ANGLE / TOTAL LINES	STEP SIZE / RESCAN START/TOTAL	CHAN MODE / LINES MISSED	OFFSET / GAPS	GAIN	AVE DN VALUE	SCAN RATE / STAND DEV.	PSA TEMP (C) / NO. EDR SEGMENTS	SOLAR AZ/EL / EDR TAPE/FILE	ANTISOLAR AZ/EL / ARCHIVE TAPE/FILE
12J018												DN0089/1	VLE001/001
12J019												DN0089/2	VLE001/002
11J020												DN0089/3	VLE001/003
11J021												DN0089/4	VLE001/004
11J022												DN0089/5	VLE001/005
12J023												DN0089/6	VLE001/006
12J024												DN0089/7	VLE001/007
11J025												DN0089/8	VLE001/008
11J026												DN0089/9	VLE001/009
11J027												DN0089/10	VLE001/010
12J028/1009	12:30:00 143/01:53:41	SINGLE BB4	197.5/205.0 ISDR 189	0 189/1	0.04	5/2	0 1	1 4 0	168.77	16K 50.19	-3 1	165.7/43.6 DN0089/11	286.0/-42.0 VLE001/011
12J029/1017	12:30:00 151/07:10:23	CLR/T BLU/T	100.0/107.5 ISDR 64	-30 0/0	0.12	1/1	2 2	1 4 2	74.34	16K 25.53	-7 1	164.2/44.2 DN0089/12	284.4/-42.6 VLE001/012
12J029/1017	12:30:00 151/07:10:23	CLR/T GRN/T	100.0/107.5 ISDR 64	-30 0/0	0.12	2/1	5 4	1 4 4	83.15	16K 27.69	-7 1	164.2/44.2 DN0089/13	284.4/-42.6 VLE001/013
12J029/1017	12:30:00 151/07:10:23	CLR/T RED/T	100.0/107.5 ISDR 64	-30 0/0	0.12	3/1	2 1	1 4 1	112.21	16K 34.36	-7 1	164.2/44.2 DN0089/14	284.4/-42.6 VLE001/014
11J030												DN0089/15	VLE001/015
11J031												DN0089/16	VLE001/016
11J032												DN0089/17	VLE001/017
11J033												DN0089/18	VLE001/018
12J034												DN0089/19	VLE001/019
11J035												DN0089/20	VLE001/020
11J036/1069	14:30:00 204/19:28:57	SINGLE BB2	242.5/250.0 ISDR 189	-30 189/1	0.04	0/2	8 2	1 4 2	119.91	16K 29.82	0 1	202.6/52.3 DN0089/21	137.4/-52.6 VLE001/021
11J037												DN0089/22	VLE001/022
12J038												DN0089/23	VLE001/023
12J039												DN0089/24	VLE001/024
11J040												DN0089/25	VLE001/025
11J041												DN0089/26	VLE001/026
11J042												DN0089/27	VLE001/027
12J043												DN0089/28	VLE001/028
12J044/1128	12:30:00 265/08:24:36	CLR/T BLU/T	100.0/107.5 ISDR 64	-30 0/0	0.12	1/1	1 1	1 4 1	74.94	16K 21.52	-3 1	149.0/64.3 DN0089/29	267.7/-62.1 VLE001/029
12J044/1128	12:30:00 265/08:24:36	CLR/T GRN/T	100.0/107.5 ISDR 64	-30 0/0	0.12	2/1	2 1	1 4 1	84.17	16K 22.99	-3 1	149.0/64.3 DN0089/30	267.7/-62.1 VLE001/030
12J044/1128	12:30:00 265/08:24:36	CLR/T RED/T	100.0/107.5 ISDR 64	-30 0/0	0.12	3/1	2 1	1 4 1	113.62	16K 30.84	-3 1	149.0/64.3 DN0089/31	267.7/-62.1 VLE001/031

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	DATA RECORD	TOTAL LINES	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	RESCAN START/TOTAL	LINES MISSED	GAPS	OFFSET	GAIN	AVE DN VALUE	SCAN RATE	STAND DEV.	PSA TEMP (C)	NO. EDR SEGMENTS	SOLAR AZ/EL	EDR TAPE/FILE	ANTISOLAR AZ/EL	ARCHIVE TAPE/FILE
11J045																						DN0089/32 VLE001/032
11J046/1143	14:30:00 280/20:18:25	SINGLE BB3	47.5/ 55.0	ISDR	189	-10 189/i	0.04	13/2		2	1	1	4 139.01	16K 52.39		4 1	223.9/64.4 DN0090/1		156.7/-65.7 VLE001/033	
11J047/1150	14:30:00 288/00:55:30	CLR/T BLU/T	160.0/167.5	ISDR	64	0 0/0	0.12	1/1		1	1	1	4 117.00	16K 24.37		4 1	227.1/65.1 DN0090/2		159.9/-66.5 VLE001/034	
11J047/1150	14:30:00 288/00:55:30	CLR/T GRN/T	160.0/167.5	ISDR	64	0 0/0	0.12	2/1		2	1	1	4 151.91	16K 28.40		4 1	227.1/65.1 DN0090/3		159.9/-66.5 VLE001/035	
11J047/1150	14:30:00 288/00:55:30	CLR/T RED/T	160.0/167.5	ISDR	64	0 0/0	0.12	3/1		2	1	1	4 175.05	16K 34.42		4 1	227.1/65.1 DN0090/4		159.9/-66.5 VLE001/036	
12J048/1157	12:30:00 295/03:32:38	CLR/T BLU/T	85.0/ 92.5	ISDR	64	-30 0/0	0.12	1/1		1	1	1	4 91.07	16K 21.66		-1 1	146.5/70.7 DN0090/5		264.1/-68.4 VLE001/037	
12J048/1157	12:30:00 295/03:32:38	CLR/T GRN/T	85.0/ 92.5	ISDR	64	-30 0/0	0.12	2/1		3	1	2	4 100.78	16K 24.02		-1 1	146.5/70.7 DN0090/6		264.1/-68.4 VLE001/038	
12J048/1157	12:30:00 295/03:32:38	CLR/T RED/T	85.0/ 92.5	ISDR	64	-30 0/0	0.12	3/1		3	1	2	4 130.23	16K 32.80		-1 1	146.5/70.7 DN0090/7		264.1/-68.4 VLE001/039	
12J049/1165	12:30:00 303/08:49:20	CLR/T BLU/T	100.0/107.5	ISDR	64	-30 0/0	0.12	1/1		1	1	1	4 85.10	16K 22.38		0 1	145.8/72.4 DN0090/8		263.0/-70.1 VLE001/040	
12J049/1165	12:30:00 303/08:49:20	CLR/T GRN/T	100.0/107.5	ISDR	64	-30 0/0	0.12	2/1		2	1	1	4 95.14	16K 24.40		0 1	145.8/72.4 DN0090/9		263.0/-70.1 VLE001/041	
12J049/1165	12:30:00 303/08:49:20	CLR/T RED/T	100.0/107.5	ISDR	64	-30 0/0	0.12	3/1		2	1	1	4 125.36	16K 33.81		0 1	145.8/72.4 DN0090/10		263.0/-70.1 VLE001/042	
11J050/1173	14:30:00 311/16:06:02	SINGLE BB3	150.0/157.5	ISDR	189	-10 189/i	0.04	13/2		0	1	0	4 176.18	16K 28.82		4 1	238.7/66.6 DN0090/11		171.9/-68.6 VLE001/043	
11J051																						DN0090/12 VLE001/044
11J052/1187	14:30:00 326/01:20:14	CLR/T BLU/T	160.0/167.5	ISDR	64	0 0/0	0.12	1/1		1	1	1	4 113.84	16K 25.17		4 1	245.9/67.0 DN0090/13		179.6/-69.2 VLE001/045	
11J052/1187	14:30:00 326/01:20:14	CLR/T GRN/T	160.0/167.5	ISDR	64	0 0/0	0.12	2/1		2	1	1	4 147.07	16K 28.91		4 1	245.9/67.0 DN0090/14		179.6/-69.2 VLE001/046	
11J052/1187	14:30:00 326/01:20:14	CLR/T RED/T	160.0/167.5	ISDR	64	0 0/0	0.12	3/1		2	1	1	4 167.80	16K 34.57		4 1	245.9/67.0 DN0090/15		179.6/-69.2 VLE001/047	
12J053/1194	12:30:00 333/03:57:22	CLR/T BLU/T	92.5/100.0	ISDR	64	-30 0/0	0.12	1/1		1	1	1	4 90.82	16K 21.22		2 1	142.8/78.3 DN0090/16		258.2/-75.8 VLE001/048	
12J053/1194	12:30:00 333/03:57:22	CLR/T GRN/T	92.5/100.0	ISDR	64	-30 0/0	0.12	2/1		3	1	2	4 101.32	16K 23.06		2 1	142.8/78.3 DN0090/17		258.2/-75.8 VLE001/049	
12J053/1194	12:30:00 333/03:57:22	CLR/T RED/T	92.5/100.0	ISDR	64	-30 0/0	0.12	3/1		2	1	1	4 130.71	16K 31.22		2 1	142.8/78.3 DN0090/18		258.2/-75.8 VLE001/050	
12J054																						DN0090/19 VLE001/051
11J055/1210	14:30:00 349/16:30:46	SINGLE BB3	165.0/172.5	ISDR	189	-10 189/i	0.04	13/2		0	1	0	4 170.67	16K 26.23		4 1	257.0/66.8 DN0090/20		191.9/-69.4 VLE001/052	
11J056/1217	14:30:00 356/21:07:53	SINGLE BB3	172.5/180.0	ISDR	189	-10 189/i	0.04	13/2		1	1	1	4 171.39	16K 22.21		4 1	260.0/66.6 DN0090/21		195.3/-69.3 VLE001/053	
11J057/1224	14:30:00 364/01:44:58	CLR/T BLU/T	160.0/167.5	ISDR	64	0 0/0	0.12	1/1		48	1	12	4 110.69	16K 26.14		4 1	262.8/66.4 DN0090/22		198.5/-69.1 VLE001/054	
11J057/1224	14:30:00 364/01:44:58	CLR/T GRN/T	160.0/167.5	ISDR	64	0 0/0	0.12	2/1		49	1	12	4 139.27	16K 30.90		4 1	262.8/66.4 DN0090/23		198.5/-69.1 VLE001/055	
11J057/1224	14:30:00 364/01:44:58	CLR/T RED/T	160.0/167.5	ISDR	64	0 0/0	0.12	3/1		50	1	10	4 150.87	16K 35.59		4 1	262.8/66.4 DN0090/24		198.5/-69.1 VLE001/056	
12J058/1231	12:30:00 006/04:22:06	CLR/T BLU/T	107.5/115.0	ISDR	64	-30 0/0	0.12	1/1		1	1	1	4 89.75	16K 24.59		0 1	134.5/84.6 DN0090/25		246.8/-81.9 VLE001/057	
12J058/1231	12:30:00 006/04:22:06	CLR/T GRN/T	107.5/115.0	ISDR	64	-30 0/0	0.12	2/1		2	1	1	4 99.60	16K 26.46		0 1	134.5/84.6 DN0090/26		246.8/-81.9 VLE001/058	
12J058/1231	12:30:00 006/04:22:06	CLR/T RED/T	107.5/115.0	ISDR	64	-30 0/0	0.12	3/1		2	1	1	4 128.17	16K 32.42		0 1	134.5/84.6 DN0090/27		246.8/-81.9 VLE001/059	
12J059																						DN0090/28 VLE001/060
11J060/1247	14:30:00 022/16:55:30	SINGLE BB3	180.0/187.5	ISDR	189	-10 189/i	0.04	13/2		8	1	7	4 167.38	16K 22.73		4 1	270.6/65.4 DN0090/29		207.4/-68.3 VLE001/061	
11J061																						DN0090/30 VLE001/062

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
			DATA RECORD	TOTAL LINES	RESCAN START/TOTAL	LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.	NO. SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE
11J062/1261	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	4	274.5/64.7	211.6/-67.6
	037/02:09:42	BLU/T	ISDR	64	0/0		1	1 109.05	27.51	1	DN0090/31	VLE001/063
11J062/1261	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	4	274.5/64.7	211.6/-67.6
	037/02:09:42	GRN/T	ISDR	64	0/0		2	1 136.70	30.09	1	DN0090/32	VLE001/064
11J062/1261	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	4	274.5/64.7	211.6/-67.6
	037/02:09:42	RED/T	ISDR	64	0/0		2	1 152.37	35.12	1	DN0090/33	VLE001/065
12J063/1268	12:30:00	CLR/T	115.0/122.5	-30	0.12	1/1	1	4	16K	0	81.3/88.7	220.5/-85.8
	044/04:46:50	BLU/T	ISDR	64	0/0		1	1 96.27	22.26	1	DN0091/1	VLE001/066
12J063/1268	12:30:00	CLR/T	115.0/122.5	-30	0.12	2/1	1	4	16K	0	81.3/88.7	220.5/-85.8
	044/04:46:50	GRN/T	ISDR	64	0/0		2	1 107.00	23.00	1	DN0091/2	VLE001/067
12J063/1268	12:30:00	CLR/T	115.0/122.5	-30	0.12	3/1	1	4	16K	0	81.3/88.7	220.5/-85.8
	044/04:46:50	RED/T	ISDR	64	0/0		2	1 135.22	29.37	1	DN0091/3	VLE001/068
12J064/1276	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	0	46.4/88.8	212.1/-86.3
	052/10:03:32	BLU/T	ISDR	64	0/0		26	1 3 94.05	20.73	1	DN0091/4	VLE001/069
12J064/1276	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	0	46.4/88.8	212.1/-86.3
	052/10:03:32	GRN/T	ISDR	64	0/0		25	1 2 105.01	22.34	1	DN0091/5	VLE001/070
12J064/1276	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	0	46.4/88.8	212.1/-86.3
	052/10:03:32	RED/T	ISDR	64	0/0		27	1 3 134.41	29.68	1	DN0091/6	VLE001/071
11J065											DN0091/7	VLE001/072
11J066/1291	14:30:00	CLR/T	167.5/175.0	0	0.12	1/1	1	4	16K	4	279.5/63.3	217.4/-66.2
	067/21:57:21	BLU/T	ISDR	64	0/0		1	1 107.62	28.32	1	DN0091/8	VLE001/073
11J066/1291	14:30:00	CLR/T	167.5/175.0	0	0.12	2/1	1	4	16K	4	279.5/63.3	217.4/-66.2
	067/21:57:21	GRN/T	ISDR	64	0/0		2	1 132.18	30.77	1	DN0091/9	VLE001/074
11J066/1291	14:30:00	CLR/T	167.5/175.0	0	0.12	3/1	1	4	16K	4	279.5/63.3	217.4/-66.2
	067/21:57:21	RED/T	ISDR	64	0/0		2	1 145.27	41.79	1	DN0091/10	VLE001/075
11J067/1298	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	2	280.2/63.0	218.2/-65.9
	075/02:34:27	BLU/T	ISDR	64	0/0		1	1 103.84	27.33	1	DN0091/11	VLE001/076
11J067/1298	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	2	280.2/63.0	218.2/-65.9
	075/02:34:27	GRN/T	ISDR	64	0/0		2	1 128.09	30.56	1	DN0091/12	VLE001/077
11J067/1298	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	2	280.2/63.0	218.2/-65.9
	075/02:34:27	RED/T	ISDR	64	0/0		2	1 141.10	40.19	1	DN0091/13	VLE001/078
12J068/1305	12:30:00	CLR/T	302.5/310.0	-10	0.12	1/1	1	4	16K	0	348.4/87.7	180.9/-87.2
	082/05:11:34	BLU/T	ISDR	64	0/0		2	2 104.82	56.91	1	DN0091/14	VLE001/079
12J068/1305	12:30:00	CLR/T	302.5/310.0	-10	0.12	2/1	1	4	16K	0	348.4/87.7	180.9/-87.2
	082/05:11:34	GRN/T	ISDR	64	0/0		3	1 2 103.55	53.60	1	DN0091/15	VLE001/080
12J068/1305	12:30:00	CLR/T	302.5/310.0	-10	0.12	3/1	1	4	16K	0	348.4/87.7	180.9/-87.2
	082/05:11:34	RED/T	ISDR	64	0/0		3	1 2 113.76	60.10	1	DN0091/16	VLE001/081
12J069/1313	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	0	342.4/87.4	174.3/-87.3
	090/10:28:16	BLU/T	ISDR	64	0/0		1	1 96.98	19.98	1	DN0091/17	VLE001/082
12J069/1313	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	0	342.4/87.4	174.3/-87.3
	090/10:28:16	GRN/T	ISDR	64	0/0		2	1 108.06	21.28	1	DN0091/18	VLE001/083
12J069/1313	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	0	342.4/87.4	174.3/-87.3
	090/10:28:16	RED/T	ISDR	64	0/0		2	1 138.51	28.51	1	DN0091/19	VLE001/084
11J070/1321	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	1/1	1	4	16K	4	281.2/62.1	219.4/-65.1
	098/17:44:58	BLU/T	ISDR	64	0/0		1	1 87.58	54.87	1	DN0091/20	VLE001/085
11J070/1321	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	2/1	1	4	16K	4	281.2/62.1	219.4/-65.1
	098/17:44:58	GRN/T	ISDR	64	0/0		2	1 96.92	50.78	1	DN0091/21	VLE001/086
11J070/1321	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	3/1	1	4	16K	4	281.2/62.1	219.4/-65.1
	098/17:44:58	RED/T	ISDR	64	0/0		2	1 135.61	66.31	1	DN0091/22	VLE001/087
11J071/1328	14:30:00	SINGLE	175.0/197.5	-30	0.12	14/3	1	4	16K	4	281.2/61.8	219.4/-64.8
	105/22:22:05	SURV	ISDR	189	189/1		0	0 129.80	50.59	1	DN0091/23	VLE001/088
11J072/1335	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	4	280.9/61.6	219.1/-64.6
	113/02:59:11	BLU/T	ISDR	64	0/0		19	4 103.81	29.33	1	DN0091/24	VLE001/089
11J072/1335	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	4	280.9/61.6	219.1/-64.6
	113/02:59:11	GRN/T	ISDR	64	0/0		20	4 126.71	32.61	1	DN0091/25	VLE001/090
11J072/1335	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	4	280.9/61.6	219.1/-64.6
	113/02:59:11	RED/T	ISDR	64	0/0		20	3 139.03	43.64	1	DN0091/26	VLE001/091
12J073											DN0091/27	VLE001/092
12J074											DN0091/28	VLE001/093

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT	STEP SIZE	CHAN MODE	OFFSET	GAIN	SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL		LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.	NO. EDR SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE
11J075/1358	14:30:00	SINGLE	197.5/220.0	-30	0.12	14/3	1	4	16K	6	279.0/60.8	217.0/-63.8
	136/18:09:42	SURV	ISDR 189	189/1		0	0	142.63	45.64	1	DN0091/29	VLE001/094
11J076/1365	14:30:00	SINGLE	220.0/242.5	-30	0.12	14/3	1	4	16K	6	278.1/60.6	216.0/-63.5
	143/22:46:50	SURV	ISDR 189	189/1		0	0	156.62	26.02	1	DN0091/30	VLE001/095
11J077/1372	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	6	277.0/60.3	214.8/-63.3
	151/03:23:55	BLU/T	ISDR 64	0/0		14	2	103.37	28.20	1	DN0091/31	VLE001/096
11J077/1372	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	6	277.0/60.3	214.8/-63.3
	151/03:23:55	GRN/T	ISDR 64	0/0		14	2	126.62	33.76	1	DN0091/32	VLE001/097
11J077/1372	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	6	277.0/60.3	214.8/-63.3
	151/03:23:55	RED/T	ISDR 64	0/0		16	2	140.26	46.60	1	DN0091/33	VLE001/098
12J078/1379	12:30:00	SINGLE	305.0/312.5	-10	0.04	13/2	1	4	16K	6	266.4/87.0	308.7/-89.0
	158/06:01:02	BB3	ISDR 189	189/1		0	0	114.08	53.79	1	DN0091/34	VLE001/099
12J079/1387	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	6	252.9/86.6	314.8/-88.2
	166/11:17:44	BLU/T	ISDR 64	0/0		1	1	101.71	22.00	1	DN0091/35	VLE001/100
12J079/1387	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	6	252.9/86.6	314.8/-88.2
	166/11:17:44	GRN/T	ISDR 64	0/0		2	1	113.02	23.35	1	DN0091/36	VLE001/101
12J079/1387	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	6	252.9/86.6	314.8/-88.2
	166/11:17:44	RED/T	ISDR 64	0/0		2	1	145.41	31.11	1	DN0091/37	VLE001/102
11J080/1395	14:30:00	SINGLE	242.5/265.0	-30	0.12	14/3	1	4	16K	11	272.6/59.2	210.0/-62.2
	174/18:34:26	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2228/1	VLE069/023
11J081/1402	14:30:00	SINGLE	265.0/287.5	-30	0.12	14/3	1	4	16K	13	270.9/58.8	208.2/-61.7
	181/23:11:34	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2228/2	VLE069/024
11J082/1409	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	13	269.2/58.4	206.3/-61.3
	189/03:48:28	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/3	VLE069/025
11J082/1409	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	13	269.2/58.4	206.3/-61.3
	189/03:48:28	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/4	VLE069/026
11J082/1409	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	13	269.2/58.4	206.3/-61.3
	189/03:48:28	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/5	VLE069/027
12J083											DN0092/6	VLE001/108
12J084/1424	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	11	217.8/82.3	317.7/-82.9
	204/11:42:28	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/6	VLE069/028
12J084/1424	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	11	217.8/82.3	317.7/-82.9
	204/11:42:28	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/7	VLE069/029
12J084/1424	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	11	217.8/82.3	317.7/-82.9
	204/11:42:28	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/8	VLE069/030
11J085/1432	14:30:00	SINGLE	150.0/157.5	-10	0.04	5/2	1	4	16K	13	263.0/56.6	199.8/-59.3
	212/18:59:10	BB4	IDR 192	192/0		0	0	0.00	0.00	1	VL2228/9	VLE069/031
11J086											DN0092/11	VLE001/113
11J087											DN0092/12	VLE001/114
12J088											DN0092/13	VLE001/115
12J089/1461	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	13	205.7/75.5	316.7/-75.7
	242/12:07:13	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/10	VLE069/032
12J089/1461	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	13	205.7/75.5	316.7/-75.7
	242/12:07:13	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/11	VLE069/033
12J089/1461	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	13	205.7/75.5	316.7/-75.7
	242/12:07:13	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2228/12	VLE069/034
11J090											DN0092/17	VLE001/119
11J091											DN0092/18	VLE001/120
11J092											DN0092/19	VLE001/121
12J093/1490	12:30:00	SINGLE	122.5/145.0	-30	0.12	14/3	1	4	16K	13	200.4/69.1	315.2/-69.1
	272/07:15:14	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2228/13	VLE069/035
12J094											DN0092/21	VLE001/123
11J095											DN0092/22	VLE001/124

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP / DATA RECORD	ELEV. POINT ANGLE STEP SIZE / TOTAL LINES	CHAN MODE / RESCAN START/TOTAL	OFFSET / LINES MISSED	GAIN / GAPS	AVE DN VALUE	SCAN RATE / STAND DEV.	PSA TEMP (C) / NO. EDR SEGMENTS	SOLAR AZ/EL / EDR TAPE/FILE	ANTISOLAR AZ/EL / ARCHIVE TAPE/FILE
11J096												DN0092/23 VLE001/125
11J097/1520	14:30:00 303/05:02:51	CLR/T BLU/T	160.0/167.5 IDR 64	0 0.12 64/0	1/1	0 1	0 4	0.00	16K 0.00	15 1	237.3/45.1 VL2228/14	173.6/-47.1 VLE069/036
11J097/1520	14:30:00 303/05:02:51	CLR/T GRN/T	160.0/167.5 IDR 64	0 0.12 64/0	2/1	0 1	0 4	0.00	16K 0.00	15 1	237.3/45.1 VL2228/15	173.6/-47.1 VLE069/037
11J097/1520	14:30:00 303/05:02:51	CLR/T RED/T	160.0/167.5 IDR 64	0 0.12 64/0	3/1	0 1	0 4	0.00	16K 0.00	15 1	237.3/45.1 VL2228/16	173.6/-47.1 VLE069/038
12J098												DN0093/4 VLE001/129
12J099												DN0093/5 VLE001/130
11J100/1543	14:30:00 326/20:13:23	SINGLE BB3	270.0/277.5 IDR 192	-20 0.04 192/0	13/2	0 1	0 4	0.00	16K 0.00	13 1	231.0/41.9 VL2228/17	167.3/-43.6 VLE069/039
11J101												DN0093/7 VLE001/132
11J102/1557	14:30:00 341/05:27:35	CLR/T BLU/T	160.0/167.5 IDR 64	0 0.12 64/0	1/1	0 1	0 4	0.00	16K 0.00	9 1	227.2/40.2 VL2228/18	163.6/-41.7 VLE069/040
11J102/1557	14:30:00 341/05:27:35	CLR/T GRN/T	160.0/167.5 IDR 64	0 0.12 64/0	2/1	0 1	0 4	0.00	16K 0.00	9 1	227.2/40.2 VL2228/19	163.6/-41.7 VLE069/041
11J102/1557	14:30:00 341/05:27:35	CLR/T RED/T	160.0/167.5 IDR 64	0 0.12 64/0	3/1	0 1	0 4	0.00	16K 0.00	9 1	227.2/40.2 VL2228/20	163.6/-41.7 VLE069/042
12J103/1564	12:30:00 348/08:04:43	SINGLE BB4	197.5/205.0 IDR 192	0 0.04 192/0	5/2	0 1	0 4	0.00	16K 0.00	6 1	188.7/52.2 VL2229/1	307.6/-51.7 VLE069/043
12J104												DN0093/12 VLE001/137
11J105												DN0093/13 VLE001/138
11J106												DN0093/14 VLE001/139
11J107/1594	14:30:00 013/05:52:19	CLR/T BLU/T	160.0/167.5 IDR 64	0 0.12 64/0	1/1	0 1	0 4	0.00	16K 0.00	6 1	217.7/37.1 VL2229/2	154.2/-38.2 VLE069/044
11J107/1594	14:30:00 013/05:52:19	CLR/T GRN/T	160.0/167.5 IDR 64	0 0.12 64/0	2/1	0 1	0 4	0.00	16K 0.00	6 1	217.7/37.1 VL2229/3	154.2/-38.2 VLE069/045
11J107/1594	14:30:00 013/05:52:19	CLR/T RED/T	160.0/167.5 IDR 64	0 0.12 64/0	3/1	0 1	0 4	0.00	16K 0.00	6 1	217.7/37.1 VL2229/4	154.2/-38.2 VLE069/046
12J108/1601	12:30:00 020/08:29:27	SINGLE BB3	82.5/ 90.0 IDR 192	-20 0.04 192/0	13/2	0 1	0 4	0.00	16K 0.00	0 1	181.7/45.9 VL2229/5	301.4/-45.1 VLE069/047
12J109												DN0093/19 VLE001/144
11J110/1617	14:30:00 036/21:02:51	SINGLE BB3	205.0/212.5 IDR 192	-10 0.04 192/0	13/2	0 1	0 4	0.00	16K 0.00	2 1	212.3/36.7 VL2229/6	148.8/-37.5 VLE069/048
11J111/1624	14:30:00 044/01:39:58	SINGLE BB3	212.5/220.0 IDR 192	-10 0.04 192/0	13/2	0 1	0 4	0.00	16K 0.00	0 1	210.8/36.8 VL2229/7	147.3/-37.6 VLE069/049
11J112												DN0093/22 VLE002/001
12J113/1638	12:30:00 058/08:54:11	SINGLE BB4	197.5/205.0 IDR 192	0 0.04 192/0	5/2	0 1	0 4	0.00	16K 0.00	-5 1	173.9/42.8 VL2229/8	294.1/-41.6 VLE069/050
12J114												DN0093/24 VLE002/003
11J115/1654	14:30:00 074/21:27:35	SINGLE BB2	205.0/212.5 IDR 192	-30 0.04 192/0	0/2	0 1	0 4	0.00	16K 0.00	4 1	205.3/38.7 VL2229/9	141.6/-39.2 VLE069/051
11J116												DN0093/26 VLE002/005
11J117												DN0093/27 VLE002/006
12J118												DN0093/28 VLE002/007
12J119												DN0093/29 VLE002/008
11J120/1691	14:30:00 112/21:52:19	SINGLE BB2	220.0/227.5 IDR 192	-30 0.04 192/0	0/2	0 1	0 4	0.00	16K 0.00	0 1	201.4/43.7 DN0093/30	137.2/-43.9 VLE002/009

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN		SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL		LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.		NO. EDR SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE
11J121												DN0093/31	VLE002/010
11J122/1705	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0	1	0	4	0.00	16K	2	201.0/46.1	136.5/-46.3
	127/07:06:32	BLU/T	IDR 64	64/0							0.00		1	VL2229/10	VLE069/052
11J122/1705	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0	1	0	4	0.00	16K	2	201.0/46.1	136.5/-46.3
	127/07:06:32	GRN/T	IDR 64	64/0							0.00		1	VL2229/11	VLE069/053
11J122/1705	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	0	1	0	4	0.00	16K	2	201.0/46.1	136.5/-46.3
	127/07:06:32	RED/T	IDR 64	64/0							0.00		1	VL2229/12	VLE069/054
12J123/1712	12:30:00	SINGLE	37.5/ 45.0	-10	0.04	13/2	0	1	0	4	0.00	16K	0	159.5/47.5	279.6/-45.7
	134/09:43:39	BB3	IDR 192	192/0							0.00		1	DN0093/35	VLE002/014
12J124/1720	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0	1	0	4	0.00	16K	-9	158.2/48.7	278.2/-46.8
	142/15:00:21	BLU/T	IDR 64	64/0							0.00		1	VL2229/13	VLE069/055
12J124/1720	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0	1	0	4	0.00	16K	-9	158.2/48.7	278.2/-46.8
	142/15:00:21	GRN/T	IDR 64	64/0							0.00		1	VL2229/14	VLE069/056
12J124/1720	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0	1	0	4	0.00	16K	-9	158.2/48.7	278.2/-46.8
	142/15:00:21	RED/T	IDR 64	64/0							0.00		1	VL2229/15	VLE069/057
11J125/1728	14:30:00	SINGLE	235.0/242.5	-30	0.04	0/2	0	1	0	4	0.00	16K	-1	201.7/50.4	136.7/-50.7
	150/22:17:03	BB2	IDR 192	192/0							0.00		1	VL2229/16	VLE069/058
11J126												DN0093/40	VLE002/019
11J127/1742	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0	1	0	4	0.00	16K	-7	203.2/53.1	137.8/-53.4
	165/07:31:16	BLU/T	IDR 64	64/0							0.00		1	VL2229/17	VLE069/059
11J127/1742	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0	1	0	4	0.00	16K	-7	203.2/53.1	137.8/-53.4
	165/07:31:16	GRN/T	IDR 64	64/0							0.00		1	VL2229/18	VLE069/060
11J127/1742	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	0	1	0	4	0.00	16K	-7	203.2/53.1	137.8/-53.4
	165/07:31:16	RED/T	IDR 64	64/0							0.00		1	VL2229/19	VLE069/061
12J128												DN0093/44	VLE002/023
12J129/1757	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0	1	0	4	0.00	16K	-11	153.1/55.7	272.6/-53.6
	180/15:25:05	BLU/T	IDR 64	64/0							0.00		1	VL2230/1	VLE069/062
12J129/1757	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0	1	0	4	0.00	16K	-11	153.1/55.7	272.6/-53.6
	180/15:25:05	GRN/T	IDR 64	64/0							0.00		1	VL2230/2	VLE069/063
12J129/1757	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0	1	0	4	0.00	16K	-11	153.1/55.7	272.6/-53.6
	180/15:25:05	RED/T	IDR 64	64/0							0.00		1	VL2230/3	VLE069/064
11J130/1765	14:30:00	SINGLE	250.0/257.5	-30	0.04	0/2	0	1	0	4	0.00	16K	4	207.5/57.5	141.4/-58.0
	188/22:41:47	BB2	IDR 192	192/0							0.00		1	VL2230/4	VLE069/065
11J131												DN0094/1	VLE002/028
11J132												DN0094/2	VLE002/029
12J133												DN0094/3	VLE002/030
12J134												DN0094/4	VLE002/031
11J135												DN0094/5	VLE002/032
11J136/1809	14:30:00	SINGLE	47.5/ 55.0	-10	0.04	13/2	0	1	0	4	0.00	16K	6	222.7/64.1	155.6/-65.4
	234/03:43:39	BB3	IDR 192	192/0							0.00		1	VL2230/5	VLE069/066
11J137												DN0094/7	VLE002/034
12J138												DN0094/8	VLE002/035
12J139												DN0094/9	VLE002/036
11J140/1839	14:30:00	SINGLE	150.0/157.5	-10	0.04	13/2	0	1	0	4	0.00	16K	6	237.4/66.5	170.4/-68.4
	264/23:31:16	BB3	IDR 192	192/0							0.00		1	VL2230/6	VLE069/067
11J141/1846	14:30:00	SINGLE	157.5/165.0	-10	0.04	13/2	0	1	0	4	0.00	16K	6	241.0/66.8	174.3/-68.8
	272/04:08:23	BB3	IDR 192	192/0							0.00		1	VL2230/7	VLE069/068
11J142/1853	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0	1	0	4	0.00	16K	6	244.6/67.0	178.2/-69.1
	279/08:45:28	BLU/T	IDR 64	64/0							0.00		1	VL2230/8	VLE069/069
11J142/1853	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0	1	0	4	0.00	16K	6	244.6/67.0	178.2/-69.1
	279/08:45:28	GRN/T	IDR 64	64/0							0.00		1	VL2230/9	VLE069/070

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL		LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.	NO. EDR SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE
11J142/1853	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	6	244.6/67.0	178.2/-69.1
	279/08:45:28	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/10	VLE069/071
12J143												
											DN0094/15	VLE002/042
12J144												
											DN0094/16	VLE002/043
11J145/1876	14:30:00	SINGLE	165.0/172.5	-10	0.04	13/2	1	4	16K	6	243.6/75.3	173.4/-77.4
	303/23:56:00	BB3	IDR 192	192/0		0	0	0.00	0.00	1	VL2230/11	VLE069/072
11J146												
											DN0094/18	VLE002/045
11J147/1890	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	6	261.8/66.5	197.3/-69.2
	317/09:10:12	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/12	VLE069/073
11J147/1890	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	6	261.8/66.5	197.3/-69.2
	317/09:10:12	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/13	VLE069/074
11J147/1890	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	6	261.8/66.5	197.3/-69.2
	317/09:10:12	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/14	VLE069/075
12J148												
											DN0094/22	VLE002/049
12J149/1905	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	4	132.0/85.4	244.2/-82.6
	332/17:04:02	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/15	VLE069/076
12J149/1905	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	4	132.0/85.4	244.2/-82.6
	332/17:04:02	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/16	VLE069/077
12J149/1905	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	4	132.0/85.4	244.2/-82.6
	332/17:04:02	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/17	VLE069/078
11J150/1913	14:30:00	SINGLE	180.0/187.5	-10	0.04	13/2	1	4	16K	6	269.9/65.5	206.5/-68.4
	341/00:20:44	BB3	IDR 192	192/0		0	0	0.00	0.00	1	VL2230/18	VLE069/079
11J151												
											DN0095/1	VLE002/054
11J152												
											DN0095/2	VLE002/055
12J153/1934	12:30:00	CLR/T	115.0/122.5	-30	0.12	1/1	1	4	16K	4	90.7/88.5	223.1/-85.6
	362/12:12:04	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2230/19	VLE069/080
12J153/1934	12:30:00	CLR/T	115.0/122.5	-30	0.12	2/1	1	4	16K	4	90.7/88.5	223.1/-85.6
	362/12:12:04	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/1	VLE069/081
12J153/1934	12:30:00	CLR/T	115.0/122.5	-30	0.12	3/1	1	4	16K	4	90.7/88.5	223.1/-85.6
	362/12:12:04	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/2	VLE069/082
12J154/1942	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	1	4	16K	2	58.2/88.8	214.9/-86.1
	005/17:28:46	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/3	VLE069/083
12J154/1942	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	1	4	16K	2	58.2/88.8	214.9/-86.1
	005/17:28:46	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/4	VLE069/084
12J154/1942	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	1	4	16K	2	58.2/88.8	214.9/-86.1
	005/17:28:46	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/5	VLE069/085
11J155/1950	14:30:00	CLR/T	152.5/160.0	0	0.12	1/1	1	4	16K	4	278.2/63.7	216.0/-66.7
	014/00:45:28	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/6	VLE069/086
11J155/1950	14:30:00	CLR/T	152.5/160.0	0	0.12	2/1	1	4	16K	4	278.2/63.7	216.0/-66.7
	014/00:45:28	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/7	VLE069/087
11J155/1950	14:30:00	CLR/T	152.5/160.0	0	0.12	3/1	1	4	16K	4	278.2/63.7	216.0/-66.7
	014/00:45:28	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/8	VLE069/088
11J156/1957	14:30:00	CLR/T	167.5/175.0	0	0.12	1/1	1	4	16K	4	279.1/63.4	217.1/-66.4
	021/05:22:35	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/9	VLE069/089
11J156/1957	14:30:00	CLR/T	167.5/175.0	0	0.12	2/1	1	4	16K	4	279.1/63.4	217.1/-66.4
	021/05:22:35	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/10	VLE069/090
11J156/1957	14:30:00	CLR/T	167.5/175.0	0	0.12	3/1	1	4	16K	4	279.1/63.4	217.1/-66.4
	021/05:22:35	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/11	VLE069/091
11J157/1964	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	1	4	16K	4	279.9/63.1	217.9/-66.1
	028/09:59:40	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/12	VLE069/092
11J157/1964	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	1	4	16K	4	279.9/63.1	217.9/-66.1
	028/09:59:40	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/13	VLE069/093
11J157/1964	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	1	4	16K	4	279.9/63.1	217.9/-66.1
	028/09:59:40	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/14	VLE069/094
12J158/1971	12:30:00	CLR/T	302.5/310.0	-10	0.12	1/1	1	4	16K	2	350.7/87.8	183.3/-87.1
	035/12:36:48	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/15	VLE069/095

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP / DATA RECORD	ELEV. POINT ANGLE / TOTAL LINES	STEP SIZE / RESCAN START/TOTAL	CHAN MODE / LINES MISSED	OFFSET / GAPS	GAIN / AVE DN VALUE	SCAN RATE / STAND DEV.	PSA TEMP (C) / NO. SEGMENTS	SOLAR AZ/EL / EDR TAPE/FILE	ANTISOLAR AZ/EL / ARCHIVE TAPE/FILE
12J158/1971	12:30:00	CLR/T	302.5/310.0	-10	0.12	2/1	0 1	0 4	16K	2	350.7/87.8	183.3/-87.1
	035/12:36:48	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/16	VLE069/096
12J158/1971	12:30:00	CLR/T	302.5/310.0	-10	0.12	3/1	0 1	0 4	16K	2	350.7/87.8	183.3/-87.1
	035/12:36:48	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/17	VLE069/097
12J159												
											DN0095/21	VLE002/074
11J160/1987	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	1/1	0 1	0 4	16K	4	281.2/62.2	219.4/-65.2
	052/01:10:12	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/18	VLE069/098
11J160/1987	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	2/1	0 1	0 4	16K	4	281.2/62.2	219.4/-65.2
	052/01:10:12	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/19	VLE069/099
11J160/1987	14:30:00	CLR/T	52.5/ 60.0	-10	0.12	3/1	0 1	0 4	16K	4	281.2/62.2	219.4/-65.2
	052/01:10:12	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2231/20	VLE069/100
11J161/1994	14:30:00	SINGLE	175.0/197.5	-30	0.12	14/3	0 1	0 4	16K	4	281.2/61.9	219.4/-64.9
	059/05:47:19	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/1	VLE069/101
11J162/2001	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0 1	0 4	16K	4	281.0/61.7	219.2/-64.7
	066/10:24:25	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/2	VLE069/102
11J162/2001	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0 1	0 4	16K	4	281.0/61.7	219.2/-64.7
	066/10:24:25	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/3	VLE069/103
11J162/2001	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	0 1	0 4	16K	4	281.0/61.7	219.2/-64.7
	066/10:24:25	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/4	VLE069/104
12J163/2008	12:30:00	SINGLE	285.0/292.5	-10	0.04	13/2	0 1	0 4	16K	4	323.3/87.2	161.3/-88.1
	073/13:01:32	BB3	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/5	VLE069/105
12J164/2016	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	16K	4	315.5/87.2	160.4/-88.5
	081/18:18:14	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/6	VLE069/106
12J164/2016	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	16K	4	315.5/87.2	160.4/-88.5
	081/18:18:14	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/7	VLE069/107
12J164/2016	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	16K	4	315.5/87.2	160.4/-88.5
	081/18:18:14	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/8	VLE069/108
11J165												
											DN0096/8	VLE002/086
11J166/2031	14:30:00	SINGLE	220.0/242.5	-30	0.12	14/3	0 1	0 4	16K	6	278.5/60.7	216.4/-63.6
	097/06:12:03	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/9	VLE069/109
11J167												
											DN0096/10	VLE002/088
12J168/2045	12:30:00	SINGLE	305.0/312.5	-10	0.04	13/2	0 1	0 4	16K	6	271.0/87.1	303.6/-89.3
	111/13:26:16	BB3	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/10	VLE069/110
12J169/2053	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	16K	9	257.1/86.7	313.5/-88.5
	119/18:42:58	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/11	VLE069/111
12J169/2053	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	16K	9	257.1/86.7	313.5/-88.5
	119/18:42:58	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/12	VLE069/112
12J169/2053	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	16K	9	257.1/86.7	313.5/-88.5
	119/18:42:58	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/13	VLE069/113
11J170/2061	14:30:00	SINGLE	242.5/265.0	-30	0.12	14/3	0 1	0 4	16K	9	273.1/59.4	210.6/-62.3
	128/01:59:40	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/14	VLE069/114
11J171/2068	14:30:00	SINGLE	265.0/287.5	-30	0.12	14/3	0 1	0 4	16K	11	271.6/59.0	208.9/-61.9
	135/06:36:48	SURV	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/15	VLE069/115
11J172/2075	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0 1	0 4	16K	11	269.9/58.6	207.1/-61.4
	142/11:13:53	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/16	VLE069/116
11J172/2075	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0 1	0 4	16K	11	269.9/58.6	207.1/-61.4
	142/11:13:53	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/17	VLE069/117
11J172/2075	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	0 1	0 4	16K	11	269.9/58.6	207.1/-61.4
	142/11:13:53	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/18	VLE069/118
12J173/2082	12:30:00	SINGLE	72.5/ 80.0	-50	0.04	8/2	0 1	0 4	16K	11	278.7/32.1	41.1/-35.1
	143/13:51:00	BB1	IDR 192	192/0		0	0	0.00	0.00	1	VL2232/19	VLE069/119
12J174/2090	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	16K	11	219.1/82.7	317.7/-83.3
	157/19:07:42	BLU/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2232/20	VLE069/120
12J174/2090	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	16K	11	219.1/82.7	317.7/-83.3
	157/19:07:42	GRN/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2233/1	VLE069/121
12J174/2090	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	16K	11	219.1/82.7	317.7/-83.3
	157/19:07:42	RED/T	IDR 64	64/0		0	0	0.00	0.00	1	VL2233/2	VLE069/122
11J175/2098	14:30:00	SINGLE	150.0/157.5	-10	0.04	5/2	0 1	0 4	16K	13	263.7/56.8	200.5/-59.6
	166/02:24:24	BB4	IDR 192	192/0		0	0	0.00	0.00	1	VL2233/3	VLE069/123

VL-1 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	AVE DN VALUE	SCAN RATE / STAND DEV.	PSA TEMP (C) / NO. EDR SEGMENTS	SOLAR AZ/EL / EDR TAPE/FILE	ANTISOLAR AZ/EL / ARCHIVE TAPE/FILE
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL		LINES MISSED	GAPS						
11J176/2105	14:30:00	SINGLE	157.5/165.0	-10	0.04	5/2	0 1	0 4	0.00	16K	13	261.8/56.2	198.4/-58.9
	173/07:01:32	BB4	IDR 192	192/0						0.00	1	VL2233/4	VLE069/124
11J177													
												DN0097/7	VLE002/104
12J178/2119	12:30:00	SINGLE	145.0/167.5	-30	0.12	14/3	0 1	0 4	0.00	16K	13	208.2/77.6	317.1/-78.0
	187/14:15:44	SURV	IDR 192	192/0						0.00	1	VL2233/5	VLE069/125
12J179/2127	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	0.00	16K	13	206.3/76.0	316.8/-76.3
	195/19:32:26	BLU/T	IDR 64	64/0						0.00	1	VL2233/6	VLE069/126
12J179/2127	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	0.00	16K	13	206.3/76.0	316.8/-76.3
	195/19:32:26	GRN/T	IDR 64	64/0						0.00	1	VL2233/7	VLE069/127
12J179/2127	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	0.00	16K	13	206.3/76.0	316.8/-76.3
	195/19:32:26	RED/T	IDR 64	64/0						0.00	1	VL2233/8	VLE069/128
11J180/2135	14:30:00	SINGLE	165.0/172.5	-10	0.04	5/2	0 1	0 4	0.00	16K	15	252.9/52.8	189.3/-55.3
	204/02:49:08	BB4	IDR 192	192/0						0.00	1	VL2233/9	VLE069/129
11J181/2142	14:30:00	SINGLE	172.5/180.0	-10	0.04	5/2	0 1	0 4	0.00	16K	15	250.8/51.9	187.2/-54.3
	211/07:26:16	BB4	IDR 192	192/0						0.00	1	VL2233/10	VLE069/130
11J182/2149	14:30:00	CLR/T	160.0/167.5	0	0.12	1/1	0 1	0 4	0.00	16K	15	248.8/50.9	185.1/-53.3
	218/12:03:21	BLU/T	IDR 64	64/0						0.00	1	VL2233/11	VLE069/131
11J182/2149	14:30:00	CLR/T	160.0/167.5	0	0.12	2/1	0 1	0 4	0.00	16K	15	248.8/50.9	185.1/-53.3
	218/12:03:21	GRN/T	IDR 64	64/0						0.00	1	VL2233/12	VLE069/132
11J182/2149	14:30:00	CLR/T	160.0/167.5	0	0.12	3/1	0 1	0 4	0.00	16K	15	248.8/50.9	185.1/-53.3
	218/12:03:21	RED/T	IDR 64	64/0						0.00	1	VL2233/13	VLE069/133
12J183/2156	12:30:00	SINGLE	122.5/145.0	-30	0.12	14/3	0 1	0 4	0.00	16K	13	200.8/69.7	315.4/-69.8
	225/14:40:28	SURV	IDR 192	192/0						0.00	1	VL2233/14	VLE069/134
12J184/2164	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	0.00	16K	13	199.6/67.8	314.9/-67.9
	233/19:57:11	BLU/T	IDR 64	64/0						0.00	1	VL2233/15	VLE069/135
12J184/2164	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	0.00	16K	13	199.6/67.8	314.9/-67.9
	233/19:57:11	GRN/T	IDR 64	64/0						0.00	1	VL2233/16	VLE069/136
12J184/2164	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	0.00	16K	13	199.6/67.8	314.9/-67.9
	233/19:57:11	RED/T	IDR 64	64/0						0.00	1	VL2233/17	VLE069/137
11J185/2172	14:30:00	SINGLE	180.0/187.5	-10	0.04	5/2	0 1	0 4	0.00	16K	15	242.1/47.6	178.3/-49.7
	242/03:13:53	BB4	IDR 192	192/0						0.00	1	VL2233/18	VLE069/138
11J186/2179	14:30:00	SINGLE	187.5/195.0	-10	0.04	5/2	0 1	0 4	0.00	16K	15	240.1/46.6	176.3/-48.6
	249/07:51:00	BB4	IDR 192	192/0						0.00	1	VL2233/19	VLE069/139
11J187													
												DN0098/7	VLE002/120
12J188													
												DN0098/8	VLE002/121
12J189/2201	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	0.00	16K	11	193.9/59.1	311.6/-58.9
	271/20:21:55	BLU/T	IDR 64	64/0						0.00	1	DN0098/9	VLE002/122
12J189/2201	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	0.00	16K	11	193.9/59.1	311.6/-58.9
	271/20:21:55	GRN/T	IDR 64	64/0						0.00	1	DN0098/10	VLE002/123
12J189/2201	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	0.00	16K	11	193.9/59.1	311.6/-58.9
	271/20:21:55	RED/T	IDR 64	64/0						0.00	1	DN0098/11	VLE002/124
11J190/2209	14:30:00	SINGLE	270.0/277.5	-20	0.04	13/2	0 1	0 4	0.00	16K	2	231.7/42.2	168.0/-44.0
	280/03:38:37	BB3	IDR 192	192/0						0.00	1	DN0098/12	VLE002/125
11J191													
												DN0098/13	VLE002/126
11J192													
												DN0098/14	VLE002/127
12J193/2230	12:30:00	SINGLE	197.5/205.0	0	0.04	5/2	0 1	0 4	0.00	16K	-7	189.2/52.7	123.9/-52.3
	301/15:29:57	BB4	IDR 192	192/0						0.00	1	DN0098/15	VLE002/128
12J194/2238	12:30:00	CLR/T	100.0/107.5	-30	0.12	1/1	0 1	0 4	0.00	16K	-5	187.7/51.1	306.7/-50.6
	309/20:46:39	BLU/T	IDR 64	64/0						0.00	1	DN0098/16	VLE002/129
12J194/2238	12:30:00	CLR/T	100.0/107.5	-30	0.12	2/1	0 1	0 4	0.00	16K	-5	187.7/51.1	306.7/-50.6
	309/20:46:39	GRN/T	IDR 64	64/0						0.00	1	DN0098/17	VLE002/130
12J194/2238	12:30:00	CLR/T	100.0/107.5	-30	0.12	3/1	0 1	0 4	0.00	16K	-5	187.7/51.1	306.7/-50.6
	309/20:46:39	RED/T	IDR 64	64/0						0.00	1	DN0098/18	VLE002/131

VL-1 CAMERA EVENTS NOT RECEIVED

VL-1 CAMERA EVENTS(IMAGES) NOT RECEIVED ON EARTH

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
12J018										
12J019										
11J020										
11J021										
11J022										
12J023										
12J024										
11J025										
11J026										
11J027										
11J030										
11J031										
11J032										
11J033										
12J034										
11J035										
11J037										
12J038										
12J039										
11J040										
11J041										
11J042										
12J043										
11J045										
11J051										
12J054										
12J059										
11J061										
11J065										
12J073										
12J074										
12J083										
11J086										
11J087										
12J088										
11J090										
11J091										
11J092										
12J094										
11J095										
11J096										
12J098										
12J099										
11J101										
12J104										
11J105										
11J106										
12J109										
11J112										
12J114										
11J116										
11J117										
12J118										
12J119										
11J121										
11J126										
12J128										
11J131										
11J132										
12J133										
12J134										
11J135										
11J137										
12J138										
12J139										
12J143										
12J144										
11J146										
12J148										
11J151										
11J152										
12J159										
11J165										
11J167										
11J177										
11J187										
12J188										
11J191										
11J192										

VL-1 HIGH RESOLUTION CAMERA EVENTS IN EVENT ORDER

VL-1 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY EVENT ORDER

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
12J028/1009	12:30:00	BB4	197.5	205.0	0	0.04	1	4	165.7	43.6
11J036/1069	14:30:00	BB2	242.5	250.0	-30	0.04	1	4	202.6	52.3
11J046/1143	14:30:00	BB3	47.5	55.0	-10	0.04	1	4	223.9	64.4
11J050/1173	14:30:00	BB3	150.0	157.5	-10	0.04	1	4	238.7	66.6
11J055/1210	14:30:00	BB3	165.0	172.5	-10	0.04	1	4	257.0	66.8
11J056/1217	14:30:00	BB3	172.5	180.0	-10	0.04	1	4	260.0	66.6
11J060/1247	14:30:00	BB3	180.0	187.5	-10	0.04	1	4	270.6	65.4
12J078/1379	12:30:00	BB3	305.0	312.5	-10	0.04	1	4	266.4	87.0
11J085/1432	14:30:00	BB4	150.0	157.5	-10	0.04	1	4	263.0	56.6
11J100/1543	14:30:00	BB3	270.0	277.5	-20	0.04	1	4	231.0	41.9
12J103/1564	12:30:00	BB4	197.5	205.0	0	0.04	1	4	188.7	52.2
12J108/1601	12:30:00	BB3	82.5	90.0	-20	0.04	1	4	181.7	45.9
11J110/1617	14:30:00	BB3	205.0	212.5	-10	0.04	1	4	212.3	36.7
11J111/1624	14:30:00	BB3	212.5	220.0	-10	0.04	1	4	210.8	36.8
12J113/1638	12:30:00	BB4	197.5	205.0	0	0.04	1	4	173.9	42.8
11J115/1654	14:30:00	BB2	205.0	212.5	-30	0.04	1	4	205.3	38.7
11J120/1691	14:30:00	BB2	220.0	227.5	-30	0.04	1	4	201.4	43.7
12J123/1712	12:30:00	BB3	37.5	45.0	-10	0.04	1	4	159.5	47.5
11J125/1728	14:30:00	BB2	235.0	242.5	-30	0.04	1	4	201.7	50.4
11J130/1765	14:30:00	BB2	250.0	257.5	-30	0.04	1	4	207.5	57.5
11J136/1809	14:30:00	BB3	47.5	55.0	-10	0.04	1	4	222.7	64.1
11J140/1839	14:30:00	BB3	150.0	157.5	-10	0.04	1	4	237.4	66.5
11J141/1846	14:30:00	BB3	157.5	165.0	-10	0.04	1	4	241.0	66.8
11J145/1876	14:30:00	BB3	165.0	172.5	-10	0.04	1	4	243.6	75.3
11J150/1913	14:30:00	BB3	180.0	187.5	-10	0.04	1	4	269.9	65.5
12J163/2008	12:30:00	BB3	285.0	292.5	-10	0.04	1	4	323.3	87.2
12J168/2045	12:30:00	BB3	305.0	312.5	-10	0.04	1	4	271.0	87.1
12J173/2082	12:30:00	BB1	72.5	80.0	-50	0.04	1	4	278.7	32.1
11J175/2098	14:30:00	BB4	150.0	157.5	-10	0.04	1	4	263.7	56.8
11J176/2105	14:30:00	BB4	157.5	165.0	-10	0.04	1	4	261.8	56.2
11J180/2135	14:30:00	BB4	165.0	172.5	-10	0.04	1	4	252.9	52.8
11J181/2142	14:30:00	BB4	172.5	180.0	-10	0.04	1	4	250.8	51.9
11J185/2172	14:30:00	BB4	180.0	187.5	-10	0.04	1	4	242.1	47.6
11J186/2179	14:30:00	BB4	187.5	195.0	-10	0.04	1	4	240.1	46.6
11J190/2209	14:30:00	BB3	270.0	277.5	-20	0.04	1	4	231.7	42.2
12J193/2230	12:30:00	BB4	197.5	205.0	0	0.04	1	4	189.2	52.7

VL-1 HIGH RESOLUTION CAMERA EVENTS SORTED BY SUN AZIMUTH/ELEVATION

VL-1 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 27 AZ 260 TO 270 EL 80 TO 90										
12J078/1379	12:30:00	BB3	305.0	312.5	-10	0.04	1	4	266.4	87.0
BOX 28 AZ 270 TO 280 EL 80 TO 90										
12J168/2045	12:30:00	BB3	305.0	312.5	-10	0.04	1	4	271.0	87.1
BOX 33 AZ 320 TO 330 EL 80 TO 90										
12J163/2008	12:30:00	BB3	285.0	292.5	-10	0.04	1	4	323.3	87.2
BOX 61 AZ 240 TO 250 EL 70 TO 80										
11J145/1876	14:30:00	BB3	165.0	172.5	-10	0.04	1	4	243.6	75.3
BOX 95 AZ 220 TO 230 EL 60 TO 70										
11J046/1143	14:30:00	BB3	47.5	55.0	-10	0.04	1	4	223.9	64.4
11J136/1809	14:30:00	BB3	47.5	55.0	-10	0.04	1	4	222.7	64.1
BOX 96 AZ 230 TO 240 EL 60 TO 70										
11J050/1173	14:30:00	BB3	150.0	157.5	-10	0.04	1	4	238.7	66.6
11J140/1839	14:30:00	BB3	150.0	157.5	-10	0.04	1	4	237.4	66.5
BOX 97 AZ 240 TO 250 EL 60 TO 70										
11J141/1846	14:30:00	BB3	157.5	165.0	-10	0.04	1	4	241.0	66.8
BOX 98 AZ 250 TO 260 EL 60 TO 70										
11J055/1210	14:30:00	BB3	165.0	172.5	-10	0.04	1	4	257.0	66.8
BOX 99 AZ 260 TO 270 EL 60 TO 70										
11J056/1217	14:30:00	BB3	172.5	180.0	-10	0.04	1	4	260.0	66.6
11J150/1913	14:30:00	BB3	180.0	187.5	-10	0.04	1	4	269.9	65.5

VL-1 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 100 AZ 270 TO 280 EL 60 TO 70										
11J060/1247	14:30:00	BB3	180.0	187.5	-10	0.04	1	4	270.6	65.4
BOX 127 AZ 180 TO 190 EL 50 TO 60										
12J103/1564	12:30:00	BB4	197.5	205.0	0	0.04	1	4	188.7	52.2
12J193/2230	12:30:00	BB4	197.5	205.0	0	0.04	1	4	189.2	52.7
BOX 129 AZ 200 TO 210 EL 50 TO 60										
11J036/1069	14:30:00	BB2	242.5	250.0	-30	0.04	1	4	202.6	52.3
11J125/1728	14:30:00	BB2	235.0	242.5	-30	0.04	1	4	201.7	50.4
11J130/1765	14:30:00	BB2	250.0	257.5	-30	0.04	1	4	207.5	57.5
BOX 134 AZ 250 TO 260 EL 50 TO 60										
11J180/2135	14:30:00	BB4	165.0	172.5	-10	0.04	1	4	252.9	52.8
11J181/2142	14:30:00	BB4	172.5	180.0	-10	0.04	1	4	250.8	51.9
BOX 135 AZ 260 TO 270 EL 50 TO 60										
11J085/1432	14:30:00	BB4	150.0	157.5	-10	0.04	1	4	263.0	56.6
11J175/2098	14:30:00	BB4	150.0	157.5	-10	0.04	1	4	263.7	56.8
11J176/2105	14:30:00	BB4	157.5	165.0	-10	0.04	1	4	261.8	56.2
BOX 160 AZ 150 TO 160 EL 40 TO 50										
12J123/1712	12:30:00	BB3	37.5	45.0	-10	0.04	1	4	159.5	47.5
BOX 161 AZ 160 TO 170 EL 40 TO 50										
12J028/1009	12:30:00	BB4	197.5	205.0	0	0.04	1	4	165.7	43.6
BOX 162 AZ 170 TO 180 EL 40 TO 50										
12J113/1638	12:30:00	BB4	197.5	205.0	0	0.04	1	4	173.9	42.8
BOX 163 AZ 180 TO 190 EL 40 TO 50										
12J108/1601	12:30:00	BB3	82.5	90.0	-20	0.04	1	4	181.7	45.9

VL-1 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 165 AZ 200 TO 210 EL 40 TO 50										
11J120/1691	14:30:00	BB2	220.0	227.5	-30	0.04	1	4	201.4	43.7
BOX 168 AZ 230 TO 240 EL 40 TO 50										
11J100/1543	14:30:00	BB3	270.0	277.5	-20	0.04	1	4	231.0	41.9
11J190/2209	14:30:00	BB3	270.0	277.5	-20	0.04	1	4	231.7	42.2
BOX 169 AZ 240 TO 250 EL 40 TO 50										
11J185/2172	14:30:00	BB4	180.0	187.5	-10	0.04	1	4	242.1	47.6
11J186/2179	14:30:00	BB4	187.5	195.0	-10	0.04	1	4	240.1	46.6
BOX 201 AZ 200 TO 210 EL 30 TO 40										
11J115/1654	14:30:00	BB2	205.0	212.5	-30	0.04	1	4	205.3	38.7
BOX 202 AZ 210 TO 220 EL 30 TO 40										
11J110/1617	14:30:00	BB3	205.0	212.5	-10	0.04	1	4	212.3	36.7
11J111/1624	14:30:00	BB3	212.5	220.0	-10	0.04	1	4	210.8	36.8
BOX 208 AZ 270 TO 280 EL 30 TO 40										
12J173/2082	12:30:00	BB1	72.5	80.0	-50	0.04	1	4	278.7	32.1

VL-1 SURVEY CAMERA EVENTS

VL-1 SURVEY CAMERA EVENTS

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
11J071/1328	14:30:00	SURV	175.0	197.5	-30	0.12	1	4	281.2	61.8
11J075/1358	14:30:00	SURV	197.5	220.0	-30	0.12	1	4	279.0	60.8
11J076/1365	14:30:00	SURV	220.0	242.5	-30	0.12	1	4	278.1	60.6
11J080/1395	14:30:00	SURV	242.5	265.0	-30	0.12	1	4	272.6	59.2
11J081/1402	14:30:00	SURV	265.0	287.5	-30	0.12	1	4	270.9	58.8
12J093/1490	12:30:00	SURV	122.5	145.0	-30	0.12	1	4	200.4	69.1
11J161/1994	14:30:00	SURV	175.0	197.5	-30	0.12	1	4	281.2	61.9
11J166/2031	14:30:00	SURV	220.0	242.5	-30	0.12	1	4	278.5	60.7
11J170/2061	14:30:00	SURV	242.5	265.0	-30	0.12	1	4	273.1	59.4
11J171/2068	14:30:00	SURV	265.0	287.5	-30	0.12	1	4	271.6	59.0
12J178/2119	12:30:00	SURV	145.0	167.5	-30	0.12	1	4	208.2	77.6
12J183/2156	12:30:00	SURV	122.5	145.0	-30	0.12	1	4	200.8	69.7

VL-1 VISUAL COLOR AND INFRARED TRIPLET CAMERA EVENTS

VL-1 TRIPLET CAMERA EVENTS
VISUAL COLOR AND INFRARED

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
12J029/1017	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	164.2	44.2
12J044/1128	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	149.0	64.3
11J047/1150	14:30:00	CLR	160.0	167.5	0	0.12	1	4	227.1	65.1
12J048/1157	12:30:00	CLR	85.0	92.5	-30	0.12	1	4	146.5	70.7
12J049/1165	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	145.8	72.4
11J052/1187	14:30:00	CLR	160.0	167.5	0	0.12	1	4	245.9	67.0
12J053/1194	12:30:00	CLR	92.5	100.0	-30	0.12	1	4	142.8	78.3
11J057/1224	14:30:00	CLR	160.0	167.5	0	0.12	1	4	262.8	66.4
12J058/1231	12:30:00	CLR	107.5	115.0	-30	0.12	1	4	134.5	84.6
11J062/1261	14:30:00	CLR	160.0	167.5	0	0.12	1	4	274.5	64.7
12J063/1268	12:30:00	CLR	115.0	122.5	-30	0.12	1	4	81.3	88.7
12J064/1276	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	46.4	88.8
11J066/1291	14:30:00	CLR	167.5	175.0	0	0.12	1	4	279.5	63.3
11J067/1298	14:30:00	CLR	160.0	167.5	0	0.12	1	4	280.2	63.0
12J068/1305	12:30:00	CLR	302.5	310.0	-10	0.12	1	4	348.4	87.7
12J069/1313	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	342.4	87.4
11J070/1321	14:30:00	CLR	52.5	60.0	-10	0.12	1	4	281.2	62.1
11J072/1335	14:30:00	CLR	160.0	167.5	0	0.12	1	4	280.9	61.6
11J077/1372	14:30:00	CLR	160.0	167.5	0	0.12	1	4	277.0	60.3
12J079/1387	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	252.9	86.6
11J082/1409	14:30:00	CLR	160.0	167.5	0	0.12	1	4	269.2	58.4
12J084/1424	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	217.8	82.3
12J089/1461	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	205.7	75.5
11J097/1520	14:30:00	CLR	160.0	167.5	0	0.12	1	4	237.3	45.1
11J102/1557	14:30:00	CLR	160.0	167.5	0	0.12	1	4	227.2	40.2
11J107/1594	14:30:00	CLR	160.0	167.5	0	0.12	1	4	217.7	37.1
11J122/1705	14:30:00	CLR	160.0	167.5	0	0.12	1	4	201.0	46.1
12J124/1720	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	158.2	48.7
11J127/1742	14:30:00	CLR	160.0	167.5	0	0.12	1	4	203.2	53.1
12J129/1757	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	153.1	55.7
11J142/1853	14:30:00	CLR	160.0	167.5	0	0.12	1	4	244.6	67.0
11J147/1890	14:30:00	CLR	160.0	167.5	0	0.12	1	4	261.8	66.5
12J149/1905	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	132.0	85.4
12J153/1934	12:30:00	CLR	115.0	122.5	-30	0.12	1	4	90.7	88.5
12J154/1942	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	58.2	88.8
11J155/1950	14:30:00	CLR	152.5	160.0	0	0.12	1	4	278.2	63.7
11J156/1957	14:30:00	CLR	167.5	175.0	0	0.12	1	4	279.1	63.4
11J157/1964	14:30:00	CLR	160.0	167.5	0	0.12	1	4	279.9	63.1
12J158/1971	12:30:00	CLR	302.5	310.0	-10	0.12	1	4	350.7	87.8
11J160/1987	14:30:00	CLR	52.5	60.0	-10	0.12	1	4	281.2	62.2
11J162/2001	14:30:00	CLR	160.0	167.5	0	0.12	1	4	281.0	61.7
12J164/2016	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	315.5	87.2
12J169/2053	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	257.1	86.7
11J172/2075	14:30:00	CLR	160.0	167.5	0	0.12	1	4	269.9	58.6
12J174/2090	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	219.1	82.7
12J179/2127	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	206.3	76.0
11J182/2149	14:30:00	CLR	160.0	167.5	0	0.12	1	4	248.8	50.9
12J184/2164	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	199.6	67.8
12J189/2201	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	193.9	59.1
12J194/2238	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	187.7	51.1

VL-1 VISUAL COLOR TRIPLET, IR TRIPLET, AND SURVEY CAMERA EVENTS SORTED BY SUN AZIMUTH/ELEVATION

VL-1 VISUAL COLOR TRIPLET, IR TRIPLET
AND SURVEY CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 5 AZ 40 TO 50 EL 80 TO 90										
12J064/1276	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	46.4	88.8
BOX 6 AZ 50 TO 60 EL 80 TO 90										
12J154/1942	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	58.2	88.8
BOX 9 AZ 80 TO 90 EL 80 TO 90										
12J063/1268	12:30:00	CLR	115.0	122.5	-30	0.12	1	4	81.3	88.7
BOX 10 AZ 90 TO 100 EL 80 TO 90										
12J153/1934	12:30:00	CLR	115.0	122.5	-30	0.12	1	4	90.7	88.5
BOX 14 AZ 130 TO 140 EL 80 TO 90										
12J058/1231	12:30:00	CLR	107.5	115.0	-30	0.12	1	4	134.5	84.6
12J149/1905	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	132.0	85.4
BOX 22 AZ 210 TO 220 EL 80 TO 90										
12J084/1424	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	217.8	82.3
12J174/2090	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	219.1	82.7
BOX 26 AZ 250 TO 260 EL 80 TO 90										
12J079/1387	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	252.9	86.6
12J169/2053	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	257.1	86.7
BOX 32 AZ 310 TO 320 EL 80 TO 90										
12J164/2016	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	315.5	87.2
BOX 35 AZ 340 TO 350 EL 80 TO 90										
12J068/1305	12:30:00	CLR	302.5	310.0	-10	0.12	1	4	348.4	87.7
12J069/1313	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	342.4	87.4

VL-1 VISUAL COLOR TRIPLET, IR TRIPLET
AND SURVEY CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 36 AZ 350 TO 360 EL 80 TO 90										
12J158/1971	12:30:00	CLR	302.5	310.0	-10	0.12	1	4	350.7	87.8
BOX 51 AZ 140 TO 150 EL 70 TO 80										
12J048/1157	12:30:00	CLR	85.0	92.5	-30	0.12	1	4	146.5	70.7
12J049/1165	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	145.8	72.4
12J053/1194	12:30:00	CLR	92.5	100.0	-30	0.12	1	4	142.8	78.3
BOX 57 AZ 200 TO 210 EL 70 TO 80										
12J089/1461	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	205.7	75.5
12J178/2119	12:30:00	SURV	145.0	167.5	-30	0.12	1	4	208.2	77.6
12J179/2127	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	206.3	76.0
BOX 87 AZ 140 TO 150 EL 60 TO 70										
12J044/1128	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	149.0	64.3
BOX 92 AZ 190 TO 200 EL 60 TO 70										
12J184/2164	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	199.6	67.8
BOX 93 AZ 200 TO 210 EL 60 TO 70										
12J093/1490	12:30:00	SURV	122.5	145.0	-30	0.12	1	4	200.4	69.1
12J183/2156	12:30:00	SURV	122.5	145.0	-30	0.12	1	4	200.8	69.7
BOX 95 AZ 220 TO 230 EL 60 TO 70										
11J047/1150	14:30:00	CLR	160.0	167.5	0	0.12	1	4	227.1	65.1
BOX 97 AZ 240 TO 250 EL 60 TO 70										
11J052/1187	14:30:00	CLR	160.0	167.5	0	0.12	1	4	245.9	67.0
11J142/1853	14:30:00	CLR	160.0	167.5	0	0.12	1	4	244.6	67.0

VL-1 VISUAL COLOR TRIPLET, IR TRIPLET
AND SURVEY CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 99 AZ 260 TO 270 EL 60 TO 70										
11J057/1224	14:30:00	CLR	160.0	167.5	0	0.12	1	4	262.8	66.4
11J147/1890	14:30:00	CLR	160.0	167.5	0	0.12	1	4	261.8	66.5
BOX 100 AZ 270 TO 280 EL 60 TO 70										
11J062/1261	14:30:00	CLR	160.0	167.5	0	0.12	1	4	274.5	64.7
11J066/1291	14:30:00	CLR	167.5	175.0	0	0.12	1	4	279.5	63.3
11J075/1358	14:30:00	SURV	197.5	220.0	-30	0.12	1	4	279.0	60.8
11J076/1365	14:30:00	SURV	220.0	242.5	-30	0.12	1	4	278.1	60.6
11J077/1372	14:30:00	CLR	160.0	167.5	0	0.12	1	4	277.0	60.3
11J155/1950	14:30:00	CLR	152.5	160.0	0	0.12	1	4	278.2	63.7
11J156/1957	14:30:00	CLR	167.5	175.0	0	0.12	1	4	279.1	63.4
11J157/1964	14:30:00	CLR	160.0	167.5	0	0.12	1	4	279.9	63.1
11J166/2031	14:30:00	SURV	220.0	242.5	-30	0.12	1	4	278.5	60.7
BOX 101 AZ 280 TO 290 EL 60 TO 70										
11J067/1298	14:30:00	CLR	160.0	167.5	0	0.12	1	4	280.2	63.0
11J070/1321	14:30:00	CLR	52.5	60.0	-10	0.12	1	4	281.2	62.1
11J071/1328	14:30:00	SURV	175.0	197.5	-30	0.12	1	4	281.2	61.8
11J072/1335	14:30:00	CLR	160.0	167.5	0	0.12	1	4	280.9	61.6
11J160/1987	14:30:00	CLR	52.5	60.0	-10	0.12	1	4	281.2	62.2
11J161/1994	14:30:00	SURV	175.0	197.5	-30	0.12	1	4	281.2	61.9
11J162/2001	14:30:00	CLR	160.0	167.5	0	0.12	1	4	281.0	61.7
BOX 124 AZ 150 TO 160 EL 50 TO 60										
12J129/1757	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	153.1	55.7
BOX 127 AZ 180 TO 190 EL 50 TO 60										
12J194/2238	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	187.7	51.1
BOX 128 AZ 190 TO 200 EL 50 TO 60										
12J189/2201	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	193.9	59.1
BOX 129 AZ 200 TO 210 EL 50 TO 60										
11J127/1742	14:30:00	CLR	160.0	167.5	0	0.12	1	4	203.2	53.1

VL-1 VISUAL COLOR TRIPLET, IR TRIPLET
AND SURVEY CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 133 AZ 240 TO 250 EL 50 TO 60										
11J182/2149	14:30:00	CLR	160.0	167.5	0	0.12	1	4	248.8	50.9
BOX 135 AZ 260 TO 270 EL 50 TO 60										
11J082/1409	14:30:00	CLR	160.0	167.5	0	0.12	1	4	269.2	58.4
11J172/2075	14:30:00	CLR	160.0	167.5	0	0.12	1	4	269.9	58.6
BOX 136 AZ 270 TO 280 EL 50 TO 60										
11J080/1395	14:30:00	SURV	242.5	265.0	-30	0.12	1	4	272.6	59.2
11J081/1402	14:30:00	SURV	265.0	287.5	-30	0.12	1	4	270.9	58.8
11J170/2061	14:30:00	SURV	242.5	265.0	-30	0.12	1	4	273.1	59.4
11J171/2068	14:30:00	SURV	265.0	287.5	-30	0.12	1	4	271.6	59.0
BOX 160 AZ 150 TO 160 EL 40 TO 50										
12J124/1720	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	158.2	48.7
BOX 161 AZ 160 TO 170 EL 40 TO 50										
12J029/1017	12:30:00	CLR	100.0	107.5	-30	0.12	1	4	164.2	44.2
BOX 165 AZ 200 TO 210 EL 40 TO 50										
11J122/1705	14:30:00	CLR	160.0	167.5	0	0.12	1	4	201.0	46.1
BOX 167 AZ 220 TO 230 EL 40 TO 50										
11J102/1557	14:30:00	CLR	160.0	167.5	0	0.12	1	4	227.2	40.2
BOX 168 AZ 230 TO 240 EL 40 TO 50										
11J097/1520	14:30:00	CLR	160.0	167.5	0	0.12	1	4	237.3	45.1
BOX 202 AZ 210 TO 220 EL 30 TO 40										
11J107/1594	14:30:00	CLR	160.0	167.5	0	0.12	1	4	217.7	37.1

VL-1 CAMERA ELEVATION CHARTS

VL-1

CAMERA 1 ELEVATION COVERAGE CHART

CAMERA 1	ELEV INTERVAL	-10 TO	0	LO-RES	11J047/1150	14:30:00	CLR
					11J052/1187	14:30:00	CLR
					11J057/1224	14:30:00	CLR
					11J062/1261	14:30:00	CLR
					11J066/1291	14:30:00	CLR
					11J067/1298	14:30:00	CLR
					11J072/1335	14:30:00	CLR
					11J077/1372	14:30:00	CLR
					11J082/1409	14:30:00	CLR
					11J097/1520	14:30:00	CLR
					11J102/1557	14:30:00	CLR
					11J107/1594	14:30:00	CLR
					11J122/1705	14:30:00	CLR
					11J127/1742	14:30:00	CLR
					11J142/1853	14:30:00	CLR
					11J147/1890	14:30:00	CLR
					11J155/1950	14:30:00	CLR
					11J156/1957	14:30:00	CLR
					11J157/1964	14:30:00	CLR
					11J162/2001	14:30:00	CLR
					11J172/2075	14:30:00	CLR
					11J182/2149	14:30:00	CLR
CAMERA 1	ELEV INTERVAL	-20 TO	-10	HI-RES	11J046/1143	14:30:00	BB3
					11J050/1173	14:30:00	BB3
					11J055/1210	14:30:00	BB3
					11J056/1217	14:30:00	BB3
					11J060/1247	14:30:00	BB3
					11J085/1432	14:30:00	BB4
					11J110/1617	14:30:00	BB3
					11J111/1624	14:30:00	BB3
					11J136/1809	14:30:00	BB3
					11J140/1839	14:30:00	BB3
					11J141/1846	14:30:00	BB3
					11J145/1876	14:30:00	BB3
					11J150/1913	14:30:00	BB3
					11J175/2098	14:30:00	BB4
					11J176/2105	14:30:00	BB4
					11J180/2135	14:30:00	BB4
					11J181/2142	14:30:00	BB4
					11J185/2172	14:30:00	BB4
					11J186/2179	14:30:00	BB4
CAMERA 1	ELEV INTERVAL	-20 TO	-10	LO-RES	11J070/1321	14:30:00	CLR
					11J160/1987	14:30:00	CLR
CAMERA 1	ELEV INTERVAL	-30 TO	-20	HI-RES	11J100/1543	14:30:00	BB3
					11J190/2209	14:30:00	BB3
CAMERA 1	ELEV INTERVAL	-40 TO	-30	HI-RES	11J036/1069	14:30:00	BB2
					11J115/1654	14:30:00	BB2
					11J120/1691	14:30:00	BB2
					11J125/1728	14:30:00	BB2
					11J130/1765	14:30:00	BB2
CAMERA 1	ELEV INTERVAL	-40 TO	-30	LO-RES	11J071/1328	14:30:00	SURV
					11J075/1358	14:30:00	SURV
					11J076/1365	14:30:00	SURV
					11J080/1395	14:30:00	SURV
					11J081/1402	14:30:00	SURV
					11J161/1994	14:30:00	SURV
CAMERA 1	ELEV INTERVAL	-40 TO	-30	LO-RES	11J166/2031	14:30:00	SURV
					11J170/2061	14:30:00	SURV
					11J171/2068	14:30:00	SURV

VL-1

CAMERA 2 ELEVATION COVERAGE CHART

CAMERA 2	ELEV INTERVAL	-10 TO 0	HI-RES	12J028/1009	12:30:00	BB4
				12J103/1564	12:30:00	BB4
				12J113/1638	12:30:00	BB4
				12J193/2230	12:30:00	BB4
CAMERA 2	ELEV INTERVAL	-20 TO -10	HI-RES	12J078/1379	12:30:00	BB3
				12J123/1712	12:30:00	BB3
				12J163/2008	12:30:00	BB3
				12J168/2045	12:30:00	BB3
CAMERA 2	ELEV INTERVAL	-20 TO -10	LO-RES	12J068/1305	12:30:00	CLR
				12J158/1971	12:30:00	CLR
CAMERA 2	ELEV INTERVAL	-30 TO -20	HI-RES	12J108/1601	12:30:00	BB3
CAMERA 2	ELEV INTERVAL	-40 TO -30	LO-RES	12J029/1017	12:30:00	CLR
				12J044/1128	12:30:00	CLR
				12J048/1157	12:30:00	CLR
				12J049/1165	12:30:00	CLR
				12J053/1194	12:30:00	CLR
				12J058/1231	12:30:00	CLR
				12J063/1268	12:30:00	CLR
				12J064/1276	12:30:00	CLR
				12J069/1313	12:30:00	CLR
				12J079/1387	12:30:00	CLR
				12J084/1424	12:30:00	CLR
				12J089/1461	12:30:00	CLR
				12J093/1490	12:30:00	SURV
				12J124/1720	12:30:00	CLR
				12J129/1757	12:30:00	CLR
				12J149/1905	12:30:00	CLR
				12J153/1934	12:30:00	CLR
				12J154/1942	12:30:00	CLR
				12J164/2016	12:30:00	CLR
				12J169/2053	12:30:00	CLR
				12J174/2090	12:30:00	CLR
				12J178/2119	12:30:00	SURV
				12J179/2127	12:30:00	CLR
				12J183/2156	12:30:00	SURV
				12J184/2164	12:30:00	CLR
				12J189/2201	12:30:00	CLR
				12J194/2238	12:30:00	CLR
CAMERA 2	ELEV INTERVAL	-60 TO -50	HI-RES	12J173/2082	12:30:00	BB1

VL-1 IPL PICTURE IDENTIFIERS
(EDR ORDER NUMBERS)

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
12J028/1009	BB4	80/08/29/092004
12J029/1017	BLU/T	80/08/29/092226
	GRN/T	80/08/29/092514
	RED/T	80/08/29/092718
11J036/1069	BB2	80/08/29/095714
12J044/1128	BLU/T	80/08/29/103634
	GRN/T	80/08/29/103904
	RED/T	80/08/29/104237
11J046/1143	BB3	80/10/06/190010
11J047/1150	BLU/T	80/10/06/190158
	GRN/T	80/10/06/190341
	RED/T	80/10/06/190540
12J048/1157	BLU/T	80/10/06/190850
	GRN/T	80/10/06/191029
	RED/T	80/10/06/191201
12J049/1165	BLU/T	80/10/06/191339
	GRN/T	80/08/29/112101
	RED/T	80/08/29/112425
11J050/1173	BB3	80/08/29/112624
11J052/1187	BLU/T	80/08/29/113652
	GRN/T	80/08/29/113845
	RED/T	80/08/29/114101
12J053/1194	BLU/T	80/08/29/115221
	GRN/T	80/08/29/115836
	RED/T	80/08/29/120049
12J055/1210	BB3	80/08/29/121340
11J056/1217	BB3	80/08/29/121544
11J057/1224	BLU/T	80/08/29/121744
	GRN/T	80/08/29/121914
	RED/T	80/08/29/122059
12J058/1231	BLU/T	80/08/29/122450
	GRN/T	80/08/29/122612
	RED/T	80/08/29/122723
11J060/1247	BB3	80/08/29/124838
11J062/1261	BLU/T	80/08/29/130334
	GRN/T	80/08/29/130447
	RED/T	80/08/29/131035

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
12J063/1268	BLU/T	80/08/29/131505
	GRN/T	80/08/29/131621
	RED/T	80/08/29/131735
12J064/1276	BLU/T	80/08/29/131918
	GRN/T	80/08/29/132052
	RED/T	80/08/29/132229
11J066/1291	BLU/T	20/09/02/074749
	GRN/T	20/09/02/074856
	RED/T	20/09/02/075003
11J067/1298	BLU/T	20/09/02/075110
	GRN/T	20/09/02/075216
	RED/T	20/09/02/075323
12J068/1305	BLU/T	20/09/02/075430
	GRN/T	20/09/02/075539
	RED/T	20/09/02/080005
12J069/1313	BLU/T	20/09/02/080230
	GRN/T	20/09/02/080656
	RED/T	20/09/02/081110
11J070/1321	BLU/T	20/09/02/081515
	GRN/T	20/09/02/081922
	RED/T	20/09/02/082114
11J071/1328	SURV	20/09/02/082315
11J072/1335	BLU/T	20/09/02/083440
	GRN/T	20/09/02/083833
	RED/T	20/09/02/084228
11J075/1358	SURV	20/09/02/085837
11J076/1365	SURV	20/09/02/090103
11J077/1372	BLU/T	20/09/02/090911
	GRN/T	80/08/29/093415
	RED/T	80/08/29/093611
12J078/1379	BB3	80/08/29/093805
12J079/1387	BLU/T	80/08/29/094004
	GRN/T	80/08/29/094212
	RED/T	80/08/29/094411
11J080/1395	SURV	81/08/31/165744
11J081/1402	SURV	81/08/31/171154

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
11J082/1409	BLU/T	81/08/31/171532
	GRN/T	81/08/31/171728
	RED/T	81/08/31/172204
12J084/1424	BLU/T	81/08/31/173251
	GRN/T	81/08/31/173427
	RED/T	81/08/31/174114
11J085/1432	BB4	81/08/31/174322
12J089/1461	BLU/T	81/08/31/175909
	GRN/T	81/08/31/180102
	RED/T	81/08/31/180300
12J093/1490	SURV	81/08/31/182519
11J097/1520	BLU/T	81/08/31/190333
	GRN/T	81/08/31/191120
	RED/T	81/08/31/191335
11J100/1543	BB3	81/08/31/192631
11J102/1557	BLU/T	81/08/31/193605
	GRN/T	81/08/31/194018
	RED/T	81/08/31/194151
12J103/1564	BB4	81/08/31/194315
11J107/1594	BLU/T	81/08/31/200214
	GRN/T	81/08/31/200502
	RED/T	81/08/31/201003
12J108/1601	BB3	81/08/31/201132
11J110/1617	BB3	81/08/31/201957
11J111/1624	BB3	81/08/31/202514
12J113/1638	BB4	81/08/31/203409
11J115/1654	BB2	81/08/31/204444
11J120/1691	BB2	81/08/31/205953
11J122/1705	BLU/T	81/08/31/210709
	GRN/T	81/08/31/210953
	RED/T	81/08/31/211116
12J123/1712	BB3	81/08/31/211246
12J124/1720	BLU/T	81/08/31/211410
	GRN/T	81/08/31/211548
	RED/T	81/08/31/211706

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
11J125/1728	BB2	81/08/31/211828
11J127/1742	BLU/T	81/08/31/212753
	GRN/T	81/08/31/212919
	RED/T	81/08/31/213048
12J129/1757	BLU/T	81/08/31/214033
	GRN/T	81/08/31/214147
	RED/T	81/08/31/214302
11J130/1765	BB2	81/08/31/214422
11J136/1809	BB3	82/03/23/213428
11J140/1839	BB3	82/03/23/215141
11J141/1846	BB3	82/03/23/215314
11J142/1853	BLU/T	82/03/23/215445
	GRN/T	82/03/23/215603
	RED/T	82/03/23/215719
11J145/1876	BB3	82/03/23/220622
11J147/1890	BLU/T	82/03/23/221252
	GRN/T	82/03/23/221408
	RED/T	82/03/23/221549
12J149/1905	BLU/T	82/03/23/222302
	GRN/T	82/03/23/222421
	RED/T	82/03/24/085057
11J150/1913	BB3	82/03/24/085342
12J153/1934	BLU/T	82/03/24/005144
	GRN/T	82/03/24/005318
	RED/T	82/03/24/005438
12J154/1942	BLU/T	82/03/24/010244
	GRN/T	82/03/24/010407
	RED/T	82/03/24/010523
11J155/1950	BLU/T	82/03/24/010908
	GRN/T	82/03/24/011023
	RED/T	82/03/24/011140
11J156/1957	BLU/T	82/03/24/011303
	GRN/T	82/03/24/011442
	RED/T	82/03/24/011606
11J157/1964	BLU/T	82/03/24/011732
	GRN/T	82/03/24/011848

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
11J157/1964	RED/T	82/03/24/012529
12J158/1971	BLU/T	82/03/24/012717
	GRN/T	82/03/24/012856
	RED/T	82/03/24/013017
11J160/1987	BLU/T	82/03/24/014927
	GRN/T	82/03/24/015053
	RED/T	82/03/24/015215
11J161/1994	SURV	82/03/24/020422
11J162/2001	BLU/T	82/09/14/152836
	GRN/T	82/09/14/153209
	RED/T	82/09/14/153805
12J163/2008	BB3	82/09/14/154049
12J164/2016	BLU/T	82/09/14/154606
	GRN/T	82/09/14/155205
	RED/T	82/09/14/155925
11J166/2031	SURV	82/09/14/161151
12J168/2045	BB3	82/09/14/162508
12J169/2053	BLU/T	82/09/14/163033
	GRN/T	82/09/14/163217
	RED/T	82/09/14/163445
11J170/2061	SURV	82/09/14/164228
11J171/2068	SURV	82/09/14/164934
11J172/2075	BLU/T	82/09/14/165507
	GRN/T	82/09/14/165644
	RED/T	82/09/14/165820
12J173/2082	BB1	82/09/14/093534
12J174/2090	BLU/T	82/09/14/094738
	GRN/T	82/09/14/095001
	RED/T	82/09/14/095330
11J175/2098	BB4	82/09/14/095752
11J176/2105	BB4	82/09/14/100318
12J178/2119	SURV	82/09/14/104738
12J179/2127	BLU/T	82/09/14/105855
	GRN/T	82/09/14/114541
	RED/T	82/09/14/114909

VL-1
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

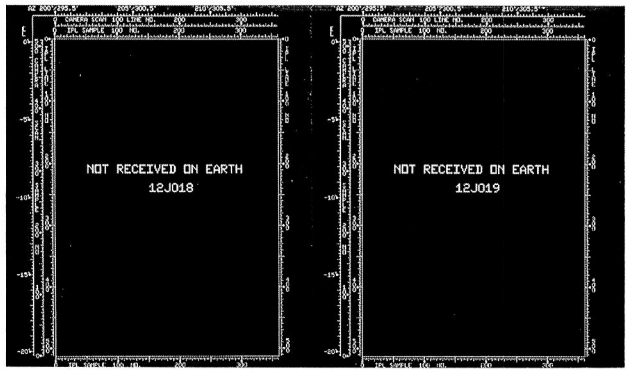
CELABEL	DIODE	IPLPICID
11J180/2135	BB4	82/09/14/115235
11J181/2142	BB4	82/09/14/115700
11J182/2149	BLU/T	82/09/14/120223
	GRN/T	82/09/14/124257
	RED/T	82/09/14/124636
12J183/2156	SURV	83/05/25/235834
12J184/2164	BLU/T	83/05/26/000122
	GRN/T	83/05/26/000313
	RED/T	83/05/26/000501
11J185/2172	BB4	83/05/26/000656
11J186/2179	BB4	83/05/26/000845
12J189/2201	BLU/T	83/05/26/002340
	GRN/T	83/05/26/002708
	RED/T	83/05/26/002859
11J190/2209	BB3	83/05/26/003130
12J193/2230	BB4	83/05/26/004314
12J194/2238	BLU/T	83/05/26/004553
	GRN/T	83/05/26/005104
	RED/T	83/05/26/005248

VL-1 EXPERIMENT DATA RECORD IMAGES

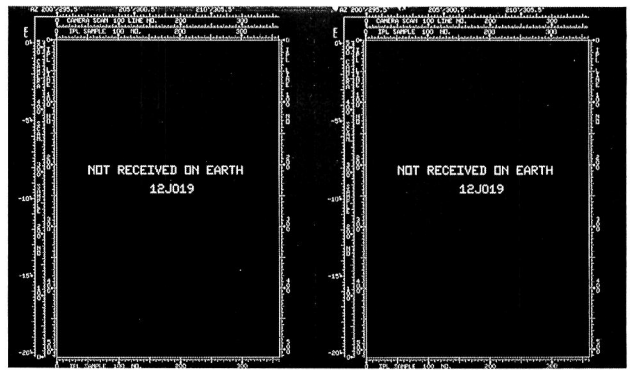
VL-1 EXPERIMENT DATA RECORD IMAGES

The following EDR image displays present the images in the order in which they were acquired by the lander. Each page contains eight display windows. These windows may include two or three EDR images; where segments of two successive camera events are small enough to be positioned as pairs in a window, this is done. The first and last camera events (or partial camera events) appearing on a page are indicated at the top of the page.

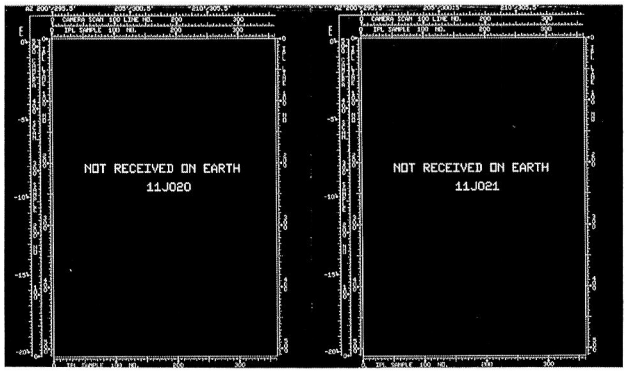
The photographic quality of the original EDR images is significantly reduced because of the limitations of space. The need to reproduce several images on each page also reduces the opportunity to maximize the reproduction quality. Nevertheless, these illustrations should serve as an invaluable tool for quickly locating certain photoproducts needed for specific purposes.



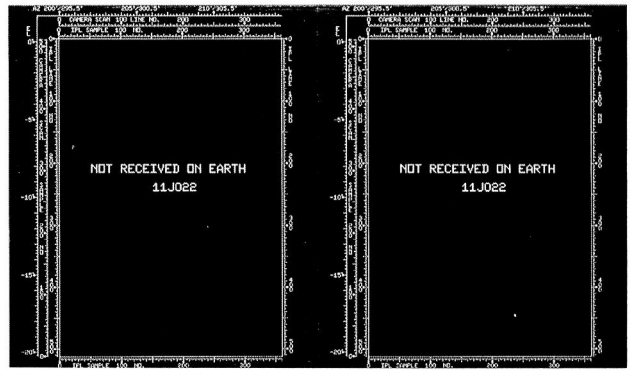
12J018/935 BB3 12J019/943 BLU



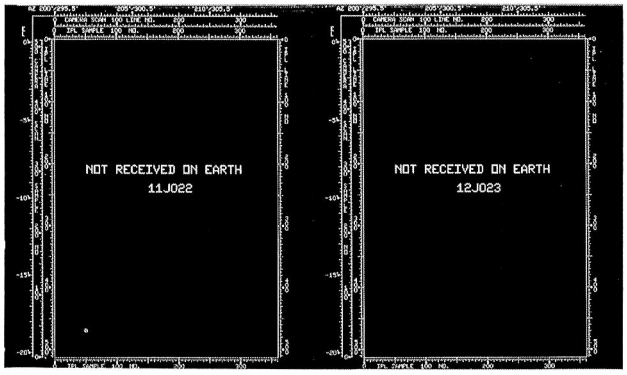
12J019/943 GRN 12J019/943 RED



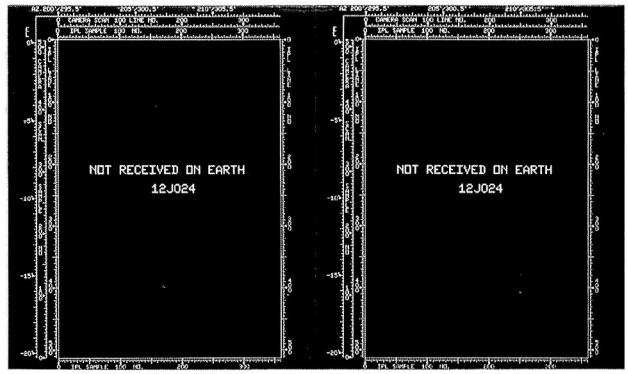
11J020/951 BB3 11J021/958 BB3



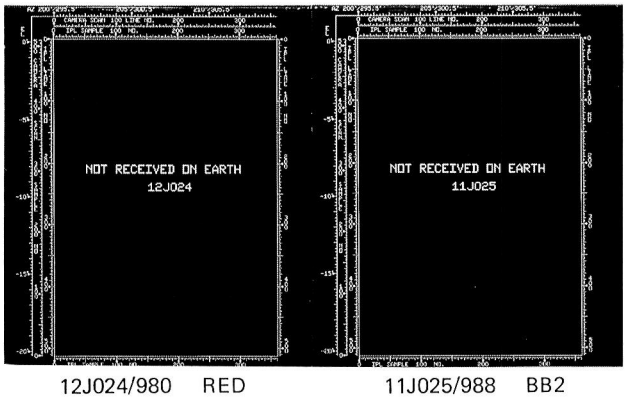
11J022/965 BLU 11J022/965 GRN



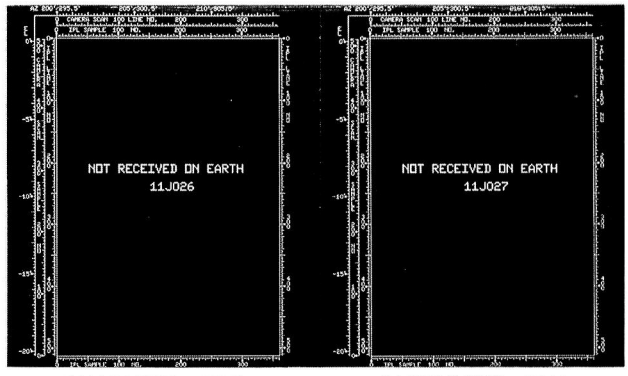
11J022/965 RED 12J023/972 BB4



12J024/980 BLU 12J024/980 GRN



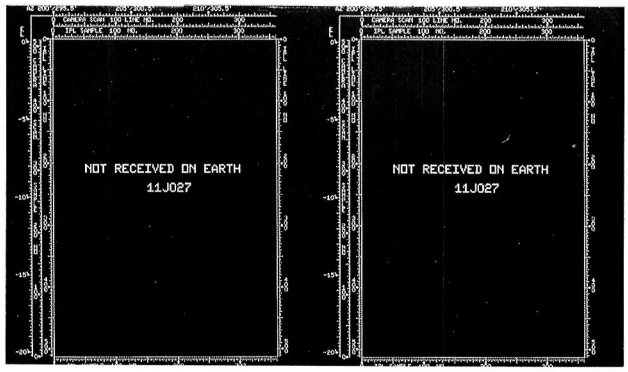
12J024/980 RED 11J025/988 BB2



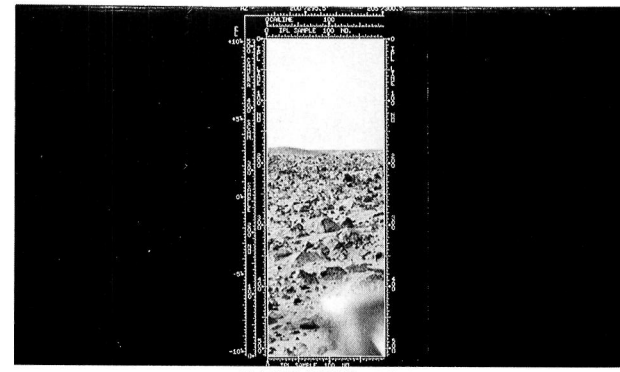
11J026/995 BB2 11J027/1002 BLU

VL-1

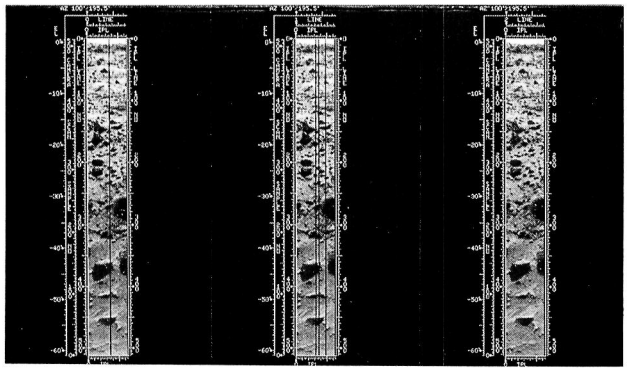
11J027/1002–11J035/1062



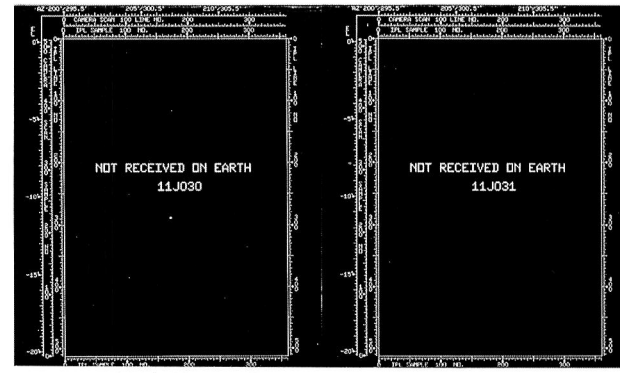
11J027/1002 GRN 11J027/1002 RED



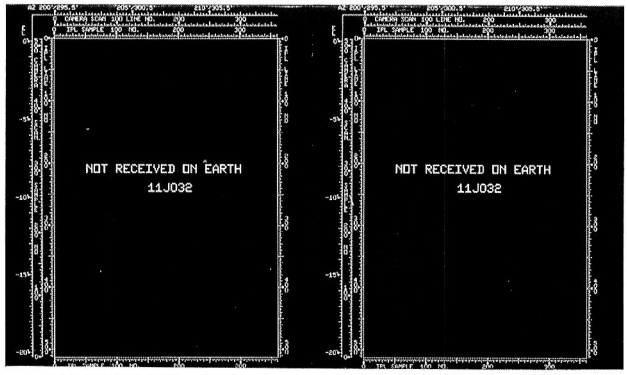
12J028/1009 BB4



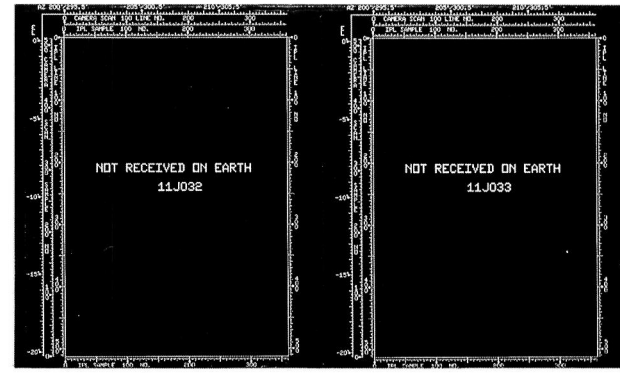
12J029/1017 BLU 12J029/1017 GRN 12J029/1017 RED



11J030/1025 BB2 11J031/1032 BB2



11J032/1039 BLU 11J032/1039 GRN



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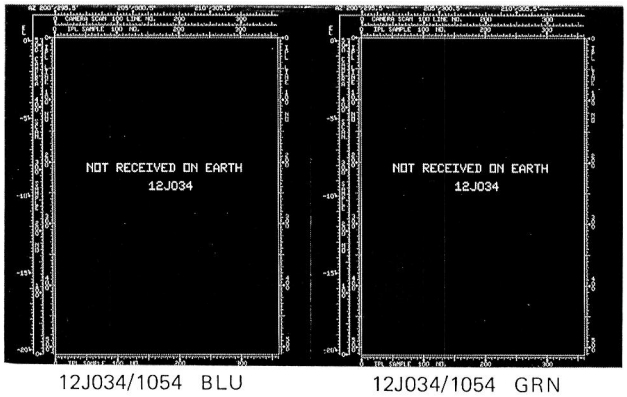
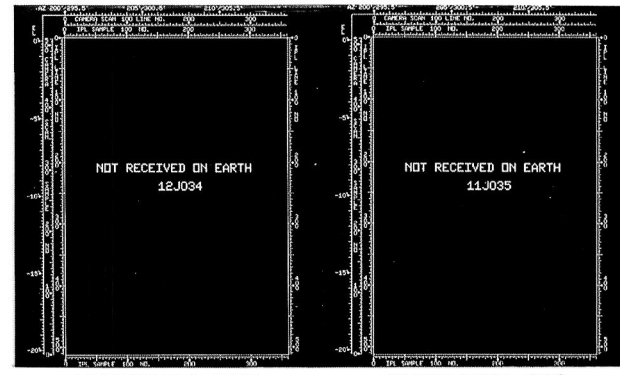


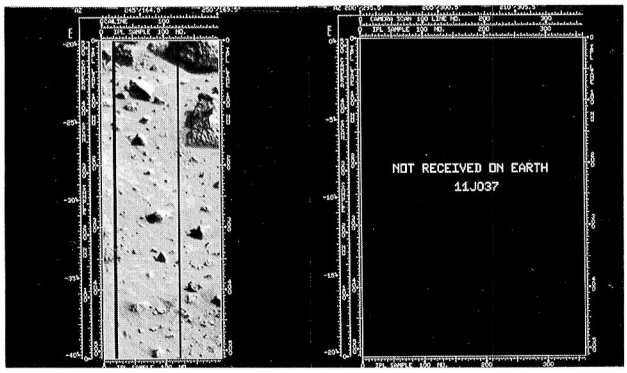
12J034/1054 BLU 12J034/1054 GRN



12J034/1054 RED 11J035/1062 BB2

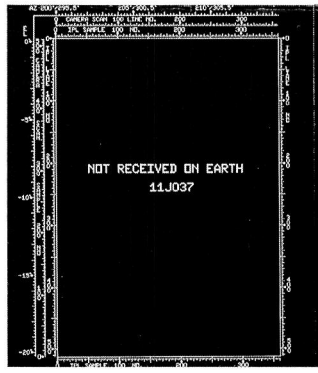
VL-1

11J036/1069–12J043/1120

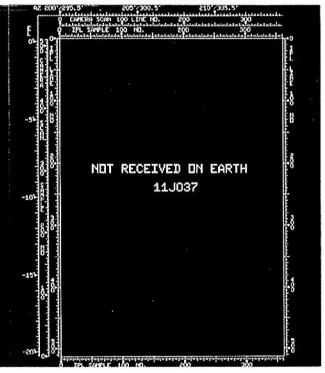


11J036/1069 BB2

11J037/1076 BLU



11J037/1076 GRN



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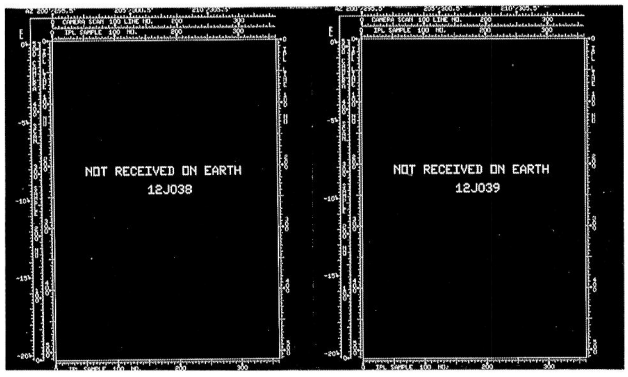
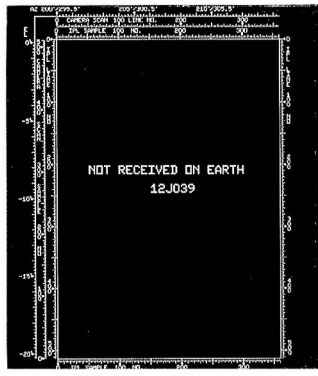


12J038/1083 SUR

12J039/1091 BLU



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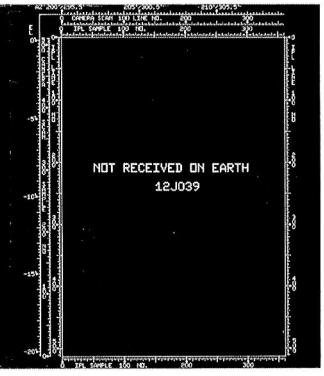
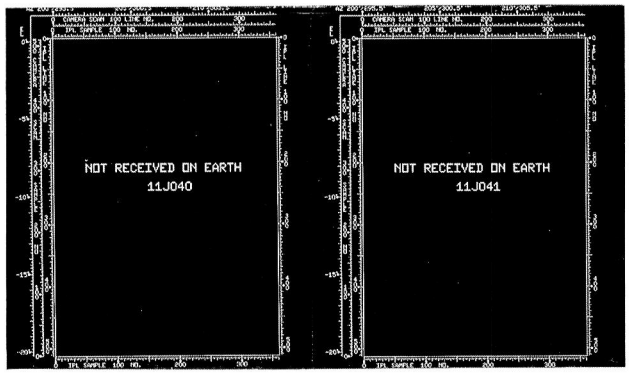
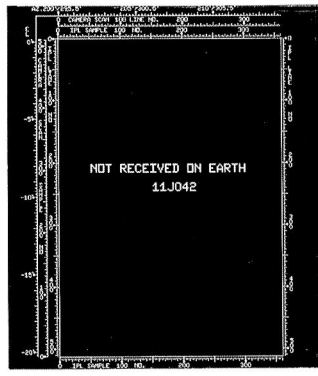


12J039/1091 RED

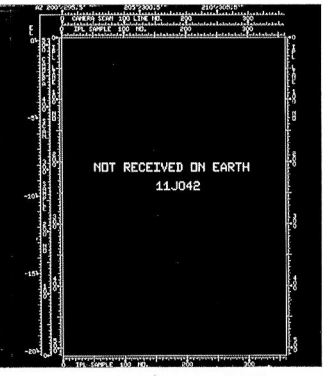


11J040/1099 BB2

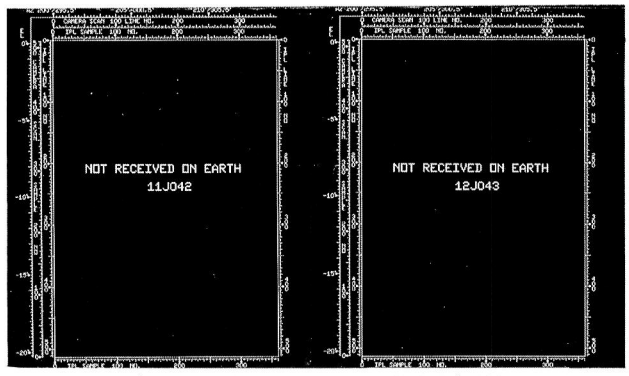
11J041/1106 BB4



11J042/1113 BLU



11J042/1113 GRN



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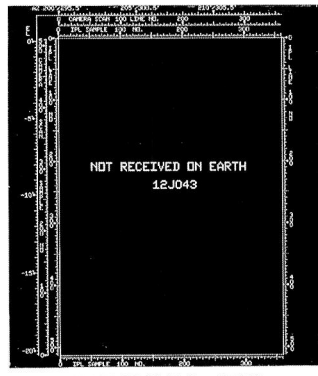
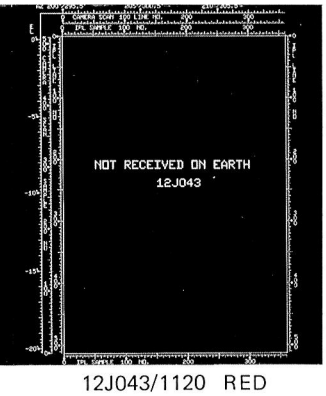
12J043/1120 BLU



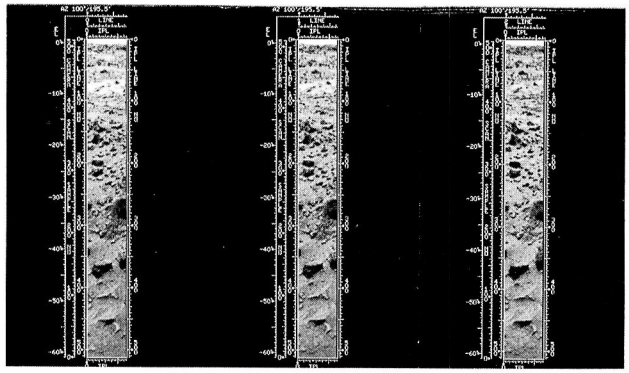
12J043/1120 GRN



12J043/1120 RED

VL-1

12J044/1128–12J053/1194



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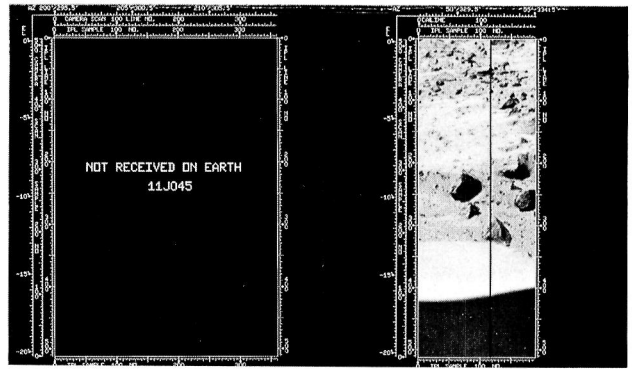
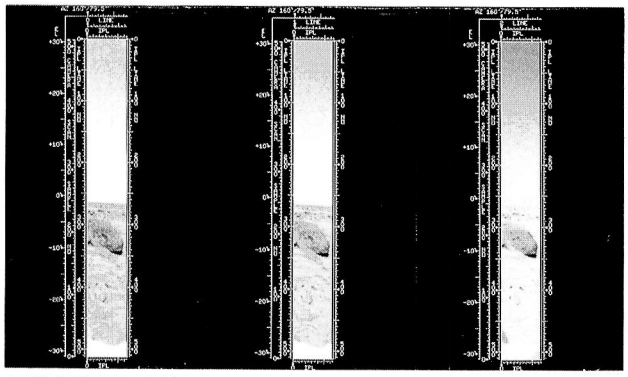


11J045/1136 BB3 11J046/1143 BB3



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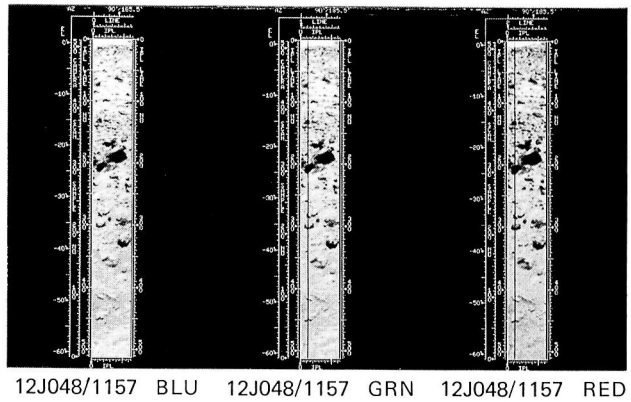
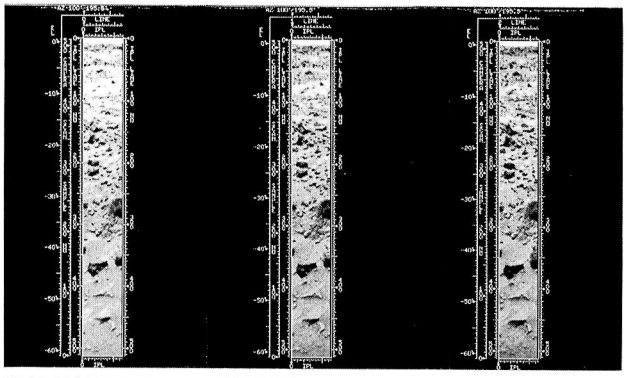


12J048/1157 BLU 12J048/1157 GRN 12J048/1157 RED



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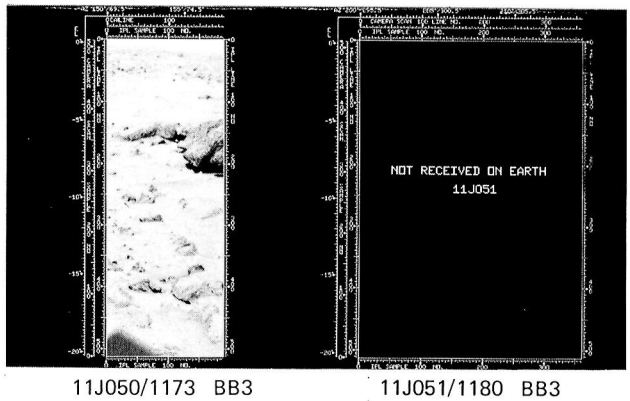
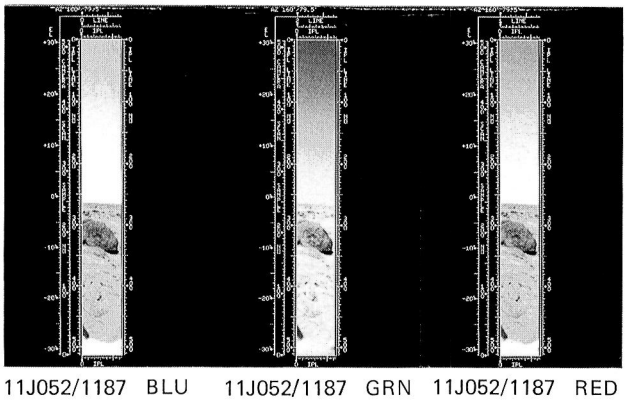


11J050/1173 BB3 11J051/1180 BB3



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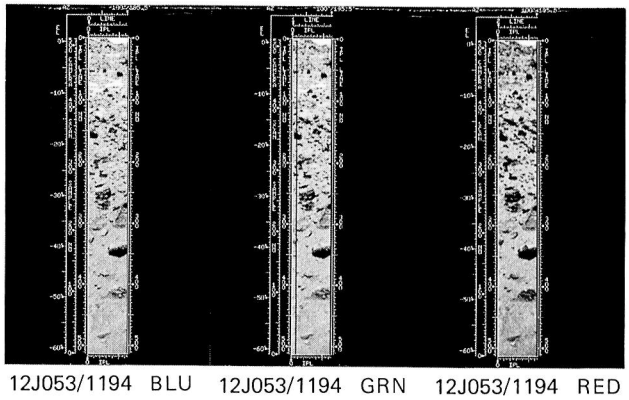

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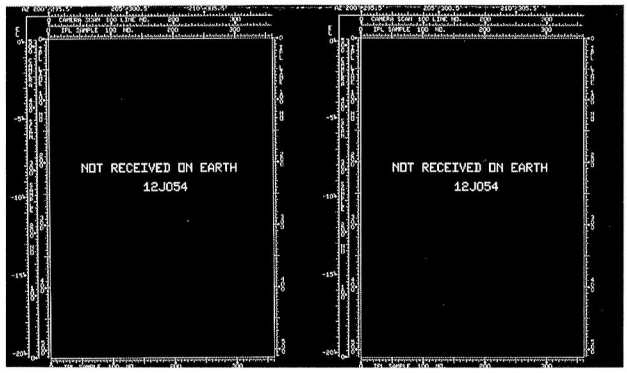
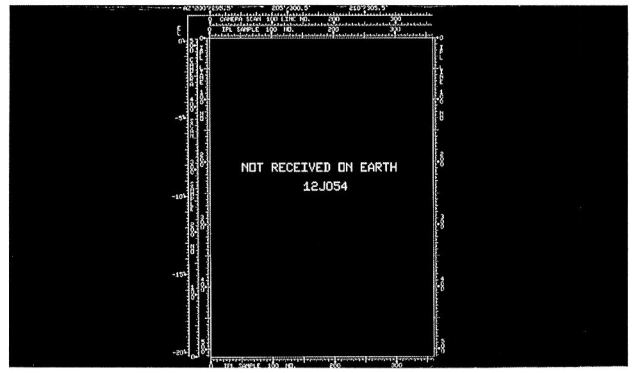


12J054/1202 BLU 12J054/1202 GRN



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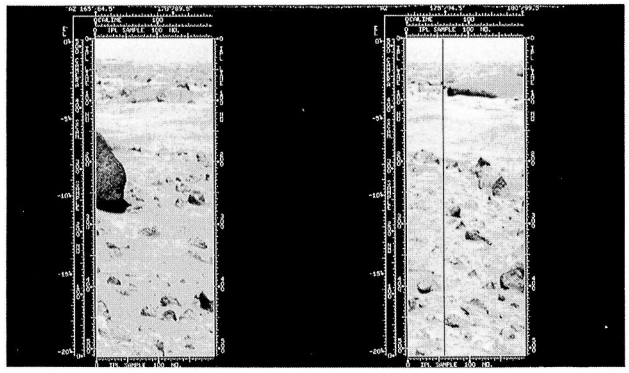
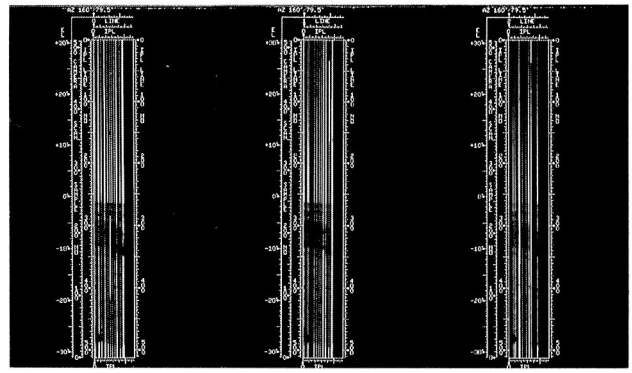


11J055/1210 BB3 11J056/1217 BB3



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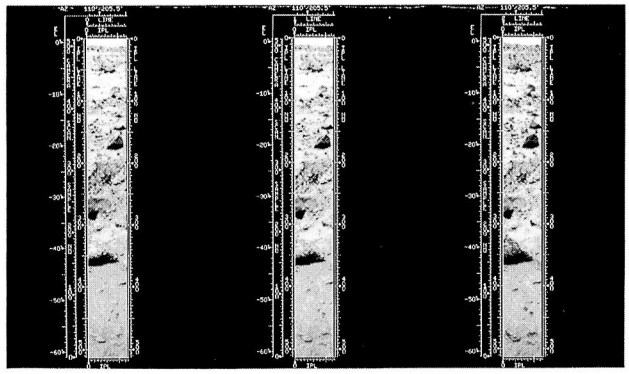
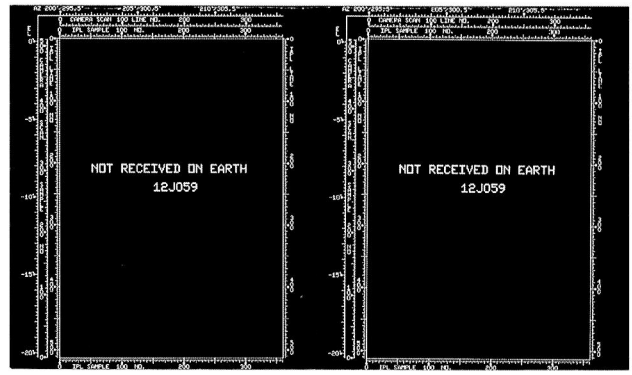
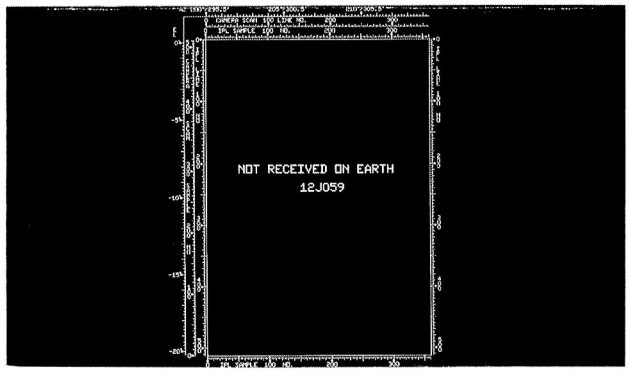


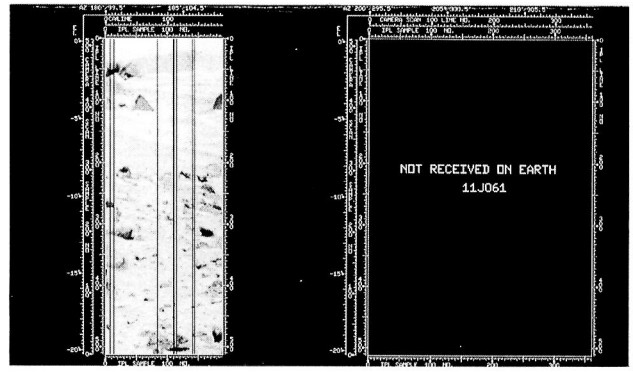
12J058/1231 BLU 12J058/1231 GRN 12J058/1231 RED



12J059/1239 BLU 12J059/1239 GRN



12J059/1239 RED



11J060/1247 BB3 11J061/1254 BB3

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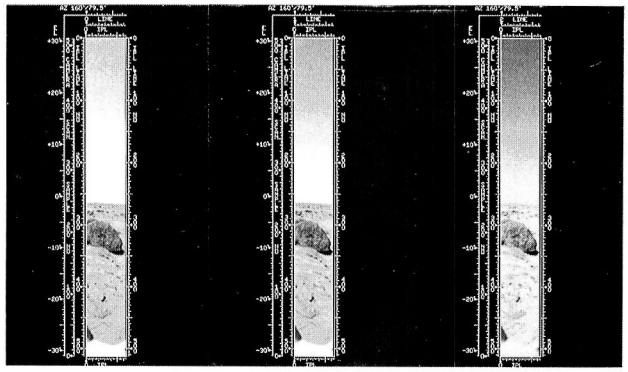

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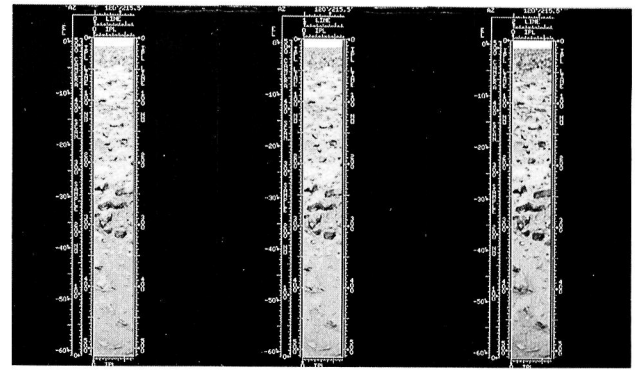
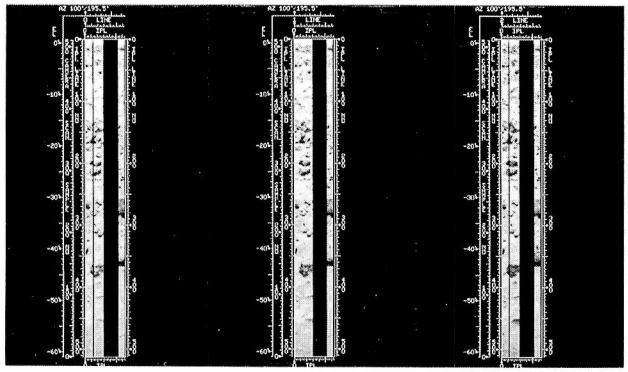


12J063/1268 BLU 12J063/1268 GRN 12J063/1268 RED



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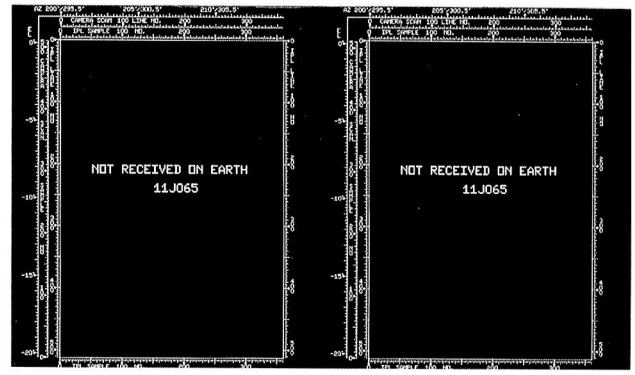
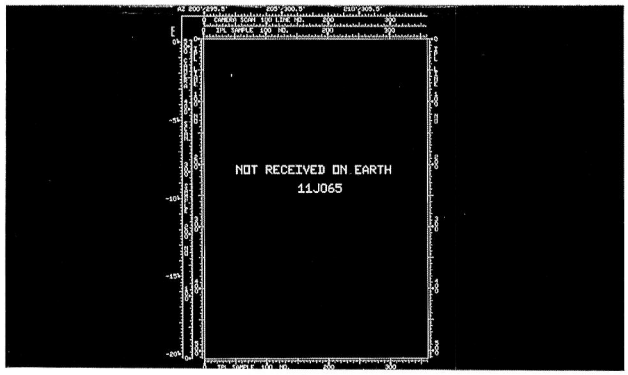
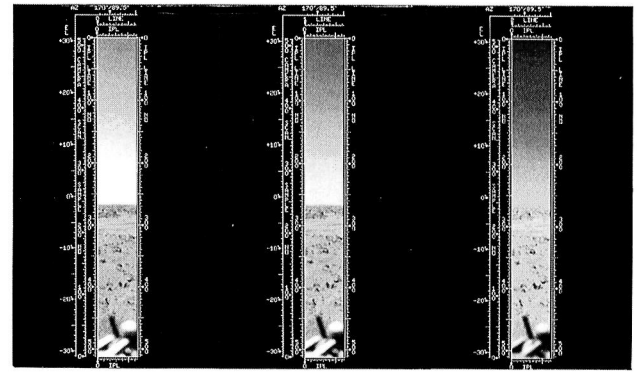


11J065/1284 BLU 11J065/1284 GRN



11J065/1284 RED



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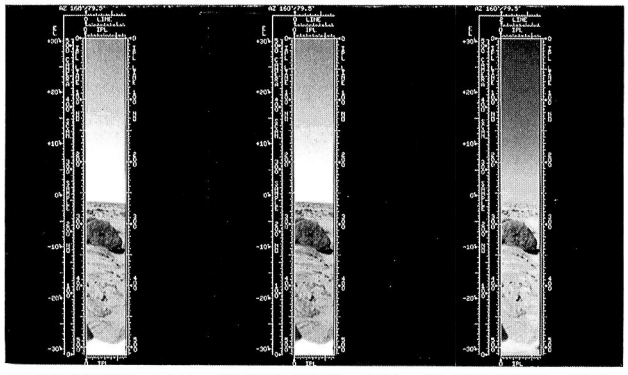

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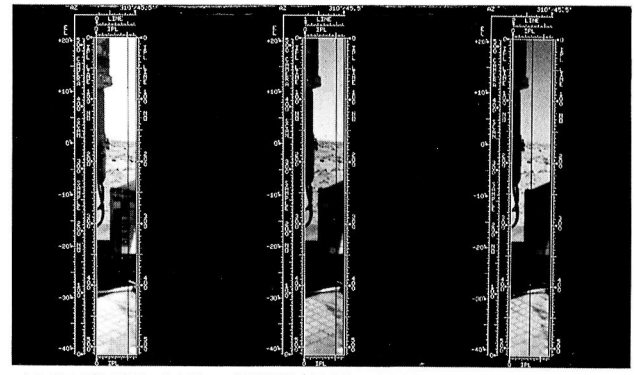

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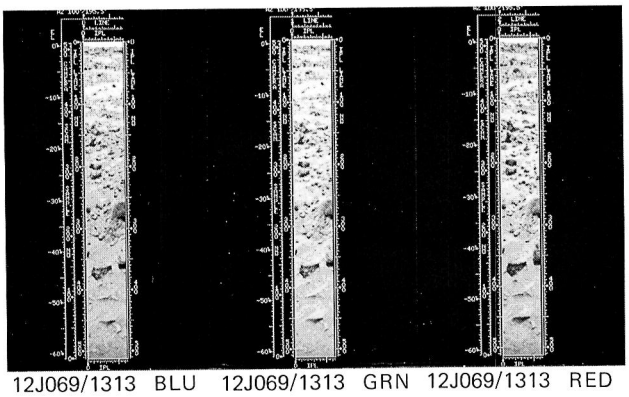

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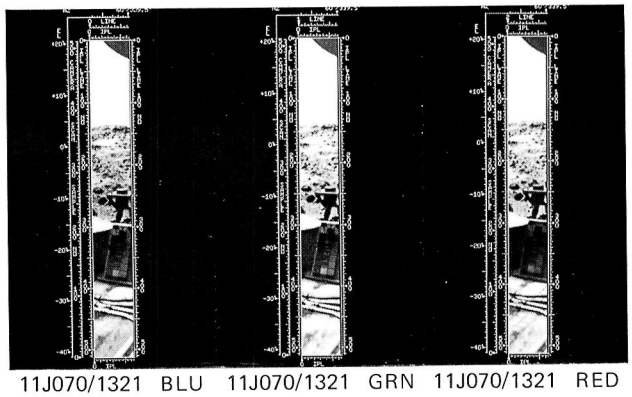
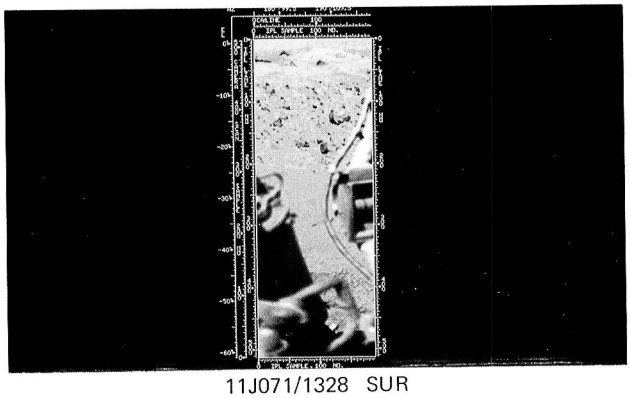
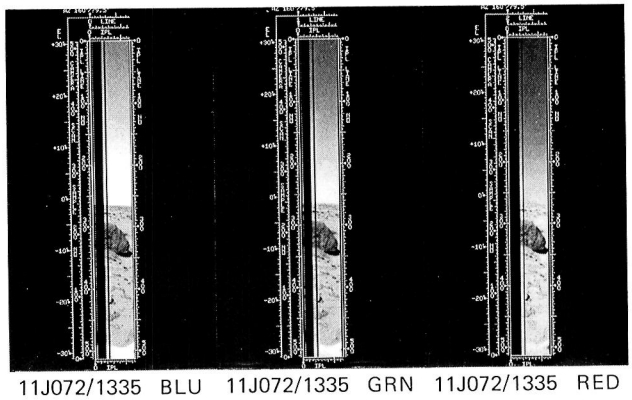


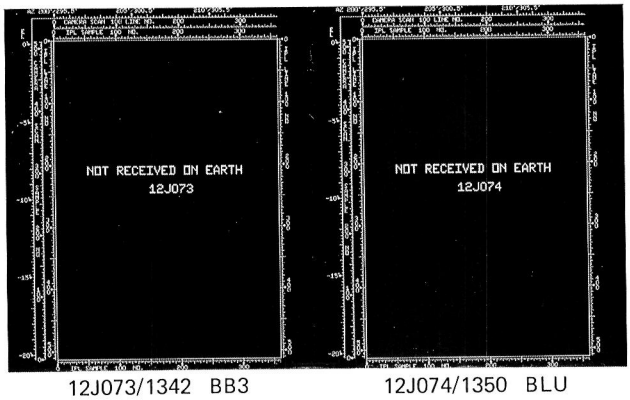
11J070/1321 BLU 11J070/1321 GRN 11J070/1321 RED



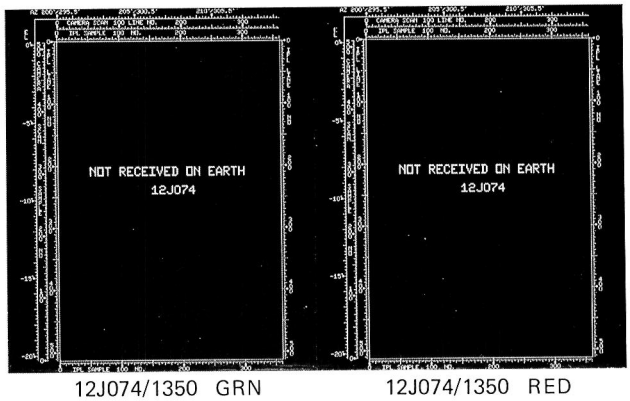
11J071/1328 SUR



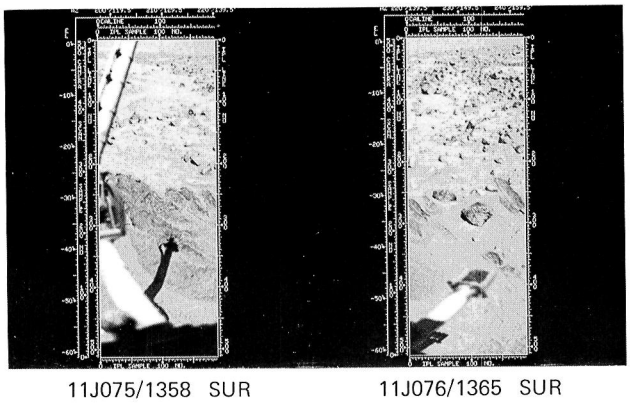
11J072/1335 BLU 11J072/1335 GRN 11J072/1335 RED



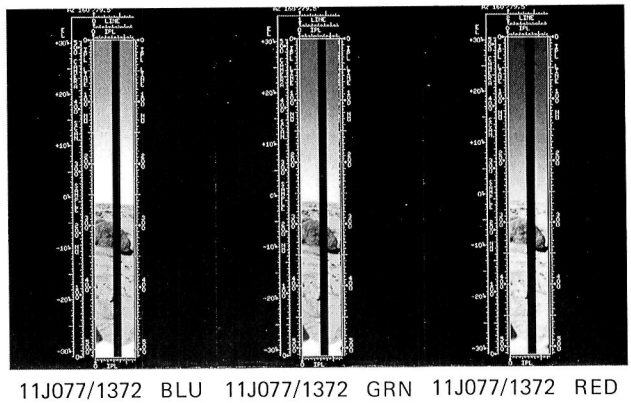
12J073/1342 BB3 12J074/1350 BLU



12J074/1350 GRN 12J074/1350 RED



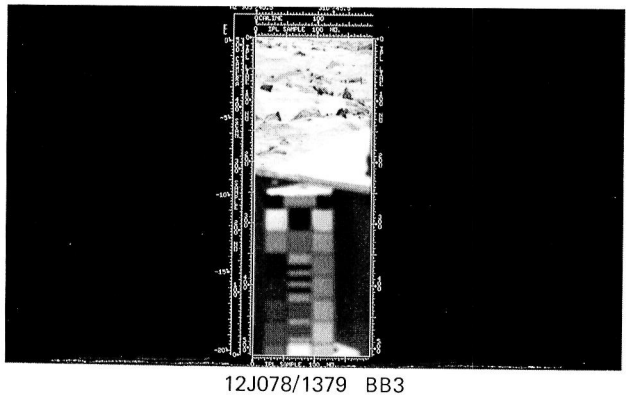
11J075/1358 SUR 11J076/1365 SUR



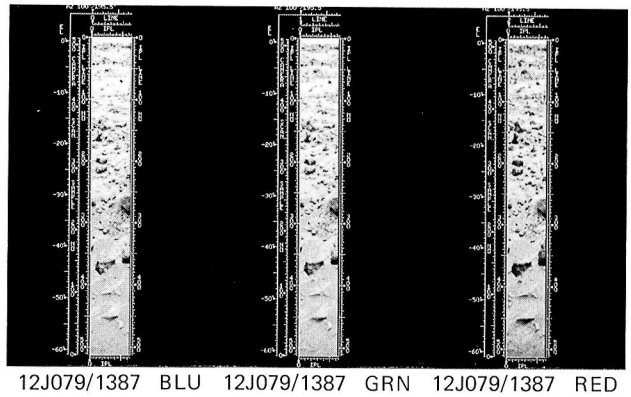
11J077/1372 BLU 11J077/1372 GRN 11J077/1372 RED

12J078/1379–11J087/1446

VL-1



12J078/1379 BB3



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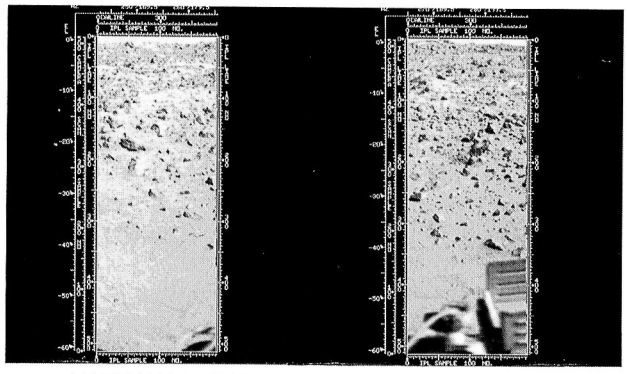
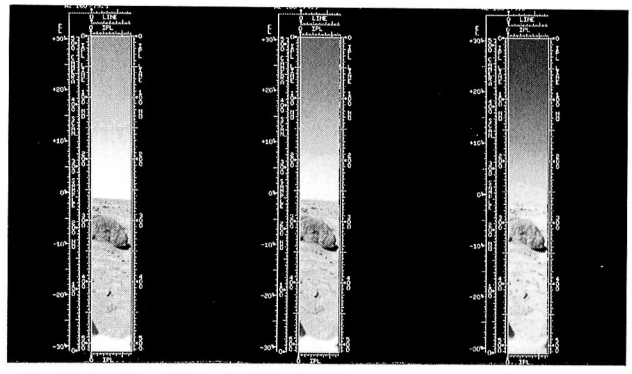


11J080/1395 SUR 11J081/1402 SUR



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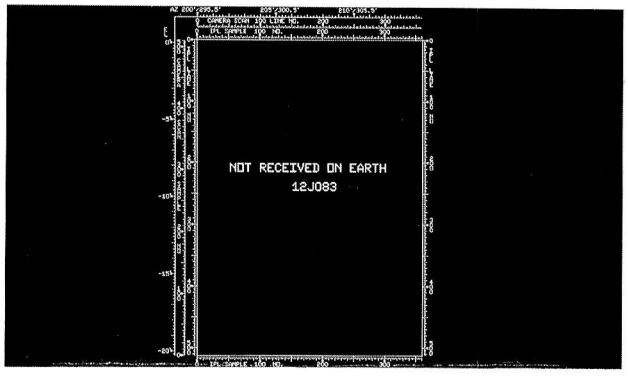
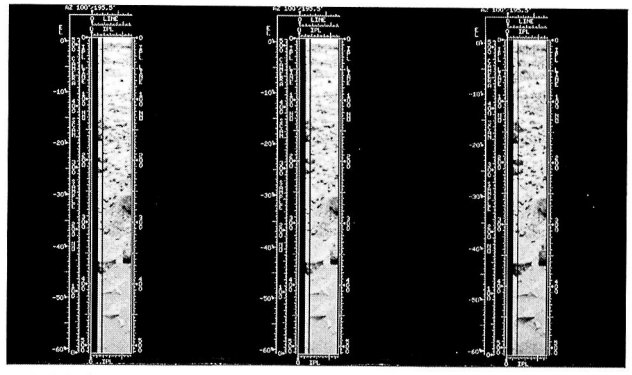


12J083/1416 BB1



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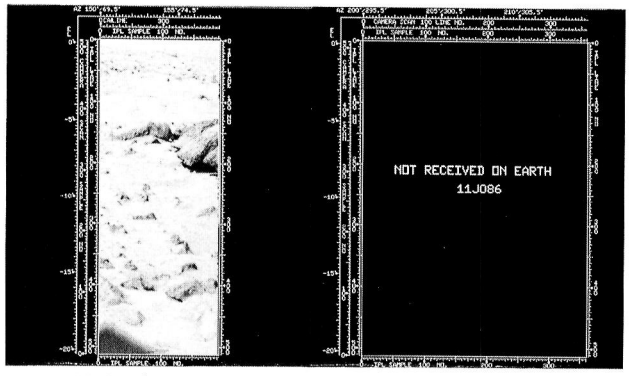
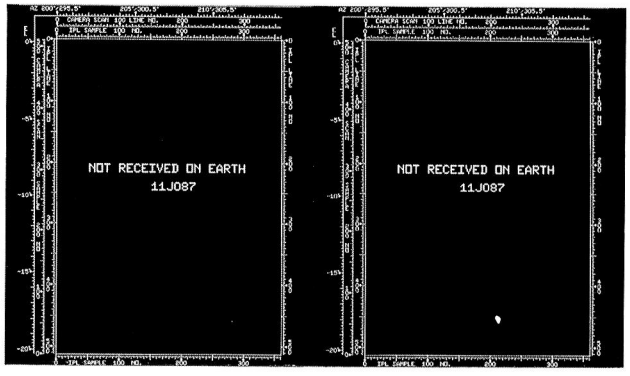
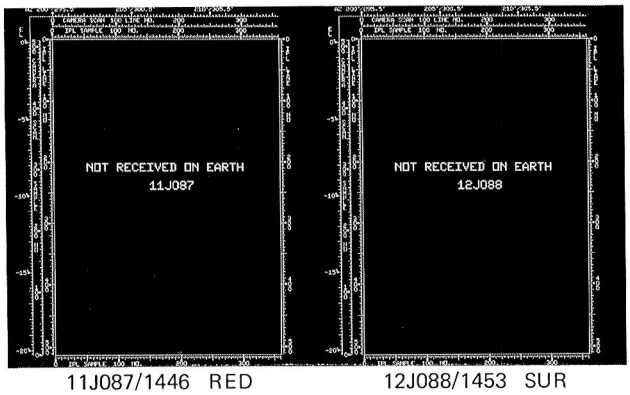


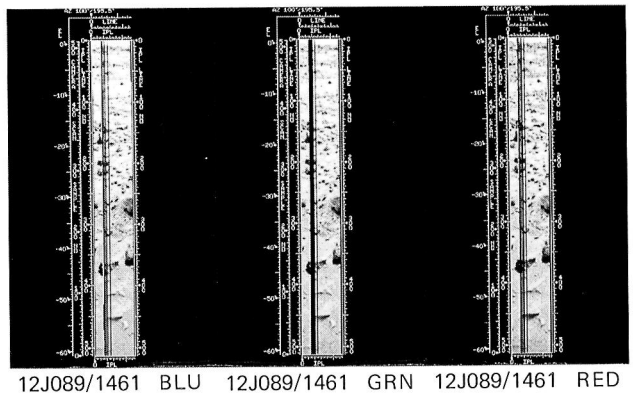
11J085/1432 BB4 11J086/1439 BB4



11J087/1446 BLU 11J087/1446 GRN



11J087/1446 RED 12J088/1453 SUR



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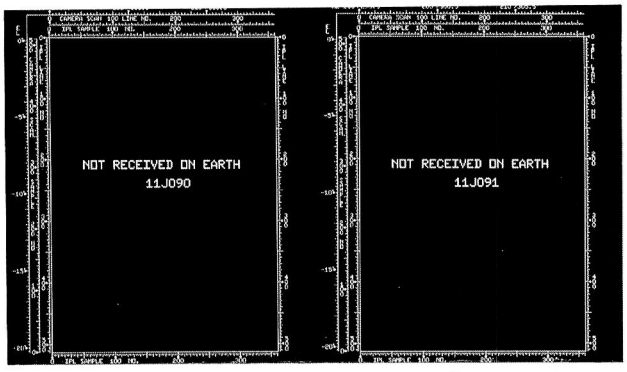
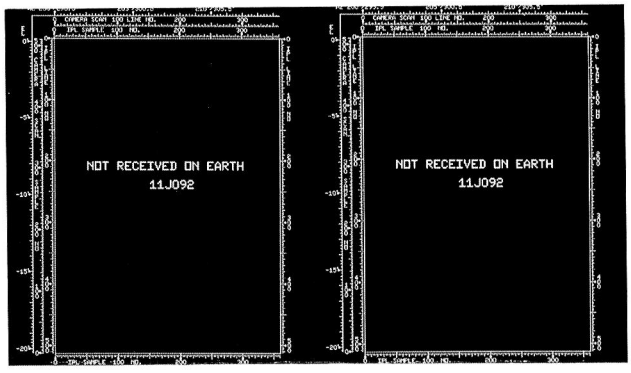
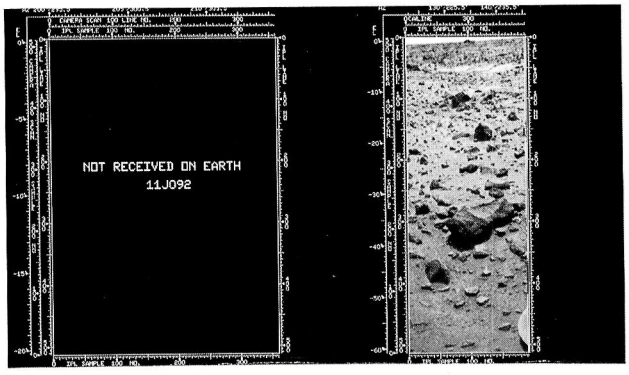


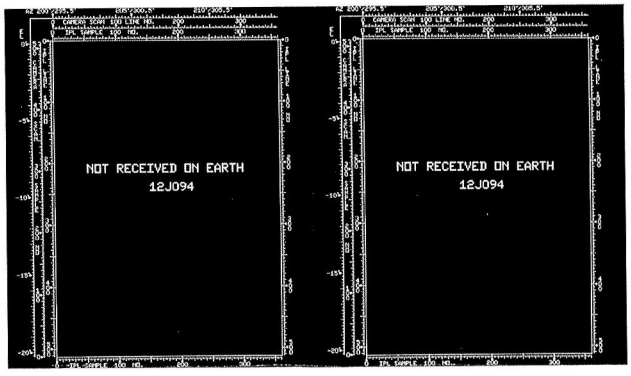
11J090/1469 BB4 11J091/1476 BB4



11J092/1483 BLU 11J092/1483 GRN



11J092/1483 RED 12J093/1490 SUR



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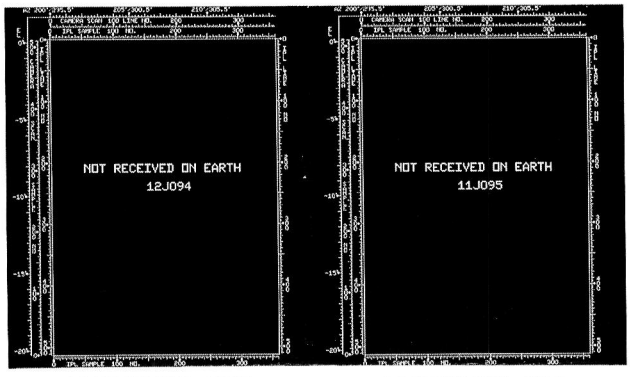
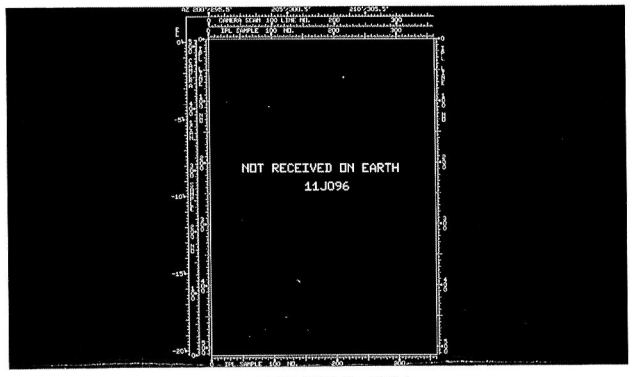
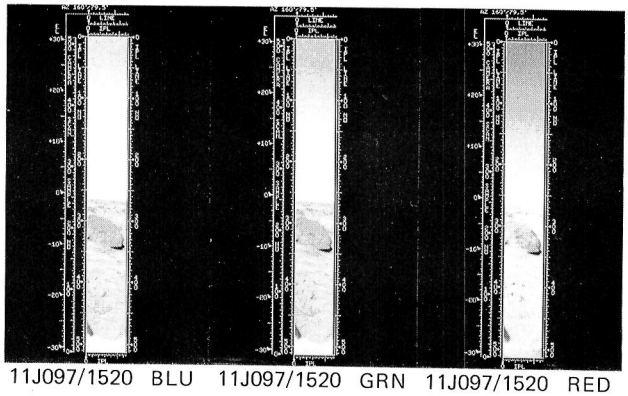


12J094/1498 RED 11J095/1506 BB4

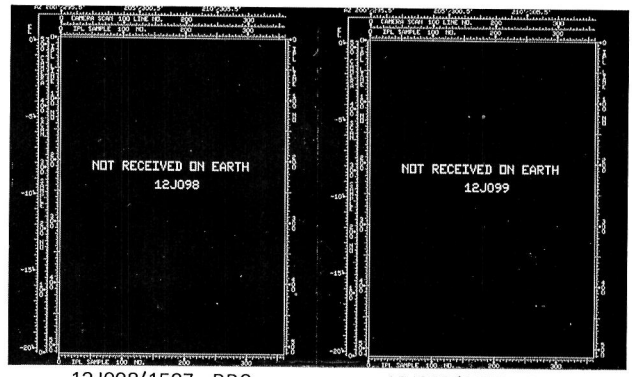


11J096/1513 BB4

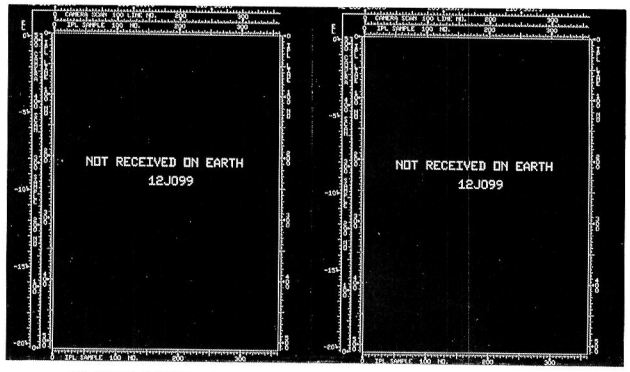
VL-1



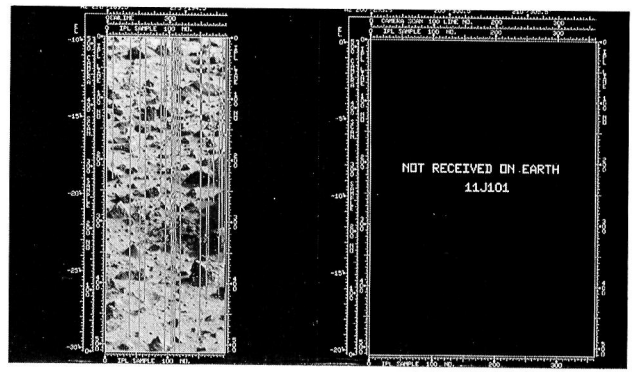
11J097/1520 BLU 11J097/1520 GRN 11J097/1520 RED



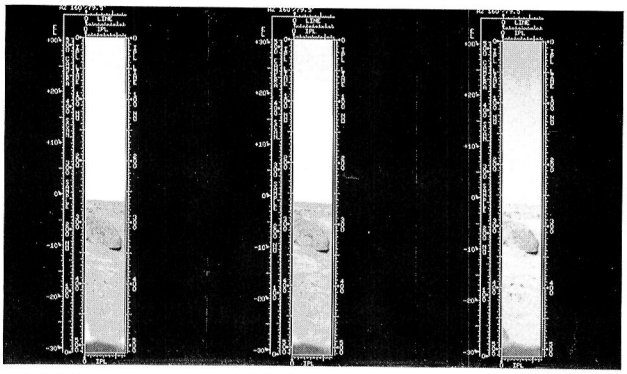
12J098/1527 BB3 12J099/1535 BLU



12J099/1535 GRN 12J099/1535 RED



11J100/1543 BB3 11J101/1550 BB3



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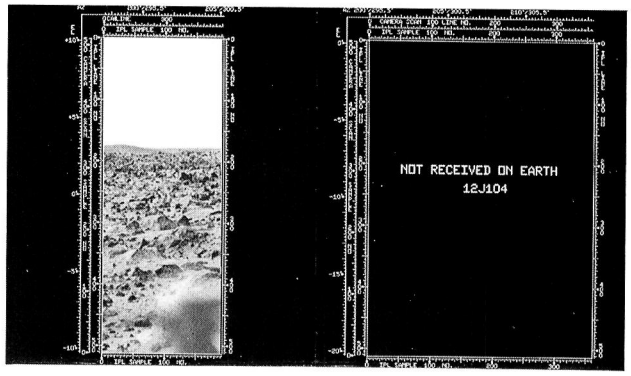
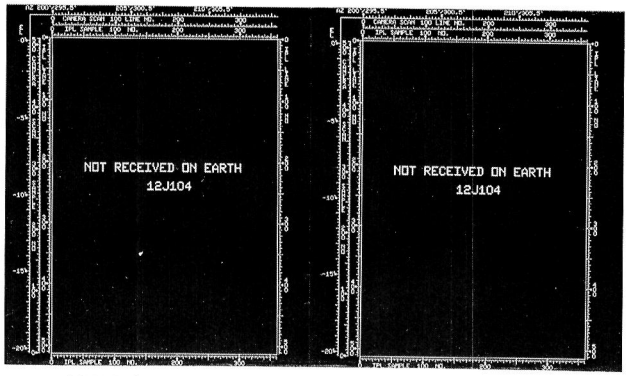


12J103/1564 BB4 12J104/1572 BLU



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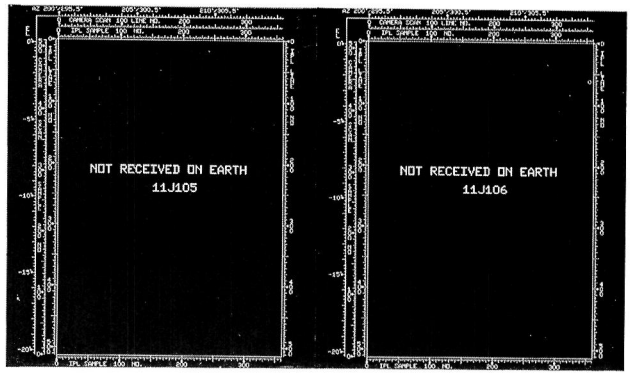
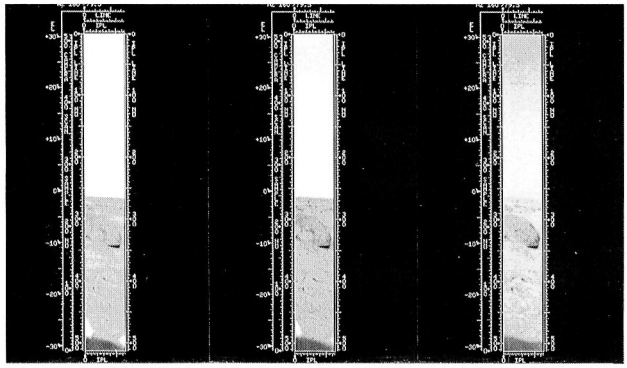


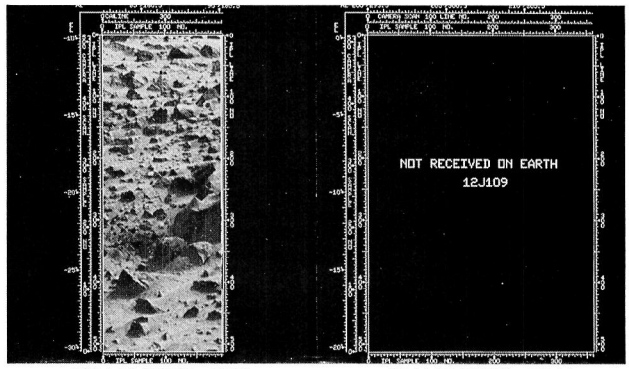
11J105/1580 BB1 11J106/1587 BB1

VL-1

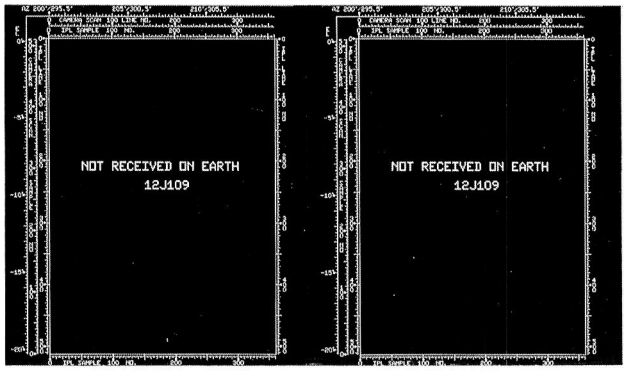
11J107/1594–11J115/1654



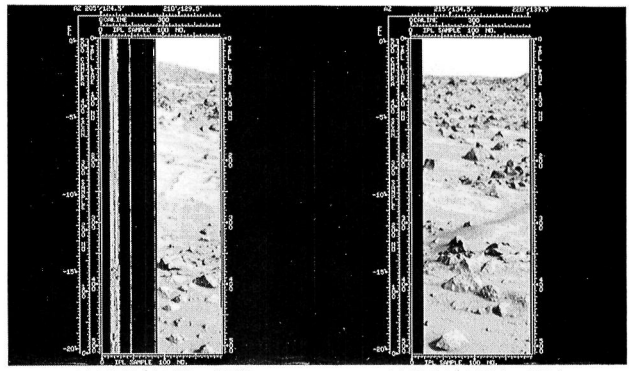
11J107/1594 BLU 11J107/1594 GRN 11J107/1594 RED



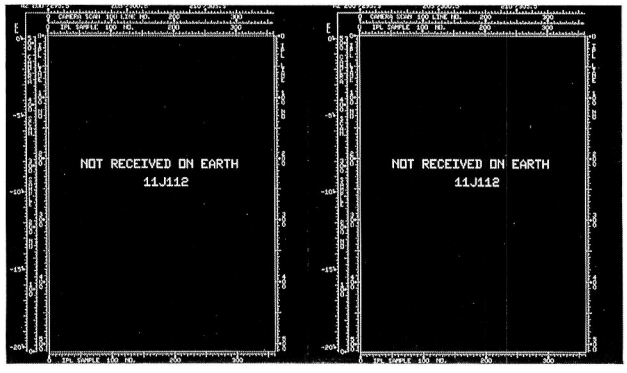
12J108/1601 BB3 12J109/1609 BLU



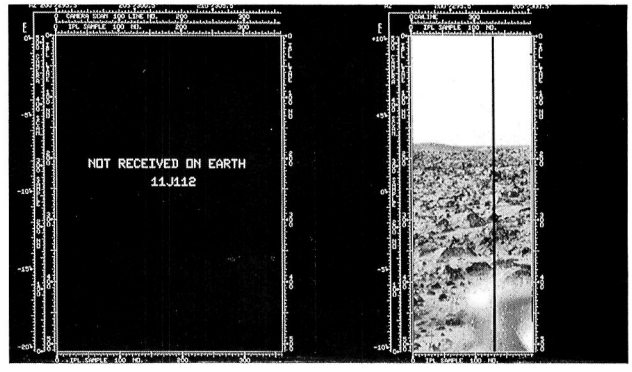
12J109/1609 GRN 12J109/1609 RED



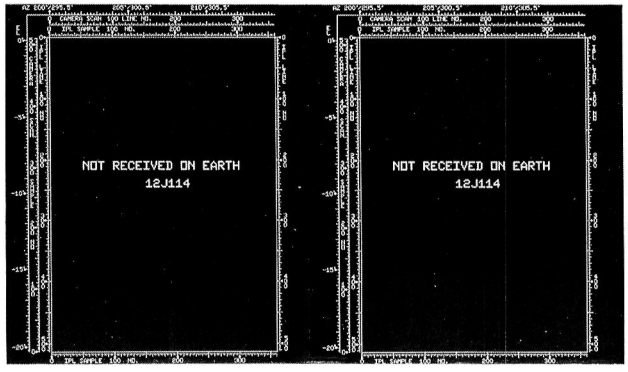
11J110/1617 BB3 11J111/1624 BB4



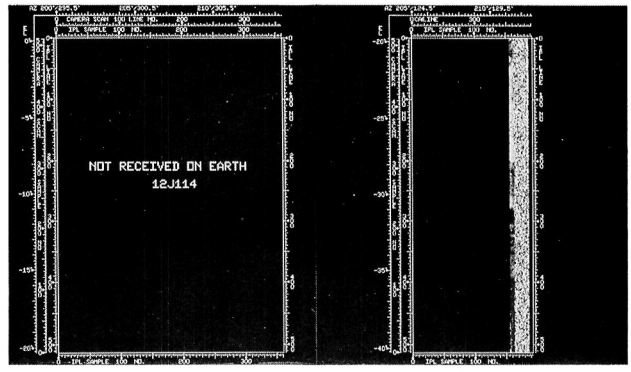
11J112/1631 BLU 11J112/1631 GRN



11J112/1631 RED 12J113/1638 BB4



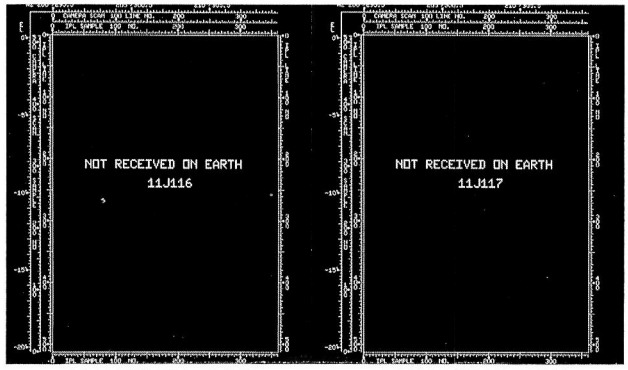
12J114/1646 BLU 12J114/1646 GRN



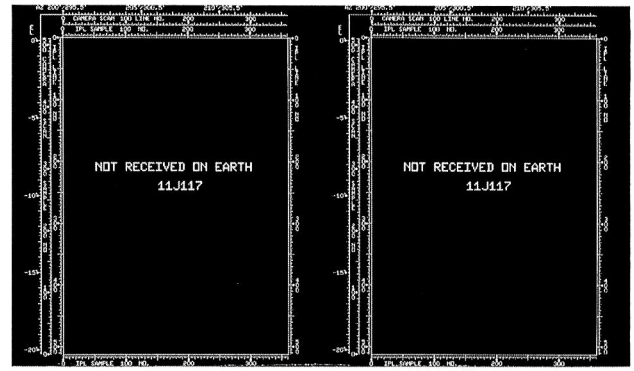
12J114/1646 RED 11J115/1654 BB2

VL-1

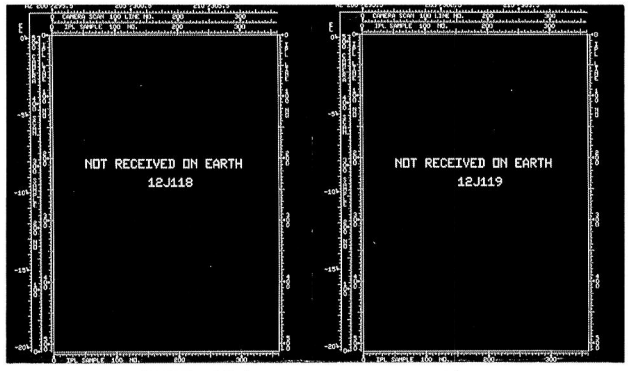
11J116/1661–12J124/1720



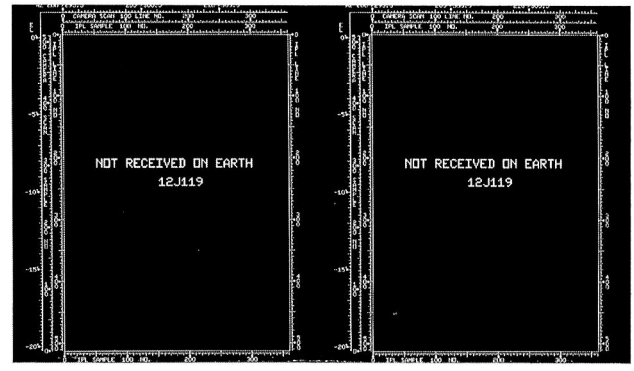
11J116/1661 BB2 11J117/1668 BLU



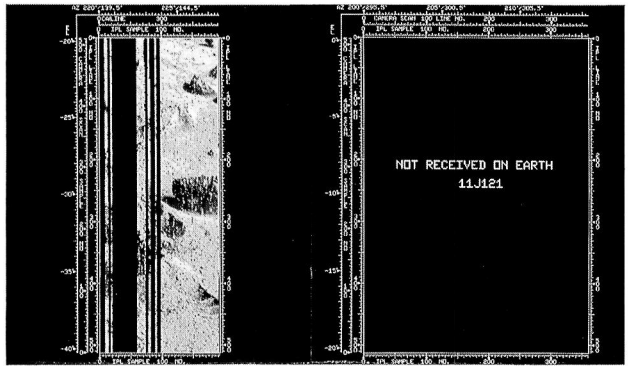
11J117/1668 GRN 11J117/1668 RED



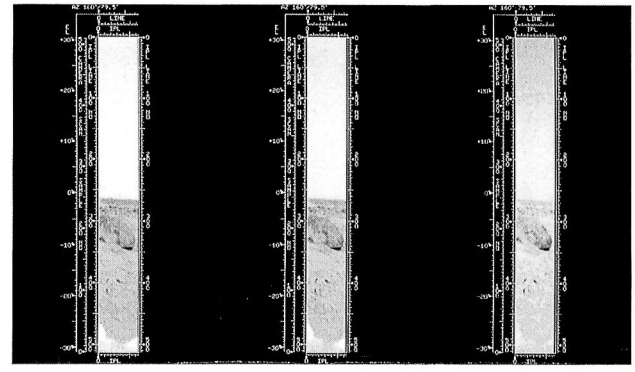
12J118/1675 BB4 12J119/1683 BLU



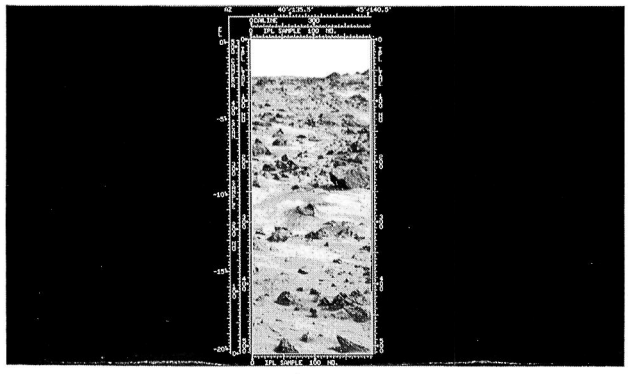
12J119/1683 GRN 12J119/1683 RED



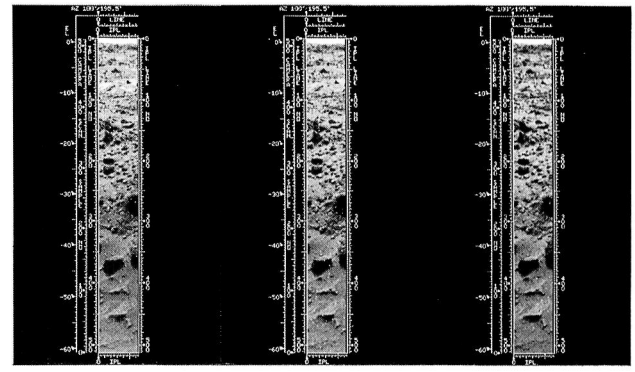
11J120/1691 BB2 11J121/1698 BB2



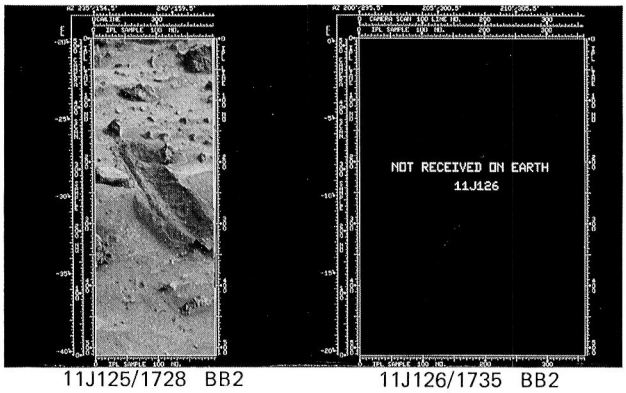
11J122/1705 BLU 11J122/1705 GRN 11J122/1705 RED



12J123/1712 BB3

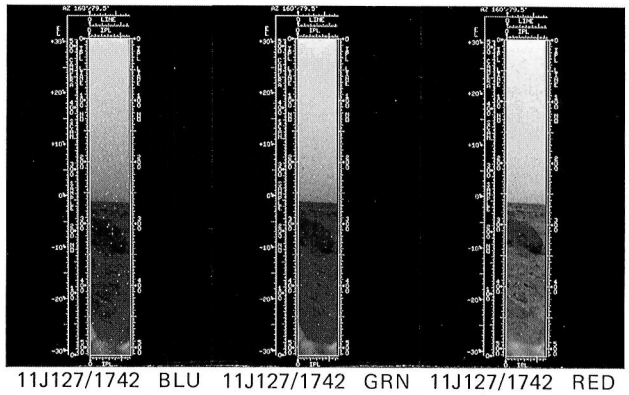


12J124/1720 BLU 12J124/1720 GRN 12J124/1720 RED

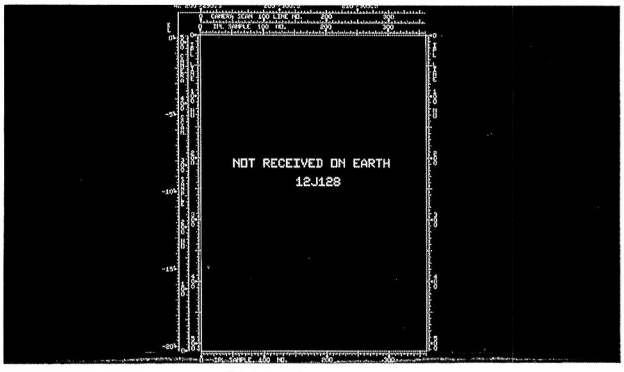


11J125/1728 BB2

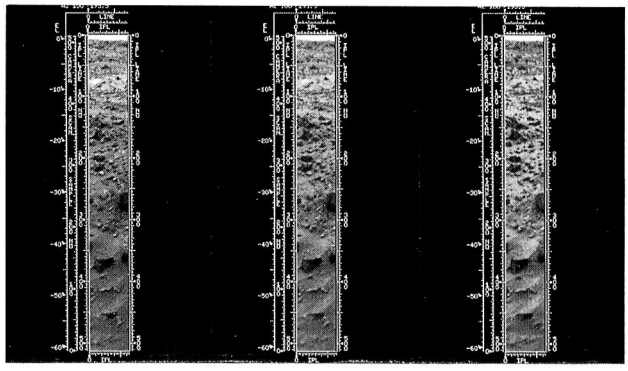
11J126/1735 BB2



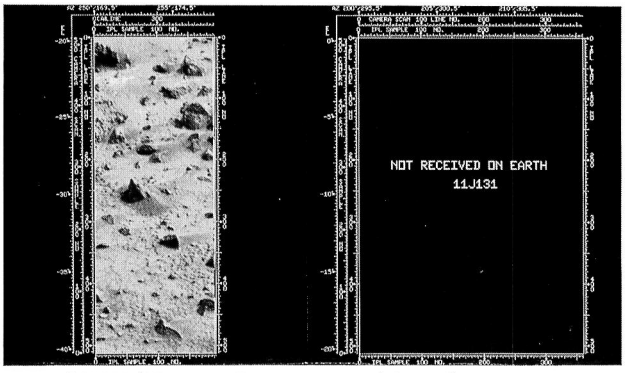
11J127/1742 BLU 11J127/1742 GRN 11J127/1742 RED



12J128/1749 SUR

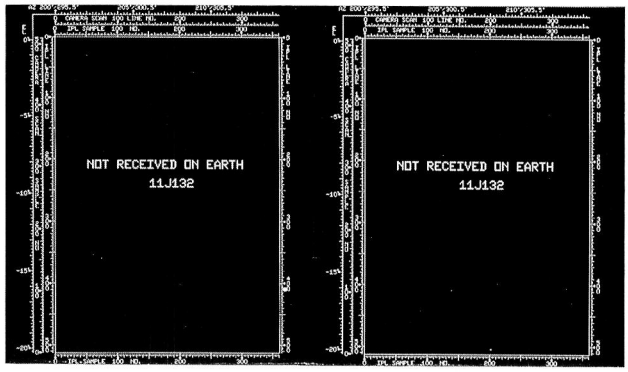


12J129/1757 BLU 12J129/1757 GRN 12J129/1757 RED

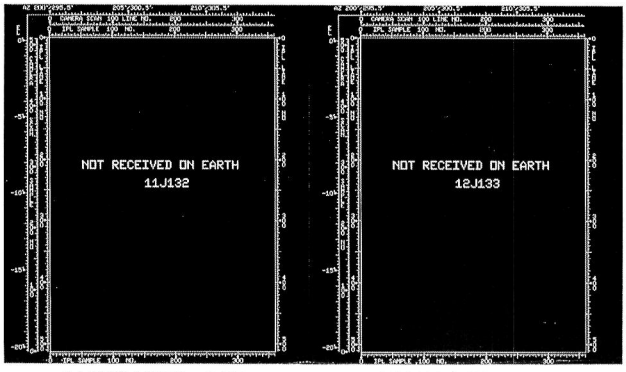


11J130/1765 BB2

11J131/1772 BB4

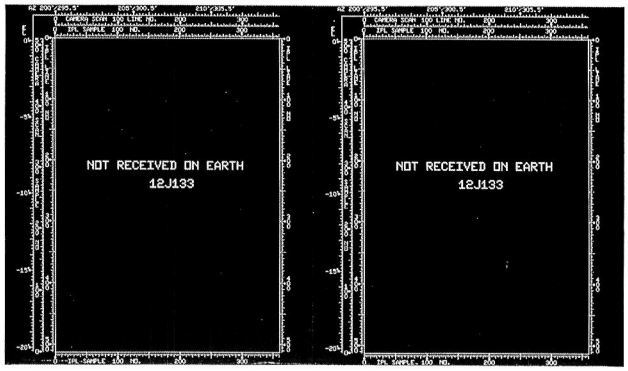


11J132/1779 BLU 11J132/1779 GRN



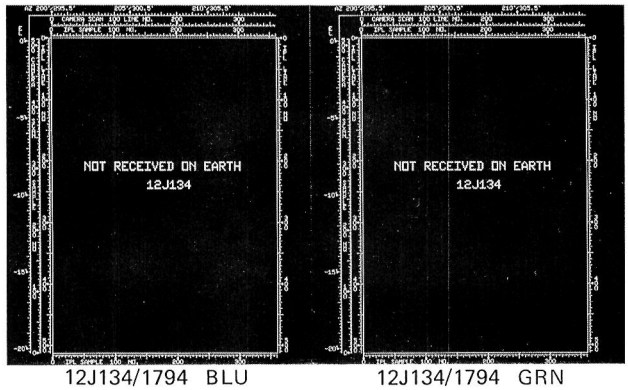
11J132/1779 RED

12J133/1786 BLU

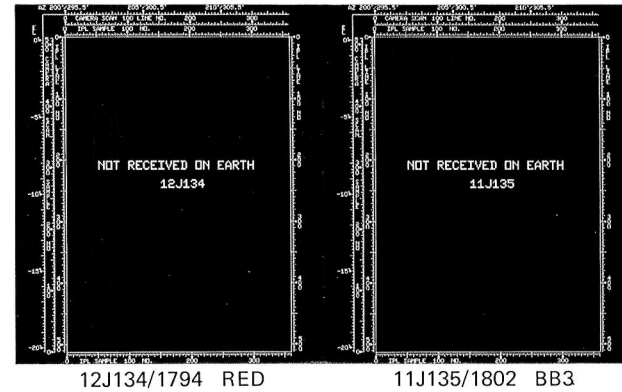


12J133/1786 GRN 12J133/1786 RED

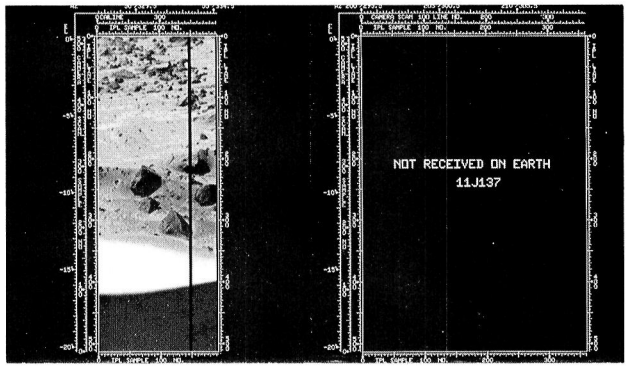
VL-1



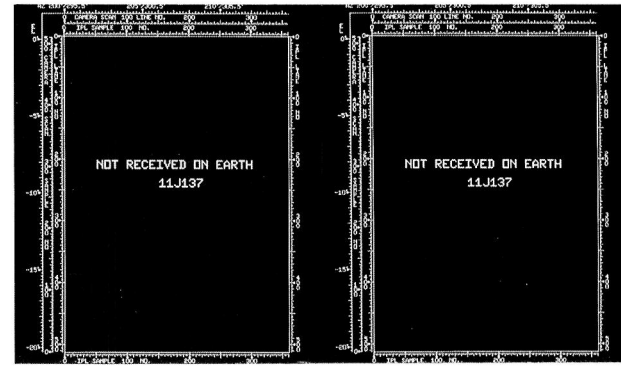
12J134/1794 BLU 12J134/1794 GRN



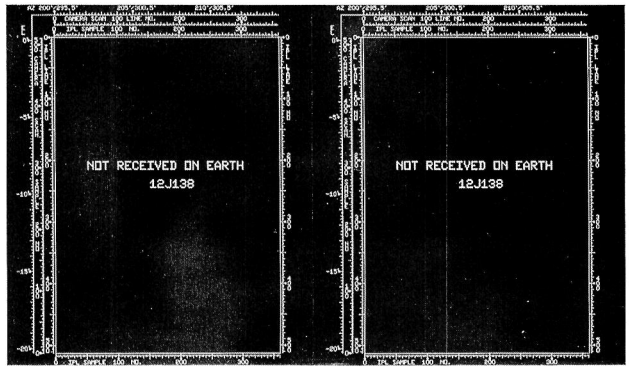
12J134/1794 RED 11J135/1802 BB3



11J136/1809 BB3 11J137/1816 BLU

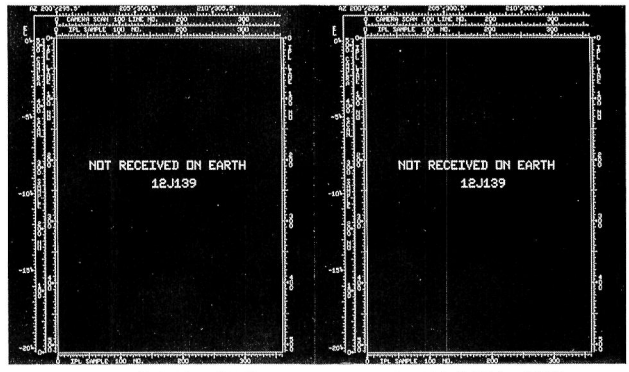


11J137/1816 GRN 11J137/1816 RED

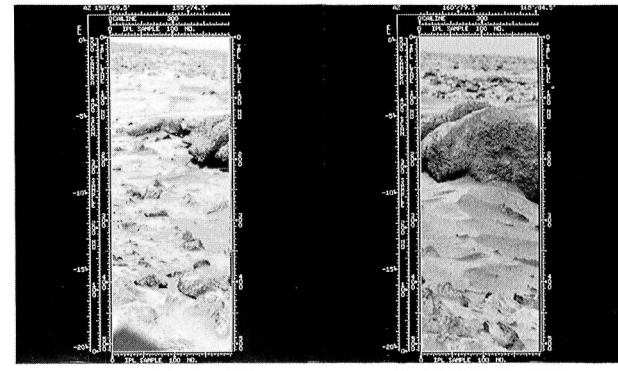


12J138/1823 BLU 12J138/1823 GRN

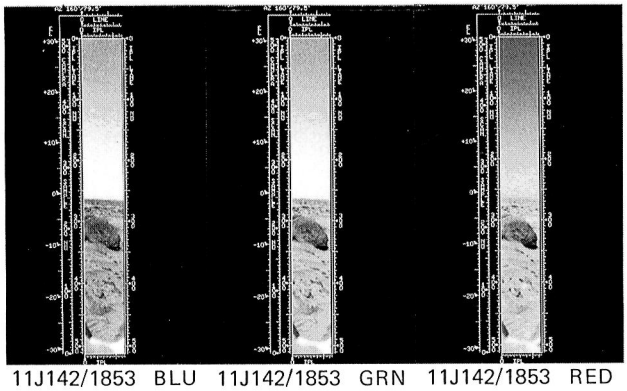
12J138/1823 RED 12J139/1831 BLU



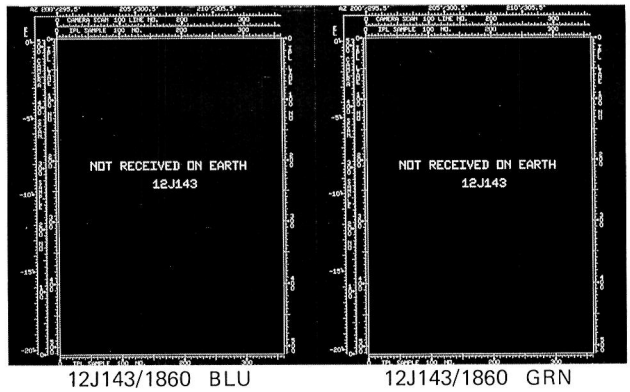
12J139/1831 GRN 12J139/1831 RED



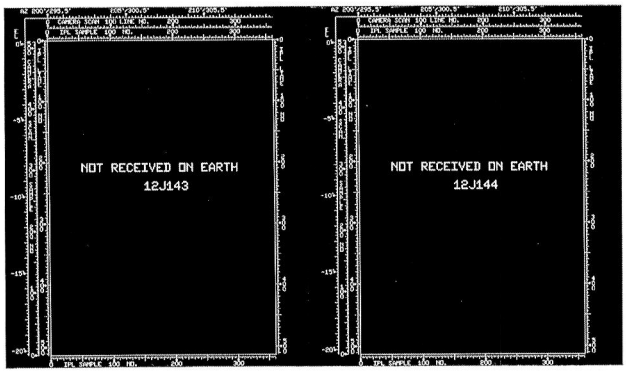
11J140/1849 BB3 11J141/1846 BB3



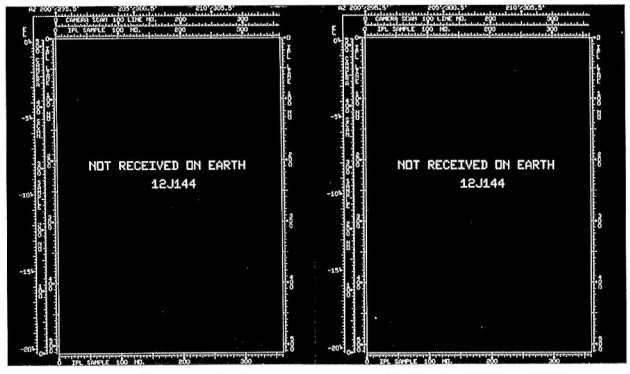
11J142/1853 BLU 11J142/1853 GRN 11J142/1853 RED



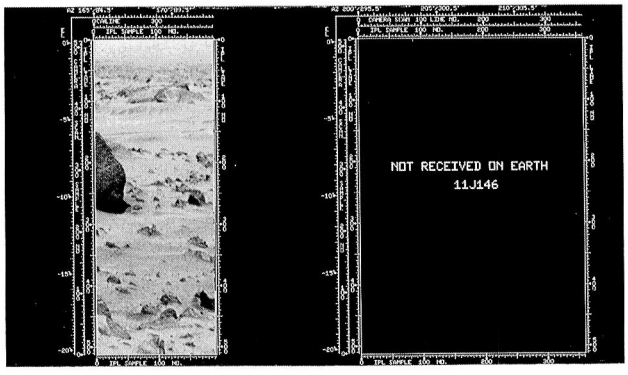
12J143/1860 BLU 12J143/1860 GRN



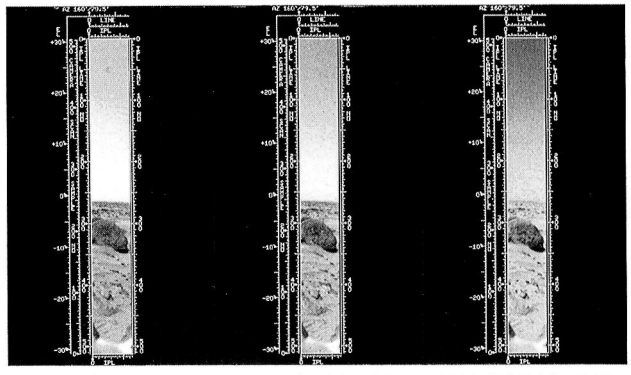
12J143/1860 RED 12J144/1868 BLU



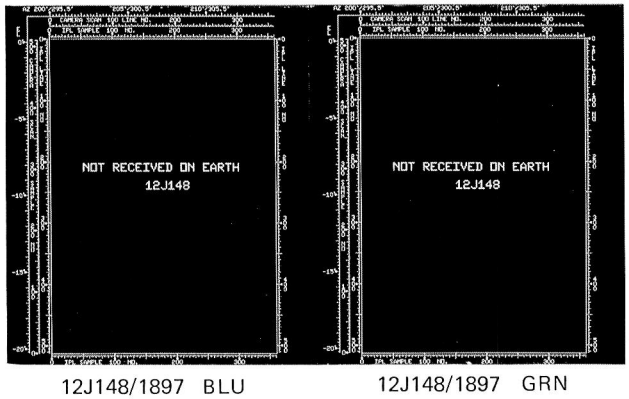
12J144/1868 GRN 12J144/1868 RED



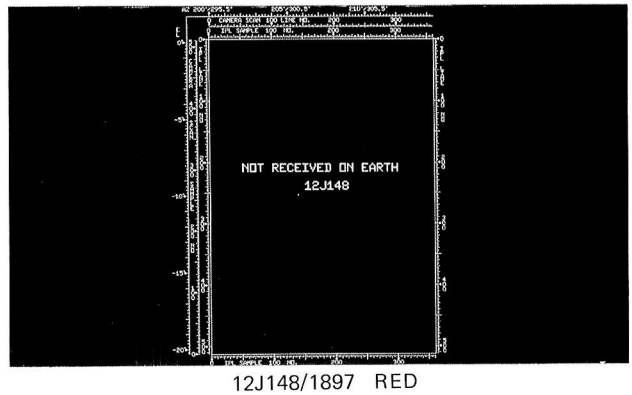
11J145/1876 BB3 11J146/1883 BB3



11J147/1890 BLU 11J147/1890 GRN 11J147/1890 RED

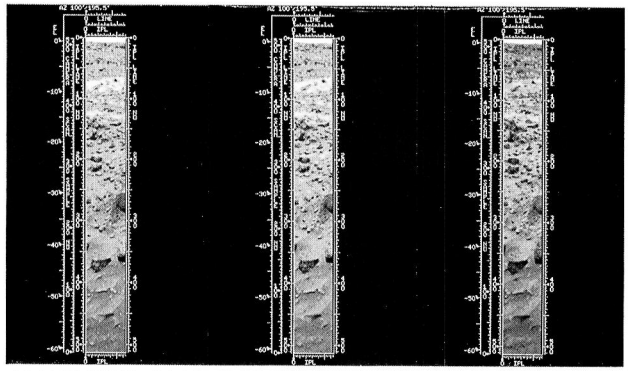


12J148/1897 BLU 12J148/1897 GRN

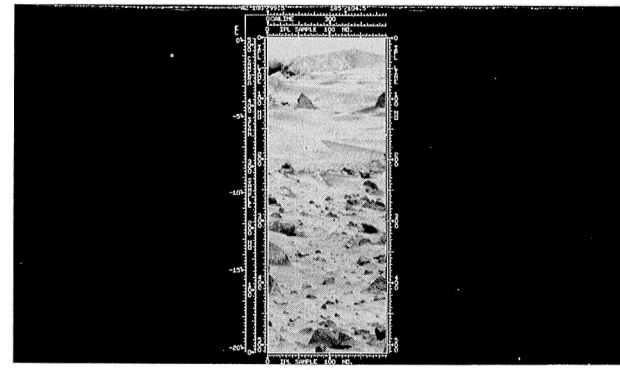


12J148/1897 RED

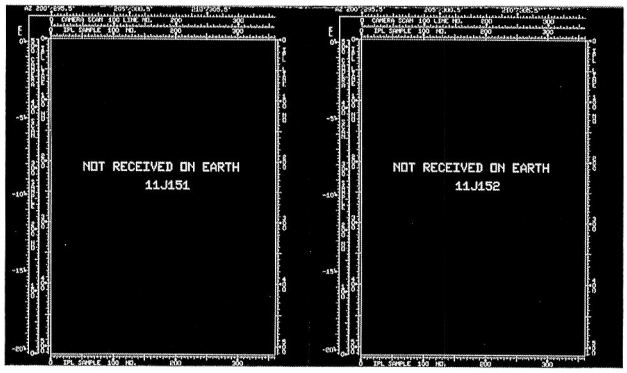
VL-1



12J149/1905 BLU 12J149/1905 GRN 12J149/1905 RED

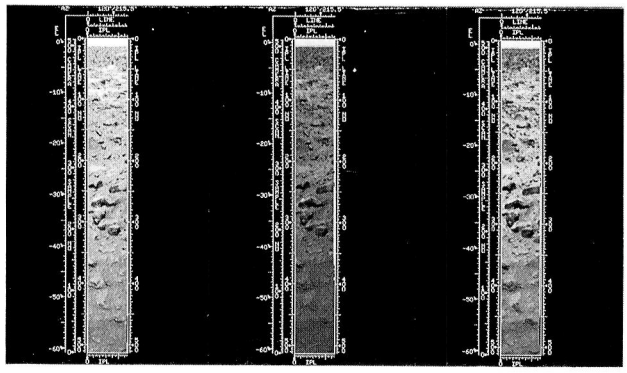


11J150/1913 BB3

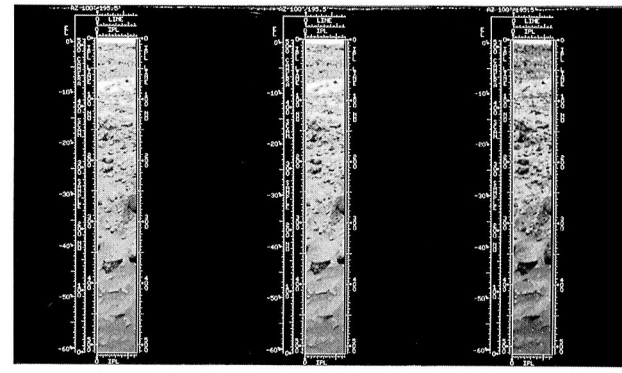


11J151/1920 BB3 11J152/1927 BLU

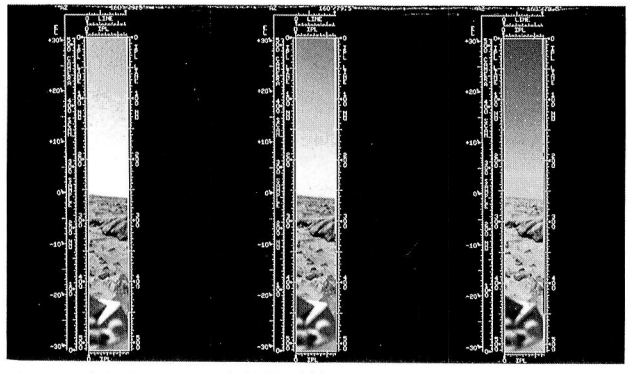
11J152/1927 GRN 11J152/1927 RED



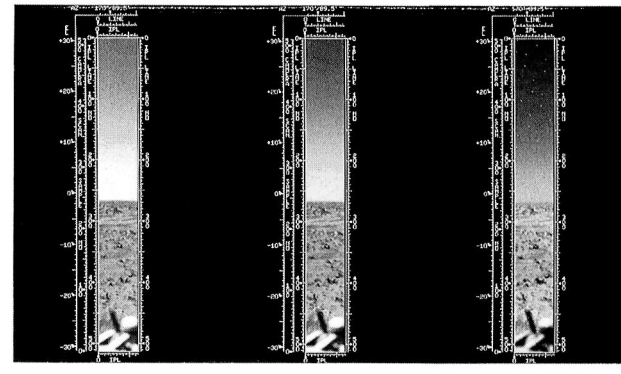
12J153/1934 BLU 12J153/1934 GRN 12J153/1934 RED



12J154/1942 BLU 12J154/1942 GRN 12J154/1942 RED



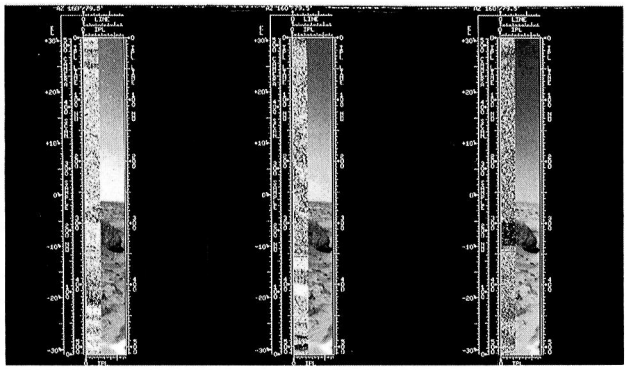
11J155/1950 BLU 11J155/1950 GRN 11J155/1950 RED



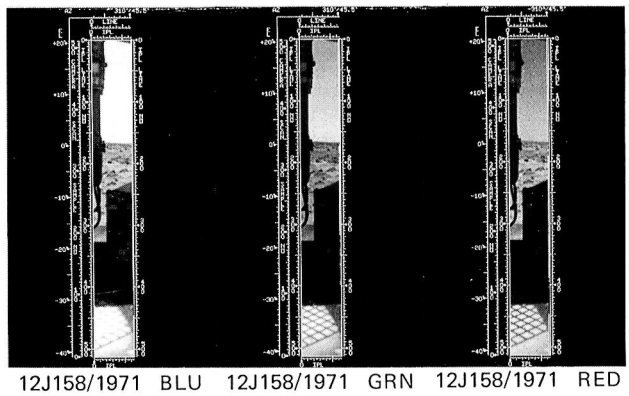
11J156/1957 BLU 11J156/1957 GRN 11J156/1957 RED

VL-1

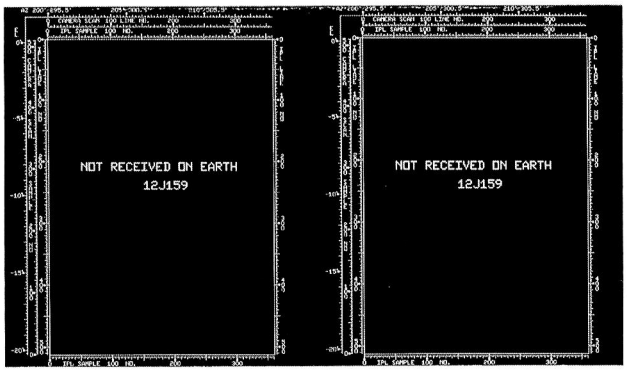
11J157/1964–12J163/2008



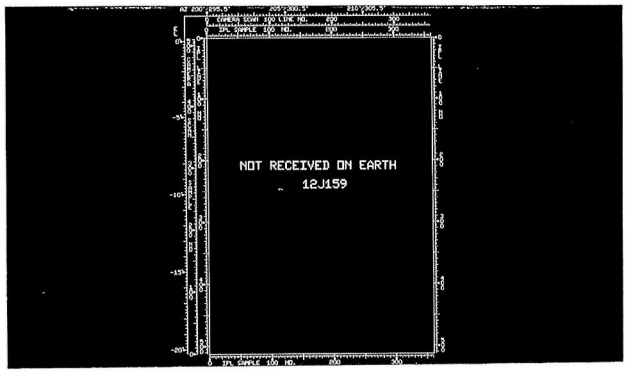
11J157/1964 BLU 11J157/1964 GRN 11J157/1964 RED



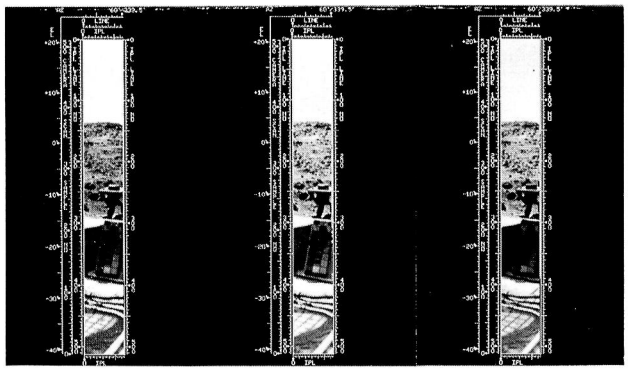
12J158/1971 BLU 12J158/1971 GRN 12J158/1971 RED



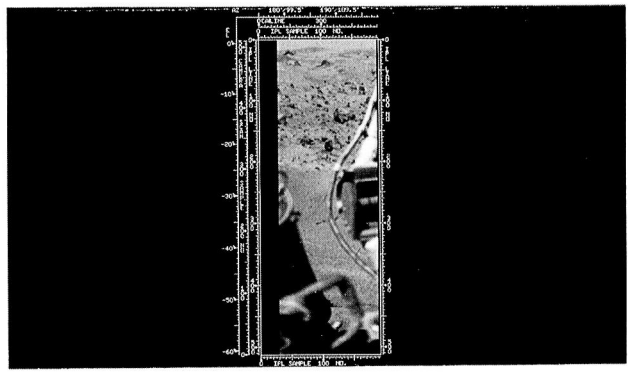
12J159/1979 BLU 12J159/1979 GRN



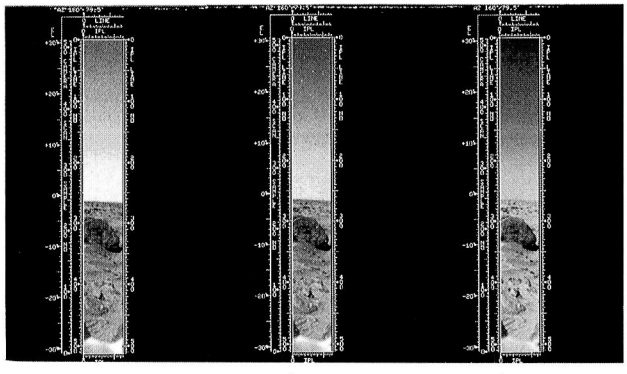
12J159/1979 RED



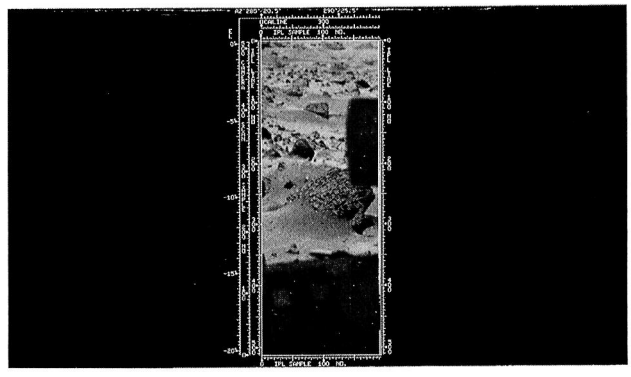
11J160/1987 BLU 11J160/1987 GRN 11J160/1987 RED



11J161/1994 SUR

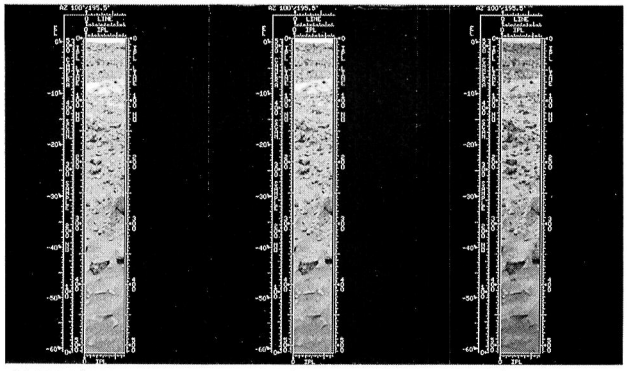


11J162/2001 BLU 11J162/2001 GRN 11J162/2001 RED

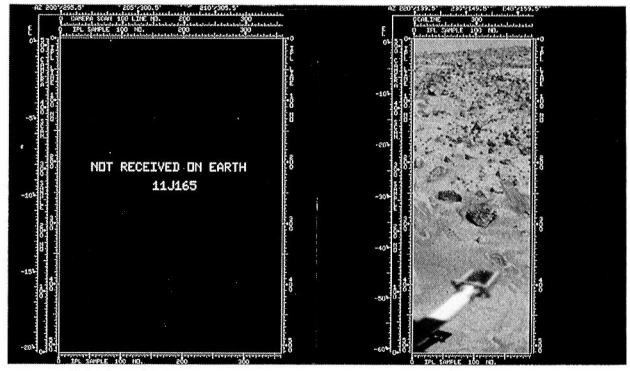


12J163/2008 BB3

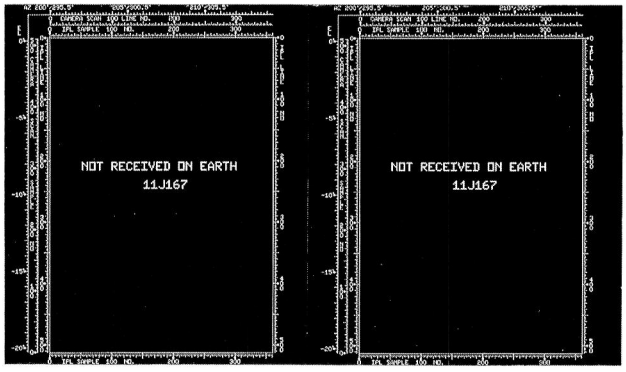
VL-1



12J164/2016 BLU 12J164/2016 GRN 12J164/2016 RED

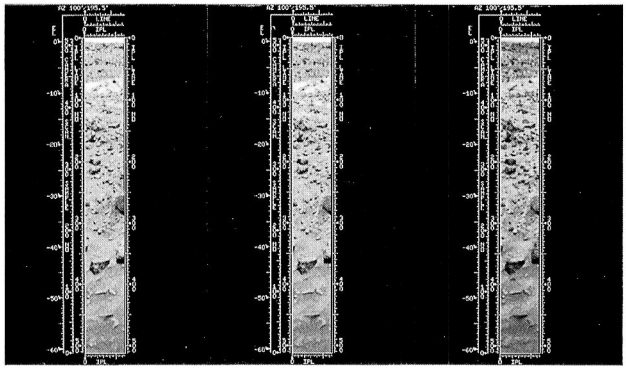


11J165/2024 SUR 11J166/2031 SUR

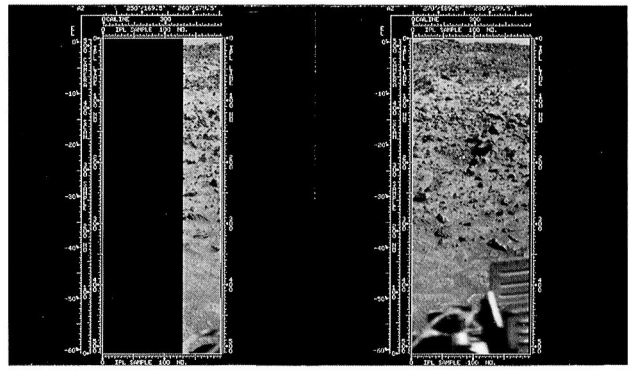


11J167/2038 BLU 11J167/2038 GRN

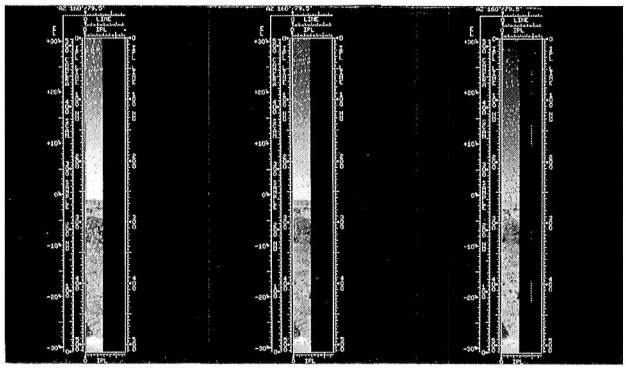
11J167/2038 RED 12J168/2045 BB3



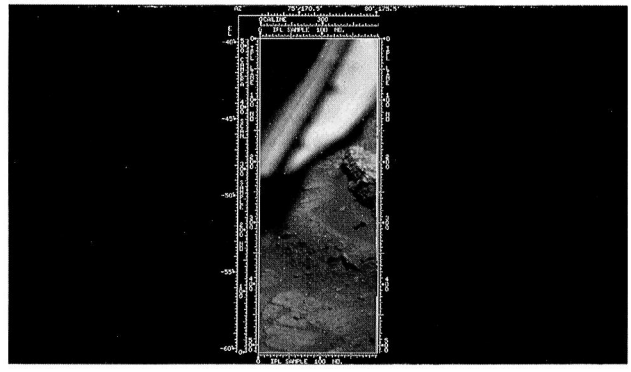
12J169/2053 BLU 12J169/2053 GRN 12J169/2053 RED



11J170/2061 SUR 11J171/2068 SUR



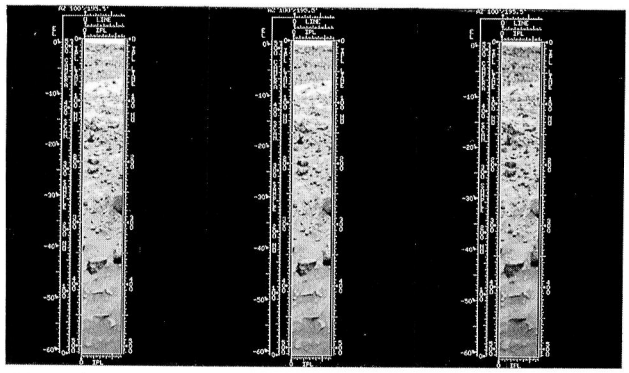
11J172/2075 BLU 11J172/2075 GRN 11J172/2075 RED



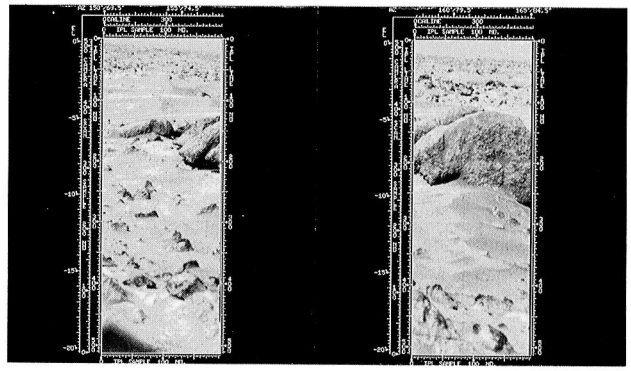
12J173/2082 BB1

VL-1

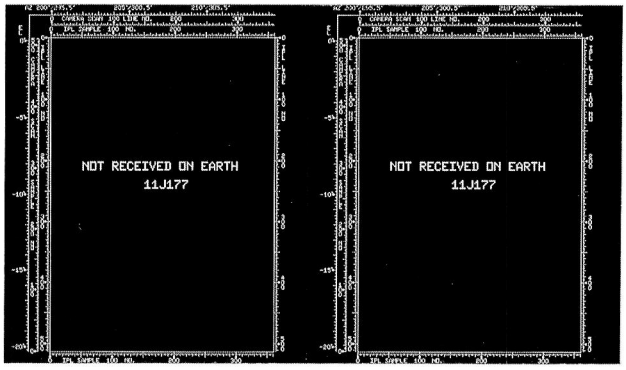
12J174/2090–12J183/2156



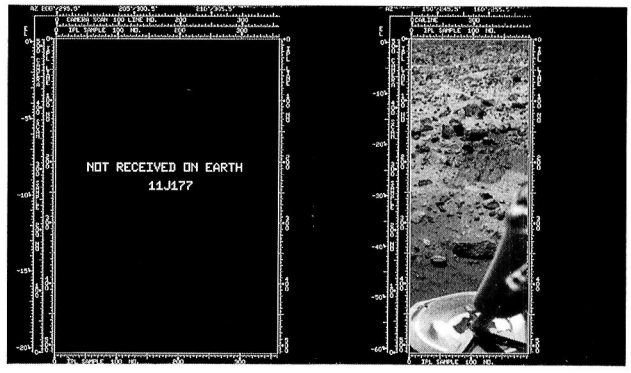
12J174/2090 BLU 12J174/2090 GRN 12J174/2090 RED



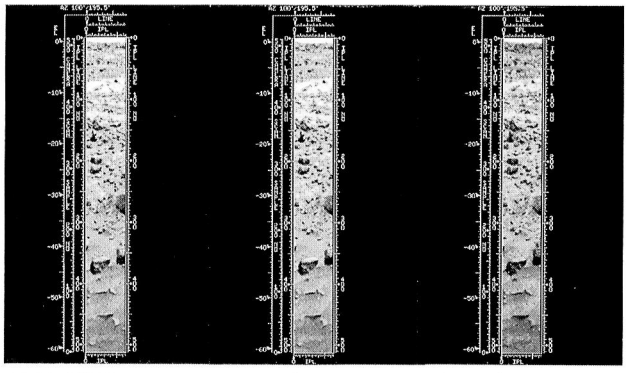
11J175/2098 BB4 11J176/2105 BB4



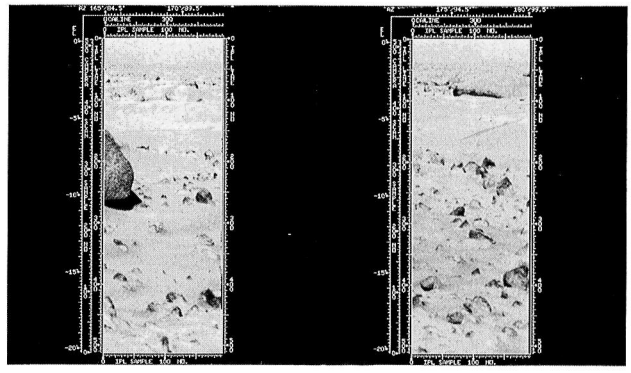
11J177/2112 BLU 11J177/2112 GRN



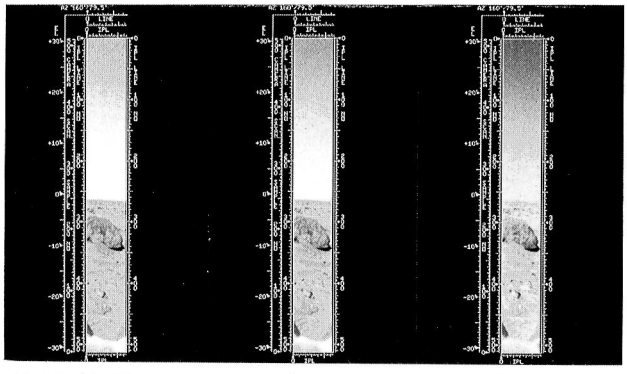
11J177/2112 RED 12J178/2119 SUR



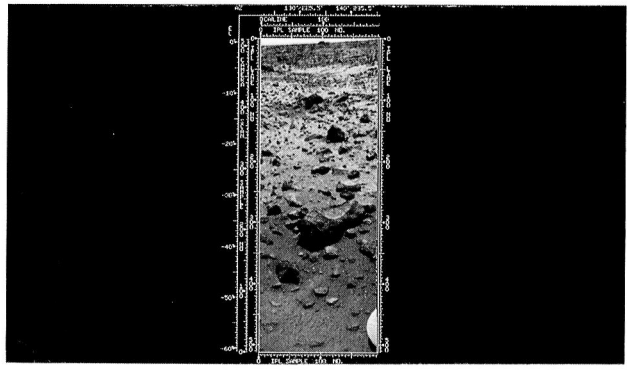
12J179/2127 BLU 12J179/2127 GRN 12J179/2127 RED



11J180/2135 BB4 11J181/2142 BB4

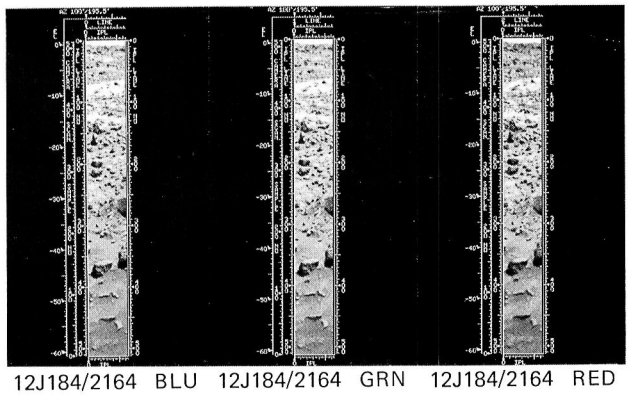


11J182/2149 BLU 11J182/2149 GRN 11J182/2149 RED

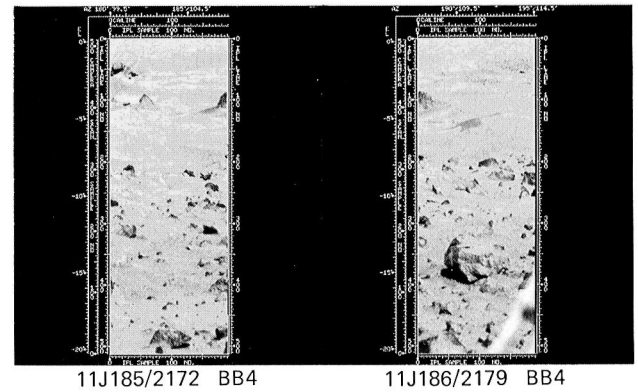


12J183/2156 SUR

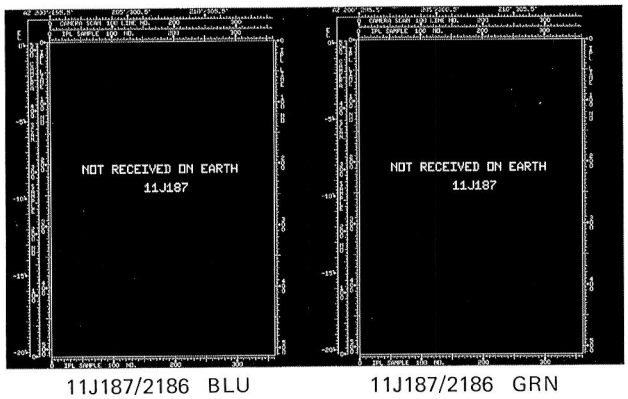
VL-1



12J184/2164 BLU 12J184/2164 GRN 12J184/2164 RED

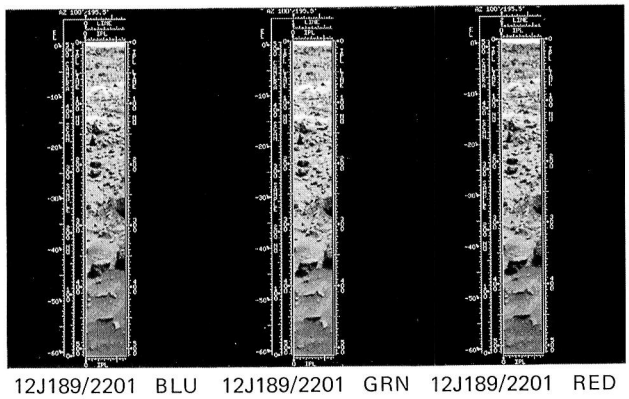


11J185/2172 BB4 11J186/2179 BB4

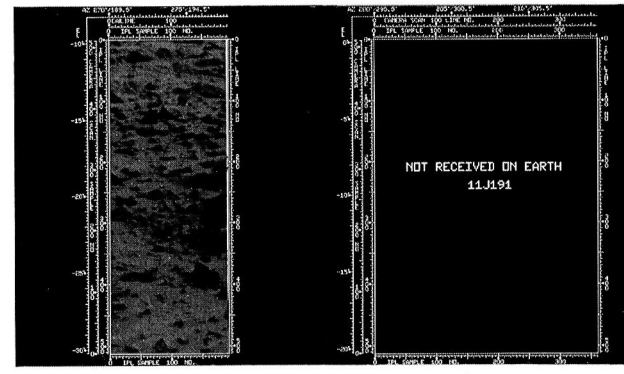


11J187/2186 BLU 11J187/2186 GRN

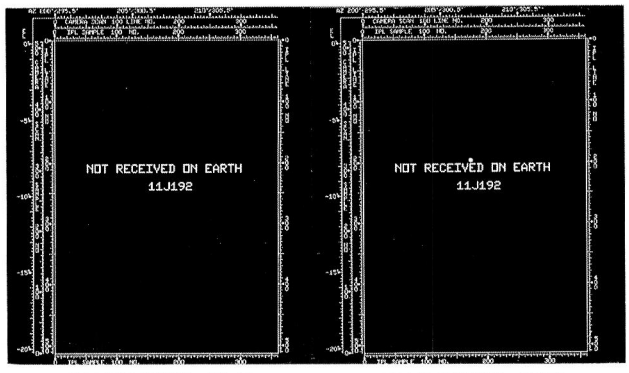
11J187/2186 RED 12J188/2193 BB3



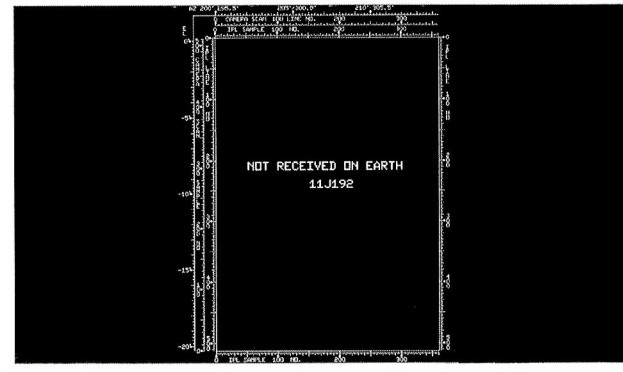
12J189/2201 BLU 12J189/2201 GRN 12J189/2201 RED



11J190/2209 BB3 11J191/2216 BB3



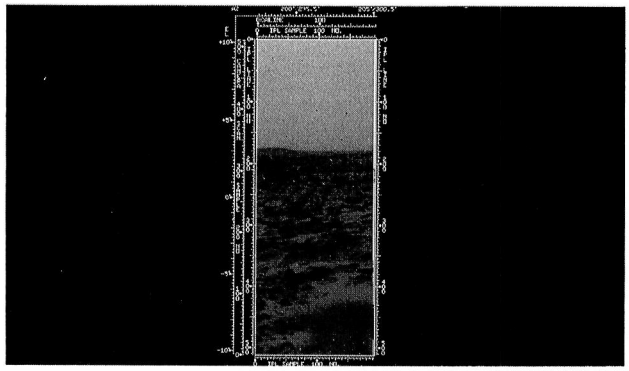
11J192/2223 BLU 11J192/2223 GRN



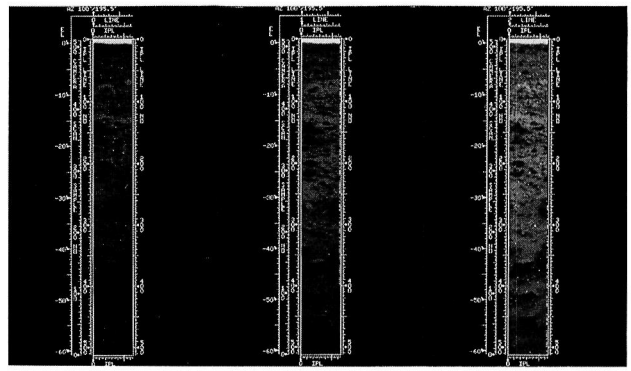
11J192/2223 RED

VL-1

12J193/2230–12J194/2238



12J193/2230 BB4



12J194/2238 BLU 12J194/2238 GRN 12J194/2238 RED

VIKING LANDER 2
EXPERIMENT DATA RECORD

VL-2 PARAMETER LISTS

VL-2 CAMERA EVENT REPORT

VL-2 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL	LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.	NO. EDR SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE	
22I096/967	12:29:59	CLR/T	300.0/310.0	-20	0.12	1/1	1	1	3	16K	-31	167.9/18.6	40.7/-15.7
	145/15:19:52	BLU/T	ISDR 84		0/0	1	1	72.62	45.58	1	FN0084/1	VLE003/001
22I096/967	12:29:59	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	3	16K	-31	167.9/18.6	40.7/-15.7
	145/15:19:52	GRN/T	ISDR 84		0/0	1	1	78.28	44.24	1	FN0084/2	VLE003/002
22I096/967	12:29:59	CLR/T	300.0/310.0	-20	0.12	3/1	1	1	3	16K	-31	167.9/18.6	40.7/-15.7
	145/15:19:52	RED/T	ISDR 84		0/0	1	1	88.58	40.96	1	FN0084/3	VLE003/003
22I097/977	12:12:09	CLR/T	300.0/310.0	-20	0.12	1/1	1	1	3	16K	-29	162.4/18.9	35.3/-15.3
	155/21:37:55	BLU/T	ISDR 84		0/0	1	1	76.82	49.25	1	FN0084/4	VLE003/004
22I097/977	12:12:09	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	3	16K	-29	162.4/18.9	35.3/-15.3
	155/21:37:55	GRN/T	ISDR 84		0/0	1	1	81.72	47.03	1	FN0084/5	VLE003/005
22I097/977	12:12:09	CLR/T	300.0/310.0	-20	0.12	3/1	1	1	3	16K	-29	162.4/18.9	35.3/-15.3
	155/21:37:55	RED/T	ISDR 84		0/0	1	1	91.28	43.06	1	FN0084/6	VLE003/006
22I098/987	12:12:10	CLR/T	300.0/310.0	-20	0.12	1/1	0	1	3	16K	-27	161.1/20.2	33.9/-16.3
	166/04:13:47	BLU/T	ISDR 84		0/0	0	1	78.06	51.34	1	FN0084/7	VLE003/007
22I098/987	12:12:10	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	3	16K	-27	161.1/20.2	33.9/-16.3
	166/04:13:47	GRN/T	ISDR 84		0/0	1	1	82.88	48.71	1	FN0084/8	VLE003/008
22I098/987	12:12:10	CLR/T	300.0/310.0	-20	0.12	3/1	1	1	3	16K	-27	161.1/20.2	33.9/-16.3
	166/04:13:47	RED/T	ISDR 84		0/0	1	1	92.25	44.10	1	FN0084/9	VLE003/009
22I099/997	12:12:09	CLR/T	300.0/310.0	-20	0.12	1/1	1	1	3	16K	-29	160.0/21.6	32.6/-17.6
	176/10:49:39	BLU/T	ISDR 84		0/0	1	1	78.11	48.90	1	FN0084/10	VLE003/010
22I099/997	12:12:09	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	3	16K	-29	160.0/21.6	32.6/-17.6
	176/10:49:39	GRN/T	ISDR 84		0/0	1	1	85.07	47.27	1	FN0084/11	VLE003/011
22I099/997	12:12:09	CLR/T	300.0/310.0	-20	0.12	3/1	1	1	3	16K	-29	160.0/21.6	32.6/-17.6
	176/10:49:39	RED/T	ISDR 84		0/0	1	1	99.14	44.41	1	FN0084/12	VLE003/012
22I100/1007	12:12:10	CLR/T	300.0/310.0	-20	0.12	1/1	10	1	3	16K	-27	159.0/23.3	31.4/-19.2
	186/17:25:32	BLU/T	ISDR 84		0/0	10	1	78.82	49.20	1	FN0084/13	VLE003/013
22I100/1007	12:12:10	CLR/T	300.0/310.0	-20	0.12	2/1	10	1	3	16K	-27	159.0/23.3	31.4/-19.2
	186/17:25:32	GRN/T	ISDR 84		0/0	10	1	86.68	47.85	1	FN0084/14	VLE003/014
22I100/1007	12:12:10	CLR/T	300.0/310.0	-20	0.12	3/1	11	1	3	16K	-27	159.0/23.3	31.4/-19.2
	186/17:25:32	RED/T	ISDR 84		0/0	11	1	99.57	43.72	1	FN0084/15	VLE003/015
22I101/1017	12:12:09	CLR/T	300.0/310.0	-20	0.12	1/1	2	1	4	16K	°-31	158.1/25.1	30.3/-20.9
	197/00:01:24	BLU/T	ISDR 84		0/0	2	2	56.83	41.98	1	FN0084/16	VLE003/016
22I101/1017	12:12:09	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	4	16K	-31	158.1/25.1	30.3/-20.9
	197/00:01:24	GRN/T	ISDR 84		0/0	1	1	57.33	39.96	1	FN0084/17	VLE003/017
22I101/1017	12:12:09	CLR/T	300.0/310.0	-20	0.12	3/1	2	1	4	16K	-31	158.1/25.1	30.3/-20.9
	197/00:01:24	RED/T	ISDR 84		0/0	2	1	63.97	34.22	1	FN0084/18	VLE003/018
22I102/1027	12:12:10	CLR/T	300.0/310.0	-20	0.12	1/1	1	1	4	16K	-27	157.4/27.0	29.4/-22.7
	207/06:37:17	BLU/T	ISDR 84		0/0	1	1	56.82	41.10	1	FN0084/19	VLE003/019
22I102/1027	12:12:10	CLR/T	300.0/310.0	-20	0.12	2/1	1	1	4	16K	-27	157.4/27.0	29.4/-22.7
	207/06:37:17	GRN/T	ISDR 84		0/0	1	1	58.50	39.92	1	FN0084/20	VLE003/020
22I102/1027	12:12:10	CLR/T	300.0/310.0	-20	0.12	3/1	1	1	4	16K	-27	157.4/27.0	29.4/-22.7
	207/06:37:17	RED/T	ISDR 84		0/0	1	1	65.93	34.41	1	FN0084/21	VLE003/021
22I103/1028	11:53:09	CLR/T	80.0/170.0	-30	0.12	1/1	188	1	4	16K	-27	152.6/25.9	24.8/-21.0
	208/06:57:52	BLU/T	ISDR 751		0/0	188	1	68.46	46.09	1	FN0084/22	VLE003/022
22I103/1028	11:53:09	CLR/T	80.0/170.0	-30	0.12	2/1	188	1	4	16K	-27	152.6/25.9	24.8/-21.0
	208/06:57:52	GRN/T	ISDR 751		0/0	188	1	76.37	45.40	1	FN0084/23	VLE003/023
22I103/1028	11:53:09	CLR/T	80.0/170.0	-30	0.12	3/1	189	1	4	16K	-27	152.6/25.9	24.8/-21.0
	208/06:57:52	RED/T	ISDR 751		0/0	189	2	93.58	42.47	1	FN0084/24	VLE003/024
22I104/1029	12:13:43	CLR/T	265.0/342.5	-10	0.12	1/1	1	1	2	16K	-29	157.7/27.5	29.6/-23.2
	209/07:58:01	BLU/T	ISDR 647		0/0	1	1	141.30	49.32	1	FN0084/25	VLE003/025
22I104/1029	12:13:43	CLR/T	265.0/342.5	-10	0.12	2/1	1	1	2	16K	-29	157.7/27.5	29.6/-23.2
	209/07:58:01	GRN/T	ISDR 647		0/0	1	1	153.86	45.31	1	FN0084/26	VLE003/026
22I104/1029	12:13:43	CLR/T	265.0/342.5	-10	0.12	3/1	2	1	2	16K	-29	157.7/27.5	29.6/-23.2
	209/07:58:01	RED/T	ISDR 647		0/0	2	1	175.39	39.14	1	FN0084/27	VLE003/027
22I105/1030	12:13:45	CLR/T	265.0/342.5	-10	0.12	1/1	63	1	4	16K	-25	157.7/27.8	29.5/-23.4
	210/08:37:38	BLU/T	ISDR 647		0/0	63	2	76.54	56.38	1	FN0085/1	VLE003/028
22I105/1030	12:13:45	CLR/T	265.0/342.5	-10	0.12	2/1	64	1	4	16K	-25	157.7/27.8	29.5/-23.4
	210/08:37:38	GRN/T	ISDR 647		0/0	64	3	79.33	54.81	1	FN0085/2	VLE003/029
22I105/1030	12:13:45	CLR/T	265.0/342.5	-10	0.12	3/1	65	1	4	16K	-25	157.7/27.8	29.5/-23.4
	210/08:37:38	RED/T	ISDR 647		0/0	65	3	86.54	51.57	1	FN0085/3	VLE003/030
21I106/1033	11:44:07	CLR/T	190.0/310.0	-20	0.12	1/1	0	1	2	16K	-31	149.9/26.2	198.3/-21.0
	213/10:06:46	BLU/T	ISDR 1001		0/0	0	0	153.80	46.91	2	FN0085/4	VLE003/031

VL-2 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	SCAN RATE	PSA TEMP (C)	SOLAR AZ/EL	ANTISOLAR AZ/EL
		DATA RECORD	TOTAL LINES	RESCAN START/TOTAL		LINES MISSED	GAPS	AVE DN VALUE	STAND DEV.	NO. SEGMENTS	EDR TAPE/FILE	ARCHIVE TAPE/FILE
21I106/1033	11:44:07	CLR/T	190.0/310.0	-20	0.12	2/1	1	2	16K	-31	149.9/26.2	198.3/-21.0
	213/10:06:46	GRN/T	ISDR 1001		0/0	1	1	1 166.27	46.61	2	FN0085/5	VLE003/032
21I106/1033	11:44:07	CLR/T	190.0/310.0	-20	0.12	3/1	1	2	16K	-31	149.9/26.2	198.3/-21.0
	213/10:06:46	RED/T	ISDR 1001		0/0	1	1	1 173.53	43.00	2	FN0085/6	VLE003/033
21I107/1033	12:16:48	SINGLE	190.0/310.0	-20	0.04	13/2	1	3	16K	-27	158.3/28.6	206.0/-24.3
	213/10:39:27	BB3	ISDR 3168		3001/168	0	1	0 134.32	37.83	5	FN0085/7	VLE003/034
21I108/1033	12:28:44	SINGLE	190.0/310.0	-20	0.04	13/2	1	2	16K	-25	161.5/29.2	208.9/-25.4
	213/10:51:23	BB3	ISDR 3167		3001/167	3	1	3 181.34	37.49	5	FN0085/8	VLE003/035
22I109/1050	13:00:27	CLR/T	65.0/340.0	-20	0.12	1/1	1	4	16K	-19	170.0/34.2	40.2/-31.4
	230/22:36:05	BLU/T	ISDR 2293		0/0	326	1	2 85.76	52.70	3	FN0085/9	VLE003/036
22I109/1050	13:00:27	CLR/T	65.0/340.0	-20	0.12	2/1	1	4	16K	-19	170.0/34.2	40.2/-31.4
	230/22:36:05	GRN/T	ISDR 2293		0/0	326	1	2 91.35	52.83	3	FN0085/10	VLE003/037
22I109/1050	13:00:27	CLR/T	65.0/340.0	-20	0.12	3/1	1	4	16K	-19	170.0/34.2	40.2/-31.4
	230/22:36:05	RED/T	ISDR 2293		0/0	329	1	4 103.06	54.75	3	FN0085/11	VLE003/038
21I110/1050	13:43:27	SINGLE	140.0/330.0	-10	0.04	5/2	1	4	16K	-15	182.6/34.7	228.3/-33.5
	230/23:19:05	BB4	ISDR 4780		4751/30	3	1	2 114.84	35.07	7	FN0086/1	VLE003/039
21I111/1050	14:01:07	SINGLE	150.0/302.5	-30	0.04	13/2	1	4	16K	-13	187.8/34.4	233.4/-34.0
	230/23:36:45	BB3	ISDR 4780		3814/967	132	1	5 86.19	36.02	7	FN0086/2	VLE003/040
22I112											FN0086/3	VLE003/041
22I113											FN0086/4	VLE003/042
22I114											FN0086/5	VLE003/043
22I115											FN0086/6	VLE003/044
21I116/1138	16:30:00	SINGLE	240.0/282.5	-30	0.04	0/2	1	4	16K	2	244.8/34.7	292.3/-41.5
	321/12:09:20	BB2	ISDR 1064		0/0	508	1	3 86.33	17.67	2	FN0086/7	VLE003/045
21I117/1140	09:30:14	SINGLE	155.0/310.0	-20	0.04	13/2	1	4	16K	-7	111.7/32.8	161.8/-24.8
	323/06:28:45	BB3	ISDR 3876		0/0	1990	1	7 73.86	30.91	5	FN0086/8	VLE003/046
22I118/1140	10:05:09	SINGLE	80.0/165.0	-50	0.04	8/2	1	4	16K	-9	119.8/37.9	353.0/-30.3
	323/07:03:40	BB1	ISDR 2126		0/0	135	1	6 83.78	31.85	3	FN0086/9	VLE003/047
22I119/1140	10:12:56	SINGLE	80.0/165.0	-30	0.04	0/2	1	4	16K	0	121.7/39.0	354.6/-31.5
	323/07:11:27	BB2	ISDR 2126		0/0	1821	1	3 89.65	41.40	3	FN0086/10	VLE003/048
22I120											FN0086/11	VLE003/049
22I121/1142	11:00:00	CLR/T	305.0/310.0	-20	0.12	1/1	1	4	16K	-13	134.5/45.5	5.4/-38.7
	325/09:17:41	BLU/T	ISDR 43		0/0	17	1	2 80.22	49.01	1	FN0087/1	VLE003/050
22I121/1142	11:00:00	CLR/T	305.0/310.0	-20	0.12	2/1	1	4	16K	-13	134.5/45.5	5.4/-38.7
	325/09:17:41	GRN/T	ISDR 43		0/0	17	1	2 94.52	56.61	1	FN0087/2	VLE003/051
22I121/1142	11:00:00	CLR/T	305.0/310.0	-20	0.12	3/1	1	4	16K	-13	134.5/45.5	5.4/-38.7
	325/09:17:41	RED/T	ISDR 43		0/0	18	1	2 112.75	57.10	1	FN0087/3	VLE003/052
22I122/1142	11:02:30	IR/T	305.0/310.0	-20	0.12	9/1	1	4	16K	-13	135.2/45.8	6.0/-39.1
	325/09:20:11	IR3/T	ISDR 43		0/0	1	1	1 75.11	39.82	1	FN0087/4	VLE003/053
22I122/1142	11:02:30	IR/T	305.0/310.0	-20	0.12	10/1	1	4	16K	-13	135.2/45.8	6.0/-39.1
	325/09:20:11	IR2/T	ISDR 43		0/0	2	1	1 72.83	38.81	1	FN0087/5	VLE003/054
22I122/1142	11:02:30	IR/T	305.0/310.0	-20	0.12	11/1	1	4	16K	-13	135.2/45.8	6.0/-39.1
	325/09:20:11	IR1/T	ISDR 43		0/0	2	1	1 84.59	43.27	1	FN0087/6	VLE003/055
22I123/1142	11:05:00	CLR/T	142.5/165.0	-30	0.12	1/1	1	4	16K	-11	136.0/46.1	6.7/-39.4
	325/09:22:41	BLU/T	ISDR 189		0/0	1	1	1 60.44	25.84	1	FN0087/7	VLE003/056
22I123/1142	11:05:00	CLR/T	142.5/165.0	-30	0.12	2/1	1	4	16K	-11	136.0/46.1	6.7/-39.4
	325/09:22:41	GRN/T	ISDR 189		0/0	2	1	2 68.26	32.12	1	FN0087/8	VLE003/057
22I123/1142	11:05:00	CLR/T	142.5/165.0	-30	0.12	3/1	1	4	16K	-11	136.0/46.1	6.7/-39.4
	325/09:22:41	RED/T	ISDR 189		0/0	3	1	2 91.20	44.20	1	FN0087/9	VLE003/058
22I124/1142	11:11:00	IR/T	142.5/165.0	-30	0.12	9/1	1	4	16K	-11	137.8/46.7	8.2/-40.2
	325/09:28:41	IR3/T	ISDR 189		0/0	1	1	1 75.65	44.69	1	FN0087/10	VLE003/059
22I124/1142	11:11:00	IR/T	142.5/165.0	-30	0.12	10/1	1	4	16K	-11	137.8/46.7	8.2/-40.2
	325/09:28:41	IR2/T	ISDR 189		0/0	2	1	1 74.13	43.84	1	FN0087/11	VLE003/060
22I124/1142	11:11:00	IR/T	142.5/165.0	-30	0.12	11/1	1	4	16K	-11	137.8/46.7	8.2/-40.2
	325/09:28:41	IR1/T	ISDR 189		0/0	2	1	1 86.64	51.05	1	FN0087/12	VLE003/061
21I125/1150	16:30:00	SINGLE	240.0/282.5	-30	0.04	0/2	1	4	16K	4	247.5/35.7	295.1/-42.6
	333/20:04:23	BB2	ISDR 1064		1064/1	0	1	0 85.55	21.56	2	FN0087/13	VLE003/062

VL-2 CAMERA EVENT REPORT

CE LABEL	LOCAL LANDER TIME / GMT	TYPE / DIODE	AZIMUTH START/STOP	ELEV. POINT ANGLE	STEP SIZE	CHAN MODE	OFFSET	GAIN	AVE DN VALUE	SCAN RATE / STAND DEV.	PSA TEMP (C) / NO. SEGMENTS	SOLAR AZ/EL / EDR TAPE/FILE	ANTISOLAR AZ/EL / ARCHIVE TAPE/FILE
			DATA RECORD	TOTAL LINES	RESCAN START/TOTAL	LINES MISSED	GAPS						
21I126/1170	16:29:59	SINGLE	240.0/282.5	-30	0.04	0/2	1	4		16K	4	251.7/37.0	299.6/-44.3
	354/09:16:08	BB2	ISDR 1064		0/0	188	2	96.87	28.81		2	FN0087/14	VLE003/063
21I127/1177	07:20:00	SINGLE	160.0/310.0	-10	0.04	5/2	1	4		16K	-11	84.7/18.5	136.3/-10.5
	361/04:43:15	BB4	ISDR 3751		0/0	186	4	58.45	37.89		5	FN0087/15	VLE003/064
22I128/1177	07:54:56	SINGLE	80.0/165.0	-50	0.04	8/2	1	4		16K	-15	90.9/24.2	326.4/-16.0
	361/05:18:10	BB1	ISDR 3576		2126/1451	2066	4	53.62	25.03		3	FN0087/16	VLE003/065
22I129/1177	08:02:42	SINGLE	60.0/165.0	-30	0.04	0/2	1	4		16K	-13	92.3/25.4	327.8/-17.3
	361/05:25:57	BB2	ISDR 2126		0/0	126	1	60.30	31.56		3	FN0087/17	VLE003/066
22I130/1177	08:10:29	SINGLE	65.0/342.5	-10	0.04	5/2	1	4		16K	-11	93.7/26.7	329.1/-18.5
	361/05:33:44	BB4	ISDR 6939		0/0	2943	4	78.47	61.84		6	FN0087/18	VLE003/067
22I131/1180	08:23:18	SINGLE	150.0/152.5	30	0.04	4/2	1	3		16K	-11	96.0/29.3	331.3/-21.1
	364/07:45:19	SUN	ISDR 64		64/1	50	1	33.39	29.43		1	FN0087/19	VLE003/068
22I132/1180	17:58:51	SINGLE	325.0/327.5	30	0.04	4/2	1	3		16K	4	270.9/23.2	145.6/-31.4
	364/17:20:52	SUN	ISDR 64		64/1	0	0	30.51	26.41		1	FN0087/20	VLE003/069
21I133/1186	12:27:59	SINGLE	180.0/212.5	-40	0.04	8/2	1	4		16K	0	169.5/60.2	208.4/-56.8
	005/15:47:31	BB1	ISDR 814		814/1	0	0	106.20	38.30		1	FN0088/1	VLE003/070
21I134/1189	12:42:59	SINGLE	245.0/260.0	-20	0.04	13/2	1	4		16K	2	176.9/60.9	214.7/-58.4
	008/18:01:17	BB3	ISDR 376		376/1	0	0	120.30	31.82		1	FN0088/2	VLE003/071
21I135/1192	17:53:58	SINGLE	240.0/245.0	-30	0.04	0/2	1	4		16K	6	272.0/24.5	322.7/-32.7
	012/01:11:02	BB2	ISDR 128		126/3	0	0	62.13	24.16		1	FN0088/3	VLE003/072
21I136/1193	10:44:58	SINGLE	240.0/245.0	-30	0.04	0/2	1	4		16K	-3	129.2/52.5	175.8/-45.3
	012/18:41:37	BB2	ISDR 128		126/3	0	0	77.53	33.93		1	FN0088/4	VLE003/073
21I137/1193	10:44:58	SINGLE	170.0/170.0	0	0.	7/7	1	2		16K	-3	*****/****	/
	012/18:41:37	UN07/C	ISDR 61		0/0	0	0	0.00	0.00		1	FN0088/5	VLE003/074
22I138/1195	08:12:50	SINGLE	147.5/150.0	30	0.04	4/2	1	3		16K	-13	93.4/29.7	328.8/-21.5
	014/17:28:40	SUN	ISDR 64		64/1	0	0	55.78	43.03		1	FN0088/6	VLE003/075
21I139/1195	13:02:00	CLR/T	140.0/165.0	-30	0.12	1/1	1	4		16K	4	186.9/61.5	223.4/-60.3
	014/22:17:50	BLU/T	ISDR 209		0/0	0	0	68.87	38.40		1	FN0088/7	VLE003/076
21I139/1195	13:02:00	CLR/T	140.0/165.0	-30	0.12	2/1	1	4		16K	4	186.9/61.5	223.4/-60.3
	014/22:17:50	GRN/T	ISDR 209		0/0	0	0	79.40	46.87		1	FN0088/8	VLE003/077
21I139/1195	13:02:00	CLR/T	140.0/165.0	-30	0.12	3/1	1	4		16K	4	186.9/61.5	223.4/-60.3
	014/22:17:50	RED/T	ISDR 209		0/0	1	1	79.32	41.17		1	FN0088/9	VLE003/078
21I140/1195	13:02:00	SINGLE	170.0/170.0	0	0.	7/7	1	2		16K	4	*****/****	/
	014/22:17:50	UN07/C	ISDR 59		0/0	0	0	0.00	0.00		1	FN0088/10	VLE003/079
21I141/1195	13:02:00	SINGLE	170.0/170.0	0	0.	7/7	1	2		16K	4	*****/****	/
	014/22:17:50	UN07/C	ISDR 61		0/0	0	0	0.00	0.00		1	FN0088/11	VLE003/080
21I142/1195	13:13:00	IR/T	140.0/165.0	-30	0.12	9/1	1	4		16K	4	192.2/61.2	228.5/-60.8
	014/22:28:50	IR3/T	ISDR 209		0/0	39	2	61.86	31.86		1	FN0088/12	VLE003/081
21I142/1195	13:13:00	IR/T	140.0/165.0	-30	0.12	10/1	1	4		16K	4	192.2/61.2	228.5/-60.8
	014/22:28:50	IR2/T	ISDR 209		0/0	41	3	61.45	31.66		1	FN0088/13	VLE003/082
21I142/1195	13:13:00	IR/T	140.0/165.0	-30	0.12	11/1	1	4		16K	4	192.2/61.2	228.5/-60.8
	014/22:28:50	IR1/T	ISDR 209		0/0	40	2	70.78	37.44		1	FN0088/14	VLE003/083
21I143/1195	13:13:00	SINGLE	170.0/170.0	0	0.	7/7	1	2		16K	4	*****/****	/
	014/22:28:50	UN07/C	ISDR 60		0/0	0	0	0.00	0.00		1	FN0088/15	VLE003/084
22I144/1195	17:58:27	SINGLE°	327.5/330.0	30	0.04	4/2	1	3		16K	4	273.2/23.9	148.0/-32.1
	015/03:14:17	SUN	ISDR 64		0/0	2	1	64.23	45.16		1	FN0088/16	VLE003/085
22I145/1195	18:22:58	SINGLE	137.5/157.5	-30	0.04	0/2	1	4		16K	4	277.5/19.9	152.6/-28.1
	015/03:38:48	BB2	ISDR 501		0/0	1	1	74.37	41.47		1	FN0088/17	VLE003/086
22I146/1210	08:01:34	SINGLE	145.0/147.5	30	0.04	4/2	1	3		16K	-9	90.7/29.8	326.3/-21.6
	030/03:11:12	SUN	ISDR 64		0/0	2	1	59.05	42.76		1	FN0088/18	VLE003/087
22I147/1210	17:59:44	SINGLE	330.0/332.5	30	0.04	4/2	1	3		16K	6	275.5/24.1	150.5/-32.3
	030/13:09:23	SUN	ISDR 64		0/0	2	1	55.95	42.15		1	FN0088/19	VLE003/088
21I148/1212	06:23:56	SINGLE	155.0/310.0	-20	0.04	13/2	1	4		16K	2	73.8/14.3	125.6/-6.8
	032/02:52:45	BB3	ISDR 3876		0/0	1653	26	55.59	44.59		5	FN0088/20	VLE003/089
22I149/1212	06:58:51	SINGLE	80.0/165.0	-50	0.04	8/2	1	4		16K	-13	79.7/19.8	315.6/-12.0
	032/03:27:40	BB1	ISDR 2126		0/0	129	3	44.40	21.48		3	FN0088/21	VLE003/090
22I150/1212	07:06:38	SINGLE	80.0/165.0	-30	0.04	0/2	1	4		16K	-11	81.0/21.1	316.9/-13.2
	032/03:35:27	BB2	ISDR 2126		0/0	918	1	50.09	27.09		3	FN0088/22	VLE003/091

VL-2 CAMERA EVENTS NOT RECEIVED

VL-2 CAMERA EVENTS(IMAGES) NOT RECEIVED ON EARTH

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
22I112										
22I113										
22I114										
22I115										
22I120										

VL-2 HIGH RESOLUTION CAMERA EVENTS IN EVENT ORDER

VL-2 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY EVENT ORDER

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
21I107/1033	12:16:48	BB3	190.0	310.0	-20	0.04	1	3	158.3	28.6
21I108/1033	12:28:44	BB3	190.0	310.0	-20	0.04	1	2	161.5	29.2
21I110/1050	13:43:27	BB4	140.0	330.0	-10	0.04	1	4	182.6	34.7
21I111/1050	14:01:07	BB3	150.0	302.5	-30	0.04	1	4	187.8	34.4
21I116/1138	16:30:00	BB2	240.0	282.5	-30	0.04	1	4	244.8	34.7
21I117/1140	09:30:14	BB3	155.0	310.0	-20	0.04	1	4	111.7	32.8
22I118/1140	10:05:09	BB1	80.0	165.0	-50	0.04	1	4	119.8	37.9
22I119/1140	10:12:56	BB2	80.0	165.0	-30	0.04	1	4	121.7	39.0
21I125/1150	16:30:00	BB2	240.0	282.5	-30	0.04	1	4	247.5	35.7
21I126/1170	16:29:59	BB2	240.0	282.5	-30	0.04	1	4	251.7	37.0
21I127/1177	07:20:00	BB4	160.0	310.0	-10	0.04	1	4	84.7	18.5
22I128/1177	07:54:56	BB1	80.0	165.0	-50	0.04	1	4	90.9	24.2
22I129/1177	08:02:42	BB2	80.0	165.0	-30	0.04	1	4	92.3	25.4
22I130/1177	08:10:29	BB4	65.0	342.5	-10	0.04	1	4	93.7	26.7
22I131/1180	08:23:18	SUN	150.0	152.5	30	0.04	1	3	96.0	29.3
22I132/1180	17:58:51	SUN	325.0	327.5	30	0.04	1	3	270.9	23.2
21I133/1186	12:27:59	BB1	180.0	212.5	-40	0.04	1	4	169.5	60.2
21I134/1189	12:42:59	BB3	245.0	260.0	-20	0.04	1	4	176.9	60.9
21I135/1192	17:53:58	BB2	240.0	245.0	-30	0.04	1	4	272.0	24.5
21I136/1193	10:44:58	BB2	240.0	245.0	-30	0.04	1	4	129.2	52.5
22I138/1195	08:12:50	SUN	147.5	150.0	30	0.04	1	3	93.4	29.7
22I144/1195	17:58:27	SUN	327.5	330.0	30	0.04	1	3	273.2	23.9
22I145/1195	18:22:58	BB2	137.5	157.5	-30	0.04	1	4	277.5	19.9
22I146/1210	08:01:34	SUN	145.0	147.5	30	0.04	1	3	90.7	29.8
22I147/1210	17:59:44	SUN	330.0	332.5	30	0.04	1	3	275.5	24.1
21I148/1212	06:23:56	BB3	155.0	310.0	-20	0.04	1	4	73.8	14:3
22I149/1212	06:58:51	BB1	80.0	165.0	-50	0.04	1	4	79.7	19.8
22I150/1212	07:06:38	BB2	80.0	165.0	-30	0.04	1	4	81.0	21.1

VL-2 HIGH RESOLUTION CAMERA EVENTS SORTED BY SUN AZIMUTH/ELEVATION

VL-2 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 89 AZ 160 TO 170 EL 60 TO 70										
21I133/1186	12:27:59	BB1	180.0	212.5	-40	0.04	1	4	169.5	60.2
BOX 90 AZ 170 TO 180 EL 60 TO 70										
21I134/1189	12:42:59	BB3	245.0	260.0	-20	0.04	1	4	176.9	60.9
BOX 121 AZ 120 TO 130 EL 50 TO 60										
21I136/1193	10:44:58	BB2	240.0	245.0	-30	0.04	1	4	129.2	52.5
BOX 192 AZ 110 TO 120 EL 30 TO 40										
21I117/1140	09:30:14	BB3	155.0	310.0	-20	0.04	1	4	111.7	32.8
22I118/1140	10:05:09	BB1	80.0	165.0	-50	0.04	1	4	119.8	37.9
BOX 193 AZ 120 TO 130 EL 30 TO 40										
22I119/1140	10:12:56	BB2	80.0	165.0	-30	0.04	1	4	121.7	39.0
BOX 199 AZ 180 TO 190 EL 30 TO 40										
21I110/1050	13:43:27	BB4	140.0	330.0	-10	0.04	1	4	182.6	34.7
21I111/1050	14:01:07	BB3	150.0	302.5	-30	0.04	1	4	187.8	34.4
BOX 205 AZ 240 TO 250 EL 30 TO 40										
21I116/1138	16:30:00	BB2	240.0	282.5	-30	0.04	1	4	244.8	34.7
21I125/1150	16:30:00	BB2	240.0	282.5	-30	0.04	1	4	247.5	35.7
BOX 206 AZ 250 TO 260 EL 30 TO 40										
21I126/1170	16:29:59	BB2	240.0	282.5	-30	0.04	1	4	251.7	37.0
BOX 225 AZ 80 TO 90 EL 20 TO 30										
22I150/1212	07:06:38	BB2	80.0	165.0	-30	0.04	1	4	81.0	21.1

VL-2 HIGH-RESOLUTION CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 226 AZ 90 TO 100 EL 20 TO 30										
22I128/1177	07:54:56	BB1	80.0	165.0	-50	0.04	1	4	90.9	24.2
22I129/1177	08:02:42	BB2	80.0	165.0	-30	0.04	1	4	92.3	25.4
22I130/1177	08:10:29	BB4	65.0	342.5	-10	0.04	1	4	93.7	26.7
22I131/1180	08:23:18	SUN	150.0	152.5	30	0.04	1	3	96.0	29.3
22I138/1195	08:12:50	SUN	147.5	150.0	30	0.04	1	3	93.4	29.7
22I146/1210	08:01:34	SUN	145.0	147.5	30	0.04	1	3	90.7	29.8
BOX 232 AZ 150 TO 160 EL 20 TO 30										
21I107/1033	12:16:48	BB3	190.0	310.0	-20	0.04	1	3	158.3	28.6
BOX 233 AZ 160 TO 170 EL 20 TO 30										
21I108/1033	12:28:44	BB3	190.0	310.0	-20	0.04	1	2	161.5	29.2
BOX 244 AZ 270 TO 280 EL 20 TO 30										
21I135/1192	17:53:58	BB2	240.0	245.0	-30	0.04	1	4	272.0	24.5
22I132/1180	17:58:51	SUN	325.0	327.5	30	0.04	1	3	270.9	23.2
22I144/1195	17:58:27	SUN	327.5	330.0	30	0.04	1	3	273.2	23.9
22I147/1210	17:59:44	SUN	330.0	332.5	30	0.04	1	3	275.5	24.1
BOX 260 AZ 70 TO 80 EL 10 TO 20										
21I148/1212	06:23:56	BB3	155.0	310.0	-20	0.04	1	4	73.8	14.3
22I149/1212	06:58:51	BB1	80.0	165.0	-50	0.04	1	4	79.7	19.8
BOX 261 AZ 80 TO 90 EL 10 TO 20										
21I127/1177	07:20:00	BB4	160.0	310.0	-10	0.04	1	4	84.7	18.5
BOX 280 AZ 270 TO 280 EL 10 TO 20										
22I145/1195	18:22:58	BB2	137.5	157.5	-30	0.04	1	4	277.5	19.9

VL-2 VISUAL COLOR AND INFRARED TRIPLET CAMERA EVENTS

VL-2 TRIPLET CAMERA EVENTS
VISUAL COLOR AND INFRARED

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
22I096/967	12:29:59	CLR	300.0	310.0	-20	0.12	1	3	167.9	18.6
22I097/977	12:12:09	CLR	300.0	310.0	-20	0.12	1	3	162.4	18.9
22I098/987	12:12:10	CLR	300.0	310.0	-20	0.12	1	3	161.1	20.2
22I099/997	12:12:09	CLR	300.0	310.0	-20	0.12	1	3	160.0	21.6
22I100/1007	12:12:10	CLR	300.0	310.0	-20	0.12	1	3	159.0	23.3
22I101/1017	12:12:09	CLR	300.0	310.0	-20	0.12	1	4	158.1	25.1
22I102/1027	12:12:10	CLR	300.0	310.0	-20	0.12	1	4	157.4	27.0
22I103/1028	11:53:09	CLR	80.0	170.0	-30	0.12	1	4	152.6	25.9
22I104/1029	12:13:43	CLR	265.0	342.5	-10	0.12	1	2	157.7	27.5
22I105/1030	12:13:45	CLR	265.0	342.5	-10	0.12	1	4	157.7	27.8
21I106/1033	11:44:07	CLR	190.0	310.0	-20	0.12	1	2	149.9	26.2
22I109/1050	13:00:27	CLR	65.0	340.0	-20	0.12	1	4	170.0	34.2
22I121/1142	11:00:00	CLR	305.0	310.0	-20	0.12	1	4	134.5	45.5
22I122/1142	11:02:30	IR	305.0	310.0	-20	0.12	1	4	135.2	45.8
22I123/1142	11:05:00	CLR	142.5	165.0	-30	0.12	1	4	136.0	46.1
22I124/1142	11:11:00	IR	142.5	165.0	-30	0.12	1	4	137.8	46.7
21I139/1195	13:02:00	CLR	140.0	165.0	-30	0.12	1	4	186.9	61.5
21I142/1195	13:13:00	IR	140.0	165.0	-30	0.12	1	4	192.2	61.2

VL-2 VISUAL COLOR TRIPLET, IR TRIPLET, AND SURVEY CAMERA EVENTS SORTED BY SUN AZIMUTH/ELEVATION

VL-2 VISUAL COLOR TRIPLET, IR TRIPLET
AND SURVEY CAMERA EVENTS
SORTED BY SUN AZIMUTH/ELEVATION
(10 DEGREE BOXES)

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
BOX 91 AZ 180 TO 190 EL 60 TO 70										
21I139/1195	13:02:00	CLR	140.0	165.0	-30	0.12	1	4	186.9	61.5
BOX 92 AZ 190 TO 200 EL 60 TO 70										
21I142/1195	13:13:00	IR	140.0	165.0	-30	0.12	1	4	192.2	61.2
BOX 158 AZ 130 TO 140 EL 40 TO 50										
22I121/1142	11:00:00	CLR	305.0	310.0	-20	0.12	1	4	134.5	45.5
22I122/1142	11:02:30	IR	305.0	310.0	-20	0.12	1	4	135.2	45.8
22I123/1142	11:05:00	CLR	142.5	165.0	-30	0.12	1	4	136.0	46.1
22I124/1142	11:11:00	IR	142.5	165.0	-30	0.12	1	4	137.8	46.7
BOX 198 AZ 170 TO 180 EL 30 TO 40										
22I109/1050	13:00:27	CLR	65.0	340.0	-20	0.12	1	4	170.0	34.2
BOX 231 AZ 140 TO 150 EL 20 TO 30										
21I106/1033	11:44:07	CLR	190.0	310.0	-20	0.12	1	2	149.9	26.2
BOX 232 AZ 150 TO 160 EL 20 TO 30										
22I100/1007	12:12:10	CLR	300.0	310.0	-20	0.12	1	3	159.0	23.3
22I101/1017	12:12:09	CLR	300.0	310.0	-20	0.12	1	4	158.1	25.1
22I102/1027	12:12:10	CLR	300.0	310.0	-20	0.12	1	4	157.4	27.0
22I103/1028	11:53:09	CLR	80.0	170.0	-30	0.12	1	4	152.6	25.9
22I104/1029	12:13:43	CLR	265.0	342.5	-10	0.12	1	2	157.7	27.5
22I105/1030	12:13:45	CLR	265.0	342.5	-10	0.12	1	4	157.7	27.8
BOX 233 AZ 160 TO 170 EL 20 TO 30										
22I098/987	12:12:10	CLR	300.0	310.0	-20	0.12	1	3	161.1	20.2
22I099/997	12:12:09	CLR	300.0	310.0	-20	0.12	1	3	160.0	21.6
BOX 269 AZ 160 TO 170 EL 10 TO 20										
22I096/967	12:29:59	CLR	300.0	310.0	-20	0.12	1	3	167.9	18.6
22I097/977	12:12:09	CLR	300.0	310.0	-20	0.12	1	3	162.4	18.9

VL-2 SUN IMAGERY CAMERA EVENTS

VL-2 SUN IMAGERY CAMERA EVENTS

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
22I131/1180	08:23:18	SUN	150.0	152.5	30	0.04	1	3	96.0	29.3
22I132/1180	17:58:51	SUN	325.0	327.5	30	0.04	1	3	270.9	23.2
22I138/1195	08:12:50	SUN	147.5	150.0	30	0.04	1	3	93.4	29.7
22I144/1195	17:58:27	SUN	327.5	330.0	30	0.04	1	3	273.2	23.9
22I146/1210	08:01:34	SUN	145.0	147.5	30	0.04	1	3	90.7	29.8
22I147/1210	17:59:44	SUN	330.0	332.5	30	0.04	1	3	275.5	24.1

VL-2 CALIBRATION AND SCAN VERIFICATION CAMERA EVENTS

VL-2 CALIBRATION CAMERA EVENTS

CELABEL	LOCAL LANDER TIME	DIODE	AZIMUTH START	AZIMUTH STOP	ELEV. POINT ANGLE	STEP SIZE	OFFSET	GAIN	SUN AZIMUTH	SUN ELEV.
21I137/1193	10:44:58	CAL	170.0	170.0	0	0.	1	2	*****	****
21I140/1195	13:02:00	CAL	170.0	170.0	0	0.	1	2	*****	****
21I141/1195	13:02:00	CAL	170.0	170.0	0	0.	1	2	*****	****
21I143/1195	13:13:00	CAL	170.0	170.0	0	0.	1	2	*****	****

VL-2 ELEVATION COVERAGE CHARTS

VL-2

CAMERA 1 ELEVATION COVERAGE CHART

CAMERA 1 ELEV INTERVAL -20 TO -10 HI-RES	21I110/1050	13:43:27	BB4
	21I127/1177	07:20:00	BB4
CAMERA 1 ELEV INTERVAL -30 TO -20 HI-RES	21I107/1033	12:16:48	BB3
	21I108/1033	12:28:44	BB3
	21I117/1140	09:30:14	BB3
	21I134/1189	12:42:59	BB3
	21I148/1212	06:23:56	BB3
CAMERA 1 ELEV INTERVAL -30 TO -20 LO-RES	21I106/1033	11:44:07	CLR
CAMERA 1 ELEV INTERVAL -40 TO -30 HI-RES	21I111/1050	14:01:07	BB3
	21I116/1138	16:30:00	BB2
	21I125/1150	16:30:00	BB2
	21I126/1170	16:29:59	BB2
	21I135/1192	17:53:58	BB2
	21I136/1193	10:44:58	BB2
CAMERA 1 ELEV INTERVAL -40 TO -30 LO-RES	21I139/1195	13:02:00	CLR
	21I142/1195	13:13:00	IR
CAMERA 1 ELEV INTERVAL -50 TO -40 HI-RES	21I133/1186	12:27:59	BB1

VL-2

CAMERA 2 ELEVATION COVERAGE CHART

CAMERA 2	ELEV INTERVAL	30 TO 40	HI-RES	22I131/1180 08:23:18 SUN
				22I132/1180 17:58:51 SUN
				22I138/1195 08:12:50 SUN
				22I144/1195 17:58:27 SUN
				22I146/1210 08:01:34 SUN
				22I147/1210 17:59:44 SUN
CAMERA 2	ELEV INTERVAL	-20 TO -10	HI-RES	22I130/1177 08:10:29 BB4
CAMERA 2	ELEV INTERVAL	-20 TO -10	LO-RES	22I104/1029 12:13:43 CLR
				22I105/1030 12:13:45 CLR
CAMERA 2	ELEV INTERVAL	-30 TO -20	LO-RES	22I096/967 12:29:59 CLR
				22I097/977 12:12:09 CLR
				22I098/987 12:12:10 CLR
				22I099/997 12:12:09 CLR
				22I100/1007 12:12:10 CLR
				22I101/1017 12:12:09 CLR
				22I102/1027 12:12:10 CLR
				22I109/1050 13:00:27 CLR
				22I121/1142 11:00:00 CLR
				22I122/1142 11:02:30 IR
CAMERA 2	ELEV INTERVAL	-40 TO -30	HI-RES	22I119/1140 10:12:56 BB2
				22I129/1177 08:02:42 BB2
				22I145/1195 18:22:58 BB2
				22I150/1212 07:06:38 BB2
CAMERA 2	ELEV INTERVAL	-40 TO -30	LO-RES	22I103/1028 11:53:09 CLR
				22I123/1142 11:05:00 CLR
				22I124/1142 11:11:00 IR
CAMERA 2	ELEV INTERVAL	-60 TO -50	HI-RES	22I118/1140 10:05:09 BB1
				22I128/1177 07:54:56 BB1
				22I149/1212 06:58:51 BB1

VL-2 IPL PICTURE IDENTIFIERS
(EDR ORDER NUMBERS)

VL-2
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
22I096/967	BLU/T	80/08/29/105132
	GRN/T	80/08/29/105312
	RED/T	80/08/29/105503
22I097/977	BLU/T	80/08/29/105716
	GRN/T	80/08/29/105942
	RED/T	80/08/29/110214
22I098/987	BLU/T	80/08/29/110419
	GRN/T	80/08/29/110604
	RED/T	80/08/29/111155
22I099/997	BLU/T	80/08/29/111733
	GRN/T	80/08/29/112114
	RED/T	80/08/29/112436
22I100/1007	BLU/T	80/08/29/112728
	GRN/T	80/08/29/113053
	RED/T	80/08/29/113236
22I101/1017	BLU/T	80/08/29/113353
	GRN/T	80/08/29/114116
	RED/T	80/08/29/114329
22I102/1027	BLU/T	80/08/29/114533
	GRN/T	80/08/29/114734
	RED/T	80/08/29/114912
22I103/1028	BLU/T	80/08/29/115311
	GRN/T	80/08/29/115517
	RED/T	80/08/29/115713
22I104/1029	BLU/T	80/09/03/164830
	GRN/T	80/09/03/165003
	RED/T	80/09/03/165119
22I105/1030	BLU/T	80/09/03/165233
	GRN/T	80/09/03/165359
	RED/T	80/09/03/165546
21I106/1033	BLU/T	80/09/03/170402
		80/09/03/171215
	GRN/T	80/09/03/170502
		80/09/03/171354
	RED/T	80/09/03/171142
		80/09/03/171429
21I107/1033	BB3	80/09/03/171835
		80/09/03/171907
		80/09/03/171941
		80/09/03/172021
		80/09/03/172145

VL-2
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
21I108/1033	BB3	80/09/04/011914
		80/09/04/012021
		80/09/04/012419
		80/09/04/012811
		80/09/04/013010
22I109/1050	BLU/T	80/09/04/014308
		80/09/04/015119
		80/09/04/015336
	GRN/T	80/09/04/014533
		80/09/04/015153
		80/09/04/015405
	RED/T	80/09/04/014603
		80/09/04/015222
		80/09/04/015436
21I110/1050	BB4	80/09/04/015903
		80/09/04/020500
		80/09/04/020928
		80/09/04/020957
		80/09/04/021027
		80/09/04/021056
		80/09/04/021125
21I111/1050	BB3	80/09/05/001239
		80/09/05/001643
		80/09/05/001721
		80/09/05/001801
		80/09/05/001902
		80/09/05/001945
		80/09/05/002022
21I116/1138	BB2	80/09/03/154724
		80/09/03/154824
21I117/1140	BB3	80/09/03/155823
		80/09/03/160141
		80/09/03/160244
		80/09/03/160347
		80/09/03/160428
22I118/1140	BB1	80/09/03/160621
		80/09/03/160705
		80/09/03/160747
22I119/1140	BB2	80/09/03/161452
		80/09/03/161538
		80/09/03/161621
22I121/1142	BLU/T	80/09/03/162631
	GRN/T	80/09/03/162836
	RED/T	80/09/03/163044

VL-2
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

CELABEL	DIODE	IPLPICID
22I122/1142	IR1/T	80/09/03/234954
	IR2/T	80/09/03/234731
	IR3/T	80/09/03/163322
22I123/1142	BLU/T	80/09/03/235212
	GRN/T	80/09/03/235426
	RED/T	80/09/03/235754
22I124/1142	IR1/T	80/09/04/000328
	IR2/T	80/09/04/000215
	IR3/T	80/09/04/000057
21I125/1150	BB2	80/09/04/002305
		80/09/04/002604
21I126/1170	BB2	80/09/04/003141
		80/09/04/003504
21I127/1177	BB4	80/09/04/005731
		80/09/04/010113
		80/09/04/010501
		80/09/04/010639
		80/09/04/010931
22I128/1177	BB1	80/09/03/153840
		80/09/03/153956
		80/09/03/154044
22I129/1177	BB2	80/09/03/154718
		80/09/03/154809
		80/09/03/154851
22I130/1177	BB4	80/09/03/155820
		80/09/03/161707
		80/09/03/161745
		80/09/03/161827
		80/09/03/161904
		80/09/03/161949
22I131/1180	SUN	80/09/03/162429
22I132/1180	SUN	80/09/03/163245
21I133/1186	BB1	80/09/03/163638
21I134/1189	BB3	80/09/03/163815
21I135/1192	BB2	80/09/03/164016
21I136/1193	BB2	80/09/03/164145
21I137/1193	UN07/C	80/09/03/164333

VL-2
IPL PICTURE IDENTIFIER
(EDR ORDER NUMBER)

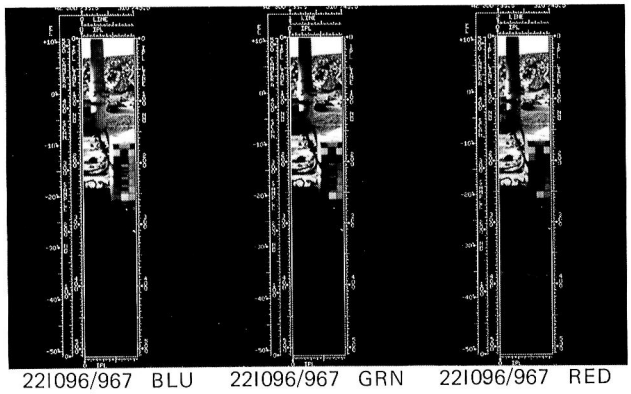
CELABEL	DIODE	IPLPICID
22I138/1195	SUN	80/09/03/164506
21I139/1195	BLU/T	80/09/03/165641
	GRN/T	80/09/03/165819
	RED/T	80/09/03/234226
21I140/1195	UN07/C	80/09/03/234605
21I141/1195	UN07/C	80/09/03/234956
21I142/1195	IR1/T	80/09/03/235758
	IR2/T	80/09/03/235427
	IR3/T	80/09/03/235214
21I143/1195	UN07/C	80/09/04/000100
22I144/1195	SUN	80/09/04/001336
22I145/1195	BB2	80/10/06/191207
22I146/1210	SUN	80/10/06/191329
22I147/1210	SUN	80/10/06/191447
21I148/1212	BB3	80/10/06/191803
		80/10/06/191844
		80/10/06/191924
		80/10/06/192517
		80/10/06/192553
22I149/1212	BB1	80/10/06/193219
		80/10/06/193258
		80/10/06/193354
22I150/1212	BB2	80/10/06/193824
		80/10/06/193903
		80/10/06/193943

VL-2 EXPERIMENT DATA RECORD IMAGES

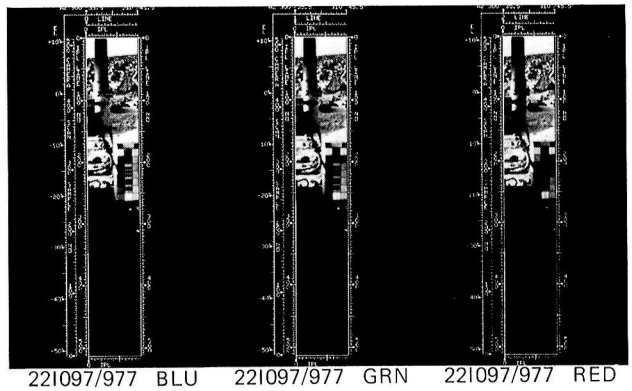
VL-2 EXPERIMENT DATA RECORD IMAGES

The following EDR image displays present the images in the order in which they were acquired by the lander. Each page contains eight display windows. These windows may include two or three EDR images; where segments of two successive camera events are small enough to be positioned as pairs in a window, this is done. The first and last camera events (or partial camera events) appearing on a page are indicated at the top of the page.

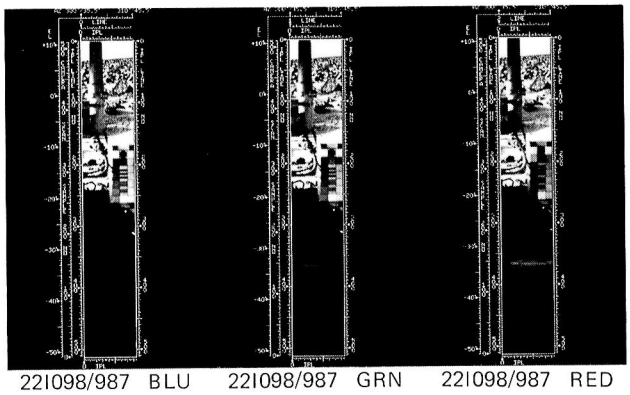
The photographic quality of the original EDR images is significantly reduced because of the limitations of space. The need to reproduce several images on each page also reduces the opportunity to maximize the reproduction quality. Nevertheless, these illustrations should serve as an invaluable tool for quickly locating certain photoproducts needed for specific purposes.



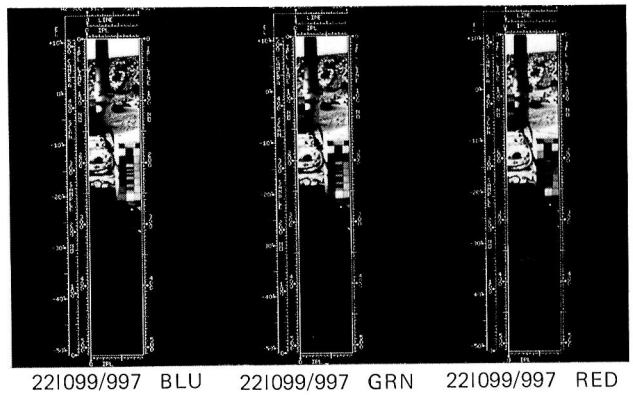
22I096/967 BLU 22I096/967 GRN 22I096/967 RED



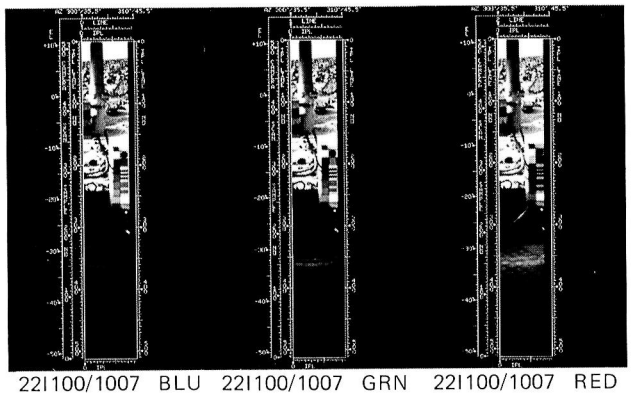
22I097/977 BLU 22I097/977 GRN 22I097/977 RED



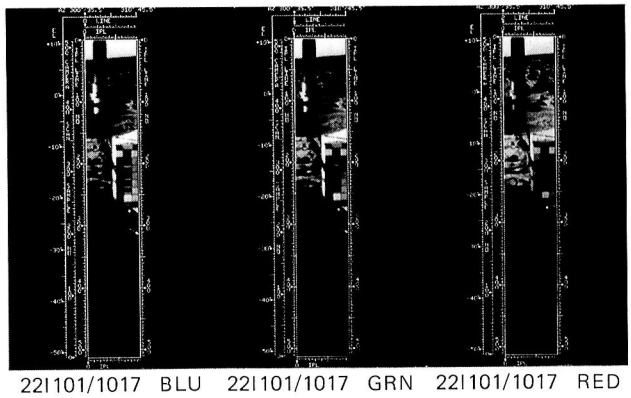
22I098/987 BLU 22I098/987 GRN 22I098/987 RED



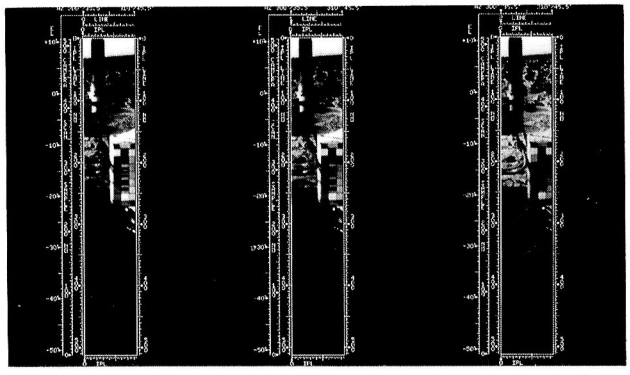
22I099/997 BLU 22I099/997 GRN 22I099/997 RED



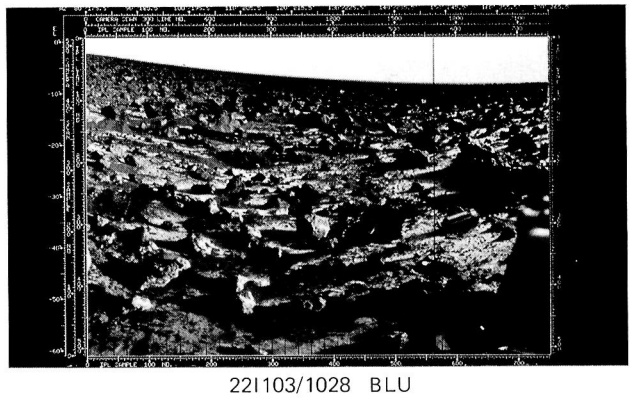
22I100/1007 BLU 22I100/1007 GRN 22I100/1007 RED



22I101/1017 BLU 22I101/1017 GRN 22I101/1017 RED

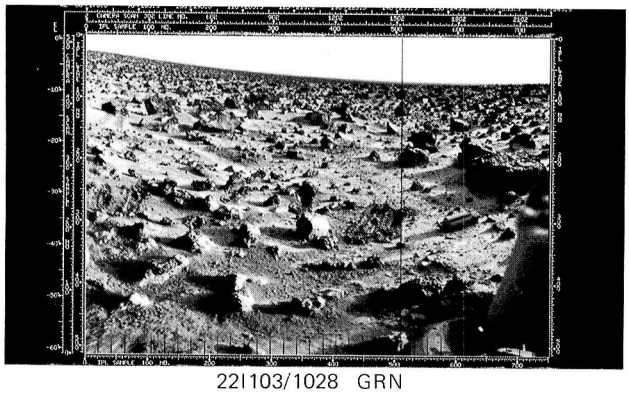


22I102/1027 BLU 22I102/1027 GRN 22I102/1027 RED

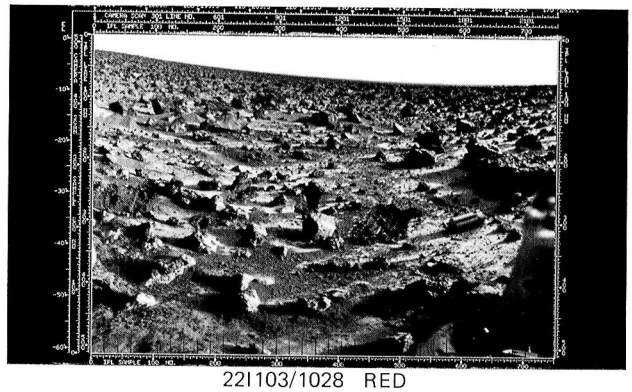


22I103/1028 BLU

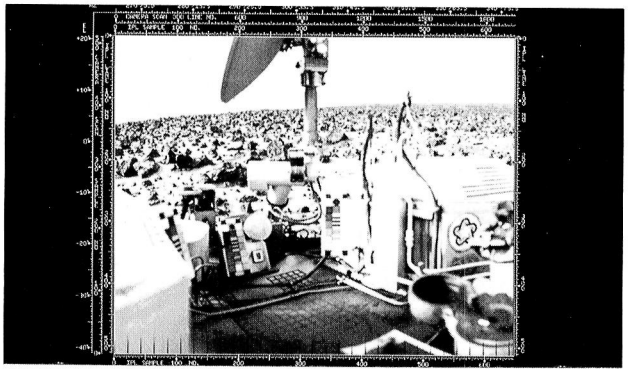
VL-2



22I103/1028 GRN

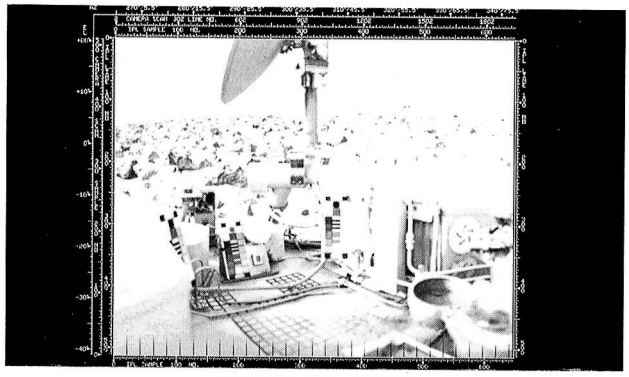


22I103/1028 RED

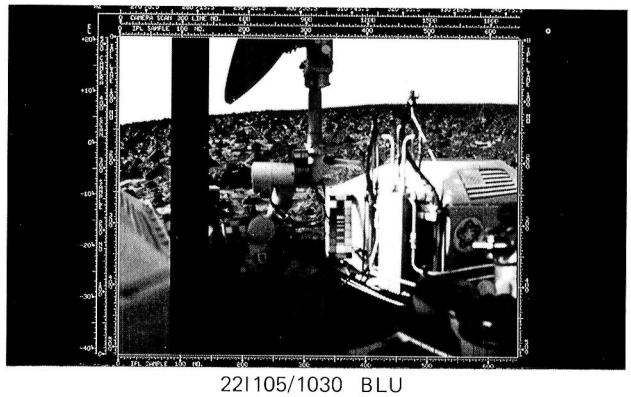


22I104/1029 BLU

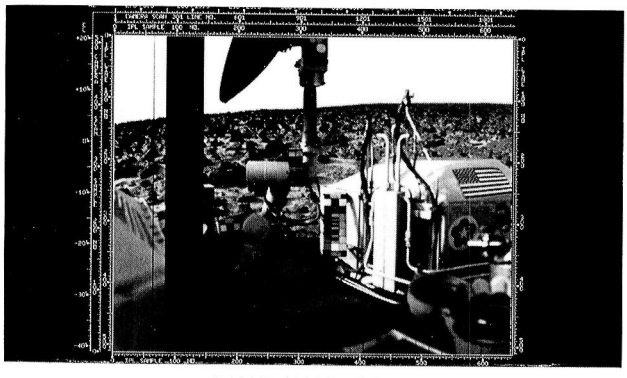
22I104/1029 GRN



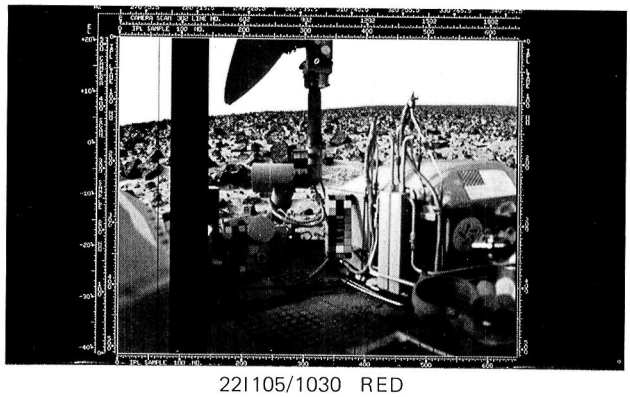
22I104/1029 RED



22I105/1030 BLU



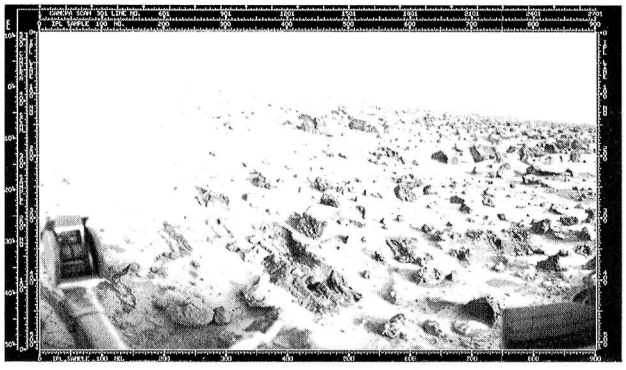
22I105/1030 GRN



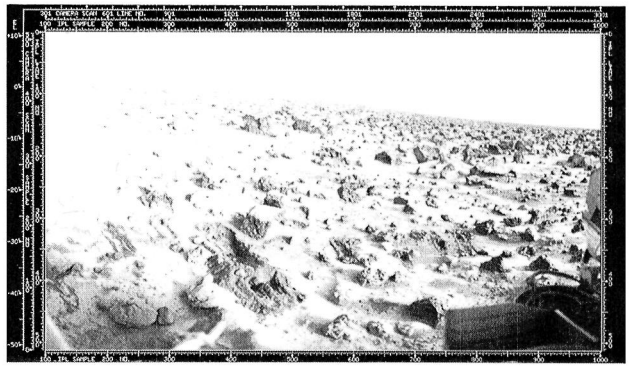
22I105/1030 RED

21I106/1033 BLU 1/2

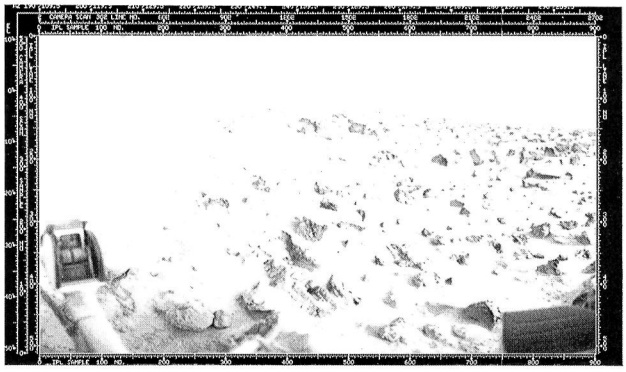
21I106/1033 BLU 2/2



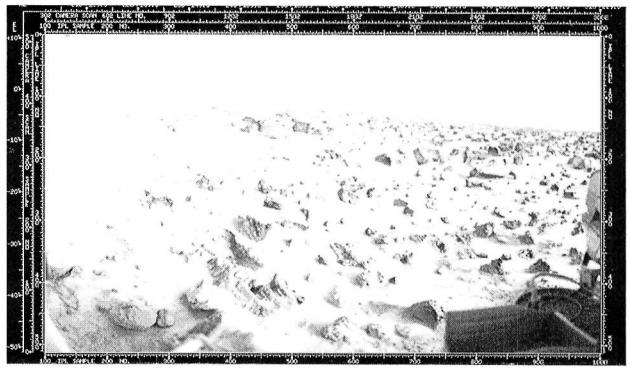
21I106/1033 GRN 1/2



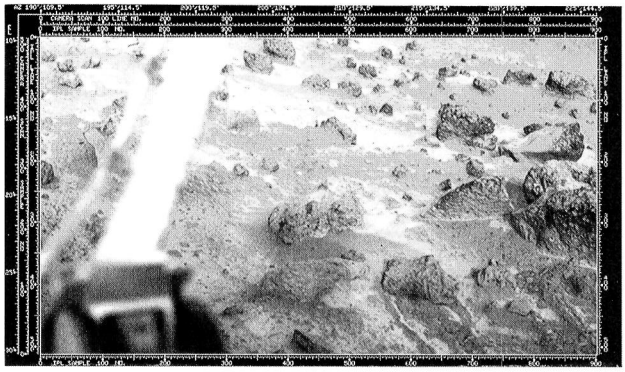
21I106/1033 GRN 2/2



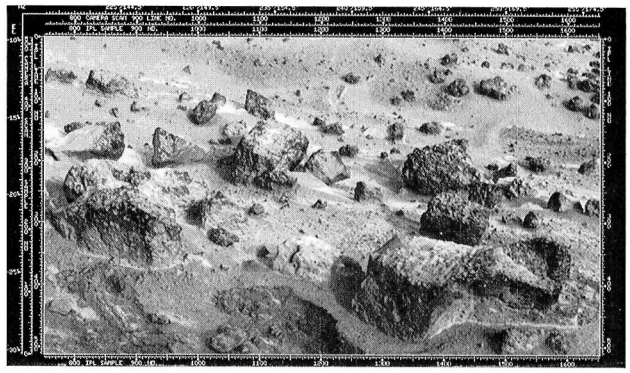
21I106/1033 RED 1/2



21I106/1033 RED 2/2

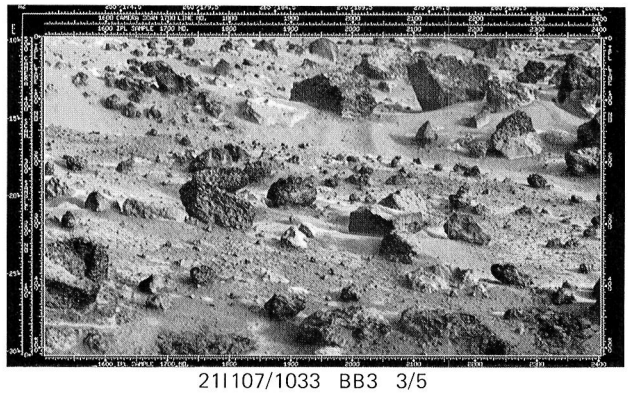


21I107/1033 BB3 1/5

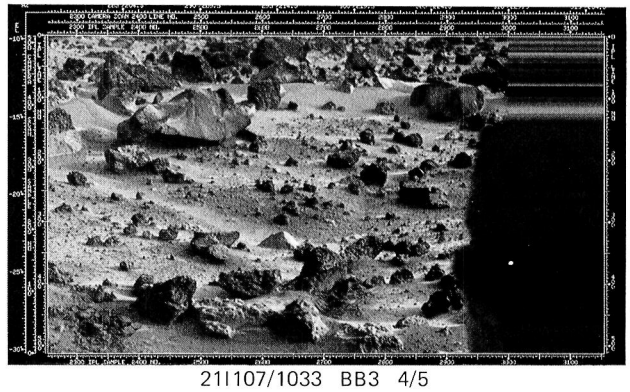


21I107/1033 BB3 2/5

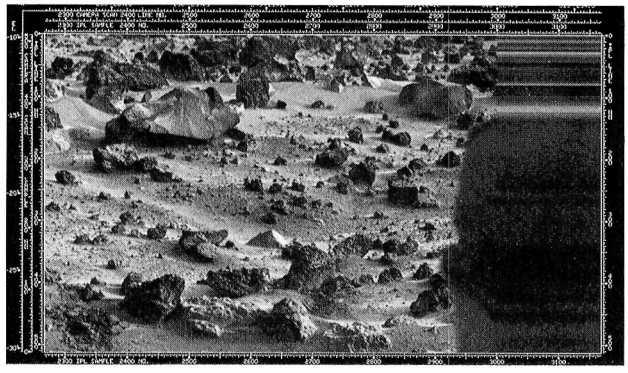
VL-2



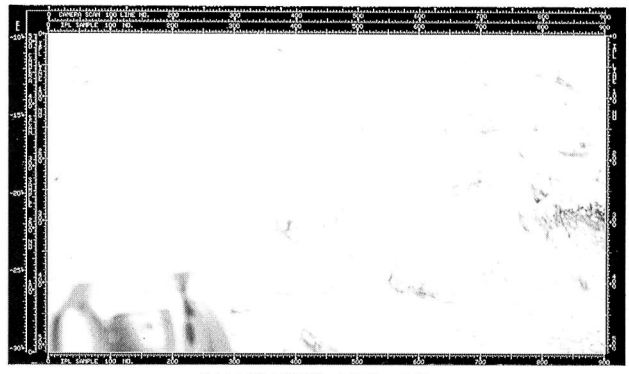
21I107/1033 BB3 3/5



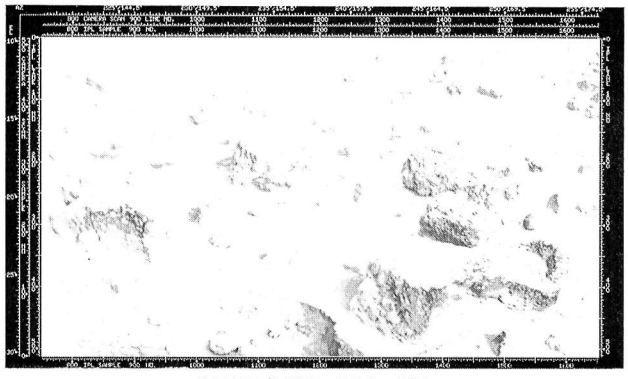
21I107/1033 BB3 4/5



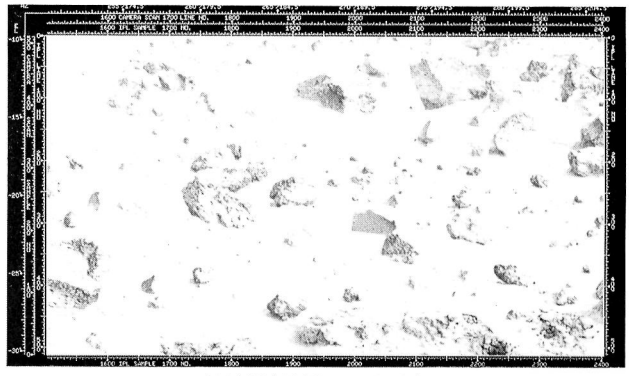
21I107/1033 BB3 5/5



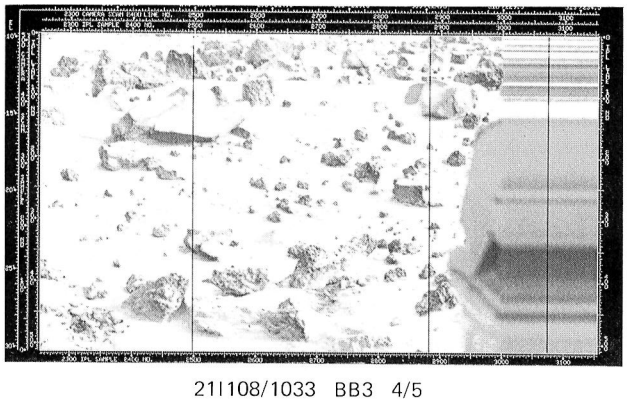
21I108/1033 BB3 1/5



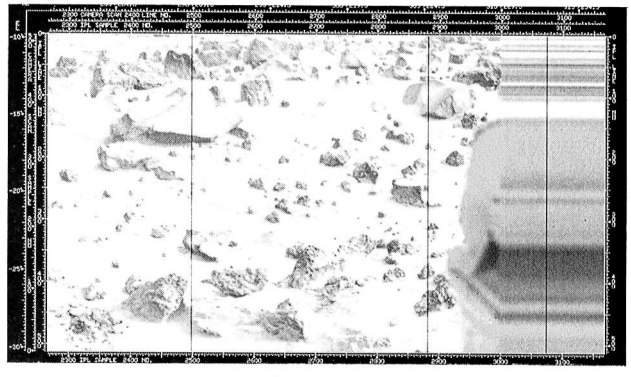
21I108/1033 BB3 2/5



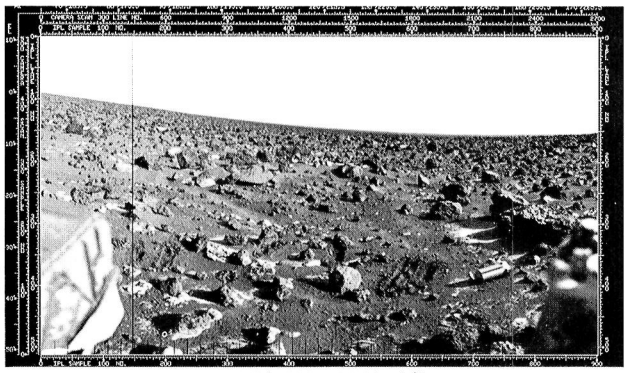
21I108/1033 BB3 3/5



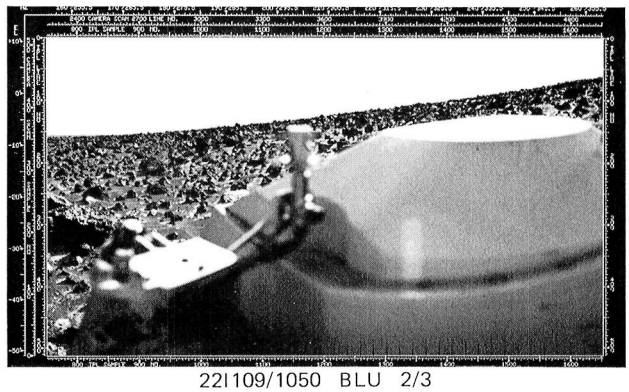
21I108/1033 BB3 4/5



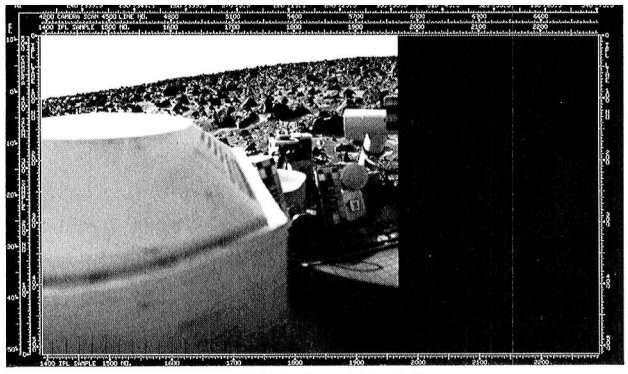
21I108/1033 BB3 5/5



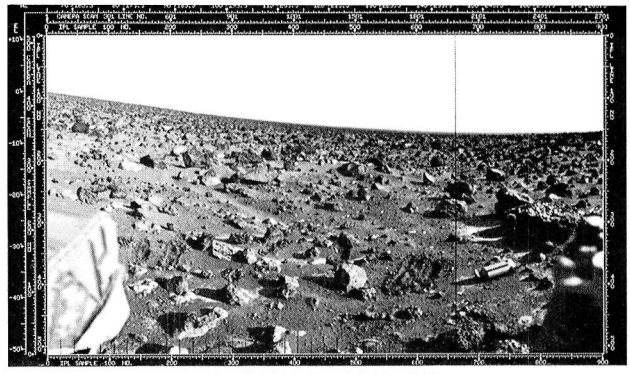
22I109/1050 BLU 1/3



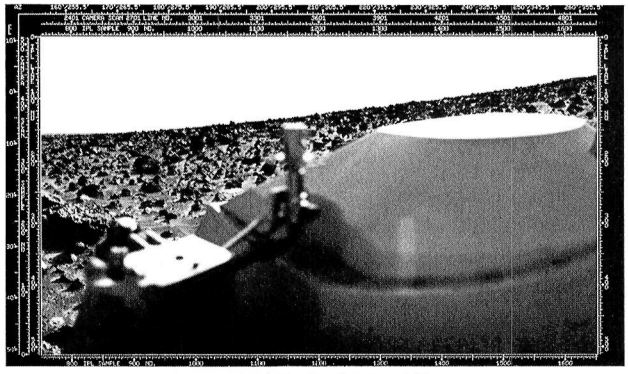
22I109/1050 BLU 2/3



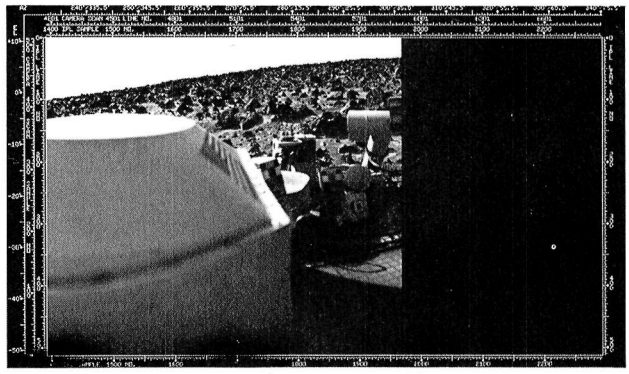
22I109/1050 BLU 3/3



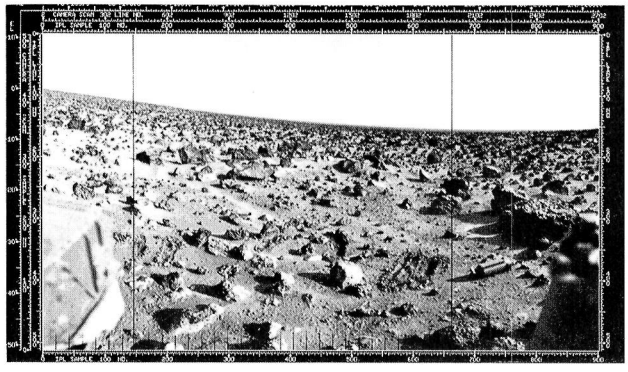
22I109/1050 GRN 1/3



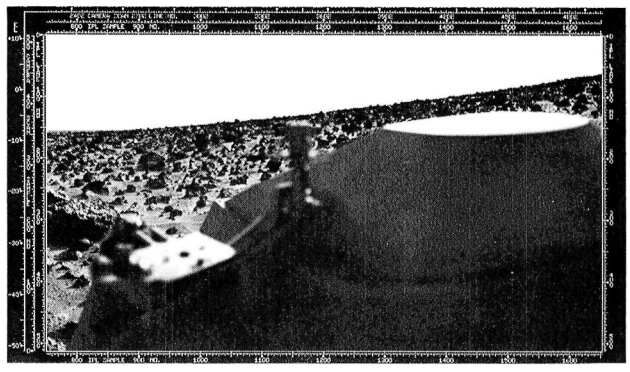
22I109/1050 GRN 2/3



22I109/1050 GRN 3/3

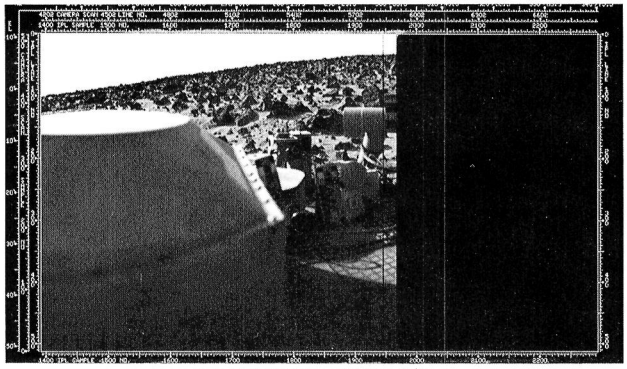


22I109/1050 RED 1/3

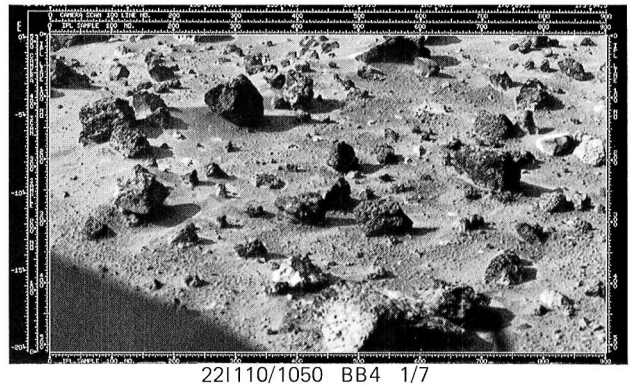


22I109/1050 RED 2/3

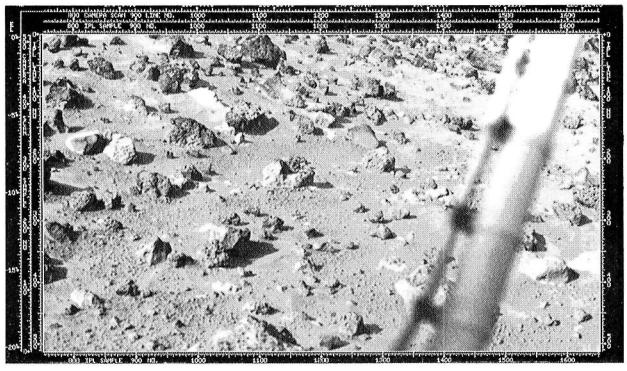
VL-2



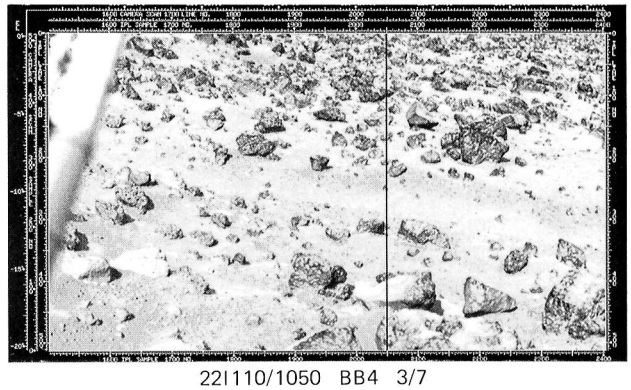
22I109/1050 RED 3/3



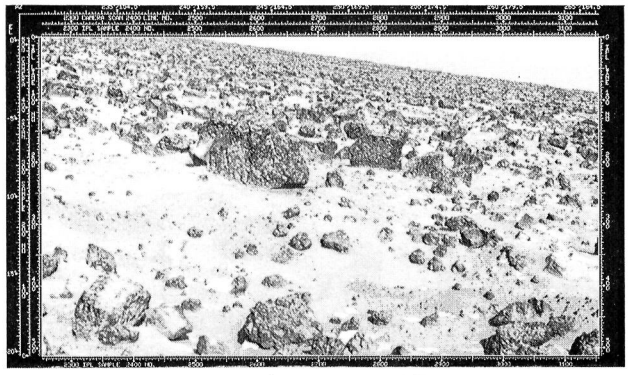
22I110/1050 BB4 1/7



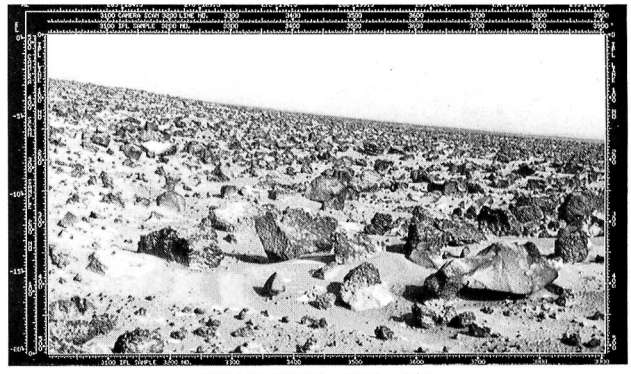
22I110/1050 BB4 2/7



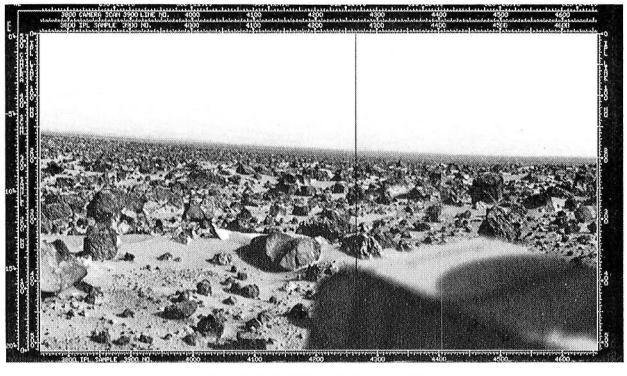
22I110/1050 BB4 3/7



22I110/1050 BB4 4/7



22I110/1050 BB4 5/7

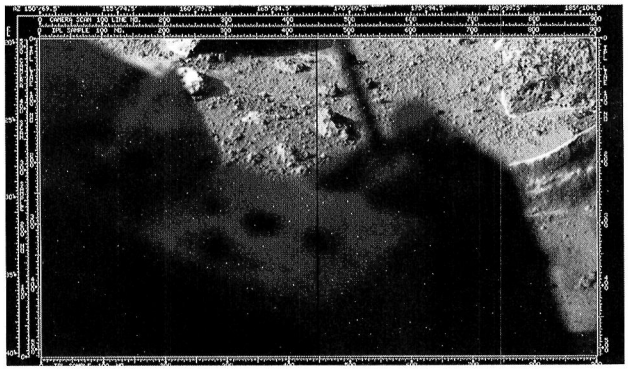


22I110/1050 BB4 6/7

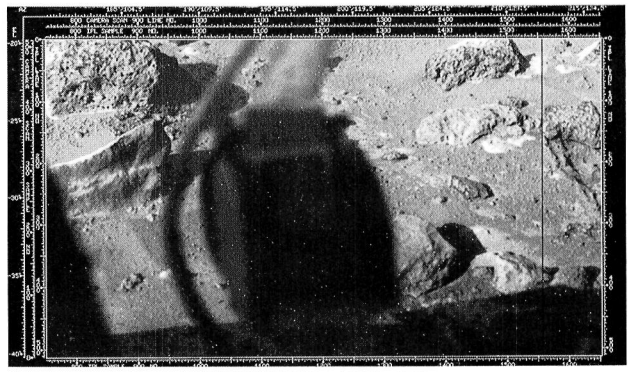
22I110/1050 BB4 7/7

VL-2

21I111/1050–22I113/----

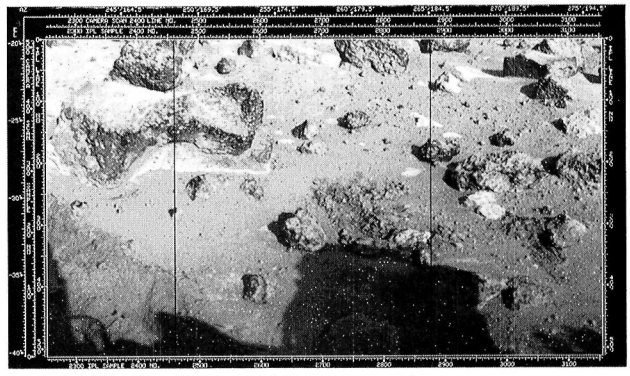


21I111/1050 BB3 1/7

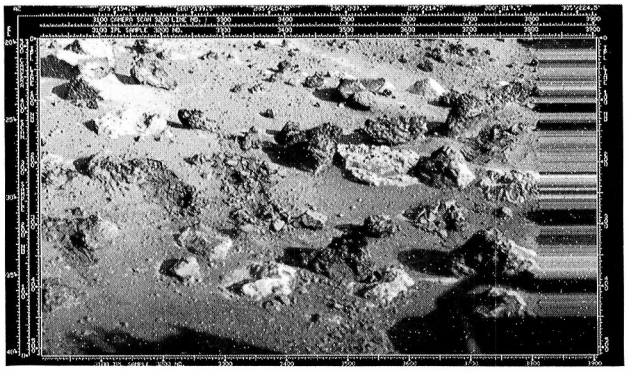


21I111/1050 BB3 2/7

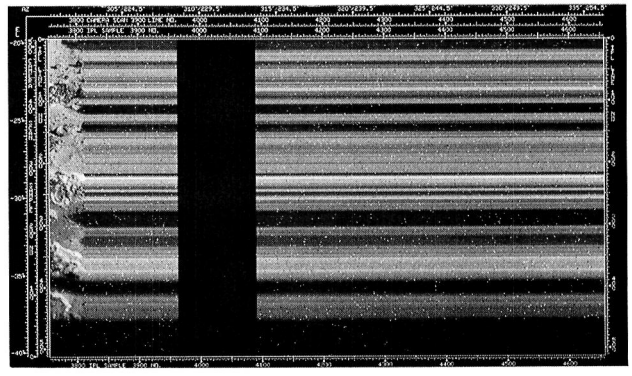
21I111/1050 BB3 3/7



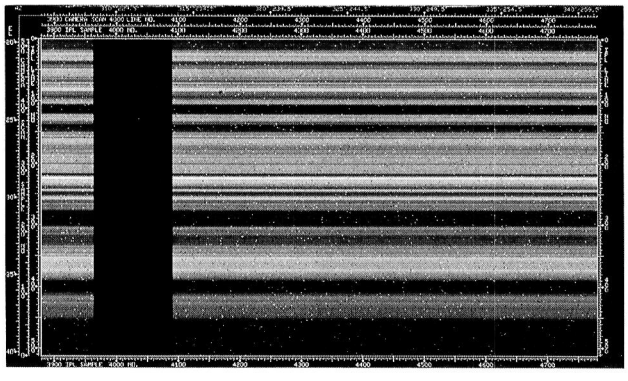
21I111/1050 BB3 4/7



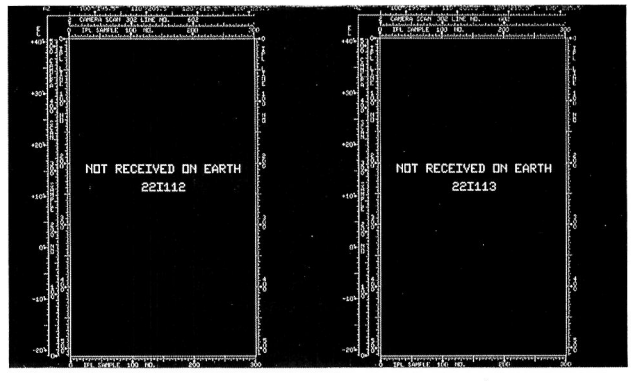
21I111/1050 BB3 5/7



21I111/1050 BB3 6/7

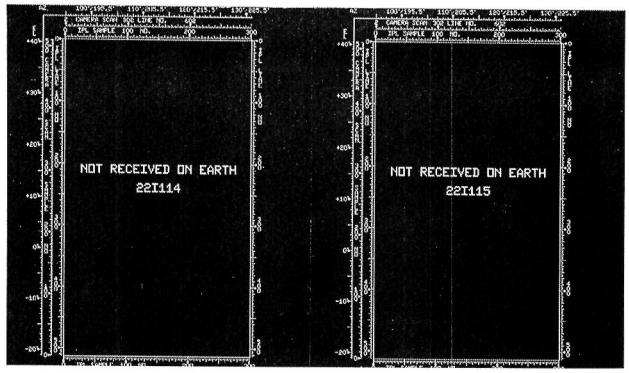


21I111/1050 BB3 7/7

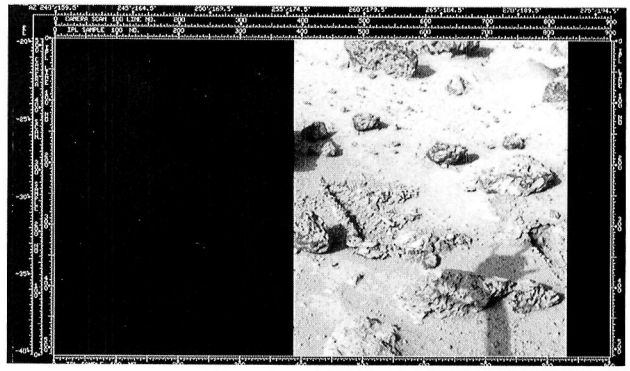


22I112/---- 22I113/----

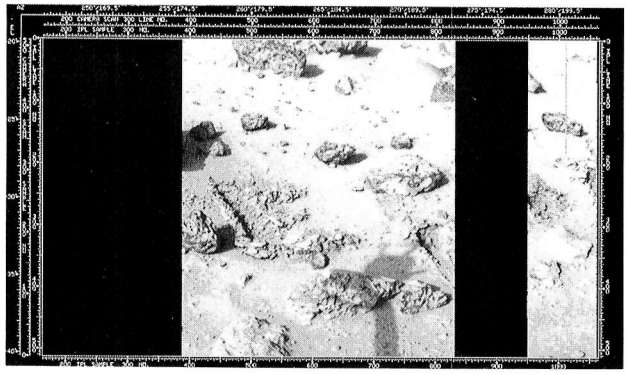
VL-2



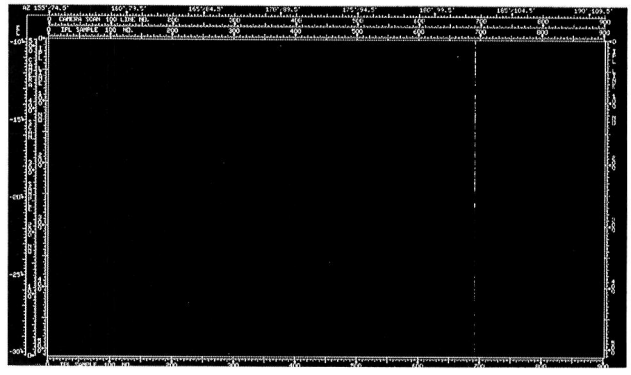
22I114/---- 22I115/ ----



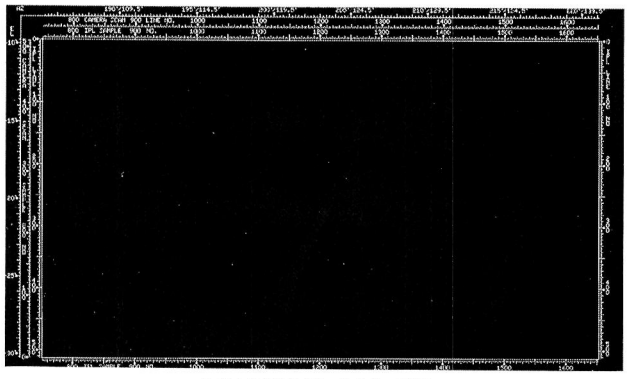
21I116/1138 BB2 1/2



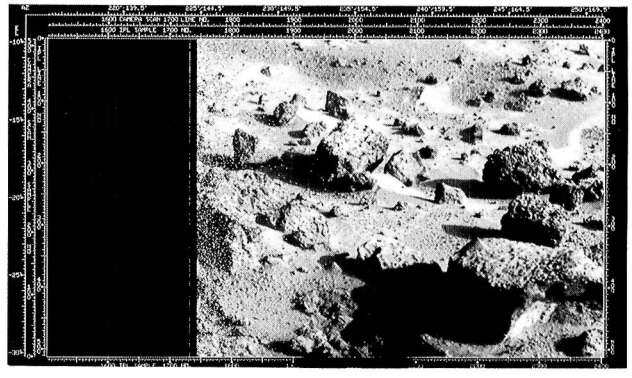
21I116/1138 BB2 2/2



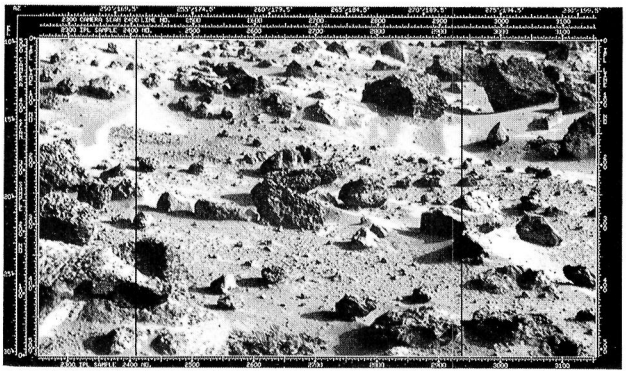
21I117/1140 BB3 1/5



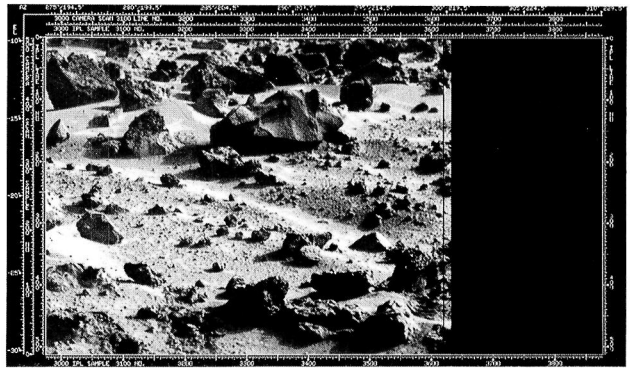
21I117/1140 BB3 2/5



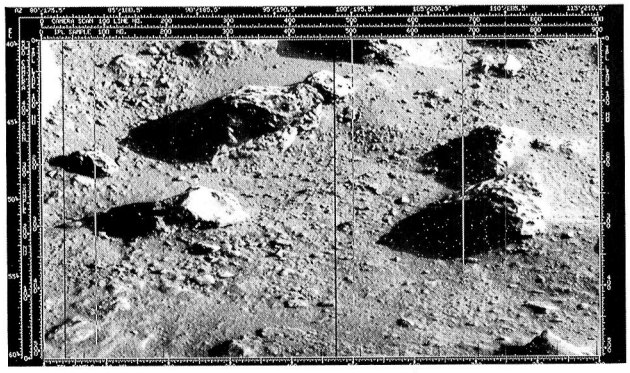
21I117/1140 BB3 3/5



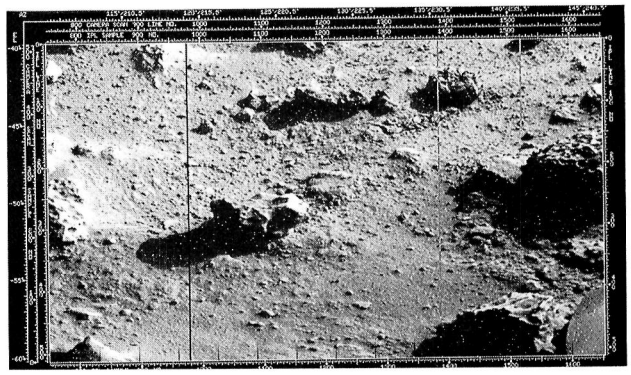
21I117/1140 BB3 4/5



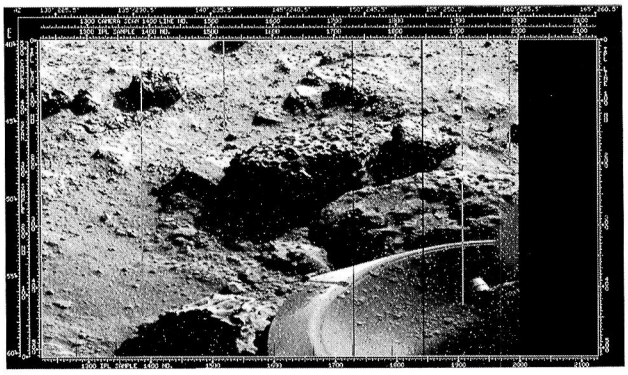
21I117/1140 BB3 5/5



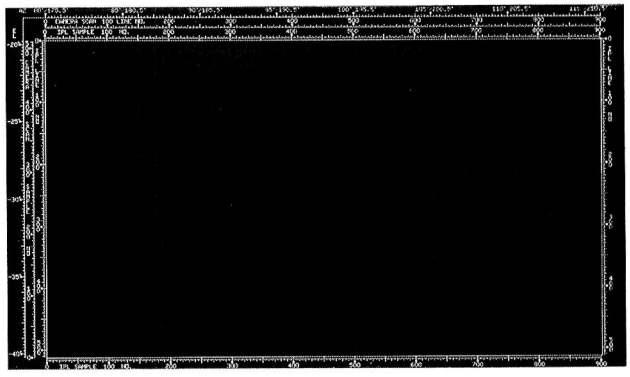
22I118/1140 BB1 1/3



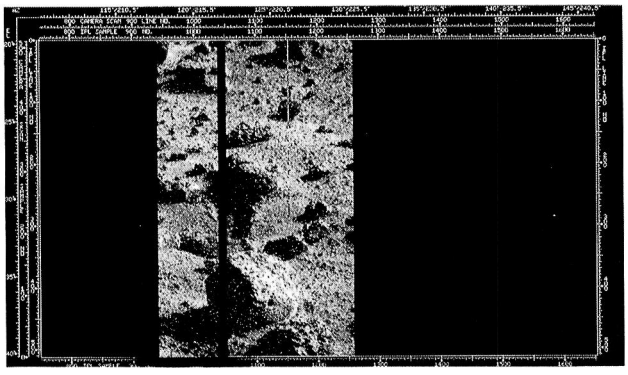
22I118/1140 BB1 2/3



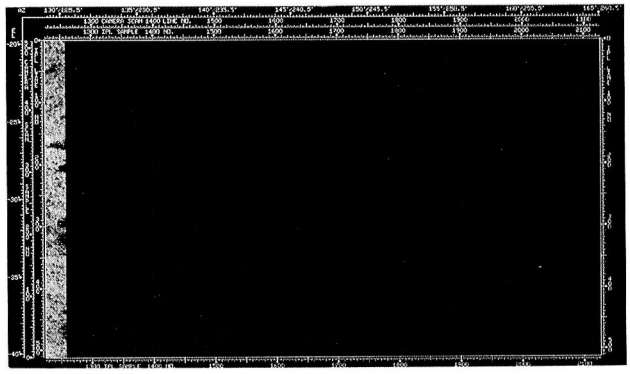
22I118/1140 BB1 3/3



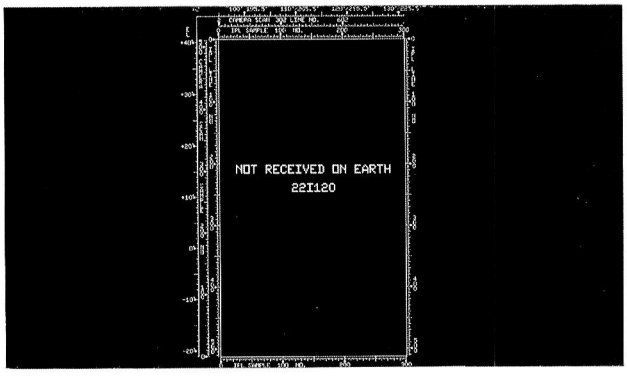
22I119/1140 BB2 1/3



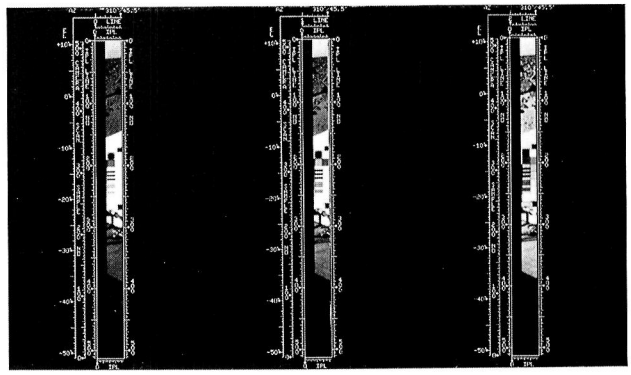
22I119/1140 BB2 2/3



22I119/1140 BB2 3/3

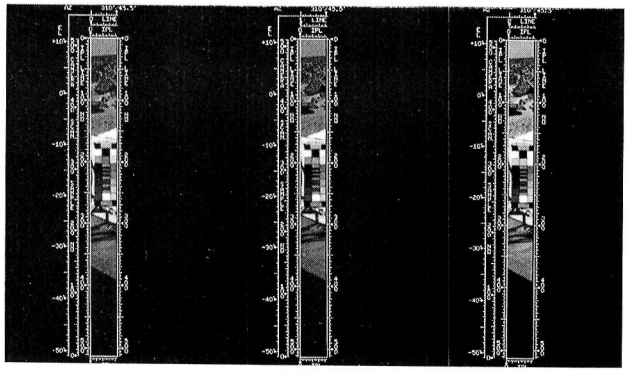


22I120/----

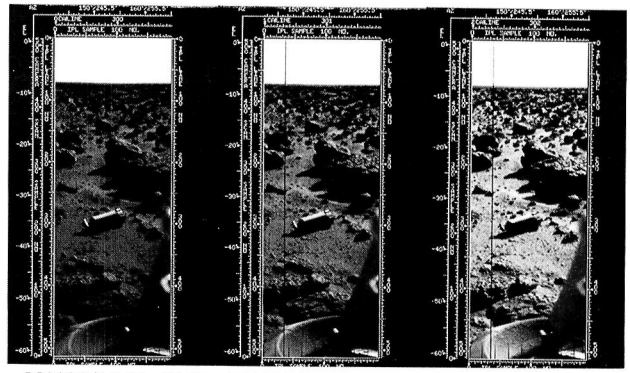


22I121/1142 BLU 22I121/1142 GRN 22I121/1142 RED

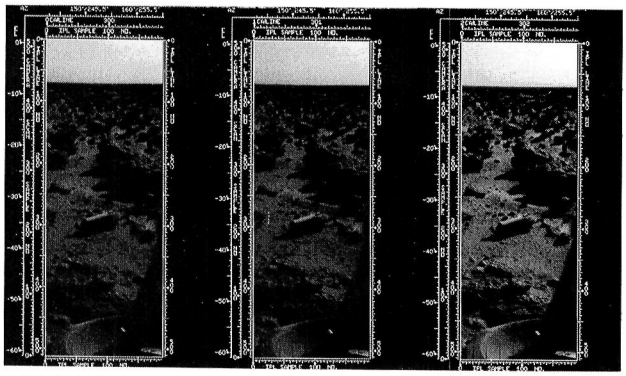
VL-2



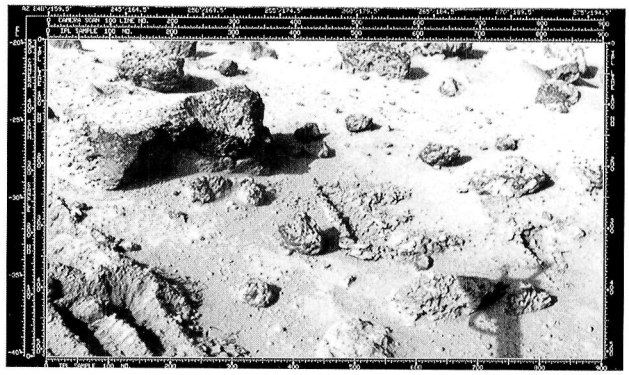
22I122/1142 IR3 22I122/1142 IR2 22I122/1142 IR1



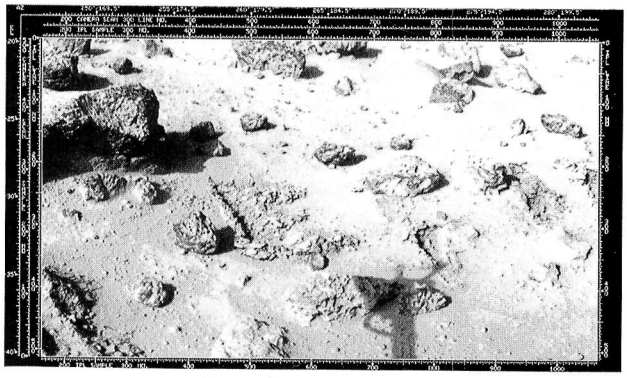
22I123/1142 BLU 22I123/1142 GRN 22I123/1142 RED



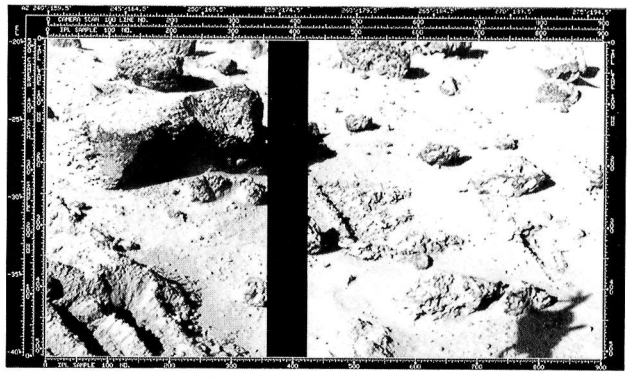
22I124/1142 IR3 22I124/1142 IR2 22I124/1142 IR1



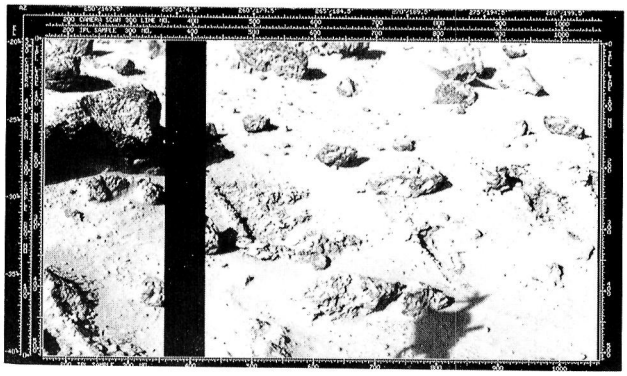
21I125/1150 BB2 1/2



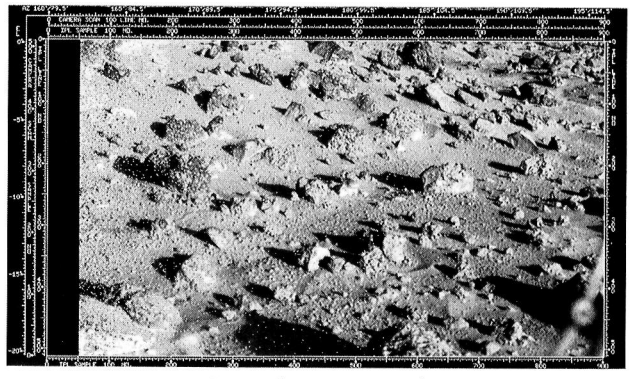
21I125/1150 BB2 2/2



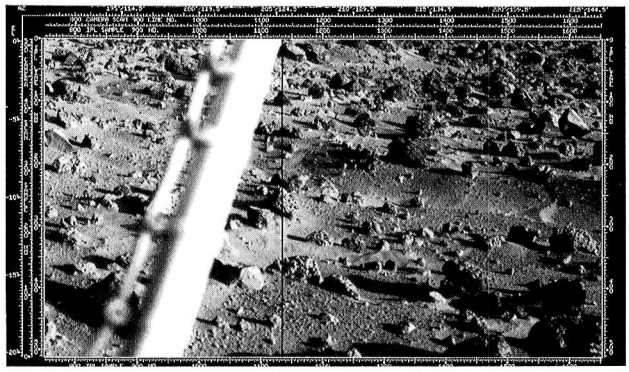
21I126/1170 BB2 1/2



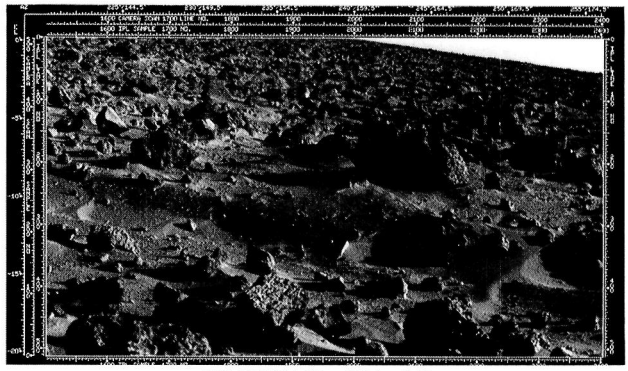
21I126/1170 BB2 2/2



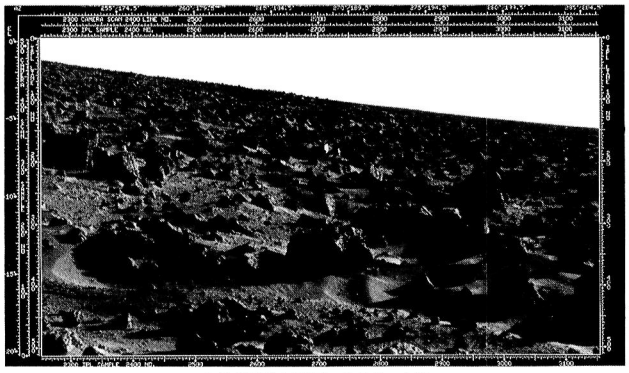
21I127/1177 BB4 1/5



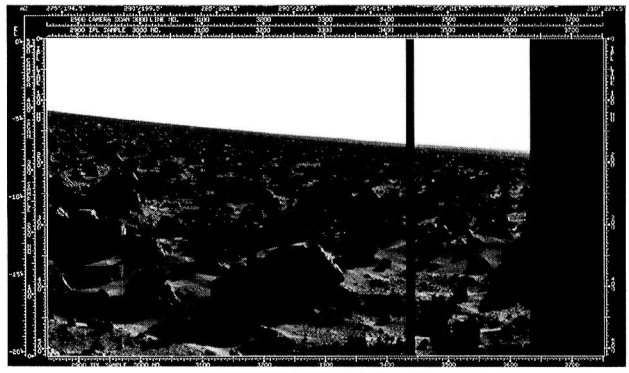
21I127/1177 BB4 2/5



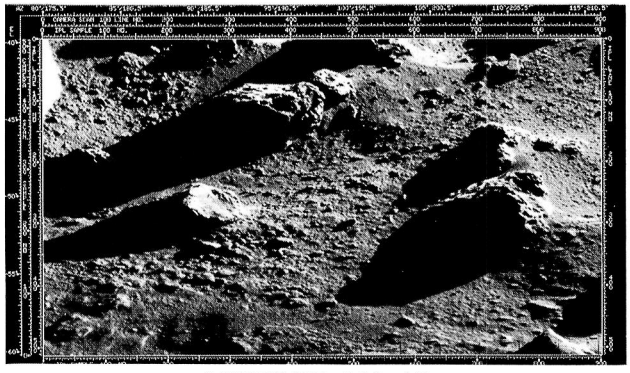
21I127/1177 BB4 3/5



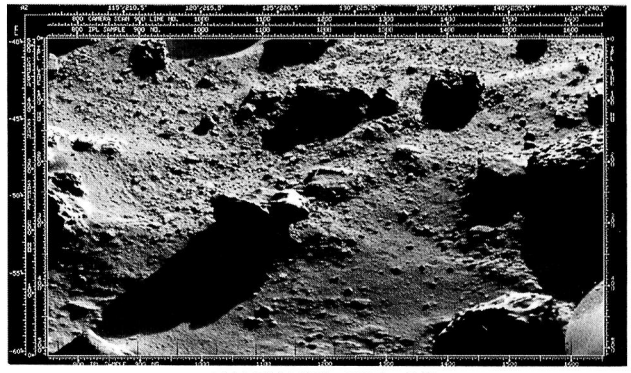
21I127/1177 BB4 4/5



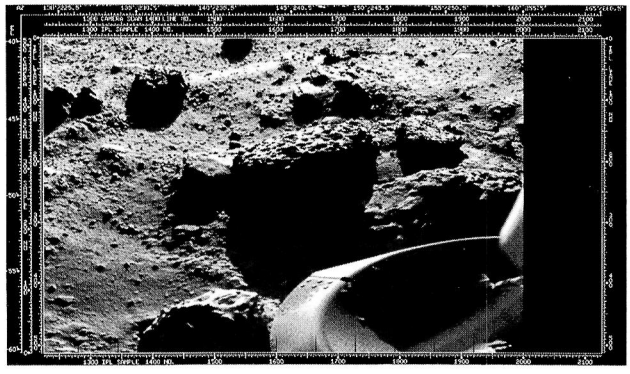
21I127/1177 BB4 5/5



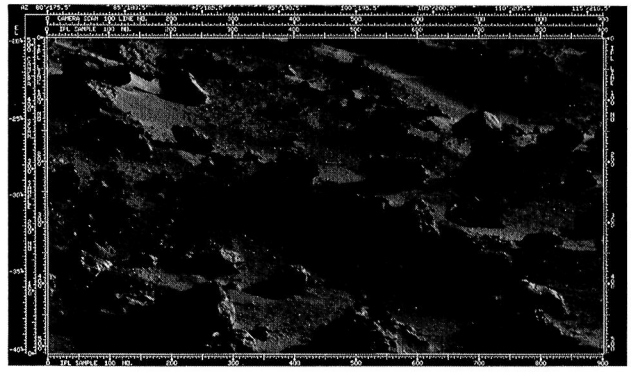
21I128/1177 BB1 1/3



21I128/1177 BB1 2/3

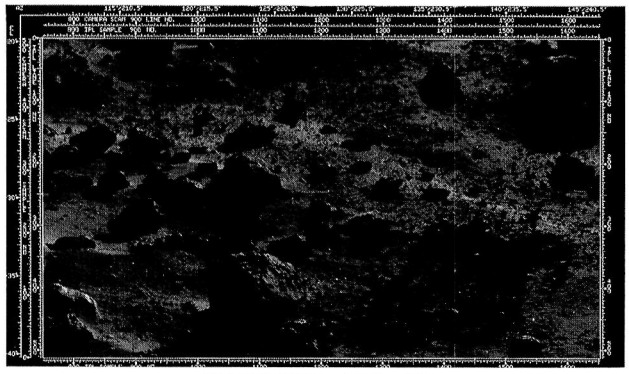


21I128/1177 BB1 3/3

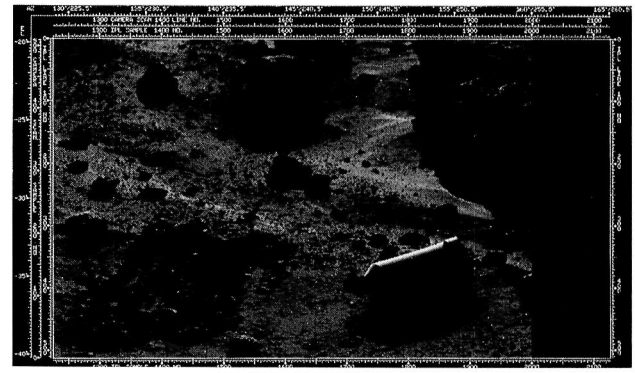


22I129/1177 BB2 1/3

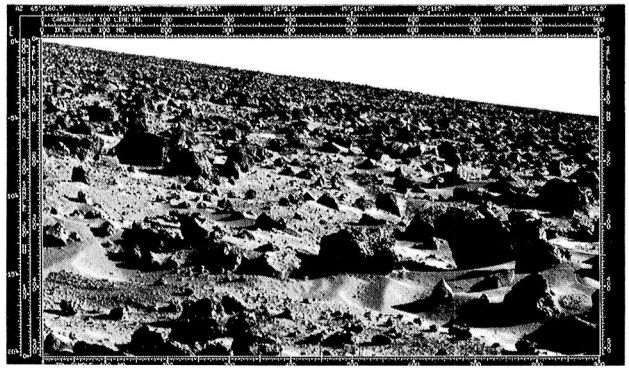
VL-2



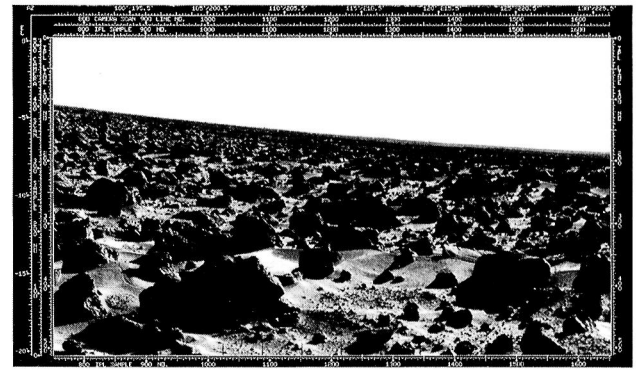
22I129/1177 BB2 2/3



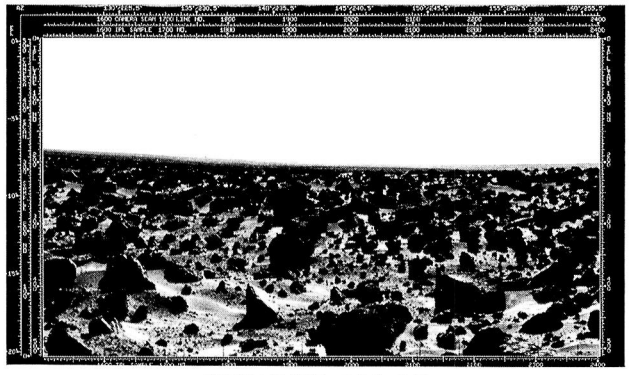
22I129/1177 BB2 3/3



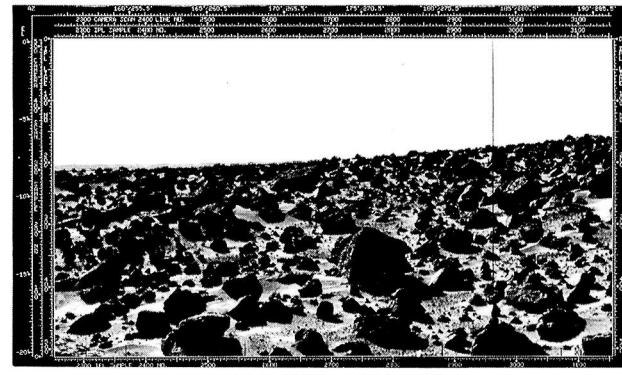
22I130/1177 BB4 1/6



22I130/1177 BB4 2/6

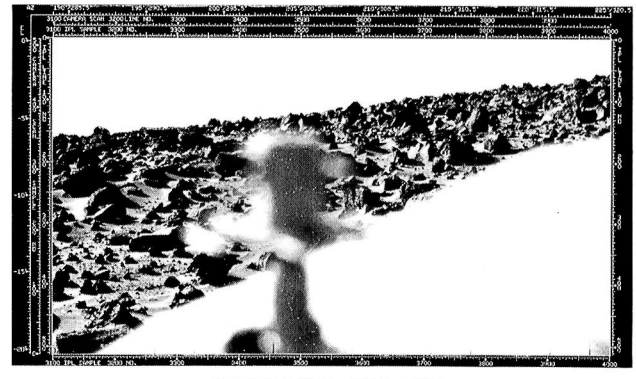


22I130/1177 BB4 3/6

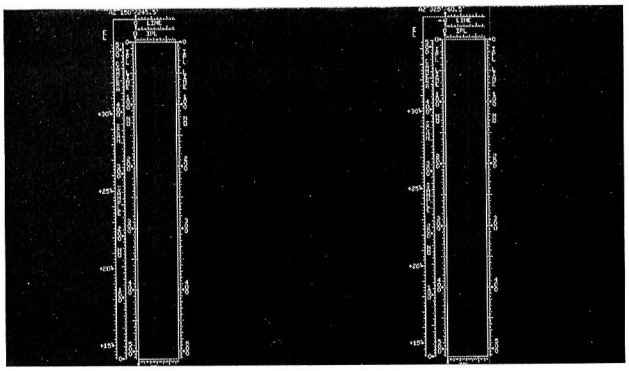


22I130/1177 BB4 4/6

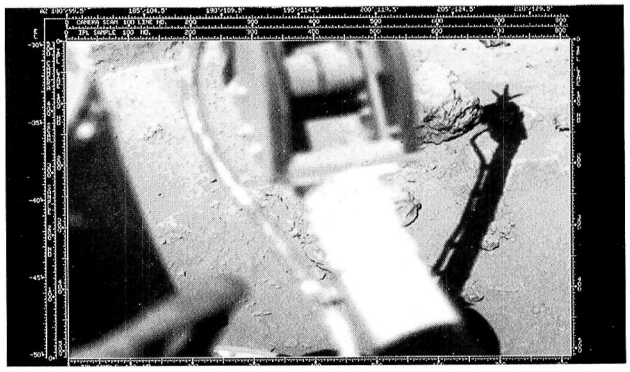
22I130/1177 BB4 5/6



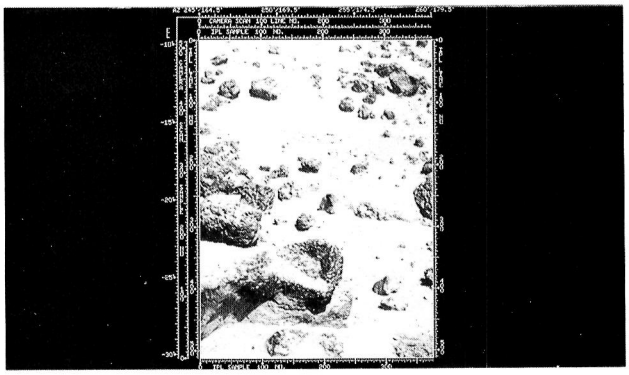
22I130/1177 BB4 6/6



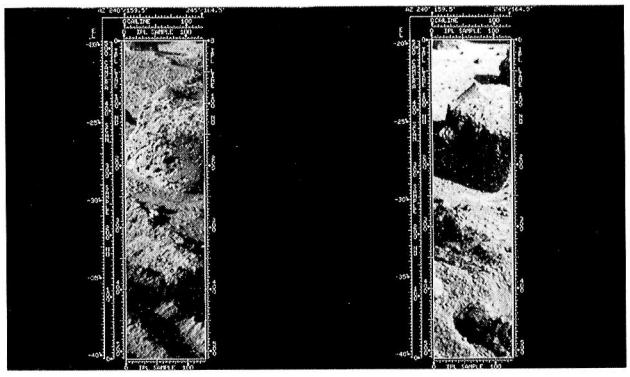
22I131/1180 SUN 22I132/1180 SUN



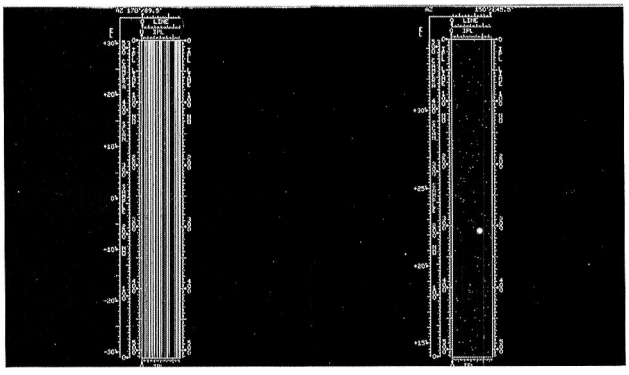
21I133/1186 BB1



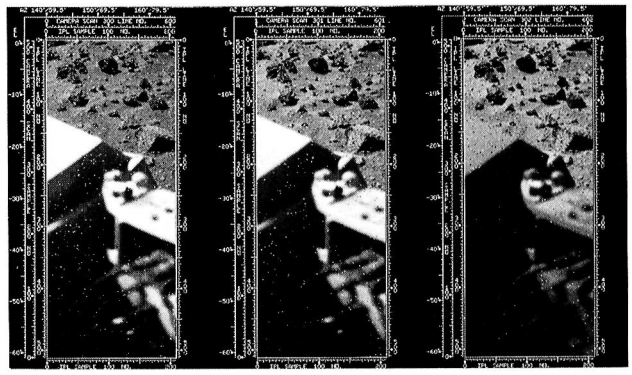
21I134/1189 BB3



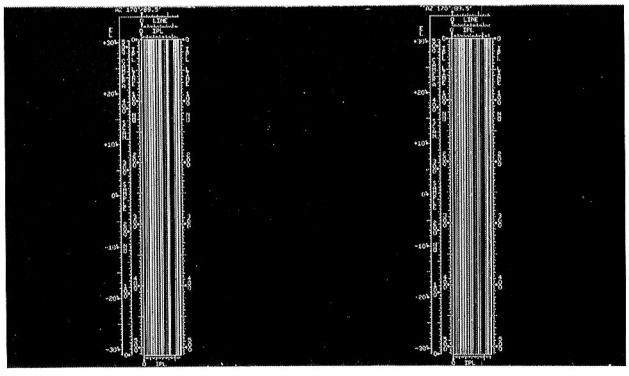
21I135/1192 BB2 21I136/1193 BB2



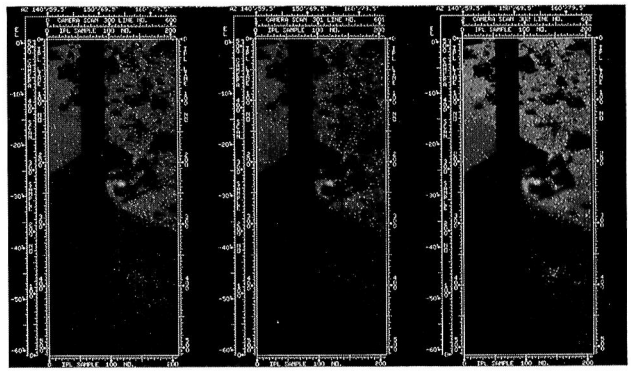
21I137/1193 CAL 22I138/1195 SUN



21I139/1195 BLU 21I139/1195 GRN 21I139/1195 RED

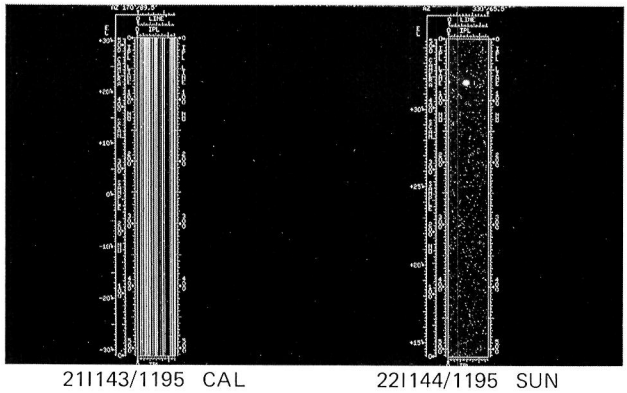


21I140/1195 CAL 21I141/1195 CAL

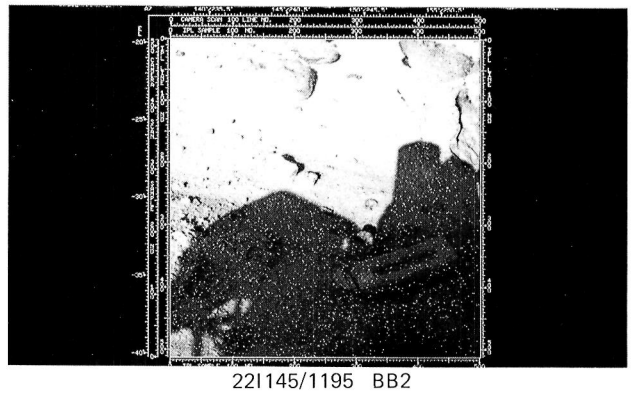


21I142/1195 IR3 21I142/1195 IR2 21I142/1195 IR1

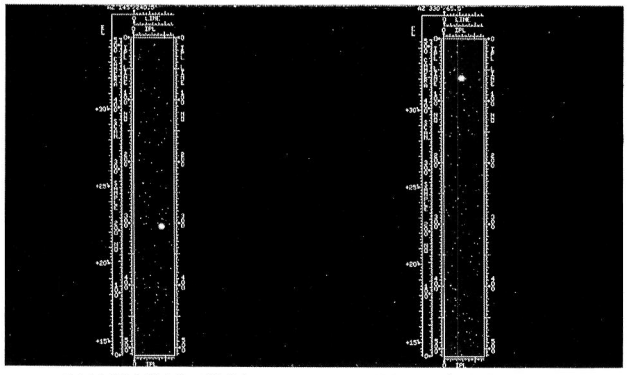
VL-2



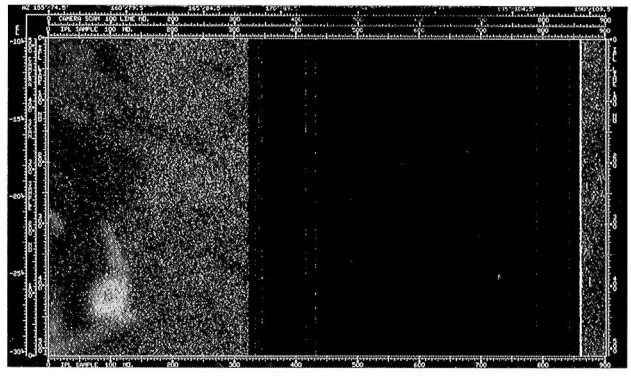
21I143/1195 CAL 22I144/1195 SUN



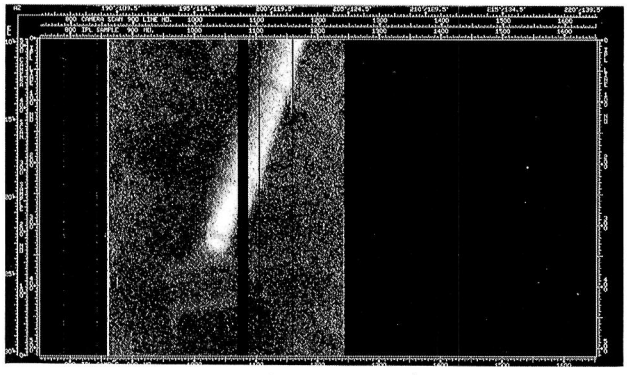
22I145/1195 BB2



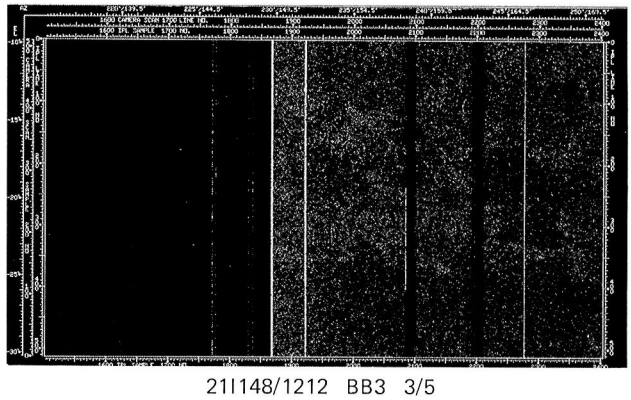
22I146/1210 SUN 22I147/1210 SUN



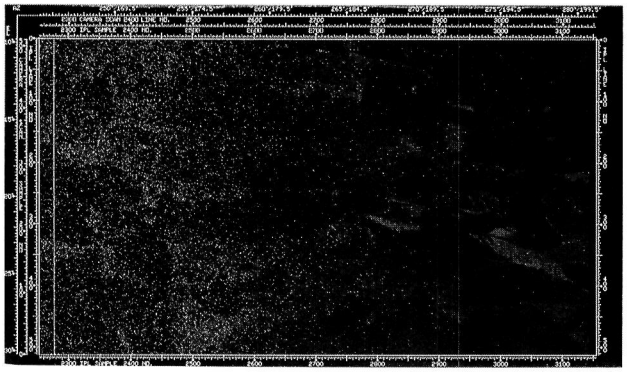
21I148/1212 BB3 1/5



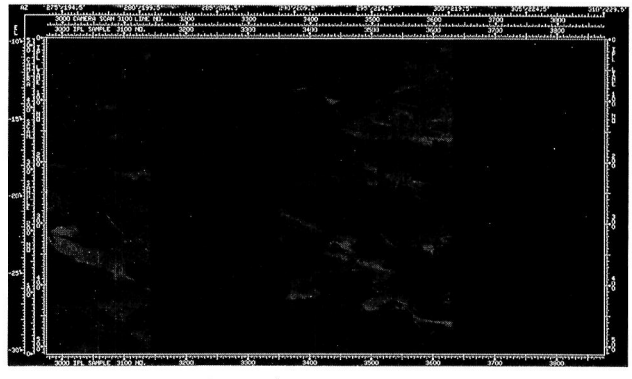
21I148/1212 BB3 2/5



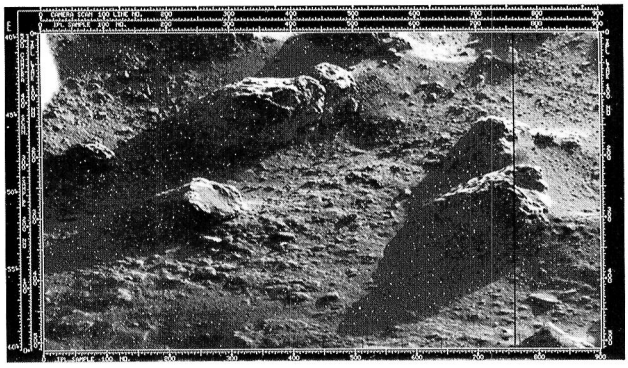
21I148/1212 BB3 3/5



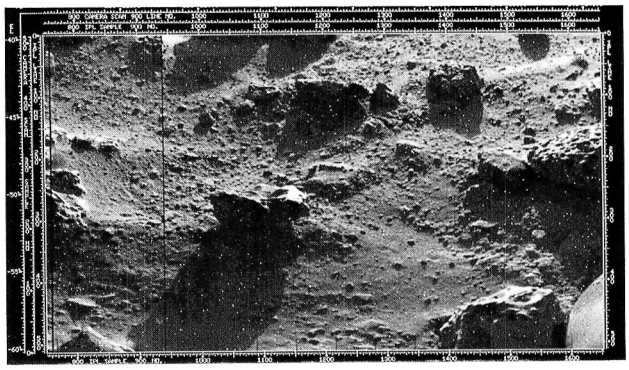
21I148/1212 BB3 4/5



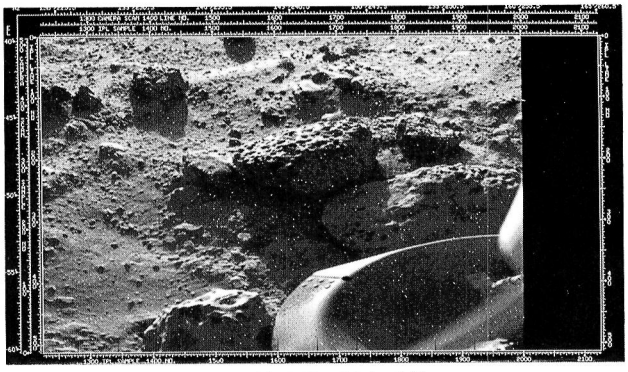
21I148/1212 BB3 5/5



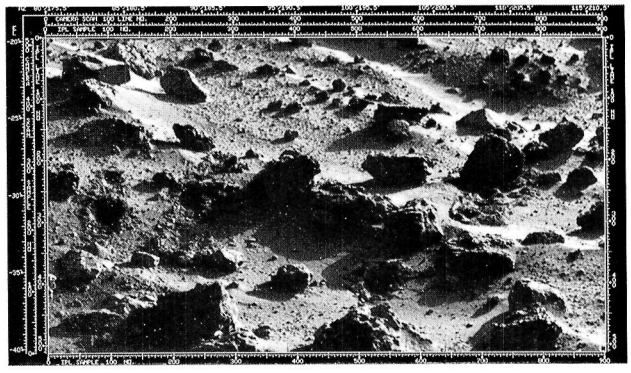
22I149/1212 BB1 1/3



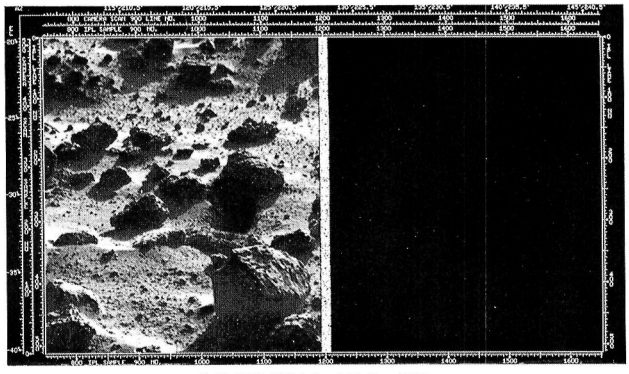
22I149/1212 BB1 2/3



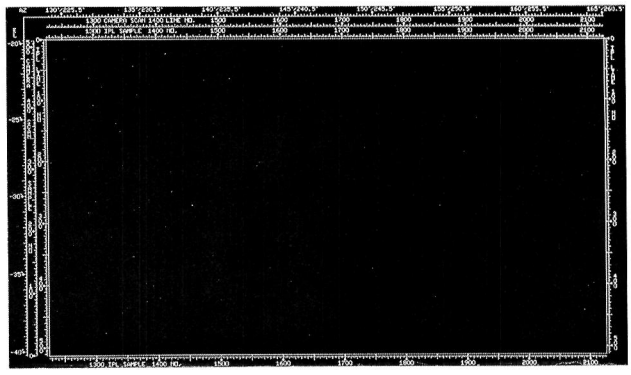
22I149/1212 BB1 3/3



22I150/1212 BB2 1/3



22I150/1212 BB2 2/3



22I150/1212 BB2 3/3

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2. Jones, Kenneth L., et al.: Viking Lander Imaging Investigation During Extended and Continuation Automatic Missions. NASA RP-1068 (Vols. I and II), 1981.

3. Scientific Results of the Viking Project, J. Geophys. Res., Vol. 82, No. 28, American Geophysical Union, 1977.

4. Snyder, Conway W.: The Extended Mission of Viking. J. Geophys. Res., Vol. 84, No. B14, Dec. 30, 1979, pp. 7917-7933.

5. Huck, Friedrich O.; Burcher, Ernest E.,; Taylor, Edward J.; and Wall, Stephen D.: Radiometric Performance of the Viking Mars Lander Cameras. NASA TM X-72692, 1975.

6. Patterson, William R., III; Huck, F. O.; Wall, S. D.; and Wolf, M. R.: Calibration and Performance of the Viking Lander Cameras. J. Geophys. Res., Vol. 82, No. 28, Sept. 30, 1977, pp. 4391-4400.

7. Wolf, Michael R.; Atwood, David L.; and Morrill, Michael E.: Viking Lander Camera Radiometry Calibration Report. Publ. No. 77-62, Vols. I and II (Contract NAS 7-100), Jet Propul. Lab., California Inst. Technol., Nov. 1, 1977. (Available as NASA CR-155537.)

APPENDIX

VIKING '75 LANDER CAMERA IMAGE PRODUCT FORMATS (PFORM)

A	Azimuth
ACT	Active
ANTISOL PT	Antisolar Point
AZ	Azimuth
AZ START	Camera Event Azimuth Start Angle, Commanded
AZ STOP	Camera Event Azimuth Stop Angle, Commanded
BB1, 2, 3	Broadband Diode 1, 2, 3
BEG	Begin
BLU	Blue Diode
BLUE	Blue Diode
C	Contrast Stretched
CE	Camera Event
CE	Camera Event Identifier
CEID	Camera Event Identifier
CEL	Camera Event Label
CHANNEL	Camera Event Channel, Commanded
CON	Contrast Stretched
CTR	Center
CRT	Cathode Ray Tube
D	Despiked
DCS	Dark Current Subtractor
DEL	Display Element
DES	Despiked
DIGIFAX	Digital Facsimile Printing Device
DIODE	Camera Event Diode, Commanded

DN	Digital Number
DN	Down
EL	Elevation Angle
EL CTR	Camera Elevation Angle, Center, Commanded
EL DN	Camera Elevation Angle, Approximate Bottom
EL UP	Camera Elevation Angle, Approximate Top
ERT	Earth Received Time
FOVLIP	First Order Viking Lander Image Processing
FRQ	Frequency
GAIN	Camera Gain, Commanded
GMT	Greenwich Mean Time
GRN	Green Diode
H	Hipass Filtered
HIP	Hipass Filtered
INH	Inhibited
IPL	Imaging Processing Laboratory
IR1, 2, 3	Infrared Diode 1, 2, 3
LLT	Local Lander Time
MODE	Camera Mode, Commanded
MTIS	Mission and Test Imaging System
MTPS	Mission and Test Photographic System
OFFSET	Camera Offset, Commanded
PATH	Radio Path, Lander to Earth
PIXEL	(Camera) Picture Element
PROC	Processing
PSA	Photosensitive Assembly

RAD	Radiometric Decalibration
RADI	Radiance
REC	Recorded
RED	Red Diode
RSCN	Rescan
RT	Real Time
/S	Singlet (Single Diode Camera Event)
SB	S-Band
SCAN	Bit Rate of Camera Acquisition of Data
SCP	Strip Contact Print
S/N	Signal-to-Noise Ratio
S/R VIDS	Standard Resolution Video Image Display System
SRAD	Spectral Radiance
STEP	Camera Pointing Direction Stepping Increment Angle
SUN	Sun Diode
SUR	Survey Diode
SURV	Survey Diode
/T	Triplet (Member of Triplet Diode Camera Event)
TEMP	PSA Temperature
TRANS FRQ	Transmission Frequency (Data to Earth)
TOT	Total
UH	Ultra High Frequency
UHF	Ultra High Frequency
VER	Version (Indicator of Enhancement)
VMC^3	Viking Mission Control and Computing Center

1. INTRODUCTION

Lander imaging data is computer processed in "first order" at VMC^3 (Viking Mission Control and Computing Center) by a program called FOVLIP (First Order Viking Lander Image Processing) and in "second order" at IPL (Image Processing Laboratory) by a variety of application programs.

2. FOVLIP IMAGE PRODUCT FORMATS

FOVLIP generates distinct image formats for each of the following three systems:

1) S/R VIDS (Standard Resolution Video Image Data System) - This is the closed circuit TV system used for displaying Lander imaging data in real-time as it is received and processed by FOVLIP.

2) MTIS (Mission and Test Imaging System) - MTIS produces a master negative from a magnetic tape provided by FOVLIP. This master negative is delivered to MTPS (Mission and Test Photographic System) for the production of duplicate negative transparencies, positive transparencies, and SCP's (strip contact prints) for general distribution.

3) DIGIFAX (JPL-coined acronym for imported digital facsimile printing device) - The Digifax will generate one or at most a very few relatively prompt master prints of FOVLIP processed images. These prints can be cured, but demands for early print availability will no doubt delay and likely preclude curing.

2.1 S/R VIDS

The format of the S/R VIDS display is illustrated schematically in Fig. A-1. It should be remarked that there is a one-to-one relationship of camera pixels (picture elements) to dels (display elements). Since S/R VIDS display hardware limitations restrict to 480 horizontal display scan lines and, furthermore, since vertically displaced dels are one-to-one with these scan lines, 32 pixels are cropped from the vertical extent of the image data. This cropping is optionally 32 pixels from the top, 32 pixels from the bottom, or in default, 16 pixels from each of the top and bottom. All three FOVLIP picture display products, i.e., S/R VIDS, MTIS, and DIGIFAX, are horizontally segmented into widths of 512 pixels. These segments have a controllable overlap which defaults to 30 pixels.

Figure A-2 details schematically the label/annotation block located in the upper right hand corner of the display. It should be noted that the process indicators (D, C, H) in line 4 will be either on or off in the positions shown. They indicate neither the order of processing nor the number of times the image on display has been subjected to the indicated process (e.g., dual high-pass filtering).

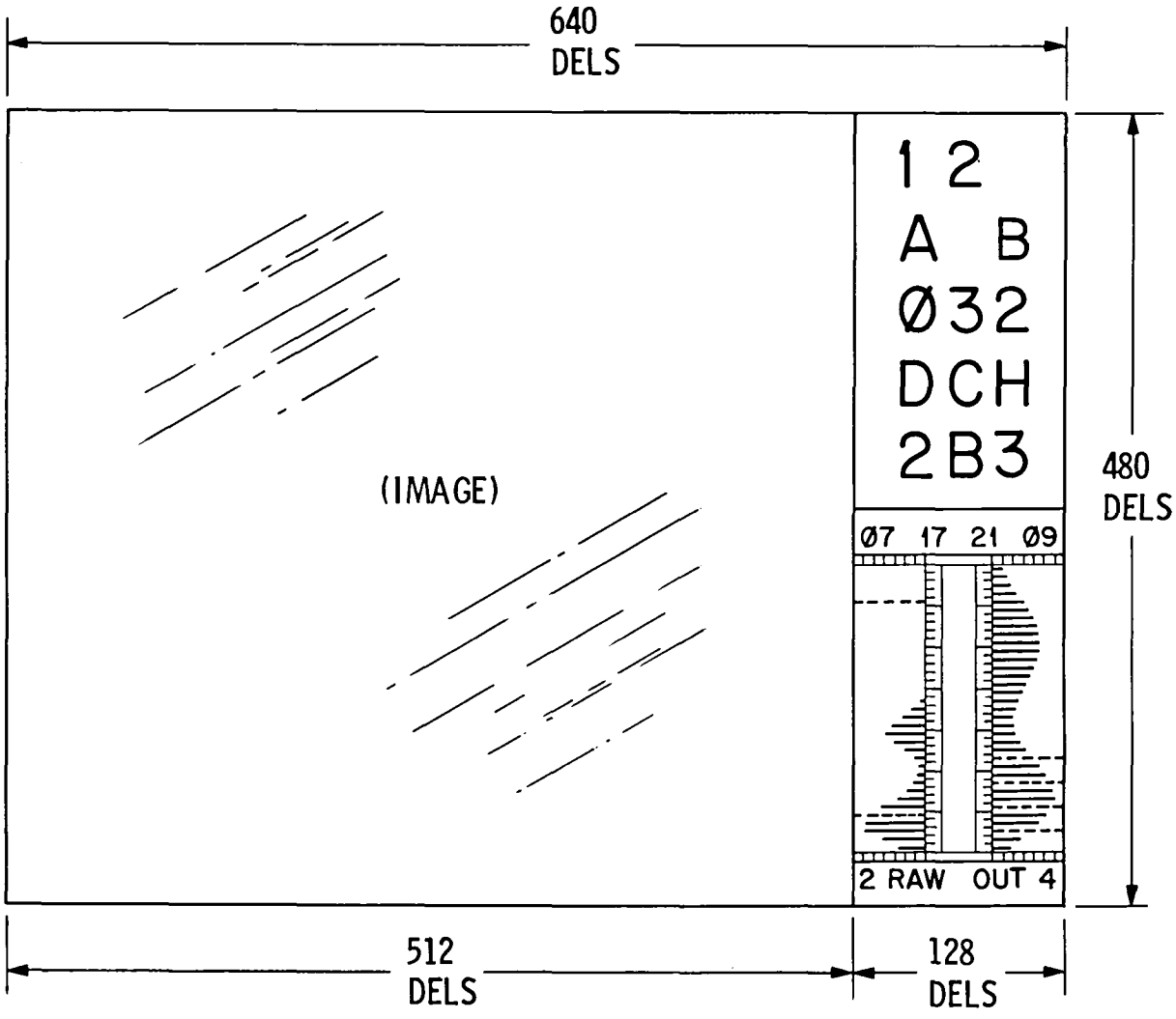
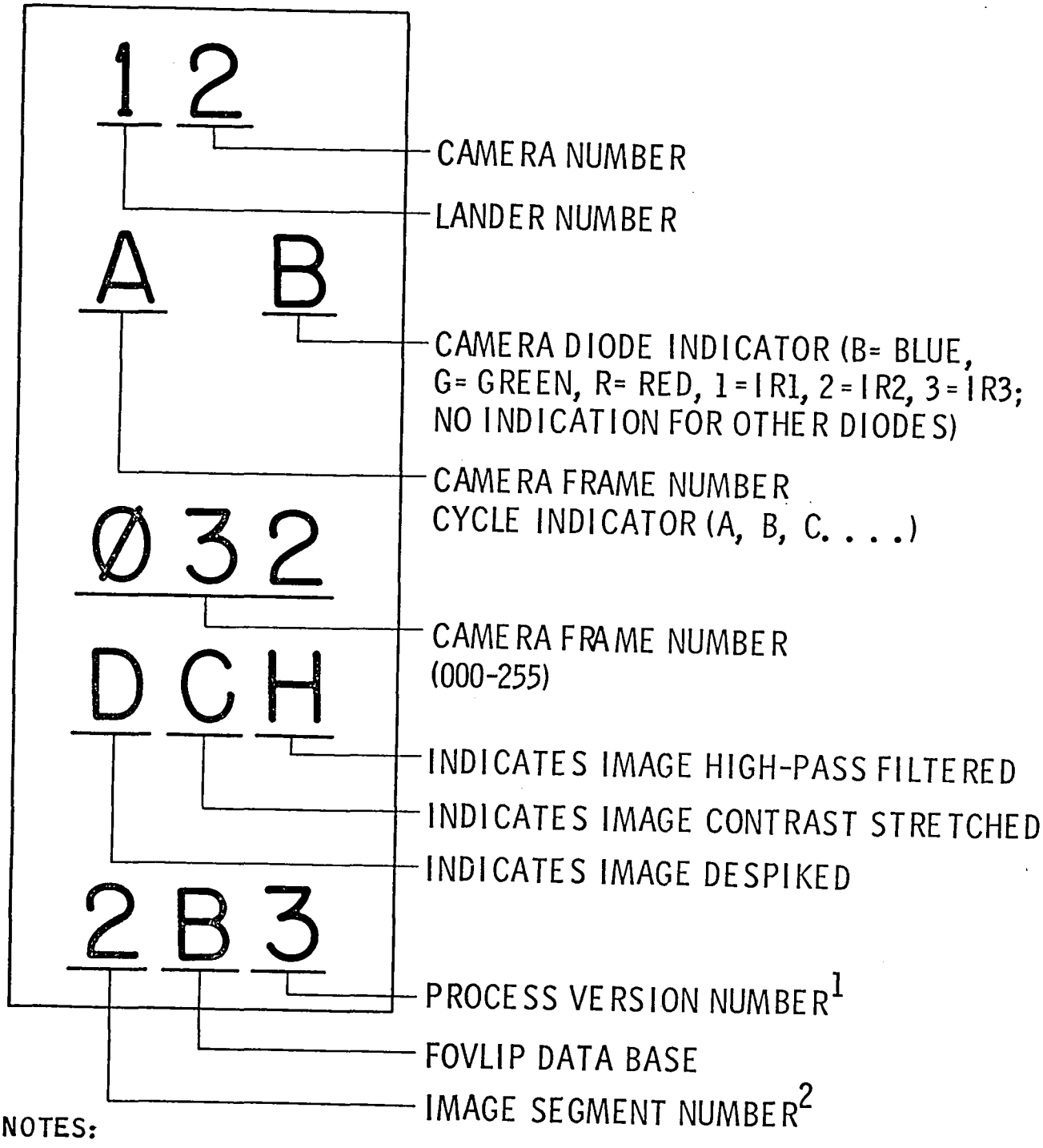


Fig. A-1. Schematic of S/R VIDS format.



NOTES:

1. Permissible Values are 0, 1, 2, 3 Where 0 Indicates That Version Is Raw, and Succeeding Numbers are Assigned In Temporal Order of Processing.
2. Image Data Is Horizontally Segmented into 512 DEL Wide Segments (Equivalent to 512 Pixels or Picture Elements) With a Controllable Overlap.

Fig. A-2. S/R VIDS label/annotation block.

Figure A-3 is a schematic illustration of the histogram block located in the lower right hand corner of the S/R VIDS display.

2.2 MTIS

The MTIS product is a negative transparency on 5"-wide roll film, generated by a Dicomed black and white CRT film recorder. The Dicomed raster is 4096 x 4096 dels. The recorder has a capacity to write in shotgun mode at 1 x 1, 2 x 2, 3 x 3, or 4 x 4 del blasts. Each Lander camera pixel forwarded by FOVLIP to MTIS on magnetic tape comprises a 2 x 2 array of identical commanded firings of the film recorder. The Dicomed is operated in the 3 x 3 mode for all FOVLIP processed Lander data. Thus, each Lander camera pixel is ultimately reproduced on film as a 2 x 2 of 3 x 3 del blasts, or equivalently a 6 x 6 of fundamental film recorder dels. This procedure optimizes the use of available space for the image field, and efficiently generates a high quality film product and associated SCP (strip contact print). Each Lander camera pixel is reproduced as a crisp square, just barely perceptible to the unaided eye, but clearly distinguishable to viewers interested in establishing precise line and sample pixel values. (Refer to section "Camera Line/Sample and IPL Line/Sample Conventions" contained in this appendix for the important distinction between "camera line/camera sample" and IPL line/IPL sample".)

In order to minimize the rate of latent image burn-in on the Dicomed CRT phosphor, successive Lander FOVLIP frames are randomly jittered over the phosphor by FOVLIP software.

Figure A-4 is an enlargement of an MTIS photo product.

2.2.1 CAMERA EVENT LABEL

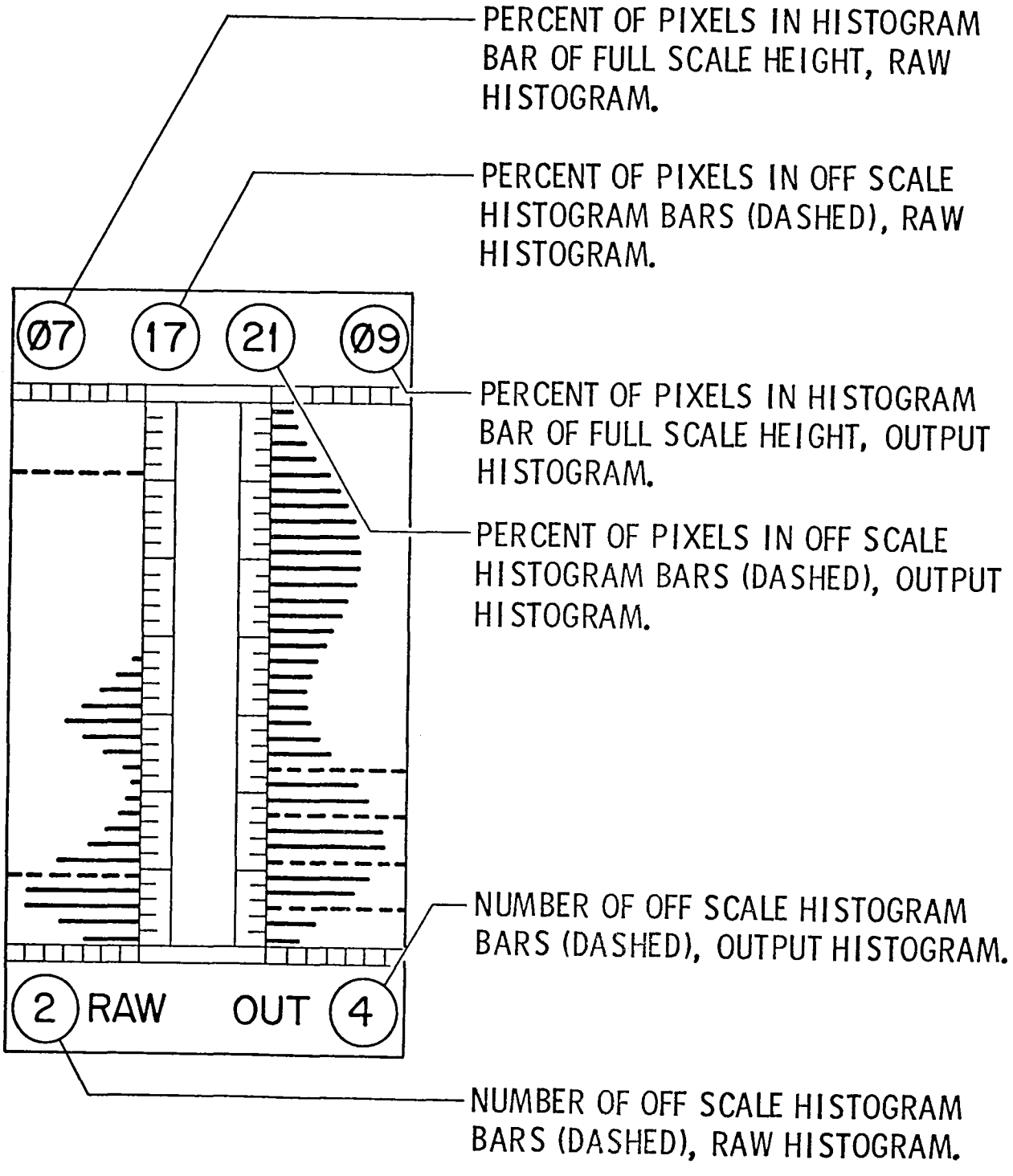
The ten character CEL (Camera Event Label) appearing in the upper right hand corner of the MTIS photo product is interpreted in Fig. A-5. A unique CEL is associated with each CE (camera event, corresponding to a response to a camera command on Mars.)

2.2.2 FOVLIP ROLL AND FRAME

The FOVLIP ROLL and (FOVLIP) FRAME number values appearing just below the CEL in the upper right corner of the MTIS product are entered by FOVLIP. Each MTIS segment has a different FOVLIP ROLL and FRAME number pair. The FOVLIP ROLL/FRAME pair can be used for identification purposes in communicating with the data library.

2.2.3 ANNOTATION

The annotation of the MTIS product is explained below:



NOTE: DN (Digital Number) Values Increase Upward

Fig. A-3. Schematic of S/R VIDS histogram block.

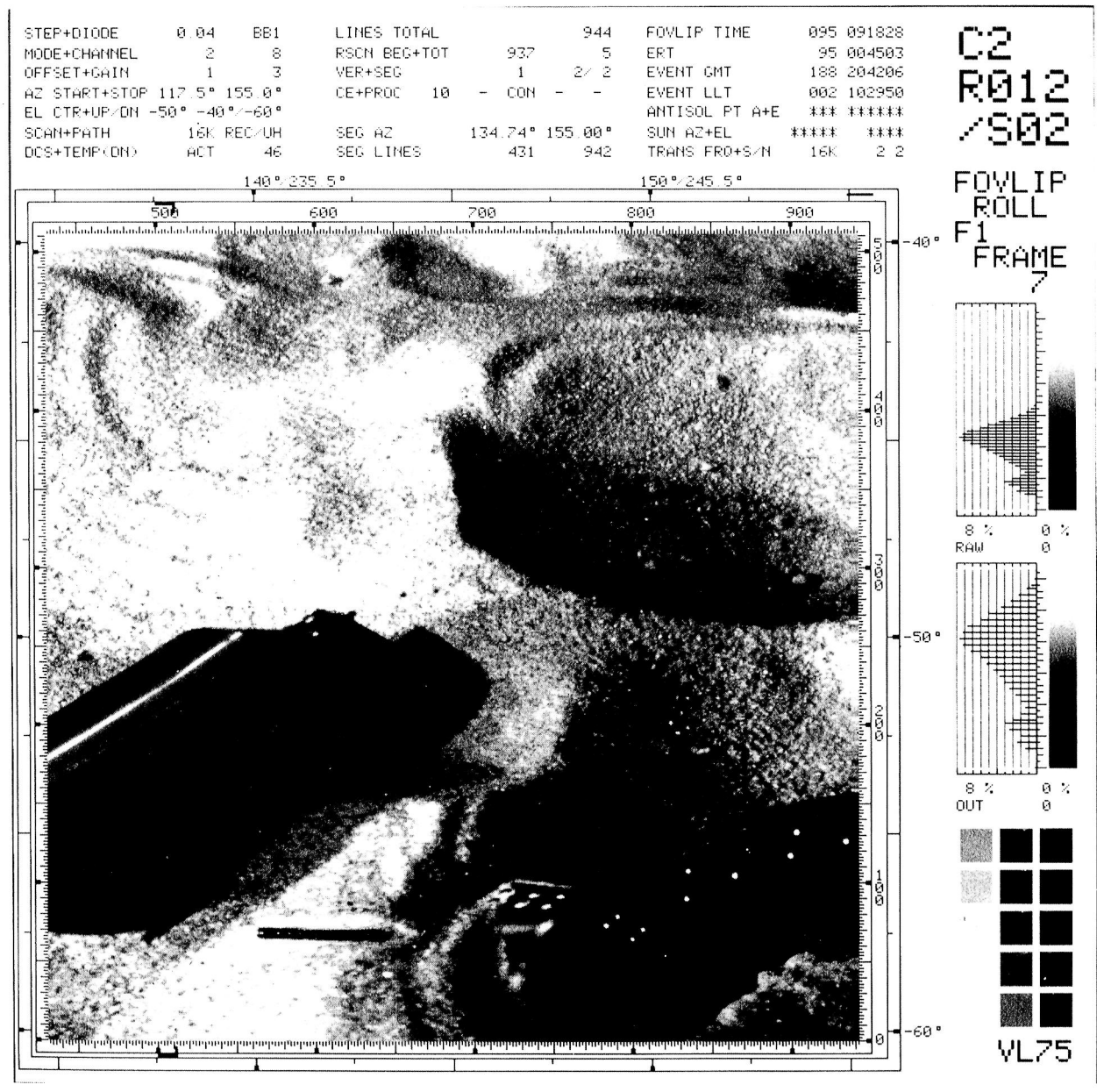


Fig. A-4. Enlargement of MTIS photo product.

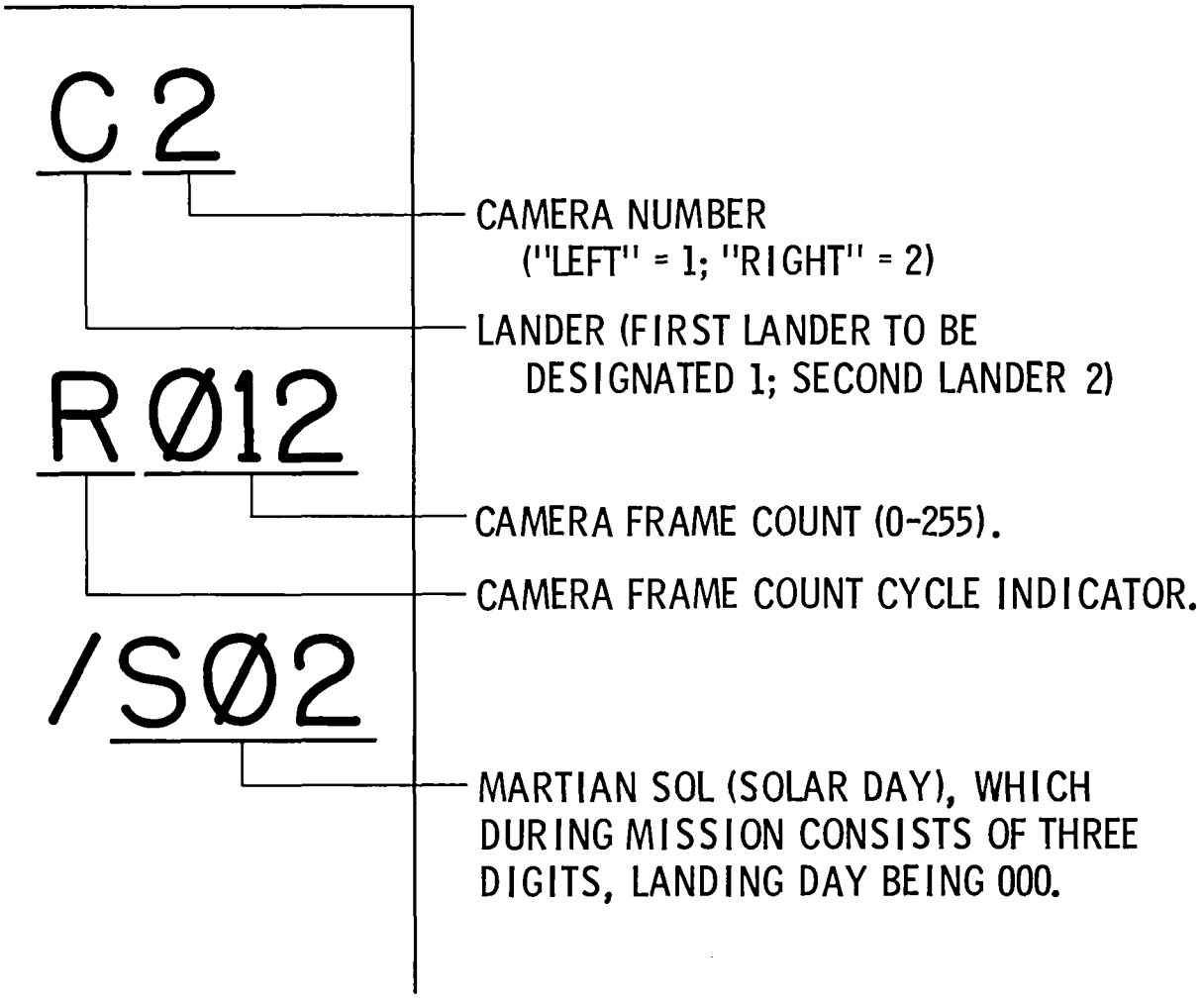


Fig. A-5. MTIS representation of CEL, Camera Event Label.

STEP

The camera steps from point to point in both azimuth and elevation by equal increments. The commanded value of the stepping increment may be either 0.04° or 0.12°.

DIODE

The camera has twelve diodes. The diode associated with the displayed data is indicated here. An appended /S or /T indicates that the CE (camera event), generally but not necessarily an azimuthally scanned image, is a member of either a singlet (mono-color, or mono-IR) or triplet (3-color, or 3-IR) acquisition, respectively. If the diode entry is preceded by an ! (exclamation mark), beware; the MODE/CHANNEL command combination (see below) is "non-nominal" and strange and useful, but not necessarily straightforward things will be happening.

MODE

The value of this commanded parameter determines the STEP size (see above).

CHANNEL

The value of this commanded parameter determines the diode(s) employed in the CE. Non-nominal pairings of MODE and CHANNEL produce unorthodox camera behavior.

OFFSET

Commanded value of camera offset.

GAIN

Commanded value of camera gain.

AZ START

This is the commanded value of the azimuth of the first (left most) line of the CE. The angular coordinate system is that referred to as the "control system" on the "skyline" drawings.

(AZ) STOP

This is the commanded value at which the clockwise incremental stepping of the camera is to stop.

EL CTR

This is the commanded value of camera elevation angle for the center of the CE, the camera horizon being referenced as 0° elevation.

(EL)UP

This is the approximate (within 1^{o}) camera elevation angle of the top of the CE.

(EL)DN

This is the approximate (within 1^{o}) camera elevation angle of the bottom of the CE.

SCAN

This is the commanded rate of bit (6 bits per image point) acquisition by the camera. Alternatives are 250 (bits per sec) or 16k (kilo bits per sec.)

PATH

This parameter (FOVLIP hand input) indicates the data path from camera to earth. An REC or RT prior to the slash indicates that the CE was recorded on board the Lander or transmitted from the Lander in real-time, respectively. A UH or SB indicates that the data was relayed to earth via the UHF radio transmitter aboard the orbiter, or sent directly to earth from the S-Band radio transmitter aboard the Lander, respectively.

DCS

This commanded parameter indicates whether the dark current subtractor was active (ACT) or inhibited (INH).

TEMP(DN)

This is the average recorded PSA (photo-sensitive assembly) temperature during the image acquisition, expressed on a scale of 0-63. This TEMP(DN) parameter is converted, by FOVLIP, to temperature T in degrees centigrade by the formula $T = 1180 \times TEMP(DN)/567 - 62.22$ (^{o}C).

LINES TOTAL

This is the total number of lines logged by FOVLIP for this CE. Missing lines are not included in the count.

RSCN BEG

If FOVLIP receives any rescan lines, then the value entered here will be the line count associated with the commanded AZ STOP plus 1.

RSCN TOT

The value entered here is equal to the value of the highest line number received minus the value of the line number associated with AZ STOP.

VER

FOVLIP displays the raw version of each CE as well as several different processed versions. The raw picture is designated RAW. Processed versions are numbered 1, 2, or 3 in the order in which they are generated.

SEG

For display purposes raw and processed versions are segmented into 512 pixel wide pieces with a controllable degree of overlap (default value 30). The digit (1, 2, ...) prior to the slash indicates the segment number and the digit following the slash indicates the total number of segments.

CE

CE is the abbreviation sometimes used by FOVLIP for the FOVLIP CEID, or camera event identifier. It is a number ranging from 1 to 9999, assigned in successively increasing order by FOVLIP to camera events as they are received. This identifier has utility to the FOVLIP operator and to those perusing FOVLIP printer output.

PROC

The processing performed on the displayed version is indicated here. A FOVLIP software limitation enables only an indication of the kinds of processes applied to the data, not the order in which they were applied. There are four process indicator locations in the annotation space of the picture formats. Each is designated for a specific process in order to indicate that the process has been performed at least once, or that it has not been performed at all. The absence of a process is indicated by a — (dash). The four possible process indicators, in the order in which they can be indicated are DES, CON, HIP, RAD representing application, respectively, of the software programs ADESPIKE (automatic despiking of evidently noisy pixels), ACONALT (contrast alteration), AHIPASS (automatic highpass filtering), and ARADCAM (automatic radiometric camera decalibration). ARADCAM can be applied in either an "absolute" mode or a "limits" mode. The former mode transforms the picture data; the latter mode only evaluates radiometric parameters associated with the picture. If ARADCAM is applied in the "absolute" mode, "RAD" will appear in the fourth "PROC" position; otherwise, a — (dash) will appear. ARADCAM is discussed further in the following section.

RADI or SRAD

If ARADCAM(automatic radiometric camera decalibration) has been applied, either a RADI (radiance) or SRAD (spectral radiance) will be indicated in the line immediately following CE + PROC. Immediately following the RADI or SRAD there will appear, on the same line, a number pair representing the values of either radiance (watt cm^{-2}

$sterad^{-1}nanometer^{-1}$) associated with pixel values DN = 0 and DN = 63, respectively.

SEG AZ

The minimum and maximum azimuth values (in the camera command or control system) for the segment are indicated here. It should be noted that the line number associated with the commanded start azimuth for the CE is zero. Through a deficiency in FOVLIP, no line number zero is ever displayed. Thus, the minimum of the SEG AZ values indicated for the first segment of any CE will be greater than the commanded AZ START value by one resolution element.

SEG LINES

The first value is the line number associated with the left edge of the segment window. If imaging data occurs across the full width of the segment, the second value will be the line number associated with the right edge of the segment. Otherwise, the second number will be, in the absence of repeated scan lines, the line number associated with the (AZ) STOP command; in the event of repeated scan lines, this second line number will be that of the last line of logged data.

FOVLIP TIME

For the raw picture, this entry denotes the Julian day and GMT (Greenwich Mean Time) of receipt by FOVLIP of the last line of the CE. For processed versions, the day and time are, for practical purposes, those associated with the FOVLIP processing of the last line of the version.

ERT

This is the Julian day and GMT of receipt, at the earth based antenna, of the first bit of the first line of the CE.

EVENT GMT

Julian day and GMT (FOVLIP hand input) of occurrence of the CE on Mars, corrected for light path time delay. (Relativistic sophisticates will appreciate restrictions on the significance of this time.)

EVENT LLT

SOL (solar day) and time (FOVLIP hand input) representing local Lander time of the CE on Mars.

ANTISOL PT A + E

Azimuth and elevation (FOVLIP hand input) of the antisolar point in the control coordinate system of the camera in question.

SUN AZ + EL

Azimuth and elevation of sun in the astronomical "local horizon system". In this system the Mars local vertical, or zenith, is at +90° elevation, and the system horizon is at 0° elevation. Azimuth is reckoned clockwise from above relative to 0° directed toward the north.

TRANS FRQ

Frequency, in bits per sec., of the data transmission to earth as entered by the DSN (Deep Space Network.)

(TRANS) S/N

This is the average signal-to-noise ratio detected and entered at the earth bound receiving station. The units are db (decibels). Values of 10 to 15 are expected, with values greater than 15 judged to be quite good.

2.2.4 MTIS HISTOGRAM

The MTIS histogram format is interpreted in Fig. A-6.

2.2.5 GREY SCALE TEST PATTERN

The grey scale test pattern appearing in the lower right hand corner of the MTIS product is generated by FOVLIP and utilized by MTIS/MTPS for photo product standardization purposes.

2.2.6 SCALES/TIC MARKS

The inner scales immediately surrounding the image field designate camera scan line number (increasing to the right) and camera sample number (increasing upward). These scales are designed to enable quick and unambiguous readings at one pixel resolution. Primary enhancement of scale tic marks occurs every 100 pixels, secondary enhancement at intermediate 50 pixel locations, tertiary enhancement at 10 pixel increments, and patterned enhancemented at the intermediate even pixel values symmetrically displaced from the 10's by 2, 4, 6, and 8. With a little practice, the precise numerical value of any line or sample scale mark can be established in less than one second. Scan line number zero is associated with start azimuth. It is an idiosyncrasy of FOVLIP that it fails to display lines numbered zero on any of its products. The first displayed line is numbered 1. The camera acquires 512 pixels as it nods upward in vertical scan. It has been a convention to number these on the scale 0-511 and this convention has been adopted in FOVLIP.

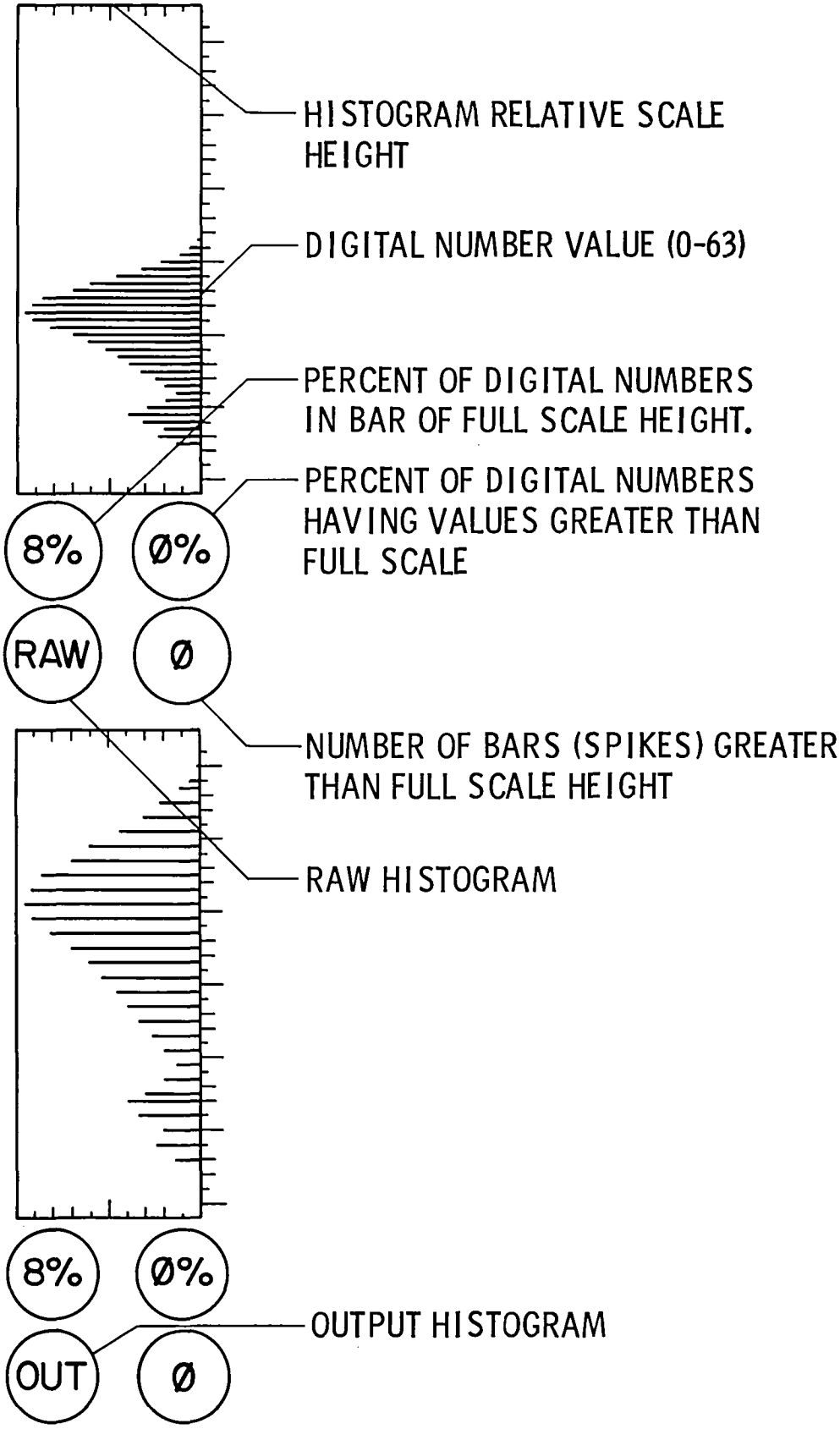


Fig. A-6. MTIS raw and output histograms.

The scales immediately surrounding those for camera line and camera sample indicate azimuth and elevation angles. A scale mark appears every 2.5° (as nearly as it can be placed considering that neither the 0.04° nor the 0.12° camera pointing angle steps divides integrally into 2.5°), to correspond with the permissible start/stop azimuth values of the camera. Pointing angle information derived from picture products is best determined by use of the camera commanded AZ START and EL CTR angle, camera angular STEP size, and appropriate line and sample readings. These determinations can be refined by incorporating a coning correction (as much as ± 0.5° at -60° elevation) and azimuth bolt-down and elevation calibration information. The camera is designed to scan symmetrically, in the vertical direction, about the commanded elevation angle (associated with camera sample number 255.5).

The first of the pair of azimuth angle values associated with each 10° tic mark, and separated from its partner by a / (slash), is in the camera command coordinate system azimuth (referred to as the "control azimuth" on the "skyline" drawings.) The second member of the pair is the LACCS (Lander camera coordinate system) azimuth angle (referred to as the "camera azimuth" on the "skyline" drawings.)

2.2.7 REPEATED SCAN LINE FLAG

Repeated scan lines are flagged by a horizontal black bar extending through the upper azimuth angle scale commencing at the first line of rescanned data and continuing to termination in the vicinity of the right extreme of the assigned image data space in the format.

2.2.8 SEGMENT OVERLAP FLAG

Segment overlap is indicated in the continued segment by hooked flags above and below the image space. The hook terminates on the last line of overlapped data.

2.2.9 MISSING LINE FLAG

If missing lines have been filled in (by a smoothing process), these lines will be flagged by short dashed segments at the top and bottom of each filled line.

2.3 DIGIFAX

An example of a Digifax product is shown in size in Fig. A-7. In nominal operation, four segments are printed per Digifax sheet. It is possible to produce single segments at 2 x 2 multiplication on a single sheet. Regardless of information content on the sheet, production time per sheet is approximately five minutes.

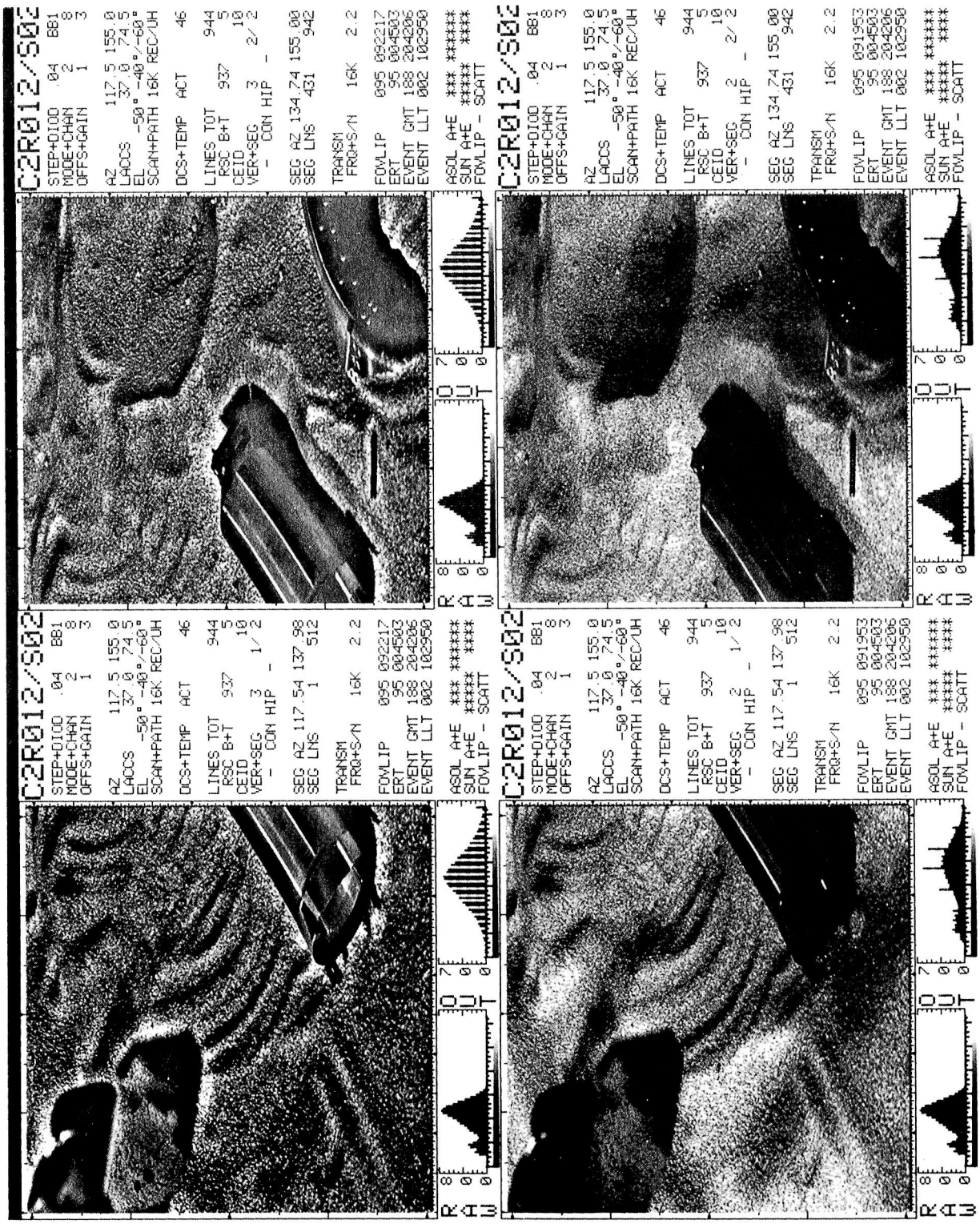


Fig. A-7. Example of digifax print.

APPENDIX

The CEL (Camera Event Label) located at the upper right hand corner of each image has been interpreted in sec. 2.2.1. The annotation field can largely be understood by reference to sec. 2.2.3. However, directly beneath the line containing the AZ start and stop values there appears the acronym LACCS, denoting Lander aligned camera coordinate system. On this line the start and stop azimuth values are given in a coordinate system that has its zero of reference directed perpendicular to the intercamera base line and toward the aft of the spacecraft (i.e., to the leg #1 side of the intercamera baseline).

Three numbers appear, one above the other, immediately to the left of each DIGIFAX histogram. The topmost number indicates the vertical scale value in terms of the percent of pixels that would reside in a bar of full scale height. The middle number denotes the total percentage of pixels that reside in the histogram bars exceeding full scale height. The bottom number indicates the number of histogram bars that exceed full scale height; these latter bars are dashed.

3. IPL IMAGE PRODUCT FORMATS

3.1 MASKVL

The MASKVL format can largely be understood by reference to the earlier MTIS format description. The present discussion is limited to significant differences from the MTIS product. See Fig. A-8.

AVE DATA NO

This is the mean DN value of the logged camera pixels within the RANGE indicated in column #3, on a scale of 0-255.

DATA QUALITY INDICATOR

(To be deleted)

MISSING LINES

This value represents the sum of 1) the calculated number of missing lines over the range from start to stop azimuth, inclusive, plus 2) the number of missing rescan lines evidenced between the last of the azimuthally incremented lines and the last logged line of rescanned data.

MISSING LINE GAPS

A pair of values denoting the first line number and the last line number for each missing line gap is indicated here. First and last values will be equal for single missing lines.

MARS LOCAL SOLAR HOUR ANGLE

(To be deleted)

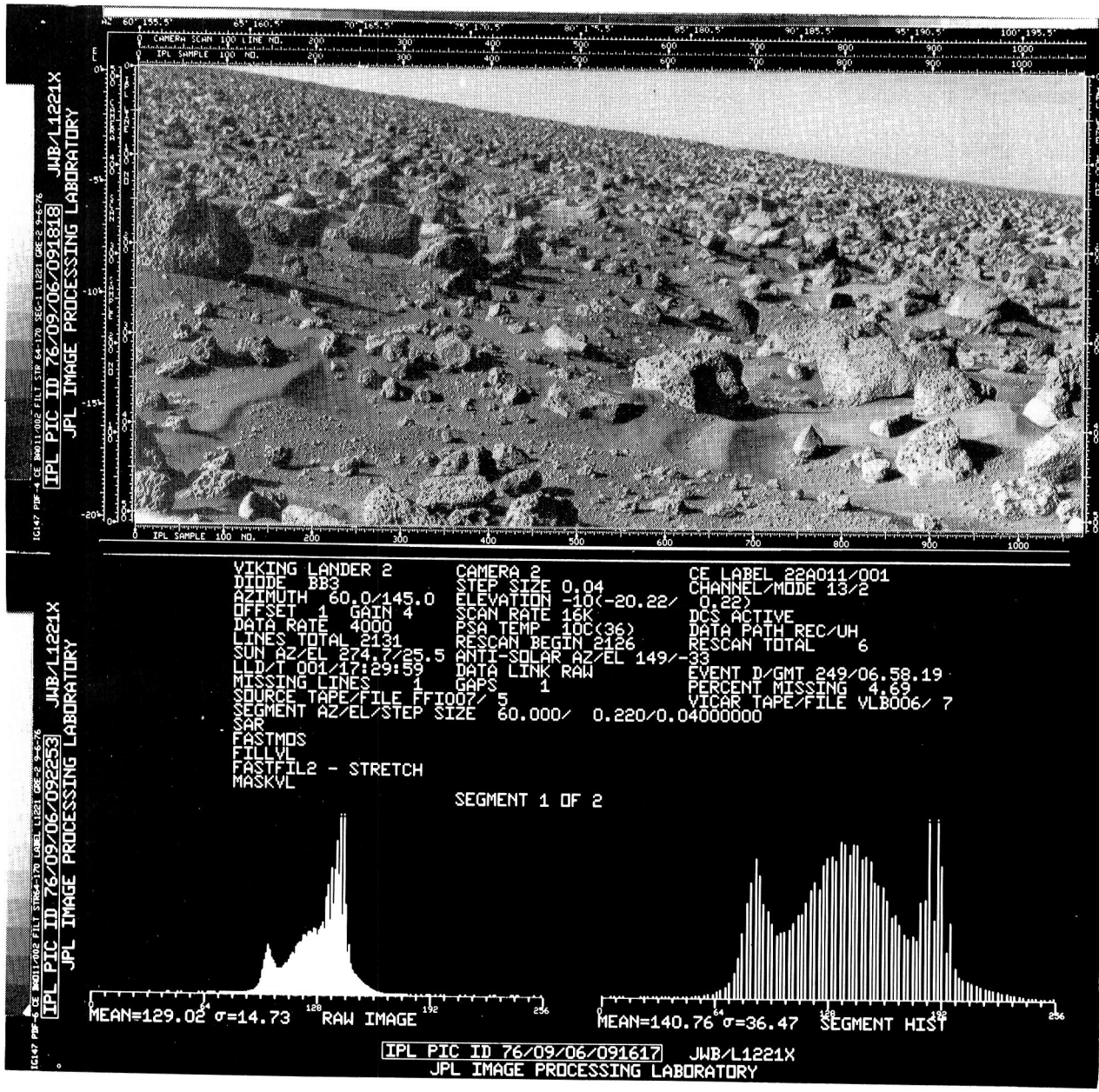


Fig. A-8. Example of IPL MASKVL photo product.

STANDARD DEVIATION

This is the standard derivation of pixel DN's on a scale of 0-255 over the RANGE (indicated in column #3).

MEAN VALUE

(To be deleted)

GAPS

This indicates the total number of missing line gaps.

RESCAN TOTAL

This is the total number of rescan lines logged at IPL.

WORST VALUE

(To be deleted)

PERCENT MISSING

This is the percent of missing lines (derived from the values of MISSING LINES and LINES TOTAL.)

SOURCE TAPE

This is 1) the tape number by which the source tape forwarded by FOVLIP to IPL may be referenced and 2) the file number associated with the image on the tape.

4. CAMERA LINE/SAMPLE AND IPL LINE/SAMPLE CONVENTIONS

Unfortunately, there are two distinct, entrenched, and unavoidable line/sample conventions for designating pixel locations in images. These are illustrated schematically in Fig. A-9.

Camera lines are oriented vertically. The lines are assigned numbers on board the Lander, and each line of returned data bears in its header its assigned line number. Pixel positions along the line are numbered 0-511, with 0 being at the bottom of the line. A singlet image (acquired using a single diode) scanning from a START AZ to a STOP AZ will contain line numbers 0, 1, 2,... from START AZ (left) to STOP AZ (right) as shown in the figure.

IPL (Image Processing Laboratory) has for many years employed a convention that is TV monitor oriented. IPL lines are horizontally aligned with numbers increasing downward, and 1 at the top. IPL samples increase to the right, with 1 at the left. The IPL convention is deeply imbedded in the Laboratory's application programs.

It will be important, whenever there is a possibility of misunderstanding, to specifically enunciate the system being employed, e.g., IPL LINE/SAMPLE or CAMERA LINE/SAMPLE (the latter perhaps abbreviated to CAM LINE/SAMPLE.)

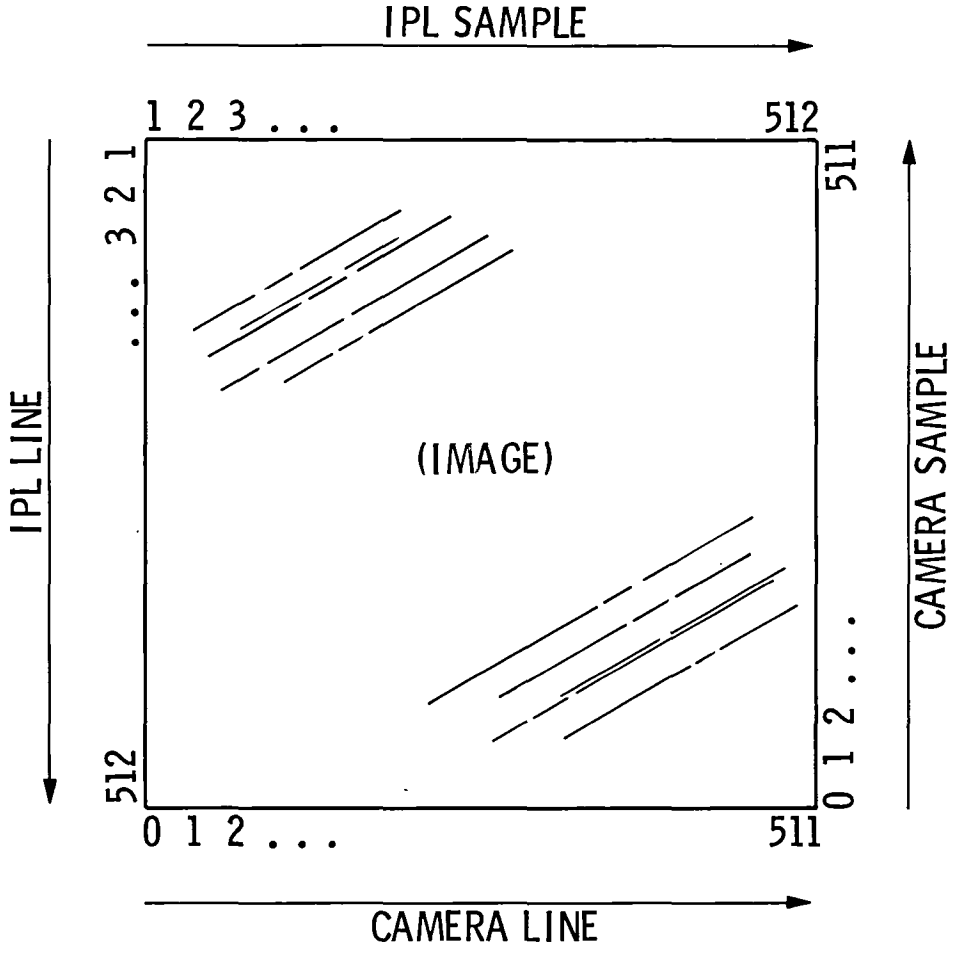


Fig. A-9. Schematic illustration of IPL line/sample and camera line/sample conventions for 512 pixel square image.

VIKING LANDER IMAGING CAMERA ORDER FORM

Scientists **OUTSIDE** the United States send order to:	Scientists **WITHIN** the United Sates send order to:
World Data Center A **Rockets and Satellites** **Code 601** **Goddard Space Flight Center** **Greenbelt, Maryland 20771, USA**	**National Space Science Data Center** **Code 601.4** **Goddard Space Flight Center** **Greenbelt, Maryland 20771**

REQUESTER INFORMATION (Please print)

Name and Title		Position	
Division/Branch			Mail Code
Organization			
Address			
City		State	
Zip Code or Country	Telephone (Area Code) (Number) (Extension)		
Date of Request	Date Data Desired	(Our average processing time for a request is 3 to 4 weeks after receipt of request. Please allow ample time for delivery. We will notify you if we cannot meet the date specified.)	

INTENDED USE OF PHOTOGRAPHS (Check all that apply)

- ☐ Support of a NASA effort (project, study, etc.); Contract No. _____
- ☐ Support of a U.S. Government effort (other than NASA)
- ☐ Research and analysis project (individual or company sponsored)
- ☐ Educational purposes (explain below)
- ☐ Preparation of Master's thesis
- ☐ Preparation of Doctoral thesis
- ☐ Other
- ☐ Exhibit or display
- ☐ Reference material
- ☐ Use in publication

Please state briefly the research project(s) in which you are engaged and if you plan to prepare any articles for publication. If so, please acknowledge NSSDC as the source of the photographs and send us a copy of your publication for our record.

NSSDC CHARGE AND SERVICE POLICY

The purpose of the National Space Science Data Center (NSSDC) is to provide data and information from space flight scientific experiments in support of additional studies beyond those performed by the principal investigators. Therefore, NSSDC will provide data and information upon request to any researcher or organization resident in the United States. In addition, the same services are available to researchers outside the United States through the World Data Center A for Rockets and Satellites (WDC-A-R&S). Normally, a charge is made for the requested data to cover the cost of reproduction and processing of the request. The researcher will be notified of the cost, and payment must be received prior to processing the request. However, as resources permit, the Director of NSSDC/WDC-A-R&S may waive the charge for modest amounts of data for use in scientific studies or specific educational purposes when they are requested by a researcher affiliated with: (1) NASA installations, NASA contractors, or NASA grantees, (2) other United States Government agencies, their contractors, or their grantees, (3) universities or colleges, (4) state and local governments, and (5) nonprofit organizations.

- ☐ Individual selected EDR 5-in. X 12-in. images (identify and order below)
- ☐ Complete set of EDR 5-in. X 12-in. images
- ☐ Individual microfiche of selected frames (identify and order below)
- ☐ Complete set of microfiche frames

INDIVIDUAL FRAME IDENTIFICATION

Mission 1 or 2	IPL PIC ID	CE label	Segment	Form *	Additional specifications

*Paper print, negative or positive film duplicates, microfiche.

VIKING LANDER IMAGING CAMERA ORDER FORM

Scientists **OUTSIDE** the United States send order to:	Scientists **WITHIN** the United Sates send order to:
World Data Center A **Rockets and Satellites** **Code 601** **Goddard Space Flight Center** **Greenbelt, Maryland 20771, USA**	**National Space Science Data Center** **Code 601.4** **Goddard Space Flight Center** **Greenbelt, Maryland 20771**

REQUESTER INFORMATION (Please print)

Name and Title	Position	
Division/Branch		Mail Code
Organization		
Address		
City	State	
Zip Code or Country	Telephone (Area Code) (Number) (Extension)	
Date of Request	Date Data Desired	(Our average processing time for a request is 3 to 4 weeks after receipt of request. Please allow ample time for delivery. We will notify you if we cannot meet the date specified.)

INTENDED USE OF PHOTOGRAPHS (Check all that apply)

- ☐ Support of a NASA effort (project, study, etc.); Contract No. _____
- ☐ Support of a U.S. Government effort (other than NASA)
- ☐ Research and analysis project (individual or company sponsored)
- ☐ Educational purposes (explain below)
- ☐ Preparation of Master's thesis
- ☐ Preparation of Doctoral thesis
- ☐ Other
- ☐ Exhibit or display
- ☐ Reference material
- ☐ Use in publication

Please state briefly the research project(s) in which you are engaged and if you plan to prepare any articles for publication. If so, please acknowledge NSSDC as the source of the photographs and send us a copy of your publication for our record.

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☐ Individual selected EDR 5-in. X 12-in. images (identify and order below)
☐ Complete set of EDR 5-in. X 12-in. images
☐ Individual microfiche of selected frames (identify and order below)
☐ Complete set of microfiche frames

INDIVIDUAL FRAME IDENTIFICATION

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15. Supplementary Notes

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16. Abstract

The images returned by the two Viking landers during the Viking Survey Mission are presented in this report. Listings of supplemental information which describe the conditions under which the images were acquired are included. Subsets of the images are listed in a variety of sequences to aid in locating images of interest. The format and organization of the digital magnetic tape storage of the images are described. A brief description of the mission and the camera system is also included.

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