APOLLO AS-502 MISSION DATA AND INFORMATION LIST, 70MM COLOR PHOTOGRAPHY

1 July 1968

Submitted By
Mapping Sciences Branch
Lunar and Earth Sciences Division
National Aeronautics and Space Administration
Manned Spacecraft Center
Houston, Texas

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Prepared By
Lockheed Electronics Company
for
Lunar and Earth Sciences Division
Under NASA Contract NAS 9-5191

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Approved By _____
Group Supervisor

Approved By _____
Section Supervisor

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Houston, Texas

PREFACE

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ABSTRACT

The Apollo 502 mission exposed 370 images in sequence, from 99 to 200 nautical miles, over the United States, the Atlantic Ocean and Africa, 4 April 1968.

The film used was Ektachrome SO-121 high resolution aerial, 70mm film with a Wratten ZE filter.

The approximate solar time, latitude and longitude, altitude, ground tract width, and scales, derived from the spacecraft ground ellapsed time, are correlated with each photograph. The percent cloud cover, correlative Gemini photograph(s) and brief descriptions of various scientific disciplines are also provided for each image.

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1. INTRODUCTION

Valuable information was derived from the flight of the Apollo 502 mission as a result of the placement of an on-board spacecraft camera, used in the taking of a single continuous sequence of reconnaissance stereoscopic photographs, using a relatively new high resolution color film.

The primary objective of the Apollo 502 mission was to test the spacecraft booster performance. A secondary objective was to establish a photographic mission, which would begin at the end of the first orbit near New Orleans, and terminate near the end of the second orbit over Baja California. The nominal orbit was to be circular at 100 nautical miles. Approximately 300 photographs were to be taken and returned to earth in the command module. The film was to be recovered, and flown to the Manned Spacecraft Center to be processed in the Precision Photographic Laboratory.

The following pages comprise a preliminary report of the screening of these photographs by the Mapping Sciences Branch/Mapping Sciences Laboratory. This report contains a catalog of the photographs as well as pertinent image data.

2. DISCUSSION

2.1 Mission

The mission performance schedule was such that the camera system could not be connected electrically to the spacecraft. Therefore,

the camera system was self powered and provided no data for telemetry.

The still camera mission was to be initiated by a 2.5 gravity switch near the time of lift off. This response activated a time delay device that initiated the camera exposure sequence 1½ hours after launch.

2.1.1 Nominal mission

The camera was to begin taking pictures, at the end of the first 100 nautical mile circular orbit. At this time the spacecraft was over New Orleans with the camera axis pointing into space. The spacecraft was then to make a 180° roll which would position the camera axis in an earthward photographic attitude. This orientation would produce essentially, a vertical camera axis over central Georgia, in the approximate area of Eastland. The camera would continue exposing film as the spacecraft passed over the Atlantic Ocean, the continent of Africa, and the dark side of the earth. Orbital continuation would bring the spacecraft into the light over the eastern Pacific, across Baja California and the Gulf of California. At this time, near the end of the second orbit, the spacecraft was to begin a second attitude maneuver and roll 180° so the camera axis would point skyward. The camera would continue exposing and advancing the film until the film supply was exhausted.

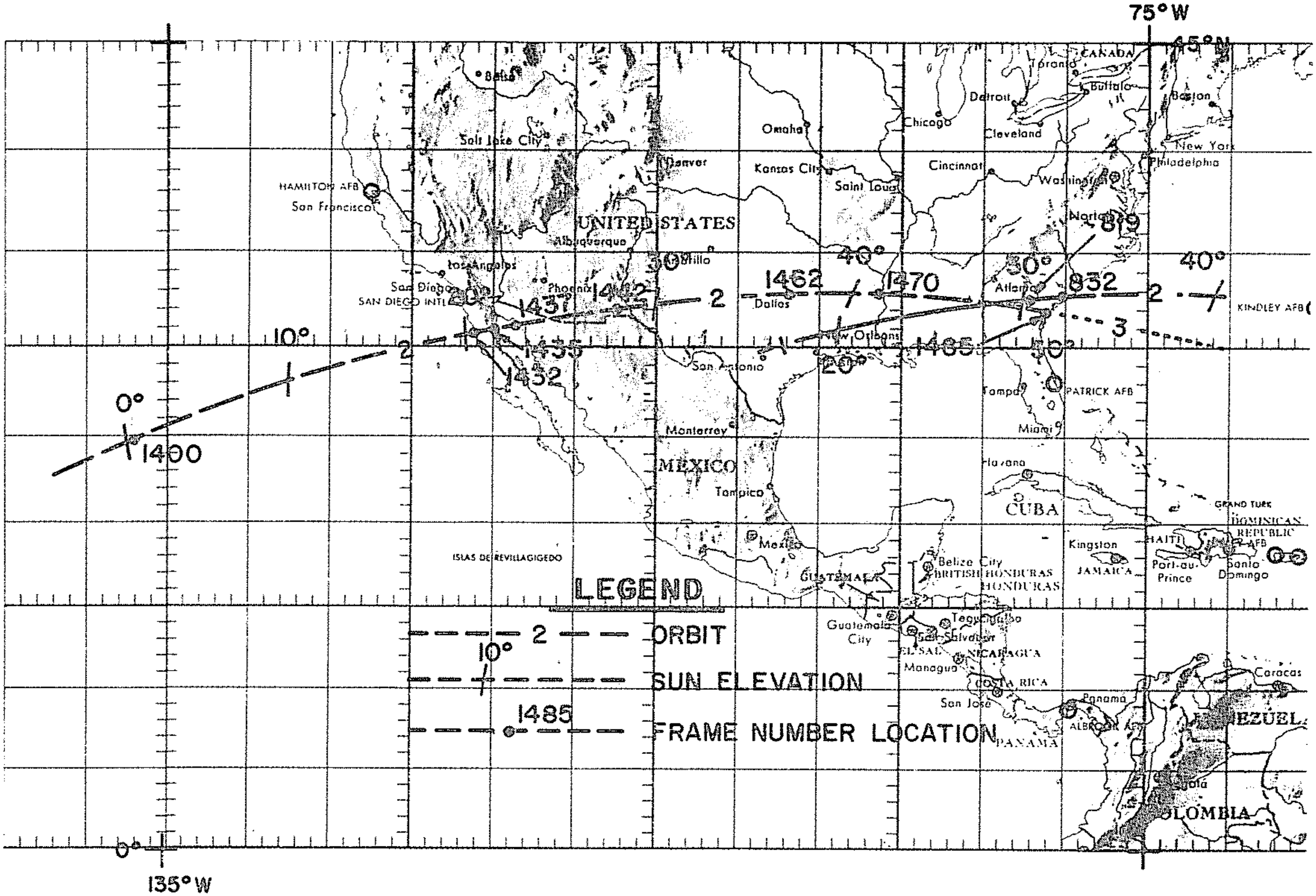
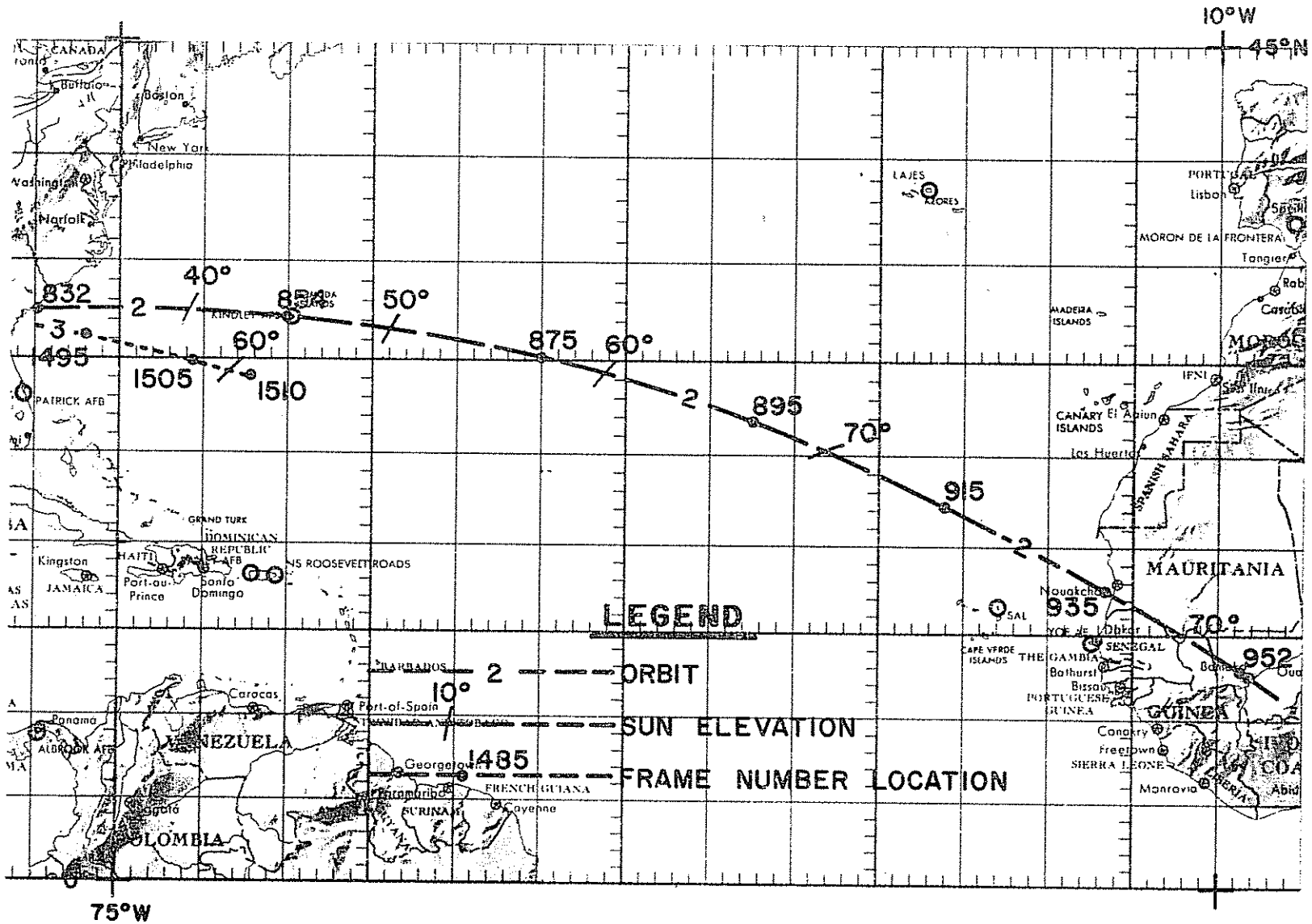

75° W
45° N
135° W
0°
10°
1400
2
1437
1442
1435
1452
1462
1470
1485
832
819
3
20°
30°
40°
LEGEND
2 ORBIT
10° SUN ELEVATION
1485 FRAME NUMBER LOCATION
UNITED STATES
MEXICO
CUBA
CANADA
HAMILTON AFB
San Francisco
SAN DIEGO INTL
San Diego
Los Angeles
Salt Lake City
Denver
Albuquerque
Phoenix
Omaha
Kansas City
Saint Louis
Chicago
Detroit
Cleveland
Cincinnati
Toronto
Buffalo
Boston
New York
Philadelphia
Washington
Norfolk
Atlanta
Dallas
San Antonio
New Orleans
Monterrey
Tampico
Mexico
Tampa
Miami
PATRICK AFB
Havana
KINDLEY AFB
GRAND TURK
DOMINICAN REPUBLIC
HAITI
Port-au-Prince
Santo Domingo
Kingston
JAMAICA
Belize City
BRITISH HONDURAS
HONDURAS
GUATEMALA
Guatemala City
EL SAL.
San Salvador
Tegucigalpa
NICARAGUA
Managua
COSTA RICA
San Jose
PANAMA
Panama
ALBROOK AFB
Caracas
COLOMBIA
ISLAS DE REVILLAGIGEDO

Figure No. 1


10°W
45°N
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832
2
3
495
40°
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1505
1510
50°
875
60°
2
895
70°
915
2
935
70°
952
1485
LEGEND
ORBIT
SUN ELEVATION
FRAME NUMBER LOCATION
CANADA
Boston
New York
Philadelphia
Washington
Norfolk
PATRICK AFB
LAJES
AZORES
MADEIRA ISLANDS
CANARY ISLANDS
Las Palmas
Lisbon
Tangier
Rabat
Casablanca
IFNI
Sidi Ifni
SPANISH SAHARA
MAURITANIA
Nouakchott
SAL
CAPE VERDE ISLANDS
SENEGAL
THE GAMBIA
Bathurst
Bissau
PORTUGUESE GUINEA
GUINEA
Conakry
Freetown
SIERRA LEONE
Monrovia
GRAND TURK
DOMINICAN REPUBLIC
HAITI
Port-au-Prince
Santo Domingo
JAMAICA
Kingston
ROOSEVELT ROADS
BARBADOS
Port-of-Spain
Caracas
VENEZUELA
Panama
ALBROOK AFB
Bogota
COLOMBIA
Georgetown
SURINAM
Paramaribo
FRENCH GUIANA
Cayenne

Figure No. 2

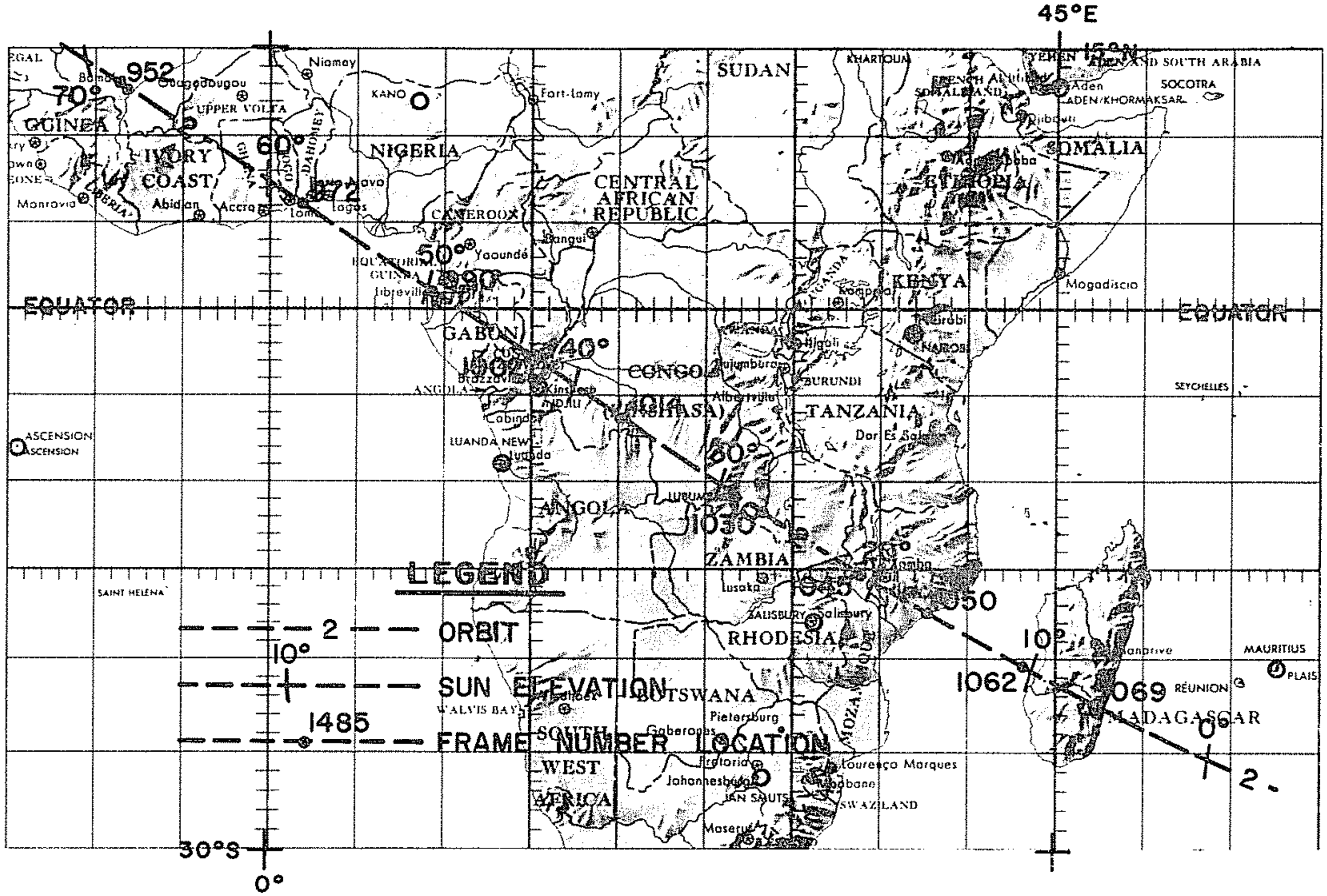
45°E
EQUATOR
SUDAN
NIGERIA
CENTRAL AFRICAN REPUBLIC
IVORY COAST
GUINEA
SOMALIA
KENYA
TANZANIA
CONGO
GABON
ANGOLA
ZAMBIA
RHODESIA
BOTSWANA
SOUTH WEST AFRICA
MADAGASCAR
LEGEND
2 ORBIT
10° SUN ELEVATION
1485 FRAME NUMBER LOCATION
952
972
990
1002
1014
1030
1045
1050
1062
1069
70°
60°
50°
40°
30°
20°
10°
0°
30°S
0°

Figure No. 3

FILM LAYOUT
70 mm

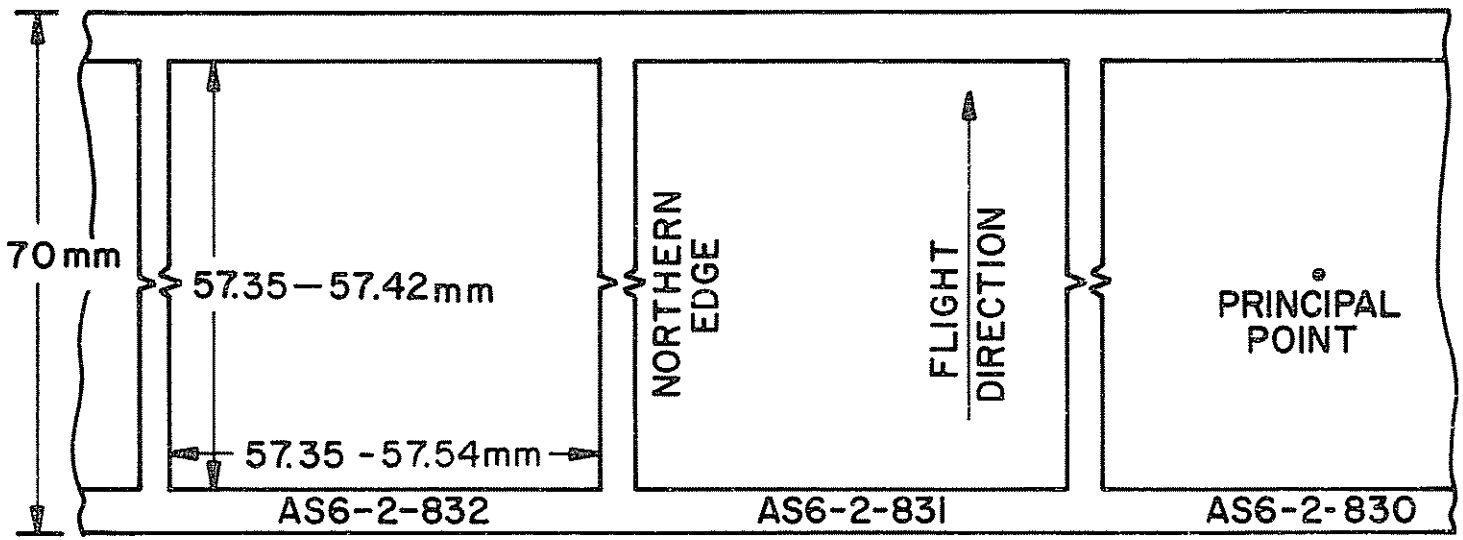

Figure No. 4

2.1.2 Actual mission

The prescribed sequence of booster power on the spacecraft did not perform as planned. This malfunction produced an ellipitical orbit with an apogee of 200 nautical miles, and a perigee of 99 nautical miles. The second 180 degree roll over Baja California did not occur and the camera remained pointing earthward. The orbit profile alteration produced some high altitude, apogee photography, of increasing overlap during the final stage of the second orbit. The film supply was exhausted over the western Atlantic, as noted in Figures 1, 2 and 3.

The photographs are essentially vertical, however, there exists a small variation in the spacecraft control mechanism allowing the camera axis to roam about the nadir point. Preliminary photogrammetric results from the examination of two photographs, indicate that the camera axis varies from the true vertical by angles of 0 to 5 degrees. At extreme orbital altitudes, this small angle of tilt is not a major problem for initial photo interpretation.

Launch time for the actual mission was 7:00:01 EST, 12:00:01 Zulu, 4 April 1968. The launch site was complex 39-A, Kennedy Space Center, Florida.

2.2 Camera Data

•J. A. Maurer, 70mm camera, Model 220G

- Lens: Kodak Ektar, f/2.8, focal length, 76mm
- Aperture setting: f/5.6
- Shutter: focal plane, speed setting 1/500
- Filter: Wratten 2E
- Intervalometer setting: 8.64 seconds
- Anti-vignetting filter: none
- Platen vacuum: none; center of photograph more fuzzy than edges
- Exposure clock: none
- Fiducial marks: two were recorded on the film from a set of four
- Mounting: the camera was bolted to the interior of the Command Module with the view through the hatch window.
- Film transport: acceptable but variable, 90° to flight direction (see Figure 4)
- Camera parameters preclude this system from being a metric mapping camera, however, the reconnaissance ability of the camera system was quite applicable to the photographic mission desired

2.3 Film data

- Type: Eastman Kodak, Ektachrome, SO-121, high resolution aerial, 70mm
- ASA 64
- Color response: low in the blue, high in the red
- Film duplication: reproduction requests have been completed on 5386, a cinamascope movie film
- Emulsion: original pre-exposed emulsion contained streaks normal to film transport direction

•Format: almost square, ranging from 57.35 to 57.42mm parallel to the flight direction and 57.35 to 57.54mm normal to the flight direction, see Figure 4

•Resolution is 160 lines/mm at a 1000:1 contrast

2.4 Equipment/data used for interpretation

2.4.1 Transparency media

2.4.1.1 Tube magnifiers 7x, linen testers 5x

2.4.1.2 Stereoscopes

2.4.1.2.1 Hand, folding, 2x and 4x

2.4.1.2.2 Zoom, binocular, 0.7-30x

2.4.1.2.3 Rear projection viewers, 3, 4, 8, 12 and 24 magnification

2.4.2 Paper prints

2.4.2. 2.4.2.1 Tube magnifiers 7x, linen testers 5x, metric and English system scales

2.4.3 Simulated orbital mission ephemeris

Mission Planning and Analysis Division/Apollo Trajectory Support Group supplied two products, a post flight mission ephemeris and a simulated orbital mission. MPAD/ATSG compared and adjusted the simulated mission to the ephemeris and produced an updated simulated orbital mission computer printout. The validity of the ephemeris is well established by corroboration of several radar tracking stations.

Direct use of the post flight ephemeris was not feasible because of the work involved and the camera intervalometer time of 8.64 seconds.

Using an estimated time for the activation of the gravity switch followed by the time delay for the first exposure, the spacecraft/camera position was computed from the above digital data. The non-interference requirement placed upon the photographic mission by the spacecraft mission schedule, precluded any specific knowledge of ground elapse time, and therefore, spacecraft position. If the precise exposure time were known, the photographs could be correlated to the spacecraft position. The geographic position of the nadir point of some frames were plotted over areas of North America where sufficient planimetric control existed. The nadir point of the photographs were discovered to be beyond acceptable limits from geographically plotted principal points of the frames. The estimated time of the first exposure was then advanced 20.16 seconds to allow the simulated nadir point to more closely correspond with the plotted principal point of the photographs. Therefore, the solar time or the recorded times of exposure on the Screening Information List are estimates and are to be considered ONLY as approximate. The precise time of each exposure may never be known. Since the

Screening Information List categories of solar time, altitude, scales and nadir points are all derived from the spacecraft ground elapse time, these categories are also only to be considered as approximate. However, the listed positions and distances are expected to be close to the precise data and therefore useful to the user.

2.5 Image Enhancement

2.5.1 Low light level exposures

Due to changing sun elevations and the necessity to optimize the shutter speed and aperture setting for only one area, certain portions of the roll of photographs are under-exposed. Several frames from these dark portions were individually reproduced again by over-exposing them. Better imagery was obtained by this process. Detail, which on the original film was too dark to see, was now made visible. This technique was especially beneficial over the eastern part of Africa, from the Gulf of Guinea to the east coast of Madagascar, where photographic sun elevations ranged from 50 degrees to about 7 degrees.

As a result of this investigation, photo interpreters are urged to enhance any orbital or aerial photograph taken at a low light level. Proper enhancement may produce additional image information not originally available to the analyst.

2.5.2 Duplication

Since SO-118 duplicating film was manufactured specifically to duplicate the SO-121 film, it is suggested that the SO-118 film be used in the future to duplicate the SO-121 film.

The SO-118 would have been used for the original duplications had the film been available in time for the Apollo 502 mission.

2.6 Interpretation suggestions and/or comments for Apollo 502 photographs

2.6.1 All shadows will point toward the zero phase point in the sunglint area. This is caused primarily by the perspective view of the taking camera and possible in part by the projection of the earth's curvature to the flat plane of the film. At the same point in time, on the ground, simultaneous azimuth readings on the cloud shadows would be identical.

2.6.2 In photographs taken at low sun elevations, the shadows will be more noticeable on the side of the photographs closest to the sun and between the edge of the photograph and the principal point. This phenomena makes the photograph appear to be poorly exposed.

2.6.3 The sunglint areas, especially on the ocean, can be used to an advantage for use in interpretating the variations of the surface reflectance on the ocean.

2.6.4 The distortions inherent in the lens system, as well as the small scale, prevent the use of the photographs for accurate terrain slope measurements.

2.6.5 Streaks produced in the original emulsion, normal to the film transport direction, should be carefully excluded from interpretations.

2.6.6 Film transparency duplicates are superior to paper prints for resolution, contrast, and edge acuity. Every photo interpretator is urged to obtain the best possible reproduction for his interpretation.

2.7 Screening Information List Explanation

The following is a column by column explanation of the Screening Information List:

2.7.1 Frame Number - Photographic frames from Apollo-Saturn 6, Mission 502 begin in number with AS6-2-756 and extend through frame number AS6-2-1510. Frames AS6-2-756 through AS6-2-818 were taken with the camera facing away from the earth and show only the dark void of space. Frame AS-6-2-819 is the first frame which contains identifiable features. Frames AS6-2-819 through AS6-2-826 are high oblique, horizon visible exposures. Frames AS6-2-827 through AS6-2-834 are low obliques decreasing in obliqueness with increasing frame number. Frames AS6-2-834 through AS6-2-1510 contain some degree and direction of camera axis tilt. Frame numbers have been assigned to each consecutive photograph of the mission

and constitute the primary means of identification for the particular frame. The Apollo Saturn 6 designation has been eliminated in the list, for brevity.

2.7.2 Orbit Number - The spacecraft orbit number increases by one with each successive pass over the longitude of Kennedy Space Center, as shown in Figure 1.

2.7.3 Solar Time - The solar time, for any particular longitude was derived from the summation, in seconds, of spacecraft launch time, (Greenwich time), and the ground elapsed time. The process of determination consists of converting all time to seconds, and either subtracting four minutes per degree for west longitude or adding four minutes per degree for east longitude. The final time for each frame was derived by reconverting seconds back to hours and minutes.

The listed solar time for those frames over land is relatively accurate. These frames, when not completely occupied by clouds, were positioned by superimposing the photographs' principal points on corresponding planimetric maps. The plotted principal points are considered accurate within two minutes of longitude.

In cases of extreme cloud cover and when over ocean bodies, the photograph nadir point was used for solar time computation. This point was derived from post mission ephemeris and simulated orbital mission data, which are based upon

the correlation of spacecraft ground elapsed time (GET). The time derived by the nadir point method is less accurate than time derived by the principal point method, because the exact time of exposure is not known. The time of exposure for each frame, which was projected from an exposure interval of 8.64 seconds, is at best only a close estimation.

In cases where the solar time was derived by nadir point computation, the exposure time varied from the ordinary exposure interval and occurs earlier or later than normally expected. This is because the nadir point and the principal point do not exactly correspond geographically.

2.7.4 Principal Point, latitude and longitude - The listed latitude and longitude for each frame was determined by principal point projection where applicable or by nadir point computation where necessary.

2.7.4.1 Principal point projection and plotting

ACIC Sectional, ONC, and WAC charts were mosaiced into strips covering the orbital path and reduced to 1:1,000,000 scale on translucent vellum. The photographs were projected through a Kail projector, and enlarged 2 to 3 times. The photographic image was superimposed on the strip vellum, positioned and plotted by comparison of the planimetric detail. Loss of image detail due to cloud cover, low light level at the time of exposure and the amount of

planimetric detail of the maps would be the causes of any error in this method. The amount of error could be as much as 2 minutes of latitude or longitude.

2.7.4.2 Nadir point computation

Preliminary photogrammetric analysis of the vertical Apollo 502 photographs shows the camera axis could be tilted as much as 3 to 5 degrees from the nadir point axis. This means the nadir and principal points are relatively near each other, geographically. Therefore, when it was not possible to correlate the principal point with planimetric features due to cloud cover or an ocean view, the spacecraft position, hence the camera position and nadir point, were computed by the method described in detail in paragraph 2.4.3. An asterisk precedes the latitude where the nadir point is used in the Screening Information List instead of the principal point.

2.7.5 Spacecraft altitude, Ground Track Width and Scales

The data for the lists of these categories were obtained from data derived from the post-flight ephemeris and the simulated orbital mission computer printout furnished by MPAD/ATSG. Like the data of latitude and longitude of the nadir point and the solar time, these categories depend upon the spacecraft ground elapsed time, which is the one universal correlator of a spacecraft mission. For the

reasons described in section 2.4.3, simulated orbital mission ephemeris, the listed data are only approximate, but useful to the user of the orbital photographs.

A brief explanation of each of these categories is desirable and follows below.

The spacecraft altitude is that distance the spacecraft is above the earth's surface.

The Ground Track Width is the approximate distance on the earth's surface contained within the image format, normal to the spacecraft's flight direction.

The three separate categories of scales refer to the size of the format media most likely obtained by users of the Apollo 502 still photographs.

The 70mm size is the total width of the original onboard film and subsequent contact reproductions, including the sprocket holes on each side. The image is somewhat smaller, as can be seen in Figure 4.

The 8 x 10 format refers to the size, in inches, of the paper prints on which the image is reproduced. The image size will vary from print to print as the paper may stretch and shrink in either direction. The printing mask may also vary slightly from exposure to exposure. The average size of the image is 7.5 inches square on the 8 x 10 prints.

The 9 x 9 format is the common term applied to 9.5 inch width roll film or paper prints of a single frame, at this size. It is expected that the 9 x 9 film format will become the most popular reproduction format of the Apollo 502 photographs because of the three times enlargement of the original image, the marked superior qualities of film transparancy over that of the paper print, edge acuity, contrast, and resolution.

2.7.6 Percent Cloud Cover

This category is estimated by overlaying the photograph with a clear film on which a square block, the size of the image, is subdivided into 100 squares. A visual estimation is then made as to the percent of the image area that is covered by clouds. This information can be helpful to the user to determine the value of the individual photograph depending upon the interest of the user.

2.7.7 Correlative Gemini Photographs

This data has been compiled to aid the user in the correlation of Apollo 502 still photographs with Gemini photographs of the same locality. Correlations of this type, with common views at different exposure times will make a significant contribution to the Earth Resources Program.

The list was compiled by reviewing the descriptions of the Gemini photographs that were taken over the same orbital path of the Apollo 502 mission and comparing them with the Apollo 502 descriptions.

2.7.8 Descriptions

Members of the Mapping Sciences Branch, Mapping Sciences Laboratory briefly described, where applicable, each photograph of the mission by applying the following categories of scientific disciplines: geography, agriculture, geology, hydrology, forestry, oceanography, and meteorology. These descriptions are brief, generalized, and are made to aid the user in determining those photographs that are most applicable. The purpose is not to perform a detailed scientific analysis of the views, but rather to point out the apparent image evidence.

Since the Mapping Sciences Laboratory personnel are not trained in meteorology, NASA's Dr. Victor Whitehead of the Space Physics Branch, LESD, analyzed the photographs and provided the necessary meteorological descriptions for the Screening Information List.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
819	1	0753	*31°58'N	86°39'W	210	130	99	1:2,762,000	1:829,000	1:690,000	98		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Frontal zone, dense cirrostratus and altostratus, some cumiloform tops.
820	1	0755	*32°05'N	85°59'W	209	130	99	1:2,754,000	1:826,000	1:689,000	98		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Frontal zone dense cirrostratus and altostratus, some cumiloform tops.
821	1	0758	*32°06'N	85°20'W	209	130	98	1:2,746,000	1:824,000	1:686,000	98		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Frontal zone, dense cirrostratus, some cumiloform tops.
822	1	0801	*32°11'N	84°40'W	209	129	98	1:2,738,000	1:821,000	1:685,000	97		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Frontal zone, small clear band behind front, dense cirrostratus, some cumiloform tops.
823	1	0802	*32°15'N	84°18'W	208	129	98	1:2,730,000	1:819,000	1:683,000	97		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: East of frontal zone, dense cirrus and altostratus, multilayered.
824	1	0806	*32°18'N	83°20'W	207	129	97	1:2,722,000	1:817,000	1:681,000	97		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: East of frontal zone, dense cirrus and altostratus, multilayered.
825	1	0809	*32°22'N	82°43'W	206	128	97	1:2,715,000	1:815,000	1:679,000	97		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Dense cirrus layered altocumulus - altostratus.
826	1	0810	*32°25'N	82°36'W	206	128	97	1:2,707,000	1:812,000	1:677,000	97		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Dense cirrus, layered altocumulus - altostratus.
827	1	0815	*32°28'N	81°24'W	205	128	97	1:270,000	1:810,000	1:675,000	96		GEOGRAPHY: Oblique looking northward; Georgia, Tennessee, North and South Carolina. METEOROLOGY: Dense cirrus, layered altocumulus.
828	1	0817	*32°30'N	80°44'W	205	127	96	1:2,693,000	1:808,000	1:673,000	90		GEOGRAPHY: Georgia, South Carolina. HYDROLOGY: Edisto River. METEOROLOGY: Dense cirrus; altocumulus, layered, thin single layer to southeast.
829	1	0820	*32°33' N	80°05' W	204	127	96	1:2,685,000	1:806,000	1:671,000	70		GEOGRAPHY: Georgia, South Carolina; Williston, Blackville, Barnwell. HYDROLOGY: Savannah, Congaree, Edisto Rivers. METEOROLOGY: Dense cirrus to northwest; thin altocumulus to center.
830	1	0823	*32°35' N	79°25' W	204	126	96	1:2,678,000	1:804,000	1:670,000	70		GEOGRAPHY: South Carolina; Barnwell, Williston, Blackville; Aiken; Sand Hills. HYDROLOGY: Congaree River, Edisto River. METEOROLOGY: Dense cirrus, thin altocumulus.
831	1	0826	*32°37'N	78°46' W	203	126	96	1:2,670,000	1:801,000	1:668,000	86		GEOGRAPHY: South Carolina; Georgetown; Sand Hills, and Coastal Plain. HYDROLOGY: Lake Marion, Congaree River. METEOROLOGY: Some cirrus, thin altocumulus.
832	2	0829	*32°39'N	78°06' W	202	126	95	1:2,664,000	1:799,000	1:666,000	92		GEOGRAPHY: South Carolina, Atlantic coast from Charleston to Winyah Bay. METEOROLOGY: Cirrus; altocumulus
833	2	0831	*32°40'N	77°26' W	202	125	95	1:2,658,000	1:797,000	1:664,000	94		GEOGRAPHY: South Carolina; Atlantic Ocean. METEOROLOGY: Cirrus; altostratus, altocumulus.
834	2	0834	*32°42'N	76°46' W	201	125	95	1:2,650,000	1:795,000	1:662,000	90		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Altostratus, altocumulus.
835	2	0837	*32°42'N	76°07' W	201	125	95	1:2,643,000	1:793,000	1:661,000	85		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Altostratus, altocumulus.
836	2	0840	*32°43'N	75°27' W	200	125	94	1:2,637,000	1:791,000	1:659,000	75		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Altostratus; altocumulus.
837	2	0843	*32°44' N	74°47' W	200	124	94	1:2,630,000	1:789,000	1:658,000	72		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Altostratus lines orientated northeast-southwest; some altocumulus.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 9" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
838	2	0846	*32°44'N	74°07'W	199	124	94	1:2,624,000	1:787,000	1:656,000	65		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altostratus lines orientated northeast-Southwest some altocumulus.
839	2	0848	*32°44'N	73°27'W	199	124	94	1:2,617,000	1:785,000	1:654,000	55		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Some altostratus, mostly altocumulus.
840	2	0851	*32°44'N	72°48'W	198	123	93	1:2,611,000	1:783,000	1:653,000	70		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, little organization.
841	2	0854	*32°43'N	72°01'W	198	123	93	1:2,605,000	1:781,000	1:651,000	72		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, little organization.
842	2	0857	*32°43'N	71°28'W	197	123	93	1:2,599,000	1:780,000	1:650,000	30		GEOGRAPHY: Atlantic Ocean OCEANOGRAPHY: Variation in reflective pattern, possibly due to wind or temperature METEOROLOGY: Altocumulus, little organization.
843	2	0859	*32°42'N	70°48'W	197	122	93	1:2,592,000	1:778,000	1:648,000	21		GEOGRAPHY: Atlantic Ocean OCEANOGRAPHY: Reflective change, due to possible wind or temperature variation. METEOROLOGY: Altocumulus, patchy.
844	2	0902	*32°41'N	70°08'W	197	122	93	1:2,587,000	1:776,000	1:647,000	37		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus Band.
845	2	0905	*32°22'N	69°28'W	196	122	92	1:2,580,000	1:774,000	1:645,000	65		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus Bands.
846	2	0908	*32°38'N	68°48'W	196	122	92	1:2,576,000	:773,000	1:644,000	41		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus Area.
847	2	0909	*32°36'N	68°40'W	195	121	92	1:2,570,000	1:770,000	1:642,000	18		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus.
848	2	0913	*32°34'N	67°28'W	195	121	92	1:2,564,000	1:769,000	1:641,000	22		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Thin altocumulus.
849	2	0916	*32°32'N	66°48'W	194	121	92	1:2,558,000	1:768,000	1:640,000	50		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Thin altocumulus layer.
850	2	0919	*32°29'N	66°09'W	194	121	91	1:2,553,000	1:766,000	1:638,000	54		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, altostratus.
851	2	0922	*32°27'N	65°29'W	194	120	91	1:2,548,000	1:764,000	1:637,000	41		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Thin altocumulus, altostratus layer, some small cumulus, little organization.
852	2	0932	*32°24'N	64°50'W	193	120	91	1:2,542,000	1:763,000	1:636,000	67		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, altostratus layer, some small cumulus.
853	2	0927	*32°20'N	64°10'W	193	120	91	1:2,538,000	1:761,000	1:634,000	66		GEOGRAPHY: Bermuda Island, Atlantic Ocean. OCEANOGRAPHY: Light tones and shallow water patterns surrounding island area. METEOROLOGY: Altocumulus, Altostratus layer, some small cumulus.
854	2	0930	*32°17'N	63°31'W	192	120	91	1:2,533,000	1:760,000	1:633,000	53		GEOGRAPHY: Bermuda Island, Atlantic Ocean. OCEANOGRAPHY: Light tones and shallow water patterns surrounding island area. METEOROLOGY: Altocumulus, Altostratus layer, small cumulus.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILOMETERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
855	2	0933	*32°14'N	62°51'W	192	119	90	1:2,528,000	1:758,000	1:632,000	68		GEOGRAPHY: Bermuda Island, Atlantic Ocean OCEANOGRAPHY: Light tones and shallow water patterns surrounding island area. METEOROLOGY: Altocumulus, Altostratus layer.
856	2	0936	*32°04'N	62°11'W	192	119	90	1:2,523,000	1:757,000	1:631,000	78		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, Altostratus layer.
857	2	0939	*32°05'N	61°32'W	191	119	90	1:2,518,000	1:756,000	1:630,000	85		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus patches, Altostratus layer.
858	2	0941	*32°01'N	60°53'W	191	119	90	1:2,514,000	1:754,000	1:628,000	93		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus patches, Altostratus layer, sharp edge on thicker cloud.
859	2	0944	*31°57'N	60°13'W	191	119	90	1:2,510,000	1:753,000	1:627,000	85		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, Altostratus layer, sharp edge on thicker cloud.
860	2	0947	*31°52'N	59°34'W	190	118	90	1:2,505,000	1:752,000	1:626,000	75		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, some small cumulus.
861	2	0950	*31°46'N	58°55'W	190	118	90	1:2,501,000	1:750,000	1:625,000	69		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Altocumulus, some small clouds.
862	2	0952	*31°42'N	58°16'W	190	118	89	1:2,497,000	1:749,000	1:624,000	65		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cumulus
863	2	0955	*31°37'N	57°37'W	189	118	89	1:2,493,000	1:748,000	1:623,000	71		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; Altocumulus, cirrus, small cumulus.
864	2	0958	*31°31'N	56°58'W	189	118	89	1:2,489,000	1:747,000	1:622,000	73		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; Altocumulus, cirrus, small cumulus.
865	2	1000	*31°24'N	56°32'W	189	117	89	1:2,485,000	1:746,000	1:621,000	82		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; cirrus, altocumulus, lower clouds aligned.
866	2	1003	*31°18'N	55°41'W	189	117	89	1:2,481,000	1:745,000	1:620,000	94		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; cirrus, altocumulus, altostratus.
867	2	1005	*31°13'N	55°08'W	188	117	89	1:2,478,000	1:743,000	1:619,000	99		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; middle and high clouds, some cumulus.
868	2	1009	*31°06'N	54°23'W	188	117	89	1:2,474,000	1:742,000	1:619,000	98		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; cirrus, middle clouds, some cumulus, little organization.
869	2	1011	*30°59'N	53°45'W	188	117	88	1:2,471,000	1:741,000	1:618,000	94		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Multilayered; cirrus, middle clouds, some cumulus, little organization.
870	2	1014	*30°52'N	53°07'W	188	117	88	1:2,468,000	1:740,000	1:617,000	83		GEOGRAPHY: Atlantic Ocean, sunglint. METEOROLOGY: Multilayered; cirrus, middle clouds, some cumulus, little organization.
871	2	1017	*30°45'N	52°28' W	187	116	88	1:2,465,000	1:739,000	1:616,000	50		GEOGRAPHY: Atlantic Ocean, sunglint METEOROLOGY: Multilayered; cirrus, middle clouds, some cumulus, little organization.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
872	2	1019	*30°38'N	51°50'W	187	116	88	1:2,462,000	1:739,000	1:615,000	54		GEOGRAPHY: Atlantic Ocean, sunglint METEOROLOGY: Multilayered; cirrus increased, middle clouds, some cumulus.
873	2	1022	*30°30'N	51°12'W	187	116	88	1:2,459,000	1:738,000	1:615,000	85		GEOGRAPHY: Atlantic Ocean, sunglint METEOROLOGY: Multilayered; chaotic sky.
874	2	1025	*30°22'N	50°33'W	187	116	88	1:2,456,000	1:737,000	1:614,000	48		GEOGRAPHY: Atlantic Ocean, sunglint OCEANOGRAPHY: Wave patterns in sunglint. METEOROLOGY: Multilayered; cirrus middle clouds, some cumulus.
875	2	1028	*30°14'N	49°55'W	186	116	88	1:2,543,000	1:736,000	1:613,000	25		GEOGRAPHY: Atlantic Ocean, sunglint OCEANOGRAPHY: Wave patterns in sunglint METEOROLOGY: Cirrus; some small cumulus.
876	2	1030	*30°06'N	49°18'W	186	116	88	1:2,450,000	1:735,000	1:613,000	74		GEOGRAPHY: Atlantic Ocean, sunglint METEOROLOGY: Cirrus, small cumulus, some cloud streets.
877	2	1033	*29°57'N	48°40'W	186	116	88	1:2,448,000	1:735,000	1:612,000	23		GEOGRAPHY: Atlantic Ocean, sunglint METEOROLOGY: Few cirrus, small cumulus, some in streets.
878	2	1036	*29°49'N	48°03'W	186	116	88	1:2,446,000	1:734,000	1:611,000	16		GEOGRAPHY: Atlantic Ocean, sunglint OCEANOGRAPHY: Wave patterns in sunglint METEOROLOGY: Small cumulus, some in streets.
879	2	1038	*29°40'N	47°25'W	186	115	87	1:2,443,000	1:733,000	1:611,000	20		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Small cumulus, altostratus, cirrus.
880	2	1041	*29°31'N	46°48'W	186	115	87	1:2,442,000	1:733,000	1:610,000	40		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Small cumulus, altostratus, cirrus.
881	2	1043	*29°22'N	46°11'W	185	115	87	1:2,440,000	1:732,000	1:610,000	44		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrus, some small cumulus, altostratus.
882	2	1046	*29°13'N	45°33'W	185	115	87	1:2,438,000	1:731,000	1:609,000	36		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrus; altostratus, some small cumulus.
883	2	1049	*29°03'N	44°56'W	185	115	87	1:2,436,000	1:731,000	1:609,000	51		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrus band, altostratus, small cumulus.
884	2	1051	*28°53'N	44°20'W	185	115	87	1:2,434,000	1:730,000	1:609,000	66		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrus band; altostratus, small cumulus.
885	2	1054	*28°43'N	43°43'W	185	115	87	1:2,433,000	1:730,000	1:608,000	75		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrostratus, some small cumulus.
886	2	1057	*28°33'N	43°06'W	185	115	87	1:2,431,000	1:729,000	1:608,000	99		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrostratus, layered below.
887	2	1059	*28°33'N	42°30'W	185	115	87	1:2,430,000	1:729,000	1:607,000	99		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrostratus, few holes, layered below.
888	2	1102	*28°29'N	41°53'W	185	115	87	1:2,429,000	1:729,000	1:607,000	99		GEOGRAPHY: Atlantic Ocean METEOROLOGY: Cirrostratus layer, one break in higher cloud, layered below.

*computer nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
889	2	1104	*28°13'N	41°17'W	185	115	87	1:2,428,000	1:728,000	1:607,000	100		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Solid cirrostratus layer.
890	2	1107	*28°08'N	40°41'W	184	115	87	1:2,427,000	1:728,000	1:607,000	100		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Solid cirrostratus layer.
891	2	1109	*27°51'N	40°05'W	184	115	87	1:2,426,000	1:728,000	1:606,000	98		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Solid cirrostratus layer, some wave form on cloud top, one break, scattered clouds below.
892	2	1112	*27°05'N	39°29'W	184	115	87	1:2,425,000	1:728,000	1:606,000	96		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Cirrostratus layer, scattered lower clouds.
893	2	1114	*27°17'N	38°53'W	184	115	87	1:2,424,000	1:727,000	1:606,000	94		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Cirrostratus layer, scattered small cumulus.
894	2	1117	*27°06'N	38°18'W	184	114	87	1:2,424,000	1:727,000	1:606,000	86		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, scattered small cumulus.
895	2	1119	*26°54'N	37°43'W	184	114	87	1:2,424,000	1:727,000	1:606,000	26		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, some in bands, small cumulus.
896	2	1122	*26°42'N	37°07'W	184	114	87	1:2,423,000	1:727,000	1:606,000	25		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave patterns in and around sun glint. METEOROLOGY: Cirrus, stratocumulus, small cumulus.
897	2	1124	*26°30'N	36°32'W	184	114	87	1:2,423,000	1:727,000	1:606,000	17		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, cumulus.
898	2	1127	*26°18'N	35°56'W	184	114	87	1:2,423,000	1:727,000	1:606,000	24		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Dark, narrow strip of water in the sun glint area. METEOROLOGY: Stratocumulus, cumulus.
899	2	1129	*26°05'N	35°22'W	184	114	87	1:2,423,000	1:727,000	1:606,000	24		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Dark, narrow strip of water in the sun glint area. METEOROLOGY: Stratocumulus, small cumulus.
900	2	1132	*25°52'N	34°47'W	184	114	87	1:2,424,000	1:727,000	1:606,000	16		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, small cumulus.
901	2	1134	*25°40'N	34°12'W	184	114	87	1:2,424,000	1:727,000	1:606,000	17		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, small cumulus.
902	2	1137	*25°27'N	33°38'W	184	115	87	1:2,424,000	1:727,000	1:606,000	24		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, small cumulus.

*computer nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILOMETERS	STATUTE MILES		70 MM	8" x 10"	9" x 9"			
903	2	1139	*25°13'N	33°03'W	184	115	87	1:2,425,000	1:728,000	1:606,000	15		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, small cumulus.
904	2	1142	*25°01'N	32°28'W	184	115	87	1:2,425,000	1:728,000	1:606,000	5		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Small cumulus.
905	2	1144	*24°48'N	31°55'W	184	115	87	1:2,426,000	1:728,000	1:606,000	4		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Small cumulus.
906	2	1146	*24°34'N	31°20'W	185	115	87	1:2,428,000	1:728,000	1:607,000	10		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Stratocumulus, small cumulus.
907	2	1149	*24°22'N	30°47'W	185	115	87	1:2,429,000	1:729,000	1:607,000	19		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Altocumulus, small cumulus.
908	2	1151	*24°07'N	30°13'W	185	115	87	1:2,430,000	1:729,000	1:607,000	17		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Altocumulus, small cumulus.
909	2	1154	*23°53'N	29°39'W	185	115	87	1:2,431,000	1:729,000	1:608,000	10		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Altocumulus, small cumulus.
910	2	1156	*23°39'N	29°06'W	185	115	87	1:2,432,000	1:730,000	1:608,000	6		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Anomalous reflection pattern in the sun glint area, showing possible surface wind pattern. METEOROLOGY: Altocumulus, small cumulus.
911	2	1158	*23°25'N	28°32'W	185	115	87	1:2,434,000	1:730,000	1:609,000	9		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Changes in tone of water in the sun glint area, not same area as #910. METEOROLOGY: Altocumulus, small cumulus.
912	2	1200	*23°11'N	27°59'W	185	115	87	1:2,436,000	1:731,000	1:609,000	9		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Altocumulus, small cumulus.
913	2	1203	*22°56'N	27°26'W	185	115	87	1:2,438,000	1:731,000	1:609,000	22		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. METEOROLOGY: Altocumulus, small cumulus.
914	2	1205	*22°42'N	26°52'W	185	115	87	1:2,440,000	1:732,000	1:610,000	32		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Changes in tone of water on edge of sun glint. METEOROLOGY: Stratocumulus.
915	2	1208	*22°27'N	26°20'W	185	115	87	1:2,442,000	1:733,000	1:611,000	23		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around sun glint. Changes in tone of water on edge of sun glint. Not same pattern as #914. METEOROLOGY: Stratocumulus.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILOMETERS	STATUTE MILES		70 MM	8" x 10"	9" x 9"			
916	2	1211	*22°12'N	25°47'W	186	115	87	1:2,444,000	1:733,000	1:611,000	17		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Well defined wave patterns in and around the sun glint. Anomalous reflection pattern, possibly caused by wind. METEOROLOGY: Stratocumulus.
917	2	1212	*21°58'N	25°14'W	186	116	88	1:2,447,000	1:735,000	1:612,000	12		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Reflective pattern of waves in sun glint. METEOROLOGY: Stratocumulus.
918	2	1215	*21°42'N	24°42'W	186	116	88	1:2,449,000	1:735,000	1:612,000	9		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Reflective pattern, probably due to wind and temperature variations. METEOROLOGY: Stratocumulus, unusual pattern, chain of cells 15-20 miles diameter.
919	2	1216	*21°09'N	24°27'W	186	116	88	1:2,452,000	1:736,000	1:613,000	21		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave or swell patterns in sun glint region. METEOROLOGY: Stratocumulus, unusual pattern, chain of cells 15-20 miles diameter.
920	2	1219	*21°12'N	23°37'W	187	116	88	1:2,454,000	1:736,000	1:614,000	36		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Variations in reflective pattern on ocean. METEOROLOGY: Stratocumulus, unusual pattern, chain of cells 15-20 miles diameter.
921	2	1222	*20°56'N	23°05'W	187	116	88	1:2,457,000	1:737,000	1:614,000	30		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Variations in reflective patterns probably due to temperature, wind, or salinity changes. METEOROLOGY: Stratocumulus, some patches with sharp edges.
922	2	1224	*20°41'N	22°33'W	187	116	88	1:2,460,000	1:738,000	1:615,000	15		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Variations in reflective patterns, probably due to temperature, wind, or salinity changes. METEOROLOGY: Stratocumulus.
923	2	1226	*20°25'N	22°01'W	187	116	88	1:2,463,000	1:739,000	1:616,000	11		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave or swell patterns in sun glint area. METEOROLOGY: Stratocumulus.
924	2	1229	*20°09'N	21°29'W	187	116	88	1:2,466,000	1:740,000	1:617,000	7		GEOGRAPHY: Atlantic Ocean, sun glint OCEANOGRAPHY: Wave or swell patterns in sun glint area. METEOROLOGY: Stratocumulus.
925	2	1230	*19°54'N	20°58'W	188	117	88	1:2,470,000	1:741,000	1:617,000	8		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave or swell patterns in sun glint area. METEOROLOGY: Stratocumulus.
926	2	1233	*19°38'N	20°26'W	188	117	89	1:2,473,000	1:742,000	1:618,000	32		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave or swell patterns in sun glint area. METEOROLOGY: Stratocumulus.
927	2	1235	*19°22'N	19°55'W	188	117	89	1:2,477,000	1:743,000	1:619,000	32		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Wave or swell pattern in sun glint area. METEOROLOGY: Cirrus, altocumulus, stratocumulus.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
928	2	1237	*19°05'N	19°23'W	189	117	89	1:2,480,000	1:744,000	1:620,000	40		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, altocumulus, stratocumulus.
929	2	1240	*18°49'N	18°52'W	189	117	89	1:2,484,000	1:745,000	1:621,000	58		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus patches and filaments; some small cumulus.
930	2	1241	*18°33'N	18°21'W	189	117	89	1:2,488,000	1:746,000	1:622,000	40		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, some small cumulus.
931	2	1244	*18°17'N	17°50'W	189	118	89	1:2,492,000	1:748,000	1:623,000	41		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus in bands, diffluence indicated.
932	2	1246	*18°00'N	17°19'W	190	118	89	1:2,496,000	1:749,000	1:624,000	18		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus in bands, diffluence indicated.
933	2	1248	*17°43'N	16°49'W	190	118	89	1:2,501,000	1:750,000	1:625,000	16		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus in patches and bands.
934	2	1251	*17°27'N	16°18'W	190	118	90	1:2,505,000	1:752,000	1:626,000	14		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus in patches and bands.
935	2	1249	17°34'N	16°39'W	191	119	90	1:2,509,000	1:753,000	1:627,000	9	S-65-63245	GEOGRAPHY: Coastline of Mauritania, East Africa. Desert area. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Lagoons along coastline. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Cirrus in bands.
936	2	1251	17°07'N	16°07'W	191	119	90	1:2,514,000	1:754,000	1:629,000	2		GEOGRAPHY: Coastline of Mauritania, East Africa. Small portion of Senegal, East Africa. Rosso, Mauritania. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Lagoons along coastline. Portion of the Senegal River flood plain. FORESTRY: Low grass savanna, with scattered deciduous shrub form along river flood plain. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Thin cirrus.
937	2	1253	17°00'N	15°37'W	191	119	90	1:2,519,000	1:756,000	1:630,000	1		GEOGRAPHY: Mauritania and Senegal, East Africa. Rosso, Mauritania. Dagana and Podor, Senegal. AGRICULTURE: Dark-toned patches along the Senegal River. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Lagoons along coastline. Senegal River alluvium flood plain. Lake Rkiz. FORESTRY: Low grass savanna with stream associated deciduous shrub form. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Thin cirrus.
938	2	1255	16°45'N	15°08'W	192	119	90	1:2,524,000	1:757,000	1:631,000	0	S-65-63254	GEOGRAPHY: Mauritania and Senegal, East Africa. Dagana and Podor, Senegal. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed, or burned-over areas. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Senegal River alluvium flood plain, Lake Rkiz. FORESTRY: Low grass savanna with some stream and river associated shrub form.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILO-METERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
939	2	1258	16°39'N	14°37'W	192	119	90	1:2,529,000	1:759,000	1:632,000	0	S-65-63254	GEOGRAPHY: Mauritania and Senegal, East Africa. Podor, Senegal. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed, or burned-over areas. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Senegal River alluvium flood plain. FORESTRY: Low grass savanna with some stream and river associated shrub form.
940	2	1300	16°11'N	14°07'W	193	120	91	1:2,534,000	1:760,000	1:633,000	0	S-65-63254	GEOGRAPHY: Mauritania and Senegal, East Africa. Kaedi, Mauritana. Desert and foothills. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed or burned-over areas. GEOLOGY: Longitudinal sand dunes. HYDROLOGY: Senegal River alluvium flood plain. Light drainage patterns in foothills. FORESTRY: Low grass savanna with some river and stream associated shrub form.
941	2	1302	15°54'N	13°37'W	193	120	91	1:2,539,000	1:762,000	1:635,000	0	S-65-63254	GEOGRAPHY: Mauritania and Senegal, East Africa. Kaedi, Mauritania. Desert and foothills. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed or burned-over areas. GEOLOGY: Longitudinal sand dunes. Stratigraphy and structure appear beneath dune cover. HYDROLOGY: Senegal River alluvium flood plain. Small lakes in flood plain. Gorgol Blanc River. Drainage patterns in foothills. FORESTRY: Low grass savanna with some drainage supported shrub form.
942	2	1304	15°35'N	13°07'W	193	120	91	1:2,544,000	1:763,000	1:636,000	0	S-65-63254	GEOGRAPHY: Mauritania and Senegal, East Africa. Kaedi, Mauritania. Matam, Senegal. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed or burned-over areas. GEOLOGY: Longitudinal sand dunes, steeply dipping beds, dendritic and trellis drainage patterns. HYDROLOGY: Senegal River alluvium flood plain. Small lakes in flood plain. Gorgol Blanc River. Oued Garfa River. FORESTRY: Tall grass savanna with some drainage supported shrub form.
943	2	1306	15°19'N	12°37'W	194	120	91	1:2,550,000	1:765,000	1:637,000	0	S-65-63254	GEOGRAPHY: Mauritania, Senegal and Mali, East Africa. Selibaby, Mauritania. AGRICULTURE: Dark-toned angular patches along the Senegal River; might be cultivated, grazed or burned-over areas. GEOLOGY: Folded beds, dendritic and trellis drainage patterns. HYDROLOGY: Senegal River alluvium flood plain. Small lakes in flood plain. Oued Garfa River. FORESTRY: Tall grass savanna.
944	2	1308	15°01'N	12°07'W	194	121	91	1:2,555,000	1:767,000	1:639,000	2		GEOGRAPHY: Mauritania, Senegal and Mali, East Africa. Selibaby, Mauritania. AGRICULTURE: Dark-toned angular patches along Senegal River; might be cultivated, grazed or burned-over areas. GEOLOGY: Escarpment dipping southwestward from river. Folded and possibly faulted beds. Dendritic drainage pattern. HYDROLOGY: Senegal River, Marigot de Karakoro River. FORESTRY: Tall grass savanna with some areas of deciduous shrub form. METEOROLOGY: Few small cumulus.
945	2	1310	14°44'N	11°37'W	195	121	92	1:2,561,000	1:768,000	1:640,000	9		GEOGRAPHY: Mautitania, Senegal and Mali, East Africa. Kayes, Mali. GEOLOGY: Rectangular and dendritic drainage patterns. HYDROLOGY: Senegal River, Kolinbine River. FORESTRY: Tall grass savanna with some deciduous shrub form. METEOROLOGY: Small cumulus.

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946	2	1312	14°26'N	11°07'W	195	121	92	1:2,567,000	1:770,000	1:642,000	39		GEOGRAPHY: Mali, East Africa. Kayes and Bafoulabe, Mali. GEOLOGY: Rectangular, trellis and meandering drainage patterns. HYDROLOGY: Senegal River, Kolinbine River, Bakoy River. FORESTRY: Tall grass savanna with increasing amounts of deciduous shrub form. METEOROLOGY: Small cumulus.
947	2	1314	14°09'N	10°38'W	196	122	92	1:2,573,000	1:772,000	1:643,000	70		GEOGRAPHY: Mali, East Africa. Bafoulabe, Mali. GEOLOGY: Guinea highlands, elevated plateau with dendritic drainage and obscured formations. HYDROLOGY: Senegal River, Bakoy River, Koumbou River. FORESTRY: Tall grass savanna with some shrub form vegetation. METEOROLOGY: Small cumulus.
948	2	1316	13°37'N	10°09'W	196	122	92	1:2,579,000	1:774,000	1:645,000	61		GEOGRAPHY: Mali, East Africa. Bafoulabe, Mali. GEOLOGY: Highlands with soil covered region and dendritic drainage flowing north. HYDROLOGY: Senegal River, Bakoy River, Baoule River. FORESTRY: Tall grass savanna with scattered shrub form vegetation. METEOROLOGY: Small cumulus.
949	2	1318	13°33'N	9°38'W	196	122	93	1:2,585,000	1:776,000	1:646,000	40		GEOGRAPHY: Mali, East Africa. Kita, Mali. GEOLOGY: Elevated plateau with dendritic drainage flowing toward Niger Basin to the north. HYDROLOGY: Bakoy River, Darouma River, Baoule River, Badinn-Ko River. FORESTRY: Tall grass savanna with scattered shrub form vegetation. METEOROLOGY: Small cumulus.
950	2	1320	13°14'N	9°10'W	197	122	93	1:2,592,000	1:778,000	1:648,000	9		GEOGRAPHY: Mali, East Africa. Kita, Mali. GEOLOGY: Rectangular and some meander drainage pattern on the Guinea highlands. HYDROLOGY: Baoule River, Badinn-Ko River. FORESTRY: Tall grass savanna with shrub form vegetation and groups of broad-leaf deciduous trees along major drains. METEOROLOGY: Small cumulus.
951	2	1323	12°57'N	8°39'W	197	123	93	1:2,598,000	1:779,000	1:649,000	4		GEOGRAPHY: Mali, East Africa. GEOLOGY: Veneered Guinea highland of undifferentiated origin, with heavy dendritic drainage. HYDROLOGY: Baoule River, Bale River. FORESTRY: Tall grass savanna with scattered shrub form, minor drainage system void of vegetation. METEOROLOGY: Small cumulus.
952	2	1325	12°39'N	8°09'W	198	123	93	1:2,604,000	1:781,000	1:651,000	1		GEOGRAPHY: Mali, East Africa. Bamako, Mali. Koulikoro, Mali. GEOLOGY: Highlands with dendritic drainage and Niger drainage divide. HYDROLOGY: Niger River and tributaries. Baoule River. FORESTRY: Tall grass savanna and shrub form on hill slopes, drainage systems void of vegetation. METEOROLOGY: Few small cumulus.
953	2	1327	12°22'N	7°41'W	198	123	93	1:2,611,000	1:783,000	1:653,000	0		GEOGRAPHY: Mali, East Africa. Bamako, Mali. Koulikoro, Mali. GEOLOGY: Highland region along the Niger River. HYDROLOGY: Niger River and tributaries. Baoule River. Banifing River. FORESTRY: Tall grass savanna with shrub form primarily on slopes.

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954	2	1329	12°03'N	7°10'W	199	124	94	1:2,618,000	1:785,000	1:654,000	0		GEOGRAPHY: Mali, East Africa. GEOLOGY: Dendritic drainage patterns on the west Guinea highlands flowing east, Sikasso Plateau. HYDROLOGY: Baoule River and tributaries. Banifing and Bagoe Rivers. FORESTRY: Tall grass savanna and shrub form vegetation primarily restricted to higher relief. Drainage apparently void of vegetation.
955	2	1332	11°45'N	6°42'W	199	124	94	1:2,625,000	1:787,000	1:656,000	0		GEOGRAPHY: Mali, East Africa. GEOLOGY: Dendritic and trellis drainage patterns in the highland area of the Sikasso Plateau. HYDROLOGY: Baoule River and tributaries. Bagoe River and tributaries. Small lakes. FORESTRY: Tall grass savanna with shrub form vegetation restricted to slopes of higher relief; avenues of drainage apparently void of vegetation.
956	2	1334	11°27'N	6°13'W	200	124	94	1:2,632,000	1:790,000	1:658,000	0		GEOGRAPHY: Mali, Ivory Coast, East Africa. Sikasso, Mali. GEOLOGY: Southern region of Sikasso Plateau, bordering the Guinea highlands with prominent dendritic and trellis drainages. HYDROLOGY: Bagoe River and tributaries. Lotio River. Small lakes. FORESTRY: Tall grass savanna and deciduous shrub form restricted to slopes of relief.
957	2	1336	11°08'N	5°45'W	201	125	94	1:2,639,000	1:792,000	1:660,000	0		GEOGRAPHY: Mali, Ivory Coast, Upper Volta, East Africa. Sikasso, Mali. GEOLOGY: Boundary of Sikasso Plateau and highlands, dominant in trellis drainage. Drainage divides prominent. HYDROLOGY: Bagoe River. Lotio River and tributaries. Leraba River, Volta Noire River. Numerous small lakes. FORESTRY: Tall grass savanna with deciduous shrub form restricted primarily to slopes of relief.
958	2	1338	10°50'N	5°14'30"W	201	125	95	1:2,646,000	1:794,000	1:661,000	0		GEOGRAPHY: Mali, Ivory Coast, Upper Volta, East Africa. Orodara, Banfora and Niangoloko, Upper Volta. GEOLOGY: Guinea highlands, relatively flat with numerous drainage patterns of trellis and complex dendritic varieties. HYDROLOGY: Leraba River. Volta Noire River. FORESTRY: Tall grass savanna with deciduous shrub form restricted primarily to relief slopes, some drainage areas appear completely void of vegetation.
959	2	1340	10°31'N	4°48'W	202	125	95	1:2,653,000	1:796,000	1:663,000	0		GEOGRAPHY: Mali, Ivory Coast and Upper Volta, East Africa. Banfora and Niangoloko, Upper Volta. GEOLOGY: Escarpment forming a boundary of formations and drainage types, both dendritic and angular trellis. HYDROLOGY: Leraba River and tributaries. Sinloko River and tributaries. FORESTRY: Tall grass savanna with scattered deciduous shrub form.
960	2	1342	10°12'N	4°18'W	202	126	95	1:2,661,000	1:798,000	1:665,000	7		GEOGRAPHY: Ivory Coast and Upper Volta, East Africa. Banfora and Niangoloko, Upper Volta. GEOLOGY: Escarpment and highland region with heavy dendritic and trellis drainage on basement complex. HYDROLOGY: Sinloko River and tributaries. Iringo River, Bougouriba River. FORESTRY: Tall grass savanna with scattered deciduous shrub form. METEOROLOGY: Cirrus, small cumulus.
961	2	1344	9°54'N	3°50'W	203	126	95	1:2,668,000	1:800,000	1:667,000	8		GEOGRAPHY: Ivory Coast and Upper Volta, East Africa. GEOLOGY: Numerous drainage divides on the basement complex, soil covered Guinea highlands, fractures controlled drainage. HYDROLOGY: Iringo River, Bougouriba River FORESTRY: Tall grass savannas with scattered deciduous shrub form. METEOROLOGY: Cirrus, small cumulus.

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962	2	1346	9°36'N	3°23'W	202	126	96	1:2,676,000	1:803,000	1:669,000	31		GEOGRAPHY: Upper Volta, Ivory Coast and Ghana, East Africa. Bouna, Ivory Coast. GEOLOGY: Dendritic, trellis and angular drainage patterns on the basement complex, fracture controlled drainage. HYDROLOGY: Iringo River, Black Volta River. FORESTRY: Tall grass savannas with scattered deciduous shrub form. METEOROLOGY: Dense cirrus, few small cumulus.
963	2	1348	9°17'N	2°53'W	204	127	96	1:2,683,000	1:805,000	1:671,000	71		GEOGRAPHY: Upper Volta, Ivory Coast and Ghana, East Africa. Bouna, Ivory Coast. GEOLOGY: Dendritic, trellis and angular drainage patterns on the basement complex, fracture controlled drainage. HYDROLOGY: Black Volta River, Volta Noire River. FORESTRY: Tall grass savannas with scattered deciduous shrub form. METEOROLOGY: Dense cirrus band, few small cumulus.
964	2	1350	9°00'N	2°33'W	205	127	96	1:2,691,000	1:807,000	1:673,000	84		GEOGRAPHY: Upper Volta, Ivory Coast and Ghana, East Africa. GEOLOGY: Dendritic and angular drainage pattern. HYDROLOGY: Black Volta River. FORESTRY: Tall grass savannas with scattered deciduous shrub form. METEOROLOGY: Cirrus, some altocumulus and small cumulus.
965	2	1352	8°41'N	1°55'W	205	127	97	1:2,699,000	1:810,000	1:675,000	35		GEOGRAPHY: Ivory Coast and Ghana, East Africa. Kintampo, Ghana. GEOLOGY: Dendritic and angular drainage pattern, fracture controlled drainage. HYDROLOGY: Black Volta River. FORESTRY: Tall grass savannas with scattered deciduous shrub form along avenues of drainage. METEOROLOGY: Cirrus, small cumulus.
966	2	1354	8°21'N	1°27'W	206	128	97	1:2,707,000	1:812,000	1:677,000	37		GEOGRAPHY: Ghana, East Africa. Kintampo and Salaga, Ghana. GEOLOGY: Dendritic and meandering drainage pattern, fracture controlled drainage. HYDROLOGY: Black Volta River, Urukwain Bonchi River, Serada Chuko River, Tanfi Pru River. Lake Volta, submerged stream course. FORESTRY: Tall grass savanna with some shrub form. METEOROLOGY: Cirrus, small cumulus.
967	2	1356	8°03'N	0°58'W	206	128	97	1:2,715,000	1:815,000	1:679,000	38		GEOGRAPHY: Ghana, East Africa. Kintampo and Salaga, Ghana. GEOLOGY: Dendritic drainage pattern. HYDROLOGY: Serada Chuko River, Tanfi Pru River, Sene River. Lake Volta, submerged stream course. FORESTRY: Tall grass savanna with deciduous shrub form, grading into broadleaf evergreen (tropical rainforest). METEOROLOGY: Cirrus, small cumulus.
968	2	1358	7°44'N	0°31'W	207	129	97	1:2,724,000	1:817,000	1:681,000	50		GEOGRAPHY: Ghana, East Africa. Salaga, Ghana. GEOLOGY: Dendritic and meandering drainage pattern. HYDROLOGY: Tanfi Pru River, Sene River. Lake Volta, submerged stream course. FORESTRY: Tall grass savanna and deciduous shrub form changing to broadleaf evergreen rainforest. METEOROLOGY: Some cirrus, widespread, small cumulus.
969	2	1400	7°25'N	0°03'W	208	129	98	1:2,732,000	1:820,000	1:683,000	46		GEOGRAPHY: Ghana and Togo, East Africa. GEOLOGY: Dendritic drainage pattern. HYDROLOGY: Tanfi Pru River, Sene River. Lake Volta. FORESTRY: Tall grass savanna and deciduous shrub form changing to thick broadleaf evergreen rainforests. METEOROLOGY: Some cirrus, widespread small cumulus, none over lake.

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970	2	1402	7°07'N	0°25'E	208	129	98	1:2,740,000	1:822,000	1:685,000	71		GEOGRAPHY: Ghana and Togo, East Africa. GEOLOGY: Dendritic drainage pattern. HYDROLOGY: Asuakawkaw River, Dayi River. Lake Volta. FORESTRY: Tall grass savanna and tropical rainforest. METEOROLOGY: Some cirrus, widespread, small cumulus.
971	2	1404	6°48'N	0°53'E	209	130	98	1:2,749,000	1:825,000	1:687,000	53		GEOGRAPHY: Ghana, Togo and Dahomey, East Africa. Lome, Togo. GEOLOGY: Dendritic drainage pattern. HYDROLOGY: Lake Volta, coastline of Gulf of Guinea. Keta Lagoon. Mono River. FORESTRY: Tropical rainforest with coastal savanna grasses. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Cirrus, small cumulus, stratocumulus.
972	2	1406	6°28'N	1°22'E	210	130	99	1:2,757,000	1:827,000	1:689,000	35		GEOGRAPHY: Ghana, Togo and Dahomey, East Africa. Lome, Togo. Allada, Dahomey. GEOLOGY: Coastal plains. Swamp along coastline, lateral drainage. HYDROLOGY: Keta Lagoon, Lake Togo, Lake Aheme. Coastline of Gulf of Guinea, Mono River. Zio River. FORESTRY: Tropical rainforest, savanna grasses and possible mangrove. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Cirrus, small cumulus, sea breeze effect.
973	2	1408	6°10'N	1°50'E	210	131	99	1:2,766,000	1:830,000	1:692,000	10		GEOGRAPHY: Ghana, Togo and Dahomey, East Africa. Lome, Togo. Allada, Ouidah, Contonou and Porto-Novo, Dahomey. GEOLOGY: Coastal plains. Swamp along coastline, lateral drainage. HYDROLOGY: Lake Togo, Lake Aheme, Lake Nokoue. Oueme River, Kouffe River, Mono River, Zio River. Coastline of Gulf of Guinea. FORESTRY: Tropical rainforest, scattered coastal savanna and possible mangrove. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Cirrus, small cumulus, sea breeze effect.
974	2	1410	5°49'N	2°19'E	211	131	99	1:2,775,000	1:833,000	1:694,000	10		GEOGRAPHY: Togo and Dahomey, East Africa. Allada, Ouidah, Cotonou and Porto-Novo, Dahomey. GEOLOGY: Coastal plain. HYDROLOGY: Lake Aheme, Lake Nokoue. Kouffo River, Oueme River. Coastline of Gulf of Guinea. FORESTRY: Tropical rainforest, possible mangrove swamp along coastline. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Cirrus, small cumulus, sea breeze effect.
975	2	1412	5°32'N	2°45'E	212	131	100	1:2,784,000	1:835,000	1:696,000	30		GEOGRAPHY: Dahomey, East Africa. 95% of photo falls over Gulf of Guinea. HYDROLOGY: Small portion of coastline of the Gulf of Guinea. OCEANOGRAPHY: Sediments and shallow water patterns. METEOROLOGY: Altocumulus, small cumulus.
976	2	1414	5°24'N	3°14'E	212	132	100	1:2,793,000	1:838,000	1:698,000	44		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Cirrocumulus, altocumulus, small cumulus.
977	2	1416	4°56'N	3°42'E	213	132	100	1:2,802,000	1:841,000	1:701,000	44		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Cirrocumulus, altocumulus, small cumulus.
978	2	1418	4°38'N	4°11'E	214	133	101	1:2,812,000	1:844,000	1:703,000	32		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Cirrocumulus, altocumulus, small cumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILOMETERS	STATUTE MILES		70 MM	8" x 10"	9" x 9"			
979	2	1420	4°19'N	2°39'E	214	133	101	1:2,821,000	1:846,000	1:705,000	30		GEOGRAPHY: Gulf of Guinea, sun glint. OCEANOGRAPHY: Anomalous reflective pattern in sun glint, probably due to wind variations. METEOROLOGY: Cirrocumulus, altocumulus, small cumulus.
980	2	1422	4°00'N	5°07'E	215	134	101	1:2,830,000	1:849,000	1:708,000	47		GEOGRAPHY: Gulf of Guinea, sun glint. OCEANOGRAPHY: Anomalous reflective pattern, probably due to wind variations. METEOROLOGY: Cirrus, altocumulus, small cumulus.
981	2	1424	3°41'N	5°35'E	216	134	102	1:2,840,000	1:852,000	1:710,000	38		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Cirrus, altocumulus, small cumulus.
982	2	1426	3°21'N	6°02'E	217	135	102	1:2,849,000	1:855,000	1:712,000	19		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Cirrus, altocumulus, small cumulus.
983	2	1428	3°02'N	6°30'E	217	135	102	1:2,859,000	1:858,000	1:715,000	23		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Altocumulus, small cumulus.
984	2	1430	2°43'N	6°57'E	218	135	103	1:2,869,000	1:861,000	1:717,000	37		GEOGRAPHY: Gulf of Guinea, sun glint. METEOROLOGY: Altocumulus, small cumulus.
985	2	1432	2°23'N	7°24'E	219	136	103	1:2,879,000	1:864,000	1:720,000	45		GEOGRAPHY: Gulf of Guinea, sun glint. Principle Island (Portugal). METEOROLOGY: Altocumulus, small cumulus.
986	2	1434	2°04'N	7°52'E	220	136	103	1:2,889,000	1:867,000	1:722,000	43		GEOGRAPHY: Gulf of Guinea, sun glint. Principle Island (Portugal). OCEANOGRAPHY: Some shallow water penetration. METEOROLOGY: Cirrus, small cumulus.
987	2	1436	1°44'N	8°20'E	220	137	104	1:2,899,000	1:870,000	1:725,000	23		GEOGRAPHY: Gulf of Guinea, sun glint. Principle Island (Portugal). OCEANOGRAPHY: Some shallow water penetration. METEOROLOGY: Cirrus, small cumulus.
988	2	1438	1°23'N	8°47'E	221	137	104	1:2,909,000	1:873,000	1:727,000	34		GEOGRAPHY: Coastline of Rio Muni, Gulf of Guinea, sun glint. OCEANOGRAPHY: Well developed beaches, some water penetration. METEOROLOGY: Cirrus, small cumulus.
989	2	1440	1°05'N	9°13'E	222	138	104	1:2,919,000	1:876,000	1:730,000	49		GEOGRAPHY: Africa; east side of Gulf of Guinea; Bay of Mondah; boundary between Rio Muni on the north, Gabon on the south; Siegue, Rio Muni; Coco Beach, Atem, Idokogo, Libreville and Denis, Gabon. Estuary of Gaber. GEOLOGY: Coastal plain. HYDROLOGY: Drowned stream pattern, aggrading regime. FORESTRY: Tropical rainforest. OCEANOGRAPHY: Sediment and/or channel patterns in Gaber Estuary and Bay of Mondah. Well developed beaches on Bay of Mondah. Some water penetration revealing bottom topography. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.
990	2	1442	0°47'N	9°41'E	223	138	105	1:2,929,000	1:879,000	1:732,000	44		GEOGRAPHY: Africa; east side of Gulf of Guinea; Bay of Mondah, boundary between Rio Muni on the north, Gabon on the south; Bay of Mondah; Siegue, Rio Muni; Coco Beach, Atem, Idokogo, Libreville, Denis, Makok, Gabon. Estuary of Gaber. GEOLOGY: Coastal plain. HYDROLOGY: Drowned stream pattern, aggrading regime. FORESTRY: Tropical rainforest. OCEANOGRAPHY: Well developed beaches on Gulf of Guinea. Sediment and channel patterns. Possible salt/fresh water interface in Gaber Estuary. Some water penetration revealing bottom topography. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
991	2	1444	0°26'N	10°08'E	223	138	105	1:2,940,000	1:882,000	1:735,000	73		GEOGRAPHY: Africa; Bay of Mondah; Gaber Estuary, boundary between Rio Muni and Gabon. Libreville, Denis, Gabon. Ogooue River. GEOLOGY: Coastal plain. HYDROLOGY: Sediment pattern in streams, aggrading regime. FORESTRY: Tropical rainforest. OCEANOGRAPHY: Well developed beaches, possible salt/fresh water interface, channel configuration and sediment patterns in Gaber Estuary. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.
992	2	1446	0°07'N	10°36'E	224	139	106	1:2,950,000	1:885,000	1:738,000	67		GEOGRAPHY: Africa; Gabon, Ogooue River, town of Kango on Gaber Estuary road from Kango to Bifoum, Lakes Nguene and Ayem. Towns of Ndjole and Junkville. Some apparent clearing of forest along Ogooue River. Some roads visible along river. GEOLOGY: Rapids near Junkville indicate structure not visible on photos. Ogooue River is incised into highlands. FORESTRY: Tropical rainforest. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.
993	2	1448	0°07'S	11°01'E	225	140	106	1:2,961,000	1:888,000	1:740,000	64		GEOGRAPHY: Africa; Gabon, Ogooue River. Towns of Bifoum and Ndjole, Junkville, Ayem, Achouka and Bocue along Ogooue River. Some apparent clearing of forest along river. Road along river. GEOLOGY/HYDROLOGY: Ogooue River is incised into highlands. FORESTRY: Tropical rainforest. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.
994	2	1450	0°30'S	11°31'E	226	140	106	1:2,971,000	1:892,000	1:743,000	74		GEOGRAPHY: Africa; Gabon, upper reaches of Ogooue River from Junkville to Kombo. Main stream appears not to trend northeastward but turns southeastward at Kon-Kon. GEOLOGY: Ogooue River meanders upstream from Kon-Kon. FORESTRY: Tropical rainforest. METEOROLOGY: Cirrus, small cumulus, cumulonimbus tops.
995	2	1452	0°51'S	11°55'E	227	141	107	1:2,940,000	1:895,000	1:746,000	65		GEOGRAPHY: Africa; Gabon, Ogooue River from Achouka to Lastoursville and Koula-Moutou. Mount Boundji obscured by clouds. GEOLOGY: Streams appear to be structurally controlled; however, the structure is not visible on the photograph. FORESTRY: Tropical rainforest. METEOROLOGY: Cirrus from cumulonimbus, small cumulus.
996	2	1454	1°11'S	12°23'E	227	141	107	1:2,993,000	1:898,000	1:748,000	61		GEOGRAPHY: Africa; Gabon, Ogooue River from Kon-Kon to Franceville. Mount Boundji covered by clouds. GEOLOGY: Meandering streams, appear to be structurally controlled; however, the structure is not visible on the photograph. FORESTRY: Tropical rainforest. METEOROLOGY: Cirrus from cumulonimbus, small cumulus.
997	2	1456	1°29'S	12°56'E	228	142	108	1:3,004,000	1:901,000	1:751,000	62		GEOGRAPHY: Africa; Gabon, Ogooue River from Lastoursville to Franceville. Mougnda mine and partial forestscar of cableway. Northwest corner of the Congo. GEOLOGY: Meandering streams. FORESTRY: Tropical rainforest. Forest cover denuded, naturally, around dendritic stream pattern tributaries. METEOROLOGY: Cirrus from cumulonimbus, small cumulus.
998	2	1458	1°46'S	13°18'E	229	142	108	1:3,015,000	1:905,000	1:754,000	56		GEOGRAPHY: Africa; southeastern corner of Gabon, northwestern corner of Congo. GEOLOGY/HYDROLOGY: Ogooue River is a meandering stream. The other streams appear to be controlled by structure of stratigraphy. FORESTRY: Area west of Franceville along the Ogooue River is denuded of the rainforest cover and savanna vegetation appears. METEOROLOGY: Cirrus, towering cumulus, small cumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
999	2	1500	2°05'S	13°47'E	230	143	108	1:3,026,000	1:908,000	1:756,000	40		GEOGRAPHY: Africa; border of Gabon and Congo. Franceville, Gabon. GEOLOGY: Stream in the Congo have a rectangular appearance as if controlled by a fracture system. FORESTRY: Approximate border position of Gabon and the Congo is the change from the tropical rainforest to the savanna. METEOROLOGY: Cirrus, towering cumulus, small cumulus.
1000	2	1502	2°24'S	14°17'E	231	143	109	1:3,037,000	1:911,000	1:759,000	44		GEOGRAPHY: Africa; Gabon/Congo boundary. Plateau de Djambala, Congo. GEOLOGY: Rectangular stream pattern. FORESTRY: Savanna/tropical rainforest boundary. METEOROLOGY: Cirrus, towering cumulus, small cumulus.
1001	2	1504	2°43'S	14°44'E	232	144	109	1:3,048,000	1:915,000	1:762,000	40		GEOGRAPHY: Africa; Eastern border of Gabon with the Congo. Plateau de Djambala and de Ngan. GEOLOGY: Rectangular stream pattern. FORESTRY: Savanna/tropical rainforest boundary. METEOROLOGY: Cirrus, underlying cumulonimbus, towering cumulus, small cumulus.
1002	2	1506	3°01'S	15°10'E	233	144	109	1:3,059,000	1:918,000	1:765,000	38		GEOGRAPHY: Africa; Congo, Plateau de Djambala and Ngah. Plain of Tha and Dzoiba Mountain. Congo River. Several smoke plumes. GEOLOGY/HYDROLOGY: Tributaries to the Congo River. FORESTRY: Savanna, streams delineated by trees. METEOROLOGY: Cirrus with underlying cumulonimbus, towering cumulus, small cumulus.
1003	2	1508	3°22'S	15°39'E	233	145	110	1:3,071,000	1:921,000	1:768,000	22		GEOGRAPHY: Africa; Plateau Bateke, Congo; Congo River, from just north of Brazzaville/Kinshasa to just south of M'pouya; Congo Republic, Kasai River confluence with the Congo River. Several plumes of smoke on the Congo side of the river. AGRICULTURE: Some light patches which may be areas of cultivation. GEOLOGY/HYDROLOGY: Stream pattern is partially rectangular; Bateke Plateau. FORESTRY: Savanna grasses with drainage associated hardwoods vegetation. METEOROLOGY: Cirrus with underlying cumulonimbus, towering cumulus, small cumulus.
1004	2	1510	3°39'S	16°07'E	234	146	110	1:3,082,000	1:925,000	1:770,000	20		GEOGRAPHY: Africa; Congo, Congo River from just north of Brazzaville/Kinshasa to just south of M'pouya. Congo Republic, Kwango River. Smoke plumes on the Congo side of the Congo River. AGRICULTURE: Few small light-toned patches which may be areas of cultivation. GEOLOGY: Barbed, rectangular and dendritic drainage patterns. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Cirrus with underlying cumulonimbus, towering cumulus, small cumulus.
1005	2	1512	4°01'S	16°34'E	235	146	111	1:3,093,000	1:928,000	1:773,000	15		GEOGRAPHY: Africa; Congo; Congo River; Congo Republic, Kwango and Wamba Rivers. GEOLOGY: Dendritic drainage pattern. Meander pattern in Kwango River. HYDROLOGY: Kwango River has wider channel than Wamba River. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Cirrus, towering cumulus, small cumulus.
1006	2	1514	4°19'S	17°02'E	236	147	111	1:3,105,000	1:932,000	1:776,000	10		GEOGRAPHY: Africa; Congo Republic, Kwango and Wamba Rivers confluence. GEOLOGY: Meander pattern in Kwango River. Dendritic drainage pattern on highlands. HYDROLOGY: Kwango River has wider channel than Wamba River. FORESTRY: Savanna grasses with stream and river associated hardwood vegetation. METEOROLOGY: Towering cumulus, small cumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1007	2	1516	4°38'S	17°27'E	237	147	112	1:3,116,000	1:935,000	1:779,000	12		GEOGRAPHY: Africa; Congo Republic; Confluence of the Kwango and Wamba Rivers to the Kafi River. GEOLOGY: Dendritic drainage pattern. Trees line water courses. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Towering cumulus, small cumulus.
1008	2	1518	4°57'S	17°54'E	238	148	112	1:3,128,000	1:938,000	1:782,000	19		GEOGRAPHY: Africa; Congo Republic, from the Wamba to the Kwango River watersheds. Few smoke plumes. GEOLOGY: Dendritic drainage pattern. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Cirrus, towering cumulus, small cumulus.
1009	2	1520	5°15'S	18°21'E	239	148	112	1:3,139,000	1:942,000	1:785,000	40		GEOGRAPHY: Africa; Congo Republic, from the Inzia to the Lutshima watershed. GEOLOGY: Dendritic drainage pattern. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Dense cirrus, imbedded cumulonimbus, towering cumulus, small cumulus.
1010	2	1522	5°33'S	18°48'E	239	149	113	1:3,151,000	1:945,000	1:788,000	65		GEOGRAPHY: Africa; Congo Republic, from the Kwango to the Kwilu watershed, town of Gungu. GEOLOGY: Rectangular drainage patterns. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Dense cirrus, imbedded cumulonimbus, towering cumulus, small cumulus.
1011	2	1524	5°51'S	19°15'E	240	149	113	1:3,163,000	1:949,000	1:791,000	70		GEOGRAPHY: Africa; Congo Republic, Oange River. AGRICULTURE: Possible areas of cultivation. GEOLOGY: Rectangular drainage patterns. FORESTRY: Savanna grasses with stream associated hardwood vegetation. METEOROLOGY: Dense cirrus, imbedded cumulonimbus, towering cumulus, small cumulus. Tower penetrating cirrus.
1012	2	1526	6°09'S	19°42'E	241	150	114	1:3,175,000	1:953,000	1:794,000	57		GEOGRAPHY: Africa; Congo Republic, Oange River. Possible areas of habitation. AGRICULTURE: Possible areas of cultivation. FORESTRY: Savanna grasses with scattered river and stream associated hardwoods. METEOROLOGY: Dense cirrus, imbedded cumulonimbus, towering cumulus, small cumulus, cumuloform tower penetrating cirrus layer.
1013	2	1528	6°28'S	20°10'E	242	151	114	1:3,187,000	1:956,000	1:797,000	43		GEOGRAPHY: Africa; Congo Republic, Oange and Kasai Rivers, town of Tshikapa; northern tip of Angola. GEOLOGY: Dendritic and rectangular drainage patterns. FORESTRY: Savanna grasses with scattered stream associated hardwood vegetation. METEOROLOGY: Dense cirrus, underlying towering cumulus, small cumulus.
1014	2	1530	6°44'S	20°34'E	243	151	114	1:3,199,000	1:960,000	1:800,000	23		GEOGRAPHY: Africa; Congo Republic, Kasai River, town of Tshikapa, Lubembe River, Shamukumbi mine, with connecting road. Some possible areas of habitation. GEOLOGY: Dendritic and rectangular drainage pattern. FORESTRY: Savanna grasses with some drainage associated herbaceous vegetation. METEOROLOGY: Cirrus, towering cumulus, small cumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70 MM	8" x 10"	9" x 9"			
1015	2	1532	7°03'S	21°02'E	244	152	115	1:3,211,000	1:963,000	1:803,000	34		GEOGRAPHY: Africa; Congo Republic, town of Tshikapa on the Kasai River. Some roads, Tshisanda and Shamukumbi mines; northern tip of Angola. FORESTRY: Savanna grasses with drainage associated herbaceous vegetation. METEOROLOGY: Cirrus, towering cumulus, small cumulus.
1016	2	1534	7°22'S	21°30'E	245	152	115	1:3,223,000	1:967,000	1:806,000	48		GEOGRAPHY: Africa; Congo Republic, Lubembe River, Shamukumbi and Tshisanda mines. Northern tip of Angola. GEOLOGY: Dendritic drainage pattern. FORESTRY: Savanna grasses with sparse herbaceous stream associated vegetation. METEOROLOGY: Cirrus, imbedded cumulonimbus, towering cumulus and cumulus.
1017	2	1536	7°41'S	22°00'E	246	153	116	1:3,235,000	1:971,000	1:809,000	45		GEOGRAPHY: Africa; Congo Republic and Angola. GEOLOGY: Dendritic and annular drainage patterns. FORESTRY: Savanna grasses with stream associated herbaceous vegetation. METEOROLOGY: Dense cirrus with imbedded cumulonimbus tops, towering cumulus, small cumulus.
1018	2	1538	7°59'S	22°18'E	247	153	116	1:3,247,000	1:974,000	1:812,000	31		GEOGRAPHY: Africa; Congo Republic and northern tip of Angola. Some areas of habitation and roads. FORESTRY: Savanna grasses with some areas of thick deciduous vegetation. METEOROLOGY: Dense cirrus with imbedded cumulonimbus tops, towering cumulus, small cumulus.
1019	2	1540	8°18'S	22°56'E	248	154	117	1:3,253,000	1:978,000	1:815,000	26		GEOGRAPHY: Africa; Congo Republic. GEOLOGY: Dendritic drainage patterns. FORESTRY: Savanna grasses with areas of dense deciduous vegetation. Some areas of possible cultivation. METEOROLOGY: Dense cirrus, cumulonimbus tops, towering cumulus, cumulus.
1020	2	1542	8°37'S	23°25'E	249	154	117	1:3,271,000	1:981,000	1:818,000	38		GEOGRAPHY: Africa; Congo Republic, from the Luisa to the Lub watershed. GEOLOGY: Rectangular and dendritic drainage patterns. FORESTRY: Savanna grasses with stream and marsh associated vegetation. METEOROLOGY: Dense cirrus, cumulonimbus tops, towering cumulus, cumulus.
1021	2	1544	8°56'S	23°54'E	250	155	118	1:3,284,000	1:985,000	1:821,000	27		GEOGRAPHY: Africa; Congo Republic, marsh and shallow lakes of southwestern Congo Republic, town of Kamina, smoke plume. AGRICULTURE: Some areas of probable cultivation. GEOLOGY/HYDROLOGY: Trellis and dendritic drainage pattern, shallow lakes. FORESTRY: Open woodland, possibly inundated (marsh lands). METEOROLOGY: Cirrus, altocumulus, towering cumulus, small cumulus.
1022	2	1546	9°14'S	24°21'E	251	156	118	1:3,296,000	1:989,000	1:824,000	30		GEOGRAPHY: Africa; Congo Republic, towns of Kamina, Kinda, Kakwisamba and Mulengi, Lubudi River, railroad scar north and west of Kamina. AGRICULTURE: Some areas of probable cultivation. GEOLOGY/HYDROLOGY: Trellis, dendritic drainage pattern, shallow lakes. FORESTRY: Open woodland. METEOROLOGY: Dense cirrus patches, altocumulus, small cumulus.
1023	2	1548	9°33'S	24°50'E	251	156	118	1:3,309,000	1:993,000	1:827,000	23		GEOGRAPHY: Africa; Congo Republic, towns of Kamina, Kinda, Kakwisamba, Mulengi, and Mwida. Lubudi River, railroad scar north and west of Kamina. AGRICULTURE: Some areas of probable cultivation. GEOLOGY/HYDROLOGY: Northeastward-trending structural/stratigraphic lineaments. Trellis and dendritic drainage patterns, shallow lakes. FORESTRY: Open woodland. METEOROLOGY: Dense cirrus patches, altocumulus, small cumulus.

FRAME NUMBER	ORBIT NUMBER SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1024	2 1550	9°51'S	25°19'E	252	157	119	1:3,321,000	1:996,000	1:830,000	29		GEOGRAPHY: Africa; Congo Republic, Lubudi and Lualaba Rivers, towns of Kinda, Kakudsamba, Mulengi and Mwida mine. Lubidi and Lualaba Rivers. GEOLOGY/HYDROLOGY: Northeastward-trending structural/stratigraphic lineaments. Trellis and dendritic drainage patterns. Meandering streams. FORESTRY: Open woodland. METEOROLOGY: Dense cirrus patches with imbedded cumulonimbus top, towering cumulus, cumulus.
1025	2 1552	10°09'S	25°46'E	253	157	119	1:3,333,000	1:1,000,000	1:833,000	37		GEOGRAPHY: Africa; Congo Republic, Lualaba River, Lake Kolwezi, mining area northwest of Lakasi (Jadotville). Town of Mwida. GEOLOGY/HYDROLOGY: Northeastward-trending structural/stratigraphic lineaments. Meandering river pattern. FORESTRY: Savanna vegetation with scattered dry open woodlands. METEOROLOGY: Cumulonimbus top with cirrus blow-off, towering cumulus, small cumulus.
1026	2 1554	10°28'S	26°15'E	254	158	120	1:3,346,000	1:1,004,000	1:836,000	65		GEOGRAPHY: Africa; Congo Republic, towns of Lakasi (Jadotville) and some mining and/or habitations northwest of Lakasi. Lake of Rotumue. GEOLOGY/HYDROLOGY: Northeastward-trending structural/stratigraphic lineaments. FORESTRY: Sparse, open deciduous woodland. METEOROLOGY: Widespread cirrus, some dense, towering cumulus; small cumulus.
1027	2 1556	10°47'S	26°44'E	255	159	120	1:3,358,000	1:1,008,000	1:840,000	52		GEOGRAPHY: Africa; Congo Republic; Lakasi (Jadotville) and some mining and/or habitation areas northwest of Lakasi, Lake of Ratumue, power transmission line scar from Lakasi southeastward. Small tip of northeastern Zambia. GEOLOGY: Northeastward-trending structural/stratigraphic lineaments. FORESTRY: Sparse, open deciduous woodland. METEOROLOGY: Cirrus, small cumulus.
1028	2 1558	11°06'S	27°13'E	256	159	121	1:3,371,000	1:1,011,000	1:843,000	37		GEOGRAPHY: Africa; Congo Republic, towns of Mulungwishi, Kamatanda, Lakasi (Jadotville) and Lubumbashi (Elisabethville). Power transmission line scar between Lakasi and Lubumbashi. Kipushi/Malindi mine area on the border between Congo Republic and Zambia. GEOLOGY: Northeastward-trending structural/stratigraphic lineaments. FORESTRY: Open woodland. METEOROLOGY: Cirrus, small cumulus.
1029	2 1600	11°24'S	27°42'E	257	160	121	1:3,383,000	1:1,015,000	1:846,000	12		GEOGRAPHY: Africa; Congo Republic, towns of Lubumbashi (Elisabethville) and Kipushi/Malindi mine area, Luapula River forming the Zambia border. Habitation areas along the Luapula River. Tshinsenda and Mokambo in the Congo Republic along the Zambia (Rhodesia and Nyasaland) border with the towns of Mufulira and Chingola and associated mines. GEOLOGY: Dendritic and meandering stream patterns. FORESTRY: Open woodland. METEOROLOGY: Cirrus, small cumulus.
1030	2 1602	11°42'S	28°10'E	258	160	122	1:3,396,000	1:1,019,000	1:849,000	11		GEOGRAPHY: Africa; southeastern corridor of the Congo Republic and the Zambia border. Lubumbashi (Elisabethville), Mokambo, Kiabala, Tshinsenda and Fort Roseberry, Congo Republic; Mufulira and Chingola Zambia (Rhodesia and Nyasaland). Some un-named habitation areas in both countries. Luapula River. GEOLOGY: Dendritic drainage pattern. FORESTRY: Open woodland. METEOROLOGY: Cirrus, small cumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70 MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1031	2	1604	12°00'S	28°40'E	259	161	122	1:3,409,000	1:1,023,000	1:852,000	15		GEOGRAPHY: Africa; southeastern corridor of Congo Republic and the Zambia border. Ndola, Mufulira and Fort Roseberry, Zambia; Mokambo, Sakania, Congo Republic, Luapula River. GEOLOGY: Dendritic drainage pattern, constriction of Luapula River course just upstream from Kabunda. FORESTRY: Open woodland. METEOROLOGY: Cirrus, small cumulus.
1032	2	1606	12°18'S	29°08'E	260	162	122	1:3,421,000	1:1,027,000	1:855,000	15		GEOGRAPHY: Africa; southeastern corridor of Congo Republic and Zambia border. Luapula River and lake area near Lake Bangweulu. Kabunda, Kalcleio and Mokambo Congo Republic; Fort Roseberry, Mufulira and Ndola, Zambia. GEOLOGY: Dendritic stream pattern, multi-lake area near Lake Bangweulu. Constriction of Luapula River course near Kabunda. FORESTRY: Open woodland. METEOROLOGY: Cirrus, small cumulus.
1033	2	1609	12°37'S	29°38'E	261	162	123	1:3,434,000	1:1,030,000	1:859,000	11		GEOGRAPHY: Africa; southeastern corridor of Congo Republic and Zambia border. Kabunda on the Luapula River. The lower lake area of Lake Bangweulu region. AGRICULTURE: Possible areas of cultivation. GEOLOGY/HYDROLOGY: Constriction of Luapula River near Kabunda, dendritic drainage pattern, shallow lake area. FORESTRY: Open woodland. METEOROLOGY: Cirrus, altocumulus.
1034	2	1611	12°55'S	30°07'E	262	163	123	1:3,447,000	1:1,034,000	1:862,000	11		GEOGRAPHY: Africa; southeastern tip of Congo (Kinshasa) where Congo borders Zambia. Zambian lake Lusiwasi included. Luapula River, separating Congo and Zambia. Lavashi ridge. GEOLOGY: Long sinuous ridges trending northeastward. HYDROLOGY: Luapula River with flood plain and associated tributary pattern. FORESTRY: Dry, open woodland, grading into tall grass and other herbaceous plants. METEOROLOGY: Cirrus, altocumulus, small cumulus.
1035	2	1615	13°14'S	30°38'E	263	163	124	1:3,459,000	1:1,038,000	1:865,000	10		GEOGRAPHY: Africa; northeastern Zambia including portions of Luangwa River and headwaters of Lukusashi River. Chitango. GEOLOGY: Major highland area bordered by high escarpment which separates higher elevations from river valley. HYDROLOGY: Dendritic/rectangular drainage pattern (Luangwa River) and (Lukusashi River). FORESTRY: Dry, open woodland with grass and other herbaceous plants. METEOROLOGY: Cirrus, altocumulus, small cumulus.
1036	2	1617	13°30'S	31°02'E	264	164	124	1:3,472,000	1:1,042,000	1:868,000	13		GEOGRAPHY: Africa; northeastern Zambia over Luangwa River Valley, Lupande River empties into Luangwa. GEOLOGY: Major drainage basin of area. Prominent scarp with probable faulting. HYDROLOGY: Dendritic/Rectanguiar drainage. Highland waters draining into Luangwa River Valley. Meandering stream patterns. FORESTRY: Sparse, open deciduous woodland. METEOROLOGY: Cirrus, small cumulus.
1037	2	1619	13°46'S	31°32'E	265	165	125	1:3,485,000	1:1,046,000	1:871,000	25		GEOGRAPHY: Africa; eastern Zambia borders with western Mozambigue. Border line is apparent in photograph. Zambia side apparently void of major vegetation. Luangwa River Valley. GEOLOGY: Highlands with major northeastward-trending ridge system. HYDROLOGY: Luangwa and Lupande Rivers, major source of water. FORESTRY: Sparse, open deciduous woodlands. METEOROLOGY: Cirrus, small cumulus.

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			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1038	2	1621	14°04'S	32°02'E	266	165	125	1:3,498,000	1:1,049,000	1:874,000	21		GEOGRAPHY: Africa; extreme southeastern tip of Zambia, Ft. Jameson Zambia, Mozambique and Malawi border. GEOLOGY: Arcuate and northward trending ridges showing differential resistant stratigraphy. HYDROLOGY: Luangwa river,major water source. FORESTRY: Sparse open woodlands grading to thick deciduous overstory.
1039	2	1623	14°22'S	32°31'E	267	166	126	1:3,511,000	1:1,053,000	1:878,000	14		GEOGRAPHY: Africa; point of three country intersection, Zambia, Mozambique and Malawi area of Fort Jameson and Dzalanyama range. GEOLOGY: Dzalanyama mountain range prominant relief. Secondary highlands include Macuacua and Dezindoe peaks. HYDROLOGY: Headwaters and tributaries of Capocho river. FORESTRY: Sparse open deciduous woodlands. METEOROLOGY: Cirrus, small cumulus.
1040	2	1625	14°39'S	33°00'E	268	166	126	1:3,523,000	1:1,057,000	1:881,000	2		GEOGRAPHY: Africa; Mozambique covering portion of Zambia and Malawi. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Northward trending lineaments and possible faults, rugged resistant stratigraphy in ridge form. HYDROLOGY: Capocho and Zambezi rivers major sources of drainage. Namanzi and Ponfi rivers drainage basins. FORESTRY: Sparse, open deciduous woodlands. METEOROLOGY: Small cumulus.
1041	2	1629	14°55'S	33°29'E	269	167	127	1:3,536,000	1:1,061,000	1:884,000	6		GEOGRAPHY: Africa; Mozambique and Malawi borders, southwest of Lake Nyasa. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Rugged Dzalanyama range grading into Zambezi river bottom lands. Western slopes of Northern Kirk Range in leading edge of photograph. Apparent steeply dipping beds. HYDROLOGY: Zambezi river major hydrologic feature, Rio Revubue and Namanzi rivers are extensive secondary drains. FORESTRY: Sparse open deciduous woodlands grading into lowland marshgrasses. METEOROLOGY: Altocumulus, small cumulus.
1042	2	1630	15°12'S	33°59'E	270	168	127	1:3,549,000	1:1,065,000	1:887,000	5		GEOGRAPHY: Africa; Northeastern corner of Mozambique, including border of Mozambique and Malawi. GEOLOGY: Namanzi river valley bounded by Dzalanyama and Kirk mountain ranges. Kirk Range with fracture joints. Large extrusive feature near southeastern corner of photograph. Kirk range sloping into Lake Nyasa basin. HYDROLOGY: Zambezi river major drainage source, Namanzi secondary source. FORESTRY: Open deciduous woodlands grading southeastward into tall grass savanna. METEOROLOGY: Altocumulus, small cumulus.
1043	2	1632	15°29'S	34°28'E	271	168	127	1:3,562,000	1:1,069,000	1:890,000	5		GEOGRAPHY: Africa; border of Mozambique and Malawi directly over Kirk Range. Blantrye. AGRICULTURE: Possible areas of cultivation. GEOLOGY: Major river basin bordered by extensive highland ranges that are highly fractured. Faults may border the river valley. Numerous intrusive rocks, lineation trends northeast probably associated with rift valley structure. HYDROLOGY: Shire river major source of drainage, contains numerous falls and rapids, Livingston falls. At lower elevations this river is associated with extensive marshlands. FORESTRY: Open deciduous woodlands grading into lowland savanna grasses. METEOROLOGY: Altocumulus, orographic cumulus pattern.

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1044	2	1634	15°45'S	34°58'E	272	169	128	1:3,575,000	1:1,073,000	1:894,000	3	S-65-64023	GEOGRAPHY: Africa; Blantyre Malawi, Lake Chilwa area. Zomba, Limbe. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Cholo Mountain and associated peaks, Mlanje Mountains very pronounced. Numerous northeastward trending lineaments. HYDROLOGY: Shire river valley, Livingston falls, Nkula falls, Lake Chilwa, lowland marshes along Shire river. FORESTRY: Open deciduous woodlands grading into lowland savanna grasses with river associated aquatic vegetation. METEOROLOGY: Altocumulus, orographic cumulus pattern, T shaped.
1045	2	1636	16°02'S	35°29'E	273	169	128	1:3,588,000	1:1,076,000	1:897,000	3		GEOGRAPHY: Africa; Malawi and Mozambique border. Blantyre and Limbe. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Jointed highlands, major escarpments along Shire river valley, northeastward and eastward trending lineaments. HYDROLOGY: Shire river and Lake Chilwa major water sources. FORESTRY: Open deciduous woodlands grading into grass savanna. METEOROLOGY: Orographic cumulus pattern in shape of "T"
1046	2	1638	16°18'S	35°58'E	274	170	129	1:3,601,000	1:1,080,000	1:900,000	2		GEOGRAPHY: Africa; Malawi and Mozambique border, Mlanje Mountains. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Numerous eastward trending arcuate lineaments that are probable resistant intrusives associated with the rift valley structure. HYDROLOGY: Shire river and Lake Chilwa, Rio Licire and Luala rivers contribute major water sources. FORESTRY: Open deciduous woodlands with grass and other herbaceous plants. METEOROLOGY: Small cumulus.
1047	2	1640	16°34'S	36°28'E	275	171	129	1:3,614,000	1:1,084,000	1:903,000	2		GEOGRAPHY: Africa; Mozambique, Montie Mabu peak area. GEOLOGY: Northeastward and eastward trending lineaments and steeply dipping beds. Probable faults associated with rift valley structure. HYDROLOGY: Extensive drainage system from inland highlands to lower coastal region. Munguzi, Luala, Rio Lugela major drainage. FORESTRY: Open deciduous woodlands. METEOROLOGY: Small cumulus.
1048	2	1642	16°51'S	36°58'E	276	171	130	1:3,627,000	1:1,088,000	1:907,000	2		GEOGRAPHY: Africa; East coast Mozambique, Rio Lugela. GEOLOGY: Coastal plain, with scattered isolated highland outcrops, meandering stream pattern. HYDROLOGY: Extensive drainage system from highlands to coast, Rio Lugela, Nipiodi and Malela rivers, primary hydrologic sources. FORESTRY: Open deciduous woodlands changing to grasses and then to mangrove. OCEANOGRAPHY: Well developed beaches, smooth coastline. METEOROLOGY: Small cumulus.
1049	2	1645	17°07'S	37°28'E	277	172	130	1:3,639,000	1:1,092,000	1:910,000	4		GEOGRAPHY: Africa; eastern coast of Mozambique, Pebau, Licungo river, Quelimane. GEOLOGY: Coastal plain. HYDROLOGY: Aggrading regime on Licungo river. FORESTRY: Predominantly mangrove. OCEANOGRAPHY: Well developed beaches, smooth coast line. METEOROLOGY: Cumulus.
1050	2	1647	17°22'S	37°57'E	278	172	131	1:3,652,000	1:1,096,000	1:913,000	8		GEOGRAPHY: Africa; eastern coast of Mozambique, Quelimane Licungo river. AGRICULTURE: Probable areas of cultivation. GEOLOGY: Coastal plain. HYDROLOGY: Aggrading regime. FORESTRY: Predominantly mangrove. OCEANOGRAPHY: Well developed beaches, smooth coastline. Light toned pattern off shore and off shore reefs. METEOROLOGY: Cumulus.

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1051	2	1649	*18°01'S	39°03'E	279	173	131	1:3,665,000	1:1,100,000	1:916,000	7		GEOGRAPHY: Africa; East coast of Mozambique, Nipicdi and Meleia rivers. GEOLOGY: Coastal plain. HYDROLOGY: Aggrading regime. FORESTRY: Predominantly mangrove. OCEANOGRAPHY: Well developed beaches, smooth coastline. Light-toned pattern offshore and offshore reefs. METEOROLOGY: Cumulus, some sea breeze effect, some alignment normal to shore
1052	2	1651	*18°17'S	39°33'E	280	174	132	1:3,678,000	1:1,104,000	1:920,000	13		GEOGRAPHY: Africa; East coast of Mozambique, Molocure river area. GEOLOGY: Coastal plain. HYDROLOGY: Aggrading regime. FORESTRY: Mangrove. OCEANOGRAPHY: Well developed beaches, light-toned patterns offshore, and offshore reefs. METEOROLOGY: Altocumulus.
1053	2	1653	*18°33'S	40°03'E	281	174	132	1:3,691,000	1:1,108,000	1:923,000	17		GEOGRAPHY: Tip of Mozambique east coast visible. OCEANOGRAPHY: Offshore reefs faintly visible (Lliа Epidendron Lliа Casuarina) METEOROLOGY: Altocumulus, towering cumulus, cumulus.
1054	2	1655	*18°49'S	40°33'E	282	175	133	1:3,704,000	1:1,111,000	1:926,000	25		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Altocumulus, towering cumulus, cumulus.
1055	2	1658	*19°05'S	41°04'E	283	176	133	1:3,717,000	1:1,115,000	1:929,000	16		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible surface wave motion. METEOROLOGY: Towering cumulus, cumulus, stratocumulus.
1056	2	1700	*19°20'S	41°34'E	283	176	133	1:3,730,000	1:1,119,000	1:933,000	7		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Cumulus.
1057	2	1702	*19°36'S	42°04'E	284	177	134	1:3,743,000	1:1,123,000	1:936,000	2		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Cumulus.
1058	2	1704	*19°52'S	42°35'E	285	177	134	1:3,756,000	1:1,127,000	1:939,000	2		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Altocumulus.
1059	2	1706	*20°07'S	43°05'E	286	178	135	1:3,769,000	1:1,131,000	1:942,000	10		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Altocumulus.
1060	2	1708	*20°22'S	43°37'E	287	179	135	1:3,782,000	1:1,135,000	1:945,000	15		GEOGRAPHY: Mozambique Channel, Indian Ocean. OCEANOGRAPHY: No visible wave action. METEOROLOGY: Altocumulus.
1061	2	1711	*20°37'S	44°07'E	288	179	136	1:3,795,000	1:1,139,000	1:949,000	15		GEOGRAPHY: Malagasy Republic; west coast of Madagascar at Morondava. GEOLOGY: Coastal plain. HYDROLOGY: Major coastal drainage consists of Maharivo river and Tsiribihina river delta. FORESTRY: Dry open woodland with scattered mangrove. OCEANOGRAPHY: Irregular, illdefined coastline. METEOROLOGY: Altocumulus.

*computed nadir point of camera

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			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1062	2	1713	*20°52'S	44°38'E	289	180	136	1:3,807,000	1:1,142,000	1:952,000	20		GEOGRAPHY: Malagasy Republic; western coast of Madagascar, Mahabo. GEOLOGY: Coastal plain, gentle to moderate slopes inland to southern tip of Causses de Lantsingy range. HYDROLOGY: Maharivo river major drain of area. Tsiribihina delta region. FORESTRY: Dry open woodland with scattered mangrove. OCEANOGRAPHY: Irregular, illdefined coastline. METEOROLOGY: Altocumulus.
1063	2	1715	*21°07'S	45°09'E	290	180	137	1:3,820,000	1:1,146,000	1:955,000	30		GEOGRAPHY: Malagasy Republic; western coast of Madagascar, Mahabo. GEOLOGY: Coastal plains joining Massif du Makay highland range. HYDROLOGY: Maharivo river dominant drainage system. FORESTRY: Open deciduous woodlands changing to grass and other herbaceous plants of highlands. OCEANOGRAPHY: Irregular, illdefined coastline. METEOROLOGY: Altocumulus, towering cumulus, stratocumulus, sea breeze effect.
1064	2	1717	*21°22'S	45°40'E	291	181	137	1:3,833,000	1:1,150,000	1:958,000	53		GEOGRAPHY: Malagasy Republic; western coast of Madagascar Mahabo. GEOLOGY: Some highland terrain visible through clouds. HYDROLOGY: Maharivo river dominant visible hydrologic feature. FORESTRY: Open deciduous woodlands changing to grasses. OCEANOGRAPHY: Coast faintly visible. METEOROLOGY: Towering cumulus, stratocumulus.
1065	2	1719	*21°37'S	46°12'E	292	182	138	1:3,846,000	1:1,154,000	1:961,000	60		GEOGRAPHY: Malagasy Republic; western coast of Madagascar. GEOLOGY: Highlands of Massif Du Makay visible but dim. Other rugged highlands visible. HYDROLOGY: Tributary of Maharivo river visible at one point in cloud break. METEOROLOGY: Towering cumulus, stratocumulus.
1066	2	1722	*21°52'S	46°43'E	293	182	138	1:3,859,000	1:1,158,000	1:965,000	46		GEOGRAPHY: Malagasy Republic; western Madagascar. GEOLOGY: Rugged inland highlands visible in cloud break. METEOROLOGY: Towering cumulus, stratocumulus.
1067	2	1724	*22°06'S	47°14'E	294	183	139	1:3,871,000	1:1,161,000	1:968,000	41		GEOGRAPHY: Malagasy Republic; central Madagascar. GEOLOGY: Central highlands visible, but dark. METEOROLOGY: Towering cumulus, stratocumulus.
1068	2	1726	*22°14'S	47°46'E	295	183	139	1:3,884,000	1:1,165,000	1:971,000	19		GEOGRAPHY: Malagasy Republic; east central Madagascar. GEOLOGY: Extremely rough central highlands visible but dark. OCEANOGRAPHY: Eastern coast barely visible, smooth coastline. METEOROLOGY: Aligned towering cumulus, and cumulus, at terminator.
1069	2	1728	*22°34'S	48°18'E	296	184	139	1:3,897,000	1:1,169,000	1:974,000	12		GEOGRAPHY: Malagasy Republic; east coast of Madagascar. GEOLOGY: Undefinable near coast. OCEANOGRAPHY: Eastern coast barely definable, apparently smooth coastline. METEOROLOGY: Aligned towering cumulus and cumulus at terminator.
1070	2	1729	*22°34'S	48°18'E	297	185	140	1:3,909,000	1:1,173,000	1:977,000	11		GEOGRAPHY: Indian Ocean; eastern coast of Madagascar, very dark. OCEANOGRAPHY: Faintly visible, apparently smooth shoreline. METEOROLOGY: Few tops visible at terminator.
1071	2	1731	*22°49'S	48°50'E	298	185	140	1:3,922,000	1:1,177,000	1:980,000	3		GEOGRAPHY: Indian Ocean; eastern coast of Madagascar, very dark. OCEANOGRAPHY: Faintly visible, apparently smooth shoreline. METEOROLOGY: Few tops visible at terminator.
1072	2	1735	*23°17'S	49°54'E	299	186	141	1:3,935,000	1:1,181,000	1:984,000	3		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.

*computed nadir point of camera

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1073	2	1738	*23°30'S	50°26'E	300	186	141	1:3,947,000	1:1,184,000	1:987,000	2		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.
1074	2	1740	*23°44'S	50°58'E	301	187	142	1:3,960,000	1:1,188,000	1:990,000	5		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.
1075	2	1742	*23°58'S	51°30'E	302	188	142	1:3,972,000	1:1,192,000	1:993,000	10		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.
1076	2	1744	*24°11'S	52°03'E	303	188	143	1:3,985,000	1:1,196,000	1:996,000	9		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.
1077	2	1747	*24°24'S	52°36'E	304	189	143	1:3,997,000	1:1,199,000	1:999,000	4		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern visible beyond terminator.
1078	2	1749	*24°37'S	53°08'E	305	189	144	1:4,009,000	1:1,203,000	1:1,002,000	3		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine cloud top pattern faintly visible beyond terminator.
1079	2	1751	*24°50'S	53°41'E	306	190	144	1:4,022,000	1:1,207,000	1:1,005,000	1		GEOGRAPHY: Indian Ocean, very dark. METEOROLOGY: Fine could top pattern faintly visible beyond terminator.
									(DARK SIDE)				
1400	2	0555	*24°09'N	137°13'W	248	154	116	1:3,266,000	1:980,000	1:816,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Daylight terminator, few cloud tops illuminated.
1401	2	0556	*25°21'N	136°39'W	247	154	116	1:3,255,000	1:977,000	1:814,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Daylight terminator, few cloud tops illuminated.
1402	2	0559	*25°34'N	136°04'W	247	153	116	1:3,244,000	1:973,000	1:811,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Daylight terminator, few cloud tops illuminated.
1403	2	0601	*25°46'N	135°31'W	246	153	116	1:3,234,000	1:970,000	1:808,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Thin lines, cloud tops illuminated.
1404	2	0603	*25°59'N	134°57'W	245	152	115	1:3,223,000	1:967,000	1:806,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Thin lines, cloud tops illuminated.
1405	2	0606	*26°11'N	134°23'W	244	152	115	1:3,213,000	1:964,000	1:803,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Cloud top illuminated, open cells about 20-40 miles in diameter.
1406	2	0608	*26°23'N	133°48'W	243	151	115	1:3,202,000	1:961,000	1:800,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Cloud top illuminated, open cells about 20-40 miles in diameter.
1407	2	0611	*26°35'N	133°14'W	243	151	114	1:3,192,000	1:958,000	1:798,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus and stratocumulus, some very thin altostratus or cirrus, fine detail.
1408	2	0613	*26°47'N	132°39'W	242	150	114	1:3,181,000	1:954,000	1:795,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some very thin higher clouds, ripples on lower clouds.
1409	2	0616	*26°58'N	132°04'W	241	150	113	1:3,171,000	1:951,000	1:793,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some higher clouds, ripples on lower clouds.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1410	2	0618	*27°10'N	131°30'W	240	149	113	1:3,161,000	1:948,000	1:790,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some higher clouds, fine detail in lower clouds.
1411	2	0621	*27°21'N	130°54'W	239	149	113	1:3,150,000	1:945,000	1:788,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some higher clouds, fine detail in lower clouds.
1412	2	0623	*27°33'N	130°19'W	239	148	112	1:3,140,000	1:942,000	1:785,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some thin higher clouds, fine detail in lower clouds.
1413	2	0626	*27°43'N	129°44'W	238	148	112	1:3,130,000	1:939,000	1:784,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus, some thin higher clouds, fine detail in lower clouds.
1414	2	0628	*27°54'N	129°09'W	237	147	112	1:3,109,000	1:936,000	1:780,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus with fine detail.
1415	2	0631	*28°05'N	128°33'W	236	147	111	1:3,109,000	1:933,000	1:777,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Thin stratus becoming stratocumulus, some higher clouds.
1416	2	0633	*28°15'N	127°57'W	236	146	111	1:3,099,000	1:930,000	1:775,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus becoming stratocumulus, some higher clouds.
1417	2	0636	*28°26'N	127°21'W	235	146	111	1:3,089,000	1:927,000	1:772,500	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratus becoming stratocumulus, some higher clouds.
1418	2	0638	*28°36'N	126°45'W	234	145	110	1:3,079,000	1:924,000	1:770,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1419	2	0641	*28°46'N	126°09'W	233	145	110	1:3,069,000	1:921,000	1:767,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1420	2	0643	*28°55'N	125°33'W	233	145	110	1:3,060,000	1:918,000	1:765,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1421	2	0646	*29°05'N	124°57'W	232	144	109	1:3,050,000	1:915,000	1:762,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1422	2	0648	*29°15'N	124°21'W	231	144	109	1:3,040,000	1:912,000	1:760,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1423	2	0651	*29°24'N	123°43'W	230	143	108	1:3,031,000	1:909,000	1:758,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1424	2	0654	*29°33'N	123°07'W	230	143	108	1:3,021,000	1:906,000	1:755,000	100		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus, some higher clouds.
1425	2	0656	*29°42'N	122°30'W	229	142	108	1:3,011,000	1:904,000	1:753,000	99		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus with thin spots.
1426	2	0659	*29°51'N	121°53'W	228	142	107	1:3,002,000	1:901,000	1:750,000	99		GEOGRAPHY: Eastern Pacific. METEOROLOGY: Stratocumulus with thin spots.
1427	2	0701	*29°59'N	121°16'W	228	141	107	1:2,992,000	1:898,000	1:748,000	99		GEOGRAPHY: Eastern Pacific, off Mexico - Baja California. METEOROLOGY: Stratocumulus with thin spots.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILOMETERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1428	2	0704	*30°07'N	120°39'W	227	141	107	1:2,983,000	1:895,000	1:746,000	99		GEOGRAPHY: Eastern Pacific, off Mexico - Baja California. METEOROLOGY: Stratocumulus with thin spots.
1429	2	0707	*30°15'N	120°01'W	226	140	106	1:2,974,000	1:892,000	1:743,000	85		GEOGRAPHY: Eastern Pacific, off Mexico - Baja California. METEOROLOGY: Stratocumulus, large element in one area, small elements in another.
1430	2	0709	*30°23'N	119°24'W	225	140	106	1:2,964,000	1:889,000	1:741,000	80		GEOGRAPHY: Eastern Pacific, off Mexico - Baja California. METEOROLOGY: Stratocumulus, large elements in one area, small elements in another.
1431	2	0712	*30°31'N	118°46'W	225	140	106	1:2,955,000	1:887,000	1:739,000	70	S-65-34671 S-66-63517 thru 23	GEOGRAPHY: Mexico, Baja California, Pacific Coast. METEOROLOGY: Stratocumulus, small cloud elements.
1432	2	0720	30°52'N	116°55'W	224	139	105	1:2,946,000	1:884,000	1:737,000	50	S-65-34671 S-66-63044 thru 55	GEOGRAPHY: Mexico, coast of Baja California and Pacific Ocean; San Pedro Matir Mountain Range. GEOLOGY: Fault block mountain range of intrusives to the East. FORESTRY: Sparse, broadleaf evergreen shrubform, some areas of possible cultivation. METEOROLOGY: Stratocumulus, small cloud elements.
1433	2	0723	30°59'N	116°10'W	223	139	105	1:2,937,000	1:881,000	1:734,000	15	S-65-45763 S-65-45764 S-65-45788	GEOGRAPHY: West coast of Baja California, Punta Colnett, Santa Maria Bay; San Pedro Matir Mts., Sa. De La Tinaja and Sa. Pinta Mt. Ranges. GEOLOGY/HYDROLOGY: Faulted mountain ranges and alluvial fans to the East; West coast contains intrusives and volcanics. FORESTRY: Sparse, broadleaf evergreen shrubform. METEORLOGY: Stratocumulus, small cloud elements.
1434	2	0725	31°05'N	115°30'W	223	138	105	1:2,928,000	1:878,000	1:732,000	1	S-65-34652 S-66-62954	GEOGRAPHY: Baja California, Pacific Coast and Gulf of California at San Felipe; Sierra De Juarez, Sierra San Pedro Matir Mt. Ranges. GEOLOGY/HYDROLOGY: Colorado River Delta and Playa, and interior desert plains adjacent to volcanic ranges in this semi arid region of alluvium deposits. METEOROLOGY: Few orographic clouds along coastal mountains.
1435	2	0729	31°13'N	114°44'W	222	138	104	1:2,919,000	1:876,000	1:730,000	0	S-65-34653 S-65-34654 S-65-45582 S-65-45703 S-66-63015 S-66-63016	GEOGRAPHY: Mexico, East coast of Baja California. GEOLOGY: Southern region of Sierra De Juarez and northern San Pedro Matir mountain complex; Sonoran Desert showing dunal patterns and alluvium along east coast. HYDROLOGY: Mouth of Colorado River flowing into the Gulf of California forming deltaic silting. FORESTRY: No visible vegetation.
1436	2	0731	31°20'N	114°07'W	221	137	104	1:2,910,000	1:873,000	1:726,000	0	S-66-62793 thru 96	GEOGRAPHY: Mexico, Gulf of California; mouth of Colorado River; Great Sonoran Desert; Bahia De Aduar. GEOLOGY: Pinacates volcanic field, Puerto Penasco, Quaternary Desert of varicus dune types due to changing wind directions. FORESTRY: None.
1437	2	0734	31°25'N	113°29'W	221	137	104	1:2,901,000	1:870,000	1:725,000	0	S-65-34675 S-65-45703 S-66-63044 thru S-66-63054	GEOGRAPHY: Mexico-Arizona border; Gulf of California, Pinacatus volcanic field; Bahia De Aduar; Sonoyta River, Sierra Prieta. GEOLOGY: Sierra Pinta Volcanic Mountain Ranges; basin and range Province containing quaternary alluvium in the Sonora Desert. FORESTRY: None.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1438	2	0737	31°31'N	112°51'W	220	136	104	1:2,893,000	1:868,000	1:723,000	0	S-65-34656	GEOGRAPHY: Mexico-Arizona; Bahia De Aduar, Bahia San Jorge, Pinacates volcanic field; Rio Sonoyta, Organ Pipe Cactus National Monument; Ajo Mountains. GEOLOGY: Basin and Range Province of volcanic mountain range. FORESTRY: Very sparse, scattered desert shrubforms primarily along drainage.
1439	2	0739	31°36'N	112°12'W	219	136	103	1:2,884,000	1:865,000	1:721,000	0	S-65-34657	GEOGRAPHY: Mexico-Arizona; Santa Rosa Valley, Organ Pipe Cactus National Monument Baboquivari Mountains, North and South Camobabi Mountains, Ajo Mountains. GEOLOGY: Block fault mountains in the Basin and Range Province. FORESTRY: Scattered shrubform (desert) with desert grasses.
1440	2	0742	31°43'N	111°33'W	219	136	103	1:2,876,000	1:863,000	1:719,000	0	S-65-34658	GEOGRAPHY: Mexico-Arizona; Santa Rosa Valley, Baboquivari Mountains, Coronado National Forest, Nogales, Tuscon, copper mining, Sierrita Mountains, Santa Cruz River, Santa Rita Mountains. GEOLOGY: Tertiary volcanics surrounded by quaternary alluvium. HYDROLOGY: Vamori Wash River. FORESTRY: Scattered desert shrubform, coniferous woodland at higher elevation.
1441	2	0745	31°48'N	110°53'W	218	135	103	1:2,867,000	1:860,000	1:717,000	0	S-65-34679	GEOGRAPHY: Mexico-Arizona; Tuscon, Nogales, Benson, Colorado National Forest, Baboquivari Mountains, Santa Catalina Mountains, Rincon Mountains, Whetstone Mts. AGRICULTURE: Some cultivated areas. GEOLOGY: Volcanic mountain ranges surrounded by alluvium deposits. HYDROLOGY: Santa Cruz River, San Pedro River FORESTRY: Scattered desert shrubform with coniferous woodlands at higher elevations.
1442	2	0748	31°52'N	110°15'W	217	135	102	1:2,859,000	1:858,000	1:715,000	0	S-65-34680	GEOGRAPHY: Mexico-Arizona; Tuscon, Nogales, Benson, Colorado National Forest, Huachuca Mountains, Rincon Mountains, Dragoon Mountains, San Pedro Valley, Sulfur Springs Valley. AGRICULTURE: Some areas of cultivation. GEOLOGY: Volcanic mountains, alluvium deposits and a large playa. HYDROLOGY: San Pedro River and Willcox Dry Lake. FORESTRY: Scattered shrubform and coniferous woodlands at higher elevation.
1443	2	0750	31°58'N	109°38'W	217	135	102	1:2,850,000	1:855,000	1:713,000	0	S-65-34681	GEOGRAPHY: Arizona-New Mexico; Willcox, Sulfur Spring Valley, Dragoon Mountains, Willcox Playa, Chiricahua Mountains, Pelocino Mountains, Animas Valley, Alkali Flats, San Simon Valley. AGRICULTURE: Areas of cultivation on flood plain. GEOLOGY: Various types of volcanic and basement complex mountain ranges with alluvium basins of unconsolidated sediments. HYDROLOGY: San Pedro River. FORESTRY: Desert shrubform with some coniferous woodlands at higher elevation.
1444	2	0753	32°01'N	108°59'W	216	134	102	1:2,842,000	1:853,000	1:711,000	0	S-65-34686 thru 94	GEOGRAPHY: Arizona-New Mexico; Willcox, Dougias, Lordsburg, Animas Valley, Chiricahua Mountains, Alkali Flats, Animas Mountains, Continental Divide, Big Burro Mountains, Hatchet Mountains, Playas Valley. GEOLOGY: Tertiary volcanic uplands and granitic ranges. HYDROLOGY: Playa Lake. FORESTRY: Scattered shrubform with coniferous woodlands at higher elevation. Scattered areas of cultivation.
1445	2	0756	32°06'N	108°18'W	215	134	101	1:2,834,000	1:850,000	1:708,000	0	S-65-34686 thru 94	GEOGRAPHY: Mexico-New Mexico; Lordsburg, Deming, Palomas, Continental Divide, Playas Valley, Hatchet Mountains, Cedar Mountains, Florida Mountains, Mining at Silver City, Hurley Areas, Mimbres Mountains. AGRICULTURE: Areas of cultivation at lower elevation. GEOLOGY: Alluvium deposits on elevated plains. FORESTRY: Scattered desert shrubform with some coniferous woodlands at higher elevation.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1446	2	0759	32°10'N	107°38'W	215	133	101	1:2,826,000	1:826,000	1:706,000	0	S-65-34686 thru 94 S-65-18739 thru 41	GEOGRAPHY: Mexico-New Mexico; Deming, Palomas, Mimbres Mountains, Florida Mountains, Sierra De Las Uvas, Potrillo Mountains. GEOLOGY: Palomas volcanic field, alluvium plains throughout the entire region. HYDROLOGY: Rio Grande. FORESTRY: Scattered desert shrub (sparse), cultivation in rio grande river area.
1447	2	0801	32°13'N	106°59'W	214	133	101	1:2,818,000	1:845,000	1:704,000	0	S-65-18739 thru 41 S-65-34686 thru 94 S-65-45670 S-65-45671	GEOGRAPHY: Mexico-New Mexico, Texas; Deming, Las Cruces, El Paso, Florida Mountains, Sierra De Las Uvas, San Andres Mountains, Organ Mountains, Franklin Mountains, White Sands, Tularosa Basin. AGRICULTURE: Areas of cultivation along Rio Grande. GEOLOGY: Alluvium deposits, volcanic ranges and westerly dipping flat irons to the North; volcanic field of recent origin. HYDROLOGY: Rio Grande and flood plain. FORESTRY: Desert shrubform.
1448	2	0804	32°16'N	106°30'W	214	133	101	1:2,810,000	1:843,000	1:703,000	0	S-65-18739 thru 41 S-65-45671 S-65-34686 thru 94	GEOGRAPHY: Mexico-New Mexico, Texas; Las Cruces, El Paso, Juarez, Alamogordo, San Andras, Organ and Franklin Mountains, Sacramento Mountains, White Sands (Alkali Flats), Tularosa Basin, Hueco Mountains. GEOLOGY: Great Plains of sedimentary beds, alluvium deposits, sedimentary mountain ranges. HYDROLOGY: Rio Grande flood plain. FORESTRY: Shrubform with coniferous woodlands in Sacramento range. METEOROLOGY: Three very small orographic clouds.
1449	2	0807	32°19'N	105°41'W	213	132	100	1:2,802,000	1:841,000	1:700,000	0	S-65-18739 thru 41 S-65-45671 S-65-34686 thru 94 S-66-63017 S-66-63018	GEOGRAPHY: New Mexico-Texas; White Sands, Alamogordo, Lincoln National Forest, Sacramento Mountains, Tularosa Basin, Guadalupe Mountains, Salt Basin. GEOLOGY: Sedimentary mountain ranges, volcanic intrusives and elevated plateaus of sedimentary and alluvium deposits. FORESTRY: Some desert shrubform coniferous woodlands in high elevations. METEOROLOGY: Three very small orographic clouds.
1450	2	0810	32°22'N	105°02'W	212	132	100	1:2,794,000	1:838,000	1:698,000	0	S-66-63426 thru 28	GEOGRAPHY: New Mexico-Texas; Carlsbad, Sacramento Mountains, Lincoln National Forest, Salt Basin. AGRICULTURE: Highly cultivated area Artesia, N.M. GEOLOGY: Capitan reef complex, western side of Delaware basin area. HYDROLOGY: Pecos River. FORESTRY: Scattered desert shrubform, some coniferous woodlands at higher elevations. METEOROLOGY: Three very small orographic clouds.
1451	2	0812	32°26'N	104°23'W	212	132	100	1:2,786,000	1:836,000	1:697,000	0		GEOGRAPHY: New Mexico-Texas; Carlsbad, Guadalupe Mountains, Salt Basin, Mescalero Escarpment, Pecos Plains, Great Plains Province, West Texas oil fields. AGRICULTURE: Cultivation along Pecos. GEOLOGY: Structural province of the Delaware Basin, Capitan reef complex, western side of Central Basin platform. HYDROLOGY: Pecos River, Red Bluff Lake. FORESTRY: Desert grass and shrubform coniferous woodlands in higher elevations.
1452	2	0815	32°29'N	103°44'W	211	131	99	1:2,778,000	1:834,000	1:695,000	2	S-65-34701	GEOGRAPHY: New Mexico-Texas; Hobbs, Mescalero Escarpment, Querecho Plains, Pecos Plains, Staked Plains, West Texas Gas & Oil Fields. GEOLOGY: Central Basin platform, Pecos flood plain, alluvium covering high plains. HYDROLOGY: Pecos River. FORESTRY: Desert shrubform and grass. METEOROLOGY: Thin altocumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1453	2	0818	32°31'N	103°04'W	211	131	99	1:2,771,000	1:831,000	1:693,000	10	S-65-34701	GEOGRAPHY: New Mexico-Texas; Hobbs, Mescalero Escarpment, Staked Plains, Gas and Oil Fields, agriculture prominent. AGRICULTURE: Moderate to intense cultivation. GEOLOGY: Contact of Central Basin platform and sedimentary plateau of the Great Plains. FORESTRY: Predominantly desert grass. METEOROLOGY: Thin altocumulus.
1454	2	0821	32°33'N	102°25'W	210	131	99	1:2,763,000	1:829,000	1:691,000	20	S-65-34702 thru 5	GEOGRAPHY: New Mexico-Texas; Hobbs, Odessa, Midland, Brownfield. Staked Plains, West Texas Oil and Gas Fields, agricultural field patterns, sand hills. GEOLOGY: Central Basin platform and Great Plains. FORESTRY: Transition from desert grasses to plains grasses with extensive cultivation. METEOROLOGY: Thin altocumulus.
1455	2	0823	32°35'N	101°46'W	209	130	99	1:2,756,000	1:827,000	1:689,000	25	S-65-34706	GEOGRAPHY: Texas; Midland, Brownfield, Big Springs, Gas and Oil Fields, Central Plains. GEOLOGY: Central lowlands of sedimentary beds. HYDROLOGY: Colorado River, Brazos River. FORESTRY: Grasslands interrupted by cultivation. METEOROLOGY: Thin altocumulus.
1456	2	0826	32°38'N	101°06'W	209	130	98	1:2,745,000	1:825,000	1:687,000	10	S-64-34706, and 7	GEOGRAPHY: Texas; Big Springs, Sweetwater, oil fields, staked plains. AGRICULTURE: Cultivated fields. GEOLOGY: Central lowlands sedimentary formations. HYDROLOGY: Colorado River, Brazos, River. METEOROLOGY: Thin altocumulus.
1457	2	0829	32°38'N	100°26'W	208	129	98	1:2,741,000	1:823,000	1:685,000	0	S-65-34708	GEOGRAPHY: Texas; Snyder, Sweetwater, Abilene, Callahan Divide, Abilene-Haskel Plains, Limestone Belt, oil fields and Central Plains. AGRICULTURE: Cultivated areas. GEOLOGY: Mid-Continental Region of sedimentary beds and alluvial deposits. HYDROLOGY: Brazos River. FORESTRY: Predominantly grassland and cultivation, range lands.
1458	2	0832	32°40'N	99°47'W	208	129	98	1:2,734,000	1:820,000	1:684,000	0	S-65-34709	GEOGRAPHY: Texas; Abilene, Callahan Divide, Plateau, Limestone Belt, Great Plains Province. GEOLOGY: Contact of sedimentary beds in the mid-continent region. HYDROLOGY: Brazos River, Hubbard Creek Lake FORESTRY: Grassland with cultivation and livestock range.
1459	2	0835	32°41'N	99°07'W	207	129	98	1:2,727,000	1:818,000	1:682,000	0	S-65-34709	GEOGRAPHY: Texas; Abilene, Breckenridge, Abilene-Haskel Plains. AGRICULTURE: Areas of cultivation and rangeland. GEOLOGY: Gulf Coast Plain sedimentary deposits. HYDROLOGY: Brazos River, Hubbard Creek Lake, Possum Kingdom Lake. FORESTRY: Predominantly grassland with scattered deciduous timber.
1460	2	0837	32°41'N	98°28'W	207	128	97	1:2,720,000	1:816,000	1:680,000	0		GEOGRAPHY: Texas; Weatherford, Graham, Cisco, Great Plains Province. GEOLOGY: Gulf Coast Plain, undifferentiated sedimentary beds trending north-south. HYDROLOGY: Brazos River, Hubbard Creek Lake, Possum Kingdom Lake, Lake Bridgeport. FORESTRY: Mixed conifers and hardwoods in river lowlands, range grasses and cultivation.
1461	2	0840	32°42'N	97°49'W	206	128	97	1:2,714,000	1:814,000	1:678,000	0		GEOGRAPHY: Texas; Mineral Wells, Weatherford, Denton, Fort Worth, Grand Prairie, Great Plains Province. GEOLOGY: Sedimentary beds of the coastal plain trending north-south. HYDROLOGY: Brazos River, Trinity River. FORESTRY: Mixed hardwoods in river and stream lowlands, range grasses and cultivation.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1462	2	0843	32°43'N	97°14'W	206	128	97	1:2,707,000	1:812,000	1:677,000	0	S-66-63022 thru 25	GEOGRAPHY: Texas; Fort Worth, Dallas Area, Whiterock Escarpment, Grand Prairie, Great Plains Province, coastal plain boundaries. AGRICULTURE: Range grasses and some cultivation. GEOLOGY: North-south trending sedimentary beds covered by soil cover, timber and alluvium. HYDROLOGY: Brazos River, Trinity River. FORESTRY: Mixed hardwood with some conifers, predominantly along drainage.
1463	2	0845	32°44'N	96°38'W	205	128	97	1:2,700,000	1:810,000	1:675,000	2	S-66-63022 thru 25	GEOGRAPHY: Texas; Fort Worth, Dallas, of Gulf coast plain. AGRICULTURE: Range grasses with some cultivation. GEOLOGY: Northeast-southwest trending sedimentary beds, of Gulf coast plain. HYDROLOGY: Trinity River, Garza-Little Elm and Lavon Reservoirs, Cedar Lake, Lake Tawakoni. FORESTRY: Mixed hardwood and conifers. METEOROLOGY: Thin altocumulus.
1464	2	0848	32°43'N	96°03'W	205	127	96	1:2,693,000	1:808,000	1:673,000	10	S-66-63022 thru 25	GEOGRAPHY: Texas; Dallas, Greenville, Sulphur Springs, Corsicana, Black Prairie, Sandy Hills, Coastal Plain. GEOLOGY: South easterly flowing dendritic drainage on sedimentary beds covered by a soil layer. HYDROLOGY: Cedar Lake, Lake Tawakoni, Sulphur River, Sabine River, Trinity River. FORESTRY: Mixed hardwood and conifers with an increasing ratio of coniferous stands. METEOROLOGY: Thin altocumulus.
1465	2	0850	32°42'N	95°25'W	204	127	96	1:2,687,000	1:806,000	1:672,000	15		GEOGRAPHY: Texas; Greenville, Tyler, Longview, Sandy Hills, Coastal Plain. GEOLOGY: Sedimentary coastal plain deposits covered with veneer of soil. Prevalent dendritic rivers flow southeast ward. HYDROLOGY: Sabine River, Sulphur River, Cedar Lake, Lake Tawakoni. FORESTRY: Mixed hardwood and conifers, timber cover increasing in area. Some range land. METEOROLOGY: Altocumulus.
1466	2	0853	32°42'N	94°51'W	204	127	96	1:2,680,000	1:804,000	1:670,000	30		GEOGRAPHY: Texas; Longview, Marshall, Henderson, Sandy Hills, Pine Flats, Coastal Plain. HYDROLOGY: Sabine River, Sulphur River, Caddo Lake, Texarkana Reservoir. FORESTRY: Mixed hardwood and conifers. Some range lands. METEOROLOGY: Altocumulus. GEOLOGY: Gulf Coast Plain sedimentary beds.
1467	2	0856	32°40'N	94°07'W	203	126	96	1:2,674,000	1:802,000	1:668,000	40	S-66-63055 thru 59	GEOGRAPHY: Texas- Louisiana, Arkansas; Longview, Marshall, Shreveport, Pine Flats, Sandy Hills, Coastal Plain. GEOLOGY: Sedimentary beds of the Red River flood plain flowing southeast ward. HYDROLOGY: Red River, Caddo Lake. FORESTRY: Mixed hardwood and conifer, increasing amounts of pure conifer. METEOROLOGY: Altocumulus, cirrus.
1468	2	0859	32°40'N	93°27'W	203	126	95	1:2,668,000	1:800,000	1:667,000	60	S-66-63055 thru 59	GEOGRAPHY: Texas- Louisiana, Arkansas; Shreveport, El Dorado, Sandy Hills, Coastal Plains. GEOLOGY: Sedimentary Gulf Coastal Plain and Red River flood plain. HYDROLOGY: Red River, Caddo Lake. FORESTRY: Mixed conifers and hardwoods, some pure conifer. METEOROLOGY: Cirrostratus, altocumulus.
1469	2	0902	32°40'N	93°44'W	202	126	95	1:2,661,000	1:798,000	1:665,000	80	S-66-63055 thru 59	GEOGRAPHY: Texas- Louisiana, Arkansas; El Dorado. GEOLOGY: Gulf Coast Plain. HYDROLOGY: Red River. FORESTRY: Mixed conifer and hardwood, increasing amounts of pure conifer. METEOROLOGY: Dense cirrostratus, cirrus, altocumulus.

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT		SPACECRAFT ALTITUDE		GROUND TRACK WIDTH (STATUTE MILES)	SCALES			PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
			LATITUDE	LONGITUDE	KILO-METERS	STATUTE MILES		70MM	8" x 10"	9" x 9"			
1470	2	0905	*32°38'N	91°49'W	202	125	95	1:2,655,000	1:797,000	1:664,000	95	S-66-63055 thru 59	GEOGRAPHY: Louisiana, Arkansas. METEOROLOGY: Dense cirrostratus, cirrus, opening with cumulus tops visible.
1471	2	0908	*32°37'N	91°09'W	201	125	95	1:2,649,000	1:795,000	1:662,000	100		GEOGRAPHY: Louisiana, Arkansas. METEOROLOGY: Dense cirrostratus, cumulus or cumulonimbus, imbedded.
1472	2	0911	*32°34'N	90°30'W	201	125	95	1:2,643,000	1:793,000	1:661,000	100		GEOGRAPHY: Louisiana, Arkansas, Mississippi. METEOROLOGY: Dense cirrostratus with cumulus or cumulonimbus, imbedded.
1473	2	0914	*32°32'N	89°49'W	200	125	94	1:2,638,000	1:791,000	1:659,000	100		GEOGRAPHY: Mississippi. METEOROLOGY: Dense cirrostratus with cumulus or cumulonimbus, imbedded.
1474	2	0917	*32°30'N	89°10'W	200	124	94	1:2,632,000	1:790,000	1:658,000	100		GEOGRAPHY: Mississippi. METEOROLOGY: Dense cirrostratus with cumulonimbus, imbedded.
1475	2	0919	*32°27'N	88°30'W	200	124	94	1:2,626,000	1:788,000	1:657,000	100		GEOGRAPHY: Mississippi, Alabama. METEOROLOGY: Multilayered cirrus, altocumulus.
1476	2	0920	*32°28'N	88°41'W	199	123	94	1:2,613,000	1:784,000	1:653,000	100		GEOGRAPHY: Alabama. METEOROLOGY: Multilayered cirrus, altocumulus, small cumulus.
1477	2	0922	*32°25'N	88°01'W	198	123	93	1:2,608,000	1:782,000	1:652,000	100		GEOGRAPHY: Alabama. METEOROLOGY: Multilayered cirrus, altocumulus, small cumulus.
1478	2	0924	*32°22'N	87°22'W	198	123	93	1:2,603,000	1:781,000	1:651,000	100		GEOGRAPHY: Alabama. METEOROLOGY: Multilayered cirrus, altocumulus, small cumulus.
1479	2	0927	*32°19'N	87°22'W	197	123	93	1:2,597,000	1:779,000	1:649,000	100		GEOGRAPHY: Alabama, Georgia. METEOROLOGY: Multilayered cirrus, altocumulus, small cumulus.
1480	2	0930	*32°15'N	86°03'W	197	122	93	1:2,592,000	1:778,000	1:648,000	100		GEOGRAPHY: Georgia. METEOROLOGY: Multilayered cirrus, altocumulus, small cumulus.
1481	2	0933	*32°12'N	85°23'W	197	122	93	1:2,587,000	1:776,000	1:647,000	90	S-65-34790 and 1	GEOGRAPHY: Georgia; Macon. METEOROLOGY: Multilayered cirrus, altocumulus, cumulus, tendency for alignment into rows.
1482	2	0936	*32°07'N	84°44'W	196	122	92	1:2,582,000	1:775,000	1:646,000	50	S-65-34790 and 1	GEOGRAPHY: Georgia; Dublin, Altamaha Upland, Fall Line Hills, Coastal Plain GEOLOGY: Atlantic Coastal Plain, sedimentary beds, consequent drainage pattern. HYDROLOGY: Ocmulgee River, Oconee River. FORESTRY: Mixed pine and hardwood, increasing to pure pine. METEOROLOGY: Cirrus, altocumulus, small cumulus tendency for alignment into rows.
1483	2	0938	*32°03'	84°04'W	196	122	92	1:2,578,000	1:773,000	1:644,000	15	S-65-34790 and 1	GEOGRAPHY: Georgia; Dublin, Hazlehurst, Altamaha Upland, Tifton Upland, Coastal Plains. GEOLOGY: Coastal Plain sedimentary beds with a soil cover obscuring the contacts. HYDROLOGY: Ocmulgee River, Oconee River. FORESTRY: Predominantly pure conifer. METEOROLOGY: Row convection cloud formation (small cumulus cloud streets)

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1484	2	0942	*31°58'N	83°25'W	196	122	92	1:2,573,000	1:772,000	1:643,000	25	S-65-34790 and 1	GEOGRAPHY: Georgia; Baxley, Jessup, Brunswick to Wassaw Sound, Atlantic Coastal Plain. GEOLOGY: River bed and flood plain of Altamaha River on the sedimentary coastal plain. A compound coastline of emergence followed by submergence along the eastern region. HYDROLOGY: Altamaha River. FORESTRY: Pure pine, intermixed with bottomland hardwood. OCEANOGRAPHY: Reflective variation parallel to coastline. METEOROLOGY: Cloud streets of small cumulus.
1485	2	0944	*31°58'N	82°46'W	195	121	92	1:2,568,000	1:771,000	1:642,000	60		GEOGRAPHY: Georgia; Atlantic Coast from Savannah to Brunswick, water penetration on coastal shelf off Georgia. GEOLOGY: Atlantic coast line of compound origin with emergence followed by submergence. OCEANOGRAPHY: Anomalous linear variation, possibly caused by sediment. METEOROLOGY: Cloud streets of small cumulus inland, middle clouds off shore.
1486	2	0947	*31°49'N	82°07'W	195	121	92	1:2,564,000	1:769,000	1:641,000	35		GEOGRAPHY: Georgia; Altamaha Sound, sun glint. GEOLOGY: Atlantic Coastal Plain forming a compound shoreline. HYDROLOGY: Savannah River. METEOROLOGY: Cirrus, altocumulus or cumulus with some alignment into rows off shore.
1487	3	0949	*31°44'N	81°28'W	194	121	92	1:2,559,000	1:768,000	1:640,000	45		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Cirrus, altocumulus or cumulus with some alignment into rows.
1488	3	0952	*31°39'N	80°49'W	194	121	91	1:2,555,000	1:767,000	1:639,000	45		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Altocumulus or cumulus some in row formation.
1489	3	0955	*31°33'N	80°10'W	194	120	91	1:2,551,000	1:765,000	1:638,000	50		GEOGRAPHY: Atlantic Ocean. METEOROLOGY: Altocumulus or cumulus with some alignment.
1490	3	0957	*31°27'N	79°31'W	194	120	91	1:2,547,000	1:764,000	1:637,000	45		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective pattern possibly resulting from currents, salinity, wind or temperature difference. METEOROLOGY: Altocumulus or cumulus with some alignment.
1491	3	1000	*31°21'N	78°52'W	193	120	91	1:2,543,000	1:763,000	1:636,000	40		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Altocumulus or cumulus with some alignment.
1492	3	1003	*31°15'N	78°13'W	193	120	91	1:2,539,000	1:762,000	1:635,000	30		GEOGRAPHY: Atlantic Ocean, wave patterns and sunglint. METEOROLOGY: Altocumulus and cumulus.
1493	3	1006	*31°09'N	77°35'W	193	120	91	1:2,535,000	1:761,000	1:634,000	12		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Altocumulus and cumulus.
1494	3	1008	*31°01'N	76°57'W	192	120	91	1:2,531,000	1:760,000	1:633,000	10		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Altocumulus and cumulus.
1495	3	1011	*30°55'N	76°18'W	192	119	90	1:2,528,000	1:758,000	1:632,000	10		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Distinct reflective variation probably from temperature, salinity or wind variation. METEOROLOGY: Altocumulus and cumulus.
1496	3	1013	*30°48'N	75°40'W	192	119	90	1:2,525,000	1:757,000	1:631,000	8		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Small cumulus.

*computed nadir point of camera

FRAME NUMBER	ORBIT NUMBER	SOLAR TIME	PRINCIPAL POINT LATITUDE	PRINCIPAL POINT LONGITUDE	SPACECRAFT ALTITUDE KILOMETERS	SPACECRAFT ALTITUDE STATUTE MILES	GROUND TRACK WIDTH (STATUTE MILES)	SCALES 70MM	SCALES 8" x 10"	SCALES 9" x 9"	PERCENT CLOUD COVER	CORRELATIVE GEMINI COLOR PHOTOGRAPH (S)	DESCRIPTION
1497	3	1016	*30°40'N	75°02'W	192	119	90	1:2,521,000	1:756,000	1:630,000	11		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective variations possibly resulting from wind, salinity or temperature differential. METEOROLOGY: Small cumulus.
1498	3	1019	*30°33'N	74°24'W	191	119	90	1:2,518,000	1:755,000	1:630,000	15		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Variations in the reflectance from the ocean surface due possibly to wind or temperature. METEOROLOGY: Altocumulus and small cumulus.
1499	3	1022	*30°25'N	73°46'W	191	119	90	1:2,515,000	1:755,000	1:629,000	15		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective pattern, linear and angular shaped. METEOROLOGY: Altocumulus and small cumulus.
1500	3	1023	*30°17'N	73°08'W	191	119	90	1:2,512,000	1:754,000	1:628,000	16		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective pattern, linear and angular shaped. METEOROLOGY: Altocumulus and small cumulus.
1501	3	1027	*30°17'N	72°30'W	191	118	90	1:2,509,000	1:753,000	1:627,000	8		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective patterns. METEOROLOGY: Small cumulus.
1502	3	1030	*30°09'N	71°52'W	190	118	90	1:2,506,000	1:752,000	1:627,000	9		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective patterns. METEOROLOGY: Altocumulus and small cumulus.
1503	3	1032	*30°06'N	71°15'W	190	118	90	1:2,504,000	1:751,000	1:626,000	25		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Altocumulus and small cumulus.
1504	3	1035	*29°52'N	70°37'W	190	118	90	1:2,501,000	1:750,000	1:625,000	35		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective patterns. METEOROLOGY: Altocumulus and small cumulus.
1505	3	1038	*29°43'N	70°00'W	190	118	89	1:2,499,000	1:750,000	1:625,000	32		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Three reflective pattern boundaries, probably due to wind, temperature or salinity changes. METEOROLOGY: Cirrus, altocumulus and small cumulus.
1506	3	1040	*29°34'N	69°22'W	190	118	89	1:2,496,000	1:749,000	1:624,000	45		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Anomalous reflective patterns with multiple variations. METEOROLOGY: Cirrus, altocumulus and small cumulus.
1507	3	1043	*29°25'N	68°46'W	190	118	89	1:2,494,000	1:748,000	1:624,000	40		GEOGRAPHY: Atlantic Ocean, sun glint. OCEANOGRAPHY: Linear reflective patterns. METEOROLOGY: Cirrus, altocumulus and small cumulus.
1508	3	1046	*29°07'N	68°09'W	189	118	89	1:2,492,000	1:748,000	1:623,000	48		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, altocumulus and small cumulus.
1509	3	1048	*28°57'N	67°31'W	189	118	89	1:2,490,000	1:747,000	1:622,000	40		GEOGRAPHY: Atlantic Ocean, sun glint. METEOROLOGY: Cirrus, altocumulus and small cumulus.
1510	3	1051	*28°47'N	66°55'W	189	118	89	1:2,488,000	1:747,000	1:622,000	40		GEOGRAPHY: Atlantic Ocean, sun glint, linear light-tone streak is a possible reflection from spacecraft windows. METEOROLOGY: Cirrus, altocumulus and small cumulus.

*computed nadir point of camera

CONCLUSIONS

The data and information contained in this report is intended to aid the scientist in the analysis of the Apollo AS-502 70mm color photography.

Ideally, this information should accompany the photography that is provided to the scientists in the earth resources disciplines and meteorology for their study of this imagery. However, due to the amount of time that is needed to prepare this report, the photography and this information could not have been disseminated to the scientists simultaneously.

REFERENCES

The following is a list of references used to aid in the compilation of the descriptions of the photographs. It was noted in some localities that spelling of the names may vary from map to map, even between two maps from the same agency. An effort was made to use the most recent and reliable map possible.

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