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April 1964

TECHNICAL PUBLICATION

PHOTOGRAPHIC EVALUATION REPORT

MISSION 9062

21 - 26 DECEMBER 1963

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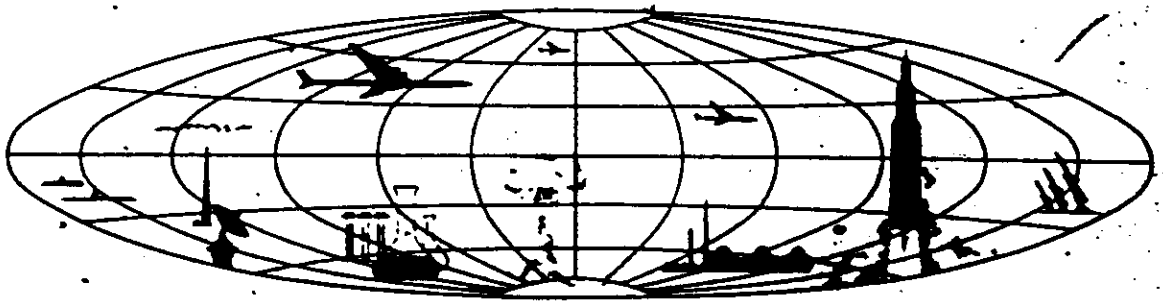

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

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LIST OF ILLUSTRATIONS (Continued)

SUMMARY AND CONCLUSIONS

Mission 9062 [redacted] M-26) was launched into a prograde orbit on 21 December 1963 at 2146Z. The mission accomplished 80 revolutions which included 41 photographic passes. The payload consisted of 5,734 panoramic frames (2,884 FWD, 2,850 AFT), 412 stellar index frames and 416 terrain index frames. A total of 147 targets were reported in the preliminary target readout. The quality of the photography and its suitability for photographic interpretation are generally comparable to Mission 9057.

Both panoramic cameras operated satisfactorily; however, the film from the master (FWD) panoramic camera was seriously degraded by corona fog.

The overall cloud cover of the mission was 40.3 percent: 41.9 percent was clear, 13.4 percent was completely overcast, and 44.7 percent was obscured to varying degrees.

All auxiliary cameras operated satisfactorily throughout the mission. Sufficient data was acquired from the horizon cameras to determine vehicle attitude. The stellar index camera produced star images through the fifth magnitude and, although some difficulty was encountered in the calculations, yaw was determined for most of the mission. The stellar and terrain index cameras operated simultaneously throughout the mission at the proper ratio of one stellar index exposure for each seven panoramic frames, and the results were good.

GENERAL FLIGHT DATA

Place of Launch: [redacted]
Date of Launch: 21 December 1963, 2146Z
Launch Vehicle: Thor w/TAT Booster, and Agena No 1168

The payload capsule was recovered dry on revolution 80, 26 December 1963.

Orbital Parameters:

	Planned	Actual (Revolution 57)
Period:	90.04 min.	89.59 min.
Perigee:	100 nm	99.57 nm
Apogee:	215 nm	196.71 nm
Eccentricity:	.0144	.0135
Inclination Angle:	65°	64.87°

PART I. CAMERA OPERATION

1. Master (FWD) Panoramic Camera No 130: This camera was operational throughout the mission; however, photography from this unit is seriously degraded by intermittent fog caused by corona static discharges. The fogging first appears in pass 007 and affects almost all subsequent passes, becoming more severe and occurring more frequently as the mission progresses.

A diagonal light leak is present between the second and third frames of most passes, and occasionally shifts into the format of the third frame. Faint shadowgraphs of equipment appear at the start (second or third frame) and end (last or second last frame) of most passes.

Rail scratches and occasional base and emulsion scratches are present throughout. In addition, four small camera-induced emulsion digs are present in the vicinity of the camera

number on every format. Similar digs are present outside the format on the frequency mark edge.

2. Slave (AFT) Panoramic Camera No 131: This camera was operational throughout the mission. A minor diagonal light leak is usually present on one of the first three and the next to last frame of each pass. Equipment shadowgraphs appear intermittently on the film and are generally located within the first and second from last frames of most passes.

A few minor corona static discharges are noted throughout the mission, with an increase in frequency and intensity on the last few passes of the mission.

Four small camera-induced scratches are consistently present in the vicinity of the camera number, and four similar scratches are present on the frequency mark edge of the film.

3. Master (FWD) Horizon Cameras: The port (supply) horizon camera operated normally throughout the mission. Underexposure prevails at the start of most passes but improves on passes which occur over areas of higher sun angles. Where the exposure is sufficient to permit analysis, acuity is very good.

The starboard (take-up) horizon camera operated normally throughout the mission. The exposure is adequate and acuity is very good.

4. Slave (AFT) Horizon Cameras: The starboard (supply) horizon camera was operational throughout the mission. The exposure is adequate and acuity is very good.

The port (take-up) horizon camera was operational throughout the mission. Most passes are underexposed in the northern latitudes, but this condition improves in areas of higher sun angles. The acuity is very good where the exposure is sufficient to permit analysis. Mission 9062 is the first mission to utilize the modified horizon camera. The acuity of the photographs from these cameras is, for the most part, very good and in some instances excellent.

An experiment was conducted on exposure. The two west-looking (starboard) horizon camera apertures were set at f 8.0 and the east-looking (port) camera apertures were opened to f 6.8. All four camera shutters were set at 1/100 second and Wratten 25 filters were used. The west-looking camera negatives were adequately exposed throughout the mission, but the east-looking camera negatives were, in most instances, underexposed. On passes which occurred near or over the Equator, the east-looking horizon camera negatives were adequately exposed and in one case, pass D18, overexposed.

All horizon frames are vignetted, but the location of the vignetted area is such that it does not seriously interfere with the use of the photography in determining vehicle pitch and roll.

5. Stellar Index Camera No D34/34/31: This camera operated at a ratio of 7 to 1 with the master unit until the supply of film was exhausted. The shutter remained open during the metering part of the camera cycle between frames 10 and 11 and frames 27 and 28. In addition, approximately 35 percent of each format was rendered unusable because of vignetting and reflections.

The edge of the film opposite the camera number contains a profusion of dendritic edge static. This static is in the border area and does not affect the formats. There are, however, large discharges of dendritic static within the formats of frames 40, 41, 42, and 393, and corona fog on frames 394 to 412.

The last five feet of the film contains transverse emulsion cracks which extend from edge to edge and are spaced approximately 0.25" apart. The gross fog rises and falls in a cyclical manner, which may be due to a very small light leak. (See Stellar Density Readings).

The threshold conditions for stellar imagery changed during the mission and in no instances were stars of greater magnitude than 5.5 recorded. Due to the lack of stellar images, and the unfavorable distribution of the few (5) which are present, the geometry is weak and the data difficult to reduce. Because of poor images, no images, or bad geometry, 128 frames (31 percent) are unusable.

The fiducial crosses on the film are unusable throughout most of the mission because of their low density. As a result, three reseau crosses within the frame area had to be used instead.

6. Terrain Index Camera No D34 34 31: This camera operated simultaneously with the stellar camera throughout the mission. There is dendritic static, the type which occurs when the film is negatively charged,* along the titled edge of the film. Also along this edge are intermittent discharges of edge static (for example: frames 256, 272, 294, 328, and 380) similar to those which occur when the film carries a positive charge. Dendritic static is also found within the format area of frames 81, 112, 178, 179, 205, 206 and 415. The last three frames (414, 415, 416) contain corona static.

A diagonal light leak, which originates at the camera number and extends 0.5" into the format, is evident on frames 31, 70, 159, 168, 173, 239, 245, 253, and 311.

The grid is well defined in all frames. However, there are small gaps in the grid (Example: Frame 403).

7. Collateral Equipment:

a. The 200 cycles per second (CPS) frequency marks are present on all frames. They are slightly flared but in no instance do they affect the panoramic formats.

b. The read-out of the binary data block was accomplished without any problems. This is the best operation of the data block to date. The images are bloomed throughout, and due to a slight mistracking of the film the top line of binary images is sometimes partially cut off by the edge of the film.

c. The horizon camera fiducials recorded properly throughout with very little blooming noted.

d. In most instances the stellar and index correlation and fiducial marks recorded too faintly to be used for their intended purpose.

e. The camera-off marker recorded satisfactorily throughout.

f. The camera numbers, though bloomed, are readable and recorded properly throughout.

PART II. FILM

1. Film Processing: This section provides a descriptive evaluation of the exposure and the processing, and comments on the exposure, the density, the processing and the physical condition of the original negative.

Pertinent data was collected during various phases of the processing and more thoroughly during the evaluation of the negatives. This is a standard procedure. The community is informed by cable of any extensive defects in the photography which may affect the PI suitability of any mission.

Support organizations provided the processing center with pre-launch samples of the actual film used on this mission. These samples along with fresh process control stock, were sensitometrically exposed and processed a

*Eastman Kodak Company. *Manual of Physical Properties of Kodak Aerial and Special Sensitized Materials*, Section 12, "Electrical Properties," Rochester, N.Y. Jun 61 (UNCLASSIFIED)

controlled levels of development. A characteristic curve was prepared from these sensitometric strips and is defined as the "Mission Material Processing Curve."

While the film was being prepared for processing, it was inspected for physical damage which could cause processing difficulties. During processing, data was recorded giving the processing conditions and film footage locations where processing changes occur. Changes in the normal course of processing which may affect the film quality were recorded, and after processing, the original negatives were examined frame by frame for defects and damage.

Most of the film on this mission received adequate exposure. The sun angle varied from 0°04' in pass D71 to 47° in pass D18. Acceptable photography was accomplished with a minimum sun angle of 3°56' in pass D54 at a latitude of 60°55'N. The photographs taken at the lower latitudes where the sun angle was relatively high (30° - 40°) have more than optimum density. The greatest variations that are directly attributed to the exposure are the horizon images. In the northern latitudes the port horizons could not be detected when the sun angle was below 14°. The starboard horizon cameras received optimum exposure with the exception of overexposure on the later part of part D18 where the sun angle was 47°.

The stellar index camera film on this mission received less than optimum exposure. A longer exposure time could be used without danger of excessive fog. The terrain index camera film received adequate exposure.

The film from both panoramic cameras received similar processing. The entire mission was subjected to a full level of processing with the exception of ten sections which were processed at the intermediate level. The gross fog density readings range from a minimum of 0.10 to a maximum of 0.30. Some of the higher readings can be attributed to a corona which fogged sections of the film.

The film from both the stellar and the terrain index camera were processed normally. However, the terrain index film appears to have received less than optimum development.

The densities of the negatives range from medium to heavy. Some of the higher densities again can be attributed to corona.

The density of the stellar negatives is less than optimum for detecting stars and star fields. The densities of the terrain index camera negatives are adequate.

2. Film Degradations:

This section lists some of the more notable film degradations, and a few frames on which examples of each can be found.

a. Master (FWD) Panoramic Camera

Corona	Found on approximately 1500 frames from pass D07 to the end of the mission. Up to pass D16, it is restricted to the first 4 frames of each pass. From pass D16 on, it affects more frames, and becomes more severe. Occasionally, it is noted that the frequency mark edge is more degraded than the titled edge.
Light Leaks	A thin diagonal light leak is present on the first few and last few frames of every pass.
Rail Scratches	Present throughout.
Emulsion Digs	Four small emulsion digs are present in the format, adjacent to camera number, in all frames. Four more are located on the frequency mark edge, outside the format.
Minus Density Streak	Pass D01, frames 28 and 29. Pass D15, frames 1 thru 14.
Edge Static (Frequency Mark Edge)	Pass D07, frame 5.
Manufacturing Splice	Pass D18, frames 53 and 55.
Minus Density Comet	Passes D19, frame 16; D20, frame 100; D21, frame 23; and D22, frame 12; D16, frame 52; D24, frames 29 and 41; D34, frames 7, 12, 24, 26.

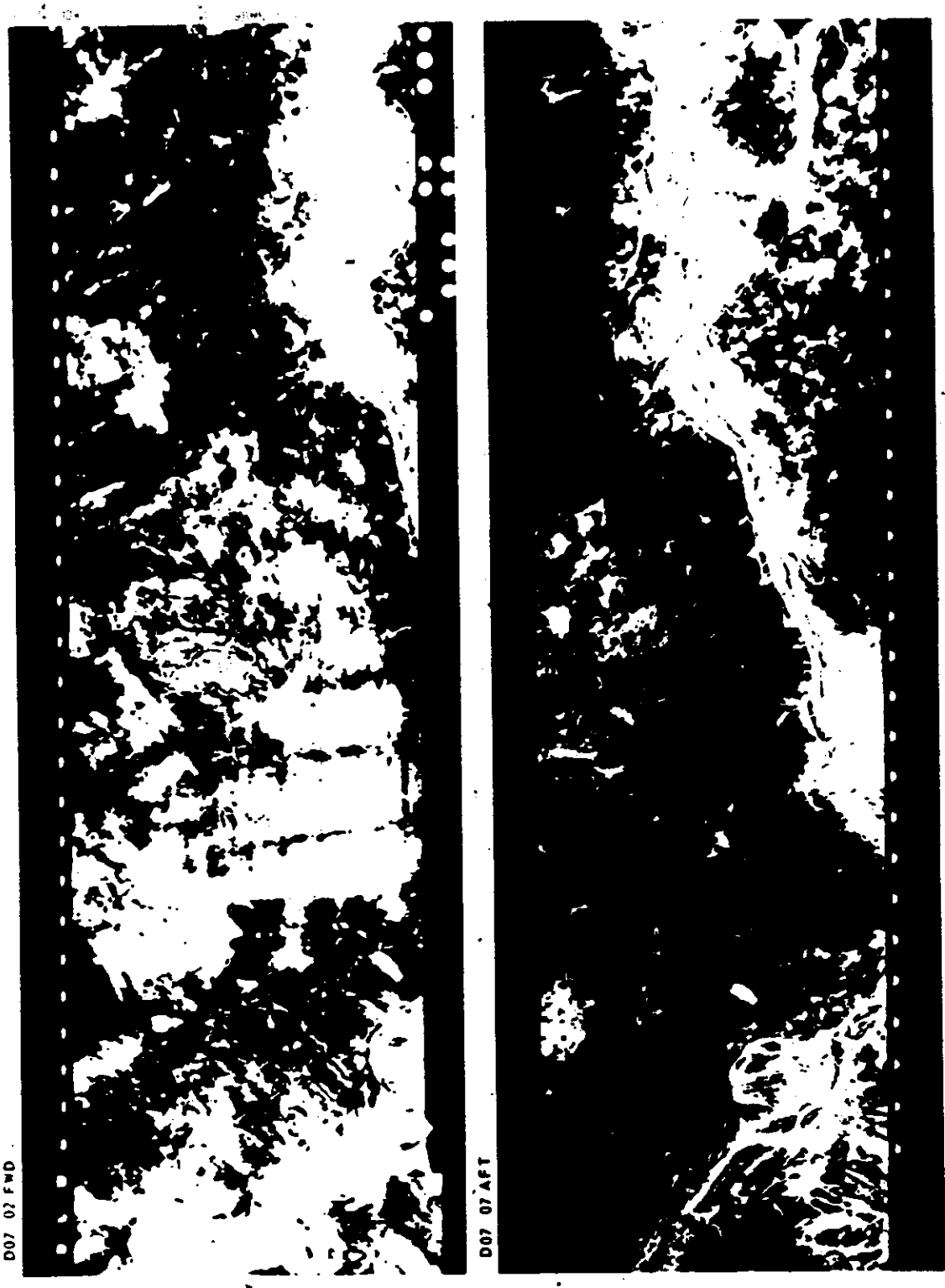

FIGURE 2. FIRST OF A CORONA TYPE FOG SHOWING TEXTURAL PATTERN IN PANORAMIC PHOTOGRAPHY (FWD ONLY).

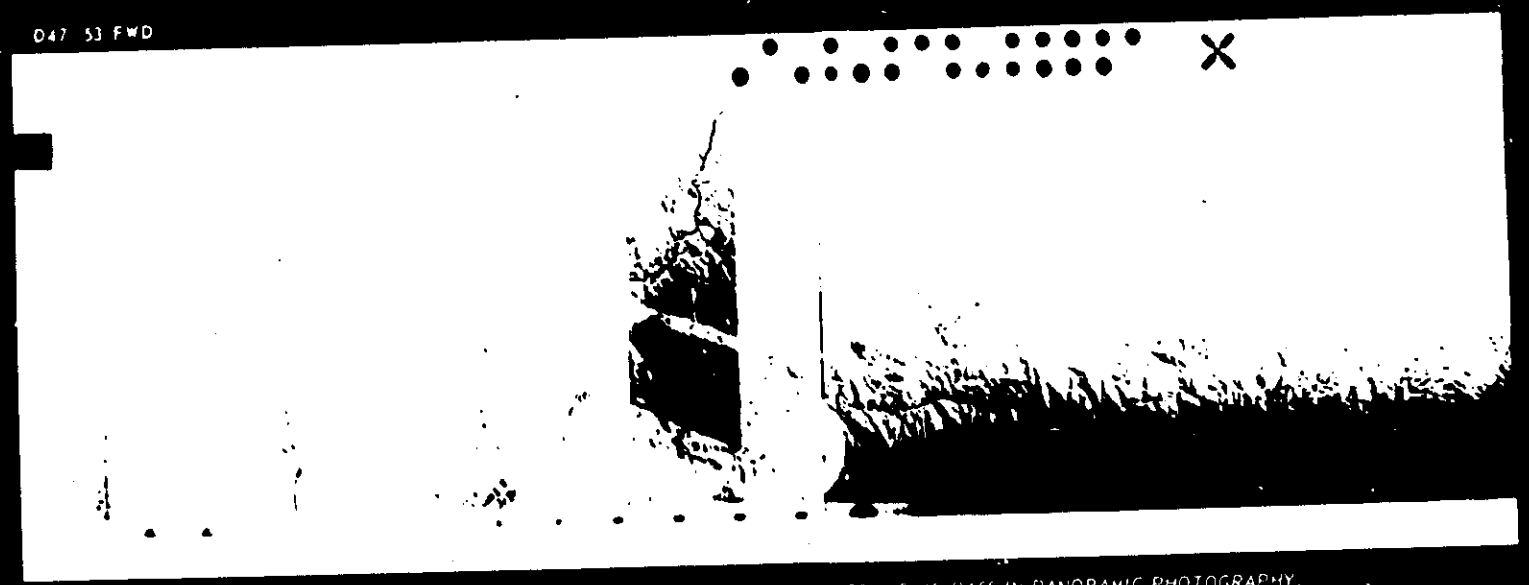

FIGURE 3. SHADOWGRAPH OF CAMERA EQUIPMENT ON LAST FRAME OF PASS IN PANORAMIC PHOTOGRAPHY.

FIGURE 4. DIAGONAL LIGHT STREAK IN PANORAMIC PHOTOGRAPHY.

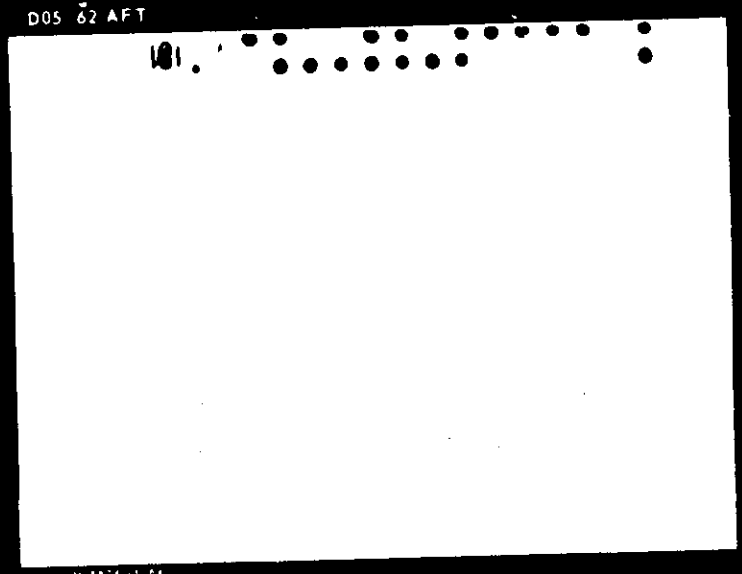

FIGURE 5. DATA BLOCK OFF EDGE OF FILM AND FLARED CAMERA NUMBER IN PANORAMIC PHOTOGRAPHY.

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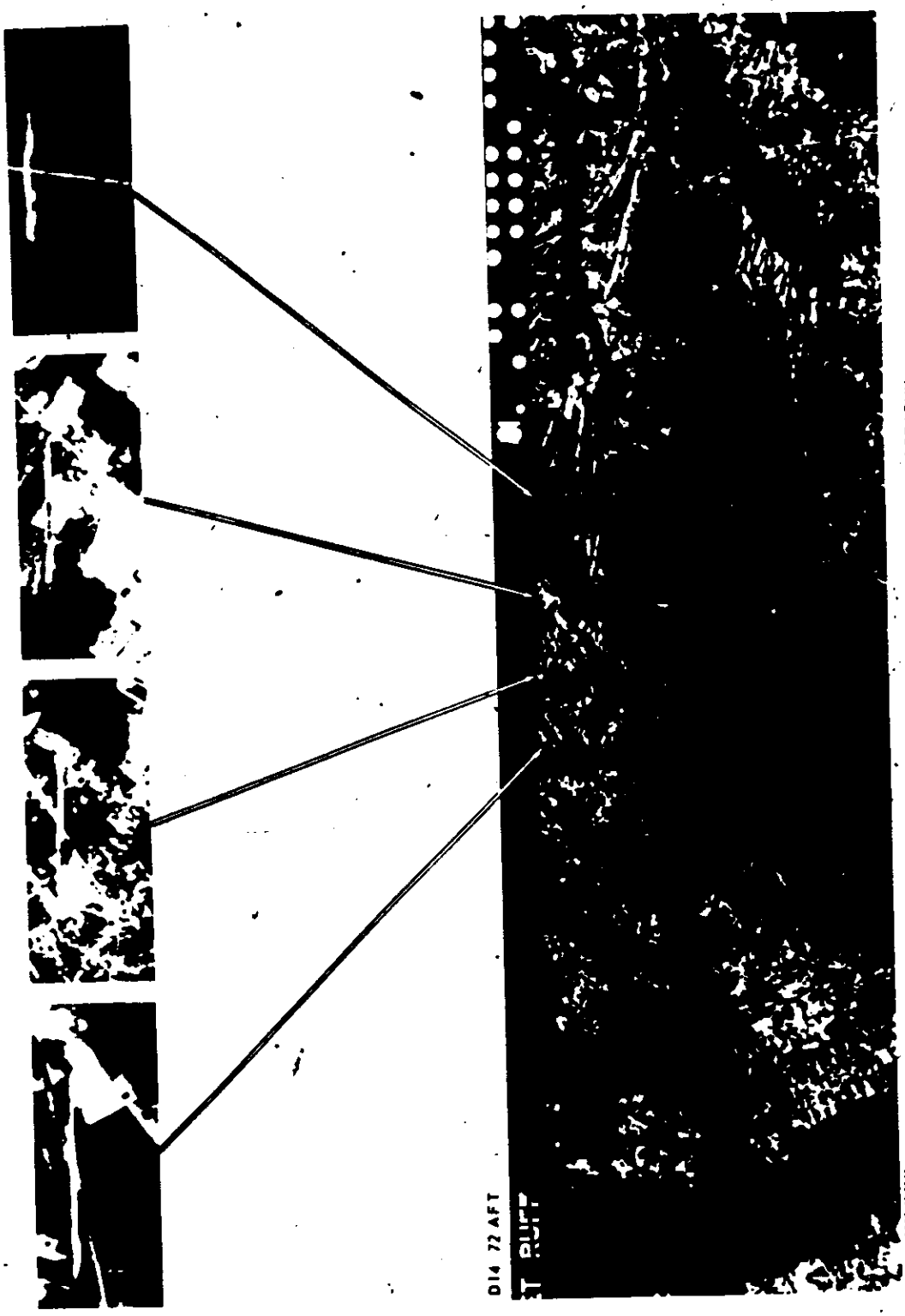


FIGURE 6. DEGRADATION BY DIGS IN PANORAMIC PHOTOGRAPHY.

FIGURE 7. CORONA STATIC ON STELLAR INDEX PHOTOGRAPHY.

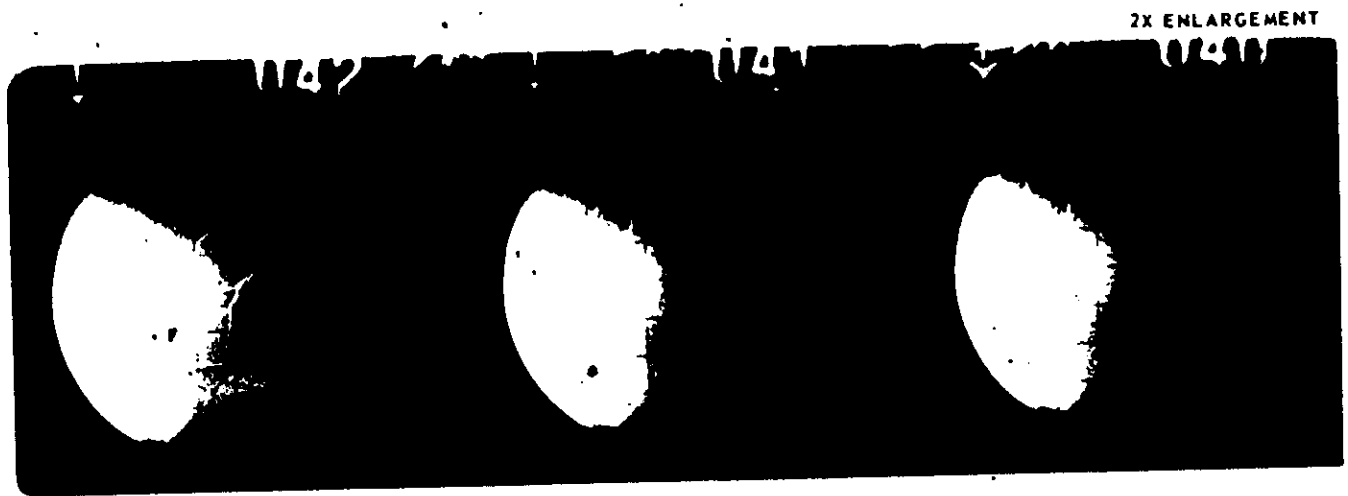


FIGURE 8. DENDRITIC EDGE STATIC ON STELLAR INDEX PHOTOGRAPHY.

Transverse Bars of Varying Density	Pass D21, frame 3.
Emulsion and or Base Scratches	Passes D79, D40, D37, D66, D71, and D72.
Crease	Pass D07, frame 67.
Blisters and Pinholes	Not excessive.

b. Slave (AFT) Panoramic Camera

Corona Static	Passes D94, frame 3: D07, frame 53: D56, throughout: D71, frames 45 to 125: D72, throughout: D24, frames 27 to 78: D77, throughout: D79, throughout.
Light Leaks	First few and last few frames of every pass.
Transverse Bars of Varying Density	Passes D36, frames 50 to 65 and D06, frames 37 to 50.
Manufacturing Splice	Pass D37, frame 72.
Minus Density Comets	Passes D66, frame 12: D67, frame 26: D24, frame 54: D25, frame 16: and D19, frame 38.
Emulsion and or Base Scratches	Passes D18, frame 48: D67, frame 26: D24, frame 54: D25, frame 16: and D79, throughout.
Edge Static	Pass D79, frames 24 and 26.
Edge Ripple	Pass D72, frames 75 and 79.
Blisters and Pinholes	Not excessive.
Emulsion Digs	Four small emulsion digs are present in the format, adjacent to camera number, in all frames. Four more are located on the frequency mark edge.
Rail Scratches	Present throughout.

c. Stellar Index Camera

Shutter Malfunction	Frames 10 and 27.
Foreign Matter	Frames 36, 63, 73, 107, 109, 286, 287, 292.
Dendritic Static	Frames 40, 41, 42, 393.
Edge Static	Throughout.
Corona	Frames 394 to 412.
Minus Density Dots	Frames 352.
Emulsion Cracks	Frames 355 to 412.

d. Terrain Index Camera

Minus Density Dots	Frames 6, 9, 10, 11, 44, 45, 46, 49, 406, 405.
Edge Static	Frames 256, 272, 294, 325, 350.
Scratches	Frames 412 to 416.
Foreign Matter	Frames 6, 9, 10, 21, 107.
Corona	Frames 414 to 416.
Dendritic Static	Frames 61, 112, 175, 179, 205, 206, and 415.
Light Leaks	Frames 31, 70, 159, 165, 173, 239, 245, 253, 311.
Broken Grid Lines	Throughout (Example: 403)

PART III. IMAGE QUALITY

1. Photographic Interpretation (PI) Suitability: This is a subjective rating by which the relative success of a mission may be measured. It is based upon usability (or interpretability), the degree of confidence which the interpreters place in the photographs, and their ability to obtain intelligence information from the mission. In determining PI suitability, all factors which affect the amount of information which can be gained from the photography are taken into

consideration. These factors include physical defects in the film or the camera system as well as limiting weather conditions. Targets are rated on an individual basis and fall into one of five categories:

Excellent: A scene in which extremely fine detail is consistently discernible. Edges and corners of buildings are sharp and well defined, contrast is optimum throughout, and there are no degrading factors such as unfavorable atmospheric conditions, camera malfunctions, or processing anomalies.

Good: A scene in which fine details such as small buildings and trails are readily discernible. Edges and corners of buildings are sharp and well defined, contrast is good throughout, and there are no degrading factors such as unfavorable atmospheric conditions.

Fair: A scene in which small buildings and trails are identifiable but edges and corners not sharp and well defined. Contrast may be slightly less than optimum but there are no degrading factors such as unfavorable atmospheric conditions.

Poor: A scene in which small buildings and trails are not readily identifiable and edges and corners not well defined. Contrast is less than optimum and atmospheric conditions or other degradations prevail.

Unusable: A scene in which identification of objects such as cultural features would be inaccurate and incomplete.

2. PI Suitability For Mission 9062: The PI suitability of this mission is considered good in that fine detail is readily discernible through most of the mission. Photo Interpreters reported on 147 targets in the preliminary target readout of which five were given the quality ratings of poor and the remainder a rating of good. Poor quality ratings due to low sun angle were given to three targets, two targets show poor imagery due to atmospherics. Snow cover was given as a hindering factor on 25 targets; however, in targets such as engine test stands the snow cover was of great assistance in determining blast marks. Highlights of targets covered by the mission are as follows:

ICBM launch site.

A tracking station.

A nuclear weapons bunker within a conventional weapons storage area.

Activity at two rocket engine test facilities.

Identification of equipment at surface-to-air missile sites.

Construction at an airframe plant and at two missile test facilities.

Mission 9062 produced some of the best photography to date from KH-4 camera systems; however, degradations are present. Problems encountered, which have a direct effect on PI suitability, and the extent of degradation are as follows:

Corona Static: Fog, due to corona discharge, affects approximately 1,500 frames of the master (FWD) panoramic negatives. The effects of corona discharge on image quality can be readily seen by a comparison of the resolution target in pass D77, frame 37 FWD and 43 AFT. The slave (AFT) panoramic camera resolves 15 feet whereas the master camera can resolve only 25 feet. MILSPEC Standard 150 was used for interpreting the resolution target. Although not as severely affected, pass D47, frame 31 FWD and 37 AFT covering another resolution target range displays nearly the same results as the target range on pass D77. Corona discharges are present on the slave photography; however, these are of very light intensity and only on the last few passes of the mission. Example: pass D71, frame 125. The corona fogging has an adverse affect on stereo capability on numerous targets in the mission.

Light Leaks: Diagonal patterns and equipment shadowgraphs are present intermittently

STELLAR INDEX PHOTOGRAPHY (2X ENLARGEMENTS)

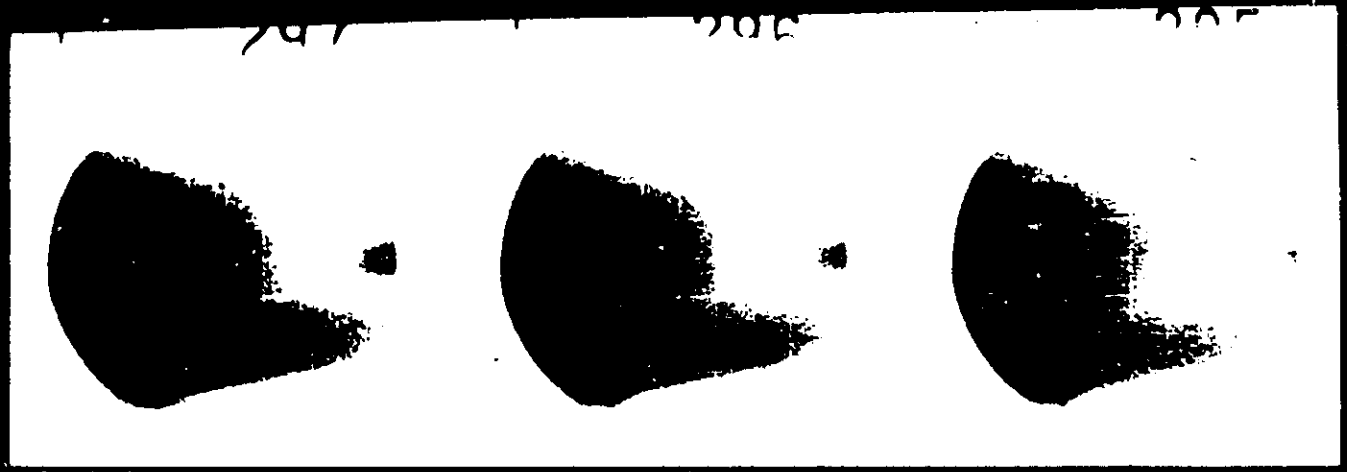


FIGURE 9. AVERAGE STELLAR FIELD, INOPERATIVE CORRELATION LAMPS AND FLARE.

FIGURE 10. DENDRITIC STATIC FROM HIGH ENERGY POINT.

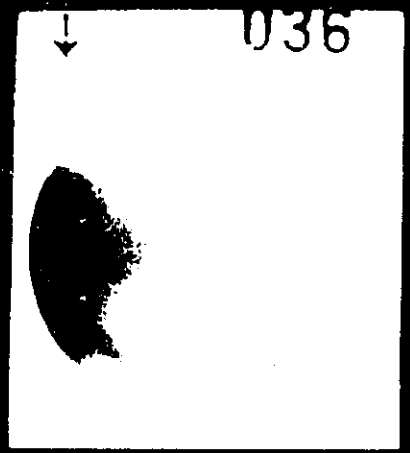


FIGURE 11. FOREIGN MATTER.

2X ENLAR

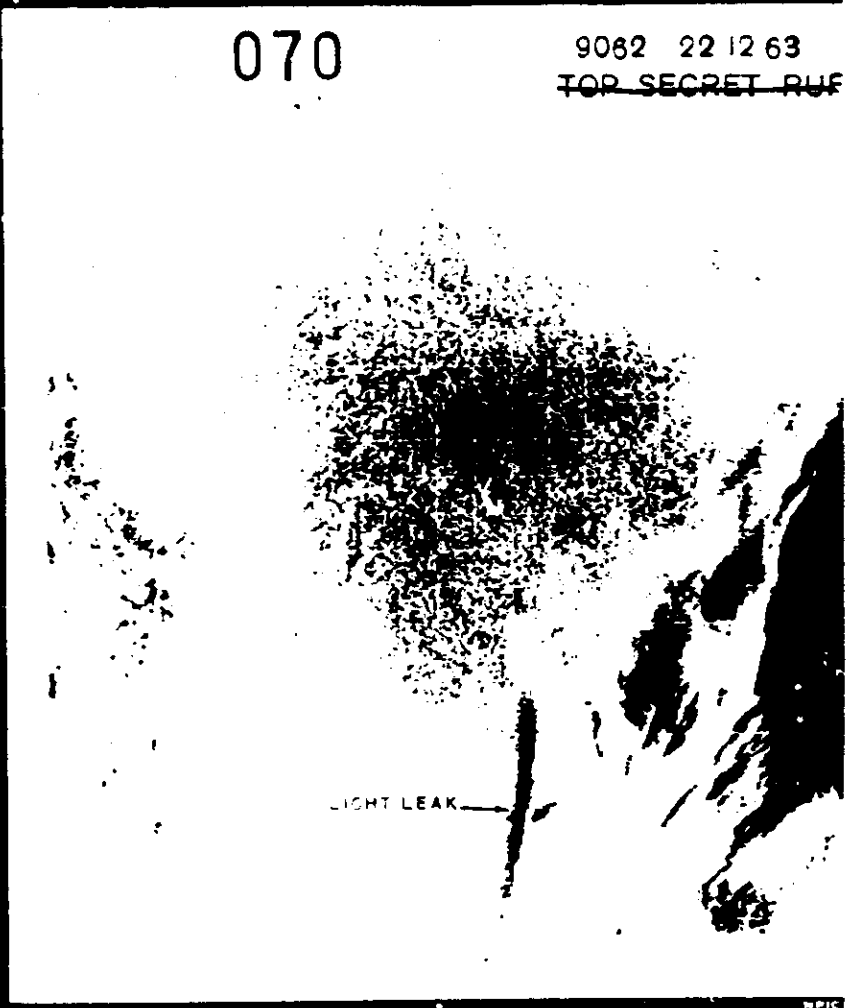


FIGURE 12. LIGHT LEAK AND TITLING IN FORMAT IN TERRAIN INDEX PHOTOGRAPH

2X ENLARGEMENT

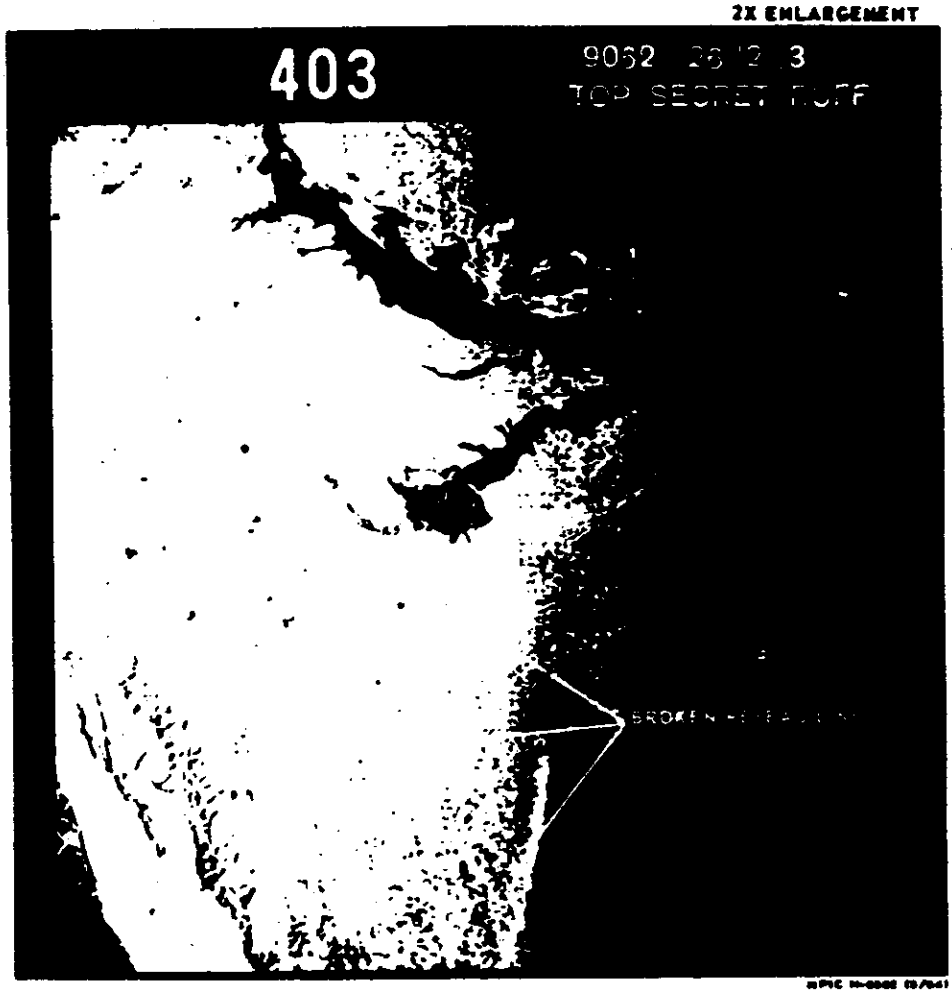


FIGURE 13. BROKEN RESEAU LINES, LIGHT LEAK, EFFECT OF SNOW ON PI SUITABILITY IN TERRAIN INDEX PHOTOGRAPHY.

2X ENLARGEMENT

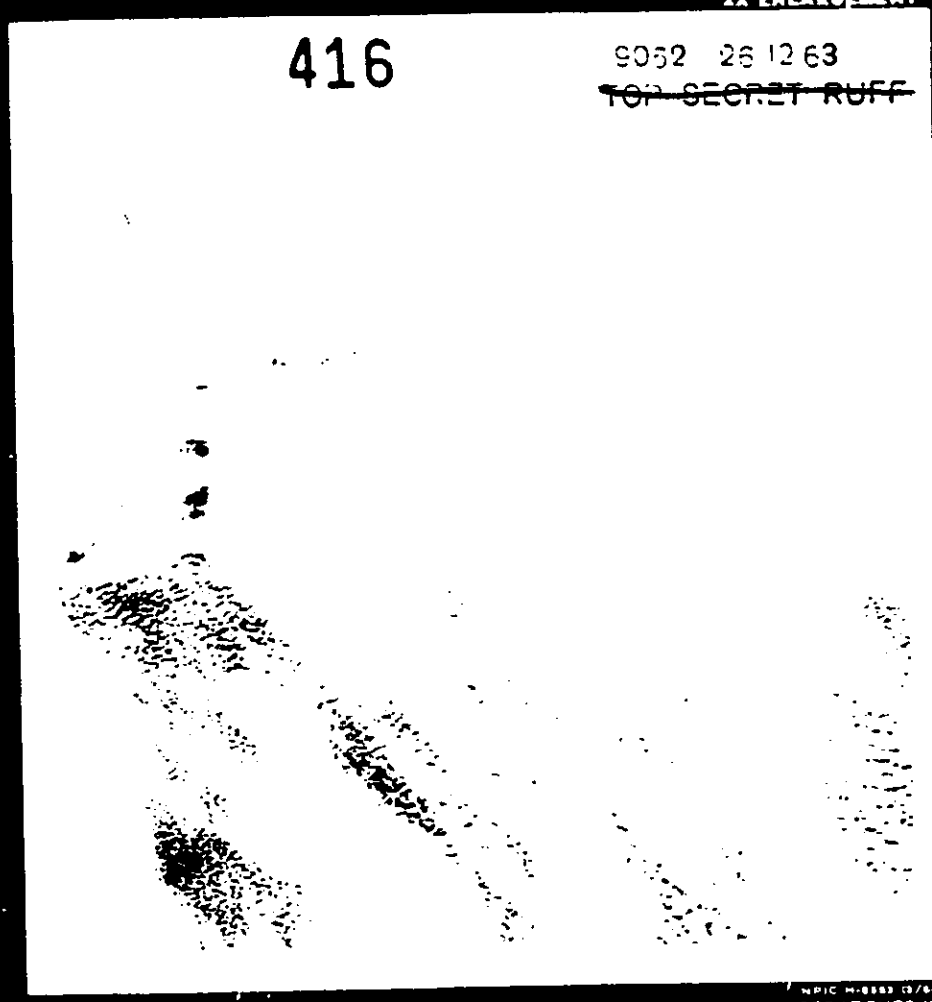


FIGURE 14. CORONA STATIC, TITLING INTO THE FORMAT AND LONGITUDINAL SCRATCHES IN TERRAIN INDEX PHOTOGRAPHY.

2X ENLARGEMENT

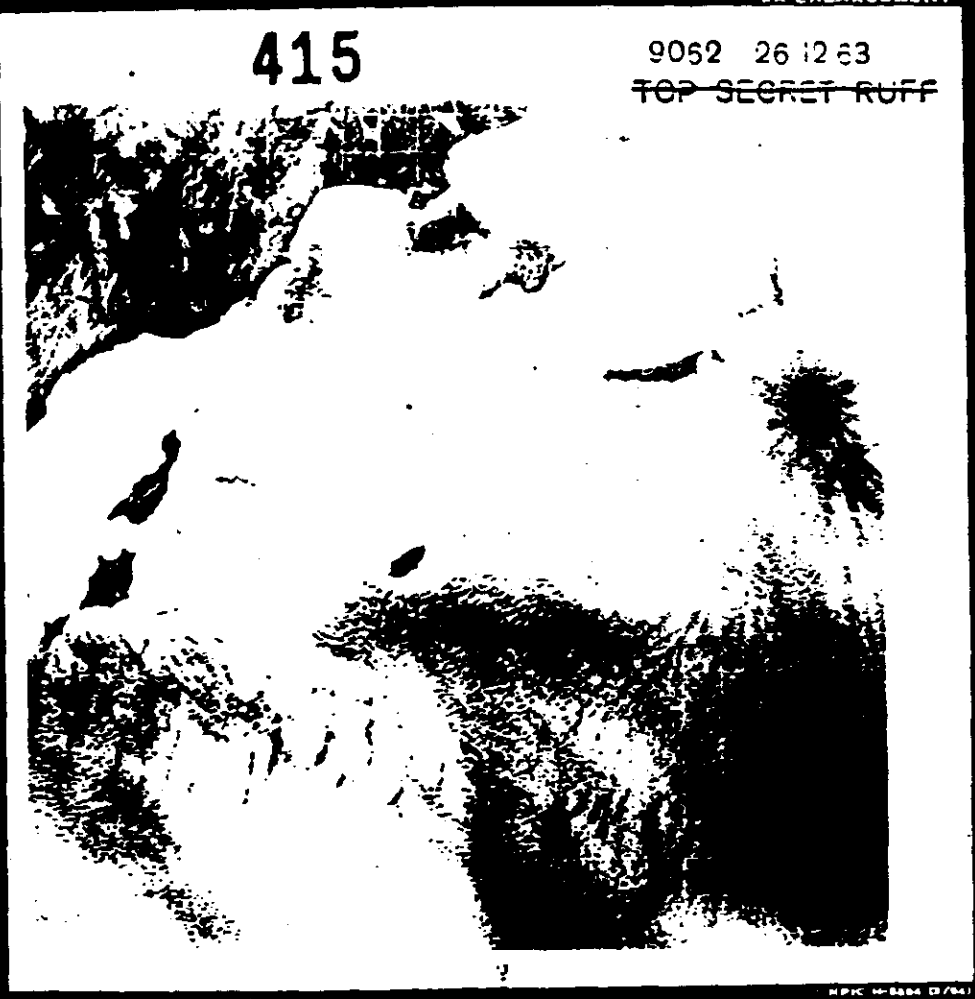


FIGURE 15. DENDRITIC STATIC, TITLING INTO THE FORMAT, AND LONGITUDINAL SCRATCHES IN TERRAIN INDEX PHOTOGRAPHY.

[redacted]

on the second and third frame and on the last three frames of each pass on both master and slave. The light leaks, although of a minor nature, degrade imagery within the affected areas. Prime examples of these degradations are pass D07, frame 03 AFT (diagonal pattern) and pass D47, frame 53 FWD (shadowgraph). Film transport (a general fogging of portions of the first and last frames occurring during a camera off/on period) is present intermittently throughout both master and slave film. The fogged areas resulting in the diagonal patterns and shadowgraphs are of a minor nature but do degrade imagery within the areas affected.

Scratches and Abrasions: Four small scratches are consistently present in the vicinity of the camera number and also along the opposite edge of the film on all photography. These scratches could cause loss of detail if over a target of interest. Numerous abrasions which would also cause a loss of detail are present on pass D53, frame 23 AFT.

Atmospherics: 40.3 percent of the photographic take is cloud covered. Haze, resulting in the rating of poor quality for a target, is present on pass D23, frame 49 FWD. Examples of industrial haze are present on pass D21, frame 53 FWD and 58 AFT. Ninety-eight known targets were not reported in this mission due to atmospherics.

Sun Angle: Three targets were given a poor quality rating due to low sun angle. Example: pass D34, frame 1.

Image Motion: The first few frames of each pass in both the master and slave cameras display smeared imagery due to uncompensated image motion. It is not apparent under low magnification; however, under higher magnifications used in detailed PI work it becomes a very degrading factor. Example: pass D05, frame 1.

Vignetting: Present on all horizon exposures. If this vignetting increases in size, it could affect the arc of the horizons on future missions. Such a case would hinder accurate determination of vehicle attitude.

3. The Mission Information Potential (MIP): This is an arbitrary number, not limited by terminal values, which is subjectively assigned to the panoramic photography of a mission and which compares it to the other KH missions. MIP is an example of photography under optimum conditions, discounting adverse atmospheric conditions, minimal sun angles, camera malfunctions or other factors which reduce the quality of the photography. The MIP is based on the best photography found in a mission, even though the photography may be limited to a few frames. Since these frames are considered the best in the mission, they do not indicate the overall success, average quality, or general interpretability of the photography.

Criteria for selection of an MIP frame:

a. Eliminate all portions of the mission affected by system malfunctions.

b. Select frames which are free of clouds and atmospheric attenuation.

c. Eliminate the first ten frames and last frame of a pass as these may be affected by incorrect scan speed.

d. Select frames that are in a continuous strip of approximately 10 cloud-free frames, as cloud shadows from distant weather fronts are cast for great distances.

e. Determine from the horizon cameras that the panoramic photography is not affected by apparent vehicle perturbations.

f. Select targets that are near the center of format and on frames as close as possible to perigee, for scale purposes and to eliminate obliquity.

[redacted]

g. Select frames having as near optimum sun angle as possible, thus eliminating frames having either overexposure or underexposure.

h. Select a high contrast target (preferably an airfield) and compare the target to a previous mission which has been given an MIP rating.

4. MIP For Mission 9062: Utilizing the criteria set forth in the preceding items, pass D14 frame 54 FWD and frame 59 AFT were selected as MIP frames for this mission. The mission was given an MIP rating of 85 and is comparable to Mission 9057 (also MIP 85).

The photographic scene covers a city and airfield which are located near the center of the format. Image quality is such that runway markings, aircraft engine nacelles (on the larger aircraft), small privately owned aircraft and vehicles in parking lots and on the highways are discernible.

Stereo quality is a contributing factor to the overall PI suitability of a mission. The stereo models achieved on this mission are of good quality although numerous models will be affected somewhat by corona fog. Those evaluated have a generally favorable base-to-height ratio of 0.60.

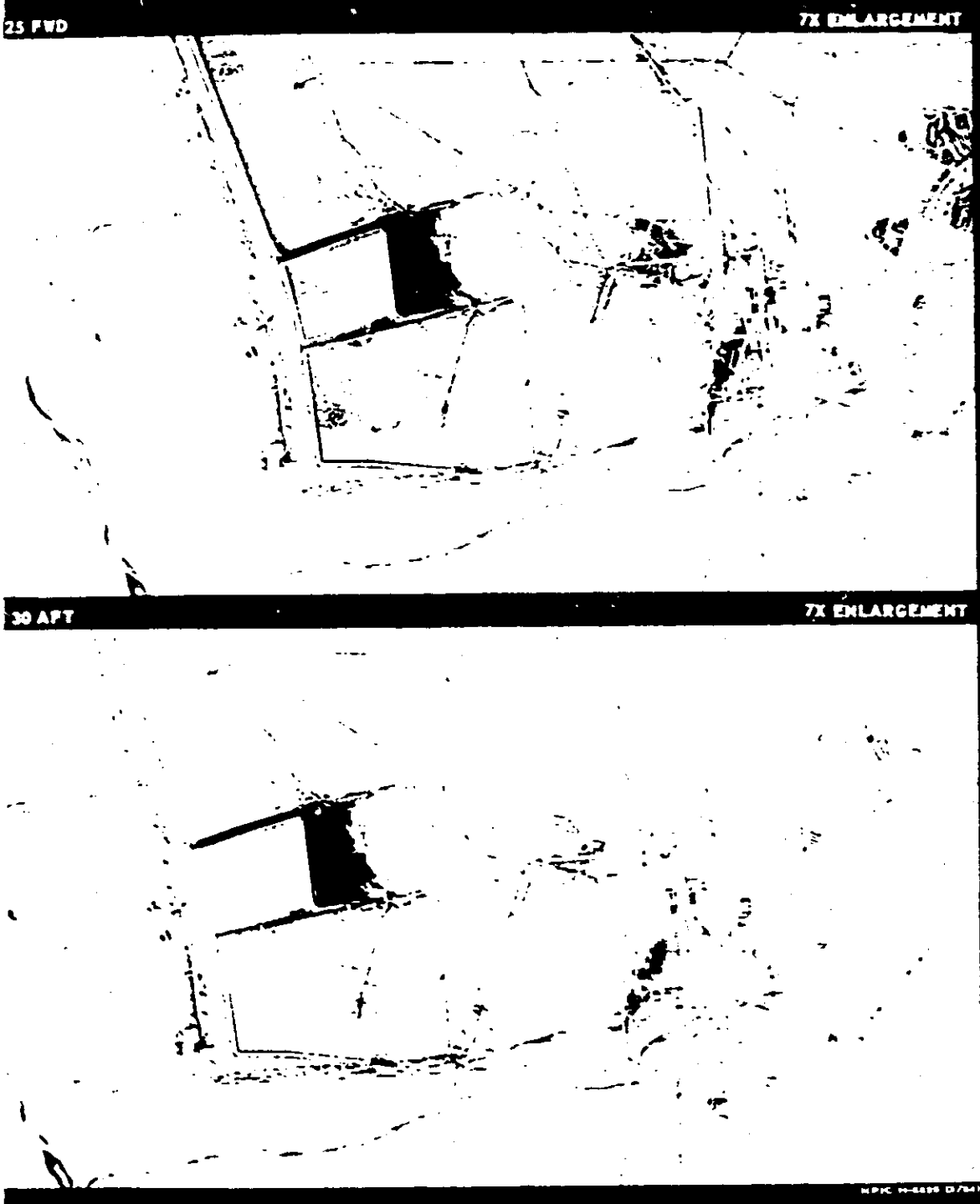


FIGURE 16. GOOD QUALITY PANORAMIC PHOTOGRAPHY (CONTRAST DIFFERENCE DUE TO SUN AZIMUTH).

[redacted]

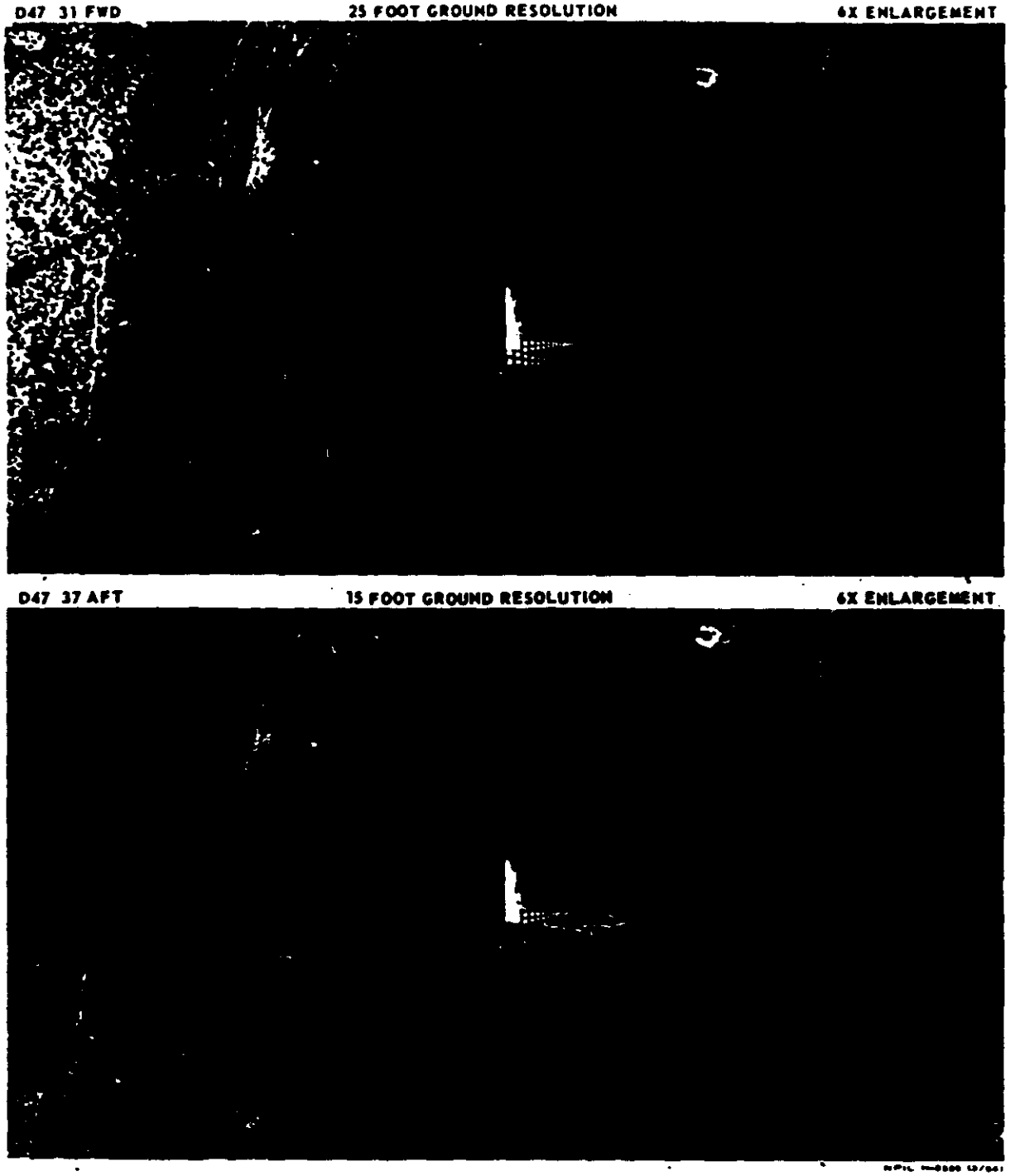


FIGURE 17. PANORAMIC PHOTOGRAPHY OF RESOLUTION TEST RANGE AT FORT HUACHUCA, ARIZONA.

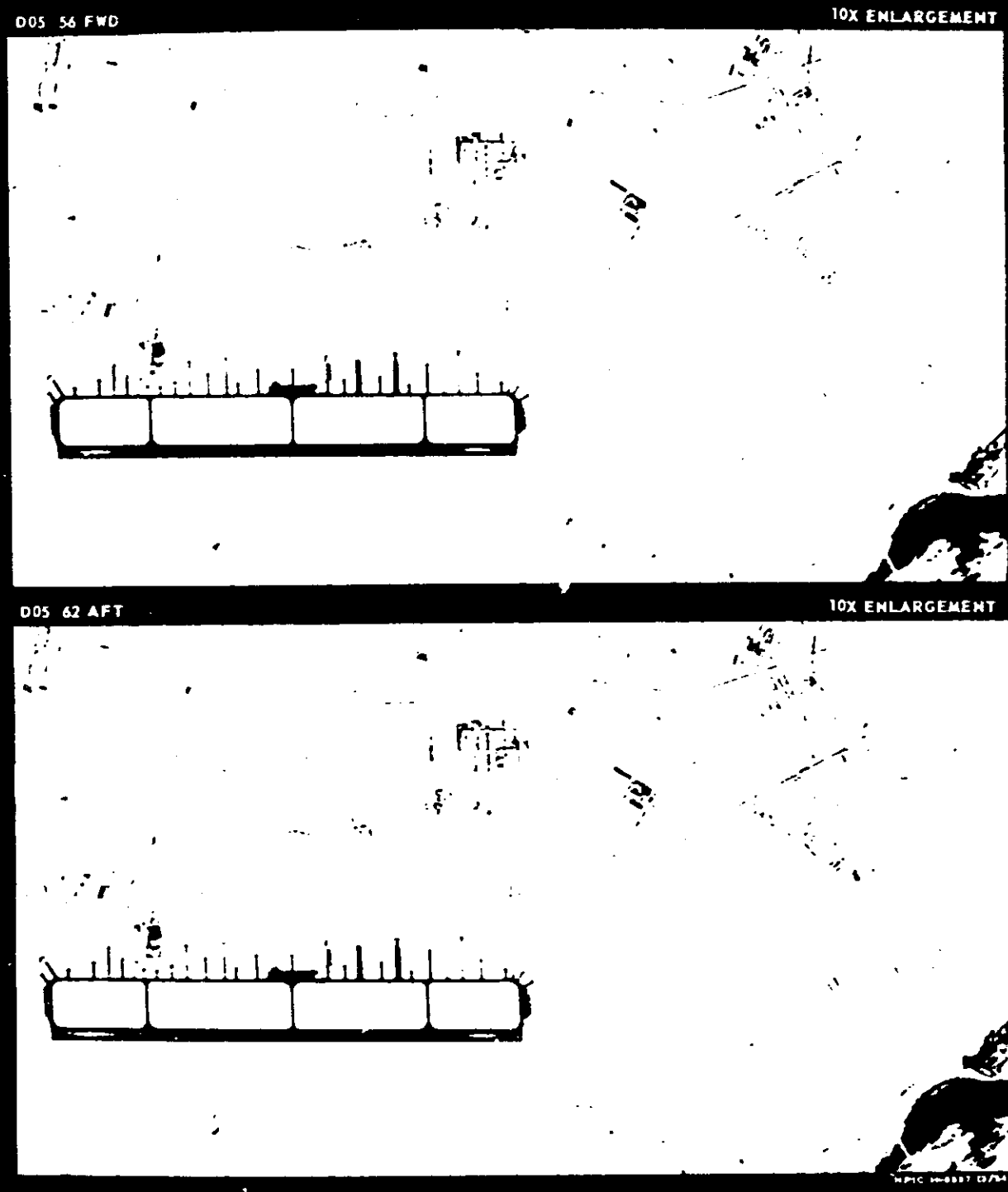


FIGURE 18. COMPARISON BETWEEN FWD AND AFT PRIOR TO CORONA EFFECT IN PANORAMIC PHOTOGRAPHY.

[redacted]

D21 S3 FWD 10X ENLARGEMENT

D21 S8 AFT 10X ENLARGEMENT

FIGURE 19. EFFECT OF SMOKE, HAZE AND LOW SUN ANGLE ON PI SUITABILITY OF PANORAMIC PHOTOGRAPHY.

[redacted]

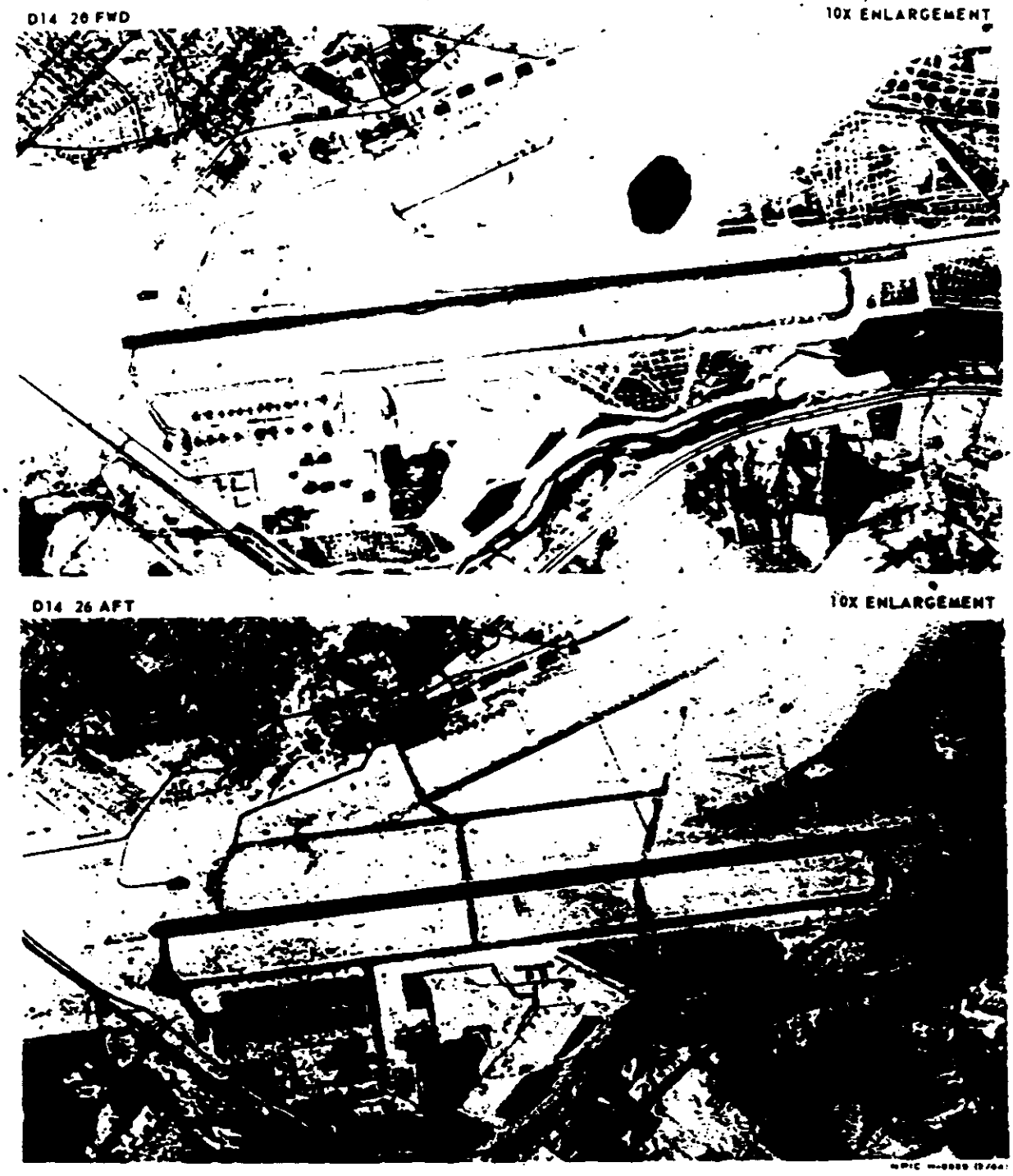


FIGURE 20. EFFECT OF SNOW ON PI SUITABILITY OF PANORAMIC PHOTOGRAPHY.

[redacted]

D77 37 FWD 20X ENLARGEMENT

D77 43 AFT 20X ENLARGEMENT

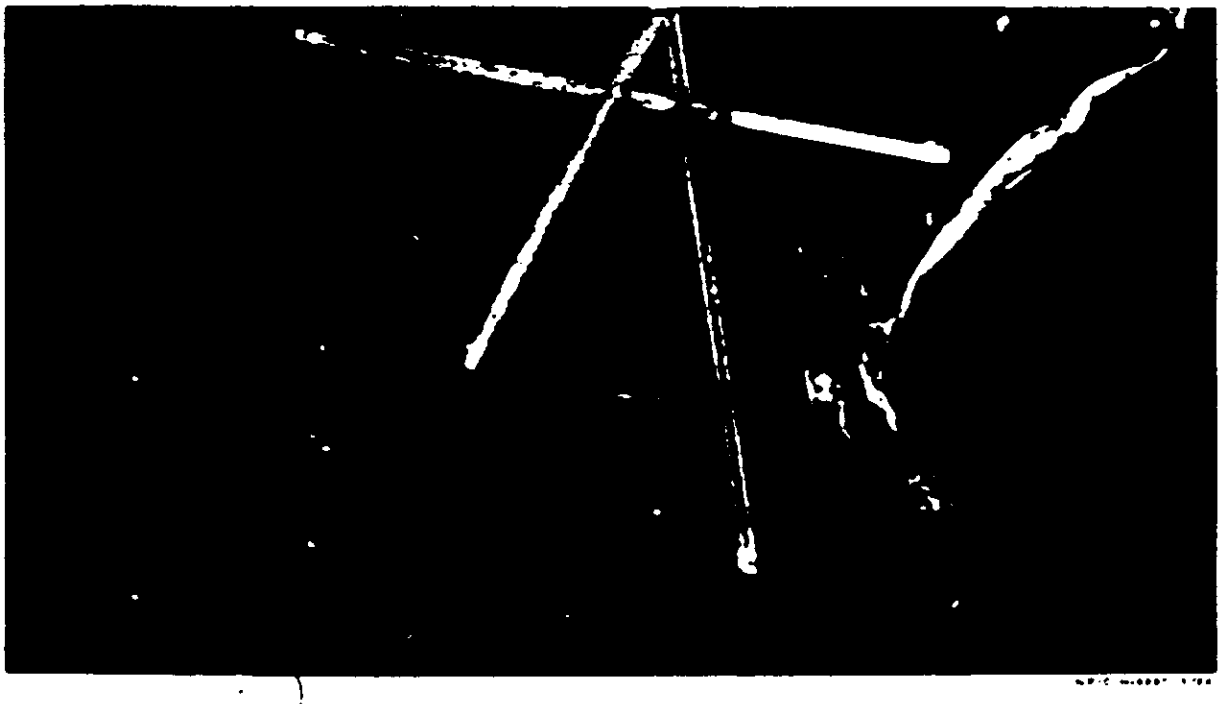


FIGURE 21 FWD CAMERA CORONA DEGRADATION AT RESOLUTION TEST RANGE, WEBSTER FIELD, NAS, MD

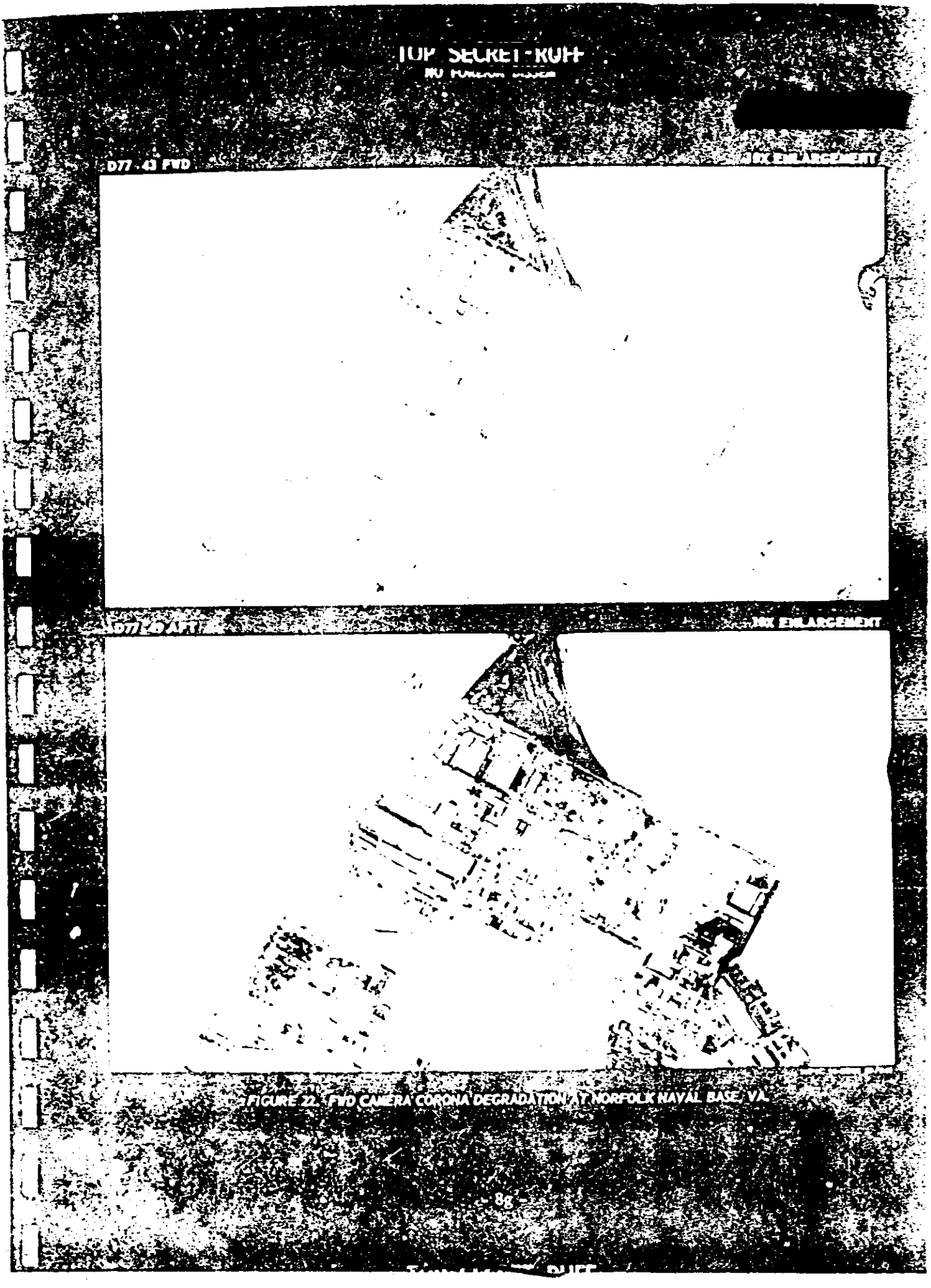


FIGURE 22. FWD CAMERA CORONA DEGRADATION AT NORFOLK NAVAL BASE, VA.

FIGURE 23. FWD CAMERA CORONA STATIC AND COMPRESSION ELONGATION DISTORTION (NOTE CIRCLES PATUXENT NAS, MD.

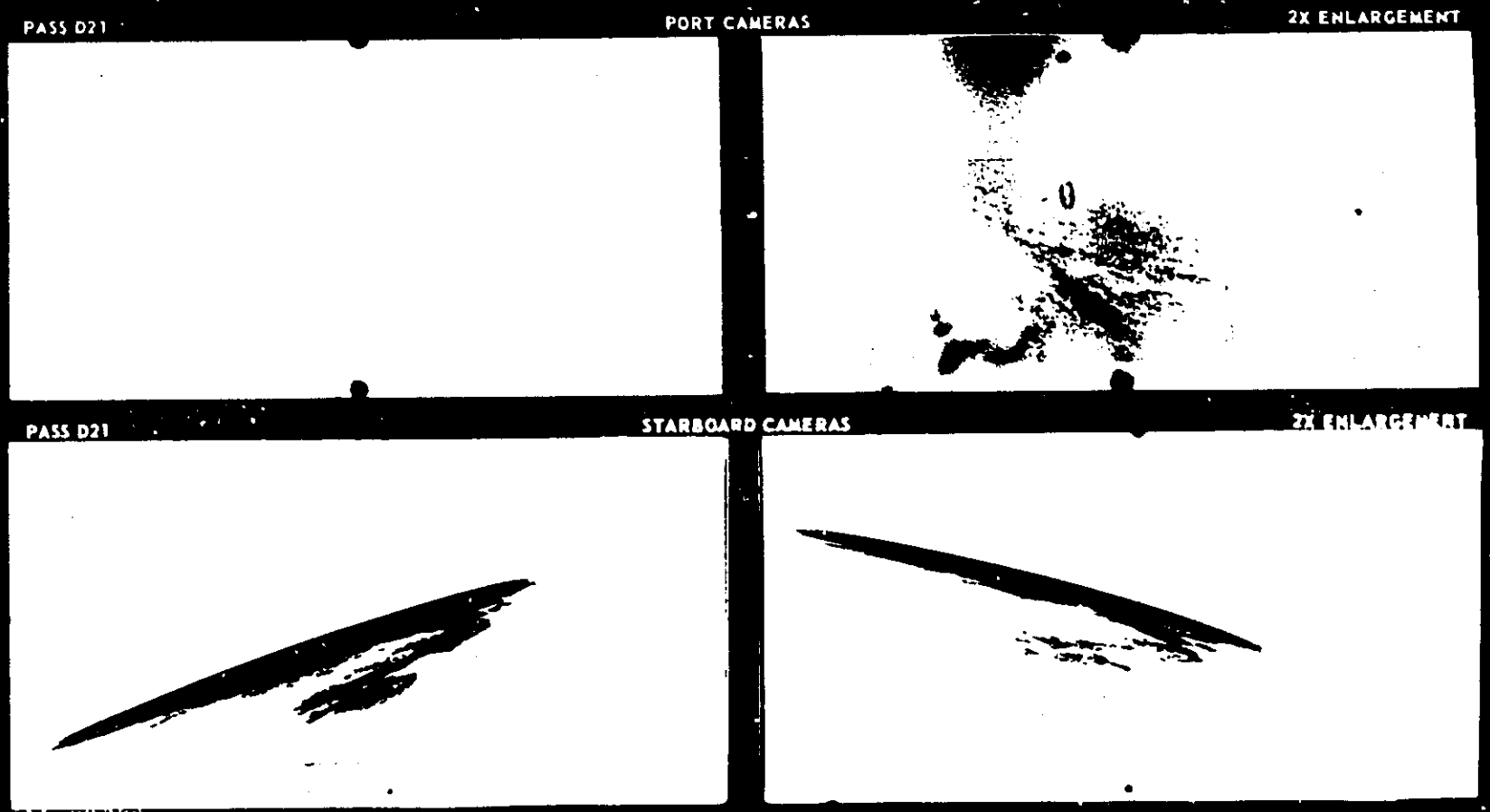


FIGURE 24. PHOTOGRAPHY FROM HORIZON CAMERAS AT 59°N LATITUDE.

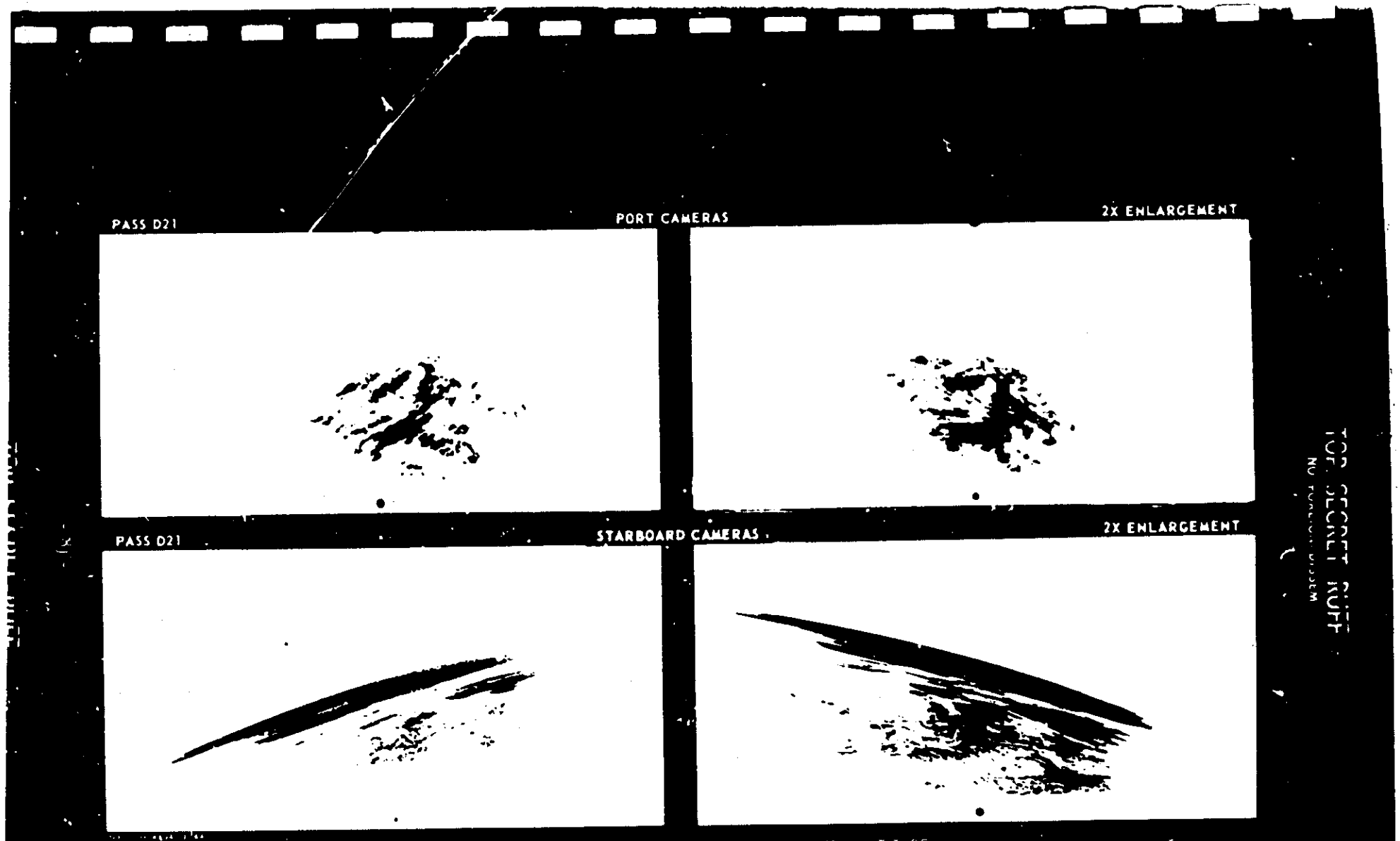


FIGURE 25 PHOTOGRAPHY FROM HORIZON CAMERAS AT 52°N LATITUDE.

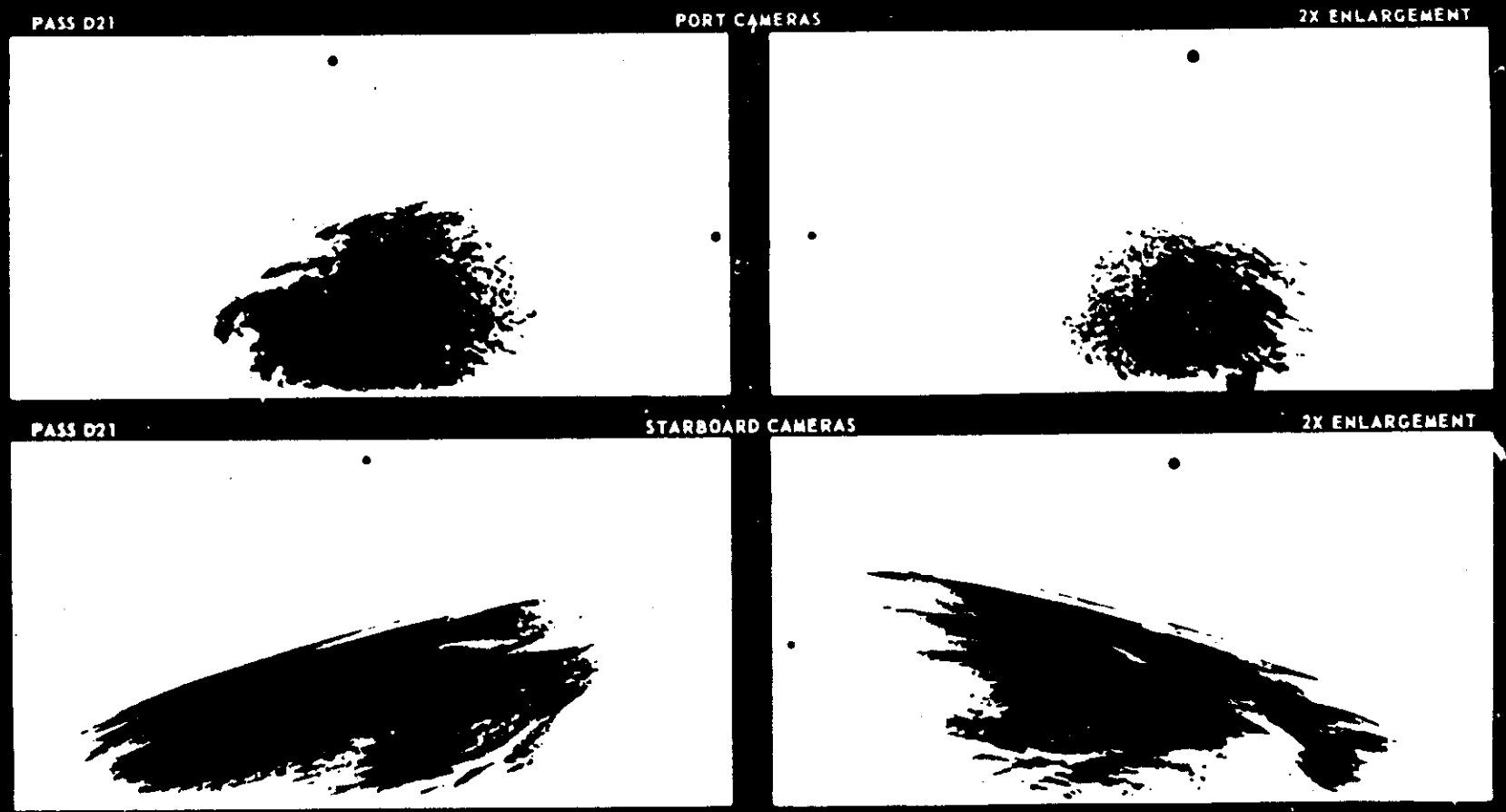


FIGURE 26. PHOTOGRAPHY FROM HORIZON CAMERAS AT 42° N LATITUDE.

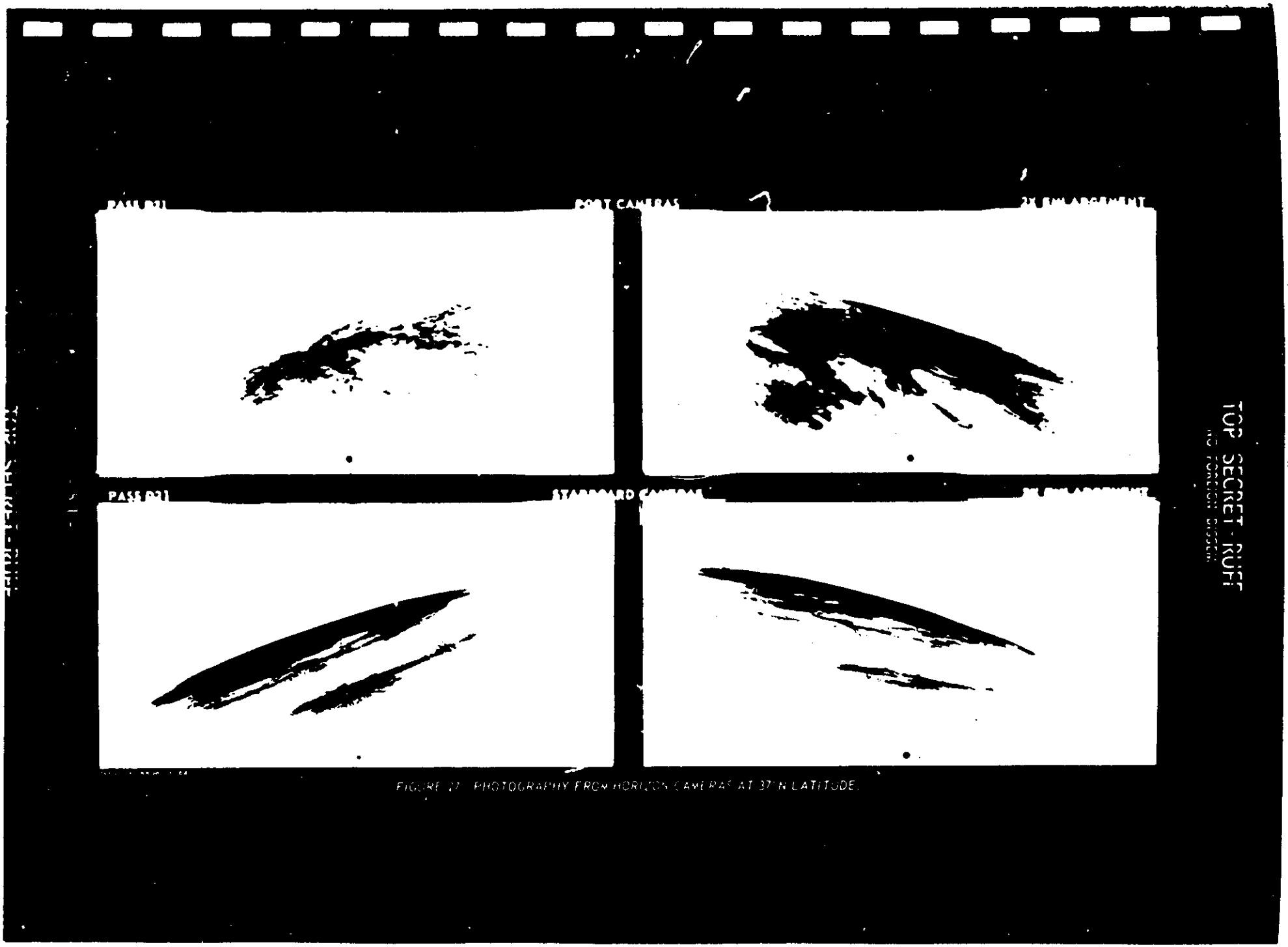


FIGURE 27 PHOTOGRAPHY FROM HORIZON CAMERAS AT 37°N LATITUDE

FIGURE 28. MISSION INFORMATION POTENTIAL, FWD PANORAMIC PHOTOGRAPHY.

FIGURE 29. MISSION INFORMATION POTENTIAL, AFT PANORAMIC PHOTOGRAPHY.

APPENDIX A. SYSTEM SPECIFICATIONS

Panoramic Cameras

	Master (Fwd)	Slave (Aft)
Camera No	130	131
Lens Serial No	1052435 (I-45)	1062435 (I-46)
Slit Width	0.250"	0.250"
Aperture	f 3.5	f 3.5
Filter	W 21	W 21
Operational Focal Length	609.602 mm	609.602 mm
Film Type	4404	4404
Film Length	7,800'	7,800'
Splices	2	1
Emulsion	46-2-11-3	46-2-11-3
Static Bench Test		
High Contrast	261	244
Low Contrast	144	159
Dynamic Test		
Pre-ship High Contrast	191	189
Pre-ship Low Contrast	136	125
Post-ship High Contrast	175	192
Post-ship Low Contrast	91	99

Stellar and Terrain Index Cameras

	Stellar	Index
Camera No	D34 34 31	D34 34 31
Lens Serial No	10402	s21902
Reseau Serial No	31	34
Filter	None	W 21
Aperture	f 1.9	f 4.5
Exposure Time	2 secs	1 500 sec
Operational Focal Length	Not Reported	Not Reported
Film Type	4401	4400
Film Length	75'	135'
Splices	None	None
Emulsion	5-6 1-5-3	9-3-63
Perpendicularity of Reseau	Not Reported	Not Reported
Location of Principal Point	Not Reported	Not Reported

Horizon Cameras

	Starboard (Take-up)	Port (Supply)	Starboard (Supply)	Port (Take-up)
Panoramic Camera No	130	130	131	131
Lens Serial No	813532	813531	s13522	s13557
Exposure Time	1 100 sec	1 100 sec	1 100 sec	1 100 sec
Aperture	f 8.0	f 6.8	f 8.0	f 6.8
Filter	W 25	W 25	W 25	W 25
Operational Focal Length	54.98 mm	54.65 mm	54.93 mm	55.08 mm
Average Lines/mm	103	101	112	93
Radial Distortion				
10° off axis	.003 mm	.001 mm	.005 mm	.000 mm
20° off axis	.009 mm	.007 mm	.018 mm	.004 mm
Tangential Distortion	.006 mm	.003 mm	.003 mm	.006 mm

Camera No 130

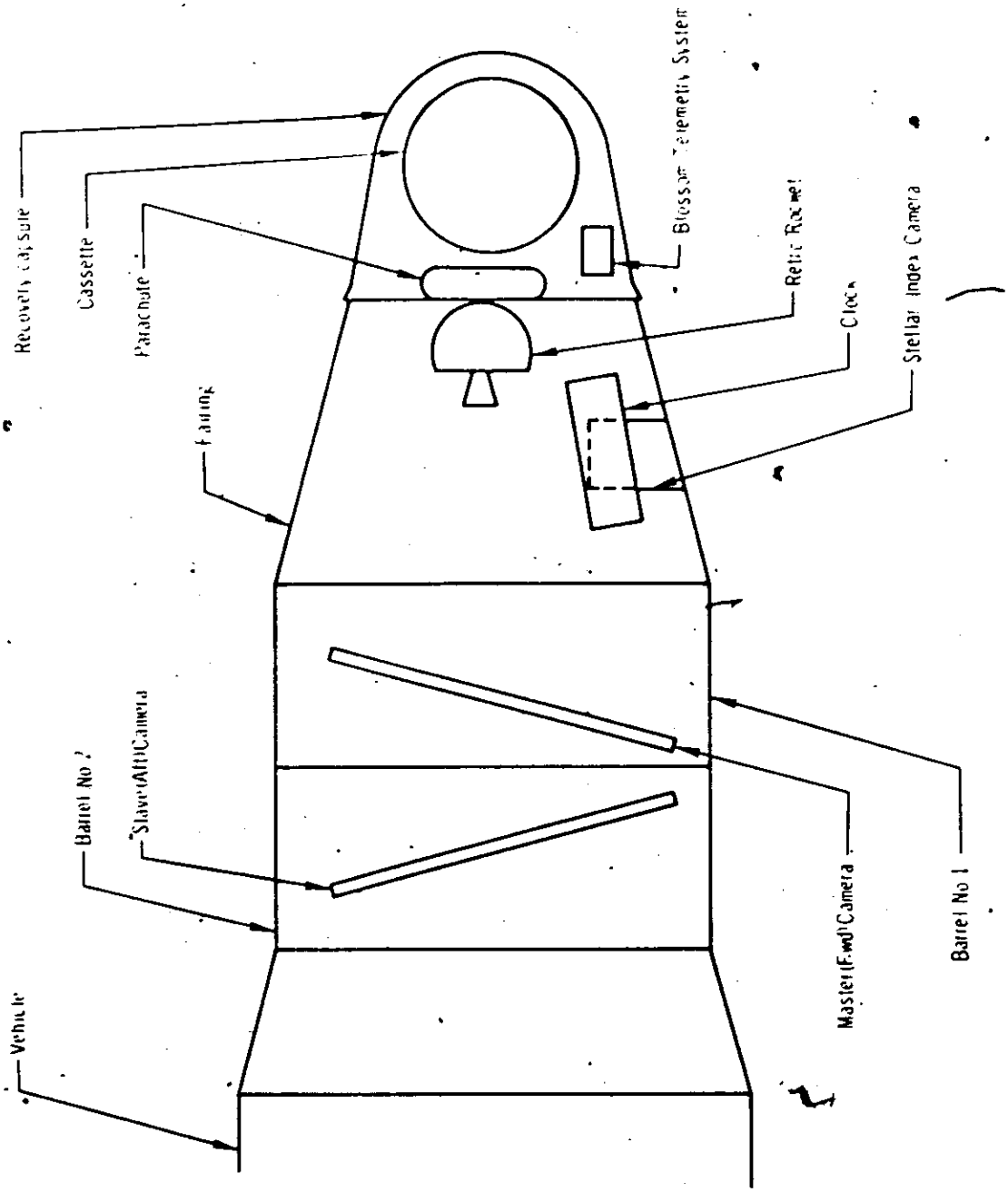
Resolution	Take-up						Supply					
Angle Off Axis	0	10	15	20	25	27.5	0	10	15	20	25	27.5
Radial Distortion	170	139	101	89	92	63	170	140	97	89	92	71
Tangential Distortion	170	123	95	84	62	48	170	116	95	75	55	42

Camera No 131

Resolution	Supply						Take-up					
Angle Off Axis	0	10	15	20	25	27.5	0	10	15	20	25	27.5
Radial Distortion	170	105	87	75	82	67	164	128	105	97	105	97
Tangential Distortion	170	110	89	75	52	42	164	119	108	86	60	51

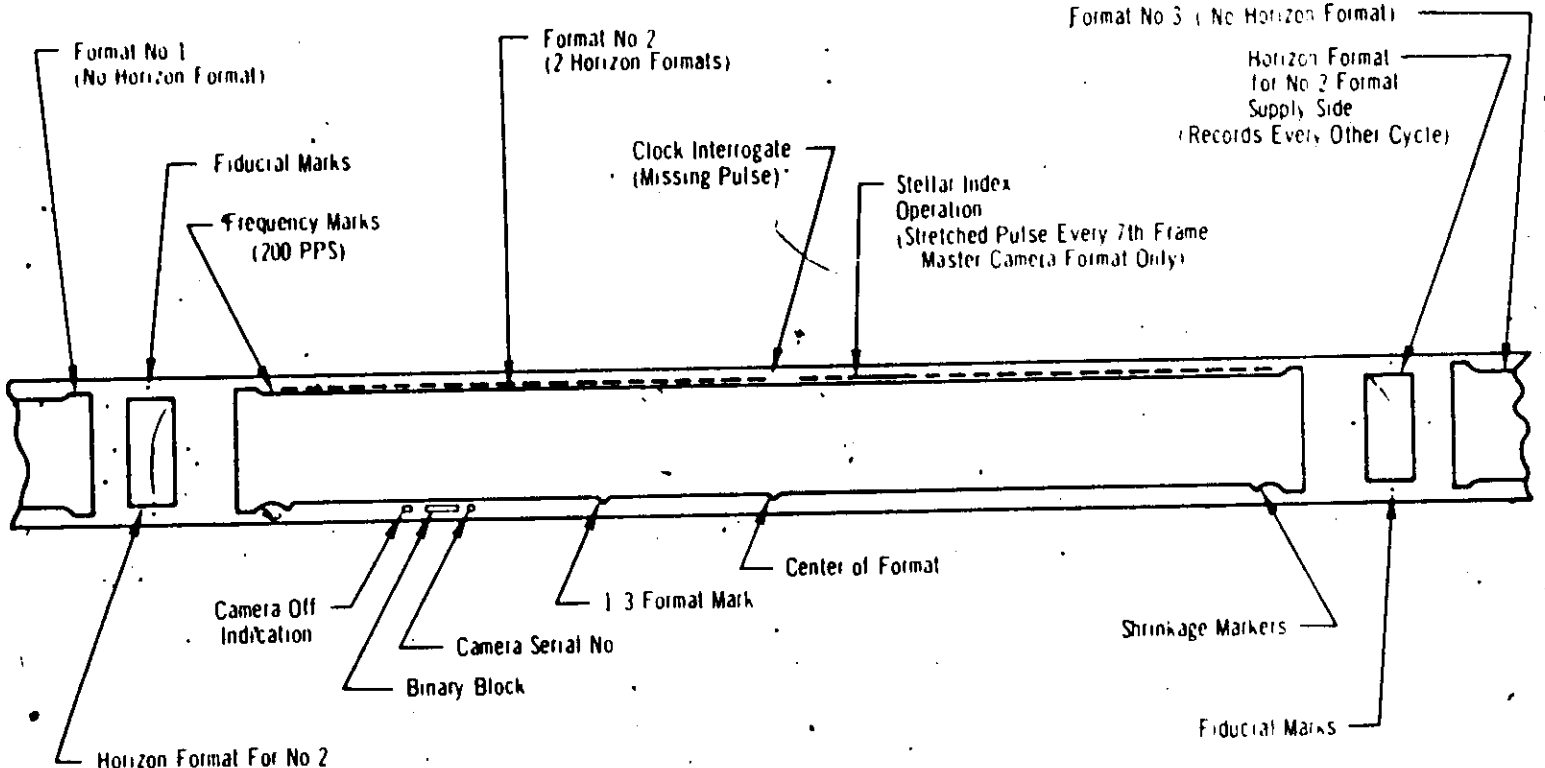
[redacted]

VEHICLE LAYOUT



FILM SPECIFICATIONS

FORMAT LAYOUT

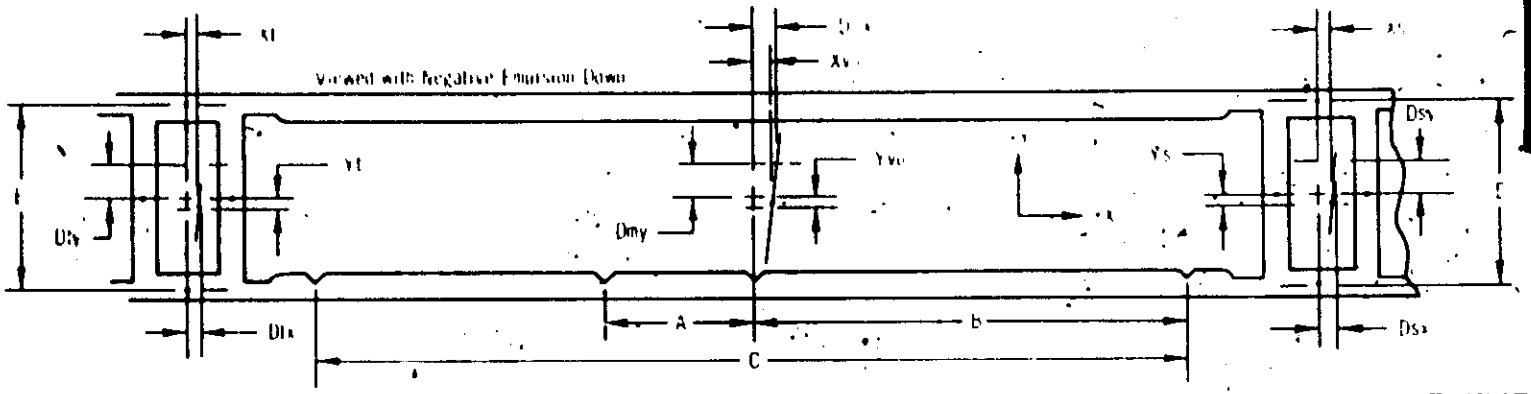


Master(Fwd)Panoramic Camera No 130
Viewed With Negative Emulsion Down
Direction of Film Transport ←
Direction of Scan →
Direction of Vehicle Motion ↓

Slave(Aft)Panoramic Camera No 131
Viewed With Negative Emulsion Down
Direction of Film Transport ←
Direction of Scan →
Direction of Vehicle Motion ↑

FILM SPECIFICATIONS

FORMAT SPECIFICATIONS



Master Film Camera		Vehicle Motion		Scan Direction	
A	76.1	Xl	+0.667	Dlx	+0.014
B	355.6	Yl	+0.171	Dly	-3.000
C	711.0	Xs	0.267	Dsx	0.005
D	56.473	Ys	0.018	Dsy	+2.000
E	56.481	Xvo	+1.328	Dmx	+0.010
		Yvo	+1.566	Dmy	3.000

Slave-Alt Camera		Vehicle Motion		Scan Direction	
A	76.2	Xl	+0.715	Dlx	+0.005
B	355.5	Yl	0.324	Dly	+2.000
C	711.5	Xs	+0.529	Dsx	0.003
D	56.485	Ys	+0.094	Dsy	1.000
E	56.500	Xvo	+0.592	Dmx	0.004
		Yvo	+0.125	Dmy	+3.000

Format dimensions

	Panoramic	Take-Up	Supply
Height	757.6		
Width	55.4		

Format dimensions

	Panoramic	Take-Up	Supply
Height	757.3		
Width	55.5		

NOTE 1. All dimensions are in millimeters and are average dimensions of three formats

2. Height of main format is taken at center of format

3. Dl, Dm, Ds, X and Y dimensions are taken 10 MM above point defining target center

4. Format Sign Convention -X+Y +X+Y

APPENDIX B. TECHNICAL COMPENDIUM

1. Mastre (Fwd) Panoramic Camera

											Limiting				Terrain			
Pass	Frame	Univ. Time	Sun Time	Sun Elev.	Alt. (yds)	Pitch	Roll (All Minus)	Cloud Cat.	Over-lap	D Min	D Max	λ	Fog	D Min	D Max	λ	Exp	
D03	02	0210	1133	8 22	237824	15 04	0 51	1144	0	0.70	2.10	1.40	0.24	0.70	2.10	1.40	1	174
D04	26	0336	1243	16 12	222521	15 09	1 06	1112	11.5	0.51	2.11	1.60	0.25	0.51	2.11	1.60	1	237
D05	63	0518	1321	21 19	210722	15 30	0 25	1111	8.0	0.78	2.07	1.49	0.22	0.78	1.68	0.90	1	252
D05	80	0519	1331	26 07	207779	15 13	0 39	1111	5.0	0.60	1.90	1.50	0.21	0.63	1.56	0.93	1	256
D07	01	0811	1111	6 28	242576	15 34	0 46	3211	0	0.66	1.58	0.92	0.24	0.66	1.48	0.82	1	157
D07	04	0812	1120	6 56	237008	15 35	0 46	1111	1.0	0.47	1.62	1.15	0.24	0.52	1.28	0.76	1	197
D07	15	0812	1132	8 11	237008	15 28	0 44	3111	5.0	0.78	1.80	1.02	0.24	0.88	1.48	0.60	1	210
D08	11	0944	1222	14 44	226501	15 22	0 51	4311	8.0	1.22	2.05	0.83	0.23	1.22	2.00	0.78	1	233
D14	20	1847	1312	24 51	212805	14 52	0 52	2222	8.0	1.70	2.13	0.53	0.23	1.73	2.10	0.37	1	252
D14	30	1848	1318	25 52	209560	14 55	0 54	4222	8.0	0.95	2.08	1.13	0.23	1.22	1.82	0.60	1	254
D14	49	1849	1325	27 52	206815	15 04	0 47	1111	8.0	0.45	2.02	1.57	0.23	0.52	1.30	0.78	1	257
D14	53	1849	1327	28 10	205709	15 07	0 44	2222	8.0	0.54	1.75	1.21	0.23	0.54	1.28	0.74	1	258
D14	66	1850	1332	28 29	204603	15 17	0 37	3244	8.0	0.47	1.90	1.43	0.23	0.47	1.68	1.21	1	260
D18	14	0041	1124	8 33	238137	15 12	0 41	3311	5.0	0.90	2.14	1.24	0.23	0.97	2.12	1.15	1	215
D18	20	0042	1133	9 24	232754	15 15	0 40	1114	5.0	0.32	1.90	1.58	0.23	0.46	1.88	1.42	1	218
D19	04	0210	1018	4 39	243415	15 30	0 34	1111	0	0.49	1.58	1.09	0.27	0.57	0.99	0.42		
D20	10	0343	1200	13 20	227067	14 56	1 36	1111	5.5	0.61	1.91	1.30	0.25	0.74	1.83	1.09	1	227
D20	73	0516	1246	20 53	214016	15 09	0 45	1344	NR	0.69	2.04	1.35	0.25	0.78	1.93	1.15	1	245
D21	01	0511	1117	7 45	237120	15 24	0 52	1111	0	1.00	1.86	0.86	0.30	1.30	1.86	0.56	1	164
D21	53	0513	1208	14 24	226763	15 28	0 41	1111	6.0	0.63	1.99	1.36	0.25	0.63	1.93	1.30	1	232
D21	57	0514	1212	14 55	222058	15 25	0 44	1111	7.0	0.58	2.03	1.45	0.26	0.58	0.82	0.24	1	233
D21e	67	0516	1254	23 25	218790	14 44	0 30	5555	NR	NR	2.04	NR	0.29	NR	NR	NR	1	234
D21e	109	0518	1314	27 53	207301	15 19	0 24	1111	7.0	0.78	1.92	1.14	0.26	0.84	1.36	0.52	1	256
D22	10	0641	1115	7 58	236765	15 06	0 56	2222	4.0	0.49	1.73	1.24	0.27	0.49	1.05	0.56	1	214
D23	32	0815	1241	21 21	217197	15 14	0 39	4334	7.5	0.68	2.03	1.35	0.14	0.68	1.32	0.64	1	246
D23	11	0816	1217	22 33	213325	15 03	0 42	4344	NR	0.40	2.13	1.73	0.11	0.45	0.76	0.31	1	245
D24	06	0942	1129	9 47	230773	15 57	0 33	2111	7.5	0.55	1.78	1.23	0.24	0.88	1.78	0.90	1	222
D24	89	0946	1249	23 36	213085	16 14	0 30	1114	8.0	0.48	2.28	1.80	0.24	0.69	2.28	1.59	1	254
D25	17	1120	1301	31 39	202463	14 40	0 30	1111	7.5	0.62	1.96	1.34	0.24	0.68	1.74	1.06	1	263
D34	27	0041	1119	10 00	231941	15 03	0 39	3223	7.0	0.60	2.00	1.40	0.23	0.60	2.00	1.40	1	227
D36	45	0345	1233	23 39	213376	14 46	0 53	4234	7.0	0.94	2.21	1.27	0.23	1.44	1.70	0.26	1	252
D36		0345	1233	23 41	213376	14 49	0 54	1114	NR	0.99	2.22	1.23	0.24	1.20	1.76	0.56	1	253
D37	14	0510	1112	9 20	235794	16 33	1 04	1111	7.5	0.42	1.87	1.45	0.24	0.53	1.61	1.08	1	225
D37	78	0513	1205	17 51	221092	14 45	0 55	1111	7.5	0.52	2.01	1.49	0.23	0.60	1.77	1.17	1	244
D37	85	0513	1208	18 20	221092	14 34	0 54	1111	8.5	0.96	2.05	1.09	0.23	0.96	2.05	1.09	1	245
D38	06	0640	1055	7 11	235305	15 45	0 32	1331	7.0	0.44	1.48	1.04	0.23	0.44	1.34	0.90	1	216
D38	27	0641	1117	10 05	230131	15 18	0 41	1111	8.0	1.14	1.91	0.77	0.23	1.24	1.54	0.30	1	227
D39	12	0810	1111	9 12	234811	15 07	0 34	1112	7.5	1.13	1.91	0.78	0.23	1.13	1.71	0.58	1	225
D39	127	0814	1217	20 15	216154	14 38	0 34	1111	8.0	0.74	1.98	1.24	0.11	1.00	1.90	0.90	1	247
D40	65	0943	1154	15 35	219895	15 39	0 34	2111	8.5	0.96	1.81	0.85	0.11	0.98	1.81	0.83	1	240
D40	93	0945	1215	21 35	212099	15 14	0 45	4244	8.5	1.00	2.13	1.11	0.18	1.23	1.82	0.59	1	246
D46	19	1818	1303	31 28	202825	15 50	0 23	1111	9.0	0.55	1.98	1.43	0.22	0.65	1.92	1.27	1	261
D46	30	1818	1305	31 22	202823	15 19	0 31	4444	7.5	1.30	2.22	0.92	0.22	NR	NR	NR	1	263
D47	03	2016	1246	30 28	206918	15 39	0 31	1111	2.0	0.62	1.98	1.36	0.22	0.90	1.70	0.80	1	225
D47	25	2017	1255	32 47	204521	15 14	0 29	1111	7.0	0.59	1.70	1.31	0.16	0.68	1.78	1.10	1	261
D47	31	2017	1257	33 24	203589	15 04	0 29	1111	6.5	0.40	1.84	1.44	0.12	0.58	1.45	0.87	1	262
D47	47	2018	1303	34 53	202658	14 40	0 27	1111	6.0	0.40	1.68	1.28	0.12	0.54	1.40	0.86	1	263
D50	10	0040	1118	11 55	229040	15 19	0 28	3411	7.0	0.44	2.08	1.64	0.18	0.58	1.72	1.14	1	230
D52	16	0341	1129	13 47	223234	15 16	0 38	1111	7.5	0.57	2.00	1.43	0.23	0.60	1.90	1.30	1	235
D53	03	0509	1032	5 38	232351	15 43	0 32	1113	0	0.48	1.66	1.18	0.23	0.53	1.21	0.68	1	193
D54	03	0637	1016	3 56	242395	14 47	0 56	4411	0.3	0.29	1.77	1.48	0.23	0.29	0.49	0.20	1	196
D55	18	0809	1048	8 13	231157	15 21	0 59	4444	5.0	0.68	1.86	1.18	0.24	0.68	0.99	0.31	1	224
D56	17	0939	1101	10 20	230556	14 42	1 21	2111	6.5	0.60	1.77	1.17	0.27	0.76	1.73	0.97	1	230
D66	26	0040	1121	11 58	219996	15 33	0 31	4444	8.5	0.59	1.77	1.18	0.27	NR	NR	NR	1	238
D67	06	0208	1101	12 06	228497	15 25	0 36	2112	6.0	0.68	1.95	1.27	0.24	0.68	1.70	1.02	1	229
D67	64	0211	1111	20 15	215418	14 38	0 57	1322	6.5	0.60	2.07	1.47	0.24	0.68	1.94	1.26	1	247

[redacted]

1. Master (Fwd) Panoramic Camera (Continued)

										Limiting				Terrain			
Pass	Frame	Univ. Time	Sun Time	Sun Elev.	Alt. (yds)	Pitch	Roll (All Minus)	Cloud Cat.	Over-lap	D Min	D Max	λ	Fog	D Min	D Max	λ	Exp
D68	13	0339	1107	12 37	233177	15 20	0 29	1111	7.0	0.59	1.93	1.34	0.25	0.59	1.80	1.21	1 234
D69	06	0507	1026	6 37	232070	15 37	1 10	2111	5.0	0.43	1.50	1.07	0.23	0.66	1.20	0.54	1 219
D70	52	0641	1142	20 33	213850	14 24	0 27	1111	6.5	NR	NR	NR	0.12	NR	NR	NR	1 [illegible]
D72	72	0939	1123	16 42	220701	15 25	0 32	1111	7.0	0.68	1.96	1.28	0.24	NR	NR	NR	1 240
D72	82	0940	1129	18 03	216591	15 08	0 37	1111	7.0	0.48	1.98	1.50	0.20	NR	NR	NR	1 242
D74	11	1245	1233	37 53	202158	16 27	0 37	1111	5.5	1.20	2.02	0.82	0.10	1.20	1.83	0.63	1 260
D77	14	1711	1155	26 14	210419	15 36	0 33	1124	6.5	0.76	2.06	1.30	0.11	0.76	2.00	1.24	1 251

Terrain	
D Min Range	0.29-1.73
D Max Range	0.49-2.28
Average D Min	0.78
Average D Max	1.65
Mean D Min	0.65
Mean D Max	1.80

Limiting	
D Min Range	0.20-1.62
D Max Range	0.27-2.30
Average D Min	0.63
Average D Max	1.77
Mean D Min	0.55
Mean D Max	2.00

Gross Fog Range	0.10-0.30
Average Gross Fog	0.22

2. Slave (Aft) Panoramic Camera

										Limiting				Terrain			
Pass	Frame	Univ. Time	Sun Time	Sun Elev.	Alt. (yds)	Pitch (All Minus)	Roll (All Minus)	Cloud Cat.	Over-lap	D Min	D Max	λ	Fog	D Min	D Max	λ	Exp
D03	08	0212	1132	8 29	237521	14 29	0 51	1144	2.0	0.70	2.10	1.30	0.24	0.70	2.10	1.40	1 211
D04	32	0345	1243	16 42	222521	14 24	1 06	1111	4.0	0.25	2.08	1.83	0.26	0.50	2.08	1.58	1 236
D04	61	0417	1302	22 37	214279	14 31	0 32	4211	5.0	0.60	2.30	1.70	0.24	0.60	2.08	1.48	1 247
D05	69	0518	1324	24 19	210722	14 03	0 25	1111	4.0	0.74	2.10	1.36	0.21	0.74	1.66	0.92	1 251
D05	86	0519	1331	26 07	207779	14 23	0 32	1111	5.0	0.47	1.58	1.11	0.20	0.57	1.46	0.89	1 254
D07	03	0811	1108	5 30	242576	13 59	0 45	1113	0.0	0.48	1.06	0.58	0.25	0.53	0.98	0.45	1 187
D07	07	0811	1114	6 28	239792	14 02	0 44	1111	0.0	0.43	1.30	0.87	0.25	0.45	1.03	0.58	1 204
D07	10	0812	1120	6 56	237008	14 06	0 44	1111	0.0	0.45	1.47	1.02	0.25	0.45	1.14	0.69	1 207
D08	08	0944	1220	14 35	226501	14 18	0 49	1111	4.0	1.13	1.92	0.79	0.23	1.13	1.92	0.21	1 229
D08	22	0945	1232	16 04	221857	15 01	0 52	1111	4.0	0.66	1.80	1.14	0.23	0.73	1.16	0.43	1 235
D11	26	1847	1312	24 51	212805	14 28	0 54	2222	4.0	1.60	2.10	0.50	0.22	1.60	2.08	0.48	1 250
D11	36	1848	1318	25 52	209560	14 33	0 53	4222	4.0	1.16	2.12	0.95	0.22	1.26	1.95	0.69	1 252
D11	55	1849	1326	27 49	206815	14 20	0 39	1111	4.0	0.49	1.53	1.04	0.23	0.59	1.53	0.94	1 255
D11	59	1849	1327	28 10	205709	14 16	0 38	1111	4.0	0.52	1.63	1.11	0.22	0.64	1.23	0.59	1 255
D11	72	1850	1332	28 29	201603	14 04	0 41	3241	4.0	0.62	1.98	1.36	0.22	0.69	1.69	1.00	1 257
D12	19	0041	1124	8 33	238137	14 17	0 40	3311	1.0	1.04	2.15	1.11	0.22	1.16	2.13	0.97	1 215
D12	27	0042	1133	9 34	232754	14 17	0 41	1114	2.0	0.35	2.15	1.80	0.22	0.82	2.13	1.31	1 218
D12	50	0210	1048	4 39	244415	13 24	0 44	1111	0.0	0.35	0.93	0.58	0.23	0.40	0.68	0.28	1 205
D29	17	0343	1200	13 20	227067	14 22	1 09	1111	3.0	0.56	1.99	1.43	0.22	0.90	1.73	0.83	1 227
D29	80	0446	1216	20 53	214016	14 25	0 44	1311	4.0	0.65	2.10	1.45	0.21	0.65	1.82	1.17	1 244
D31	07	0511	1117	7 45	237129	14 03	0 41	1111	0.0	0.41	1.56	1.15	0.22	0.79	1.46	0.67	1 212
D31	50	0613	1208	14 21	226763	14 19	0 29	1111	3.0	0.59	1.91	1.32	0.23	0.59	1.91	1.32	1 231
D28	63	0514	1212	14 55	222058	14 19	0 30	5555	NR	NR	NR	NR	0.23	NR	NR	NR	1 212
D21	75	0516	1254	23 25	213790	14 15	0 28	5555	NR	NR	NR	NR	0.23	NR	NR	NR	1 247
D21	114	0518	1314	27 53	207301	14 15	0 18	1111	4.0	0.89	1.77	0.88	0.23	1.07	1.57	0.50	1 255
D22	10	0640	1107	7 07	242515	14 25	0 56	1111	1.0	0.46	1.28	0.82	0.21	0.46	1.11	0.65	1 212
D22	53	0643	1158	12 50	240911	14 30	0 42	1111	4.0	1.00	1.84	0.84	0.21	1.23	1.60	0.37	1 227
D23	38	0815	1241	21 21	217197	14 31	0 43	1331	4.0	0.89	2.03	1.14	0.15	0.89	1.22	0.33	1 24[illegible]

[redacted]

2. Slare (Aft) Panoramic Camera (Continued)

										Limiting				Terrain			
Pass	Frame	Univ. Time	Sun Time	Sun Elev.	Alt. (yds)	Pitch (All Minus)	Roll (All Minus)	Cloud Cat.	% Overlap	D Min	D Max	Δ	Fog	D Min	D Max	Δ	Exp
D23	47	0816	1247	22 23	213325	14 25	0 42	4344	5.0	0.50	2.11	1.61	0.11	0.58	0.84	0.26	1 247
D24	07	0941	1124	9 15	236031	14 01	0 26	1111	4.0	0.58	1.66	1.08	0.20	0.58	1.48	0.90	1 222
D24	93	0946	1249	23 36	213085	14 32	0 39	1131	3.0	0.48	2.21	1.73	0.19	0.84	2.21	1.37	1 251
D25	22	1120	2301	31 39	202463	14 50	0 31	1111	5.0	0.64	2.00	1.36	0.20	0.75	1.73	0.98	1 260
D34	06	0930	1050	6 17	237224	14 37	0 38	2222	3.0	0.30	1.95	1.65	0.20	0.78	1.70	0.92	1 214
D36	50	0845	1233	23 39	213376	14 25	0 56	4234	4.0	0.88	2.30	1.42	0.19	1.40	1.60	0.20	4 251
D37	20	0510	1112	9 20	235794	13 08	0 53	1111	3.0	0.40	1.64	1.24	0.20	0.58	1.51	0.93	1 226
D37	84	0513	1205	17 51	221092	15 04	0 53	1111	6.0	0.58	2.01	1.43	0.22	0.86	2.01	1.15	1 243
D38	08	0640	1049	6 28	235302	14 02	0 36	1111	3.0	0.45	1.14	0.69	0.22	0.45	1.00	0.55	1 217
D38	50	0641	1111	10 00	230131	14 23	0 46	2122	5.0	0.78	1.80	1.02	0.23	0.78	1.03	0.25	1 226
D39	48	0810	1111	9 12	[illegible]	13 56	0 30	1112	4.0	0.66	1.80	1.14	0.23	0.69	1.51	0.82	1 226
D39	133	0814	1217	20 15	216174	15 02	0 44	1111	6.0	0.52	1.93	1.41	0.13	0.78	1.78	1.00	1 247
D40	69	0913	1154	15 55	228895	13 48	0 37	2312	6.0	0.97	1.94	0.97	0.12	0.97	1.87	0.90	1 239
D40	91	0945	1215	21 35	212099	13 54	0 47	2142	5.0	0.44	2.01	1.57	0.13	1.46	1.68	0.22	1 244
D46	25	1848	1303	34 29	202823	14 14	0 31	1111	5.0	0.50	1.74	1.24	0.22	0.82	1.74	0.92	1 260
D47	09	2016	1246	30 21	206915	14 02	0 30	1111	4.0	0.56	1.91	1.36	0.22	0.55	1.28	0.73	1 255
D47	31	2017	1255	32 47	204297	14 30	0 28	1111	5.0	0.44	1.58	1.14	0.22	0.44	1.56	1.12	1 260
D47	57	2017	1257	33 21	203588	14 49	0 27	1111	5.0	0.58	1.82	1.24	0.18	0.58	1.74	1.16	1 261
D47	58	2018	1303	34 53	202658	14 55	0 26	1111	6.0	0.29	1.46	1.17	0.12	0.29	1.67	1.38	1 262
D50	19	0010	1114	11 55	229040	14 25	0 32	1112	3.0	0.27	1.96	1.69	0.12	0.29	1.67	1.38	1 229
D52	22	0341	1129	13 47	223234	14 36	0 42	1111	0.0	0.58	1.96	1.38	0.22	0.62	1.77	1.15	1 236
D53	09	0509	1032	5 38	232351	13 49	0 25	1113	0.0	0.39	1.30	0.91	0.23	0.43	1.11	0.68	1 212
D54	06	0637	1016	3 56	242395	14 32	0 50	4111	2.0	0.21	1.13	0.92	0.18	0.26	0.54	0.28	1 212
D55	23	0809	1048	8 13	231157	14 20	0 56	4444	8.0	0.48	1.62	1.14	0.22	0.48	0.84	0.36	1 224
D55	98	0812	1158	20 33	216450	14 18	0 46	4222	6.5	1.22	2.01	0.79	0.22	1.43	1.81	0.38	1 247
D56	28	0949	1104	10 20	230556	14 38	1 12	2111	6.0	0.39	1.78	1.39	0.21	0.59	1.64	1.05	1 230
D56	90	0942	1155	19 44	216976	15 10	0 37	1111	6.0	0.53	1.90	1.37	0.21	0.58	1.39	0.81	1 246
D66	32	0040	1121	14 58	219996	14 16	0 39	4444	7.0	0.57	1.51	0.94	0.20	NR	NR	NR	1 236
D67	11	0208	1148	12 06	228497	14 27		2111	5.0	0.50	2.05	1.55	0.21	0.50	1.43	0.93	1 232
D68	19	0339	1107	12 37	228177	14 12	0 24	1111	4.0	0.51	1.68	1.17	0.22	0.51	1.63	1.12	1 234
D69	12	0507	1026	6 37	235070	13 35	0 50	2111	2.5	0.47	1.20	0.73	0.21	0.47	1.10	0.63	1 223
D70	37	0641	1142	20 33	215880	14 51	0 33	1111	6.0	0.89	1.90	1.01	0.10	0.89	1.65	0.76	1 247
D70	85	0642	1156	24 14	210157	14 5[illegible]	0 45	1114	4.0	0.68	2.12	1.44	0.10	0.98	2.00	1.02	1 252
D71	01	0805	0931	0 04	241060	14 41	0 48	5555	NR	0.20	0.27	0.07	0.15	NR	NR	NR	1 165
D71	25	0806	1005	3 54	235738	13 40	0 41	5555	NR	0.56	1.75	1.19	0.21	NR	NR	NR	1 219
D71	50	0807	1036	8 01	230649	14 24	0 33	4444	2.5	0.40	1.68	1.28	0.21	NR	NR	NR	1 227
D71	75	0808	1109	11 16	225830	15 07	0 41	3444	6.5	0.87	1.71	0.84	0.21	NR	NR	NR	1 234
D71	100	0809	1118	15 20	221819	14 45	0 4[illegible]	4412	4.0	0.98	1.68	0.70	0.11	0.98	1.58	0.60	1 240
D71	121	0811	1140	19 57	213373	14 00	0 31	1111	5.0	1.62	1.81	0.19	0.19	1.62	1.81	0.19	1 244
D72	11	0936	1024	6 28	234986	13 53	0 31	4341	2.5	0.47	1.30	0.83	0.20	0.78	0.98	0.20	1 222
D72	82	0940	1126	17 07	216591	14 31	0 41	1111	4.5	0.98	1.96	0.98	0.22	1.08	1.84	0.76	1 242
D74	01	1215	1233	36 50	202158	13 06	0 41	1111	4.0	1.04	1.72	0.68	0.10	1.42	1.64	0.22	1 247
D77	18	1711	1153	25 36	220419	13 48	0 33	1144	5.0	0.84	2.01	1.37	0.11	0.66	1.88	1.22	1 241
D79	21	2012	1201	29 28	208663	NR	NR	3445	3.0	0.43	2.13	1.70	0.19	0.63	1.34	0.71	1 254

NR indicates information not available.

Terrain

D Min Range	0.26-1.62
D Max Range	0.84-2.21
Average D Min	0.72
Average D Max	1.54
Mean D Min	0.57
Mean D Max	1.68

Limiting

D Min Range	0.20-1.62
D Max Range	0.27-2.30
Average D Min	0.63
Average D Max	1.77
Mean D Min	0.48
Mean D Max	2.00

Gross Fog Range 0.10-0.27
Average Gross Fog 0.19

APPENDIX C. DENSITY READINGS

1. Stellar Index Camera.

The density readings on the Stellar Index Camera were taken as follows: One reading was taken on every frame as near the center principal point, PP) of the format as the reseau grid would permit. Gross fog readings were taken in the metering space between frames at the beginning and end of each pass, and whenever a change in gross fog occurred. A maximum density reading was taken from each frame from which there is a gross fog reading. The instrument used was a Macbeth Quantalog Densitometer, Model EP 1000, with an ET 20 attachment and an 0.5 mm aperture.

Pass	Frame	PP	Gross	D Max
D03	1	0.80	.25	3.00
D03	2	0.89		
D03	3	0.92		
D03	4	0.92		
D03	5	1.02	.25	2.94
D03	6	1.10		
D03	7	1.10		
D03	8	1.12		
D03	9	1.18	.32	3.10
D03	10	2.62	.37	3.82
D04	11	2.40		
D04	12	1.36	.39	3.22
D04	13	1.30		
D04	14	1.31		
D04	15	1.28	.21	3.40
D04	16	1.30		
D04	17	1.42		
D04	18	1.41		
D04	19	1.35		
D04	20	1.40	.18	3.13
D04	21	1.45		
D05	22	1.08		
D05	23	1.20		
D05	24	1.16		
D05	25	1.13	.18	2.89
D05	26	1.19		
D05	27	2.72		
D05	28	2.52		
D05	29	1.41		
D05	30	1.42	.18	3.10
D05	31	1.42		
D05	32	1.40		
D05	33	1.45		
D05	34	1.57	.17	3.09
D07	35	0.50	.17	2.51
D07	36	0.60		
D07	37	1.30		
D07	38	0.75		
D07	39	0.85		
D07	40	0.93	.18	3.09
D07	41	1.05		
D07	42	1.11		
D07	43	1.15		
D07	44	1.20		
D07	45	1.45		
D07	46	1.42		
D07	47	1.46		
D07	48	1.45	.24	3.39
D07	49	1.48		
D07	50	1.47	.20	3.23
D07	51	1.47		
D07	52	1.43	.18	3.23
D08	53	1.21	.20	3.09
D08	54	1.32		
D08	55	1.36		
D08	56	1.42		
D08	57	1.42		
D08	58	1.50		
D08	59	1.51		
D08	60	1.62	.20	3.23
A10E	61	0.23	.20	
A10E	62	0.24	.20	
D14	63	1.66	.21	3.21
D14	64	1.70		
D14	65	1.58		
D14	66	1.55		
D14	67	1.55		
D14	68	1.56		
D14	69	1.67		
D14	70	1.67		
D14	71	1.67		
D14	72	1.62		
D14	73	1.60	.20	
D18	74	0.70	.23	3.29
D18	75	0.80		
D18	76	0.82		
D18	77	0.85		
D18	78	0.92	.27	3.04
D18	79	1.00		
D18	80	1.95	.30	3.37
D18	81	1.92		
D18	82	1.85	.32	3.40
D18	83	1.85		
D18	84	1.78	.31	3.32
D18	85	1.85		
D18	86	1.80	.25	3.26
D18	87	1.90	.22	3.29
D19	88	0.45	.20	2.76
D19	89	0.51		
D19	90	0.67	.22	2.89

Pass	Frame	PP	Gross	D Max
D19	91	0.77		
D19	92	0.81	.24	2.99
D19	93	0.89	.27	3.00
D20	94	1.19	.26	3.20
D20	95	1.22		
D20	96	1.20	.24	3.19
D20	97	1.25		
D20	98	1.30	.10	3.22
D20	99	1.31		
D20	100	1.34	.10	3.14
D20	101	1.32		
D20	102	1.32	.26	3.10
D20	103	1.31		
D20	104	1.40	.21	3.14
D20	105	1.43		
D20	106	1.37	.19	3.11
D20	107	1.30		
D20	108	1.31	.17	3.04
D21	109	0.71	.21	2.81
D21	110	0.76		
D21	111	0.82		
D21	112	0.85		
D21	113	0.95		
D21	114	1.01		
D21	115	1.10		
D21	116	1.07		
D21	117	1.11		
D21	118	1.56		
D21	119	1.51		
D21	120	1.51		
D21	121	1.54		
D21	122	1.59		
D21	123	1.55		
D21	124	1.61	.19	3.06
D22	125	0.64	.18	2.77
D22	126	0.74		
D22	127	0.81		
D22	128	0.84		
D22	129	0.95		
D22	130	0.95		
D22	131	0.98		
D22	132	1.02		
D22	133	1.04		
D22	134	1.11		
D22	135	1.12		
D22	136	1.16		
D22	137	1.30	.17	3.13
D23	138	1.42	.18	3.06
D23	139	1.41		
D23	140	1.52		
D23	141	1.46		
D23	142	1.48		
D23	143	1.48		
D23	144	1.50		
D23	145	1.50	.22	3.16
D24	146	0.94	.22	3.08
D24	147	1.00		
D24	148	1.06		
D24	149	1.08		
D24	150	1.11		
D24	151	1.15		
D24	152	1.24		
D24	153	1.32		
D24	154	1.35		
D24	155	1.50		
D24	156	1.58		
D24	157	1.60		
D24	158	1.62		
D24	159	1.62		
D24	160	1.59		
D24	161	1.66		
D24	162	1.60	.35	3.28
D25	163	1.49	.40	3.22
D25	164	1.50		
D25	165	1.52		
D25	166	1.60		
D25	167	1.62		
D25	168	1.62		
D25	169	1.60	.40	3.21
A26E	170	0.32	.25	
A26E	171	0.32	.25	
D34	172	0.82	.31	2.98
D34	173	0.84		
D34	174	0.97		
D34	175	0.97		
D34	176	1.01		
D34	177	1.09	.34	3.12
D36	178	1.59	.32	3.09
D36	179	1.55		
D36	180	1.62		
D36	181	1.62		
D36	182	1.68		
D36	183	1.63		
D36	184	1.63		
D36	185	1.67		
D36	186	1.62		
D36	187	1.60	.23	2.16
D37	188	0.80	.21	2.92
D37	189	0.84		
D37	190	0.90		
D37	191	0.91		
D37	192	0.91		
D37	193	0.95		
D37	194	1.03		
D37	195	1.11		
D37	196	1.14		
D37	197	1.22		
D37	198	1.30		
D37	199	1.34	.24	3.10
D38	200	0.60	.23	2.70
D38	201	0.66		
D38	202	0.74		
D38	203	0.82		
D38	204	0.92		
D38	205	1.00		
D38	206	1.06		
D38	207	1.16		
D38	208	1.20	.23	3.01
D39	209	0.50	.22	2.60
D39	210	0.60		

[redacted]

Pass	Frame	PP	Gross	D Max
D39	211	0.68		
D39	212	0.74		
D39	213	0.80		
D39	214	0.84		
D39	215	0.82		
D39	216	0.91		
D39	217	0.94		
D39	218	0.99		
D39	219	1.06		
D39	220	1.20		
D39	221	1.27		
D39	222	1.34		
D39	223	1.45		
D39	224	1.48		
D39	225	1.54		
D39	226	1.60		
D39	227	1.60		
D39	228	1.69		
D39	229	1.70	.25	3.24
D40	230	0.90	.27	2.83
D40	231	0.98		
D40	232	1.05		
D40	233	1.12		
D40	234	1.16		
D40	235	1.20		
D40	236	1.22		
D40	237	1.45		
D40	238	1.32		
D40	239	1.32		
D40	240	1.38		
D40	241	1.40		
D40	242	1.42		
D40	243	1.44	.29	3.19
D46	244	1.82	.30	3.35
D46	245	1.87		
D46	246	1.89		
D46	247	1.97		
D46	248	1.95	.33	3.40
D47	249	1.42	.40	3.19
D47	250	1.42		
D47	251	1.36		
D47	252	1.32		
D47	253	1.35		
D47	254	1.36		
D47	255	1.32		
D47	256	1.32	.28	3.14
D50	257	1.03	.28	3.01
D50	258	1.04		
D50	259	1.12		
D50	260	1.14		
D50	261	1.21	.29	3.04
D52	262	1.00	.25	3.06
D52	263	1.07		
D52	264	1.11		
D52	265	1.08		
D52	266	1.21		
D52	267	1.26		
D52	268	1.32		
D52	269	1.42	.24	3.13
D53	270	0.59	.21	2.82
D53	271	0.62		
D53	272	0.69		
D53	273	0.77		
D53	274	0.82		
D53	275	0.85		
D53	276	0.89	.21	2.94
D54	277	0.46	.21	2.70
D54	278	0.59		
D54	279	0.66		
D54	280	0.71		
D54	281	0.77		
D54	282	0.84		
D54	283	0.90		
D54	284	0.94		
D54	285	1.04	.21	2.93
D55	286	0.67	.22	2.77
D55	287	0.75		
D55	288	0.85		
D55	289	0.90		
D55	290	1.01		
D55	291	1.01		
D55	292	1.08		
D55	293	1.37		
D55	294	1.43		
D55	295	1.41		
D55	296	1.45		
D55	297	1.42		
D55	298	1.37		
D55	299	1.53		
D55	300	1.53		
D55	301	1.53	.24	3.20
D56	302	0.94	.27	2.92
D56	303	1.01		
D56	304	1.04		
D56	305	1.15		
D56	306	1.19		
D56	307	1.24		
D56	308	1.29		
D56	309	1.47		
D56	310	1.52		
D56	311	1.49		
D56	312	1.62		
D56	313	1.57		
D56	314	1.62	.33	3.28
D66	315	1.05	.32	2.99
D66	316	1.10		
D66	317	1.19		
D66	318	1.22		
D66	319	1.24		
D66	320	1.26	.40	3.00
D67	321	1.17	.40	3.60
D67	322	1.25		
D67	323	1.25		
D67	324	1.31		
D67	325	1.30		
D67	326	1.32		
D67	327	1.35		
D67	328	1.42		
D67	329	1.50		
D67	330	1.54		

Pass	Frame	PP	Gross	D Max
D67	331	1.55	.23	3.21
D68	332	0.99	.24	2.99
D68	333	1.02		
D68	334	1.04		
D68	335	0.98		
D68	336	1.03		
D68	337	1.10		
D68	338	1.18		
D68	339	1.21	.21	3.06
D69	340	0.64	.20	2.83
D69	341	0.74		
D69	342	0.79		
D69	343	0.87		
D69	344	0.95		
D69	345	1.01	.22	3.12
D70	346	1.27	.20	3.02
D70	347	1.34		
D70	348	1.40		
D70	349	1.41		
D70	350	1.43		
D70	351	1.52		
D70	352	1.54		
D70	353	1.62		
D70	354	1.60		
D70	355	1.61		
D70	356	1.53		
D70	357	1.52	.20	3.13
D71	358	0.33	.19	2.15
D71	359	0.43		
D71	360	0.50		
D71	361	0.60		
D71	362	0.66		
D71	363	0.80		
D71	364	0.87		
D71	365	0.96		
D71	366	1.11		
D71	367	1.20		
D71	368	1.25		
D71	369	1.32		
D71	370	1.41		
D71	371	1.38		

Pass	Frame	PP	Gross	D Max
D71	372	1.48		
D71	373	1.52		
D71	374	1.52		
D71	375	1.51	.20	3.36
D72	376	0.74	.20	2.91
D72	377	0.85		
D72	378	0.94		
D72	379	0.95		
D72	380	1.00		
D72	381	1.08		
D72	382	1.14		
D72	383	1.14		
D72	384	1.20		
D72	385	1.34		
D72	386	1.39		
D72	387	1.43		
D72	388	1.47		
D72	389	1.62		
D72	390	1.60	.27	3.19
473E	391	0.19	.22	
473E	392	0.22	.22	
D74	393	1.72	.24	3.21
D74	394	1.63		
D74	395	1.49		
D74	396	1.35		
D74	397	1.34	.24	3.12
D77	398	1.61	.22	3.14
D77	399	1.61		
D77	400	1.50		
D77	401	1.44		
D77	402	1.39		
D77	403	1.31		
D77	404	1.32		
D77	405	1.44		
D77	406	1.60	.23	3.19
D79	407	1.90	.60	3.42
D79	408	1.93		
D79	409	1.85		
D79	410	1.87		
D79	411	2.15		
D79	412	2.00	.10	3.62

2. Terrain Index Camera.

Density readings were taken on each pass, using a Macbeth QuantaLog Densitometer, Model EP 1900, with an ET attachment and a 0.5 mm aperture. The values are correlated below.

Pass	Frame	Terrain		Limiting		Gross Fog		
		D-Min	D-Max	D-Min	D-Max	Titled	Center	Untitled
D03	1	0.20	0.70	0.20	0.82	0.06	0.06	0.06
D03	9	NR	NR	0.30	1.20	0.06	0.07	0.07
D04	11	0.30	0.66	0.30	0.66	0.07	0.06	0.06
D04	21	0.33	1.00	0.33	1.72	0.07	0.07	0.07
D05	22	0.44	0.95	0.44	0.99	0.05	0.06	0.07
D05	34	0.34	0.75	0.34	0.75	0.07	0.07	0.07

[redacted]

2. Terrain Index Camera (Continued)

Pass	Frame	Terrain		Limiting		Gross Fog		
		D-Min	D-Max	D-Min	D-Max	Titled	Center	Untilled
D07	35	0.24	0.42	0.24	0.50	0.08	0.09	0.08
D07	52	0.39	1.29	0.39	1.29	0.06	0.09	0.05
D08	53	0.39	1.27	0.39	1.27	0.10	0.09	0.09
D08	60	NR	NR	0.18	1.01	0.09	0.09	0.09
D14	63	0.75	0.99	0.30	1.27	0.09	0.09	0.09
D14	72	0.55	1.40	0.27	1.40	0.09	0.10	0.09
D18	74	0.23	0.70	0.16	0.70	0.09	0.09	0.09
D18	87	NR	NR	0.40	1.00	0.10	0.10	0.10
D19	88	0.25	0.55	0.12	0.55	0.10	0.10	0.10
D19	93	0.32	0.80	0.13	0.80	0.08	0.08	0.08
D20	94	0.22	1.03	0.22	1.03	0.09	0.09	0.09
D20	105	0.34	0.51	0.24	1.30	0.09	0.09	0.09
D21	109	0.22	0.61	0.22	0.61	0.09	0.09	0.09
D21	124	0.25	0.66	0.25	0.79	0.09	0.09	0.09
D22	125	0.14	0.62	0.14	0.62	0.09	0.09	0.09
D22	137	0.32	1.25	0.32	1.25	0.09	0.09	0.09
D23	138	NR	NR	0.22	1.00	0.09	0.10	0.09
D23	145	0.40	1.24	0.39	1.30	0.09	0.09	0.09
D24	146	0.36	0.56	0.16	0.71	0.09	0.09	0.09
D24	162	0.28	1.32	0.22	1.32	0.09	0.09	0.09
D25	163	NR	NR	0.24	1.13	0.09	0.09	0.09
D25	169	0.74	1.13	0.32	1.13	0.09	0.09	0.09
D34	172	0.30	0.88	0.15	0.88	0.11	0.11	0.11
D34	177	0.22	1.00	0.22	1.19	0.09	0.09	0.09
D36	178	0.24	1.06	0.24	1.06	0.09	0.09	0.09
D36	187	NR	NR	0.20	0.95	0.07	0.07	0.07
D37	189	0.14	0.64	0.14	0.76	0.06	0.06	0.06
D37	197	0.15	1.29	0.15	1.29	0.07	0.07	0.07
D38	202	0.10	0.65	0.10	0.65	0.09	0.09	0.09
D38	208	NR	NR	0.33	0.98	0.06	0.06	0.06
D39	210	NR	NR	0.09	0.95	0.06	0.06	0.06
D39	229	NR	NR	0.30	1.36	0.07	0.07	0.07
D40	232	0.41	0.65	0.13	0.65	0.09	0.09	0.09
D40	242	0.36	1.18	0.34	1.18	0.06	0.06	0.06
D46	244	0.19	0.64	0.19	0.64	0.06	0.06	0.06
D46	245	0.26	0.44	0.17	1.42	0.06	0.06	0.06
D47	249	0.16	0.95	0.16	0.95	0.06	0.06	0.06
D47	256	0.17	0.73	0.17	0.73	0.11	0.11	0.11
D50	258	0.30	1.05	0.18	1.18	0.06	0.07	0.07
D50	260	0.32	1.00	0.09	1.00	0.07	0.07	0.07
D52	262	0.12	0.92	0.12	0.92	0.07	0.07	0.07
D52	269	0.21	0.97	0.21	0.97	0.07	0.07	0.07
D53	271	0.10	0.45	0.10	0.57	0.06	0.06	0.06
D53	276	NR	NR	0.19	0.84	0.07	0.07	0.07
D54	279	NR	NR	0.09	0.82	0.09	0.06	0.06
D54	295	0.31	0.92	0.31	0.92	0.07	0.07	0.07
D55	296	NR	NR	0.11	0.55	0.07	0.07	0.07
D55	301	0.35	1.07	0.17	1.07	0.07	0.07	0.07
D56	307	0.29	0.67	0.16	0.67	0.06	0.06	0.06
D56	314	0.21	0.88	0.21	0.88	0.07	0.07	0.07
D66	315	NR	NR	0.14	0.91	0.06	0.06	0.06
D66	320	NR	NR	0.17	1.14	0.06	0.06	0.06
D67	321	0.13	0.55	0.13	0.55	0.06	0.06	0.09
D67	329	0.27	1.03	0.17	1.11	0.09	0.09	0.10
D68	332	0.11	1.10	0.11	1.10	0.06	0.06	0.06
D68	339	0.20	1.04	0.20	1.04	0.07	0.07	0.07
D69	341	0.19	0.67	0.14	0.67	0.07	0.08	0.06

2. Terrain Index Camera (Continued)

Pass	Frame	Terrain		Limiting		Gross Fog		
		D-Min	D-Max	D-Min	D-Max	Titled	Center	Untitled
D69	344	0.12	0.65	0.12	0.55	0.09	0.09	0.09
D70	346	NR	NR	0.20	1.17	0.07	0.07	0.08
D70	357	0.15	1.32	0.15	1.32	0.07	0.07	0.08
D71	363	NR	NR	0.17	1.04	0.08	0.08	0.08
D71	375	NR	NR	0.44	1.02	0.07	0.07	0.07
D72	376	0.09	0.61	0.09	0.61	0.06	0.06	0.07
D72	390	0.26	0.67	0.26	1.17	0.07	0.07	0.07
D74	393	0.56	1.17	0.56	1.17	0.07	0.07	0.07
D74	397	NR	NR	0.54	1.24	0.07	0.07	0.07
D77	399	0.54	0.97	0.54	1.27	0.07	0.07	0.07
D77	406	0.24	0.62	0.14	0.62	0.07	0.07	0.07
D79	407	NR	NR	0.42	1.26	0.07	0.07	0.07
D79	413	0.14	0.95	0.14	1.05	0.05	0.09	0.09

Note NR denotes no reading made

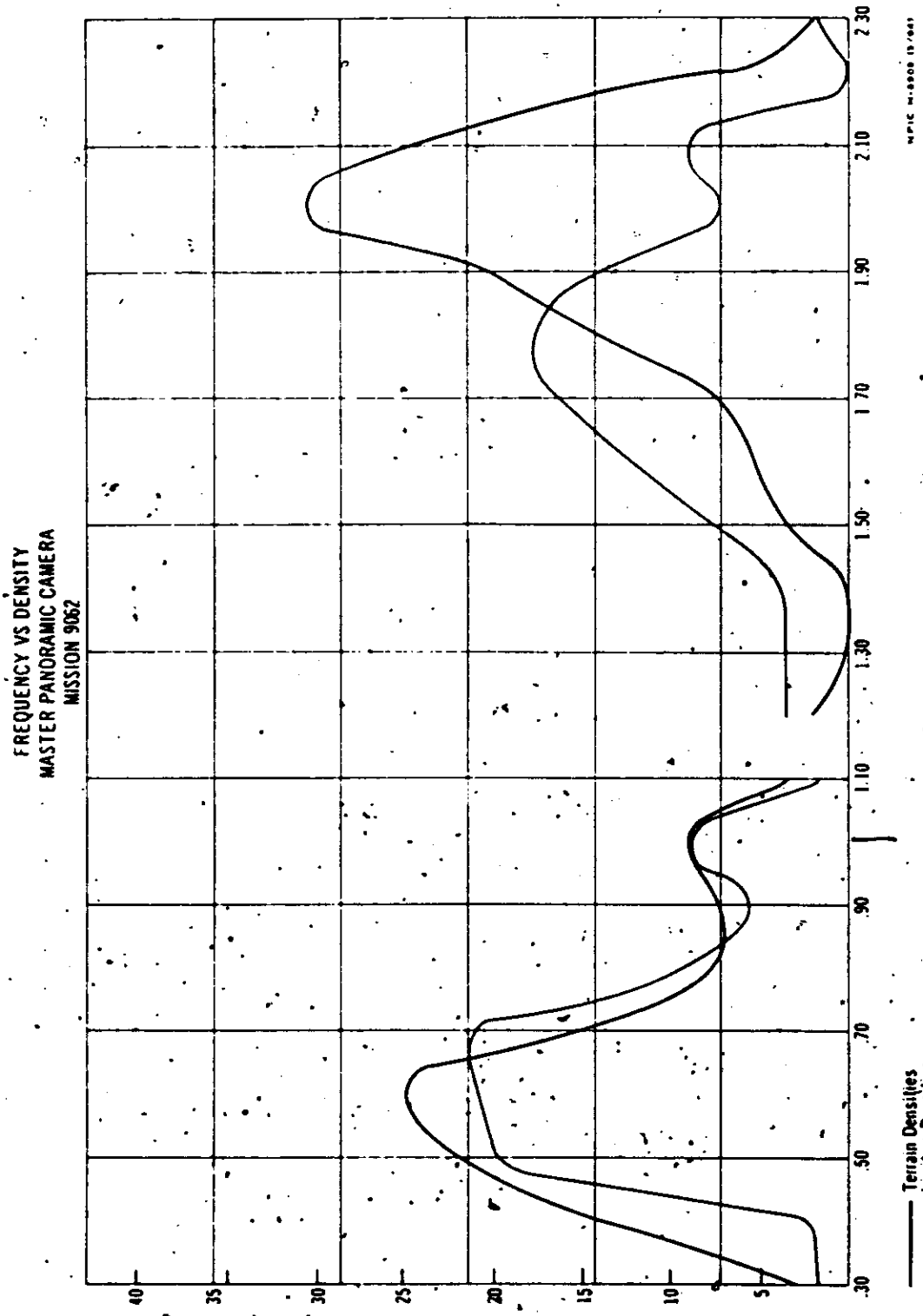
Terrain	
D-Max Range	0.42-1.40
D-Min Range	0.09-0.77
Average D-Max	0.87
Average D-Min	0.25

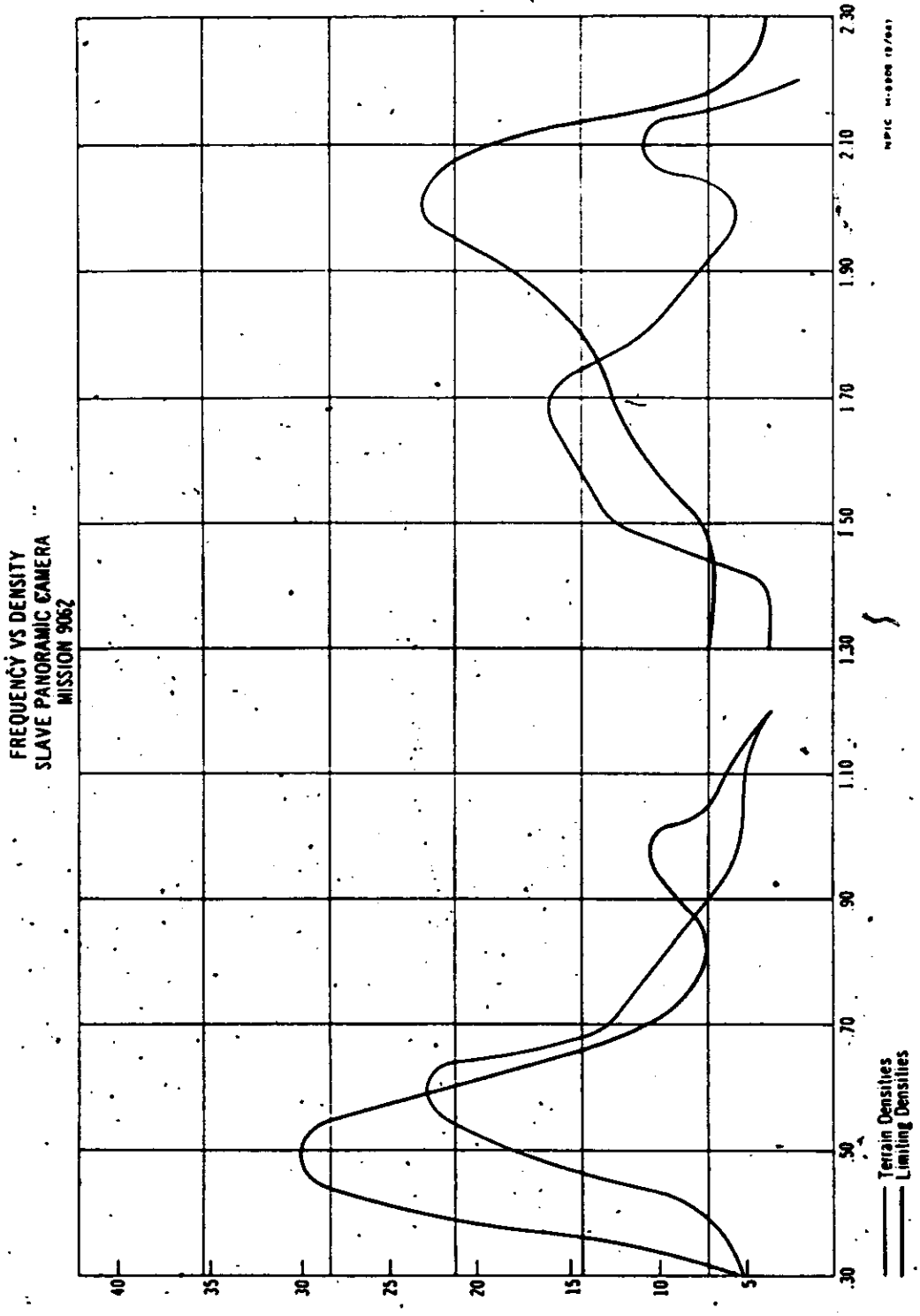
Limiting	
D-Max Range	0.50-1.72
D-Min Range	0.09-1.27
Average D-Max	0.98
Average D-Min	0.24

Gross Fog Range	0.06-0.11
Average Gross Fog	0.08

[redacted]

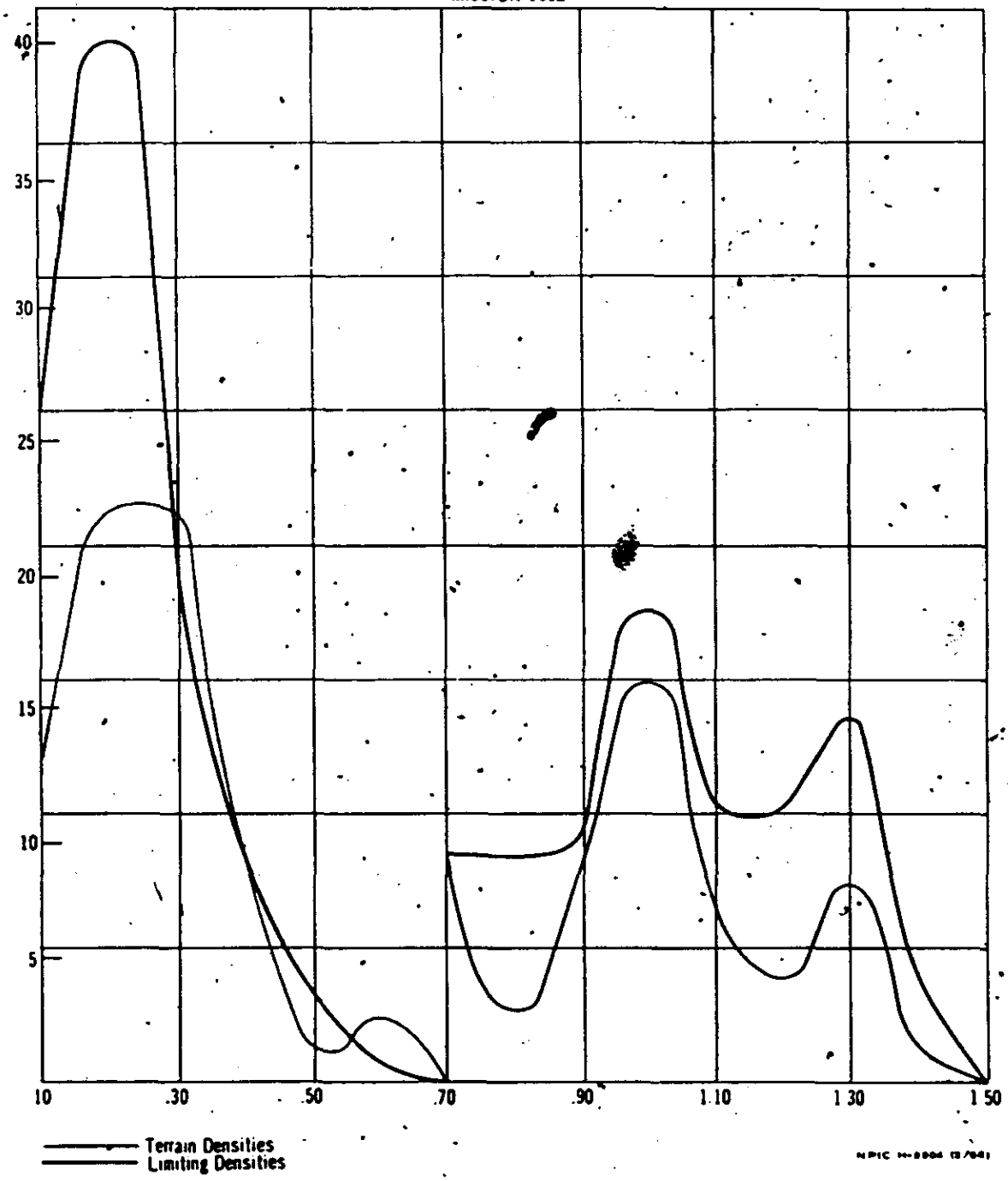
APPENDIX D. DENSITY CHARTS



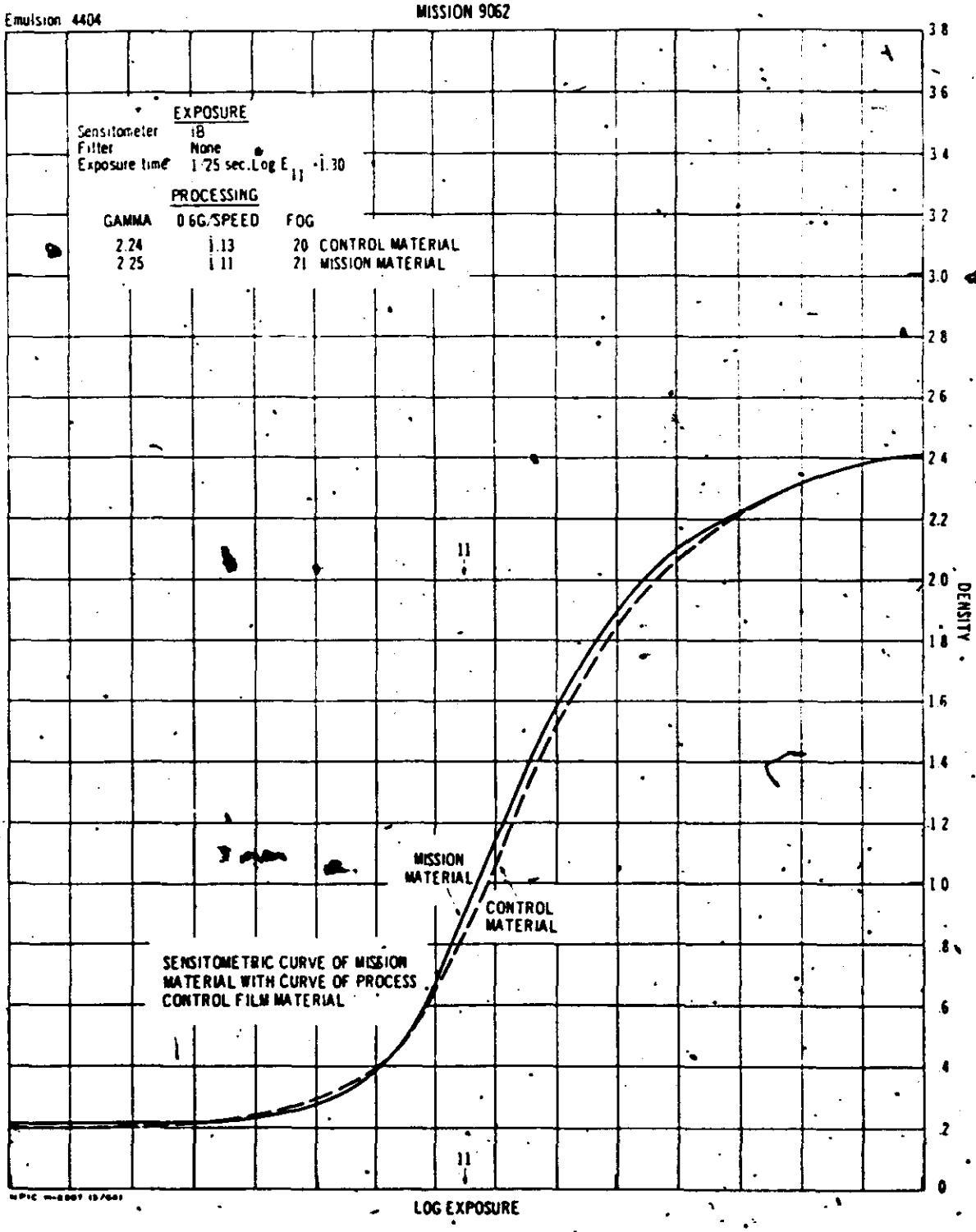

FREQUENCY VS DENSITY
SLAVE PANORAMIC CAMERA
MISSION 9062
Terrain Densities
Limiting Densities
.30
.50
.70
.90
1.10
1.30
1.50
1.70
1.90
2.10
2.30
40
35
30
25
20
15
10
5

[redacted]

FREQUENCY VS DENSITY
TERRAIN INDEX CAMERA
MISSION 9062



PANORAMIC CAMERA
MISSION 9062



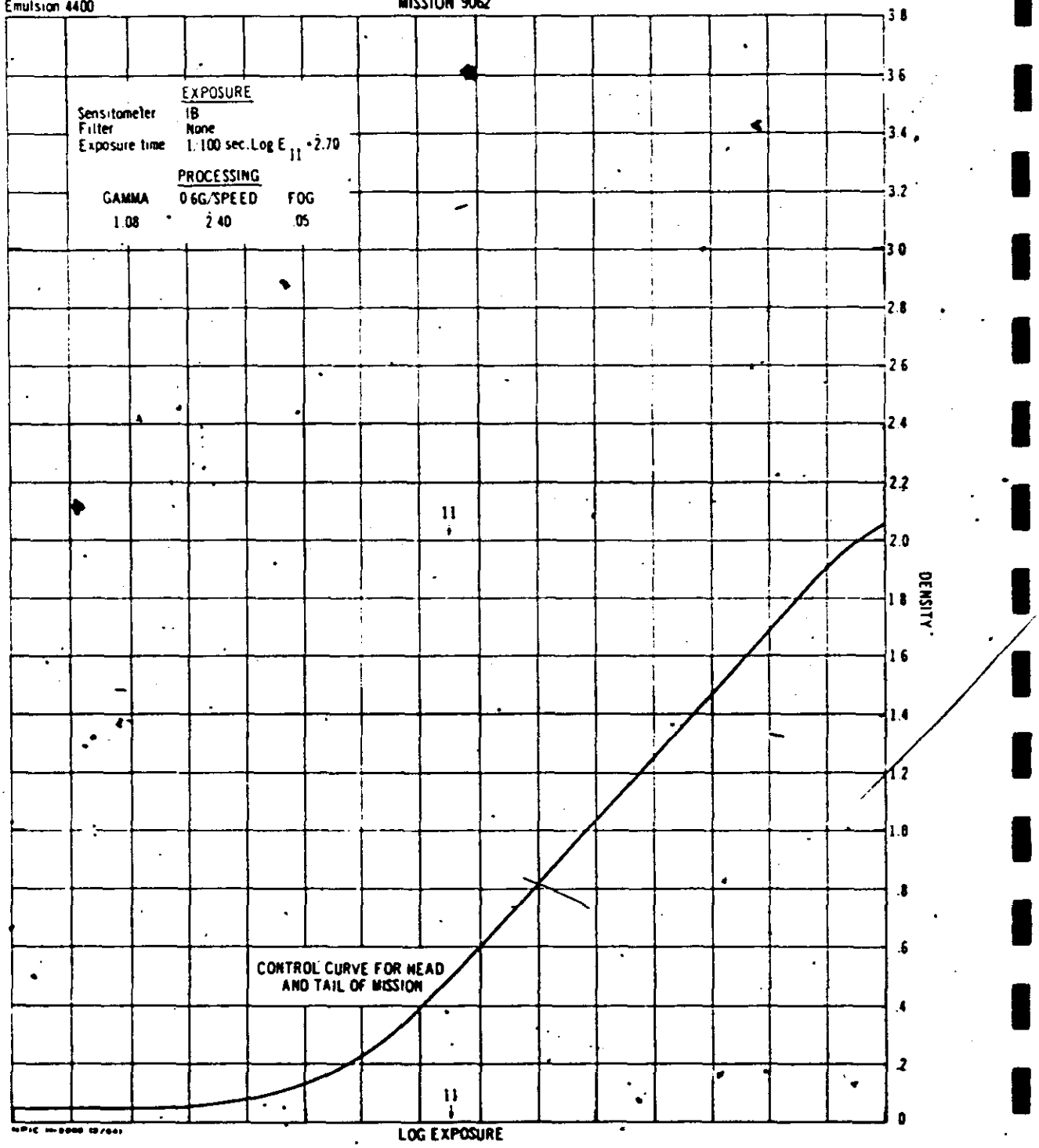
TERRAIN INDEX CAMERA
MISSION 9062

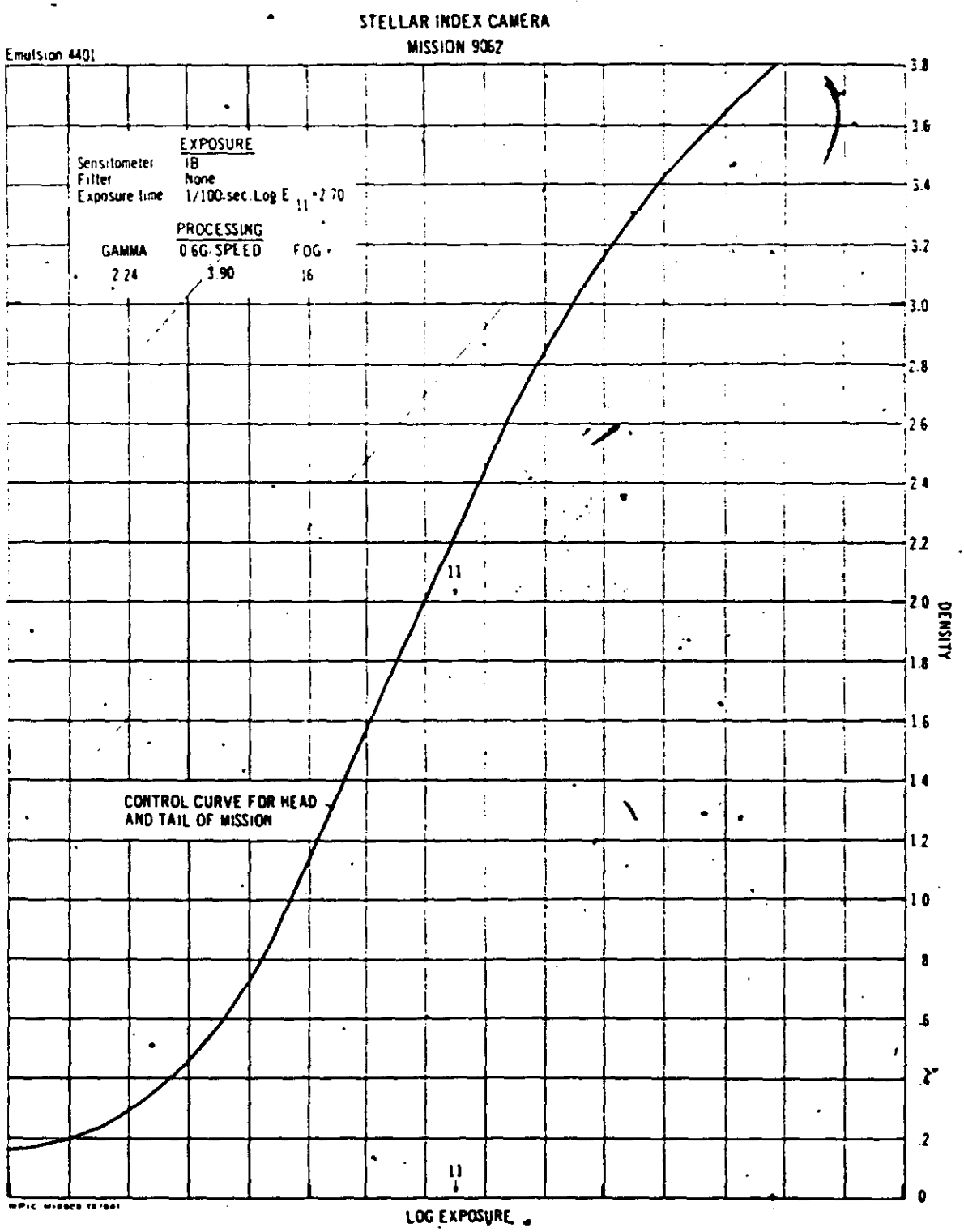
Emulsion 4400

EXPOSURE
Sensitometer IB
Filter None
Exposure time 1/100 sec. Log E_{11} +2.70

PROCESSING

GAMMA	0.6G/SPEED	FOG
1.08	2.40	.05




STELLAR INDEX CAMERA
MISSION 9062
Emulsion 4401
EXPOSURE
Sensitometer IB
Filter None
Exposure time 1/100-sec. Log E 11 = 2.70
PROCESSING
GAMMA 2.24
DEVELOPMENT SPEED 3.90
FOG .16
CONTROL CURVE FOR HEAD AND TAIL OF MISSION
11
11
DENSITY
LOG EXPOSURE
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
0

[redacted]

APPENDIX E. MISSION COVERAGE STATISTICS

1. Plottable Coverage: The following is a summary of square nautical miles of plottable coverage for this mission. The figure is the sum of both master and slave photography, and excludes coverage which is entirely over water or completely cloud covered.

Algeria	105,140
China	435,161
Denmark	17,700
Egypt	61,320
Iran	16,104
Japan	22,066
Mexico	40,936
Mongolia	106,354
Morocco	1,260
Norway	2,596
Poland	104,564
Rumania	29,400
Sweden	62,307
Tuamotu Archipelago (France)	616
United States	362,965
U.S.S.R.	4,997,765
TOTAL	6,370,609

2. Cloud Cover: This statistical analysis of cloud cover on Mission 9062 is based on cloud cover per quarter segment of each frame of photography. The data is obtained by analysts trained in estimating cloud cover by designated categories.

Five cloud categories have been formulated for use on this photography. These categories allow for the wide latitude of cloud-cover conditions commonly found on a frame of this photography.

In Table 1, a mean cloud percentage value has been calculated for each category for use in determining a combined cloud-cover percentage for all operational passes of the mission.

The occurrences of each cloud category within an operational pass is expressed as a percentage and appears in Table 2. Each percentage is a ratio of the number of occurrences of a given cloud-cover category to the total number of cloud observations in a photographic pass. For example: if the number of category 1 occurrences in a given pass is 200 out of a total of 1000 (250 frames x 4 quarters), all categories combined, then 20 percent of the pass would be as in category 1.

A cloud-cover percentage per pass is included in the last column of Table 2 under "cloud-cover percentage per pass." This value is determined by the summation of the products category percentage in each pass and the mean cloud percentage for that category as established in Table 1. For example: it is determined that the following percentages exist in a given pass:

20 percent	Category 1
15 percent	Category 2
30 percent	Category 3
25 percent	Category 4
10 percent	Category 5

Then, by using the mean cloud percentage established in Table 1, the following computations are made:

0.20	x 5.0	=	1.00	percent
0.15	x 17.5	=	2.63	percent
0.30	x 38.0	=	11.40	percent
0.25	x 75.0	=	18.75	percent
0.10	x 100.0	=	10.00	percent
TOTAL			43.78	percent

Hence, 43.8 percent of this pass is cloud covered.

Table 1. Cloud-Cover Categories

Category Number	Percent of Cloud-Cover	Description	Mean Cloud Percentage
1	Less than 10	Clear	5
2	10 - 25	Small Scattered Clouds	17.5
3	26 - 50	Large Scattered Clouds	38
4	51 - 99	Broken or Connected Clouds	75
5	100	Complete overcast	100

[redacted]

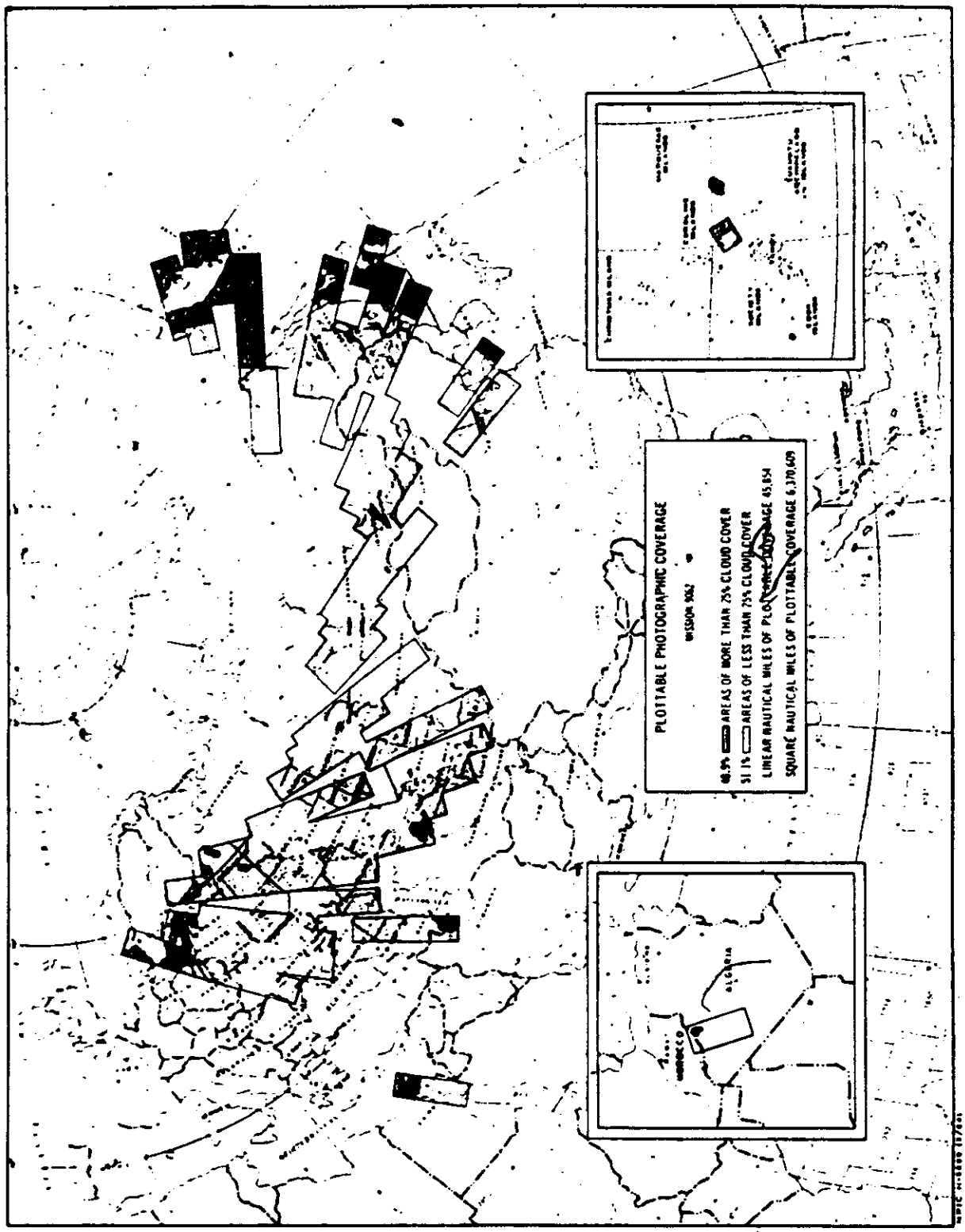

PLOTTABLE PHOTOGRAPHIC COVERAGE
MISSION 9062
AREAS OF MORE THAN 25% CLOUD COVER
AREAS OF LESS THAN 25% CLOUD COVER
LINEAR NAUTICAL MILES OF PLOTTABLE COVERAGE 45,854
SQUARE NAUTICAL MILES OF PLOTTABLE COVERAGE 6,370,609

Table 2. Percentage of cloud-cover categories for operational passes from the slave (AFT) panoramic photography.

Pass Number	1	2	3	4	5	Cloud-Cover Percentage Per Pass	Pass Number	1	2	3	4	5	Cloud-Cover Percentage Per Pass
3D	6.8	4.2	9.6	61.0	15.2	66.7	39D	37.3	24.4	5.7	29.7	2.9	33.5
4D	49.2	9.3	24.7	15.7	1.1	26.4	40D	21.6	6.3	6.6	34.7	26.6	59.8
5D	46.4	6.1	17.0	18.7	12.1	36.0	50D	38.9	3.9	17.2	39.4	0.6	39.3
7D	48.5	8.3	6.7	13.5	22.7	39.2	52D	94.0	4.4	0.8	0.8	0.0	6.4
8D	28.6	3.0	6.4	16.9	44.9	62.0	53D	41.7	13.0	15.7	26.6	2.6	33.2
18D	19.5	16.6	13.9	34.2	15.3	50.2	54D	34.6	3.9	18.6	42.7	0.0	41.6
19D	75.0	22.4	2.6	0.0	0.0	8.7	55D	2.1	2.9	1.9	55.6	37.5	80.5
20D	64.6	13.8	8.7	11.6	1.1	16.9	56D	69.1	6.4	5.2	16.1	1.2	20.2
21D	58.1	9.3	4.6	12.5	15.5	31.2	66D	0.6	6.2	14.2	79.0	0.0	65.6
22D	64.1	7.7	4.3	9.0	14.9	27.6	67D	14.1	26.6	36.2	22.9	0.0	36.3
23D	0.0	5.9	9.3	30.1	54.7	81.8	65D	96.4	1.2	0.4	0.0	0.0	5.3
24D	25.2	10.4	20.9	25.7	17.8	46.1	69D	56.5	23.9	5.5	9.1	0.0	17.1
25D	100.0	0.0	0.0	0.0	0.0	5.0	70D	26.6	4.1	4.1	50.5	12.4	54.2
34D	17.6	30.8	17.6	34.0	0.0	38.5	72D	32.4	1.6	5.9	21.2	36.7	56.6
36D	37.6	3.7	2.4	43.6	12.5	48.6	71D	14.4	9.2	5.2	57.2	14.0	61.2
37D	85.4	1.3	1.9	7.7	3.7	14.7	74D	100.0	0.0	0.0	0.0	0.0	5.0
38D	44.6	3.1	6.2	23.6	20.3	44.1		41.9*	9.2*	9.3*	26.2*	13.4*	40.3**

*Average percentage by category for mission.
**Over-all mission cloud-cover percentage.