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TECHNICAL PUBLICATION

PHOTOGRAPHIC EVALUATION REPORT MISSION 1035-1 20-25 SEPTEMBER 1966 MISSION 1035-2 25-30 SEPTEMBER 1966

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MARCH 1967

COPY [redacted]

101 PAGES

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TECHNICAL PUBLICATION

PHOTOGRAPHIC EVALUATION REPORT
MISSION 1035-1
20-25 SEPTEMBER 1966
MISSION 1035-2
25-30 SEPTEMBER 1966

MARCH 1967

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

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SYNOPSIS

Mission 1035 was launched on 20 September 1966 at 2114Z. Recovery of both re-entry vehicles was achieved by air catch, the first on 25 September 1966 at 0019Z and the second at 2341Z on 30 September 1966. The mission accomplished 75 operational, 16 domestic, and 2 engineering passes.

Mission 1035 is the first "J" system flown with the photogrammetric configuration (Pan Geometry Modification). See Appendix "C" for the Pan Geometry operation.

All cameras operated satisfactorily throughout the mission. No major anomalies were noted. Fog patterns due to light leaks are less dense and less numerous than on recent missions of this system. It is suspected that improved main camera seals are the major factor.

The image quality of both main cameras was consistently good and equal to the best of recent missions. Unusually good atmospheric conditions are considered to be the primary reason for the high quality. Also, a yaw programmer was used for the first time in over a year. The improved image motion compensation is probably another factor contributing to the quality of the mission. Both parts of Mission 1035 were assigned an MTP of 85.

A new stellar/index control arrangement which switches control from the master to the slave when only the latter is operating was initiated on this mission. This new control arrangement will be installed on all future "J" systems.

The stellar/index cameras functioned properly. No major degradations were noted on either record. The stellar camera produced point type images, and no difficulty was encountered in the reduction process. The quality of the index camera material is equivalent to the best received from this system to date.

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GENERAL FLIGHT DATA

Launch and Recovery Dates

Launch Date, Mission 1035	20 September 1966/2115Z
Recovery Date, Mission 1035-1	25 September 1966/0019Z
Reactivation Date, Mission 1035-2	25 September 1966
Recovery Date, Mission 1035-2	30 September 1966/2341Z

Orbital Parameters (Actual)

	Mission 1035-1 (Rev 41)	Mission 1035-2 (Rev 120)
Period	90.755 min	90.601 min
Perigee	98.748 nm	100.718 nm
Apogee	[illegible] nm	238.820 nm
Eccentricity	0.01974	0.01915
Inclination Angle	85.055°	85.054°
Perigee Latitude	29.100°N	48.780°N

Photographic Operations

	Mission 1035-1	Mission 1035-2
Operational Passes	35	40
Domestic Passes	5	10
Domestic/Operational Passes	0	0
Engineering Passes	1	1
Recovery Orbits	81	160

[redacted]

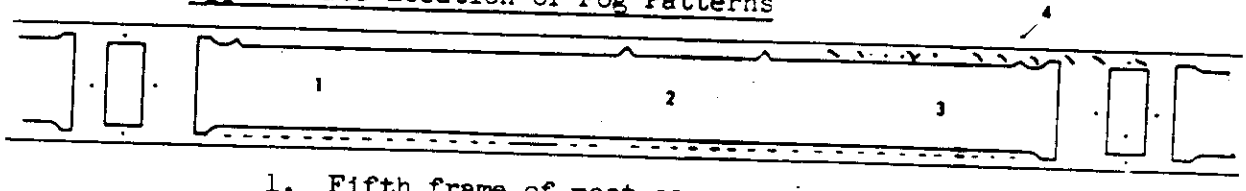
PART I. CAMERA OPERATIONS

1. Forward-Looking (Master) Panoramic Camera No 188

The forward-looking panoramic camera functioned properly throughout the mission. The photography, however, was affected by the following degradations.

a. Fog patterns, due to light leaks and long camera sit periods, are less dense and less numerous than on recent missions of this system. The improved main camera seals could be a contributing factor. The location of these fogged areas is illustrated below.

Approximate Location of Fog Patterns



1. Fifth frame of most camera operations.

2. Second to last frame of most camera operations. Associated with camera sit periods.

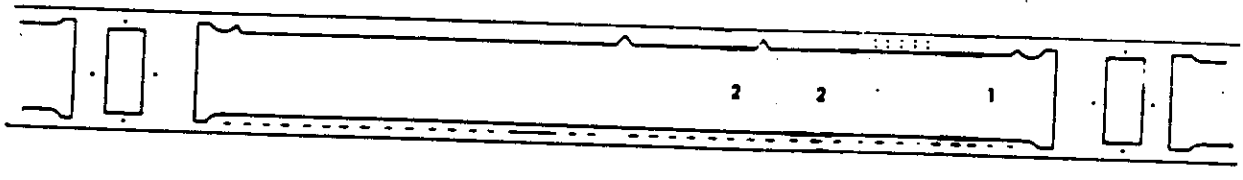
3. Fifth frame of a few camera operations. Less dense than number 1.

4. Crescent-shaped fog appears intermittently along the camera number edge adjacent to both the panoramic and horizon camera formats. These fog patterns dissipate approximately half way through Mission 1035-1.

2. Aft-Looking (Slave) Panoramic Camera No 189

a. The aft-looking panoramic camera functioned properly throughout the mission. Degradation to the photography due to light leaks is minor. The location of these patterns is illustrated below.

Approximate Location of Fog Patterns



1. Second to last frame of some camera operations. Density varies with "camera off" duration.

2. Third to last frame of a few camera operations. Density varies with "camera off" duration.

3. Forward-Looking (Master) Horizon Cameras

a. The port horizon camera operated satisfactorily throughout the mission.

b. The starboard horizon camera functioned properly throughout the mission. Although the densities of the starboard horizons appeared to be greater than those of the port, they are in a normal and acceptable range.

4. Aft-Looking (Slave) Horizon Cameras

a. The port horizon camera operated satisfactorily throughout the mission.

b. The starboard horizon camera functioned properly throughout the mission. The same density difference reported for the horizon camera exposures of the master camera applies to the horizon camera exposures of the slave camera.

5. Stellar Camera No D95/112/113 (Mission 1035-1)

The stellar camera operated satisfactorily throughout the mission, producing 435 frames. Flare degradations are minimal and stellar images can be detected in the flared areas. A small particle of foreign matter is recorded in the same area throughout. The particle is out of focus, indicating that it adhered to the surfaces of the reseau plate opposite the film. A fine plus density line, between the correlation lamp and the stellar format, is present on the last 42 frames. At least 15 stellar images can be detected on each frame. Plus density streaks, previously referred to as "jettisoned fuel particles," are present intermittently throughout the mission.

6. Stellar Camera No D96/104/116 (Mission 1035-2)

The stellar camera functioned properly throughout the mission, producing 475 frames. Earth flare was minor and stellar images could be detected within the flared areas. A particle of foreign matter is recorded in the same area throughout. Two areas of crescent-shaped flare are present around the format perimeters. They extend approximately 0.10 inch into the format. Although these areas are of high density, they do not affect the stellar field. The last 13 frames contain the usual

abrasions, gouges, emulsion cracking, and fog patterns associated with film supply depletion. A fine plus density line, between the correlation lamp and the stellar format, runs parallel to the film edges for the last 76 frames of the mission. At least 15 stellar images can be detected on each exposure.

7. Index Camera No D95/112/113 (Mission 1035-1)

The index camera operated satisfactorily throughout the mission. No degradations were noted. The image quality is good and comparable to the best received to date from this system.

8. Index Camera No D96/104/116 (Mission 1035-2)

The index camera functioned properly throughout the mission. Small comet-shaped static discharges were present in the border along the reseau number edge intermittently throughout the mission. The image quality is comparable to that received from Mission 1035-1.

9. Associated Equipment

This equipment records part of the information required for correlation and mensuration of the panoramic cameras.

a. A streaked timing pulse was observed on the slave camera material for the first time. This condition is the normal result of a new stellar index control arrangement which switches control from the master to slave camera when only the latter is operating. This new control arrangement will be installed on all future "J" systems.

b. The camera number and binary index lamp adjacent to the camera number are bloomed but readable on both cameras.

c. Mission 1035 is the first "J" system flown with the photogrammetric configuration (Pan Geometry Modification). This modification consists of 3 nodal traces, appearing in the image format as lines of plus density, and 73 holey rail dots appearing in the borders, one centimeter apart on both film edges of both main cameras. See Appendix "C" for the Pan Geometry operation.

[redacted]

FIGURE 1. EXPLANATION OF PHOTOGRAPHIC DATA

The data pertaining to photographs contained in this publication are defined as follows:

PASS: A pass is the operational portion of an orbital revolution. A suffix D indicates that the photography was acquired during the descending portion, a suffix A indicates that the photography was acquired during the ascending portion, and a suffix M indicates that the photography was acquired during a pass that includes both ascending and descending portions. An additional suffix E indicates that the pass was an engineering operation or that a portion of the pass has been edited.

DATE OF PHOTOGRAPHY: The date of photography indicates the day, month, and year (GMT) that the photography was acquired.

UNIVERSAL GRID COORDINATES: These coordinates are included to locate the illustrated photography within the panoramic format.

ENLARGEMENT FACTOR: The enlargement factor is included to indicate the number of diameters the original material has been enlarged in the photographic illustration.

GEOGRAPHIC COORDINATES: These coordinates are included to indicate the latitude and longitude of the panoramic format.

ALTITUDE: This measurement is the vertical distance from the vehicle to the Hough Ellipsoid at the time of the acquisition of the photography.

PITCH: Rotation of the camera about its transverse axis. Using appropriate aeronautical terminology, positive readings indicate nose-up attitude and negative readings indicate nose-down attitude.

ROLL: Rotation of the camera about its longitudinal axis. Using appropriate aeronautical terminology, positive readings indicate left wing-up attitude and negative readings indicate right wing-up attitude.

YAW: Rotation of the camera about its vertical axis. Positive readings indicate counterclockwise rotation when viewing the ground nadir from the vehicle-mounted camera in-flight.

LOCAL SUN TIME: This time is included to present to the viewer a realistic time of acquisition of the photography illustrated.

SOLAR ELEVATION: The solar elevation is the angular elevation of the sun above a plane tangent to the surface of the earth at the center of the panoramic format. A negative solar elevation indicates that the sun is below the plane.

SOLAR AZIMUTH: The solar azimuth is the angular measurement of the rays of the sun measured from true north in a clockwise direction.

EXPOSURE: The exposure is the duration of the photographic exposure expressed in a fraction of a second and is computed from the scan rate and slit width.

VEHICLE AZIMUTH: The vehicle azimuth is the angle of ground track with respect to geodetic coordinates.

PROCESSING LEVEL: The processing level is pertinent to the referenced frame and is extracted from the contractor's processing report.

FIGURE 2. FOREIGN MATTER IN STELLAR FORMATS

Present on stellar exposures of Missions 1035-1 and 1035-2. A small foreign particle has adhered to the surfaces of the reseau plate opposite the film in each stellar camera, and thus the particle appears somewhat out of focus. It remains in the same position for the entire record of both missions.

[redacted]

[redacted]

Mission Number	1035-1
Stellar Frame Numbers	210, 211, 212
Correlates with Fwd Camera Frames	80, 87, 94
Pass	37D
Date of Photography	23 Sep 66
Enlargement Factor	2.5X
Exposure Time	1 sec

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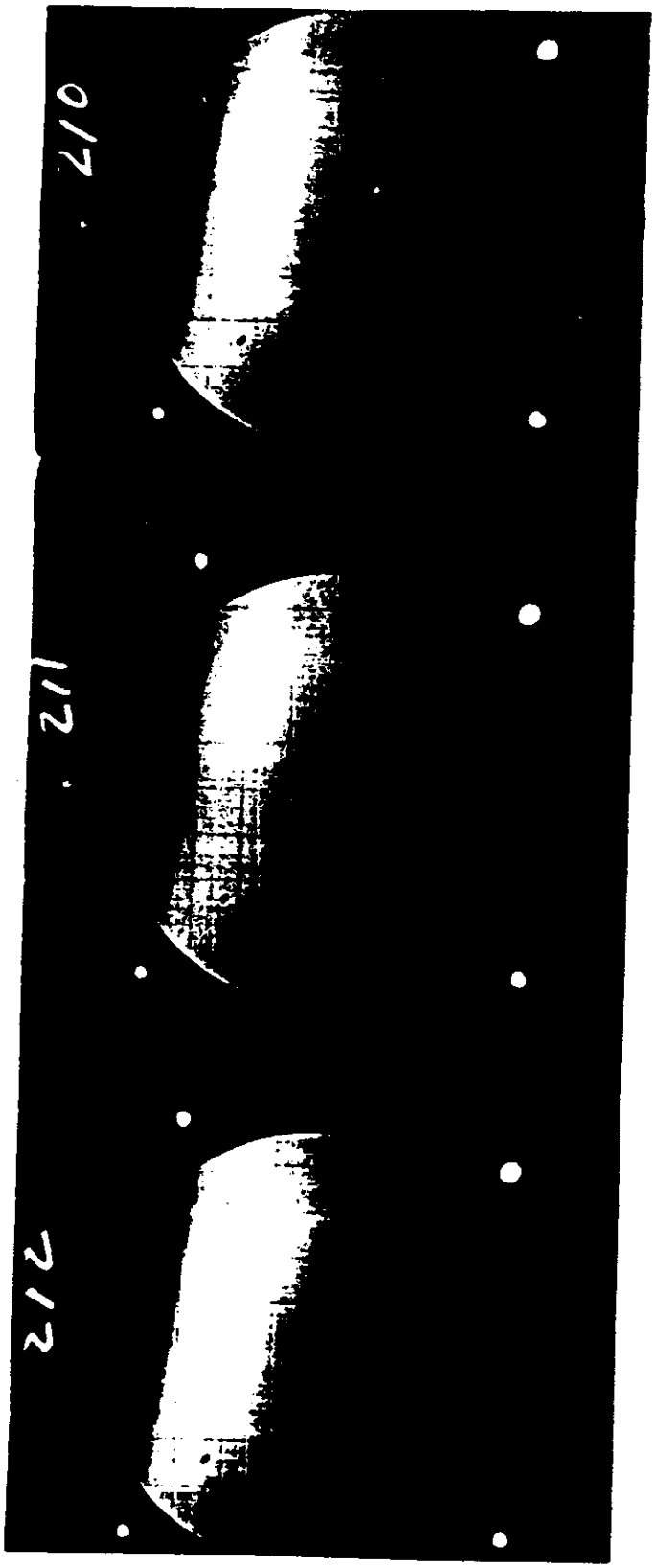

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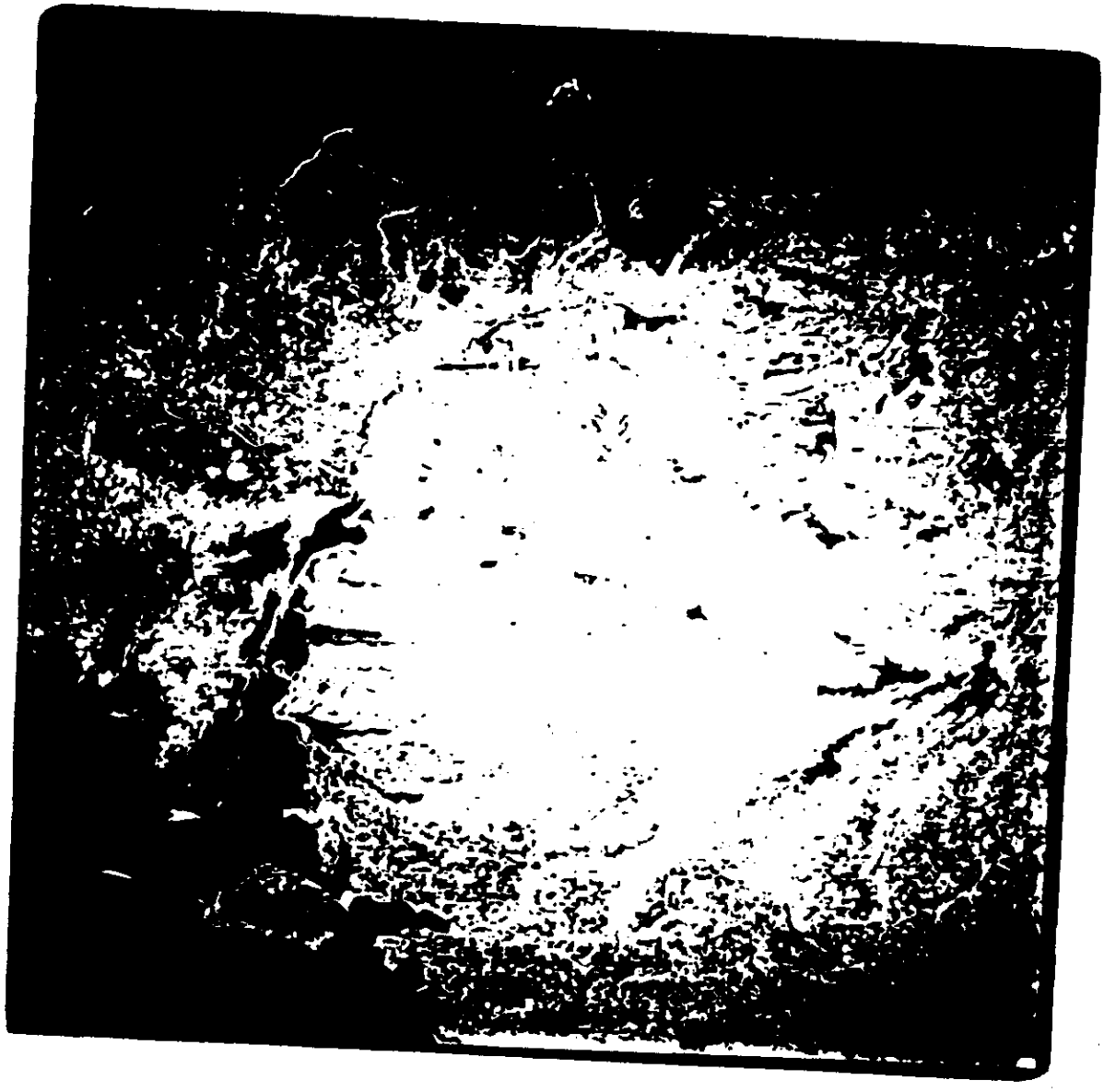
FIGURE 3. INDEX PHOTOGRAPHY, GOOD QUALITY

This photograph is indicative of the good quality photography produced by the index camera for Missions 1035-1 and 1035-2.

[redacted]

Mission Number	1035-1
Index Frame Number	152
Correlates with Fwd Camera Frame	33
Pass	25D
Date of Photography	22 Sep 66
Enlargement Factor	2.5X
Exposure	1/500 sec

[redacted]



PART H. FILM

1. Film Processing

This section provides an evaluation of processing, density, contrast, and physical conditions of the original negatives.

a. The master and slave material from Missions 1035-1 and 1035-2 were processed in the Trenton processor. Infrared densitometry was employed to determine the optimum level of development for all portions of both panoramic records. The following information indicates the percentage of film processed at each level of development and the number of processing level changes:

	Mission 1035-1		Mission 1035-2	
Development Level	Master	Slave	Master	Slave
Primary	0%	1%	4%	1%
Intermediate	11%	14%	18%	20%
Full	89%	85%	78%	79%
Process Changes	16	23	35	36

b. The filter/slit width combination for each panoramic camera provided adequate exposure except where low solar elevations prevailed. A Wratten 23A filter combined with a 0.225 inch slit width was used on the master panoramic camera and a Wratten 21 filter combined with a 0.175 inch slit width was used on the slave panoramic camera. Most of the photography from both panoramic cameras was of medium density and contrast.

c. The stellar record from Missions 1035-1 and 1035-2 was processed with a Yardleigh processor. A modified film path was utilized to provide single step, viscous development. The exposure of the stellar records was adequate to detect stellar images.

d. The index records for both parts of Mission 1035 were processed with the Drape processor. The exposure of the index records was generally adequate. However, where low solar elevation prevailed the exposure was less than optimum. In general, the photography from both index cameras was of medium contrast and density.

2. Film Footage (Processed)

Camera	Mission 1035-1	Mission 1035-2
Master (Forward-Looking) Panoramic No 188	7,876	8,139
Slave (Aft-Looking) Panoramic No 189	7,939	8,083
Stellar No D95/113	60	NA
Index No D95/112	112	NA
Stellar No D96/116	NA	60
Index No D96/104	NA	125

3. Frame Totals (Titled)

Camera	Mission 1035-1	Mission 1035-2
Master (Forward-Looking) Panoramic No 188	2,841	3,079
Slave (Aft-Looking) Panoramic No 189	2,861	3,058
Stellar No D95/113	435	NA
Index No D95/112	435	NA
Stellar No D96/116	NA	475
Index No D96/104	NA	475

4. Physical Film Degradations

The degradations to the original negative of this mission are similar to those noted on previous missions. Rail scratches are present along both edges of the film throughout. Minus density streaks appear intermittently on the material from both main cameras. These streaks appear along the scan direction and indicate a bias in the IMC direction. The cause appears to be a loose particle of foreign matter randomly in contact with the field flattener. Dendritic fog resulting from static discharges is present intermittently along both film edges of both main cameras. This fog extends into the format on occasions but generally is confined to the borders. The camera number edge of both main cameras is ragged from the take up end of each frame to the second shrinkage marker. This was caused by an emulsion buildup on the film guide rails. Beginning with "J-37" (Mission 1037), all "J" systems will have polished rails. This should reduce the amount of emulsion removed from the film. A minus density streak on the master camera material appears randomly throughout the mission. This streak is different than the one described earlier, in that it does not extend the full length of the format but extends across unexposed areas between formats as well as through the horizon formats. While this anomaly could result from a manufacturing defect, it is probably processing induced. In Mission 1035-2, the last 2 feet of the master material and the last 8 feet of the slave material were

contaminated by a small amount of electrolite (potassium hydroxide) which spilled from the recovery battery at the time of air recovery. A new vent device has been designed to prevent recurrence of this condition. In general, the photographic record of Mission 1035 is considered to have fewer significant anomalies than any "J" mission to date.

PART III. IMAGE QUALITY

1. Definition of Photographic Interpretation (PI) Suitability

PI suitability is an assessment of the information content of photographic reconnaissance material and its interpretability. A number of interrelated factors are involved, such as the quality of the photography, the extent of target coverage, scale, and weather limitations. However, the fundamental criteria for assigning a PI suitability rating may be reduced to (a) the scope of the photographic coverage and (b) the degree to which a photographic interpreter may extract useful and reliable information from the material.

PI suitability ratings are: Excellent, Good, Fair, Poor, and Unuseable. These ratings refer to the overall interpretive value of the photography obtained from a particular reconnaissance mission. Individual targets may also be assigned PI suitability ratings. The standards that determine assignment of the various ratings are:

Excellent: The photography is free of degradations by camera malfunctions or processing faults and weather conditions are favorable throughout. The imagery contains sharp, well-defined edges and corners with no unusual distortions. Contrast is optimum and shadow details, as well as details in the highlight areas, are readily detectable. Observation of small objects and a high order of mensuration are made possible by the consistently good quality of the photography.

Good: The photography is relatively free of degradations or limiting atmospheric conditions. Edges and corners are well defined. No unusual distortions are present. Detection and accurate mensuration of small objects are feasible, but to a lesser degree than in material rated as Excellent.

Fair: Degradation is present and the acuity of the photography is less than optimum. Edges and corners are not crisply defined, and there is loss of detail in shadow or highlight areas. Detection and identification of small objects are possible but accuracy of mensuration is limited by the fall-off in image quality and the less-than-optimum contrast.

Poor: Camera-induced degradations or weather limitations severely reduce the effectiveness of the photography. Definition of edges and corners are not well defined. Only gross terrain features and culture may be detected or identified and distortion of form may exist. Accurate mensuration of even large objects is doubtful.

Unuseable: Degradation of photography completely precludes detection, identification, and mensuration of cultural details.

2. PI Suitability, Missions 1035-1 and 1035-2

The PI suitability is good for the operational portions of Missions 1035-1 and 1035-2. A total of 173 targets was reported on during the preliminary readout. Fifty-nine of the 173 targets were given a poor quality rating. The poor quality ratings were generally the result of overcast weather conditions over the target area.

It should be noted that this report is of a preliminary nature and represents the initial scan results, accomplished in a short period of time. A more detailed study of the photography may produce additional information and alter portions of the preliminary report.

3. Definition of Mission Information Potential (MIP)

The MIP 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 missions. It is meant to be a measure of the camera's maximum capability for recording information, discounting adverse atmospheric conditions, minimum solar elevations, 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 to be the best in the mission, they do not indicate the overall success, average quality, or general interpretability of the photography.

Criteria for selection of the MIP frame:

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

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

c. Eliminate the first 10 frames and last frame of a pass because these may be affected by incorrect scan speed.

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

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

[redacted]

[redacted]

[redacted]

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

g. Select frames having near optimum solar elevation.

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

c. NIIRS, Missions 1035-1 and 1035-2

The NIIRS frame for Mission 1035-1 was selected from the slave camera material, frame 86, pass 63D. Coverage of the same area was provided by the master camera, frame 10, pass 63D. An NIIRS rating of 85 was assigned. The detail in both photographs is good. However, the detail in the slave camera material is slightly better primarily due to a greater amount of image transmission by the master camera optics. It is also noted that the slave camera had a narrower slit, providing a shorter exposure duration.

Aft frame 86, pass 15D was selected as the NIIRS frame for Mission 1035-2. Coverage of the same area was provided by the master camera, frame 80, pass 15D. An NIIRS rating of 85 was assigned.

The image quality of Missions 1035-1 and 1035-2 is consistently good and comparable to the best of any recent missions. A primary reason for the high quality is considered to be unusually good atmospheric conditions. Also, a yaw programmer was used for the first time in over a year. The improved image motion compensation is also a probable factor contributing to the quality of the mission.

FIGURE 4. MIP PHOTOGRAPHY, SLAVE CAMERA, MISSION 1035-1

FIGURE 5. PHOTOGRAPHY OF MIP AREA, MASTER CAMERA, MISSION 1035-1

The following photographs provide stereo coverage of the MIP area. The photography from both panoramic cameras is good. However, the slave camera (aft-looking) photography contains greater detail than the master camera photography.

[redacted]

	FIGURE 4	FIGURE 5
Camera	Aft	Fwd
Pass	63D	63D
Frame	10	10
Date of Photography	24 Sep 66	24 Sep 66
Universal Grid Coordinates	54.3 - 12.7	37.3 - 11.3
Enlargement Factor	20X	20X
Geographic Coordinates	33-56N 116-58W	33-56N 116-55W
Altitude	603,613'	604,374'
Camera Attitude		
Pitch	-15°04'	15°11'
Roll	0°34'	0°40'
Yaw	-1°41'	-1°40'
Local Sun Time	1256	1256
Solar Elevation	52°51'	52°51'
Solar Azimuth	154°	154°
Exposure	1/378 sec	1/294 sec
Vehicle Azimuth	176°59'	176°54'
Processing Level	Full	Full

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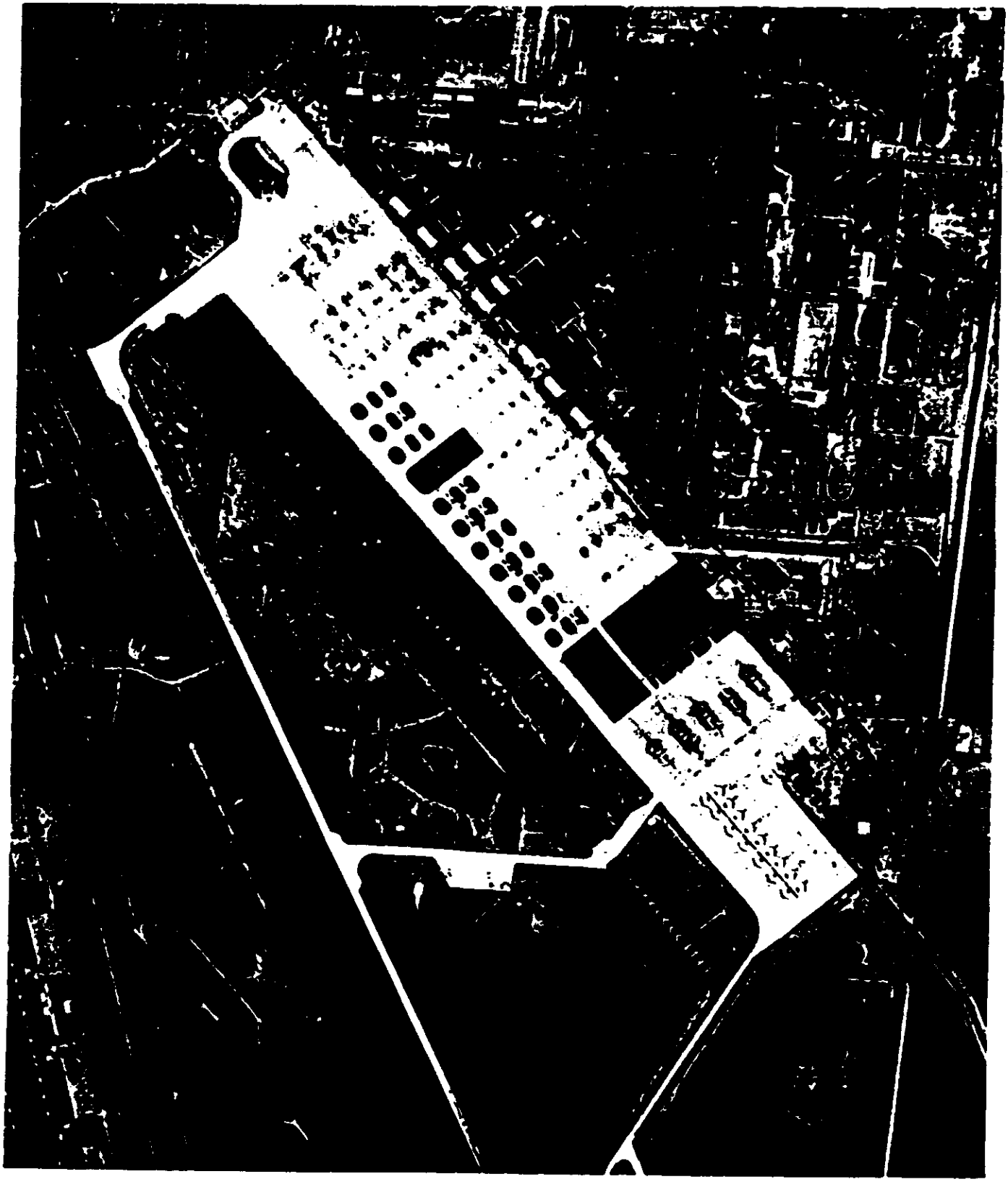

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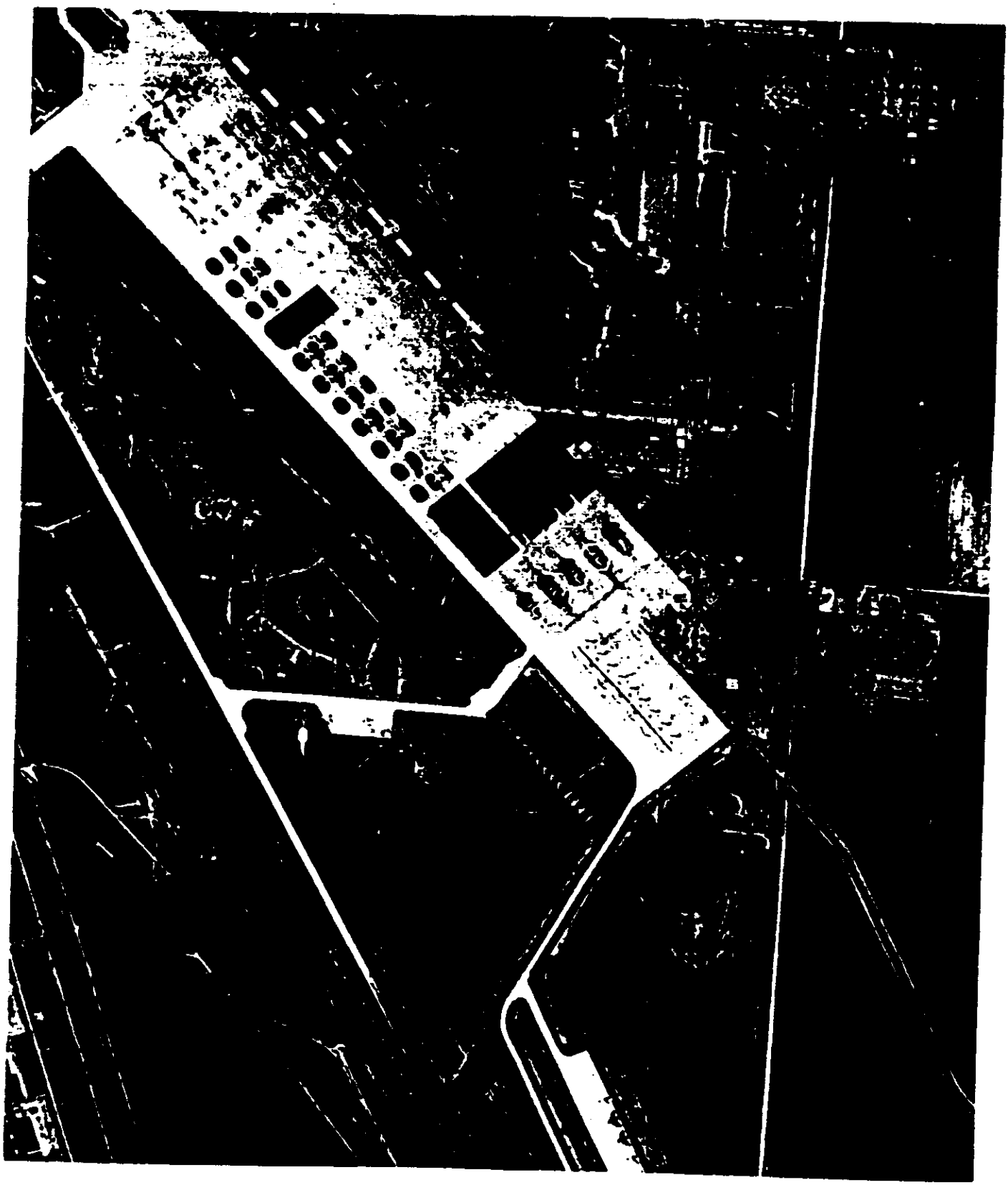

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FIGURE 6. MIP PHOTOGRAPHY, SLAVE CAMERA, MISSION 1035-2

FIGURE 7. PHOTOGRAPHY OF MIP AREA, MASTER CAMERA, MISSION 1035-2

The following photographs provide stereo coverage of the MIP area of Mission 1035-2.

[redacted]

[redacted]

	FIGURE 6	FIGURE 7
Camera	Aft	Fwd
Pass	151D	151D
Frame	86	86
Date of Photography	30 Sep 66	30 Sep 66
Universal Grid Coordinates	43.8 - 12.6	47.5 - 12.1
Enlargement Factor	20X	20X
Geographic Coordinates	45-01N 036-55E	45-00N 036-58E
Altitude	610,458'	610,135'
Camera Attitude		
Pitch	-15°01'	14°58'
Roll	-0°22'	-0°21'
Yaw	-01°7'	-1°10'
Local Sun Time	1156	1156
Solar Elevation	42°15'	42°16'
Solar Azimuth	180°	180°
Exposure	1/380 sec	1/296 sec
Vehicle Azimuth	175°33'	175°25'
Processing Level	Full	Full

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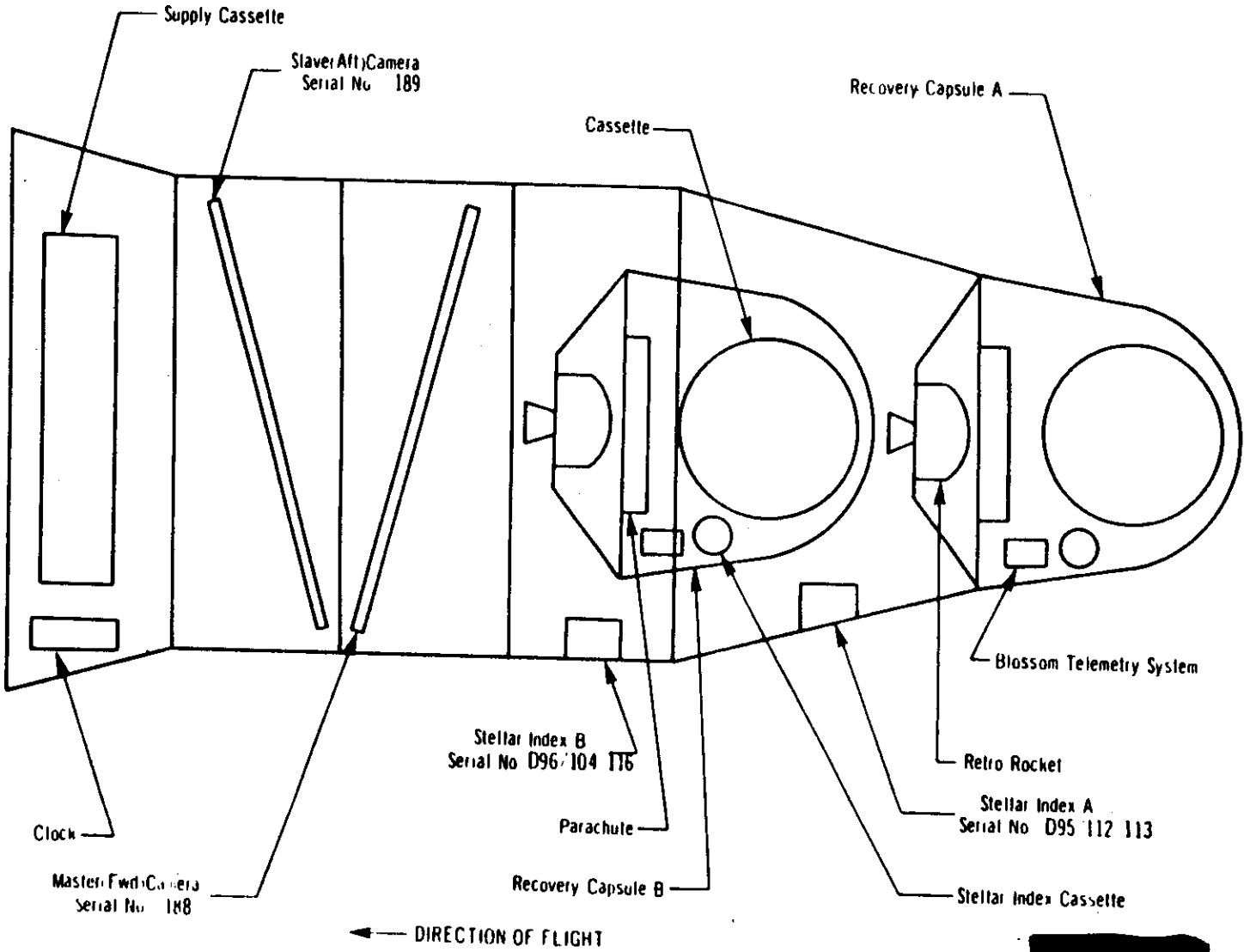
APPENDIX A. SYSTEM SPECIFICATIONS

1. Cameras	Fwd Camera	Fwd Take-Up Horizon	Fwd Supply Horizon	Aft Camera	Aft Take-Up Horizon	Aft Supply Horizon	Mission 103[illegible]-1		Mission 103[illegible]-2	
							Stellar	Index	Stellar	Index
Camera Number	[illegible]	NA	NA	[illegible]99	NA	NA	D9[illegible]/112/113		D96/104/11[illegible]	
Reseau Number	NA	NA	NA	NA	NA	NA	113	112	116	104
Lens Serial Number	20[illegible]243	12[illegible]93	12[illegible]	212243	[illegible]	12[illegible]	113[illegible]	H20[illegible]	10721	8[illegible]97
Slit Width (in)	0.0[illegible]	NA	NA	0.17[illegible]	NA	NA	NA	NA	NA	NA
Aperture	3.[illegible]	[illegible].0	[illegible].3	3.[illegible]	[illegible].3	[illegible].0	1.8	4.[illegible]	1.8	4.[illegible]
Exposure Time Sec	1/25[illegible] avg	1/1[illegible]	1/1[illegible]	1/34[illegible] avg	1/1[illegible]	1/1[illegible]	1 sec	.05 sec	1 sec	.05 sec
Filter (Written)	23A	25	25	21	25	25	None	21	None	21
Focal Length (mm)	60[illegible].632	5[illegible]	[illegible]4.[illegible]	60[illegible].632	[illegible]4.[illegible]	[illegible]4.[illegible]	83.54	38.3	84.02	38.32
Film Length (ft)	16,000	NA	NA	16,000	NA	NA	7%	13%	7%	13%
Splices	3	NA	NA	3	NA	NA	None	None	None	None
Emulsion	2[illegible]4-[illegible]4-5-6	2[illegible]4-[illegible]4-5-6	2[illegible]4-[illegible]4-5-6	2[illegible]4-[illegible]4-5-6	2[illegible]4-[illegible]4-5-6	2[illegible]4-[illegible]4-5-6	151-43-4-6	113-2-4-6	151-43-4-6	113-2-4-6
Film Type	3404	3404	3404	3404	3404	3404	3401	3403	3401	3403
Resolution Data (L/mm)										
Static										
High Contrast	26[illegible]	2[illegible]9	2[illegible]9	2[illegible]1	2[illegible]9	2[illegible]9	*	72 AWAP	*	71 AWAP
Low Contrast	147	*	*	143	*	*	*	*	*	*
Dynamic										
H High Contrast	141	*	*	171	*	*	*	*	*	*
H Low Contrast	121	*	*	11[illegible]	*	*	*	*	*	*
F High Contrast	15[illegible]	*	*	174	*	*	*	*	*	*
F Low Contrast	117	*	*	119	*	*	*	*	*	*

NA - Not Applicable.
* - Not Measured.

2. VEHICLE CONFIGURATION AND EQUIPMENT LAYOUT



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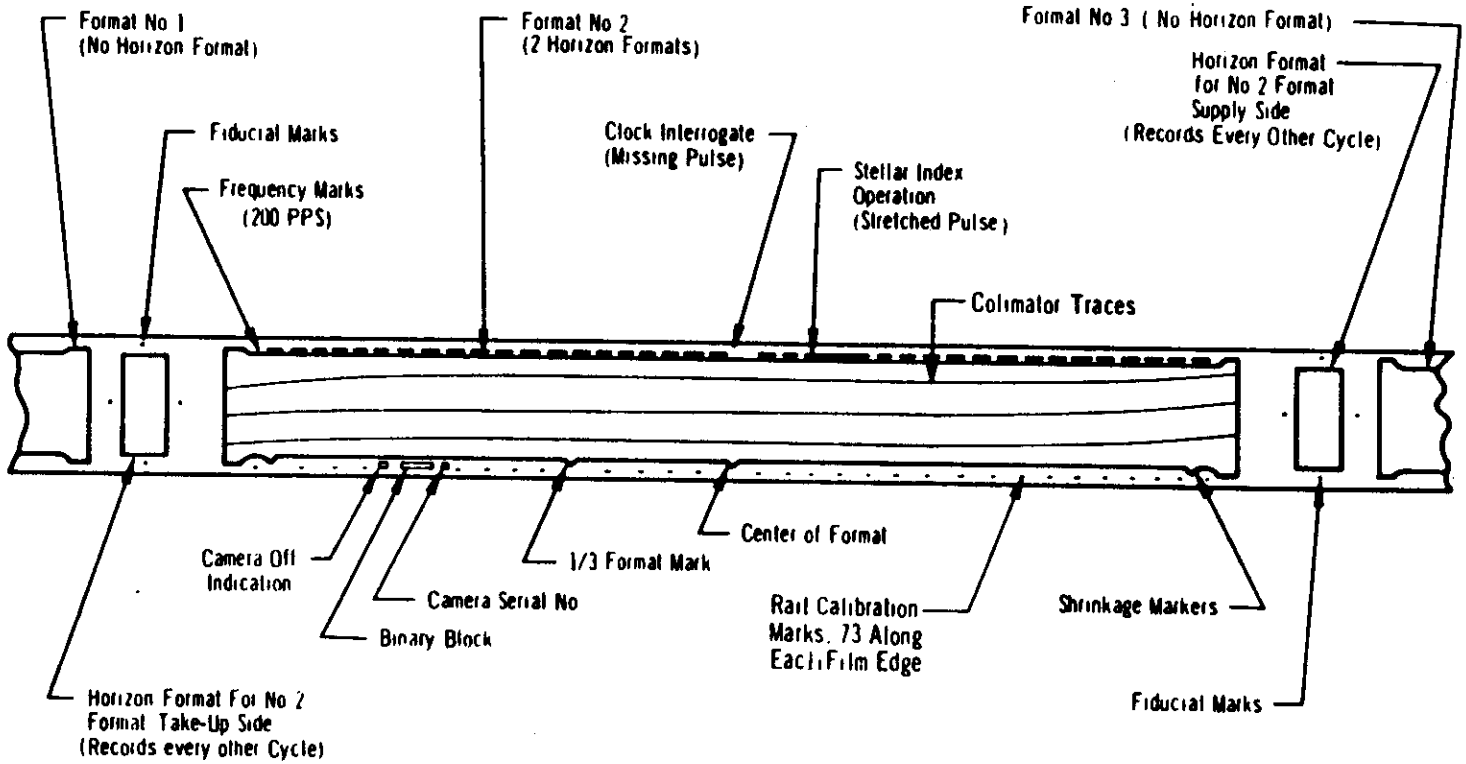
3. PANORAMIC FORMAT CONFIGURATION



Master(Fwd)Panoramic Camera No 188
Viewed With Negative Emulsion Down
Direction of Film Transport ←
Direction of Scan →
Direction of Vehicle Motion ↓

Slave(Aft)Panoramic Camera No 189
Viewed With Negative Emulsion Down
Direction of Film Transport ←
Direction of Scan →
Direction of Vehicle Motion ↑

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APPENDIX B. DENSITY READINGS

The following density readings were taken using a Macbeth Quantalog Densitometer, Model EP 1000, with an ET 20 attachment and a 0.5 mm aperture. All values include gross fog. The frames selected for this analysis are the first and last of each pass. The density values are presented here in the interest of further analysis.

STELLAR CAMERA MISSION 1035-1

Pass	Frame	Dmax	Dmin	Delta	Gross Fog
1D	1	0.92	0.22	0.70	0.19
	2	0.99	0.23	0.76	0.20
3D	3	0.90	0.22	0.68	0.20
	5	0.95	0.21	0.74	0.19
4D	6	0.72	0.22	0.50	0.19
	10	0.54	0.18	0.36	0.17
5D	11	0.82	0.19	0.63	0.17
	21	1.00	0.21	0.79	0.17
6D	22	0.82	0.20	0.62	0.19
	39	0.84	0.19	0.65	0.17
7D	40	0.62	0.19	0.43	0.18
	55	1.04	0.21	0.83	0.17
A08E	56	NR	NR	NR	0.17
	57	NR	NR	NR	0.18
8D	58	1.10	0.22	0.88	0.21
	64	0.79	0.20	0.59	0.17
9D	65	0.82	0.29	0.53	0.16
	88	0.96	0.22	0.74	0.17
14D	89	0.62	0.21	0.41	0.18
	90	0.64	0.18	0.46	0.17
16D	91	0.70	0.20	0.50	0.16
	93	0.72	0.18	0.54	0.15
19D	94	0.89	0.20	0.69	0.15
	96	0.84	0.21	0.63	0.16
21D	97	0.81	0.18	0.63	0.15
	117	1.21	0.23	0.98	0.17
22D	118	0.60	0.18	0.42	0.17
	134	0.94	0.20	0.74	0.17
23D	135	0.84	0.21	0.63	0.18
	146	0.98	0.21	0.77	0.18
25D	147	0.86	0.20	0.66	0.18
	160	0.93	0.21	0.72	0.17
27D	161	0.96	0.22	0.74	0.18
	165	0.98	0.22	0.76	0.18
30D	166	1.19	0.24	0.95	0.19
	170	1.04	0.24	0.80	0.20
31D	171	1.12	0.23	0.89	0.19
	176	0.83	0.21	0.62	0.18
32D	177	0.80	0.20	0.60	0.18
	179	0.74	0.20	0.54	0.17
36D	180	0.99	0.20	0.79	0.18
	186	0.77	0.29	0.48	0.18

Pass	Frame	Dmax	Dmin	Delta	Gross Fog
37D	199	0.74	0.19	0.55	0.17
	229	0.96	0.21	0.75	0.17
38D	230	0.82	0.20	0.62	0.17
	233	0.72	0.19	0.53	0.18
39D	234	0.80	0.21	0.59	0.17
	243	1.18	0.23	0.95	0.16
40D	244	0.92	0.22	0.70	0.16
	251	0.90	0.22	0.68	0.19
41D	252	0.98	0.22	0.76	0.18
	258	0.89	0.22	0.67	0.18
45D	259	0.62	0.19	0.43	0.17
	261	0.61	0.21	0.40	0.18
46D	262	0.74	0.23	0.51	0.18
	266	0.72	0.22	0.50	0.18
47D	267	0.93	0.22	0.71	0.18
	272	0.92	0.21	0.71	0.18
52D	273	0.72	0.20	0.52	0.18
	290	0.82	0.19	0.63	0.18
53D	291	0.62	0.20	0.42	0.18
	321	0.74	0.20	0.54	0.17
54D	322	0.78	0.19	0.59	0.17
	333	1.01	0.22	0.79	0.17
55D	334	0.80	0.19	0.61	0.17
	343	0.94	0.21	0.73	0.16
56D	344	1.02	0.20	0.82	0.16
	349	1.00	0.21	0.79	0.18
57D	350	0.94	0.22	0.72	0.18
	352	0.96	0.22	0.74	0.18
58D	353	0.99	0.20	0.79	0.18
	358	0.94	0.22	0.72	0.18
59D	359	0.82	0.22	0.60	0.18
	360	0.76	0.21	0.55	0.18
60D	361	1.08	0.22	0.86	0.18
	366	0.85	0.22	0.63	0.18
63D	367	0.93	0.23	0.70	0.18
	368	0.98	0.22	0.76	0.18
67D	369	0.90	0.21	0.69	0.18
	371	1.04	0.22	0.82	0.18
68D	372	1.01	0.20	0.81	0.18
	384	1.06	0.23	0.83	0.18
69D	385	0.84	0.21	0.63	0.18
	412	0.93	0.20	0.73	0.16
70D	413	0.91	0.19	0.72	0.16
	435	0.92	0.22	0.70	0.18

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INDEX CAMERA MISSION 1035-1

Pass	Frame	Limiting Dmax	Limiting Dmin	Limiting Delta	Gross Fog	Terrain Dmax	Terrain Dmin	Terrain Delta
1D	1	1.58	0.29	1.29	0.07	NR	NR	-
	2	1.75	0.40	1.35	0.08	NR	NR	-
3D	3	1.62	0.39	1.23	0.06	NR	NR	-
	5	1.73	0.28	1.45	0.08	NR	NR	-
4D	6	1.75	0.19	1.56	0.08	0.72	0.49	0.23
	10	1.21	0.15	1.06	0.08	0.98	0.25	0.73
5D	11	1.58	0.25	1.33	0.09	0.75	0.25	0.50
	21	1.18	0.22	0.96	0.10	0.84	0.22	0.62
6D	22	1.81	0.26	1.55	0.10	0.58	0.26	0.32
	39	1.40	0.70	0.70	0.10	1.40	0.70	0.70
7D	40	0.69	0.30	0.39	0.10	0.69	0.30	0.39
	55	2.08	0.22	1.86	0.08	1.12	0.52	0.60
A08E	56	NR	NR	-	0.08	NR	NR	-
	57	NR	NR	-	0.08	NR	NR	-
8D	58	1.91	0.56	1.35	0.09	NR	NR	-
	64	1.55	0.52	1.03	0.08	1.31	0.52	0.79
9D	65	1.58	0.22	1.36	0.08	NR	NR	-
	88	1.86	0.33	1.53	0.08	1.63	0.33	1.30
14D	89	1.18	0.32	0.86	0.08	1.18	0.32	0.86
	90	1.40	0.14	1.26	0.08	1.40	0.50	0.90
16D	91	1.90	0.30	1.60	0.08	NR	NR	-
	93	1.95	0.22	1.73	0.07	NR	NR	-
19D	94	1.52	0.16	1.36	0.08	NR	NR	-
	96	1.72	0.15	1.57	0.08	NR	NR	-
21D	97	1.72	0.35	1.37	0.08	0.70	0.35	0.35
	117	2.12	0.40	1.72	0.08	0.94	0.62	0.32
22D	118	1.10	0.25	0.85	0.08	0.57	0.25	0.32
	134	2.09	0.55	1.54	0.07	2.09	0.72	1.37
23D	135	1.32	0.50	0.82	0.08	1.32	0.50	0.82
	146	1.82	0.42	1.40	0.08	1.35	0.42	0.93
25D	147	1.50	0.55	0.95	0.08	NR	NR	-
	160	1.67	0.52	1.15	0.08	1.67	0.52	1.15
27D	161	1.82	0.23	1.59	0.08	1.62	1.28	0.34
	165	1.54	0.30	1.24	0.08	1.54	0.99	0.55
30D	166	2.02	0.40	1.62	0.08	NR	NR	-
	170	2.00	0.36	1.64	0.08	NR	NR	-
31D	171	2.10	0.34	1.76	0.08	1.00	0.39	0.61
	176	1.42	0.21	1.21	0.08	1.42	0.21	1.21
32D	177	1.20	0.35	0.85	0.08	NR	NR	-
	179	1.42	0.17	1.25	0.06	0.62	0.17	0.45

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Pass	Frame	Limiting Dmax	Limiting Dmin	Limiting Delta	Gross Fog	Terrain Dmax	Terrain Dmin	Terrain Delta
36D	180	1.57	0.32	1.25	0.08	0.62	0.32	0.30
	198	1.98	0.68	1.30	0.08	1.60	0.68	0.92
37D	199	0.70	0.25	0.45	0.08	0.70	0.25	0.45
	229	1.58	0.16	1.42	0.08	NR	NR	-
38D	230	1.30	0.17	1.13	0.08	0.42	0.17	0.25
	233	1.55	0.24	1.31	0.08	0.95	0.24	0.71
39D	234	1.42	0.40	1.02	0.08	1.42	0.40	1.02
	243	1.72	0.39	1.33	0.08	1.31	0.39	0.92
40D	244	1.52	0.60	0.92	0.08	1.52	0.60	0.92
	251	1.71	0.82	0.89	0.08	NR	NR	-
41D	252	1.75	0.24	1.51	0.08	0.91	0.31	0.60
	258	1.71	0.29	1.42	0.08	1.10	0.40	0.60
45D	259	1.32	0.32	1.00	0.07	0.98	0.32	0.66
	261	1.96	0.31	1.65	0.07	1.04	0.31	0.73
46D	262	0.80	0.18	0.62	0.07	0.80	0.18	0.62
	266	0.78	0.23	0.55	0.08	0.78	0.23	0.55
47D	267	2.12	0.31	1.81	0.08	1.06	0.32	0.74
	272	1.32	0.52	0.80	0.07	1.32	0.52	0.80
52D	273	1.46	0.28	1.18	0.07	1.18	0.28	0.90
	290	1.46	0.74	0.72	0.07	1.46	0.74	0.72
53D	291	1.10	0.30	0.80	0.08	0.68	0.30	0.38
	321	1.62	0.26	1.36	0.08	0.92	0.34	0.58
54D	322	1.49	0.52	0.97	0.08	1.49	0.52	0.97
	333	2.00	0.34	1.66	0.07	2.00	0.34	1.66
55D	334	1.74	0.50	1.24	0.07	1.74	0.50	1.24
	343	1.42	0.61	0.81	0.07	1.42	0.61	0.81
56D	344	1.64	0.99	0.65	0.07	NR	NR	-
	349	1.60	0.68	0.92	0.08	1.36	0.68	0.68
57D	350	1.64	0.52	1.12	0.08	0.70	0.52	0.18
	352	1.97	0.30	1.67	0.08	1.01	0.44	0.57
58D	353	1.78	1.14	0.64	0.08	NR	NR	-
	358	1.58	0.82	0.76	0.08	NR	NR	-
59D	359	1.79	0.38	1.41	0.08	1.42	0.38	1.04
	360	1.60	0.17	1.43	0.08	1.60	0.48	1.12
60D	361	1.65	0.61	1.04	0.08	0.92	0.61	0.31
	366	1.10	0.44	0.66	0.08	1.10	0.44	0.66
63D	367	1.44	0.38	1.06	0.08	1.44	0.38	1.06
	368	1.20	0.38	0.82	0.07	1.20	0.38	0.82
67D	369	1.40	0.36	1.04	0.08	NR	NR	-
	371	1.98	0.78	1.20	0.08	NR	NR	-
68D	372	1.72	0.38	1.34	0.08	NR	NR	-
	384	1.42	0.38	1.04	0.08	0.81	0.42	0.39
69D	385	1.50	0.22	1.28	0.09	0.62	0.22	0.40
	412	2.14	0.30	1.84	0.08	0.94	0.41	0.53
70D	413	1.22	0.31	0.91	0.07	0.74	0.31	0.43
	435	1.52	0.20	1.32	0.08	1.52	0.20	1.32

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Mission 1035-1

Average Terrain Dmax	1.13
Average Limiting Dmax	1.58
Average Terrain Dmin	0.42
Average Limiting Dmin	0.38
Terrain Dmax Range	0.42 - 2.09
Limiting Dmax Range	0.69 - 2.14
Terrain Dmin Range	0.17 - 1.28
Limiting Dmin Range	0.14 - 1.14
Average Gross Fog	0.08

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STELLAR CAMERA MISSION 1035-2

Pass	Frame	Dmax	Dmin	Delta	Gross Fog
76D	1	1.14	0.36	0.78	0.23
	10	1.52	0.37	1.15	0.30
77D	11	1.30	0.42	0.88	0.28
	19	1.03	0.44	0.59	0.30
79D	20	1.04	0.44	0.60	0.32
	21	1.18	0.40	0.78	0.32
81D	22	1.78	0.49	1.29	0.30
83D	23	1.20	0.42	0.78	0.29
	28	1.08	0.40	0.68	0.30
84D	29	1.26	0.42	0.84	0.32
	35	1.97	0.44	1.53	0.34
86D	36	2.04	0.44	1.60	0.30
	45	1.92	0.50	1.42	0.30
87D	46	1.50	0.44	1.06	0.28
	49	1.68	0.48	1.20	0.34
88D	50	1.74	0.38	1.66	0.30
	58	1.45	0.38	1.07	0.32
92D	59	1.12	0.40	0.72	0.30
	62	1.26	0.40	0.86	0.30
94D	63	1.30	0.38	0.92	0.32
	70	1.55	0.43	1.12	0.29
95D	71	1.48	0.42	1.06	0.30
	72	1.44	0.47	0.97	0.32
99D	73	1.46	0.34	1.12	0.30
	76	1.58	0.40	1.18	0.30
100D	77	1.16	0.40	0.76	0.30
	97	1.19	0.39	0.80	0.29
101D	98	1.34	0.39	0.95	0.29
	102	1.45	0.35	1.10	0.28
102D	103	1.36	0.36	1.00	0.28
	111	1.48	0.38	1.10	0.28
103D	112	1.50	0.42	1.08	0.26
	120	1.62	0.42	1.20	0.28
104D	121	1.01	0.34	0.67	0.26
	133	1.22	0.32	0.90	0.28
105D	134	1.50	0.40	1.10	0.24
	138	1.20	0.42	0.78	0.26
107D	139	1.50	0.38	1.12	0.27
	142	1.60	0.44	1.16	0.27
108D	143	1.41	0.40	1.01	0.29
	155	1.29	0.37	0.92	0.29

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Pass	Frame	Dmax	Dmin	Delta	Gross Fog
109D	156	1.76	0.52	1.24	0.29
	158	1.64	0.54	1.10	0.30
110D	159	1.50	0.56	0.94	0.30
	161	1.41	0.49	0.92	0.29
115D	162	1.38	0.44	0.94	0.30
	173	1.12	0.35	0.77	0.28
116D	174	1.56	0.43	1.13	0.30
	185	1.24	0.37	0.87	0.27
117D	186	1.18	0.38	0.80	0.30
	206	1.78	0.55	1.23	0.28
118D	207	1.42	0.35	1.07	0.28
	220	1.24	0.37	0.87	0.27
119D	221	1.40	0.39	1.01	0.28
	242	1.58	0.32	1.26	0.27
120D	243	1.52	0.42	1.10	0.27
	249	1.56	0.48	1.08	0.27
121D	250	1.48	0.31	1.17	0.28
	256	1.51	0.46	1.05	0.27
122D	257	1.73	0.29	1.44	0.28
	260	1.32	0.32	1.00	0.28
123D	261	1.12	0.30	0.82	0.28
	266	1.52	0.34	1.18	0.29
124D	267	1.38	0.36	1.02	0.28
	273	1.45	0.39	1.06	0.28
126D	274	1.14	0.34	0.80	0.28
	275	1.42	0.36	1.06	0.25
131D	276	1.36	0.37	1.01	0.26
	281	1.22	0.38	0.84	0.27
132D	282	1.10	0.34	0.76	0.27
	288	1.36	0.39	0.97	0.29
133D	289	1.38	0.40	0.98	0.27
	312	1.60	0.47	1.13	0.28
134D	313	1.43	0.36	1.07	0.28
	328	1.12	0.38	0.74	0.28
135D	329	1.54	0.45	1.09	0.28
	349	1.12	0.43	0.69	0.28
136D	350	1.25	0.40	0.85	0.28
	358	1.26	0.40	0.86	0.30
137D	359	1.42	0.40	1.02	0.28
	363	1.42	0.40	1.02	0.28
140D	364	1.28	0.37	0.91	0.29
	373	1.32	0.39	0.93	0.28
141D	374	1.36	0.42	0.94	0.30
	375	1.30	0.40	0.90	0.30