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PHOTOGRAPHIC EVALUATION REPORT

Mission 9041
2, 3, 4, 5, 6 August 1962 Z

FE No. 34-62

HANDLE VIA [redacted]
CONTROL SYSTEM ONLY

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3 October 1962

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PART I - FORWARD CAMERA

Mission No: 9041
Camera No: 88
Slit Width: 0.200"
Film Type: 7J-23-7800 (SO 132)

Filter, Main: Wratten 21
Filter, Horizon: Wratten 25
Evaluated By: [redacted]

1. Shutter Operation (Horizon Cameras): Possible port and starboard horizon camera shutter malfunctions are indicated by abrupt loss of imagery within the horizon format areas. Examples: pass D15, frames 12, 14; pass A16, all frames; pass A17, all frames; pass A18, frame 2; pass D20, frames 9 to end of pass; pass D21, frames 10 to end of pass; pass D22, all frames;pass D23, frames 9 to end of pass; pass D25, frames 10 to end of pass; pass A28, frames 2, 9; pass A30, all frames; pass A32, all frames; pass D36, all frames; pass D37, all frames; pass D40, frames 43 to end of pass; pass A46, all frames; pass D52, frames 26 to end of pass. Other possible horizon camera shutter malfunctions are recorded within the terrain format areas. Examples: pass A18, frame 29; pass D22, frame 27; pass A28, frame 29; pass A31, frames 15 to 20; pass D36, frames 51 to 75.

2. Horizon Camera Exposure:
   a. Supply (Port); Fair throughout the film where not affected by low sun angle or possible horizon shutter malfunction. Slightly out of focus (f/6.8 with a 1/200 second average speed).
   b. Take-up (Starboard): Poor, out of focus throughout (f/6.8 with a 1/200 second average speed).

3. Camera Number: Operational throughout except where a second or third binary is exposed at the camera-off position. The number is overexposed but legible, despite severe blooming.

4. Binary Operation: The binary functions throughout the mission. Double binaries are recorded at 75 percent of the camera-off positions. The remainder are single binaries, with the exception of a few triple binaries. Light number 15 in the binary system failed to operate after pass A01, frame 1; light number 19 failed to operate after pass A50, frame 1; light number 23 failed to operate throughout the mission.

5. Film Metering:
   a. Supply (Port) Horizon Camera - metering averages 0.20" with a range of 0.17"-0.22".
   b. Take-up (Starboard) Horizon Camera - metering averages 0.19" with a range of 0.18"-0.20".

6. Film Tracking: Normal.

7. Timing Pulses: Poorly defined and appear as double images throughout most of the film. The pulses are recorded outside of the terrain format area and terminate 10.0" to 12.0" from the supply edge of the last terrain frame of a pass. The timing pulses extend to the supply edge of the final terrain frame in passes D05, D09, A14, A16, D23, D25.

8. Fiducials:
   a. Main Camera - the fiducials appear ragged but usable throughout the photography.
   b. Horizon Camera - the fiducials are well defined with no flare present.

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9. Light Leaks: A diagonal light leak consisting of two parallel streaks is present in the final terrain frame of each pass throughout the mission. The pattern enters the terrain format across the trailing edge, and projects into the format area approximately to a mid-point between the leading and trailing edges. The location of the pattern varies between 12.0" to 25.0" from the supply edge of the terrain frame. Equipment image shadow appears in pass D09, frame 96; pass D51, frames 1, 26, 27, 28. A light leak appears in the port horizon camera format in pass A62, frame 2; pass A63, frame 52.

10. Static Electricity: Possible corona static fogging first appears in pass D19, frame 3, and thereafter is present in frame 3 of most of the remaining passes. This possible corona static carries over into frame 4 in passes A32 and A35. In addition, possible corona static fogging is apparent in the last frames of passes D23 and D25. Striated static patterns with associated 6.3" fog patches first appear throughout pass A14 and thereafter recur within most of the remaining passes. Characteristically, these striations and associated fog patches increase in frequency and density as the end-of-pass approaches. Where not present throughout an entire pass, these patterns commence in the leading frames, as soon as frame 4 or as late as frame 15, and then continue to the end-of-pass. Terrain format degradation is serious as the end-of-pass approaches and negates about 25% of the film for photographic interpretation purposes. Semi-elliptical fog patches that appear associated with the striated patterns are found as follows: pass A44, frames 22-26; pass A46, frames 1-3, 41 to end-of-pass; pass A47, frames 1-3, 17, 19; pass D47, frame 13; pass D52, frames 31-35, 42-29, 54, 55; pass A62, frame 2; pass A65, frame 88.

11. Pinholes: Present in the terrain format areas of pass A15, frames 50, 59; pass A16, frame 86; pass A18, frame 22; pass D47, frames 1, 3; pass A65, frames 95, 127, 130, 132.

12. Abrasions and Scratches: Scratches appear consistently under the binary and/or camera number in each frame throughout the film. Similar scratches are located approximately 4.0" from the take-up edge of the terrain format. These scratches are parallel to, and approximately 0.20" inboard of, the trailing edge. They appear to be camera-induced and vary in length from 0.05" to 0.08". Random scratches occur intermittently in the terrain format areas throughout the photography. Examples: pass D05, frames 6, 76, 77, 89, 104; pass D06, frames 1, 4, 9, 10; pass D07, frames 76, 91, 95, 98, 100, 102. Deep irregularly spaced scratches, apparently processing-induced, are found throughout the terrain format area in pass D09, frames 1 to 31, near the format center. Severe scratches, 4.75" long, are found in pass A16, frame 84. Scratches of similar severity are found in pass D22, frames 46, 47. Abrasions are few, and intermittent throughout.

13. Tearing: None. A manufacturing splice occurs in pass D23 frame 42. Transparent splices occur on pass A16, between frames 11 and 12; pass D23, between frames 16 and 17; pass A45, between frames 17 and 18.

14. Water Marks: Present in pass A16, frame 10; pass D21, frames 1, 2, (extending from the supply edge of frame 1, across the horizon camera format, into frame 2). Chemical spots of purple coloration are found in pass A01, frame 2, apparently derived from a blister in that frame.

15. Pressure Streaks: Small base rubs are present at random throughout.

16. Processing Streaks: None could be positively defined.

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17. Blistering and Crimping: Blisters are found intermittently throughout the film. Examples: pass A01, frame 2; pass D04, frames 72, 111; pass A15, frames 50, 54, 59; pass A17, frames 66, 67; pass A18, frame 22; pass D22, frames 18, 29. Intermittent crimping is also present. Examples: pass D05, frame 105; pass D06, frames 21, 22; pass A15, frame 58; pass D15, frame 15; pass A17, frames 69, 70, 71, 93, 94.

18. Contrast: Low 45%, medium 55%, high 0%.

19. Apparent Resolution: Image quality is generally good and is comparable to mission 9037. Imagery of the forward camera is somewhat inferior to that obtained by the aft camera.

20. Apparent Granularity: Fine.

21. Photo Quality:
    a. Main Camera - quality is only fair, due to degradation of the imagery by low sun angle, fogging, static and the presence of intermittent scratches, abrasions, and blisters.
    b. Horizon Cameras - the port horizon camera produced a fair image, with generally adequate exposure, and is therefore rated "fair". The starboard horizon camera, although adequately exposed, produced out-of-focus and multiple images, and is therefore rated"poor".

22. Camera Operation:
    a. Main Camera - a rating of "fair" is assigned, due to the presence of fogging and static effects which degrades approximately 50% of the photography. Double, and in some instances triple binary exposures are recorded at the camera-off positions. When present, the second and third binary recordings do not consistently show the camera number and/or the end-of-pass marker.
    b. Horizon Cameras - the port horizon camera experienced possible intermittent shutter malfunctions. The starboard horizon camera was consistently out of focus.

23. Suitability for PI: Due to degradation by fogging, static and low sun angle, a rating of "fair" is assigned.

Remarks:

1. Heavy fogging occurs intermittently. Examples: pass A24, frame 21; pass D31, frames 14, 15; pass A34, frame 50; pass D35, frames 26, 27; pass D40, frames 17, 39; pass A47, frame 51; pass D47, frame 13. The cause of this fogging is not readily definable. The density gradient varies from approximately 0.18 to 0.24 and is plainly evident on the original negative.

2. Handling marks, including crimps, are found intermittently throughout the film. Most of these marks may be attributed to film handling after processing. Foreign matter is found in pass A01, frame 1; pass D03, frames 1, 30; pass D04, frame 89; pass D05, frames 73-75, 105; pass D06, frames 1, 31; pass D07, frame 104; pass D09, frames 87, 97; pass A15, frames 35, 36; pass D15, frame 2; pass A16, frame 77; pass A17, frames 2, 8, 68; pass A18, frame 25; pass D18, frame 27; pass D20, frames 2, 9, 42, 47; pass D21, frames 30, 47; pass D23, frames 16, 17, 58; pass D25, frames 70, 71; pass A28, frame 5; pass A31, frames 37, 38; pass D36, frame 75; pass A45, frame 18; pass D47, frame 1; pass A50, frame 28; pass D51, frame 9; pass D52, frames 34, 44, 45, 46; pass A65, frames 76, 131, 132.

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3. Uniform base fogging, probably due to exposure of the film to radiation, is present intermittently. Examples: pass D03, frames 35-37; pass D04, frames 1-14, 125-128; pass D05, throughout; pass D19, frames 25-28; pass D20, frames 44-47; pass D21, frames 1-4; pass D35, frames 26-27; pass D36, frames 1-4, 74-77; pass D37, frames 1-5; pass D51, frames 26-29; pass D52, frames 1-15, 75-78; pass A62, frames 1-6.

4. Lacquer is present within the terrain format in pass D06, frame 32; pass A16, frame 77; pass A28, frames 1-33. Material is also transferred into the format from the end splices. Examples: pass D05, frames 73-75, 105; pass D06, frames 1, 31.

5. A few desensitized streaks are present in this film. Examples: pass A29, frame 1; pass A34, frame 11; pass D35, frames 1, 3; pass A62, continuous streaks throughout.

6. Minus density streaks appear intermittently throughout this film but do not appreciably degrade the terrain format imagery.

7. Excessive roll and yaw affect all frames of pass A02.

8. The following descriptions of overlap and film transport for Camera Number 88 were determined from the fifth and the last frames of each pass, where possible. Cloud cover, low sun angle and no imagery may have precluded determination of these values in some passes.

Pass	Overlap (Percent)		Film Transport (From Take-Up Side in Inches)	
	Beginning	End	First Frame	Last Frame
A01	NM	NM	NM	7.5"
A02	40	60	NM	9.25"
A03	0	2	NM	NM
D03	0	0	NM	14.2"
D04	1	0	11.6"	14.2"
D05	0	0	16.75"	15.5"
D06	NM	4	NM	15.5"
D07	3	NM	NM	16.75"
D09	1	1	NM	16.0"
A14	NM	NM	14.0"	9.5"
A15	2	4	NM	7.9"
D15	0	0	NM	15.0"
A16	NM	1	NM	NM
A17	2	2	NM	NM
A18	1	NM	NM	8.7"
D19	0	0	NM	14.0"
D20	NM	NM	12.0"	15.5"
D21	NM	NM	13.0"	15.0"
D22	0	0	12.9"	14.9"
D23	0	9	13.0"	15.5"
D25	0	1	4.0"	16.25"
A28	2	4	14.1"	8.0"
A29	3	3	NM	7.5"
A30	1	1	5.5"	8.0"
A31	0	0	5.8"	8.4"
D31	1	1	NM	15.0"

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Pass	Beginning	End	First Frame	Last Frame
A32	NM	1	13.5"	NM
A33	NM	NM	9.0"	9.0"
A34	0	1	NM	8.7"
D34	0	0	NM	14.4"
D35	1	2	12.0"	14.5"
D36	0	0	12.5"	16.0"
D37	0	0	14.0"	15.5"
D40	2	4	NM	16.5"
A44	1	4	NM	8.5"
A45	0	1	NM	8.2"
A46	NM	NM	NM	9.5"
A47	0	2	NM	9.5"
D47	0	1	NM	15.5"
A50	2	NM	13.4"	9.9"
D50	NM	NM	NM	NM
D51	NM	NM	12.1"	15.2"
D52	0	0	13.1"	16.3"
A62	0	1	15.5"	9.5"
A63	NM	NM	NM	7.2"
A65	0	1	NM	NM

Note: NM denotes "Not Measurable"

9. Density readings were taken on every pass using the MacBeth Quantalog Densitometer, Model EP 1000, with an EP 20 attachment. Terrain and Limiting density value readings for D Max and D Min as well as Gross Fog are correlated below.

			Terrain		Limiting			
Reading	Pass	Frame	D Max	D Min	D Max	D Min	Gross Fog	Sun Angle*
1	A01	1	0.98	0.46	2.10	0.46	0.19	
2	A02	34	0.96	0.58	2.12	0.74	0.19	
3	A03	2	1.96	0.33	1.96	0.33	0.21	
4	D03	2	1.56	0.85	2.13	0.72	0.20	
5	D04	41	1.88	0.72	1.88	0.72	0.22	
6		76	1.72	1.02	2.08	0.98	0.21	
7	D05	10	1.96	0.93	2.08	0.93	0.32	
8		96	1.71	0.89	1.71	0.89	0.30	
9	D06	54	1.73	0.67	2.14	0.64	0.26	
10	D07	23	1.56	0.85	2.12	0.79	0.23	
11		86	1.70	1.04	2.11	1.04	0.23	
12	D09	60	1.62	0.93	2.14	0.80	0.20	
13		83	1.76	1.20	2.00	1.00	0.23	
14	A14	61	1.40	0.54	1.40	0.54	0.30	
15		95	2.00	1.38	2.00	1.38	0.30	
16	A15	4	1.72	0.48	2.10	0.44	0.22	
17	D15	11	1.76	1.09	2.06	1.09	0.29	
18	A16	42	1.87	0.87	2.14	0.82	0.19	
19		77	2.01	1.15	2.10	1.15	0.22	
20	A17	62	1.78	1.30	2.12	1.22	0.24	
21		89	2.09	1.72	2.09	1.72	0.23	
22	A18	6	Clouds	Clouds	2.04	0.55	0.18	
23	D19	1	2.11	1.02	2.16	1.02	0.18	
24	D20	9	Clouds	Clouds	1.96	1.05	0.21	
25	D21	25	1.77	0.86	2.12	0.86	0.30	
26	D22	66	1.88	0.79	2.13	0.79	0.23	
27	D23	35	1.91	1.05	2.14	0.80	0.23	
28		78	1.78	1.32	2.18	1.32	0.20	

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Reading	Pass	Frame	Terrain D Max	Terrain D Min	Limiting D Max	Limiting D Min	Gross Fog	Sun Angle*
29	D25	22	1.70	0.84	2.17	0.84	0.23	
30		78	1.55	0.64	1.93	0.60	0.25	
31	A28	27	1.76	0.54	1.98	0.54	0.22	
32	A29	16	Clouds	Clouds	1.81	0.37	0.21	
33	A30	28	1.26	0.54	1.78	0.42	0.20	
34	A31	4	1.40	0.37	2.05	0.37	0.26	
35	D31	14	1.74	0.95	2.10	0.75	0.22	
36	A32	65	1.29	0.63	1.91	0.63	0.25	
37		122	1.89	1.17	2.08	1.17	0.20	
38	A33	53	1.11	0.45	2.12	0.42	0.24	
39	A34	16	Clouds	Clouds	1.85	0.36	0.20	
40	D34	5	Clouds	Clouds	2.15	Clouds	0.19	
41	D35	7	1.34	0.40	1.34	0.40	0.20	
42	D36	26	1.75	0.74	2.04	0.66	0.22	
43	D37	61	1.78	0.83	2.16	0.78	0.22	
44	D40	26	1.56	0.88	2.00	0.63	0.25	
45		79	1.68	1.00	2.14	0.98	0.20	
46	A44	7	Clouds	0.31	1.71	0.31	0.21	
47	A45	12	Clouds	Clouds	1.84	0.33	0.21	
48	A46	31	1.30	0.45	2.05	0.45	0.19	
49	A47	9	1.66	0.29	1.78	0.29	0.19	
50	D47	6	1.93	0.65	1.93	0.65	0.19	
51	A50	16	1.50	0.39	1.88	0.39	0.19	
52	D50	3	Clouds	Clouds	2.12	Clouds	0.19	
53	D51	1	Clouds	Clouds	1.77	0.91	0.21	
54	D52	23	1.49	0.63	1.98	0.62	0.24	
55	A62	38	Clouds	Clouds	1.90	0.36	0.21	
56	A63	29	0.82	0.31	2.00	0.27	0.22	
57	A65	67	1.02	0.34	1.62	0.34	0.19	
58		123	1.85	0.69	1.96	0.69	0.18	

* The Sun Angle data was not available for enclosure in the Photographic Evaluation Report at time of publication, however, upon compilation of the data, it will be published as an addendum to this report.

	Terrain	Limiting
Average D Max	1.64	1.99
Average D Min	0.78	0.72
Range D Max	2.11-0.82	2.18-1.34
Range D Min	1.72-0.29	1.38-0.27
Overall Range	2.11-0.29	2.18-0.27

Average Gross Fog 0.22
Range Gross Fog 0.32-0.18

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3 October 1962

PART II - AFT CAMERA

Mission No: 9041
Camera No: 89
Slit Width: 0.200"
Film Type: 7J-23-7800 (SO 132)

Filter, Main: Wratten 21
Filter, Horizon: Wratten 12
Evaluated By: [redacted]

1. Shutter Operation (Horizon Cameras): Possible shutter malfunction of both port and starboard horizon cameras occurs on pass D04, frames 107-128; pass D05, frames 1-10.

2. Horizon Camera Exposure:
   a. Take-Up (Port): Imagery is slightly out of focus, being underexposed on all ascending passes and overexposed on all descending passes. (f/8.0, 1/200 second).
   b. Supply (Starboard): Imagery is overexposed and slightly out of focus. (f/8.0, 1/200 second).

3. Camera Number: In general, the camera number is overexposed. The lamp fails to function on pass D04, frames 107-128; pass D05, frames 1-10.

4. Binary Operation: Functional - lamps fail to function on pass D04, frames 107-128; pass D04, frames 1-10. Double binary recordings usually occur on the last frame of a pass and camera-off positions.
   For further information on binary problems, reference should be made to a report on binary clock malfunctions that will soon be released by NPIC/TID/TAB.

5. Film Metering:
   a. Metering on take-up side (port horizon camera) ranges from 0.19" to 0.11", with an average of 0.13".
   b. Metering on the supply side (starboard horizon camera) ranges from 0.20" to 0.13", with an average of 0.16".

6. Film Tracking: Normal.

7. Timing Pulses: Functional but not readable, being imaged in the format area on all passes. At the camera-off positions the pulses terminate as far as 18" from supply edge of terrain format, where measurable.

8. Fiducials:
   a. Main Camera - functional but slightly ragged. The point of the fiducial is not well defined.
   b. Horizon Camera - well defined. The lamps fail to function on pass D04, frames 107-128; pass D05, frames 1-10.

9. Light Leaks: A diagonal light leak entering the format from the leading edge occurs on the first frame of nearly all passes. Light leaks also occur on frame 3 of most passes and on the 2nd and 3rd frames from shutdown on all passes. The light leak occurring on the 3rd frame from shutdown sometimes appears as an equipment image.

10. Static Electricity: Possible corona type static is first evident on pass D07 and continues through pass D40. It reappears very lightly on pass D47 and D51. Fog and striations, occurring every 6.3", usually begins on frame 4 or 5 of each pass and continues throughout the entire pass in varying intensities, except on the last frame of the pass. The area not affected by film transport on the last frame, in most instances, is not affected by the fog and striations. A static mark is recorded on all terrain formats on the leading edge outside of the format area, near the starboard extremity. Possible fan-shaped static in the format area

appears on pass D04, frames 112-114; pass D51, frames 12-18 and pass A50, frames 27-28. Linear static is associated with multiple parallel camera-induced scratches, that are continuous along the trailing edge of the format.

11. Pinholes: Few, ten frames were recorded as having a few scattered pinholes.

12. Abrasions and Scratches: Multiple and continuous camera-induced scratches parallel to the trailing edge are recorded on all frames. Rail scratches are recorded on both leading and trailing edges of the format. Other minor scratches, possibly occurring after processing, appear on pass D04, frames 1, 10, 89, 91, 92, 126; pass D06, frames 3-11; pass A14, frames 1, 6, 11, 18, 28, 61, 82, 92-93, 105; pass D22, frames 9, 13, 21, 30.

13. Tearing: No tearing is present. A manufacturing splice is present on pass D23, frame 72. Transparent splices are located on pass D05, between frames 17 and 18; pass A14, between frames 48 and 49; pass D21, between frames 22 and 23; pass D37, between 45 and 46; pass D52, between frames 72 and 73.

14. Water Marks: Very few. An example of the type of water spots present may be found on pass A62, frame 1.

15. Pressure Streaks: Small shiny base rubs are present intermittently on all passes of the mission.

16. Processing Streaks: A minus density streak, possibly occurring during processing is present on pass D03, frames 1-37. Minus density spots are apparent on pass D15, frame 10; pass A18, frame 24; pass A31, frame 24; pass A65, frame 75.

17. Blistering and Crimping: Blisters on 6 frames of the photography. Crimps, possibly occurring after processing, appear on 10 frames.

18. Contrast: 45% low, 55% medium, 0% high.

19. Apparent Resolution: Good. Acuity is comparable to mission 9037. Quality of the aft camera appears slightly better than the forward camera.

20. Apparent Granularity: Fine.

21. Photo Quality:
    a. Main Camera - fair. Degradation is due to light leaks, fog and striations (corona static), and multiple camera-induced scratches along trailing edge of format.
    b. Horizon Cameras - poor. The port horizon on all ascending passes is underexposed and in some instances no imagery appears for all or a portion of the pass. Port and starboard images are overexposed and slightly out of focus on descending passes. Starboard horizon camera images are overexposed and slightly out of focus on all ascending passes.

22. Camera Operation:
    a. Main Camera - fair. Degradations are due to fog and striations (corona static) appearing on 50% of the film; camera-induced scratches on trailing edge of all frames; timing pips in the format area; and a malfunction of the binary index, binary clock, camera number and horizon fiducial on pass D04, frames 107-128 and pass D05, frames 1-10.
    b. Horizon Cameras - poor due to slightly out of focus, either underexposed or overexposed, and a mulfunction on pass D04, frames 107-128 and pass D05 frames 1-10.

23. Suitability for PI: Fair - degrading factors are atmospheric conditions, low sun angle, camera-induced scratches along trailing edge, timing pips in format area and fog striations (corona static).

Remarks:

1. Gross fog density is heavier than usual on the leading edge resembling fogging due to a light leak. The dark area gradually dissipates as it reaches the leading edge of the terrain format. This condition is present on all passes. The density gradient varies from approximately 0.24 to 0.18 and is quite evident on the original negative.

2. Handling mark (fingerprints) occur on 10 frames.

3. Foreign matter, consisting of small bits of wax, lacquer, opaquing material from the titling and embedded dirt are present on approximately 120 frames scattered throughout the film.

4. Small bits of emulsion have been pulled or lifted from approximately 35 frames scattered throughout the photography.

5. The end of pass marker is double exposed on nearly all passes and is usually associated with the double exposure of the binary clock.

6. A uniform base fog is apparent on some passes. The fogging is possibly due to exposure of the film to radiation. Examples: pass D03, frames 35-37; pass D04, frames 1-14, 125-128; pass D05, throughout; pass D19, frames 25-28; pass D20, frames 44-47; pass D21, frames 1-4; pass D35, frames 26-27; pass D36, frames 1-4, 74-77; pass D37, frames 1-5; pass D51, frames 26-29; pass D52, frames 1-15, 75-78; pass A62, frames 1-6.

7. Excessive roll and yaw affect all frames of pass A02.

8. The following descriptions of overlap and film transport for Camera Number 89 were determined from approximately the fifth and last frames of each pass where possible. Cloud cover, low sun angle and no imagery may have precluded determination of these values in some passes.

	Overlap (Percent)		Film Transport (From Take-Up Side in Inches)	
Pass	Beginning	End	First Frame	Last Frame
A01	1	1	NM	8.0"
A02	70	80	NM	9.2"
A03	0	6	NM	7.5"
D03	4	4	NM	14.9"
D04	5	5	14.8"	14.8"
D05	5	5	NM	16.2"
D06	NM	4	NM	16.5"
D07	5	8	NM	NM
D09	1	5	NM	17.5"
A14	NM	NM	14.7"	11.0"
A15	1	5	11.8"	9.2"
D15	0	0	NM	16.2"
A16	4	6	NM	11.8"
A17	4	5	NM	12.3"
A18	2	NM	12.5"	8.3"
D19	0	1	NM	15.2"
D20	NM	NM	15.0"	16.2"
D21	NM	NM	16.0"	16.5"
D22	1	5	16.3"	16.3"

Pass	Beginning	End	First Frame	Last Frame
D23	0	4	NM	17.0"
D25	1	2	NM	17.5"
A28	0	5	18.3"	8.1"
A29	1	1	NM	7.5"
A30	0	0	NM	8.0"
A31	4	7	6.1"	8.7"
D31	1	3	NM	17.0"
A32	6	6	NM	11.8"
A33	4	6	9.5"	9.3"
A34	1	3	NM	9.0"
D34	NM	NM	9.7"	15.0"
D35	1	2	NM	17.5"
D36	0	4	15.5"	18.0"
D37	0	5	15.5"	17.0"
D40	1	6	NM	18.0"
A44	1	NM	16.0"	8.5"
A45	0	0	6.6"	8.1"
A46	1	NM	NM	12.0"
A47	1	5	NM	9.4"
D47	1	1	NM	17.2"
A50	1	4	15.3"	10.4"
D50	NM	NM	NM	15.5"
D51	0	NM	14.5"	16.0"
D52	4	NM	13.1"	18.0"
A62	1	2	14.0"	9.5"
A63	0	1	NM	20.0"
A65	NM	NM	NM	NM

Note: NM denotes "Not Measurable"

9. Density readings were taken on every pass using the MacBeth Quantalog Densitometer, Model EP 1000, with an EP 20 attachment. Terrain and Limiting density value readings for D Max and D Min as well as Gross Fog are correlated below.

Reading	Pass	Frame	Terrain		Limiting		Gross Fog	Sun Angle*
			D Max	D Min	D Max	D Min		
1	A01	5	0.81	0.47	2.05	0.47	0.23	
2	A02	50	1.28	0.69	2.07	0.67	0.23	
3	A03	5	1.73	0.36	1.73	0.36	0.24	
4	D03	7	1.55	0.92	1.92	0.66	0.22	
5	D04	47	1.89	0.79	1.89	0.79	0.26	
6		82	1.62	0.86	2.10	0.86	0.24	
7	D05	16	1.67	1.11	2.14	1.11	0.35	
8		102	1.65	0.71	2.05	0.71	0.37	
9	D06	61	1.74	0.51	2.09	0.49	0.26	
10	D07	29	1.49	0.86	2.12	0.74	0.25	
11		93	1.64	1.00	2.02	0.84	0.25	
12	D09	67	1.55	0.75	2.16	0.75	0.22	
13		90	1.69	0.92	2.05	0.92	0.25	
14	A14	67	1.42	0.60	1.42	0.60	0.37	
15		102	1.94	1.24	1.94	1.24	0.32	
16	A15	10	1.69	0.47	2.12	0.47	0.28	
17	D15	15	1.76	1.08	2.02	0.84	0.25	
18	A16	49	1.80	0.81	2.13	0.81	0.22	
19		82	1.88	1.26	1.88	1.26	0.22	
20	A17	68	1.98	1.05	2.00	1.05	0.25	
21		84	1.86	1.55	2.08	1.38	0.22	

Reading	Pass	Frame	Terrain D Max	Terrain D Min	Limiting D Max	Limiting D Min	Gross Fog	Sun Angle*
22	A18	11	Clouds	Clouds	2.13	0.70	0.21	
23	D19	5	2.11	0.66	2.14	0.56	0.21	
24	D20	15	Clouds	Clouds	2.16	1.09	0.28	
25	D21	29	1.62	1.23	2.16	1.09	0.33	
26	D22	72	1.82	0.68	2.15	0.68	0.25	
27	D23	41	1.81	0.96	2.03	0.92	0.23	
28		78	1.98	1.07	1.98	1.07	0.24	
29	D25	28	1.70	0.84	2.12	0.79	0.25	
30		85	1.41	0.58	2.09	0.58	0.24	
31	A28	31	1.93	0.72	1.98	0.56	0.26	
32	A29	20	Clouds	Clouds	1.91	0.44	0.24	
33	A30	31	1.19	0.57	2.10	0.46	0.23	
34	A31	9	1.36	0.28	2.02	0.28	0.25	
35	D31	15	1.69	0.89	1.96	0.84	0.25	
36	A32	72	1.49	0.69	1.82	0.69	0.21	
37		129	1.78	0.97	2.08	0.85	0.21	
38	A33	59	1.18	0.60	2.06	0.52	0.21	
39	A34	20	Clouds	Clouds	1.65	0.34	0.21	
40	D34	5	Clouds	Clouds	2.03	Clouds	0.20	
41	D35	13	1.66	0.57	1.66	0.57	0.21	
42	D36	33	1.76	0.86	2.05	0.81	0.28	
43	D37	67	1.66	0.75	2.10	0.67	0.31	
44	D40	32	1.59	0.75	2.09	0.75	0.25	
45		86	1.74	1.14	2.12	1.03	0.21	
46	A44	13	Clouds	0.33	1.58	0.33	0.21	
47	A45	17	Clouds	Clouds	1.96	0.40	0.23	
48	A46	37	1.17	0.38	1.75	0.38	0.21	
49	A47	16	1.60	0.26	1.82	0.26	0.20	
50	D47	11	1.84	0.60	2.06	0.60	0.20	
51	A50	22	1.72	0.54	2.02	0.54	0.20	
52	D50	7	Clouds	Clouds	2.10	Clouds	0.21	
53	D51	4	1.76	0.95	2.08	0.66	0.22	
54	D52	29	1.45	0.65	1.92	0.57	0.27	
55	A62	46	Clouds	Clouds	1.89	0.29	0.21	
56	A63	35	0.63	0.37	1.98	0.26	0.21	
57	A65	74	0.95	0.38	2.03	0.38	0.20	
58		130	1.79	0.75	1.97	0.75	0.19	

*The Sun Angle data was not available for enclosure in the Photographic Evaluation Report at time of publication, however, upon compilation of the data, it will be published as an addendum to this report.

	Terrain	Limiting
Average D Max	1.62	2.00
Average D Min	0.77	0.69
Range D Max	2.11 - 0.63	2.16 - 1.42
Range D Min	1.55 - 0.26	1.38 - 0.26
Overall Range	2.11 - 0.26	2.16 - 0.26

Average Gross Fog 0.24
Range Gross Fog 0.37 - 0.19

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PART III - FRAMING CAMERA

Mission No: 9041
Camera No: 94
Camera Setting: f/6.3, 1/250 second

Filter: Wratten 21
Film Type: 7J-30 (SO 130)
Evaluated By: [redacted]

1. Shutter Operation: Operational for 198 frames, thereafter a possible shutter malfunction occurred and no imagery was recorded. Shutter remained closed for 2.8" between frames 8 and 9.

2. Exposure: Good when not degraded by uniform fog.

3. Camera Number: Clearly registered on all frames.

4. Film Metering: Slightly erratic, ranging from 0.24" to 0.05", with an average of 0.14".

5. Film Tracking: Normal.

6. Reseau Grid: Clearly registered and well defined.

7. Light Leaks: A bar-shaped light leak is present on frames; 5, 9, 14, 26, 27, 28, 32, 47, 57, 72, 73, 87, 98-100, 113, 115, 127, 137, 138, 141, 145, 149, 163, 167, 173, 185 and 187. An arcing light leak extending in from the edge of the format occurs on frames 107, 108, 118, 119, 123, 124, 134, 135, 139, 140, 149, 150, 162 and 163.

8. Static Electricity: Continuous edge static extending into format area is apparent on frames 91-98, 123, 124. Branch-type static occurs on frames 39, 40, 93 and 101.

9. Pinholes: Few.

10. Abrasions and Scratches: Small scratches are present intermittently throughout and a heavy scratch occurs on frames 64 and 131.

11. Tearing: None

12. Water Marks: None

13. Pressure Streaks: None

14. Processing Streaks: A plus density streak is present on frame 111 parallel to a grid line.

15. Blistering and Crimping: None

16. Contrast: Low, degraded by uniform fogging.

17. Apparent Resolution: Good when not degraded by uniform fogging.

18. Apparent Granularity: Slightly grainy.

19. Photo Quality: Poor. Degraded by uniform fogging and granularity.

20. Camera Operation: Fair. Degradation is due to a shutter malfunction after frame 198.

21. PI Suitability: Poor. Degradation is due to uniform fogging and granularity.

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Remarks:

1. Uniform fogging, possibly due to exposure of the film to radiation, is present on frames 14-19, 29-40. After frame 40, heavy uniform fog occurs approximately every 2.5" throughout the remainder of the film.

2. Overlap was normal, 55-65% for all frames.

3. A desensitized spot occurs every 2.8" in fogged areas on frames 35-198.

4. Transfer of opaquing material used for titling appears on all frames.

5. Density readings were taken on selected frames using the MacBeth Quantalog Densitometer Model EP 1000, with an EP 20 attachment and a 0.5 mm aperature. Terrain and Limiting density values for D Max and D Min as well as Gross Fog are given below.

Pass	Frame	Terrain D Max	Terrain D Min	Limiting D Max	Limiting D Min	Gross Fog
A01	2	**	**	2.28	0.63	0.17
A02	7	1.11	0.50	**	**	0.22
A03	13	**	**	2.50	0.55	0.28
D03*	18	2.34	1.39	**	**	0.80
D04	24	2.64	0.81	**	**	0.31
D05	46	**	**	3.00	0.87	0.39
D06	63	**	0.75	2.93	**	0.30
D07	69	2.32	1.02	**	**	0.31
D09*	89	1.56	1.26	2.95	**	0.49
A14	97	1.32	0.46	2.06	0.46	0.29
A15	111	1.82	0.54	**	**	0.31
D15	122	2.48	0.87	**	**	0.37
A16	132	2.45	1.04	**	**	0.33
A17*	146	2.96	1.58	**	**	0.59
A18*	151	**	**	2.41	1.65	1.48
D19*	156	**	**	3.34	1.96	1.74
D20*		No Readings Possible due to Heavy Fogging				
D21*	165	**	**	3.07	1.36	1.02
D22*	180	**	**	2.43	1.34	0.94
D23*	182	**	**	2.99	1.56	0.91
D25*	197	**	**	3.23	1.74	1.68

* Heavy fogging due to radiation.
** No readings possible in these categories.

	Terrain	Limiting
Average D Max	2.02	2.55
Average D Min	0.75	0.68
Range D Max	2.64 - 1.11	3.00 - 2.06
Range D Min	1.04 - 0.46	0.87 - 0.46
Overall Range	2.64 - 0.46	3.00 - 0.46

Average Gross Fog 0.30
Range Gross Fog 0.39 - 0.17

Note: Gross fog readings over 0.40 are considered due to radiation and are not included in the above recordings(Range Gross Fog).

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PART IV - VEHICLE ATTITUDE DATA

Pass	Pitch Variation	Pitch Range	Roll Variation	Roll Range	No. of Frames	Remarks
A01		No Data Available				
A02	-19° 17' -14° 07'	5° 10'	-5° 16' 7° 21'	12° 37'	67	No data for frames 1-2
A03		No Data Available				
D03	-17 01 -16 28	0 33	0 29 0 11	0 18	37	
D04	-16 53 -16 25	0 28	1 05 -0 03	1 08	86	
	-16 49 -16 27	0 22	-1 06 -0 39	0 27	42	No data for frames 105-128
D05	-17 06 -16 44	0 22	1 06 0 53	0 13	31	
	-17 19 -14 57	2 22	1 54 0 52	1 02	75	
D06	-16 51 -16 08	0 43	1 05 0 47	0 18	67	
D07	-16 35 -15 04	1 31	1 08 0 57	0 11	107	
D09	-16 22 -15 31	0 51	1 19 0 39	0 40	100	
A14	-14 30 -13 48	0 42	0 13 -0 03	0 16	88	No data for frames 1-49
	-15 49 -14 53	0 56	0 12 0 21	0 33	24	
A15	-17 06 -16 32	0 34	1 53 1 13	0 40	71	No data for frames 1-43
A16	-17 26 -16 50	0 36	1 39 1 32	0 07	40	No data for frames 1-27
	-17 01 -16 44	0 17	1 09 -0 05	1 04	47	
A17	-16 23 -15 27	0 56	1 14 0 10	1 04	69	No data for frames 1-32
	-16 45 -16 36	0 09	0 00 -0 06	0 06	26	
A18	-16 36 -14 37	1 59	0 46 0 55	0 09	30	No data for frames 1-19
D19	-14 38 -14 28	0 10	1 32 1 04	0 28	28	
D20	-16 20 -16 05	0 15	1 14 0 23	0 51	48	
D21	-14 50 -13 32	1 18	1 52 0 39	1 13	51	
D22	-16 48 -14 12	2 36	0 50 0 23	0 27	74	
D23	-16 48 -16 33	0 15	0 58 0 34	0 24	48	
	-16 23 -14 24	1 59	1 37 1 04	0 33	40	
D25	-16 39 -15 06	1 23	0 59 -0 03	1 02	110	
A28		No Data Available				
A29		No Data Available				
A30		No Data Available				
A31		No Data Available				
A32	-16 50 -16 12	0 38	0 57 -0 02	0 59	149	No data for frames 1-70
A33		No Data Available				
A34		No Data Available				
D34	-15 23 -15 19	0 04	1 23 1 18	0 04	12	
D35	-16 40 -16 26	0 14	1 29 0 58	0 31	28	
D36	-16 39 -13 30	2 09	1 40 1 06	0 34	77	
D37	-16 09 -15 11	0 58	1 32 0 39	0 53	67	
D40	-14 41 -14 26	0 15	0 50 0 41	0 09	39	
	-14 32 -14 14	0 18	1 33 1 19	0 14	65	
A44		No Data Available				
A45		No Data Available				
A46		No Data Available				
A47		No Data Available				
A50	-14 24 -13 22	1 02	1 02 0 39	0 23	31	
D50	-14 45 -14 40	0 05	0 39 0 07	0 32	13	
D51	-16 20 -16 03	0 17	2 00 1 46	0 14	29	
D52	-16 51 -15 32	1 19	0 57 0 11	0 46	78	
A62		No Data Available				
A63		No Data Available				
A65	-16 20 -15 24	0 56	0 18 -0 41	0 37	133	No data for frames 1-75

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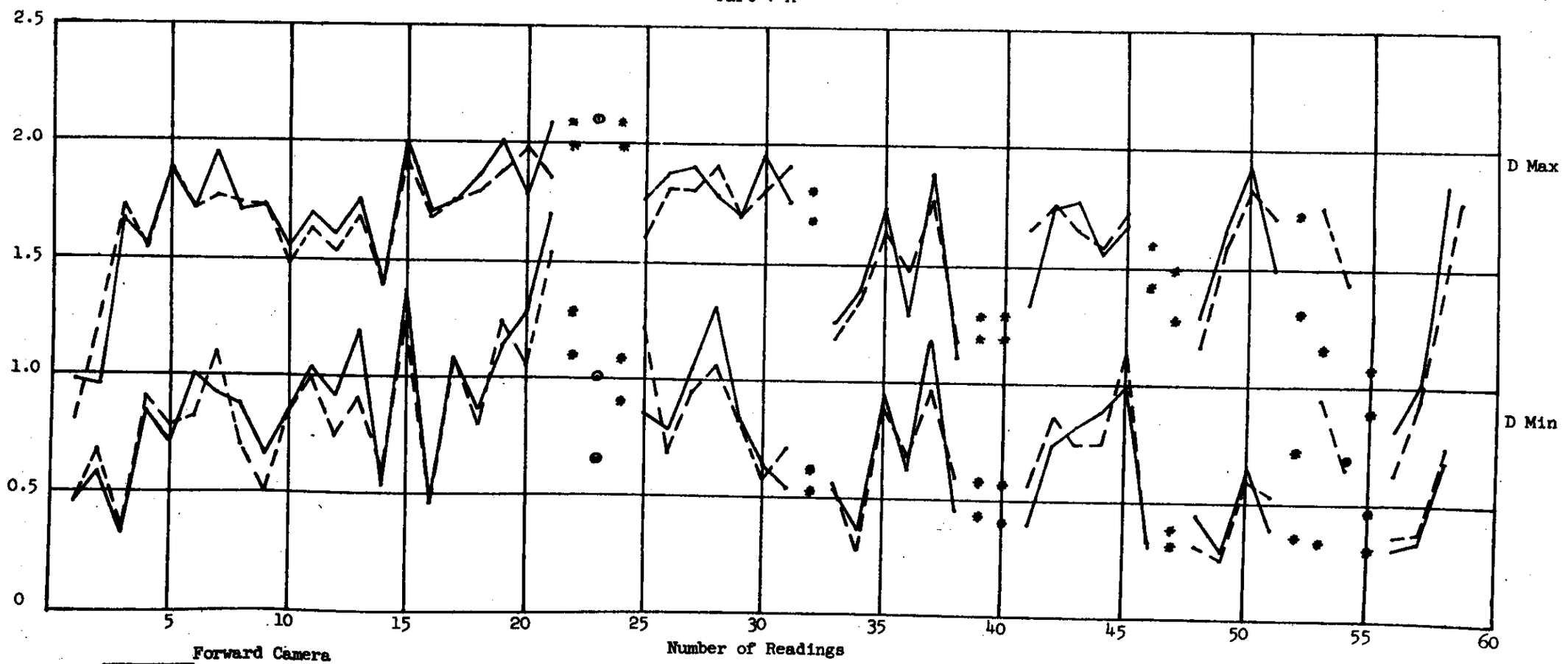
Mission 9041 Terrain Density
Part V-A



*Indicates No Readings Made

⊙Indicates Single Reading

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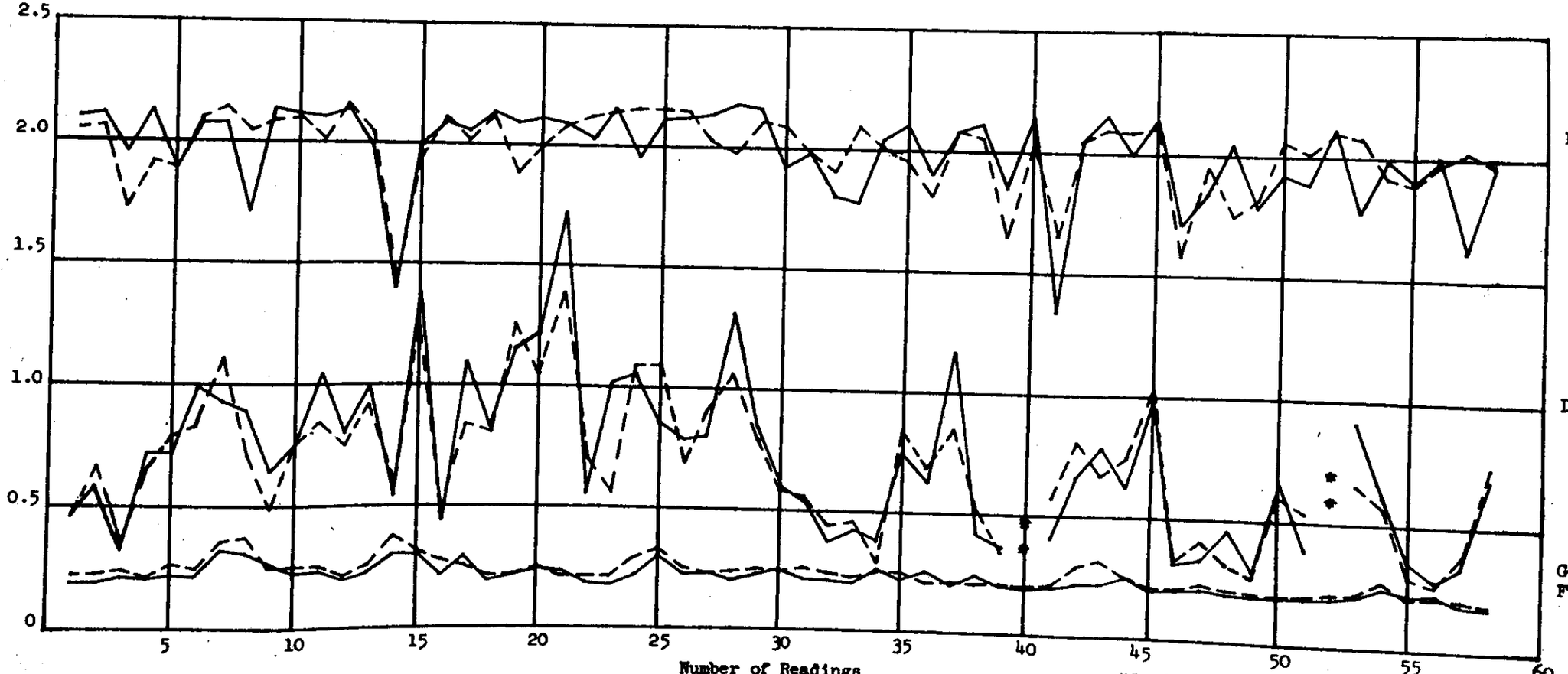
Mission 9041 - Limiting Density
Part V-B



_____Forward Camera
------Aft Camera

*Indicates No Readings Made

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