[redacted]

30 November 1964

To: [redacted]

From: [redacted]

Subject: TRIP REPORT CONCERNING MISSION 1013 FAILURE (J-15)

INTRODUCTION:

Both the forward and aft looking panoramic camera systems failed to transport film into SRV #1 during pass D-52. Both film take-up spools appear to have stopped at about the same time. Frame 105 from the forward and 111 from the aft looking camera were the last frames of photography recovered from pass D-52. SRV #1 was filled with film to 80% of full capacity when final failure occurred.

A duplicate positive of the recovered original record was evaluated during the week of 16 November 1964 for clues to the cause of the in-flight failure.

Anomalies were found [redacted] are noted in this report.

SUMMARY OF CONCLUSIONS:

1. Excessive film in the platen during exposure of both panoramic cameras created an out of focus condition that caused soft terrain imagery to be generated thru most of pass 51 and 52. Occasionally a sharp frame of photography was produced after pass 51 by both cameras.

2. The first Eastman Kodak splice thru the aft looking camera created an out of focus condition that caused soft terrain imagery to be generated. The splice was located in frame 90 of pass D-24. Occasionally a sharp frame of photography was generated at infrequent random intervals.

3. The cause of SRV #1 to fail to take-up film from both main cameras during the second operation of pass 52 appears to be open to speculation and cannot be easily proved using the anomalies observed in the recovered photography.

SUMMARY OF OBSERVED FILM ANOMALIES:

1. Observations relative to conclusion #1. (Excessive Film in Platen)

Approximately 8 frames of panoramic photography from each camera contained horizon camera imagery so close to the film supply end of the adjacent terrain frame that one horizon camera fiducial was [redacted]

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recorded in the terrain imagery of each panoramic frame. Occurrences appear to be random and were confined to pass 51 and 52. All of the above panoramic frames contained very soft terrain imagery.

Three of the eight panoramic frames were measured and proved to be the longest film lengths of any measured in the flight. Measured lengths were between farthest shrinkage markers and are as follows:

FWD, D-52, Frame 95, 28.090 inches, soft imagery

AFT, D-51, Frame 20, 28.075 inches, soft imagery

AFT, D-52, Frame 98, 28.090 inches, soft imagery

Shorter frames generated by the forward camera were sharp and measured as follows:

FWD, D-52, Frame 94, 28.030 inches, sharp imagery

FWD, D-1, Frame 302, 28.035 inches, sharp imagery

Short frames generated by the aft camera that were [redacted] measured as follows:

AFT, D-1, Frame 301, [redacted] inches, [redacted] imagery

Frame 302, 28.00 inches, sharp imagery

Note: Most aft camera frames were rendered soft by the passage of the Eastman Kodak splice during pass D-24, frame 90 regardless of the actual frame length. This problem will be summarized later in the report.

Soft imagery is associated with excessively long film lengths in the platen of up to 0.09 inches longer than at the start of the mission. [redacted] Many additional panoramic frames generated by both cameras during passes D-47, 51 and 52 exhibited abnormally close horizon photographs which correspond with excessively long panoramic frames. These panoramic frames were usually soft. But when the frame length, of those frames checked, was excessive by a small amount 0.01 to 0.03 inches, terrain photography was sharp.

2. Observations Relative to Conclusion #2 (E.K.Co. splice)

Aft camera terrain photography was consistently sharp prior to the time the first Eastman Kodak splice passed thru the platen of instrument 159 during pass 24, frame 90. Beginning with frame 90 and immediately thereafter, aft camera photography became soft with low

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definition over 50 to 60% of each format area for approximately 400 consecutive photographs where weather permitted detailed evaluation.

Figure No. 1 shows the general character of photography before, during, and after passage of the first Eastman Kodak splice thru the aft looking camera.

Approximately 50 frames of aft camera photography were sharp at random intervals after passage of the subject splice out of approximately 800 frames. The balance of 750 frames contained either soft areas and/or were covered by weather and could not be accurately evaluated for ground detail.

Measurements show that at the time the splice entered the aft camera platen area, the film shifted laterally toward the rail on the timing track side of the format by about 0.012 inches. Subsequent measurements made at random intervals from pass D-24 to D-47 indicate that the film path generally continued to be laterally displaced toward the timing track rail and never fully recovered.

An abnormally large quantity of adhesive appeared to be present at the edges of the Eastman Kodak splice. Additional adhesive appeared to have transferred to the original negative of the splice. [redacted] the original negative at Eastman Kodak prior to [redacted] and spooling operations. The adhesive 75 inches ahead of the splice corresponds to one film wrap on the supply spool and is accompanied by static marks that outline the dimensions of the splice. The adhesive 120 inches ahead of the splice partially fills the voids observed in the adhesive layer at the splice.

RECOMMENDATIONS:

1. It is recommended that Eastman Kodak be advised of the excessive adhesive associated with some of their splices and the potential impact upon the performance of the J system.

2. It is recommended that Boston be advised of the excessive film lengths and associated soft imagery observed in the platen area of both cameras during photographic scan beginning with pass 51.

[redacted]
Performance Evaluation

APPROVED: [redacted]

Operations & Analysis

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

MISSION 1013-1

FIGURE NO. 1 : AFT LOOKING CAMERA: PHOTOGRAPHIC DEFINITION VS E.K. CO. SPLICE PASSAGE
PASS 24