[redacted]

29 October 1959

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report of [redacted]

1. During the period of 20 October 1959 to 26 October 1959, the undersigned with Colonel C. Murphy, [redacted] (of the project), [redacted] (NRO), and Mr. E. L. Green [redacted] visited Vandenburg Air Force Base to accept payload section for flight 1051 and to review film handling and pre-flight procedures employed at L Building.

2. Unit 109 was shipped to Vandenburg AFB on Saturday, 17 October and camera SS-10 was shipped on Wednesday, 21 October. All documentation, e.i., camera log, and test records were shipped with the camera. The above team arrived at Vandenburg AFB a few hours after arrival of the camera. Review of test records and the camera log by Colonel Murphy, [redacted] and the undersigned revealed records to be insufficient and not up to date, preventing immediate acceptance of the payload section. Records indicated that there had been a camera part malfunction on the last HAT's test, and that a film break occurred on the tests run at Palo Alto on 17 October. Additional documentation received later from Palo Alto indicated the camera had only about 300 cycles of satisfactory operation prior to shipment to Vandenburg AFB. In light of information contained in camera log and test data, it was deemed necessary to conduct further operational tests before acceptance could be made of the payload unit for flight 1051. It was agreed that these tests would be made during systems check at the pad and after the unit had been returned to the L Building. No attempt was made to clean the instrument for these tests; however, the unit was configured (including all changes, such as installation of the new guillotine), as near flight configuration as possible. (It seems this is not considered standard practice by the Vandenburg AFB LMSD team prior to systems runs.) By insisting on this procedure many discrepancies were noted in the established pre-flight procedures.

3. The LMSD team, although being very capable in preparing the vehicle for launch, does not have, as a team member, anyone with sufficient background and/or experience to adequately prepare aerial photographic equipment for flight.

4. The conditions of the clean room and the balance of the L Building are more like a factory assembly area than the type of area required for handling and pre-flighting specialized photographic equipments. The area is sadly lacking in cleanliness and equipments for the functions to be performed. It seems that no consideration has been given to lighting conditions during loading of the payload into the instrument or during the time the instrument faring is mated to the nose cone. Under the conditions proposed, fogging of the payload can occur.

5. Although extreme care has been exercised in delivering the payload (film) to Vandenberg, it was noted that operational film, although kept in air conditioned area, is stacked on the floor where damage could occur. Camera spools, although notices are attached to each film can indicating that spools are never to be stood on flanges, were placed on flanges under workbenches. A check of all these spools showed all flanges to be damaged. It was also noted that all operational rolls of film had been opened before intended use, increasing the danger of fogged film.

6. The following pieces of equipment are considered necessary and should be procured for the L Building at the earliest possible date.

a. Film Storage Racks
b. Spool Storage Racks
c. Safe Lights, necessary Wiring and Switches
d. Film Splicer
e. Viewing Table
f. Film Processor

Since the camera must be moved from the clean room, after loading, to an area in the L Building without air conditioning, it is recommended that additional air conditioning equipment be procured to air condition the complete building. Also, that provisions be made to darken the area during the perod the camera section faring is being mated to the nose cone.

7. It is felt that we should draw upon the experience we have obtained on the [redacted] program and apply it to the CORONA operation. It is, therefore, recommended that the above be reviewed with RTD and LSD with the recommendation that the present team be increased to include a photographic pre-flight technician. This member should be authorized from a photographic stand point to approve the complete payload section for flight. His duties should include:

a. Maintenance of the dark room area in a manner comparable to the way the special equipment sections are maintained on the [redacted] program.

b. Maintenance of film supply and spares, e.i., film spools and etc.

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c. Processing and evaluation of test film.

d. Loading the instrument.

e. Supervision of instrument operation during systems check.

3. In view of the camera failures experienced on 17 October and 20 October, it was deemed necessary to make a close inspection of the instrument prior to the above reference systems check and acceptance of the unit. The following items were noted:

a. The cassette take up spool was found to have sharp burs on the inside edge of one flange. This item had been installed at Palo Alto and was considered ready for flight. Such burs, however, could have caused a film break in flight.

b. The torque on the supply spool torque motor was found to exceed 10 lbs. This possibly could have backed up the supply spool enough to pull the handmade splice into the instrument and again be a possible cause for a film break in flight. The torque motor was readjusted after the pad systems check to 2 lbs or less.

c. It was also noted that leader running through the instrument had scratches throughout the format area. Although camera platten rails can be removed for the cleaning, pressure plates for the horizon cameras cannot be removed and emulsion or film base build up in these areas might be causes for film breaks at altitude. However, film exposed on the pad system check and processed at [redacted] shows no evidence of scratching during transport of thin base material.

It was noted the new high-temperature torque motor had been installed, although a unit of this type had not been qualified (however, qualification was expected prior to flight time). Later checks have revealed that the only motor received todate is installed on camera #10. Qualification must wait for further deliveries.

4. Other items noticed during inspection of the payload unit are considered by the undersigned to be possible risk items for flight 1051 and should be reviewed for possible improvement for any subsequent flights:

a. Sheared Rollers - Present rollers are film edge supporting and show evidence of heavy creasing on the edges of the film while the camera is operating. This is an area that might cause a film break in flight. It is recommended that consideration be given to installing the old beaded show roller or a roller of a new design. ([redacted] seems to have a new improved roller design of this type.)

b. Film Tension - Film tension seems to fluctuate throughout the camera system during operation. This has always been a possible

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cause for improper film tracking or film wrap around capstan film breaks. It was most noticeable from the supply spool under the first skew roller and to the input metering rollers. The undersigned considers this flutter or uneven film tension to be excessive at this point. The complete film path should be reviewed with the view to insuring constant film tension throughout the system.

10. In view of the above, the following are recommended:

a. That Headquarters, working with LMSD review acceptance specs for the payload area and devise a simplified workable document that will show numerical limits or other acceptable limits and the results of all tests performed by LMSD. This will expedite acceptance of each unit.

b. That LMSD be encouraged to complete all work and modifications recommended for each flight unit, at Palo Alto prior to shipment to Vandenburg AFB.

c. That Headquarters, in corporation with SSD, aid LMSD in establishing pre-flight SOP's to be used during the L Building count down prior to launch. Also, aid LMSD (if necessary) in the selection and training of a photographic pre-flight technician. It is recommended that this person be permanently assigned to the LMSD L Building.

d. That all equipments mentioned in paragraph 6 be procured and installed in the L Building at the earliest possible time.

e. That the undersigned or a team consisting of the undersigned, Mr. E. L. Green (or representative) with a LMSD representative make periodic visits to Vandenburg AFB to insure implementation and compliance with the above recommendations. These visits should be made at least once every 30 days.

/s/
[redacted]
[redacted], USAF

Attachments:
[redacted]

Distribution:
[redacted]

[redacted]