



Ref #82
2 September 1961

ASH *EPJ*
ASH STAT

To:

From:

Subject: **Brief Status Report of Type III Unit Modification**

1. Designation of Unit

The Modified Units from a previous program are now designated Type III for identification of the modified version.

2. Type III Unit Received

The first Type III unit was received for modification during the last week in April 1961.

3. Thermal Test Set-up

The set-up for thermal tests to be used to empirically design, baffles, insulation, and conductive shields was completed on 8 August 1961. Initial tests have been made.

4. Space Layout

Space layouts and attach fitting locations have been established.

5. Frame Modification

Frame and structural modifications required by the vehicle space limitations are established and detail design is in work.

6. Shutter

The shutter rewind speed is too slow and a new, faster motor is scheduled in shortly. It will be tested under the thermal environment, though data indicates no problem here.

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7. Oblique Drive

A dwell type mechanism has been designed which will avoid the shock previously present in the oblique drive. This mechanism appears to be excessively complex because of the smooth return sweep desired that adds clutches and solenoids to the device.

A "ramp" type position servo that will provide the smooth stops desired has been breadboarded and appears to show promise. The advantage gained is that the existing position cams and switches can be used without change. The basis for this simple design is that the "ramp" is only required upon stopping. The start of the motion can be accomplished by turning on the motor as before. The abruptness of the "start" does not cause excessive shock. The critical motion which must be smooth is the "stop".

8. Focus Drive

The design of the new platen mounting on differential ball screws is laid out. The modification will be tested in the thermal set up to devise a simple position servo controlled by a temperature sensor. It may be that final trim of this focus servo will not be possible until actual flight tests. The servo will be designed for easy field adjustment of position, zero and rate of change with temperature.

9. Windows

The windows are designed and the vehicle manufacturer is preparing to buy them. A simple sealed window sandwich with fused quartz exterior and optical glass interior is planned. Thermal and anti-reflective coatings will be applied. The sandwich will be kept at low pressure by evacuating the space between the elements to a low pressure point on the vehicle through a small tube and porous ceramic filters. The ceramic filter is expected to avoid intake of water vapor upon descent.

10. Program

The modifications are planned for completion and lab test in the course of the next three months. Delivery is planned for December 1961.

WCM