

File 1.1
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4 December 1964

MEMORANDUM FOR: Chief, Special Projects Staff

SUBJECT: Weekly Status Report No. 11 on Project FULCRUM

1. Camera System

A. Itek - Itek was informed by TWX on 30 November that a detailed project review would be held at Itek on 14 and 15 December, and a suggested agenda was outlined. Itek was also asked by TWX on 30 November to comment by 7 December on image quality and camera design trade-offs for minimum perigee of 70 vs 80 NM, 80 NM being approximately the crossover point of the maximum payload-in-orbit curve and the drag makeup penalty curve. [redacted] was informed by Mr. Morser on 30 November that the 31" primary mirror blank had been cracked during fabrication processing on 25 November and that it appeared to be totally unusable.

[redacted] and [redacted] attended a project review meeting at Itek on 3 December. During a review of the milestone chart, [redacted] noticed that the 1 February terminal date for the brassboard film transport feasibility testing had slipped one week. Mr. Madden was reminded that this was the second incident where a slippage of major consequence had occurred and the Project Office had not been officially informed. Itek was asked to present in detail at the 14-15 December meeting the reasons why this slippage occurred and what actions were taken in attempting to rectify it. A

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number of other slippages were noticed, only one of which, clearly affects the 1 February deadline. This involves the need for reordering a primary mirror blank (27" diameter) with the earliest completion date for its testing being 1 April. Itek assumed full responsibility for the breakage of the 31" primary and stated that the stresses at the interface with the vacuum chuck might have been avoided had more proper concern been displayed for the difficulty of the problem. A revised work statement reflecting the termination of the 1/3 focal length task and the addition of an interface liaison task was submitted, total cost now proposed--\$3,216,476. Modifications to existing tasks included an analytical study of the feasibility of using gas-lubricated bars as part of the film transport system; an investigation of the methods of film steer; and a proposed design study which would allow the continuous transport brassboard to be later altered to develop the intermittent method of film transport.

Itek was informed on 2 December to proceed with the necessary modifications to the Ion-Physics vacuum chamber at an estimated \$30,000 to \$35,000 in order to assure chamber availability for the brassboard through the end of February.

Attached is a complete listing of all Itek's TMs received to date, including the most recent acquisitions.

B. P.E. - P.E. was informed by TWX on 30 November that the design total stereo angle for the FULCRUM camera configuration will be 30° . A project plan for the re-imaging optics and auto-focus tasks now being funded by ORD was submitted on 1 December.

C. STL - Dr. Scott visited Mr. Reeves on 1 December, and the results of their technical discussions are contained in a memorandum prepared by Dr. Scott. Work, in general, appeared to be on schedule.

D. RCA - Analytical efforts are getting under way on the film handling servos.

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2. Spacecraft

G.E. has not been, as yet, officially advised that they have won the spacecraft competition, nor has STL been informed that they did not win. A visit to G.E. by SPS personnel has been tentatively scheduled for 9 December.

3. Recovery System

[redacted] and [redacted] visited AVCO on 3 December and left with them a draft of the work statement covering phase IB. [redacted] was asked to look into the availability of the aerodynamic studies on the Discoverer configuration, and also to ascertain if more than one parachute vendor should be contacted. These questions and further discussions on the work statement will be covered during the visit to AVCO on 11 December.

4. Systems Engineering

Dr. DeLauer and Messrs. Ross, Franks, and Grady presented the results of their orbital payload launch system studies to SPS personnel on 2 December at headquarters. Supporting documentation submitted at the same time was as follows:

1. OPLS 1.0 -- General Requirements Exhibit
2. OPLS 1.1 -- Aerospace Vehicle Equipment Design Criteria Exhibit
3. OPLS 1.2 -- Aerospace Ground Equipment Design Criteria Exhibit
4. OPLS 1.3 -- Facilities and Real Property Installed Equipment Design Concept Exhibit.

Messrs. Maxey, McMahon, Crowley, and Dr. DeLauer visited the Martin Company in Denver on 3 December and discussed with Mr. Rauth the validity of the cost data generated by STL on the booster and launch facilities. They were

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assured that no technical bottle necks existed in supplying Titan II's to us or having Martin run a completely civilianized launch facility. STL's cost data for the standard Titan II with minimum modifications appeared good, but the launch data must be rechecked. A completely civilianized approach to the booster procurement and launch phase (up to injection into orbit) appears feasible.

5. Interface Aspects

[redacted] of NPIC has undertaken a four-month study contract with Itek, the purpose of which is the timely consideration of those design and interface problems which must be solved early in the system development program in order to insure later the satisfactory and timely reduction of FULCRUM photography and auxiliary data.

Messrs. Maxey, Crowley, McMahon, and Dirks briefed the Director and Chief of Staff of the NRO and Dr. Fubini of DDR&E on the status of the FULCRUM program. Dr. Fubini was especially pleased with the progress made to date.

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