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5 February 1965

MEMORANDUM FOR: Chief, Special Projects Staff

SUBJECT: Weekly Status Report No. 20 on Project
FULCRUM

1. Camera System

A. ITEK -- Mr. Madden and Mr. Morser visited Headquarters on 1 February to discuss the work statement for the month of February with [redacted]. Itek-proposed tasks included:

- (1) Further brassboard testing.
- (2) Continuation of the gas bar steering breadboard work.
- (3) Beginning of an intermittent film drive breadboard.
- (4) Prototype design of the optical bar structure and film transport.
- (5) Procurement of critical components for development and feasibility testing of pilot units.
- (6) Optimization of the optical design from the standpoint of tolerancing.
- (7) Continuation of the optical fabrication and testing effort.
- (8) Modification to the optical mount design as necessary.

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- (9) Detailed facilities procurement specifications.
- (10) Defining requirements for a separate assembly and test facility.
- (11) Error budget and performance prediction analysis.
- (12) Further corona investigations at Ion Physics.
- (13) Programmatic and field service planning for Phase II.
- (14) Increased consideration for interface aspects, and
- (15) A first look at S/I camera requirements.

In general, all tasks were consistent with Project Office's intentions, with the exception of the intermittent film drive task. Formal approval of the work statement was to be accomplished on 9 February, the next scheduled program review at Itek.

Daily brassboard status reports have been instituted, and test results in ambient have been very encouraging. Specific results from the various tests are contained in the Itek file folder. Mr. Morser made it clear that the IMC aspects of the test program could not be accomplished by the end of February. He further stated that, even if the ambient tests were completed by 8 February, vacuum testing would not begin until 16 February because of conversion and integration delays. Report delivery schedules were revised on 1 February and reflected major slippages. Itek was informed that the Project Office would not tolerate these excessive delays and that every effort must be made to provide vital reports by 12 February. The optical fabrication and mounting feasibility effort report was received on 4 February.

B. P. E. -- The P. E. reports completing their camera system backup effort were delivered to the Project Office on 1 February. Work has begun on the five tasks described in the work statement covering the month of February.

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C. STL -- Mr. Reeves delivered the final report of the STL film transport effort on 1 February. Mr. Reeves also provided recommended task descriptions to be accomplished during the month of February, covering certain critical aspects of the original study which are still incomplete. Specifically, these tasks consisted of:

- (1) An analog simulation of the effects of capstan perturbations.**
- (2) Digital computer model analysis of the continuous film transport configuration.**
- (3) Experimental determination of the effects on the intermittent film transport of film being drawn from a slack box at high speeds.**
- (4) Interface and performance specifications for both the intermittent and continuous transport systems, and**
- (5) A final report documenting the above tasks.**

This work statement was approved by the Project Office. Dr. Scott prepared a memo on 3 February summarizing his visit to STL on 27 January.

D. RCA -- Messrs. Maxey, , Dirks and Dr. Scott visited RCA on 5 February to review their film handling status. Permission to proceed with the breadboard testing of their design was requested, and the matter was taken under consideration by the Project Office.

II. Spacecraft -- Mr. Hood and Mr. Petty delivered the Spacecraft Phase IB reports on 1 February. The cost summary of \$19,284,300 (costs through three flight vehicles and one training vehicle) represented an increase (excluding SEAC support) of approximately \$7,000,000 over the Phase IA estimate, resulting

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primarily from a new drag make-up system, a new command programmer, a new infra-red scanner, and increased component qualification requirements. A work statement covering recommended efforts through the month of February was provided by G. E. and approved by the Project Office.

Mr. Hood and various members of his staff presented the results of their Phase IB studies in a formal briefing at Headquarters on 4 February. Remedial action was taken by G. E. management in two areas of concern resulting from the briefing. Specifically, a more experienced attitude control expert was transferred from within Mr. Cowles' department to head up the attitude control area under the FULCRUM program. Also, two G. E. corporate consultants were retained to maintain an overview of the attitude control problem. Secondly, a facilities statement was prepared to give the Project Office assurance of the availability of needed equipment and facilities to support expeditiously the Phase II program.

Dr. Chalmers and members of his staff presented a briefing on the results of their spacecraft backup and vulnerability studies to the Project Office on 3 February. Final report covering the analysis supporting this briefing is due on 15 February.

III. Recovery System -- Dr. Berninger submitted Avco's Phase IB reports on 2 February, along with a proposed work statement for the month of February. The work statement was divided into systems studies, design studies, support studies, and an alternate design feasibility study which considers the recovery of the entire spacecraft. The Project Office felt that these efforts were logical refinements to the referenced design and could be accomplished within the \$140,000 available funds.

IV. Systems Engineering -- Dr. Besserer visited the Project Office on 3 February to discuss SEAC matters.

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V. Interface Aspects -- An electric power interface meeting between Itak and G. E. was held on 5 February. [redacted] and [redacted] of the Project Office attended. The spacecraft contractor will assume that 25 volts is the minimum allowable interface voltage. However, transients down to 20 volts for less than 100 milliseconds will be acceptable. Itak was to look into their power load curves for the next meeting.



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