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25 December 1964

**MEMORANDUM FOR:** Chief, Special Projects Staff

**SUBJECT:** Weekly Status Report No. 14 on Project  
**FULCRUM**

1. Camera System

A. Itek - Following a review of the current Itek work statement, and its approval by Mr. Madden of Itek and [redacted], a CPFF contract for a total of \$3,076,106 was negotiated on 22 December. Termination date for the contract is 31 January 1965, and certain milestones which have slipped beyond this date have specifically been excluded, as have all Phase IC and Phase II costs.

In the process of some breadboard testing, Itek engineers found some severe rippling in some of the 7 inch wide film provided by EK. Samples of this film were returned to EK for comment, the ripple having a major effect on film flatness tests. Pending the results of EK's evaluation and a further look by Itek into film from other spools provided by EK, discussions with EK, Itek, and SPS personnel will be arranged.

B. P.E. - Senior technical staff members of P.E. briefed Messrs. Maxey and Dirks at a safehouse in Washington on the night of 22 December, in order that Mr. Maxey, who was unable to attend the 16 December meeting, might be brought up to date on their current technical progress.

C. STL - The third progress report on the STL film transport study was received on 21 December. The main portion of the report deals with the preliminary design results. Following a review by SPS personnel of

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the document, discussions will be held with Mr. Reeves at Headquarters on the remaining Phase I effort.

D. RCA - Mr. Dirks and [ ] visited RCA on 19 December and discussed their initial work efforts. A method of utilizing a magazine of film strips, each strip approximately 10 feet long, was proposed by Mr. Kell of RCA which would allow all the film to be exposed in one pass, would eliminate the need for moving the entire IMC mechanism laterally, and would avoid the difficult problems inherent in slowing the film to half speed during the inactive 240° of rotation. It was decided to devote major attention to this concept during the immediate future to determine whether there are any major inherent disadvantages to the approach.

## 2. Spacecraft

General Carter approved on 24 December the institution of a backup spacecraft study at STL. This study, which will utilize the \$200,000 previously authorized for spacecraft subsystem supporting studies, will concentrate on minimum weight spacecraft design (i.e. efficient subsystems), a study of survivability, and a study on conceptual designs of spacecraft which are compatible with the various boosters in the Titan family. It is intended that G.E. be informed of this decision.

The test results of the ATL scanner flown on a Lockheed spacecraft is being acquired, and when available, will be sent to G.E. to assist them in their attitude control system selection.

## 3. Recovery System

Efforts are underway to acquire program 241 re-entry data and to provide it to AVCO.

## 4. Systems Engineering

Messrs. Frank, Grady, and Dr. Chalmers visited Headquarters on 22 December to discuss recent organizational changes within the SEAC contract at STL and to

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discuss various technical aspects of the Titan booster family. In a telephone conversation with Dr. DeLauer, Mr. Maxey was informed that Mr. Ross would not be available to the program and that Dr. Chalmers would be responsible for ~~all-S&T~~ backup spacecraft and vulnerability efforts at STL. STL was tasked by TWX on 24 December to develop cost information on the Titan IIIK/Agens and pad construction and AGE requirements for the Titan III. Consideration is being given to describing the booster required in the FULCRUM program as a modified Titan III core rather than a modified Titan II for the political advantages to be gained.

**5. Interface Aspects**

An informal interface meeting between G.E., Itek, and SPS personnel (Messrs. Dirks and ) was held at Itek on 23 December. Thermal and attitude control interface between the spacecraft and camera systems was discussed. A separate informal interface meeting involving AVCO, Itek, and SPS personnel was also held that afternoon. It was agreed that direct spooling of the film on  to fixed spools in the re-entry vehicle was entirely unsatisfactory, because a large CG offset would result if a malfunction occurred on either camera system. However, AVCO agreed to look closely into the practicality of rotating the take-up spools within the RV (and possibly translating them forward) after all the film had been spooled directly into the RV. This would probably require a Discoverer-type configuration, similar to one described by AVCO as an alternate design in their proposal.

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