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22 January 1965

MEMORANDUM FOR: Chief, Special Projects Staff

SUBJECT: Weekly Status Report No. 18 on Project FULCRUM.

1. Camera System

A. ITEK -- Messrs. Maxey, McMahon, Crowley, and Dirks visited Itek on 16 January for the dry run of the briefing for Mr. McCone. Mr. McCone along with Dr. Whealon of CIA, Dr. Fubini, Dr. McMillan, General Stewart, Col. Carter, [redacted] of DOD, and Dr. Land were give a FULCRUM status briefing on 18 January at Itek by senior Itek officials and members of the Itek Project Staff. A detailed description of what transpired is contained in Mr. Crowley's Pulitzer Prize effort dated 19 January.

The modification to the Ion Physics vacuum chamber has been completed on schedule. Completion of the brassboard assembly and debug is now estimated to be 29 January. Final alignment of the final path will require more time than originally estimated, and, therefore, the completion of the brassboard feasibility testing is not expected to be completed until 15 February. The folding mirror, which is now oval with a rectangular hole in the center, has developed what appears to be a natural instability problem which has the effect of changing the required figure of the mirror. The primary mirror, which had been returned to the Corning Glass Company for annealing, was returned to Itek on 22 January; and although the cracks are still visible in the surface, there is a bond over them, and assessment of its future value to the project is currently under way.

Itak was informed on 22 January that they were authorized

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HANDLE VIA BYEMAN

CONTINUOUS SYSTEM

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to proceed with ^{Feb and March} work in the essential areas required on the design and development of the FULCRUM camera system at a manpower level not in excess of 130.

B. P. E. -- In view of the fact that P. E. recognizes the fact that their participation in the FULCRUM program beyond Phase I is unlikely, the question of the disposition of the bread-board hardware arose and it was decided by the Project Office not to disassemble during the month of February.

C. STL -- A meeting has been set up for 27 January at STL for a program review of the film handling contract.

D. RCA -- Mr. Dirks visited RCA on 22 January to discuss the status of the film drive effort there.

2. Spacecraft

Messrs. Crowley, Dirks, and [] attended a Project review briefing held at G. E. on 22 January. Due primarily to an increase from 600 lbs. to 770 lbs. for the RV, the current spacecraft weight is 1,273 lbs. plus 835 lbs. of expendables, which when added to the current combined camera and RV payload weight of 3,895 lbs. results in an injected weight of 6,003 lbs. This allows only a nine-day maximum life for the 80 NM perigee orbits and does not fulfill the five-day minimum life capability using direct injection for the 100 NM perigee orbits. The capacity of the two prime batteries further limits the 80 NM perigee lifetime to a seven-day planned mission. G. E. suggested a 1 February pre-award go-ahead on the \$3,000,000 development contract for the Marquardt bi-propellant radiation-type drag makeup engine. The current system reliability estimate for performance success (all functions are performed) is 0.957 and the mission success (data from half of the telemetry is lost) is 0.913. Performance success estimate for the first flight is 0.82. G. E. was provided with the flight test report of the ATL Model III horizon sensor and the Lockheed evaluation of that flight test report. G. E. proposes to use a similar dither scanner with their attitude control system.

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Mr. Dirks discussed the vulnerability contract involving chaff with Avco personnel on 16 January.

3. Recovery System

Messrs. Maxey, Crowley, and McMahon attended a project briefing at Avco on 16 January. Dr. Berninger pointed out that greater confidence in obtaining angle-of-attack in the subsonic region, which would allow use of a two-chute system and thus eliminate the need for a supersonic drogue, was evidenced in the Discoverer configuration rather than the modified E-5. Due in a large degree to an increase in the payload size (the addition of skew bars and the associated gas bottle, the taking of payloads out through the center hub and re-evaluation of water impact) the weight of the entire recovery system is now 1,765 lbs. It was agreed by all that this weight was excessive and that a closer look should be given to the packaging of the reels and air bar assembly. It was also pointed out that the impact errors defined in the specification were exceeded by 5NM due to seasonal winds alone.

4. Systems Engineering

Mr. Crowley met with Mr. Frank briefly on the evening of 18 January to discuss SEAC progress. Mr. Frank provided a report presenting preliminary estimates of the cost of fabrication, assembly, and check out of the Titan II and the Titan III with the Agena upper stage, including pro-rated launch site construction and ground support equipment, based on a launch rate of 15 units per year for a three year period. The costs for the Titan II varied from \$158,000,000 to \$217,000,000 depending on concurrent production contracts. The costs for the Titan III varied from \$175,000,000 to \$275,000,000 with a fixed \$98,000,000 cost for the Agena upper stage.

5. Interface Aspects

of the Project Office and Messrs. Cahow and Olsson of Avco attended a spacecraft-reentry vehicle interface

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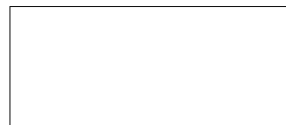
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meeting at G. E. on 21 January, at which mechanical, thermal, and electrical interface problems were discussed. It was concluded that the RV will be mated to the spacecraft truss at truss mounting points by separation devices which are jig-matched to the RV. Lateral support for the RV during powered flight fabrication will be provided by snubbing to the fairing at three points each around the RV fore and aft rings. There will be no physical thermal barrier between the RV and the spacecraft, but further analyses to determine the conductance through the thrust cone will be required. Light tightness between the RV and spacecraft will be obtained by a light-getting baffle, one part of which is mounted to the RV thrust cone and the other part to the spacecraft thermal shield. Aside from payload requirements in the RV, the RV does not require any power from the spacecraft. Two signals, one the recovery system activation signal and the other the deorbit signal, will be provided by the spacecraft to the RV. A preliminary agreement on the number of pins and the assignments for the electrical interface connectors was arrived at.

A meeting between Avco and Itek representatives was held at Itek on 22 January to review Itek modifications to the Avco proposed payload arrangement in the RV.

A memorandum from the DDS&T to the DCI recommending continuance and funding for the FULCRUM program was forwarded on 20 January.



O/DDS&T/SPS/[]/mes/5725 (1 Feb 65)

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