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July 29, 1964

Dear John:

As we have discussed, the objective of the effort on FULCRUM at this time should be to establish, in an expeditious manner, definitive data on the technical issues that are critical to the performance or success of the camera. Accordingly, I believe effort should be directed to and limited to:

- a. Initial design, fabrication of an engineering model, and definitive test of the complete film transport mechanism;
- b. Preliminary optical and mechanical design of the rotating camera, limited to the amount necessary to establish a model suitably simulating the camera's mass, inertia, balance, and flexural stiffness; this model must be dynamically tested with prototype bearings.

I suggest further that the activities be conducted under the following general conditions:

- 1. Activities will be conducted under the aegis of the ~~(S)~~ NRO; full information on activities and progress will be available to ~~(S)~~ DNRO at all times.
- 2. Contracts will be let for items (a) and (b) separately.
- 3. Consideration will be given to competitive bidding on item (a).
- 4. Funds will be applied only to specific contracts, each defined by a negotiated statement of work approved by ~~(S)~~ DNRO and accompanied by a definitive contractor estimate of cost.
- 5. No contracts will be let for items not covered in this guidance, such as systems integration, spacecraft design, design of re-entry vehicles, etc.
- 6. An individual in CIA will be identified as responsible for these contracts.

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Relative to the initial design, fabrication of an engineering model, and definitive test of the complete film transport mechanism: Tests may be conducted in a 1G field, and need not be conducted on a rotating platform, but they must otherwise simulate the full conditions and dynamics of the operation. Measurements and analyses must be adequate to establish the contributions of film motion to image smear, and the dynamic reaction of the film transport mechanism upon its mount. Tests with actual film must determine the mechanical and electrostatic behavior of film, drive, re-wind, and indexing under varying conditions of load, under vacuum conditions.

Relative to the preliminary optical and mechanical design of the rotating camera and bearings: A dynamical model of the camera is to be fabricated which duplicates mass, inertia, and balance, and includes the dynamics of the film transport mechanism. The dynamical model is to be tested with prototype bearings. Measurements, tests, and analyses must be adequate to determine (i) the dynamical performance of the camera and its supporting structure, and the corresponding contributions to image smear, when the dynamical and elastic properties of the supporting structure are known, and (ii) bearing life, behavior, and gas consumption, all in vacuum.

I should appreciate your views concerning the foregoing.

Sincerely,

(signed)  
Cyrus R. Vance

The Honorable John A. McCone  
Director  
Central Intelligence Agency

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