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CORONA GAMBIT FULCRUM

*Fulcrum
File*

DEPARTMENT OF THE AIR FORCE
WASHINGTON

OFFICE OF THE UNDER SECRETARY

May 3, 1965

Dear Red,

Mr. McCone frequently expressed concern about the need for a new satellite system for general search. To be sure that you are fully informed as to activities of the NRO in this connection, I will give you a report of background and status.

The original requirement for satellite reconnaissance systems was expressed by the USIB on July 5, 1960, with the statement that they must be "capable of obtaining coverage of denied areas at object resolutions of 20 feet, 5 feet, and ultimately 1 foot on a side." Very early, CORONA met and bettered the first requirement, and during 1963 GAMBIT met and bettered the second. In March of 1964, the NRO established a development - GAMBIT 3 - to meet the third.

In July of 1964, USIB again addressed the requirement, and on July 29 stated "That developmental work should proceed urgently toward achievement of

- (1) A single capability for search and surveillance with continuous stereoscopic ground coverage equivalent to KH-4 and resolution equivalent to KH-7; and
- (2) A capability which will permit interpretation of details on the order of one foot or less on a side even with a swath width approximately half that of KH-7."

This statement reaffirmed the requirement for GAMBIT 3 - which of course is not a search system - and established for the first time specific required characteristics for a general search system.

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During the period between the two statements by USIB, the Purcell Panel, convened by the DCI in June of 1963, also addressed the search requirement. Its report, dated July 3, 1963, stated "...the ground resolution achieved under the best conditions by the M (CORONA) system now operating appears to be adequate to meet a large fraction of those intelligence requirements which depend on general coverage. We believe that an attempt to make a completely new system which would provide equally wide coverage with only a modest improvement in resolution (5 foot, say, instead of 10 foot ground resolution) would not be a wise investment of resources."

The current cycle of activities within the NRO related to general search systems began with a competition and an award of a study contract to Eastman Kodak in January 1963. Under the code name VALLEY, these studies examined general search systems based on TITAN IIIC, having as a general objective to photograph large areas at a resolution of 1½ feet or better. The results did not give assurance that at the desired resolution a useful coverage would be achieved within the payload of the TITAN IIIC. The controlling technical problems were identified. The VALLEY contract was continued to conduct broad systems studies, and design studies and breadboard tests of critical components. Both GAMBIT 3, and the current Eastman efforts on general search, noted later, had their origins in these VALLEY studies.

During the spring of 1963, two competitive proposals for a general search system having a resolution in the range of 6 feet to 10 feet were received and evaluated. With the recommendation of the Purcell Panel in July, consideration of these was dropped.

Later in 1963, a proposal to adapt the GAMBIT camera to a general search configuration was received and evaluated. It was felt that the proposed adaptation did not adequately exploit the technology that was even then evidently becoming available.

In November 1963, a contract was initiated with ITEK to study comparatively a variety of camera concepts. Studies under this contract were soon directed exclusively to general search systems. They covered systems having resolutions in the range from 2 feet to 10 feet.

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During the spring of 1964, the CIA initiated studies of FULCRUM. These were briefed to me and to Dr. Fubini in June. On July 8, Mr. Vance directed the NRO to undertake design studies of systems alternative to FULCRUM having comparable performance objectives; and on July 29, as noted above, USIB identified these performance objectives as a specific requirement.

In August 1964, then, in parallel to the FULCRUM activity, competitive design studies were undertaken against a specific statement of requirements. Contracts were let with Eastman Kodak, ITEK, and Fairchild, to study and recommend designs for a system to search 7 to 10 million square miles with stereoscopic photography at a resolution, on the ground track, of three feet or better. Contractors were asked to plan around a booster having the capability of the TITAN IIIX-AGENA, and were required to design for the use of an alternate recovery system providing for up to six small recovery capsules.

Recommended designs were submitted in January 1965. Fairchild's was unsatisfactory. Those of Eastman and ITEK, which drew upon the background developed by these contractors in their prior broad studies, were both quite attractive, and were quite different from each other. Both contractors have been continued competitively since. Each is now under contract to design, fabricate, and test a prototype of his recommended optical system, and to conduct tests of other critical components, such as film transport mechanisms. Each has been asked to lay out a preliminary development plan, and each is working with spacecraft contractors to refine an over-all payload design.

In December 1964, Lockheed and General Electric were brought under contract competitively for spacecraft design studies to support the camera studies. Since February they have been working with each of the camera contractors. During May, they will be asked to examine designs for alternative re-entry systems.

The four contracts, with Eastman, ITEK, Lockheed, and General Electric, are all funded incrementally on a month-to-month

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basis. From the start of this effort last August, through May, about \$6 million will have been spent on these efforts. I am looking forward to an opportunity to brief you in detail on the content and progress of this work.

Sincerely,



Brockway McMillan
Director
National Reconnaissance Office

Vice Admiral William F. Raborn, USN (Ret)
Director
Central Intelligence Agency

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