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CONTROL SYSTEM~~HEXAGON~~~~ISI~~ NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

PRO A G.C.

OFFICE OF THE DIRECTOR

10 I (1)
April 30, 1966

MEMORANDUM FOR GENERAL MARTIN, SAFSP

SUBJECT: Implementation of HEXAGON Development Program

The development of the New General Search and Surveillance System as defined by my memorandum of April 23, 1966, to the Executive Committee and the attachments thereto (BYE 52224-66) has been approved. It is requested that you take those actions necessary to implement this approval in accordance with the schedule of early events in attachment 5. A copy of this schedule is attached for reference. This effort should be conducted in accordance with the following additional guidelines:

a. CIA-OSP should be requested to participate in the preparation of the system specifications and program schedule, as well as in the preparation of the RFP's for the Satellite Basic Assembly, and SI and Terrain Frame Camera. They should also be requested to participate in the study of 4 vs 2 recovery vehicles and in the preparation of the RFP for the recovery vehicles.

b. SAFSP will chair the source selection boards for the Satellite Basic Assembly, SI and Terrain Frame Camera, and Recovery Vehicles. CIA-OSP will be requested to furnish membership for these boards and assistance in evaluation of proposals as required.

c. I plan to review the RFP's, the membership of the source selection boards, the instructions to each board and the lists of recommended sources at appropriate points during the source selection process. The RFP's should be submitted for my approval prior to issuance, and the source selection boards will report their findings and recommendations to me.

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By separate correspondence, I have established and issued instructions to the Source Selection Board for the Sensor Subsystem. Copies of this correspondence are attached. SAFSP is providing membership on the Source Selection Board and will provide assistance to the Board in evaluation of proposals. It is expected that CIA-OSP will request SAFSP/Aerospace to participate from time to time in studies and other activities related to the Sensor Subsystem. You should be prepared to respond to such requests.

I have also requested the Chief of Staff to conduct a competition for the TITAN IIID launch vehicle and provide firm costs for TITAN IIIC less transtage for comparison. A copy of my memorandum to him is attached for your information and guidance.

With regard to launch facilities, it is desired that SAFSP accomplish an analysis to identify the advantages and disadvantages to HEXAGON and the NRP of modification of PALC II pad 4 vs building an additional pad at the ILC. I must receive the results of this study and your recommendations prior to the time that funds are committed for modification (as opposed to design) of PALC II pad 4.

Alexander H. Flax
Alexander H. Flax

cc: Mr. Sheldon, CIA

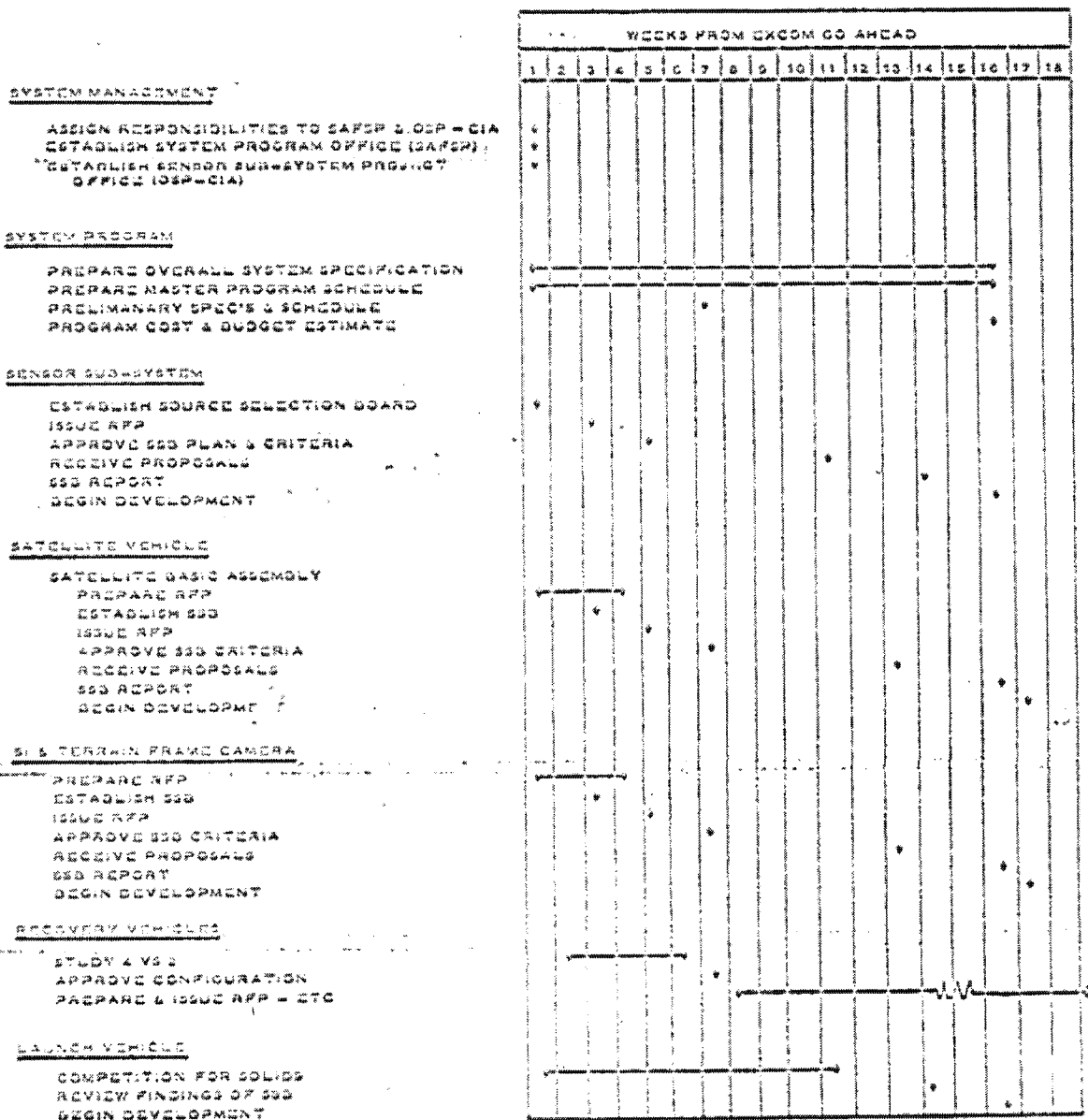
Attachments

1. schedule
2. memo to SSB
3. memo to CoES

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SCHEDULE OF EARLY EVENTS

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HELIX FULCRUM

April 1, 1966

MEMORANDUM FOR MR. SHELDON, CIA
DR. STEININGER, PSAC
GENERAL MARTIN, SAFSP

SUBJECT: New General Search and Surveillance System

Attached for your information and advance perusal is the package on the above subject that I intend to send to the NRP Executive Committee next week.

At various times in the past, I have solicited your comments and views on the more significant aspects of the project (requirements, sensor source selection, management and assignments of project responsibility, etc). All of these have received very careful consideration in arriving at my proposals to the Executive Committee.

If you are aware of any factors not previously called to my attention which might impact on the attached, please so advise as soon as possible and I will consider possible adjustments. Otherwise, I anticipate sending this package to the ExCom on the afternoon of April 5th.

You will note the BYEMAN classification of HELIX on this memorandum. That is the code word I will propose to the ExCom as a successor to FULCRUM and S-2 previously used by CIA and SAFSP to safeguard activities pertaining to this project.

Alexander H. Flax
Director
National Reconnaissance Office

Attachment

BYE 52214-66
HELIX FULCRUM

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1. Sheldon
2. Steininger
3. Martin
4. SS-1
5. SS-7
6. RF-1
7. Koslov

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~~GAMBIT FULCRUM~~DEPARTMENT OF THE AIR FORCE
WASHINGTON

OFFICE OF THE ASSISTANT SECRETARY

MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE
DIRECTOR OF CENTRAL INTELLIGENCE
SPECIAL ASSISTANT TO THE PRESIDENT
FOR SCIENCE AND TECHNOLOGY

SUBJECT: New General Search and Surveillance Satellite System

Over the past several months, the NRO Staff, with the assistance of the CIA and SAFSP, has carefully evaluated all aspects of the proposed new General Search and Surveillance Satellite System. During this period, detailed analyses and demonstrations of critical technology have continued on three separate camera designs at two different contractors: one design concept at Perkin-Elmer (considerably changed and improved from a prior Itek effort); and two design concepts at Itek Corporation (one of which was transferred to Itek from Eastman Kodak last fall, in view of the EK workload at the time the MOL sensor was approved). Simultaneously with the contractor efforts, inhouse studies on this new system have been continued by CIA-OSP, SAFSP, and the NRO Staff.

I have reviewed the background, studies and work accomplished during the past two years. Two ad hoc task groups of CIA-OSP, SAFSP, and NRO Staff representatives have been convened to make recommendations on both technical and project management matters. Comments on the reports of these task groups have been solicited and received from the CIA and SAFSP. Also, the camera designs have been reviewed several times by Dr. Land's PSAC Panel on NRP matters. I now wish to recommend a specific course of action for proceeding with this project as outlined in this memorandum.

One of the more difficult problems has been to devise a technique which will permit the equitable competition of the three camera designs which were designed against varied technical

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and operational requirements, and all of which are at different stages of analysis, design and demonstration of critical technology. Since each camera appears to be fundamentally capable of meeting the basic USCB requirement established for the new system (namely, resolution equal to or better than the KH-7 and coverage equal to or better than the KH-4), great care has had to be exercised in the establishment of other technical/operational criteria so as to assure selection of the best camera system without regard to arbitrary restraints, limitations, or secondary requirements such as may be imposed in the course of specific system design. I believe that the proposed evaluation methods and criteria, which are described in the attached documents, will provide a sound basis for camera system selection in the light of the aforementioned considerations.

There is general agreement among the NRP participants and myself as to the general system configuration which should be adopted. It involves a system with 25 to 30-day on-orbit lifetime which includes sufficient film to photograph approximately 20,000,000 square miles in stereo, a stellar-index camera to provide for application of the product to mapping, charting, and geodesy, and from two to four recovery vehicles for the return of film. (I propose that the RV decision be deferred until the completion of the spacecraft and sensor competitions; RV development is not pacing and deferral will not delay the earliest possible first launch.) The orbital vehicle will require a booster of the TITAN III-D class (TITAN III-C core with two 120-inch diameter, three-segment strap-on solid rocket motors) since the total on-orbit weight probably will exceed 12,000 pounds.

After considering several alternative management approaches, I have arrived at the conclusion that an assignment of responsibilities generally in accordance with the normal assignments described in the 1965 NRP Agreement will best meet the conditions imposed by the specific requirements of the Agreement with respect to this system and the requirement for sound and effective system project management. Accordingly that is the approach recommended: CIA-CSP would be responsible for the

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entire sensor sub-system and SAFSP would be responsible for the remaining system elements. The Director, SAFSP would be designated as the System Project Director, responsible for all overall system engineering, system integration and integrated project management. The responsibilities of SAFSP for the overall system would include all interfaces with the sensor sub-system. In the exercise of these interface responsibilities, tradeoffs in system mission performance reliability and cost as well as other program factors, SAFSP will give due weight to the requirements of the sensor sub-system as defined and presented by CIA-OSP. SAFSP responsibilities would not include system engineering, technical direction, or contract supervision for the sensor sub-system. These latter three functions would be included in the CIA sub-system management responsibilities assigned directly by the DNRO.

Attached to this memorandum for your consideration and approval are the following documents:

1. A System Operational Requirement (SOR) which sets forth the desired and/or minimum technical and operational criteria for the entire system.
2. A Request for Proposal (RFP) for the sensor sub-system. This RFP will be issued to the two competing contractors as the basis for their proposals. The RFP will also serve to establish basic guidelines for the source selection evaluation.
3. A management plan for the development, production, and operation of the new system, including the assignment of responsibilities to CIA-OSP and SAFSP. This plan is in the form of a memorandum from the DNRO to the Director of Reconnaissance, CIA and the Director, SAFSP.
4. A series of five papers which explain the rationale for the most significant portions of the SOR, RFP, and management plan. These briefs cover requirements, system life considerations, recovery vehicles, the technique for measuring system effectiveness, and system management.

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On a time scale compatible with the sensor development, contractor competitions for several other sub-systems will be conducted. I propose that the spacecraft element of the system be recompeted--despite the fact that both SAFSP and CIA-OSP had previously selected General Electric as the spacecraft contractor--for the reason that not all contractors had equal opportunities to bid against precisely the same requirements and, in any event, the current requirements differ in several respects from those previously used as a basis for competition. The RVs should be recompeted for the same reason. A brief spacecraft competition should not delay the first launch by more than a few weeks at most, and the RV development is not pacing at all. Additionally, it is proposed to compete the strap-on solid rocket motors for the TITAN III-D.

Upon receipt of Executive Committee approval, I propose to embark on the schedule included as Attachment 5. Within about sixteen weeks after receipt of your approval, we would expect to have selected the sensor and spacecraft contractors, the solid-rocket strap-on motor contractor, and would have them all on contract toward a first launch of the new system in late 1968.

You may have noted the BYEMAN classification of HELEX on this memorandum. That is the code word designator selected for the New General Search System; it supplants the previous designators of FULCRUM in the CIA and S-2 in SAFSP which were used to safeguard activities pertaining to the New Search System.

Alexander H. Flax
Director
National Reconnaissance Office

Attachments
a/s

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