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(S) NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

March 15, 1969

MEMORANDUM FOR THE DIRECTOR SAFSP
FOR THE DIRECTOR, CIA RECONNAISSANCE PROGRAMS

SUBJECT: HEXAGON Management

As the HEXAGON Program has proceeded and working relationships between the System Project Office (SPO) and the Sensor Subsystem Project Office (SSSPO) have evolved in a generally satisfactory fashion, it has become apparent that some differences of interpretation may still exist as to the intent of the Management Plan for this system which I issued on April 30, 1966.

I believe that the overall assignments of responsibility in this plan, as regards the design, development and procurement aspects of the program, are quite clear and generally agreed to. On the other hand, a difference of interpretation seems to have arisen with respect to the orbital operations phase. In the design, development and procurement phases of the HEXAGON Program the Management Plan makes quite clear that the SSSPO is responsible to the DNRO and not to the System Project Director (SPD) for technical and performance matters wholly internal to the sensor subsystem. At the same time, the SPD is charged with responsibility for overall system engineering and system integration including the definition of interface specifications between the sensor subsystem and the other elements of the system.

The Management Plan is explicit in assigning total responsibility to the System Project Director during on-orbit operation of the HEXAGON system, although it is also stated that the SPD will normally assign responsibility for the sensor operation including analyses of sensor technical difficulties to the senior SSSPO representative as "the principal sensor assistant to the SPD." It is clearly stated in the Management Plan that "the SPD is the final field authority during a mission operation from launch through recovery" and that in launch and on-orbit operations among other things, "the SSSPO is expected to be responsive to appropriate direction from the SPD."

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The Management Plan also states that the SPD will utilize the services of the Aerospace Corporation in a general engineering role. To accomplish this, it was specified that "Aerospace Corporation employees supporting the SPO shall have free access to information and data from the SSSPO and the sensor subsystem contractors but shall exercise no technical influence or judgment of matters internal to the sensor subsystems and shall not be charged by the SPD with advising him on such matters." It is further stated that "the exchange of information contemplated herein will in many cases require direct contact with contractor engineering staffs at the contractor plants and test facilities. However, all such direct contacts must be coordinated through the government agency responsible for contractor supervision. Such coordination is to be for purposes of informing the responsible agency and permitting full participation or monitoring of such direct contacts; however, the SPO and SSSPO should each honor the requests of the other for any item of information or any required direct communication with contractors." During a mission such direct contact with contractor field personnel at the Satellite Test Center, Sunnyvale, is clearly required and should be provided under the provisions of the HEXAGON Management Plan. The requirement on both the SPO and the SSSPO to provide both free flow of information and direct communication with their contractors as required, applies in all aspects of the HEXAGON Program; it is particularly compelling on the orbital operations phase where the operational situation permits little or no delay in such communication.

The SPD has prepared a plan for the conduct of on-orbit operations under which the Aerospace Corporation will provide engineering support for overall systems engineering in relation to mission performance. This will be done by utilizing small staffs at the Satellite Control Facility representing each major subsystem contractor. The sensor subsystem contractor staff is to be provided by the SSSPO at a level of effort agreed to with the SPD. This contractor staff will remain under the contractual control and administrative supervision of the SSSPO. Overall Aerospace Corporation access to all subsystem contractor staffs is necessary in order to assure coordinated and integrated

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monitoring, control, and data analysis on a continuous basis throughout a mission. It is not intended or permitted under the Management Plan that the Aerospace Corporation will be the authority on the internal functioning of the sensor subsystem. In particular, when a malfunction occurs in the sensor subsystem, the SPD, in accordance with the Management Plan, will normally consult with the senior designated representative of the SSSPO. However, an assessment of the overall performance of the many systems which interface and interact with the sensor subsystem cannot be made without detailed knowledge of conditions within the sensor subsystem. Moreover, any action to correct deficiencies in the sensor subsystem (if these are identified during the mission)or in subsequently delivered units of the sensor subsystem, will be entirely the responsibility of the SSSPO but must also be coordinated with the SPO and the Aerospace Corporation for interface control and system integration.

The foregoing plan of operations is entirely consistent with the HEXAGON Management Plan. Provision of sensor on-orbit performance and operational data during a mission to Aerospace representatives charged with advising the SPD on the overall system performance is in accordance with the assignment of overall responsibility for on-orbit operations to the SPD (and is in fact essential to the exercise of this responsibility) and is in accordance with the provision for free exchange of information and the requirement that the SPO and the SSSPO should each honor the requests of the other for any item of information or any required direct communication with contractors. The Management Plan makes clear, and I have restated in a meeting on January 10, 1968 at which NRO staff, SAFSP and CIA personnel were present, that during the conduct of HEXAGON missions no division of management responsibility is acceptable and that the SPD is unequivocally responsible for the conduct of on-orbit operations.

Although analogies between different types of systems are not always the best way to illustrate a point, I believe that the typical relationship between an airframe and engine contractor, each under direct and separate contracts to the government, provides a good analogy to some aspects of the system/subsystem organizational relationships in the HEXAGON Program.

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Typically, the engine contractor provides to the airframe program office and the airframe contractor complete computer programs describing the operation of the engine over the entire range of environmental and operational conditions, including data on internal engine operating conditions which may be susceptible to measurement and diagnosis in flight or ground tests. The airframe program office may or may not be responsible for the engine contract (which in the DoD is often held by a different Service from the one procuring the airframe and other subsystems). In any event, such exchange of detailed information on the propulsion subsystem is not for the purpose of permitting the airframe program office or the airframe contractor to redesign internal elements of the engine such as compressors, turbines, or combustors and has never, to my knowledge, resulted in such action.

Analogously, the SPD and his systems engineering support contractor must have available to them for on-orbit operation all pertinent operating data on the sensor subsystem in its normal operating modes and all possible means for identification correction of malfunctions or out-of-specification performance in any major subsystem interfacing with the sensor subsystem including, but not limited to, power, thermal control, attitude control, command and telemetry. During on-orbit operations when a malfunction is specifically localized to the sensor subsystem, the SPD will normally be expected, as specified in the Management Plan, to consult with the senior SSSPO representative in his capacity as principal sensor subsystem advisor to the SPD during on-orbit operations. Moreover, when other than normal sensor operation must be undertaken in order to compensate for malfunctions in any other subsystem for the purpose of obtaining the maximum overall operational collection effectiveness, the senior SSSPO representative will also normally be consulted prior to taking any action. Aerospace Corporation system engineering personnel will not be responsible for matters internal to the sensor subsystem in this sense. However, since any action taken to correct sensor subsystem malfunctioning may affect other subsystems essential to performance of the mission, it is absolutely

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essential that they, as overall system engineering contractors, be as fully informed as possible on all aspects of corrective measures contemplated in the sensor subsystem for the purpose of assuring that such measures will not by the effect on other subsystems degrade rather than improve overall mission collection effectiveness. By the same token, in order to assure that no adverse effects on sensor performance result from out of specification performance or malfunctions of other subsystems, it is essential that the senior representative of the SSSPO be fully informed on all subsystem status reports and all contemplated abnormal modes of operation to the same extent as the SPD himself. The HEXAGON Management Plan provides fully for such information to be made available to any designated representative of the SPO or the SSSPO and their contractors.

I stated at the time of issuance of the original Management Plan that its successful implementation would require the wholehearted cooperation of both CIA and SAFSP. I believe that in general we have had that cooperation with respect to the ongoing development and procurement effort. There has been a natural tendency to view on-orbit operations, since they lie in the future, as an area for protracted negotiation as to the fine details of working relationships. Since we are now at a point where definite and positive arrangements must be made for on-orbit operation, the time has clearly come to pin down these working relationships and to proceed with implementation of operational plans. In view of the major national investment in the HEXAGON system and the high degree to which we are depending upon it as a major component of our total intelligence collection capability, I believe it is essential for both the SPO and the SSSPO to make final these plans and working arrangements for operations in accordance with the original HEXAGON Management Plan, which the foregoing discussion may clarify but does not change.

Alexander H. Flax

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(S) NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

THE NRO STAFF

March 12, 1969

DR. FLAX

We thought you would want to personally sponsor the attached memoranda for signature by Mr. Packard and Dr. Seamans.

The first designates Dr. McLucas the Director, National Reconnaissance Office and replaces the October 1, 1965 letter signed by Mr. Vance which is included for your reference at Tab A.

The second refers to the first and delegates to Dr. McLucas (1) full directive authority over all activities of SAFSS and SAFSP and (2) the authority to act for the Secretary on all Air Force matters associated with the NRO and/or within the purview of the NRP, including the MOL reconnaissance payloads. This memorandum would replace that signed by Dr. Brown on November 9, 1965 (see Tab B).

William R. Yost

WILLIAM R. YOST
Lt Colonel, USAF

R.A. Berg

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