

September 30, 1969

Bill:

The paper is fine as a detailed background paper to insure McLucas understands.

He will still need a much briefer paper for circulation to ExCom. This paper should briefly state the present arrangement.

- The proposed new arrangement (Why can't we get that accepted by NASA & DOD now?)

- Address the need for additional 156 review.

- Address the acceptability within current guidelines of - building things at 20 meters
- planning things at 3-5 meters
- doing all the astronomy they wish.

Emphasize that the structures of the guidelines have been clearly understood as necessary to insure that reconnaissance-like activities by NASA are called to the attention of DOD and not because of a "forever" restriction on NASA, i.e., the present procedures are guidelines and working arrangements only and NASA has always had the optional mechanism of proposing anything they want for consideration for MSFPC or 156 if they were dissatisfied--they have not because they are not!!

Lew Allen, Jr.
Colonel, USAF

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GUIDELINES FOR NASA ACTIVITY IN EARTH SENSING

Background

The initial NRO concern over NASA activities related to earth reconnaissance was addressed to the Secretary of Defense in April 1965. In a memorandum to Mr. McNamara, Dr. McMillan outlined a number of related facts indicating the extent of activities by NASA bearing on earth reconnaissance which he considered to run counter to national policy as expressed by the NSC and which he felt could jeopardize security and discipline within the NRP. Dr. McMillan recommended that a general agreement be struck with the NASA setting up a procedure which would identify NASA requirements for reconnaissance sensors or reconnaissance-like activities and provide in each case for specific agreements at the level of the Associate Administrator and the DNRO.

In early May 1965, Mr. McNamara proposed to NASA that the Air Force serve as its agent in procuring, developing and testing in earth orbit, sensor equipment for NASA reconnaissance-related activities. Within DOD, Mr. McNamara designated the DDR&E as the channel for NASA to use in obtaining official DOD non-reconnaissance requirements and setting up such programs. He suggested further that

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NASA carry out actual performance of any such cooperative programs with the Air Force and indicated that NASA should work through the National Reconnaissance Office on all programs which had sensitive implications of a reconnaissance nature. Mr. McNamara suggested an agreement between DOD and NASA which would incorporate these procedures.

A NASA response of June 23, 1965 rejected Mr. McNamara's proposal, and suggested in lieu of any agreement at the Secretary of Defense/Administrator of NASA level, that, in any future case in which NASA desired to proceed beyond the exploratory study phase, the Associate Administrator of NASA and the Director, NRO, be delegated the responsibility for executing a memorandum of understanding which would prescribe the detailed arrangements, including the assignments of responsibility.

In his response of July 31, 1965 to the NASA letter, Mr. McNamara indicated that his understanding of the NASA requirements, as expressed by Mr. Webb, was that these requirements overlapped the performance range of classified NRO programs and should be governed by the same considerations of national security which were the bases for an earlier DOD/NASA agreement on NASA reconnaissance programs (August 28, 1963).

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In view of the grave possibility of endangering the national security, Mr. McNamara enjoined NASA to terminate its study contracts in this special area, with the industrial and academic community, and to disband these study groups until determinations by the agreed to management procedures could be brought to bear. Mr. McNamara suggested that, in the interim, properly cleared individuals could carry on in-house study.

The DNRO (Dr. McMillan) and the Associate Administrator of NASA (Dr. Seamans) met on July 27, 1965 to discuss a general procedure for making such determinations.

On August 5, 1965 Dr. McMillan summarized his understanding of this general procedure:

1. NASA would establish a small committee (of perhaps three members) appropriately located within the NASA organization. These individuals would be given BYEMAN clearances.
2. These individuals would keep themselves informed about reconnaissance-related activities within NASA that fell within the scope of a definition to be agreed upon by McMillan and Seamans.
3. Initially, these activities were to be reported to Dr. Seamans for discussion with Dr. McMillan as to disposition according to the DOD/NASA agreement already in force.

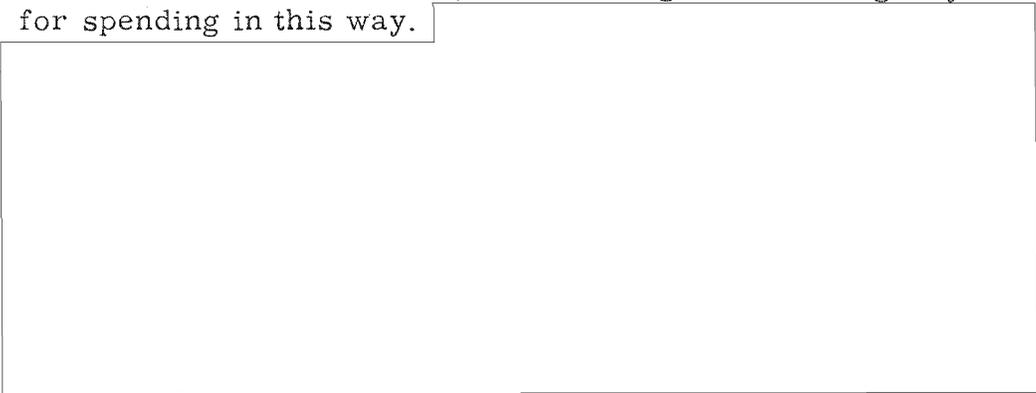
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4. As the policies developed, it was understood that these matters could be settled by discussion between the NASA committee and the Director, NRO Staff without requiring the direct attention of Drs. McMillan and Seamans.

Dr. McMillan suggested, at this time, a definition of the scope of reconnaissance-related activities that would automatically be subject to review. In general, activities were to be identified prior to the issuance of an RFQ, or prior to the transfer of funds to another agency. The suggested definition:

An activity is defined as the expenditure of NASA research and development money with a university or industry, or the transfer of NASA money to another government agency for spending in this way.



There were other possible activities which Dr. McMillan considered of technical interest to the NRP. He suggested that these should also be brought to his attention. These included the development or test of pointing, tracking, and stabilizing techniques, or systems to be used with satellites bearing high resolution sensors,

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in which the pointing accuracy was better than 20 microradians or the unstabilized rate was less than 20 microradians per second. The development or test of new recording media for use with reconnaissance-like sensors were also considered to be activities of interest.

On August 24, 1965 Dr. Seamans accepted for NASA the arrangements and criteria set forth by Dr. McMillan in his letter of August 5. Dr. Seamans designated Messrs Garbarini (NASA/OSSA), [] (NASA/OMSF) and [] (NASA/OART) to serve as the committee to keep him informed of reconnaissance-related activities within NASA which fell within the scope of the agreed definition.

On August 30, 1965 Mr. Vance nominated Colonel David L. Carter (NRO Staff) and [] (DDR&E) to represent OSD on a "Remote Sensor Coordination Panel." NASA activities, in this area, proceeded then along the established guidelines.

On April 4, 1966 Mr. Schultze (Director, Bureau of the Budget) and Dr. Hornig (Director, Office of Science and Technology), in a letter to Mr. Rusk, outlined a growing interest in the possible uses of satellite reconnaissance-type systems for peaceful purposes as reflected in studies being conducted by NASA to investigate the potential for earth sensing from satellites and suggested a study, by

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the NSAM 156 Committee, of the relationships between the programs of NASA and the NRO. The NSAM 156 Committee was asked to review the current security restrictions on reconnaissance activities and established national policy toward developing a plan of action based on such a review. A suggested list of issues was included.

The NSAM 156 Committee reported its conclusions to the President on July 11, 1966. The key relevant recommendations:

1. The classified national reconnaissance program should be protected by continuing to consider carefully the political and security effects of proposed unclassified earth-sensing activities prior to their authorization. Similarly, consideration should continue to be given to the political and security effects of public discussion of such activities. Any party at interest can request the NSAM 156 Ad Hoc Committee to review possible political or security issues which might arise from particular NASA or other non-military plans, programs, or other related activities concerned with spaceborne earth-sensing.

2. There is potential great political capital in a US program of natural resource surveys and other scientific and economic exploitation of satellite earth observation and sensing, provided the basis has been properly laid, and the announcement of such a program is able to draw upon and project viable economic promise. Further consideration should therefore be given to a major political initiative advancing the concept of economic betterment through space activities. If such an initiative is decided upon, it should come at a time when sufficient work has been done to demonstrate the potentialities and offer reasonable promise of some early payoff.

3. At present, and for the next several years, from the standpoint of political and security considerations there is no objection to NASA proceeding with its tentatively planned experimental program, complying with the limitation previously established between NASA and NRO.*

*The Committee accepts as a satisfactory present definition of the limitation on the study, design, development, fabrication, or test of earth sensors by NASA (as proposed in Dr. McMillan's letter to Dr.

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4. In discussion of the use of observation satellites for natural resources purposes, NASA should, for the next five years -- subject to future review and possible revision of guidelines -- restrict its discussion of future systems to those involving ground resolution of 10-15 feet. The same restriction should apply to all other interested Government agencies. In order to facilitate proper classified control to apply the above general guidelines, and additional detailed implementing guidelines developed by NASA with the concurrence of NRO, a NSAM should be issued directing all other civilian agencies with an interest in satellite earth-sensing for these purposes to make known their interests in that field to, and coordinate fully with, NASA. Apart from other advantages to be expected from such an articulation of responsibilities, it should enable NASA to apply the agreed classified guidelines limitations to other civilian agencies.

5. NASA and other appropriate agencies should consider carefully the relative merits and costs of aerial and other possible alternatives to various space-borne earth-sensing programs in terms of practical political interests as well as cost effectiveness. Similarly, the respective merits of manned and unmanned satellites will of course require consideration. To assist in deciding these questions, NASA and other appropriate Government personnel should be permitted to use selected U-2 and KH-4 photography, most of which is now codeword classified, to advance its studies of non-military earth-sensing applications.

Recognizing the necessity for conducting its Earth Resources Survey Program in such a manner as to continue to avoid placing the U. S. space reconnaissance program in jeopardy, NASA proposed that the program go forward under a special NASA-DOD coordinating and monitoring mechanism governed by a set of guidelines and ground rules

Seamans of August 5, 1965, and accepted by Dr. Seamans in his reply to Dr. McMillan of August 24, 1965) as those sensors not exceeding a capability of "an angular resolution of 0.1 milliradian or finer, or an optical [] with a physical aperture greater than 30 cm. and an optical figure controlled to better than 1/4 wave length." This limiting optical resolution is roughly equivalent to 20 meters from low earth orbit.

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acceptable to the Secretary of State, Secretary of Defense, DCI, President's Science Advisor and the Administrator of NASA. On September 26, 1966, a coordinating and monitoring committee designated the Survey Applications Coordinating Committee was established. The specific guidelines, criteria, and ground rules for the conduct of the NASA Earth Resources Survey Program were based upon the McMillan-Seamans agreement of August 5, 1965.

In January 1968, a memorandum of understanding between the DOD and NASA updated and expanded the functions of the Manned Space Flight Policy Committee (MSFPC) to include:

- a. Resolve those matters concerning the mutual participation in and support of the manned space flight programs of the two Agencies.
- b. Arrive at agreements involving top policy determination.
- c. Facilitate the exchange, at top management level, of viewpoints and information of importance in the coordinated planning of the manned space flight program of the NASA and the DOD.

In February 1968, the MSFPC charter was annexed to include a subcommittee, designated the Survey Applications Coordinating Committee (SACC) to report directly to the MSFPC and to provide for a detailed and continuing review, coordination, monitoring, and control of NASA activities that relate to the NRP.

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The definitions contained in the SACC charter were those initially agreed to in August 1965 and endorsed by the NSAM 156 Committee in July 1966:

1. A reconnaissance like-sensor is currently defined to be an image forming sensor having an angular resolution of .1 milliradian or finer, or an optical system with a physical aperture greater than 30 cm and an optical figure controlled to better than 1/4 wave length. Until revised, these criteria will define the sensitive sensor performance threshold.

2. An activity of interest to the NRO is defined as the expenditure of NASA research and development money with a university or industry, or the transfer of money to another organization to be used in this way, that involves the study, design, development, fabrication, or test of reconnaissance-like sensors, or significant components thereof, for use in orbital systems, and studies of the use of such sensors in orbital systems.

3. Pointing, tracking, and stabilizing techniques or systems of interest to the NRO are defined as those in which the pointing accuracy is better than 20 microradians or the unstabilized rate is less than 20 microradians per second.

4. Recording media of interest to the NRO are defined as those for use with reconnaissance-like sensors.

The agreed-to NASA program guidelines were these:

1. NASA programs which essentially duplicate equipment capabilities or operations of the NRO are not to be initiated unless overriding considerations in the national interest warrant such duplication.

2. Development, procurement, or acquisition, of reconnaissance like sensors for NASA programs agreed upon by the MSFPC is undertaken only after a detailed agreement between the NRO and NASA has been executed within the sense of the DOD/NASA Agreement on NASA Reconnaissance Programs of August 28, 1963, as amended.

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3. Security limitations or technical thresholds imposed by NRO upon proposed or approved NASA activities are reviewed by the MSFPC as requested by NASA.

Present Situation

In May 1969, the DOD element of the SACC proposed officially for SACC review a revision to the guidelines which would

- a. permit talking about higher ground resolutions as requirements,
- b. define limitation in terms of ground resolution rather than angular resolution,
- c. propose to consider astronomy experiments outside the scope of the SACC security guidelines.

The suggested changes included:

- a. clarifying the astronomy experiment exemption as non-earth looking,
- b. clarifying the ground resolution as 20 meters (from any altitude) for current programs,
- c. confirming a 5 meter ground resolution (from any altitude) criterion for sensitive imagery for NASA planning of future earth-sensing systems,
- d. adding a requirement to review NRO related hardware and techniques for contribution to NASA needs,

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e. removing from the definition of reconnaissance-like sensors those optical systems with a physical aperture greater than 30 centimeters or those sensors with an optical figure controlled to better than 1/4 wave length.

This revision to the security guidelines is currently under consideration by SACC and will, when agreed to, be transmitted to the MSFPC for its approval.

Discussion

NASA activity in the earth-sensing area has been reviewed continuously by the DOD/NASA SACC and has proceeded, virtually uninhibited, within these guidelines.

The somewhat unrealistic restrictions imposed previously on astronomical experiments have, for practical review purposes, been removed. Astronomical experiments have been recognized as intrinsically non-provocative to other nations and have been reviewed for some time in this context. The proposed revision to the SACC procedures would officially place such experiments outside the scope of the security guidelines of the SACC charter.

As a matter of practicality, the SACC has for some time used a ground resolution of 20 meters (from any altitude) rather than the previously defined angular resolution, as a criterion for defining reconnaissance-like sensor performance.

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Pursuant to the NSAM 156 Committee recommendations of July 1966, the SACC has, in reviewing plans based on NASA documented needs for future earth sensing systems, used a 5 meter ground resolution (from any altitude) as the criterion for sensitive imagery.

NASA does not consider the proposed revised guidelines to be prohibitive either in its current or planned earth resources program activity, in its planned astronomical experiments or to its examination of the potential or future use of the ATS hardware and technology in an earth-sensing role.

The NRO considers an early SACC involvement in the continuing review within the context of these guidelines of NASA Earth Resources Program planning to be essential in protecting the security of the NRP, in avoiding a duplicative effort in the development of hardware and in accommodating the sharing of existing technology.

A formal approval by the MSFPC and continued use by SACC of the revised guidelines would appear to satisfy both DOD and NASA concerns.

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