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~~TOP SECRET~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

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THE NRO STAFF

April 7, 1967



MEMORANDUM FOR DR. FLAX

VIA: GENERAL BERG AND MR. REBER

SUBJECT: Recommendation #7 of the NSAM 156 Ad Hoc Committee's Report of July 11, 1966

TAB A is the response of Mr. Helms to your letter of February 23 by which you forwarded a special study report related to Recommendation #7 of the NSAM 156 Ad Hoc Committee Report of July 11, 1966.

You will recall that Recommendation #7 stated that "The Director of Central Intelligence in consultation with the Director of the National Reconnaissance Office should review and establish appropriate security restrictions on cameras and other sensing apparatus and equipment which can be made available for NASA's program of non-military applications of satellite earth sensing." Attached as TAB B is your February 23 letter to Mr. Helms, the special study report and other related correspondence.

While stating his support of the findings of the special study support, Mr. Helms has withheld his official endorsement pending consideration by EXCOM of NASA's proposed use of a GAMBIT camera in earth orbit. Mr. Helms refers to your February 17 letter to Admiral Taylor (TAB C) wherein you advised that you planned to report to EXCOM concerning this latter problem.

*Louis F. Mazza*  
LOUIS F. MAZZA  
Assistant for Security  
NRO Staff

GAMBIT

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*7 Apr*

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CENTRAL INTELLIGENCE AGENCY

WASHINGTON 25, D. C.

OFFICE OF THE DIRECTOR

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April 5, 1967

The Honorable Alexander Flax  
Director, National Reconnaissance Office  
Department of Defense  
Washington, D.C.

Dear Al:

I have your letter of February 23 which forwards the final report of your group in connection with Recommendation #7 of the NSAM 156 Ad Hoc Committee Report of July 11, 1966. While I support the findings and recommendations of the report, I have delayed a reply because of the serious study we have been giving to NASA's proposed use of a GAMBIT camera in earth orbit. I note in your letter of February 17 to Admiral Taylor that you plan to report to the NRP Executive Committee on this problem. I believe this would be the appropriate forum in which to resolve the question of the use of a GAMBIT camera by NASA and intend, therefore, to await the outcome of the Ex Com consideration of this matter before officially endorsing the report.

Sincerely,

*Dick*

Richard Helms

BYE #0056-67

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February 23, 1967

Dear Dick:

On August 4, 1966, you wrote me (BYE 0178-66) concerning Recommendation #7 of the NSAM 159 Ad Hoc Committee's report of July 11, 1966 "Political and Security Aspects of Non-military Applications of Satellite Earth Sensing" which referred to your responsibilities for establishing security criteria for NRP equipment which might be made available to NASA. In my reply to you of August 11, 1966 (BYE 59603-66) I suggested that a small group of experts, representing the CIA, NSA, DIA and NRO, be assembled to consider the matter.

This group has completed its study and its final report is attached. I generally agree with the findings expressed in the report and believe that the report can be used, at least for the near future, as a practical security classification guide for NRP cameras and other equipment which may be made available for NASA use.

If you approve the findings and recommendations of this report, I would propose that it form the specific basis for NRO dealings with NASA on equipment and technology.

Sincerely,

Alexander E. Flax

Mr. Richard Holms  
The Director of Central Intelligence  
Washington 25, D. C.



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WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

11 August 1966

Dear Dick:

This is in response to your letter of August 4 regarding Recommendation No. 7 of the NSAM 156 Ad Hoc Committee's final report. During June 1966, my staff prepared a study, "Technical Security Considerations of the Disclosure of National Reconnaissance Program Sensor Technology," which might well serve as a useful starting point for the indicated analysis. I would suggest a small group of experts, representing the CIA, NSA, DIA and NRO, be assembled to assist in preparing my recommendations to you. Mr. Louis Mazza would be my choice for chairman of this group. If you concur in this approach, I would appreciate a CIA nominee.

Sincerely,

Alexander H. Flax  
DirectorMr. Richard Helms  
Director  
Central Intelligence Agency  
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TRP SATELLITE PHOTOGRAPHIC

EQUIPMENTS PROGRAMS ABOVE

THE 0.1 HR. CRITERION

- A. Itek Corporation 2 1/4 inch focal length frame terrain camera which has been used with the CORONA/J-1 and GALEBY systems.
- B. Eastman Kodak Corporation, 3 inch focal length frame terrain camera which has been used with the GALEBY system.
- C. Fairchild, 3 inch focal length frame terrain camera which is programmed for use with the CORONA/J-3 system in July 1967.
- D. Fairchild, 3 inch focal length frame terrain camera. This camera was flown at high altitudes under project ARGON for purposes of geodesy. It is a forerunner of the Fairchild 3 inch focal length frame terrain camera programmed for use with the CORONA/J-3 system.

superiority. We cannot in fact be sure at this time, that some elements of a U.S. system produced at the 0.1 MR criterion will not in some manner enhance Soviet technology. In order to insure U.S. superiority in the field of satellite reconnaissance and in order to insure against increasing the potential vulnerability of U.S. satellite reconnaissance systems, some degree of security protection will be required for technology related thereto for sometime to come.

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(active countermeasures). It is appropriate therefore, that discussion of the subject of technology security also considers the degree of security necessary to insure against increased vulnerability of WRP operating systems. While in all probability not germane in light of NASA's current modus operandi, continual care should be exercised to insure that there is no definitive pattern of commonality between NASA-WFO command and control procedures, because of the assistance this might provide to hostile analysis of the WRP systems. In addition all hardware (whether associated with the vehicle or the sensor) requires close scrutiny, prior to providing such equipment to NASA, to insure that the unclassified use of the equipment by that organization, will not in some manner contribute to the vulnerability of the then operating WRP systems. An example might be the  $10^{-9}$  g/sec<sup>2</sup> accelerometer for precise positioning presently under development (security classification SECRET). Exposure of this feature might facilitate a hostile analysis of system vulnerability. Certainly if there is a question related to any technology which might have a bearing upon the matter of vulnerability, conservative judgement should dictate continuance of the maximum feasible degree of security classification and/or control.

In conclusion, there is not sufficient evidence upon which to assess the nature and extent of the U.S. technological

An examination of the current state of U.S. technology related to satellite reconnaissance, reveals no instance wherein the elements comprising this technology cannot be explained in terms of generally accepted geometric, mechanical or engineering norms. Many unclassified technical papers have been prepared by competent but unclassified individuals, which describe comparable or at least feasible photographic satellite systems. The presumed U.S. technological superiority in this field therefore, can be attributed to our intense preoccupation and dedication to the matter, rather to any scientific break-through in the classical sense. Some of the most significant elements contributing to our advanced state-of-the-art (thin based, ultra-sensitive films, lens grinding and large mirror construction and stabilization techniques) are not today subject to special security controls, except as they relate to a composite satellite reconnaissance system. None of these elements however, can be singled out as providing the key to our presumed technological superiority, for in fact there is an inter-relationship of all componentry of a satellite reconnaissance system, critical only in the sense of a factor of photographic resolution.

As demonstrated in the prior discussion related to intelligence source security, RFP reconnaissance satellites are to a degree presently vulnerable to hostile physical interference



10-30 ft. It is indicated that the Soviets have a sophisticated attitude control system, possessing both the accuracy and stability required of a satellite photographic system. In the area of stabilization however, U.S. analysts of the Soviet program are unable to find evidence of crab or yaw adjustment, a factor which might be significantly degrading the quality of their photography. The spotting system has been estimated to provide ground resolution on the order of 6-12 feet. Available evidence supports the conclusion that the Soviet spotting system is a panoramic system. Their acquisition of the U-2 panoramic camera in 1956 is reported to have stirred considerable technological interest in the panoramic camera concept on their part.

~~Our analysis of the Soviet system however, is based primarily upon telemetry intercept. We possess no captured Soviet equipment, documents, drawings or photography, with which to support our analysis or with which to compile a more complete description of the Soviet equipment. Until we acquire such materials, we cannot be sure that technology related to a U.S. photographic satellite system yielding on the order of 10-15 ft of ground resolution, would not enhance technology related to a Soviet system which we now assess as having comparable ground resolution capability. In short we cannot at present define the technological superiority of the U.S. vis-a-vis the Soviet system.~~

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## A DISCUSSION RELATED TO TECHNOLOGY SECURITY

The only practical gage for technology security to be applied to U.S. satellite reconnaissance equipments, is the nature and extent of the U.S. technological superiority vis-a-vis the Soviet equipments. Even this gage however, overlooks any possible repercussions in the event nations, other than the USSR and the U.S., should embark upon a program of satellite reconnaissance.

Technology security of itself in the case of satellite reconnaissance however, is not necessarily a matter requiring extraordinary (SPECIAL) security protection. The primary consideration is and should continue to be, the protection of the intelligence source and method (intelligence source security). Technology security however, is a valid secondary consideration, if the U.S. hopes to maintain its technological edge.

Attributing U.S. intelligence analysis credit the Soviets with an effective and smoothly functioning program which enjoys a relatively high priority. The analysis shows, that like the U.S. program, they employ two separate photographic systems: one for search and surveillance, and one for spotting. The search and surveillance system apparently employs three frame cameras to provide wide area coverage. Ground resolution of this system has been estimated at no better than 10 feet with most of the photography probably yielding on the order of

comprehension or firm evidence of the true capabilities and magnitude of the program. Therefore, it would appear most prudent for the U.S. to continue to conduct such programs under the utmost secrecy at least until such time as international acceptance of reconnaissance by satellites is achieved.

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and scope of the U.S. satellite reconnaissance program. The discontinuance of both the U.S. and Soviet satellite reconnaissance activities by force of political action would result in the U.S. sustaining a much more serious loss than the USSR. Under such circumstances, the Soviets could continue reasonably effective conventional intelligence collection activities in the "open" U.S. society, whereas the U.S. conventional intelligence collection in the "closed" Soviet society would remain largely ineffective and non-productive of that intelligence needed to replace that secured by satellite reconnaissance.

To date, evidence of Soviet, or any nations, intent to use either active or passive measures to counter the U.S. satellite reconnaissance program is at best sketchy. Therefore it is most difficult, if not impossible, to determine or attempt to establish that point at which sufficient provocation exists to induce the use of countermeasures. The scenario which could prevail at any given moment entails so many intangibles and variables that no reliable measures can be established which would be of assistance in an evaluation to predetermine the provocation point. If it is assumed that the technology employed in the National Reconnaissance Program today provides the quality and quantity of information that would provoke reaction then it can also be assumed that such reaction has not been experienced because those concerned do not have a full

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with an increased volume of high resolution stereo coverage, the validity of future U.S. estimates of Soviet military capabilities would not equal the accuracy of today's estimates because of our failure to detect all new deployments with present satellite camera systems resolutions. The Soviet practice of dispersing ICBM sites and other strategic targets does not appear to be attributable to a planned program designed to reduce detection or observation by satellite reconnaissance. It does appear to result from the application of practical, tactical or operational considerations. If the Soviets were to combine these considerations with a real desire to reduce detection or observation, they could implement an effective program that would result in a serious reduction in the U.S. intelligence estimative capability, particularly in those areas where the U.S. intelligence community is almost totally dependent upon satellite photography as a source of reliable information. Similar results could be expected in other geographic areas, depending upon the knowledge of camouflage and deception techniques possessed by the state involved.

Political action designed to force discontinuance of U.S. satellite reconnaissance can be initiated by any state, at any time, and in a wide variety of combinations of forums. Such action would most likely be initiated subsequent to comprehensive appreciation of factual knowledge which reveals the quality

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'successful' merely because they operate outside or beyond the confines of the target state." The Soviet charge, in connection with the announcement that Gemini 5 astronauts were taking photographs, that the U.S. was using the Gemini program to conduct espionage against China and Southeast Asia provided additional current evidence of the Soviet attitude and sensitivity to photo reconnaissance. Although the above concerns the Soviet attitude towards satellite reconnaissance and their capability for active countermeasures against satellite vehicles, this same course of action is open to any state possessing a missile launch capability and tracking facilities, i.e. China, France, Japan, etc.

The negation or degradation of satellite reconnaissance photography through passive means is a course of action open to any state that recognizes the need for such action. Current evaluation of Soviet camouflage and deception thus far noted leads to the conclusions that if the Soviets have endeavored to hide "sensitive" installations they have grossly underestimated the capabilities of the U.S. satellite reconnaissance systems. On the other hand it is felt that if the Soviets should fully exercise their knowledge of camouflage and deception techniques concurrent with planned and new construction, even a greatly increased volume of high resolution stereo coverage might not be adequate to optimize the opportunities to detect and evaluate Soviet military capabilities. It is further estimated that even

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Further, the difficulty that the U.S. would experience in trying to prove direct Soviet connection with acts resulting in satellite destruction/incapacitation could encourage them to take this course of action. It is interesting to note that since the enactment of United Nations General Assembly Resolution 1721 on 20 December 1961, which commended to the member states the proposition that international law applied to the peaceful use of outer space, and that it was free for exploration and use by all states in conformity with international law, Soviet pronouncements on the subject have clearly indicated that they do not consider reconnaissance to be a peaceful use. Analysis of Soviet public pronouncements indicates that some are clearly designed to justify in the eyes of world opinion, possible Soviet action to destroy U.S. satellites.

The most recent evidence of this Soviet position occurred on 21 July 1966 where in a Soviet delegate to the Eighth Nuclear Disarmament Committee advised a U.S. delegate that "... "there were other military activities in which we are both engaged which also could not be accepted by the USSR or by the neutrals as 'peaceful', i.e. reconnaissance. Spying is aggressive and therefore not peaceful, from wherever it is conducted." "Trawlers and airplanes and satellites cannot be considered as peaceful when they are used to spy out those things which a sovereign state does not wish to be exposed, and they cannot qualify as

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## A DISCUSSION RELATED TO INTELLIGENCE

## SOURCE SECURITY

The possible courses of action available to any nation desiring to counter satellite reconnaissance activities may be categorized as active and passive. As used in this study active countermeasures are defined as those which physically involve the satellite such as jamming, destruction, de-orbit, etc. Passive countermeasures are those designed to negate or degrade the effectiveness of the satellite by such techniques as camouflage/deception, dispersal or political actions which do not physically involve the vehicle.

The possibility of loss of the satellite to active countermeasures, particularly physical attack, is considerably greater today than in 1960. Recent studies conclude that there is no deficiency which would preclude the Soviets from having an operational anti-satellite system at the present time. The decision to use this capability in peacetime could confront the Soviet leadership with serious problems. However, their fetish for secrecy, coupled with other reasons to disrupt East-West relationships could provide the impetus for such a course of action. Demonstration of this is evidenced by the numerous Soviet shoot-downs of U.S. aircraft over their territory or over waters which they effectively control, even though these waters were "international" within the normal meaning of international law.



of the fundamental optical characteristics of any system designed to produce resolutions greater than 0.1 MR, as well as any system technology bearing upon the matter of E.M. systems vulnerability, should be proscribed for a minimum SECRET security classification and BYEMAN security protection should continue to be proscribed for information related to the origin and prior usage of the equipments.

F. Lowering of the established criterion applicable to radar equipments should not be considered until the intelligence application and potential of satellite borne high resolution radar has been more clearly established. Results of the NRP feasibility demonstration conducted under project QUILL have been provided to NASA under the proscribed security controls.

G. NASA systems intended to produce better than the proscribed 0.1 MR limiting criterion, such as might be required for purposes of lunar or extra-planetary exploration or astronomical observation from earth orbit, should be developed utilizing security procedures presently proscribed under project UPWARD.

H. The D/NRO should continue to carefully assess NASA planned experimentation including space borne optical, microwave and radiometry equipments, and should consult with the DCI regarding the possible impact of such experimentation upon the National Reconnaissance Program.

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publication of the resulting imagery.

2. An examination of all intelligence available at the time related to the composition, characteristics and performance of Soviet reconnaissance systems and of programs of other nations which might have developed during the interim, in addition to evidence of active and passive countermeasures then available to the Soviets and other nations and their probable disposition to employ such countermeasures.

3. A firm requirement based upon a positive demonstration of a potential for a major U.S. initiative advancing the concept of economic betterment through space activities with promise of early payoff and resulting plaudits to this country.

D. Any lowering of the 0.1 KR criterion should additionally be restricted to a phase-timing designed to provide maximum security to the WRP evolved systems. (For example, whereas the NSAM-156 Committee suggests 10-15 ft. resolution as an appropriate restriction on NASA discussion of future systems, this resolution, roughly equivalent to KE-4, will represent the best WRP search and surveillance capability for several years to come.)

E. Despite any subsequent decision to lower the established criterion below the 0.1 KR criterion, data revealing

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of thermal state derived from such equipments will include signal content, which in all probability should be identified and compensated for if any meaningful scientific analysis is to result. It is suggested that consideration of the impact of such experimentation by NASA upon the NRP must await more definition by NASA of its plans with respect to the use of such equipments.

#### XIV. Recommendations:

A. Technology related to NRP systems producing resolutions greater than 0.1 MR (listed on TAB C) could be provided to NASA in response to their requirements for use on an unclassified basis. Special security arrangements, designed to protect the equipment's origin and prior use will be required in each instance.

B. Care should be exercised to insure against a definitive pattern of commonality between NASA and NRP command and control procedures related to earth sensing equipments in order not to facilitate hostile system vulnerability analysis of the latter.

C. Any consideration of lowering the established 0.1 MR criterion should first be examined in light of:

1. Any international reaction resulting from the conduct by NASA of the NSAS 156 Committee endorsed experimental program operating under the 0.1 MR criterion limitation and the subsequent unclassified

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a closely demonstrated requirement to meet some important national objective, necessitating the use by NASA of equipment providing resolution superior to the established criterion.

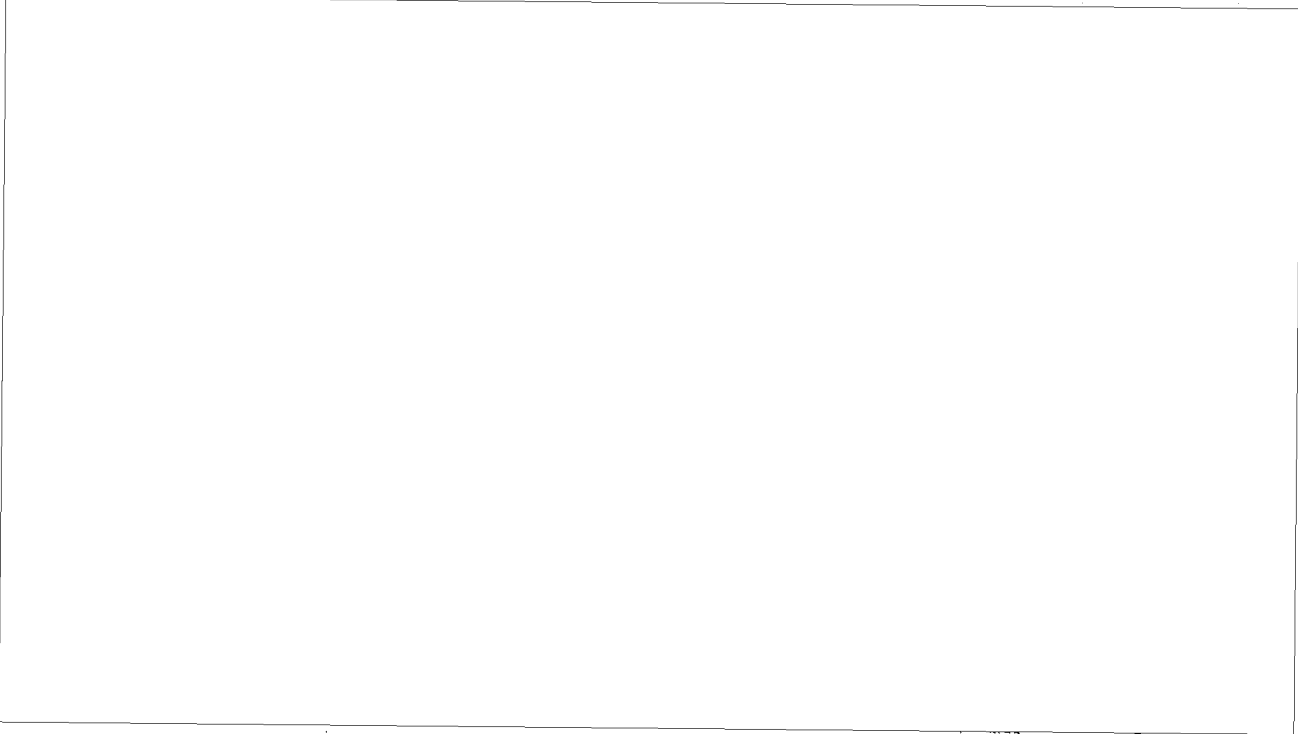
XII. The matter of the use of earth orbiting spacecraft equipped with optical telescopic devices for astronomical observation also poses unique problems, because such activities will require the use of extremely high precision optics, technology related thereto having been actually pioneered by astronomical scientists. It is the opinion of the panel that optical and spacecraft technology and technical requirements for telescopes for stellar and solar observations, are of a degree of significant similarity with NRP high resolution optical systems, as to warrant the development of a security guide for such activities similar to that prescribed under project UPWARD.

XIII. The matter of NASA experimentation in passive microwave and radiometry equipments was also considered by the panel. Although NASA planned application of such equipments appears somewhat vague at this point in time, some of their initial studies suggest their use for measurement of the thermal state of various earth surfaces. There would appear to be no application of existing or proposed NRP satellite SIGHT equipments to such purposes and therefore possibly the matter requires no further consideration at this time. This conclusion however avoids the fact that measurements

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the technological and political security limitations become less acute, the composite technology of a system producing better resolution than that newly adopted criterion should then serve as the guide for the continuance of SUREMAN security protection. However, inasmuch as the U.S. will, in all probability, continue to have difficulty in obtaining precise definition of the composition, characteristics and performance of Soviet satellite systems, it is suggested that some degree of security protection will be necessary even beyond such a decision, in order to insure continuation of U.S. satellite reconnaissance technological superiority in addition to providing security protection to elements of the system which might have a carry-over effect, in terms of vulnerability of the then operating WRP equipments.



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XI. The matter of lunar or extra-planetary exploration poses certain problems, in that the use of high as well as medium range resolution optics is in all probability necessary to obtain any meaningful scientific data. Whereas photography of the moon or other planets obtained from spacecraft would result in no adverse international reaction, from the photography or the equipment itself, can be extrapolated the probable capability of the same equipment operating against the earth's surface from earth orbit. It is suggested that the existing security guide for Apollo Lunar Mapping and Survey Program/Project UPWARD (see TAB D) is appropriate to this circumstance and should be used as a model for any future activities of this nature where there again may develop,

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available to counteract, it is reasonable to assume that their lack of definitive knowledge of our technological state-of-art has been a major contributing factor to their failure to take counteraction. The extent and effectiveness of the U.S. satellite reconnaissance program can be defined in terms of (1) ground resolution, (2) a volume of interpretable photography, and (3) the technology by which both were accomplished. Whereas the advanced state-of-art of the U.S. program is more attributable to our intense dedication to the objective rather than any scientific break through in the classical sense, the translation of theory into a proven operational capability in this instance, was accomplished at considerable cost and effort. Therefore, maximum security protection of the technology is both feasible and desirable and in all probability essential to preservation of the intelligence source.

IX. In light of the NSAM 156 Committee's endorsement of the 0.1 IR criterion as a limitation upon NASA study, design, development, fabrication or test of earth sensors, it is reasonable to hold that critical technology today (in the sense of requiring EPICAN security) is that composite technology of a satellite image forming sensor and platform producing better than 0.1 IR resolution. If, as suggested by the NSAM 156 Committee's report, the criterion should be lowered as the general state-of-art of the classified technological capabilities improves and should

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However, we have found no satisfactory basis upon which to assess in a quantitative way, either of these considerations. From the intelligence available, the precise point of provocation cannot be determined and in all probability is subject to many intangibles. Inasmuch as current U.S. knowledge of Soviet satellite reconnaissance systems has been derived almost exclusively from telemetry intercept, detailed description of the composition, characteristics and performance of Soviet satellite reconnaissance systems is not available to the extent desirable to assess how and to what degree the U.S. systems compare with those of the Soviet.

VI. However, this is not to imply that security of technology is not vital to the protection of this important intelligence source. A comparison of the U.S. vis-a-vis the Soviet state-of-art is directly pertinent to the question of what degree of security is necessary to maintain the U.S. technological edge. Moreover, it is more important in this instance to consider what effect revelation of U.S. state-of-art may have in terms of provoking counteraction by the Soviets or other foreign governments. For in fact, in the current era of growing public presumption of the activity, the extent and effectiveness as well as the importance of the program to national planning, rather than the fact of the activity, have become pre-eminent. If we assume that the Soviets are aware of the activity and that they have the means

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on vast areas of the Communist Bloc, and in addition provides an effective source of information from the standpoint of timely and economical production of maps and charts. With regard to target materials, satellite reconnaissance not only permits identification of new targets but also provides the details required by planning and operations staffs to establish target priorities, select appropriate weapons and delivery systems, and provide combat crews with materials for target study. In relation to geodesy, satellite reconnaissance has enabled the locational accuracy of specific targets and installations to be improved, significantly enhancing the potential effect of weapons systems to be employed against them. The dynamic and complex nature of the Communist Bloc military posture creates an ever increasing demand for detailed factual information. The sophisticated capabilities to be provided by follow-on satellite reconnaissance systems -- not duplicated by any other source -- will satisfy presently stated requirements for photographic information and will allow for an even more accurate assessment of the Communist Bloc military threat.

VII. The panel concluded that, with respect to the U.S. satellite reconnaissance program, intelligence source security should be the primary consideration and that technology security, while a valid secondary consideration, may not of itself constitute a requirement for extraordinary (BYEMAN) security protection.

obtained as what degree of security necessary to insure against any gratuitous betterment of foreign satellite reconnaissance state-of-art. Discussions related to these two security aspects are presented in Tabs A and B.

V. It is noted that since the first two successful missions in 1950, there has been a dramatic improvement in the quality of U.S. satellite photography, accompanied by a more than doubling of the quantity of such materials obtained during any calendar year. As a result, the value of satellite reconnaissance has increased to the point that it is of major importance to:

A. The intelligence community, since U.S. knowledge of Communist capabilities in the strategic offensive, defensive and nuclear energy fields is largely obtained or confirmed by this source and could not be acquired to the same degree by any other means.

B. The national decision makers, since information on the Communist capabilities is used to determine the nature, character and strengths of the national force structure and national defense posture required to counter these capabilities.

VI. The contribution of satellite reconnaissance to the mapping, charting, geodesy and target materials program has also been significant. It is an essential source of reliable information

COMMUNIST CAPABILITIES  
IN THE STRATEGIC OFFENSIVE,  
DEFENSIVE AND NUCLEAR ENERGY

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in their report, nor was the use of space borne optics and other sensing equipments for lunar or extra-planetary exploration, nor their use in earth orbit for purposes of astronomical observation.

III. The panel examined the history of existing NRP security system and has concluded that it was designed primarily to protect the fact of a U.S. satellite reconnaissance program and secondarily, the extent and effectiveness of the program. Critical technology therefore, in the sense of requiring EYEMAN or TALENT/KEYHOLE security protection, has been for the most part that composite data revealing the fact of the activity.

IV. ~~The fact of the NASA earth sensing program is unclassified.~~ Therefore, it is necessary, in considering the matter of security related to the equipments used by NASA in their program, to find some more appropriate definition of the term, critical technology. Such a definition of critical technology was examined from the standpoint of both "intelligence source security" and "technology security". For purposes of this study, "intelligence source security" is defined as that degree of security required to insure against provocation of the opposition's political bureaucracy to the point where they might consider appropriate counteraction designed to prejudice the overall effectiveness of the U.S. satellite reconnaissance program. "Technology security" is

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B. The report endorses the NASA tentatively planned experimental program of satellite earth sensing, to demonstrate a potential and to serve as a basis for further consideration of a major U.S. political initiative advancing the concept of economic betterment through space activities.

C. The report endorses the NRO-NASA previously agreed to criterion for limitation of NASA study, design, development, fabrication or test of earth sensors (not exceeding a capability of an angular resolution of 0.1 milli-radian or finer, or an optical or infra-red image forming system with a physical aperture greater than 30 CM and an optical figure controlled to better than  $\frac{1}{4}$  wave length); and further recommends that NASA, for the present, restrict its discussion of future systems to those involving ground resolution on the order of 10-15 feet.

D. The NSAM 156 Committee's report suggests a gradual lowering of the 0.1 MR criterion, as the general state-of-art of the classified technological capabilities improves and as the technological and political security limitations become less acute.

E. The NSAM 156 Committee guidance is limited specifically to satellite optical and infra-red image forming and radar systems for application to requirements for earth sensing. Passive microwave and radiometry were not discussed

I. A study panel, comprised of representatives of NRO, CIA, DIA and NSA, was convened to consider the matter of Recommendation #7 of the NSAM 155 Committee's report of 11 July 1966 "Political and Security Aspects of Non-military Applications of Satellite Earth Sensing". Recommendation #7 recommends that "The Director of Central Intelligence, in consultation with the Director of the National Reconnaissance Office, should review and establish appropriate security restrictions on cameras and other sensing apparatus and equipment which can be made available for NASA's program of non-military application of satellite earth sensing". The panel limited the scope of its study to the specific charge contained in Recommendation #7. The question of possible de-control of the products of the National Reconnaissance Program (NRP) was addressed by the USIB; the results of their review are reflected in a memorandum for holders of USIB D-41.12/23 dated 20 August 1966.

II. The following analysis of the NSAM 156 Committee's report is suggested as germane to the matter under consideration:

A. The report substantially sustains the provisions of NSC 2454, recommending additionally that the classified National Reconnaissance Program should be protected by continuing to consider carefully the political and security effects of proposed earth-sensing activities prior to their authorization.

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THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON 25, D. C.

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4 August 1966

The Honorable Alexander Flax  
Director, National Reconnaissance Office  
Department of Defense  
Washington, D. C.

Dear Al:

As you know, on 11 July, the NSAM 156 Committee completed its report on "Political and Security Aspects of Non-military Applications of Satellite Earth Sensing." Recommendation 7 of this report recommends that "The Director of Central Intelligence, in consultation with the Director of the National Reconnaissance Office, should review and establish appropriate security restrictions on cameras and other sensing apparatus and equipment which can be made available for NASA's program of non-military applications of satellite earth sensing." I would be grateful if you could give me your views and recommendations on sensors within the NRP inventory which can be declassified for use by NASA without jeopardy to our classified reconnaissance program. I would also appreciate your comments and suggestions on any other security aspects of making presently classified earth sensing equipment available to NASA for its program of non-military applications of earth sensing.

Sincerely,

(s/ Richard Helms

Richard Helms

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Security Annex to DOD/CIA-NASA Agreement  
 on NASA Reconnaissance Program,  
 dated 28 August 1963 (BYE 6789-63)

This document lists security policy on specific major items and actions associated with the referenced agreement. As the program progresses, necessary revisions and additions will be formalized by subsequent supplemental agreements in the form of amendments to this annex. (A subsequent security guide, rather than this document, will be used to govern the wording of unclassified releases.)

A. General

<u>Item</u>	<u>Classification</u>
1. The existence of an agreement between the <del>(S)</del> NRO and NASA regarding lunar reconnaissance	TOP SECRET/BYEMAN Special BYEMAN clearance required
2. The existence of an agreement between the DOD and NASA regarding lunar reconnaissance, co-signed by the Under Secretary of the Air Force and the Associate Administrator of NASA	Unclassified
3. All references to the <del>(S)</del> NRO, by full name or initials	SECRET/BYEMAN Special BYEMAN clearance required
4. The text of the agreement between the DOD and NASA regarding lunar reconnaissance	TOP SECRET/BYEMAN Special BYEMAN clearance required
5. The fact that the DOD or any of the services (Army, Navy, Air Force) is participating in the lunar reconnaissance program	Unclassified

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B. Public Information

- |   |   |
|---|---|
| 1. NASA public statement of plan to have camera aboard manned lunar orbital flight, with provision for recovery of exposed film   | Unclassified                                  |
| 2. NASA public statement that camera is being developed under USAF contract, including the name of the contractor(s)  | Unclassified                                  |
| 3. NASA public statement that all details and specifications of the photographic hardware are classified by the DOD in order to protect possible future military applications | Unclassified                                  |
| 4. DOD public statement, if queried, that the Air Force Systems Command is charged with the responsibility for providing photographic hardware to NASA for this program       | Unclassified                                  |
| 5. DOD public statement, if queried, that selection of photographic hardware contractor was handled as normal source selection based on a classified Request for Proposal     | Unclassified                                  |
| 6. Public announcement of identities of all firms participating in Request for Proposal   | Not releasable except by Secretary of Defense |

C. Requirements

- |  |              |
|--|--------------|
| 1. The fact that NASA may conduct lunar reconnaissance with Apollo | Unclassified |
|--|--------------|

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CONFIDENTIAL

- 2. NASA's generalized statement of design objectives for lunar reconnaissance operations
- 3. NASA's official statement of lunar reconnaissance requirements
- 4. ~~(S)~~ NRO analyses in response to NASA requirements, showing what can be fulfilled and how it will be fulfilled

TOP SECRET/BYEMAN  
Special Byeman clearance required

TOP SECRET/BYEMAN  
Special Byeman clearance required

D. Source Selection

- 1. The fact that a source selection may be conducted for a reconnaissance payload

Unclassified

- 2. The meeting place, time of meeting, or constitution of the source selection board

TOP SECRET

- 3. Requests for proposals, as issued to contractors

TOP SECRET/BYEMAN  
Special Byeman clearance required

- 4. Contractor replies to requests for proposal

TOP SECRET/BYEMAN  
Special Byeman clearance required

- 5. Source Selection Board deliberations and results

TOP SECRET/BYEMAN  
Special Byeman clearance required

- 6. The name of the award-winning contractor (s)

Unclassified

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 [Handwritten initials and numbers: "B", "6", "3", "6"]  
 [Handwritten reference: "NASA-2369-64-7K"]

E. Reconnaissance Hardware Development/Engineering Program

- 1. The name of the payload contractor(s) (and subcontractors, if any)      Unclassified
- 2. Payload contractor and subcontractor progress reports      TOP SECRET/BYEMAN  
Special Byeman clearance required
- 3. Payload specifications and drawings that reveal the fundamental optical characteristics of the reconnaissance equipment      TOP SECRET/BYEMAN  
Special Byeman clearance required
- 4. Interface information including drawings (other than described in 3 above) covering such items as circuitry, stabilization, telemetry, weight, mass balance, thermal balance, power requirements, etc., to permit appropriate action on the part of the vehicle designers/engineers      SECRET (or lower, based on further detailed review)
- 5. Contracting, auditing, and renegotiation actions and reports      TOP SECRET/BYEMAN  
Special Byeman clearance required

F. Flight Operations

- 1. The fact that a lunar reconnaissance payload exists      Unclassified
- 2. View of camera or mock-up in completely assembled state with no opportunity to assess its design or operational characteristics      Unclassified
- 3. Access to the general area of the assembled camera by persons who must check out lead-in circuitry, power, telemetry, etc.      SECRET (or lower, based on further detailed review)

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4. Access to camera storage, dis-assembly, test, and check-out special facility TOP SECRET/BYEMAN Special Byeman clearance required

5. Access to camera system in disassembled state or access to camera for engineering adjustment to an extent permitting assessment of design or operational characteristics TOP SECRET/BYEMAN Special Byeman clearance required

6. Camera telemetry on the ground or in flight Unclassified

7. Recovery area security: Access to view of assembled camera with no opportunity to assess its design or operational characteristics Unclassified

8. Recovery area security: external view of film cassette Unclassified

9. Recovery area security: access to or possession of film cassette SECRET

10. Recovery area security: access to camera to extent permitting assessment of design or operational characteristics TOP SECRET/BYEMAN Special Byeman security clearance required

11. Custody of camera without internal access permitting assessment of design or operational characteristics SECRET

C. Reconnaissance Products

1. Lunar photography as initially processed SECRET

SECRET

SECRET

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2. Sanitized lunar photography  
(i.e., remove fiduciarities  
and enlarge)

Unclassified

3. Earth photography, if any

TOP SECRET/TALENT  
KEYHOLE

Special clearance required

*Brockway McMillan*

Brockway McMillan  
Director  
~~(S)~~ National Reconnaissance  
Office

*Robert C. Seamans, Jr.*

Robert C. Seamans, Jr.  
Associate Administrator  
National Aeronautics and  
Space Administration

~~TOP SECRET/TALENT KEYHOLE~~  
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