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EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

BAF-A-2

MAR 2 2 1969

Honorable Richard Helms
Director of Central Intelligence
Central Intelligence Agency
Washington, D. C.

Dear Dick:

Thank you very much for your letter of March 11. Let me start by emphasizing our area of agreement: it is our shared objective to cut away marginally productive intelligence activities. In this light, let me try to make clear why it is that we cannot now agree with your conclusion that the HEXAGON photography would provide additional intelligence information sufficient to justify its significant cost.

Let me address the question of the relative value of the HEXAGON system in terms of <u>need</u>, <u>cost</u> and <u>risks</u>. I have also attached a paper (Tab A) which discusses the six specific areas cited in your letter as examples of the special contribution which HEXAGON's performance could make to intelligence needs.

<u>Need</u>

1. <u>Initial Rationale and Present Situation</u>

- As you noted, the initial requirement for a system like the HEXAGON was set forth by USIB in 1964. Since 1964, both the CORONA (KH-4B) and the GAMBIT-3 (KH-8), although less expensive systems than the HEXAGON, have greatly improved. (The chart at Tab B shows this.) Consequently, the added marginal value of the HEXAGON, if it is used as a replacement

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No Objection

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for the CORONA and partial substitute for the GAMBIT-3, is now considerably less than it may reasonably have appeared in 1964.

- The GAMBIT-3 improved and improving performance against the surveillance requirement demonstrates there is no clear need for the more expensive HEXAGON system as a partial substitute in the surveillance role. The CORONA, too, as you know, has improved considerably since 1964. In recognition of such improvements in the present mix, the OSD study of November, 1968 concluded that the present and improving sampling capability of the GAMBIT-3/CORONA combination is adequate to meet our intelligence needs in the area of Soviet bloc and Chinese Communist capabilities in air and missile defense, aircraft systems, missile systems, and naval forces (page 5, par. 8, BYE-78416/68).

2. Performance and Capability of CORONA/GAMBIT-3 Mix

- The GAMBIT-3's performance for spotting now meets 99% of the annual target looks required against all 6,600 COMIREX targets (USIB D-46.9/16). This capability will further improve. All significant DIA targets are colocated with the COMIREX targets now covered.

- The CORONA is adequate to meet the requirement of broad area search of the Soviet bloc and China. (In 1968, CORONA provided cloud-free search photography of 94% of mainland China.) When CORONA detects new targets or significant changes in previously identified targets, the GAMBIT-3 can be directed to provide high resolution spotting coverage.

Cost

1. NRO Cost Estimates vs. Probable Program Costs

- The cost savings resulting from a cancellation of the HEXAGON might well, I believe, exceed the FY 69-74 savings of $280-389 M based upon the NRO estimates. Savings on the order of $900 M are a more reasonable estimate. Although the NRO proposal indicates that the operating costs of the HEXAGON/GAMBIT-3 mix about equals that of the CORONA/GAMBIT-3 mix, it will actually be greater since

- The HEXAGON mix will probably include 5 rather than 4 GAMBIT-3 and HEXAGON missions due to GAMBIT-3's advantage of [redacted] as against HEXAGON's 30" best resolution and due to concerns for reliability and frequency of coverage.

- The CORONA mix will probably not require more than 6 CORONA's and 5 GAMBIT-3's as opposed to the 7 CORONA's and 7 GAMBIT-3's now in the NRO estimates.

- Tab C portrays detailed cost comparisons.

- As to potential additional costs for mapping satellites, the use of separate mapping satellites at a cost of $100 million would never be seriously considered since the 3" system of the CORONA would be adequate. If the less complicated CORONA should continue, the bulk of the proposed out-year reductions could probably be retained.

Risks

1. HEXAGON program slippage of 3 to 6 months will probably occur due to technical and management complexities. This will drive costs up and a slip of more than 3 months will require the extension of CORONA production--now scheduled to phase out in the next 3 months.

2. HEXAGON launch rates of 4 per year now programmed may result in vehicle losses which would produce a significant gap in search coverage.

In summary, it does not seem that the arguments for the added value of the HEXAGON adequately reflect the growing capabilities of our present systems; the probable added cost over time of the HEXAGON system; and the related risk of probable technical difficulties with resulting delays which would increase HEXAGON costs and might necessitate further CORONA purchases in any event.

In light of the factors in this letter and the attached materials, we feel that our original position is justified and my staff is available for more detailed discussions.

Sincerely,

Bob Mayo

Enclosures

TAB A

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CORONA/GAMBIT-3 Capabilities and HEXAGON/GAMBIT-3 Capabilities on Priority Intelligence Problems

This paper describes the quality of information available from the CORONA/GAMBIT-3 (G-3) systems mix against examples of intelligence problems where HEXAGON would make its greatest additional contribution, as provided in Mr. Helms' letter to the Bureau of the Budget, of March 11, 1969.

(1) Significantly better intelligence on Soviet and Chinese ground forces, including force composition, readiness, and redeployment.

Comment: For force composition and readiness, the GAMBIT-3 resolution, clearly superior to the HEXAGON's, does and would provide important details on the quality and quantity of Soviet and Chinese units that would not be discernible by the HEXAGON. Once GAMBIT-3 has established the signature or function (e.g., tank or motorized rifle division) of a ground force installation, then subsequent CORONA coverage along with occasional updates with GAMBIT-3 coverage is sufficient for high confidence estimates of force composition and readiness. See for example, studies of the Soviet Ground Force equipment holdings in the Byelorussian Military District (CIA, SR IR 67-2, Oct. '67) and Soviet Military Forces on the Sino-Soviet Border (CIA, SR IR 68-7, Sept. '68).

For redeployment, if it occurs over a period of months, the CORONA/G-3 can monitor such changes adequately. In the case of quick redeployment, the HEXAGON's broad swath would have an advantage in good weather. However, in rapid redeployment, any film recovery system is limited by the fact that the satellite must be over the target area during the redeployment under cloud-free and daylight conditions. Even then, the time delay from camera operation to film interpretation is measured in days. The gaps, with no crisis coverage, between the HEXAGON missions are longer than those between CORONA missions.

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(2) Better insight into the logistic support systems of Communist bloc countries.

Comment: G-3's high resolution is valuable in discerning some details of installations and equipment that could or do have a primary or substitute civilian use (e.g., trucks taken out of civilian use when large mobilization occurs). The Belorussian study, referred to above, based on the GAMBIT spotting system and the CORONA search systems, produced significant high confidence changes in our understanding of Soviet logistic support. While it is true that these studies were based in part upon low-level oblique aerial photography, the HEXAGON would be equally dependent on non-satellite data.

(3) A marked upgrading in our ability to detect and evaluate mobile missile forces in the USSR which we anticipate shortly (in this connection we must have the basis for confident judgments that deployments have not occurred, as well as the ability to detect once begun).

Comment: Given the long (e.g., 2 years) R & D phases associated with such a new missile, and given the high priority G-3 coverage targeted on missile test centers, the G-3 would be able to establish a signature of the missile and its support elements that could be used for later G-3 or CORONA identification of the systems in deployment phase. The G-3/CORONA mix was adequate to detect the deployment along the Sino-Soviet border of a tactical missile system (SCALEBOARD, SS-12), which is presumably smaller than a mobile missile system sufficiently large to pose a strategic threat to the U.S. (See CIA, SR IM 69-7, Feb. '69).

Because of the inherent serious disadvantages of mobile missiles, such as degraded accuracy, more difficult command and control problems, lower reliability, limited suitable rail or road network, etc., the Soviets are unlikely to introduce such a system on a wide scale (this is also discussed in the recent CIA-SR document referred to above).

(4) Significantly improved intelligence on a wide range of other targets, such as Communist bloc radar stations, and thus facilitating reduction in certain types of collection activity.

Comment: CORONA (KH-4B), as the 1968 OSD study and recent OAK Reports have indicated, is adequate to detect the deployment of all air defense radars and missiles, and is occasionally able to conclude that a SAM site is unoccupied. Moreover, SIGINT satellite

[redacted] Finally, we understand that the SIOP mission planning for air penetration of the Soviet Union either avoids known sites (available with present capabilities) or negates them with jamming or standoff missiles.

(5) Broad area and high resolution coverage of sensitive areas outside the USSR and China, such as the area of Israeli-Arab confrontation, the Czech borders, or the Sino-Indian border region.

Comment: In the case of the Israeli-Arab confrontation, the CORONA is adequate for monitoring changes in air order of battle, and in other areas of the world where the weather is less favorable to overhead photography, all photographic satellite systems operate within noteworthy limitations. While it is true that the HEXAGON system will provide a better opportunity for sweeping up broad areas in good weather, the time delay in film recovery degrades timely responsiveness and therefore the value of any film recovery system, including the HEXAGON. We had good coverage of both the Czech crisis and the Arab-Israeli conflict but it was not available for use when it was needed.

(6) Substantial improvement of our capacity to monitor Soviet adherence to or violation of any future arms control agreement.

Comment: Soviet testing of any weapon in violation of arms control treaty prohibition would be monitored closely by the G-3 which is already targeted with highest priority against Soviet weapons R and D test centers. If the violation is detectable by photography, the higher resolution

G-3 will be more able to detect subtle violations than the poorer resolution HEXAGON, and if it is not collectible by photography, but rather by SIGINT or HUMINT, the HEXAGON has no special advantage.

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EQUAL PERFORMANCE OPTIONS

System Mix Options Where Both Meet Current Requirements

Mix Option 1 below is currently approved to meet USIB requirements for both search and surveillance in FY 70. Mix Option 2 was that described by USIB (COMIREX) in April 1968, as that future combination that would also meet these requirements.

Mix Option 1		Launches	Successful Missions	Unit Cost	Annual Costs
$236 M/per yr.	CORONA	7	6	$14 M	$98 M
	G-3	6	5	23 M	138 M
					$236 M

Comments: (a) Nearly all surveillance with best available resolution; (b) Poorer (6'-10') resolution for search capability, but adequate to cover Sino-Soviet bloc; (c) More G-3 missions for technical intelligence; (d) Less risk; and (e) Lower 5-year costs (operating +$570 M; investment +$100 M)

Mix Option 2					
$350 M/per yr.	HEXAGON	5	4	$45 M	$225 M
	G-3	5	4	25 M	125 M
					$350 M

Comments: (a) Better search resolution; (b) Less surveillance target looks with best available resolution; (c) More risk; and (d) Higher 5-year costs (see comment above: $670 M more than mix option 1).

Note: The CORONA/G-3 mix would probably produce an even greater savings due to the following factors:

	Additional 5-year savings
- Surveillance requirements can be met with 4 G-3 missions per year in mix option #1	-115
- HEXAGON would probably require 5 missions rather than 4 in each of the first 2 years in mix option #2 as the system is maturing	-90
- Additional HEXAGON development costs	-30
	-235

These three factors would produce a total cost differential of $670 M plus $235 M or $905 M over a 5-year period.

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