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PRO A4d(2) HANDLE VIA
BYEMAN
CONTROL SYSTEM

~~TS~~ NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.



THE NRO STAFF

29 January 1970

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MEMORANDUM FOR GENERAL ALLEN
SUBJECT: Highboy Mission Planning

QUESTION

What are the costs involved in provision of a HIGHBOY modification kit?

BACKGROUND

As outlined in my memorandum of 20 January (TAB A), provision of a HIGHBOY module, or modification kit, could permit an either high or low option on each of a given series of GAMBIT vehicles with only a six-week decision time required. The cost to provide this kit is unknown, but expected to be substantially greater than the \$1.5M estimated for custom conversion of a single pre-selected vehicle.

DISCUSSION

There is still no particular requirement for HIGHBOY until 1972 because of CORONA/HEXAGON overlap. This would be 4335, just two vehicles before a prospective major block change. Perhaps the kit ought to be postponed in effectivity until the new block buy.

RECOMMENDATION

That you approve the message at the right requesting more detailed information on such a kit.

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RICHARD L. GEER
Major, USAF

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TAB A, 20 Jan 70 LHSM,
Allocation of 4326 to

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HIGHBOY Msn
~~CORONA GAMBIT EARPDP HEXAGON~~

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DOD DIRECTIVE 5200.10 DOES NOT APPLY

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20 January 1970

MEMORANDUM FOR GENERAL ALLEN

SUBJECT: Allocation of 4326 to a HIGHBOY Mission

ISSUE

Should Mission 4326 be cancelled with the KH-8 vehicle so saved reserved for HIGHBOY employment?

BACKGROUND

Cancellation of the 4326 March launch of GAMBIT, with appropriate schedule rearrangement, would impair CCRP satisfaction by only four percent (TAB A). In recognition of this and because of the desirability of providing more time at SLC-4W for the modification to [] requirements, WHIG 9595 (TAB B) was sent asking in effect if a 4326 cancellation would be beneficial. CHARGE 4836 (TAB C) replied it would, but that a second GAMBIT pipeline vehicle would be undesirable.

There is a possibility of conversion of whatever vehicle this leaves surplus to the "regular" KH-8 requirements to a HIGHBOY role as a HEXACON surveillance back-up. The use of GAMBIT and CORONA, with GAMBIT in a dual mode, as an alternate to a GAMBIT/HEXACON mix, was examined in detail by General Martin in November 1968 (TAB D). A HIGHBOY module could, in principle, permit an either/or option on each vehicle with only a six-week decision time, but the cost would be substantially greater than a "custom" conversion of an individual vehicle to the HIGHBOY configuration. This special vehicle would cost about \$1.5M extra, exclusive of storage and retest costs and could be available by Vehicle 30 or 31 (TAB E).

DISCUSSION

There are two points to be examined to resolve this issue: Can the GAMBIT schedule be reduced and still meet requirements and is the HIGHBOY use of a surplus KH-8 vehicle a good concept?

~~CORONA GAMBIT BARPOB HEXACON~~

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The current launch schedule through December 1971 is given in TAB F. The first HIGHBOY flight could occur as early as January 1971.

Deletion of the March 1970 GAMBIT launch may be done without dropping CCRP requirement satisfaction below levels previously deemed acceptable (TAB A). On the other hand, there is still a requirement on the books* for no more than 60 days between KH-8 flights while KH-4 is the search system, rather than KH-9.

As of now, the gap between 4329 and 4330 exceeds that limit by about ten days and we have exceeded the limit before without receiving complaints. The removal of the March launch, without adjustment, would create a gap 30 days in excess of the limit, but suitable schedule adjustment (to meet the 4% maximum loss of CCRP satisfaction) would ameliorate this. Such a rearrangement would advance the launch date of what is now 4327 from 23 to 7 April.

Assuming that the loss of the March launch is tolerable, what use may be made of the "saved" vehicle? The 4326 bird itself would probably be used for the next launch, whenever that might be scheduled. In any event, the surplus would eventually be employed either at the end of the block series, thus postponing the need for a new block order and saving money or as a back-up to a launch failure. Back-up of GAMBIT for itself is embodied in the pipeline concept. Back-up of GAMBIT for HEXAGON in the surveillance role is the HIGHBOY concept.

General Martin outlined in detail the advantages of GAMBIT as a HEXAGON surveillance substitute in his October 1968 letter to the DNRO (TAB D). The R-5 lens, scheduled for Vehicle 32, is less suitable for HIGHBOY than the wider field R-361. It seems reasonable for this reason and because of the presumed need for HIGHBOY by January 1971 to assign Vehicle 4331 to the HIGHBOY role. It should be noted that calculations of HIGHBOY effectiveness should reckon:

* Requirements for High Resolution Imagery Surveillance by Satellite Reconnaissance of Targets in the Soviet Bloc and Communist China, USIB, 21 March 1968.

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(1) a HIGBOY launch after a HEXAGON failure, not optimally spaced to maximize coverage; and

(2) regular GAMBIT missions with lower perigees (see TAB G) and smaller fields of view than General Martin used in his calculations.

However, the presumption that HIGBOY is required in the 1971 time period may be fallacious. Actually, the GAMBIT flights do not drop to four per year based on KH-9 coverage of surveillance requirements until 1972. If HEXAGON failure occurs in 1971, its surveillance mission will be covered by GAMBIT. Examination of the 70-71 launch schedule without the March 1970 KH-8 launch reveals no apparent reliance on KH-9. Thus, a requirement for HIGBOY cannot be justified until 1972. (It should be noted that KH-4 presence or absence plays no part here. KH-8 cannot back up the KH-4 or KH-9 search mission.)

The candidate vehicle for HIGBOY modification now becomes 4335, with an R-5 lens, and the modification occurs one year after the period for which the calculations of TAB E were made, thereby distorting both General Martin's performance and [redacted] financial calculations.

CONCLUSION

The deletion of the March 1970 KH-8 launch appears attractive from two points of view:

(1) easing the strain on the SLC-4W shelter modification for [redacted]; and

(2) saving money in P-110.

Conversion of a "saved" vehicle to a HIGBOY configuration does not appear necessary as an early P-467 back-up. Cost-effectiveness of HIGBOY as a later back-up to the KH-9 surveillance mission might be considered but would require a "quick-reaction" module construction (QRM?) and is not needed until 1972.

RECOMMENDATION

For your information, if you wish to pursue the subject further at this time, I shall draft appropriate

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messages initiating detailed study by SP. At the same time, review of requirements should be undertaken by COMIREX.

RICHARD L. GEER
Major, USAF

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TAB A, Memo dtd 14 Oct 69 w/atchs
TAB B, WHIG 9595
TAB C, CHARGE 4836
TAB D, SP-1 Ltr dtd 31 Oct 68 w/l atch
TAB E, Memo dtd 4 Nov 69 w/l atch
TAB F, Current Launch Schedule
TAB G, CHARGE 0077

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