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17 November 1967

MEMORANDUM FOR DR. FLAX

SUBJECT: TAGBOARD

Mr. Bill Fisher informally requested the answers to four questions concerning TAGBOARD. It is understood that the questions would be raised by BOB representative at the EXCOM meeting 17 November.

In addition, Dr. Steininger, also informally, submitted two questions, same subject and apparently to be discussed at the same time.

I thought it appropriate to furnish you the answers and at your discretion pass the answers to the concerned personnel at the EXCOM meeting.

FRANK W. HARTLEY, JR.
Colonel, USAF
Director, Program D

Attachment
Tag Questions
& Answers

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Cy 2 of 2 Cys

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QUESTIONS SUBMITTED BY MR. FISHER

1. What type of guidance system is used in TAGBOARD?

ANSWER: MH390D Inertial Navigation System (INS) designed and produced by M-H, sub to LAC. The 390 is installed in the D-21B and the B52. Additionally, the B52's are equipped with Stellar Trackers (MH330M) which update the INS continuously. The 390 was previously in the D-21 and modified slightly to operate in the D21B. The flight test data is extensive and in fact, this system has proven to be very reliable and accurate.

2. When is the last input or update to be made?

ANSWER: The Stellar is constantly updating the B52 and D-21B INS during mated flight. Just prior to launch of the D-21B the Stellar will update the D-21B INS to a bounded error of 1.7 NM.

3. What is the CEP at end of D-21B free flight?

ANSWER: The design specification maximum error of the 390 is 1.5 mi per hour of flight; therefore, for the programmed 3000 NM D-21B range the maximum error is estimated to be $1.5 \text{ NM} \times 1.5 \text{ hours} = 2.25 \text{ NM} \neq 1.7$ bounded error at launch = 3.95 NM. This maximum error is based on a short mated flight. For an example, see attached chart, for a twelve hour mated flight plus 1 \neq 30 hour free flight, we can expect a maximum error of 4.25 NM. In actual conditions, flight test history reveals that we are achieving approximately 50% better than specifications. This performance is considered excellent when the camera coverage of 28 NM is considered.

4. Does the INS correct in flight?

ANSWER: The INS is updated by the Stellar Tracker only during mated flight.

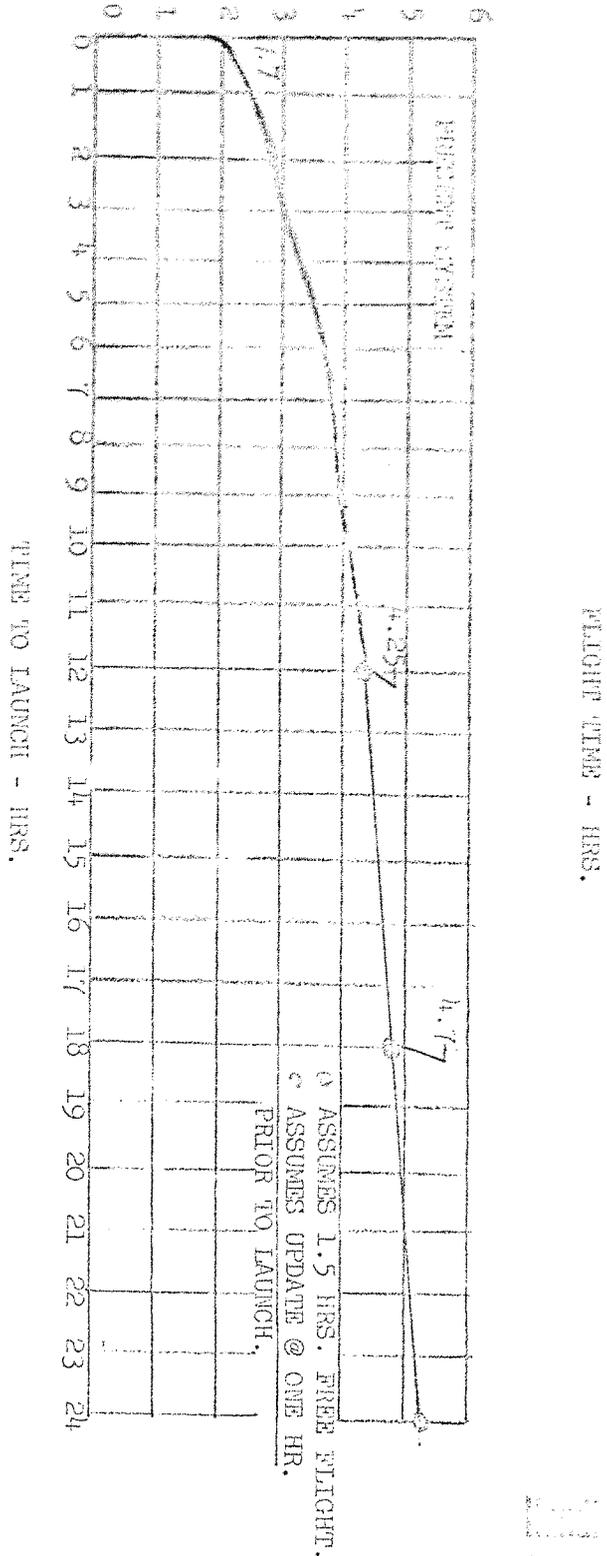
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DRIB TERMINAL ERROR
-CSP



Control System

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CHART #1

QUESTIONS SUBMITTED BY DR. STEININGER

1. What is the Radar Cross Section of TAGBOARD?

ANSWER: The attached charts (#2 and 3) are for your review and use. The TAGBOARD Radar Cross Section was broken out separately to avoid a comparison.

2. What is the vulnerability of TAGBOARD as compared to OXCART at 50,000 ft and higher?

ANSWER: The attached charts (#4 and 5) show the miss distance data as just recently computed on the Electronic Warfare Environmental Simulator at General Dynamics, Ft. Worth. As you realize, miss distance is only one factor of vulnerability; however, the complete vulnerability study has not yet been completed.

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RADAR CROSS SECTION (RCS)

The RCS simulated for three systems is identified below. For each system the RCS was varied with system penetration toward the site. Guideline missile launch ranges were 36, 34, 32 and 30 NM. Launch range is slant range from Fan Song B site-to-target. Offset ranges (i.e., cross range at which the target penetrated the Fan Song B site area) were 1, 4 and 8 NM.

SYSTEM IDENTIFICATION	APPROXIMATE S-BAND RCS
TAGBOARD	
SR-71	
OXCART	

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CHART #0

RADAR CROSS SECTION (RCS)

The RCS simulated for the TAGBOARD system is shown below. The RCS was varied with system penetration toward the site. Guideline missile launch ranges were 36, 34, 32 and 30 NM. Launch range is slant range from Fan Song B site-to-target. Offset ranges (i.e. cross range at which the target penetrated the Fan Song B site area) were 1, 4 and 8 NM.

SYSTEM IDENTIFICATION	APPROXIMATE S-BAND RCS
TAGBOARD	

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CHART #3