

~~TOP SECRET~~

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON 25, D.C.



REPLY TO  
ATTN OF: AFRDR

SUBJECT: Proposal for TAGBOARD Drone Launch from B-52H

SEP 13 1966

TO: SAFRD

Forwarded herewith per your direction of 9 September 1966 is a proposal for a TAGBOARD drone launch from a B-52H aircraft. This proposal includes FY67 and FY68 cost estimates.

*Clason B. Saunders*  
CLASON B. SAUNDERS, Colonel, USAF  
Ofc, Assistant For Reconnaissance  
DCS/Research and Development

1 Atch  
Proposal

Handle the BUREAU  
Control Office

BYE - 54 350 - CC  
Copy of 2 copies  
By 1/1/66

~~TOP SECRET~~

BEST COPY  
AVAILABLE

~~TOP SECRET~~

## Proposal for Tagboard Drone Launch from B-52H

1. A study has been conducted as to the feasibility of launching the D-21 Tagboard drone vehicle by some other means than the presently used M-21 Tagboard carrier. The most promising solution is to launch the drone, suitably modified, from a B-52H in a manner similar to that already proven on the X-15. The drone fitted with a solid propellant rocket booster providing an average thrust of approximately 30,500 lbs for 67 seconds would be dropped at 40,000 ft and 0.8M. The booster would then be ignited and the drone accelerated to M 3.2-3.4 and an altitude of 75,000-80,000 ft. At motor burn-out the booster case would be jettisoned. The drone would then accelerate or decelerate as required to its design Mach of 3.3 and would then proceed on a climbing cruise for a range of 3,000 miles with a mission capability identical to that of the present vehicle.
2. Under this proposal, flight tests involving the MD-21 mother-drone combination will end in September 1966 upon the completion of some hot camera tests now underway. The M-21 carrier aircraft would then be laid-up and could be made available to the Oxcart program if so desired. The present Tagboard drone (D-21) would be modified to a D-21 B configuration by reworking it to accommodate a B-52 pylon attachment on the upper surface of the fuselage and a booster attachment and jettison system on the lower surface. Some structural beefup will also be required because of the increased drone weight due to the booster addition and the expanded free flight regime which will now be from .8M to 3.3M. Modifications will also be made to the Automatic Flight Control System, the Inflight Checkout and Inertial Navigation System to accommodate the changed launch and boost conditions.

Handle via BYEMAN  
 Control System  
 ATC 1175  
 BYE 59356-2  
 C-1175  
 8/1/66

~~TOP SECRET~~

~~TOP SECRET~~

3. As we see it now we should have a limited operational capability one year from go-ahead. With the first launch (approximately seven months from go-ahead) consideration should be given to modification of a second B-52H to enhance operational flexibility. All operations should be launched and recovered from Area 51 although post strike of the carrier vehicle is an option we would consider for extremely remote areas. A typical sortie with target requirements in South China/Viet Nam would take off from Area 51 for launch of one drone in the vicinity of Kadena. A great circle route would cover 5800 NM and 12:40 hours flying time. Two air refuelings would be necessary for recovery at Area 51 with another eleven hours required for the return. Recovery of the drone payload would occur approximately 1 + 30 hours after separation from the B-52 to take place in areas dictated by the mission profile; i.e., Bay of Bengal, South China Sea, Yellow Sea, Black Sea, etc.
4. The B-52 external modification would consist mainly of the addition of two under-wing pylons for twin D-21B attachment. This pylon attachment will be similar to that of the X-15 with the important difference that the D-21B pylon allows full use of the B-52 flap system for take-off and landing while the X-15 pylon renders the flaps inoperative. Since the pylons will be attached through existing B-52 wing bolt patterns and the generated loads are within the capability of the attachments and backup structure, no B-52 wing beefup will be required.
5. The primary internal B-52 modification would be the addition of a dual launch control station. This will provide a completely independent launch control function for each of the D-21B aircraft as well as mounting,

2

Handle via BYEMAN  
 Control System  
 4144 C  
 BY 54356 66  
 Copy of 8/1/82  
 P/O of 5/1/82

~~TOP SECRET~~

checkout and post launch telemetering functions. Other modifications include the installation of the stellar initial navigation system, ancillary power for the D-21B, multiple camera installations and miscellaneous electrical and plumbing changes.

6. The booster chosen to boost the D-21B from .8M to 3.3M is a modification of the Project Appollo Command Module Escape Rocket produced by the Lockheed Propulsion Company. Its length including the nozzle will be 382 inches, the diameter 24 inches and its weight 9529 lbs. The booster rocket motor employs state-of-the-art design and components throughout in order to provide maximum performance confidence within the time available for its development.

7. The Area 51 runway length will be more than adequate for the B-52H operation. However, some construction will be required to accommodate the B-52H ground operations such as concrete extensions of the North and South turn-around pads, relocation of taxiway lights and an added 300 ft X 300 ft concrete pad, etc.

8. Specifically under this proposal, the following actions would be taken in FY67:

- a. Modification of a B-52H.
- b. Retrofit the 15 remaining D-21's to the D-21B configuration.
- c. Produce 7 additional D-21's in place of the 15 D-21 buy previously approved.
- d. Produce 7 additional cameras in place of the 15 camera buy previously approved.
- e. Construction at Area 51 to accommodate B-52H ground operation.

9. The airframe contractor has stated that if given a go-ahead

~~TOP SECRET~~

Handwritten notes: 10/20/66, 10/21/66, 10/22/66, 10/23/66, 10/24/66, 10/25/66, 10/26/66, 10/27/66, 10/28/66, 10/29/66, 10/30/66, 10/31/66, 11/1/66, 11/2/66, 11/3/66, 11/4/66, 11/5/66, 11/6/66, 11/7/66, 11/8/66, 11/9/66, 11/10/66, 11/11/66, 11/12/66, 11/13/66, 11/14/66, 11/15/66, 11/16/66, 11/17/66, 11/18/66, 11/19/66, 11/20/66, 11/21/66, 11/22/66, 11/23/66, 11/24/66, 11/25/66, 11/26/66, 11/27/66, 11/28/66, 11/29/66, 11/30/66, 12/1/66, 12/2/66, 12/3/66, 12/4/66, 12/5/66, 12/6/66, 12/7/66, 12/8/66, 12/9/66, 12/10/66, 12/11/66, 12/12/66, 12/13/66, 12/14/66, 12/15/66, 12/16/66, 12/17/66, 12/18/66, 12/19/66, 12/20/66, 12/21/66, 12/22/66, 12/23/66, 12/24/66, 12/25/66, 12/26/66, 12/27/66, 12/28/66, 12/29/66, 12/30/66, 12/31/66, 1/1/67, 1/2/67, 1/3/67, 1/4/67, 1/5/67, 1/6/67, 1/7/67, 1/8/67, 1/9/67, 1/10/67, 1/11/67, 1/12/67, 1/13/67, 1/14/67, 1/15/67, 1/16/67, 1/17/67, 1/18/67, 1/19/67, 1/20/67, 1/21/67, 1/22/67, 1/23/67, 1/24/67, 1/25/67, 1/26/67, 1/27/67, 1/28/67, 1/29/67, 1/30/67, 1/31/67, 2/1/67, 2/2/67, 2/3/67, 2/4/67, 2/5/67, 2/6/67, 2/7/67, 2/8/67, 2/9/67, 2/10/67, 2/11/67, 2/12/67, 2/13/67, 2/14/67, 2/15/67, 2/16/67, 2/17/67, 2/18/67, 2/19/67, 2/20/67, 2/21/67, 2/22/67, 2/23/67, 2/24/67, 2/25/67, 2/26/67, 2/27/67, 2/28/67, 2/29/67, 2/30/67, 3/1/67, 3/2/67, 3/3/67, 3/4/67, 3/5/67, 3/6/67, 3/7/67, 3/8/67, 3/9/67, 3/10/67, 3/11/67, 3/12/67, 3/13/67, 3/14/67, 3/15/67, 3/16/67, 3/17/67, 3/18/67, 3/19/67, 3/20/67, 3/21/67, 3/22/67, 3/23/67, 3/24/67, 3/25/67, 3/26/67, 3/27/67, 3/28/67, 3/29/67, 3/30/67, 3/31/67, 4/1/67, 4/2/67, 4/3/67, 4/4/67, 4/5/67, 4/6/67, 4/7/67, 4/8/67, 4/9/67, 4/10/67, 4/11/67, 4/12/67, 4/13/67, 4/14/67, 4/15/67, 4/16/67, 4/17/67, 4/18/67, 4/19/67, 4/20/67, 4/21/67, 4/22/67, 4/23/67, 4/24/67, 4/25/67, 4/26/67, 4/27/67, 4/28/67, 4/29/67, 4/30/67, 5/1/67, 5/2/67, 5/3/67, 5/4/67, 5/5/67, 5/6/67, 5/7/67, 5/8/67, 5/9/67, 5/10/67, 5/11/67, 5/12/67, 5/13/67, 5/14/67, 5/15/67, 5/16/67, 5/17/67, 5/18/67, 5/19/67, 5/20/67, 5/21/67, 5/22/67, 5/23/67, 5/24/67, 5/25/67, 5/26/67, 5/27/67, 5/28/67, 5/29/67, 5/30/67, 5/31/67, 6/1/67, 6/2/67, 6/3/67, 6/4/67, 6/5/67, 6/6/67, 6/7/67, 6/8/67, 6/9/67, 6/10/67, 6/11/67, 6/12/67, 6/13/67, 6/14/67, 6/15/67, 6/16/67, 6/17/67, 6/18/67, 6/19/67, 6/20/67, 6/21/67, 6/22/67, 6/23/67, 6/24/67, 6/25/67, 6/26/67, 6/27/67, 6/28/67, 6/29/67, 6/30/67, 7/1/67, 7/2/67, 7/3/67, 7/4/67, 7/5/67, 7/6/67, 7/7/67, 7/8/67, 7/9/67, 7/10/67, 7/11/67, 7/12/67, 7/13/67, 7/14/67, 7/15/67, 7/16/67, 7/17/67, 7/18/67, 7/19/67, 7/20/67, 7/21/67, 7/22/67, 7/23/67, 7/24/67, 7/25/67, 7/26/67, 7/27/67, 7/28/67, 7/29/67, 7/30/67, 7/31/67, 8/1/67, 8/2/67, 8/3/67, 8/4/67, 8/5/67, 8/6/67, 8/7/67, 8/8/67, 8/9/67, 8/10/67, 8/11/67, 8/12/67, 8/13/67, 8/14/67, 8/15/67, 8/16/67, 8/17/67, 8/18/67, 8/19/67, 8/20/67, 8/21/67, 8/22/67, 8/23/67, 8/24/67, 8/25/67, 8/26/67, 8/27/67, 8/28/67, 8/29/67, 8/30/67, 8/31/67, 9/1/67, 9/2/67, 9/3/67, 9/4/67, 9/5/67, 9/6/67, 9/7/67, 9/8/67, 9/9/67, 9/10/67, 9/11/67, 9/12/67, 9/13/67, 9/14/67, 9/15/67, 9/16/67, 9/17/67, 9/18/67, 9/19/67, 9/20/67, 9/21/67, 9/22/67, 9/23/67, 9/24/67, 9/25/67, 9/26/67, 9/27/67, 9/28/67, 9/29/67, 9/30/67, 10/1/67, 10/2/67, 10/3/67, 10/4/67, 10/5/67, 10/6/67, 10/7/67, 10/8/67, 10/9/67, 10/10/67, 10/11/67, 10/12/67, 10/13/67, 10/14/67, 10/15/67, 10/16/67, 10/17/67, 10/18/67, 10/19/67, 10/20/67, 10/21/67, 10/22/67, 10/23/67, 10/24/67, 10/25/67, 10/26/67, 10/27/67, 10/28/67, 10/29/67, 10/30/67, 10/31/67, 11/1/67, 11/2/67, 11/3/67, 11/4/67, 11/5/67, 11/6/67, 11/7/67, 11/8/67, 11/9/67, 11/10/67, 11/11/67, 11/12/67, 11/13/67, 11/14/67, 11/15/67, 11/16/67, 11/17/67, 11/18/67, 11/19/67, 11/20/67, 11/21/67, 11/22/67, 11/23/67, 11/24/67, 11/25/67, 11/26/67, 11/27/67, 11/28/67, 11/29/67, 11/30/67, 12/1/67, 12/2/67, 12/3/67, 12/4/67, 12/5/67, 12/6/67, 12/7/67, 12/8/67, 12/9/67, 12/10/67, 12/11/67, 12/12/67, 12/13/67, 12/14/67, 12/15/67, 12/16/67, 12/17/67, 12/18/67, 12/19/67, 12/20/67, 12/21/67, 12/22/67, 12/23/67, 12/24/67, 12/25/67, 12/26/67, 12/27/67, 12/28/67, 12/29/67, 12/30/67, 12/31/67, 1967.

immediately he can modify the B-52H and retrofit the first D-21 to the D-21B configuration within six months. He further states that he could retrofit the first three D-21's at a one per month rate with the remaining twelve coming off his line at a two per month rate. Assuming an immediate go-ahead he feels that it is feasible to resume flight testing of the B-52H/D-21B configuration in the last quarter of FY67. It is anticipated that three D-21B separations would be required to prove-out the concept and that D-21B launches with cameras installed would follow thereafter at a one per month rate.

10. The first of the seven production D-21B's would come off the line in January 1968. The next four would be produced at a one per month rate with the last two produced in June 1968. The airframe contractor would then be in a position to produce drones at a two per month rate thereafter should a further drone buy be approved early in FY68. The seven additional cameras would be produced at a one per month rate starting September 1967 with the last camera delivered in March 1968.

11. An estimated 21.076M of FY67 funds would be required for the B-52H/D-21B program compared with the previously requested 34.514M for the M-21 mother-drone combination. A detailed comparison is attached herewith (Incl 1). It will be noted that the reduction is primarily in the support area and reflects the fact that the M-21 will not be flown after September of this year and that the B-52H will be blue-suit maintained.

12. FY68 fund requirements have been estimated for two alternatives. Alternative 1 assumes an early FY68 go-ahead for an additional buy of 24 drones and 12 cameras. These 24 additional D-21B's would be produced at a two per month rate starting in July 1968 with the last delivered in

Handle via BVEHSM  
Central System

Oct 27 -  
1875 14 396-66  
Ed J. [unclear]  
[unclear]

~~TOP SECRET~~

June 1969. The additional twelve cameras would be produced at a one per month rate starting in July 1968 with the last one also delivered in June 1969. Alternative 2 assumes an early FY68 go-ahead for an additional buy of 16 drones and 8 cameras. The 16 D-21B's under this alternative would be produced at a 1 1/3 per month rate starting in July 1968 with the last delivered in June 1969. The eight cameras would still be produced at a one per month rate starting in July 1968 with last delivery in February 1969. Both alternatives assume that the previously procured drones and cameras will be B-52H launched at a one per month rate and support costs have been calculated on that basis. It is estimated that 60.60M of FY68 funds would be required for alternative 1 and 45.60M for alternative 2. This compares with a previously requested 71.70M for a 24 drone/12 camera buy and MD-21 launches at a one per month rate. A more detailed cost comparison of both of these alternatives and the previously proposed program are given in Incl 2.

Handle via EVEMAN  
Control System

attd to  
B/E 64356-66  
Cyl 1 of 2  
D 6 of 6 pgs

~~TOP SECRET~~