Proposed Scoring Systems for Falcon

The following is a brief resume of several proposed ~~scoring~~ systems for determining the firing accuracy of the Falcon series missile. These systems can be roughly classified in two broad divisions ~~classes — those~~ by the types of targets utilized; ~~an~~ real ~~exact~~ and simulated. The real system ~~would~~ involves a target similar in size to the targets that will be attacked in combat. ~~and that~~ Scoring ~~would be~~ is accomplished in ~~this type of~~ system by simply observing hits on the target. In the simulated systems a small target ~~is used~~ which ~~supplies~~ merely supplies an aim point for the weapons system ~~and misses are recorded~~ while ~~exactly~~ distances of rockets from target (miss distance) is recorded as the missiles cross ~~this~~ a plane through the target normal & vertical to the mean longitudinal path of the missile. The simulated system's ~~success~~ success depends entirely upon the ability to determine miss distance accurately. ~~Methods~~ Methods

by which this is accomplished ~~,~~ also determines to a great extent target configuration and other test factors.

A real target system has the advantage of leaving no doubt ~~as~~ as to test results ~~but it has~~ and is almost indispensable in engineering tests. Its very nature however prevents its employment on any reasonable scale outside ~~engineering~~ limiting developmental & engineering ~~testing~~ firing. At present and in the forseeable future the only real bomber target is the QB-17 drone, and the only fighter target is the QF-80. ~~Both~~ Logistic, if not economic considerations alone ~~preclude~~ prevent any wide scale firing program. Equally important however is the inability of the ~~QB-17~~ archaic QB-17 to achieve anything remotely resembling realistic target performance. A ~~not~~ missile system capable of consistently destroying piston driven aircraft at 180 m.p.h. & 15,000 ft. should ~~be~~ not be construed ~~assumed~~ capable of any similar performance against jets at Mach .8 and altitudes of 45,000 ft or higher. ~~The~~ A Q.F. 80 looks much better performancewise but ~~it~~ used ~~as a target~~ results obtained are only valid for

armament systems ~~perform~~ performance against fighter type aircraft ~~for~~ for the small size of the QF-80 makes it a simulated target for bomber performance ~~where~~ and ~~any~~ no valid conclusions can only limited conclusions should be drawn about its performance against bombers unless some form of miss distance information is obtained.

A simulated system consists of ~~the following~~ a ~~system~~ target moving at rates and paths corresponding to ~~an expected~~ real target ~~port~~ or trajectories and supplying an aim point (a radar reflector for the GAR-1 & 1A or an infra red source ~~for~~ the GAR 1B), and a system for recording miss distance. Once data has been obtained using this configuration ~~the data~~ this information may then be ~~to~~ applied to targets of any configuration thus obtaining valid kill probabilities. If miss distance information is accurate this method has ~~little~~ no little or disadvantage over a real target configuration while its advantages are many. ~~Until recently no~~ Firing error indicators are a critical item here but it now appears that several ~~feasible~~ workable systems will soon be available for use with this

missile series. The single outstanding advantage of a simulated is that target size can be drastically ~~removed~~ reduced. With radar-optic scoring the target becomes nothing more than an object to supply an aim point for interceptor and strike camera.

The following is brief description of several proposed systems for use with the Falcon. Number one is ~~the real target using drones~~ uses QB17 + QF80 or other drones. Number 3 is ~~two~~ is a proposal of Northrop which is presently being implemented. Numbers ~~two and three~~ 4, ~~and~~ four 5, and ~~five~~ 6 are proposals of my own ~~etc~~ hinging largely on the radar-optic scoring system.

The idea of using drones as targets is a simple and logical ~~one~~ but fraught with difficulties. As previously noted the QB-17 is a good target ~~size wise~~ from size stand point but extremely unrealistic in performance. The QF-80 is reasonably ~~more~~ realistic in performance but will need some form of F.C.D. if results are to be applied to bomber type targets. Assuming that ~~one~~ the Q-2 will someday be available it should be included in this series. With ~~our~~ fairly high

Number two is merely an elaboration of the present two systems

.26
30 | 8.0
60
200

hit probabilities that these missiles apparently will have any large scale program is obviously impossible. There simply are not enough drones to expend. Assuming a hit probability of 30% eight drones would be required to fire 25 missiles, a relatively small sample. Money wise this would be on the order of $2,000,000 for targets alone. This will ~~to say~~ have to be repeated with the G.A.R. I-B.

If QF-80's are used the hit probability and unit cost go down ~~to~~ and performance goes up however ~~on F.O.B.~~ the cost will again be extremly high and ~~will be~~ operations will be restricted ~~for~~ by numbers of drones available. It is obvious that only a small number of firings can be made utilizing either of these aircraft types and in the case of the QB-17 they will be a very unrealistic firings.

A small, high speed drone such as the Q-2 would be a better approach, especially if purley operational losses can be kept low. It is a simulated target and of course will need firing error equipment. The operation of such a vehicle will of course require a considerable amount of supporting equipment

Hit probability ~~should~~ be low with such a target.

& personell for its operation. The state of development
~~of~~,
of this target series seems to be still indeterminate.
available & proposed
Of ~~?~~ drones in general it can be said that
their ~~operation~~ ~~w~~ utilization will be expensive and
will require ~~[illegible]~~ supporting effort.

~~The man~~ ~~The use of a tow [illegible]~~

A tow system utilizing enough cable
to place the target a safe distance from tow craft
is another simple and