edited by Mad Dog

MS # D-031

THE FIRE OF THE ARTILLERY ANTIAIRCRAFT AGAINST FORMATIONS IN GREAT ALTITUDES DURING THE AIR DEFENSE OF THE ZONE OF INTERIOR WINTER 1944/45 AND SPRING 1945.

by

GENERAL OF THE ARTILLERY ANTIAIRCRAFT WALTHER VON AXTHELM

Place of Report	:	Garmisch (Germany)
Date of Finishing	:	23 April 1947
Sources:		
a.) Personnel	:	None: Written by memory
b.) Documents	:	None
Sketches and Prints	:	2 Sketches (scheme without scale) on pages 3 and 4.
Index of Abbreviations	:	None

Ft Bliss, Texas-10/26/48-20 Copies

The fire of the Antiaircraft Artillery against formations in great heights during the Air Defense of the Zone of the Interior Winter 1944/45 and Spring 1945.

Since the middle of the year 1943 the air raids increased in striking power, compactness and numerical force against the centers of military and vital importance especially the Capital Berlin, the Ruhr district, Hamburg and the middle German industrial area. Besides the hydro works, ball bearing works and traffic centers were affected by very heavy forces since spring 1944. If the opponent should succeed in paralyzing the production of fuels and lubricants and the traffic system, these attacks sure had to lead to defeat. The attacks until the end of 1943 were mostly flown at night, however during the further course of the War night and day attacks alternated.

The efficiency of the German Artillery Antiaircraft on the one side and the progressive technical development of Bombers (for example Four Engine Fortresses) on the other side were the reason for the running increase of bombing altitudes. After 1943 the bombing altitudes generally were not over 6500 meters, a high in which the AA 8.8 cm 38 and the AA 10.5 cm could operate with prospect for success. With increase of the altitudes to above 8000 meters and the strong stepped up formations used by the opponent, the picture for ground defense changed considerably.

In this altitude the ... 8.8 cm and the 10.5 cm AA only had a very limited chance to shell a horizontal course of target (approximately 30 seconds) while the more efficient guns (AA 8.8 cm 41 and AA 12.8 cm) could well fight these attacks, but were not available in the necessary quanti consequently new ways had to be found, to make the defense also fit against those attackers.

One of these ways was during the winter 1943, 44 originated an idea to fight the hostile planes not just by points of burst, but to aspire to direct hits with superquick impact fuze. This idea was taken up with great skepticism because it contradicted sharply all so far by all Artillery Antiaircraft of the world used firing methods for heavy AAA. Yet the Commanding General of the Artillery Antiaircraft ordered a large scale firing test at the AAA firing range Lustrow and took care of warlike target performance and unobjectionable photographs of firing data and target conditions by means of several recording Theodslite stations. A committee of University Professors and ballisticians checked the mathematical foundations for the calculations of the expectancy of hitting and reckoned over the whole process. The result was that the process promised much better chances of hitting against planes with large surface (Approximately 200 Sq. meters and more) not only in medium, but in higher altitudes, if it would not be against single planes, but against units.

Since the practical firing test as well as the theoretical calculations proved positive, unit tests were ordered at different operational areas. The tests showed amazing results.

So far an average of 3000 shells had been necessary to shoot down an approximately 30 ton heavy large surfaced bomber, the impact firings made in different places showed, that the now necessary average shell quantity was between 800 and 850 for each downed plane. With that proof was brought in late fall 1944 that the hitting chances of the new process would surpass the old process by a little more than three times.

Therefore, the conversion of the fuze production was caused to the new double fuze. However, the action became not effective until the early months of 1945. It was planned to supply completely the A.A in the Zone of the Interior with this fuze. One did not take any chances with this plan because it was possible to fire with point of impact as well as point of burst, that meant to keep on using the old method of firing with point of burst or the new method with point of impact or both methods combined depending upon air situation and tactical employment of the opponent.

In sketch 1 (page 3) a phase of a trajectory is shown. The proposition of horizontal range dispersion, direction dispersion and vertical range dispersion is indicated. In any case it is evident that the horizontal range dispersion is a manifold of the vertical range and direction dispersion. However, it is just the horizontal range of dispersion which plays a very important role while firing against large surfaced targets in higher altitudes. The vertical range and for short and over firing or better said high and low firing direction dispersion does not matter so much with these large surfaced planes.

In sketch 2 (page 4) a formation flies staggered between 6000 and 8000 meters altitude.

For better understanding one should imagine the planes, flying over or under a medium datum level of 7000 meters, projected on this medium level. The AAA too will apply its firing data to this level. Then, while firing with points of burst, at best 50% of all fired shots will go through this datum level and burst in the or over, while the other 50% will burst below the level.

The new double fuze offered the possibility, to fix the fuze setting for having the points of burst approximately 200 meters above the highest planes, while every preceding touch with a lower flying plane would bring the sensitive fuze to a blast and destroy the plane. With a fuze setting in the sample of sketch 2 of 8200 meters all trajectories go through the datum level while with the old method of firing with point of burst 50% of the shots would blast below this level. This consideration refers only to the trajectory dispersion and disregards the fuze setting. This can be done unobjectionably since the fuze dispersion is very little, if the very precisely working clockwork fuze is used and because the result will only be influenced insubstantially, by the fuze dispersion.

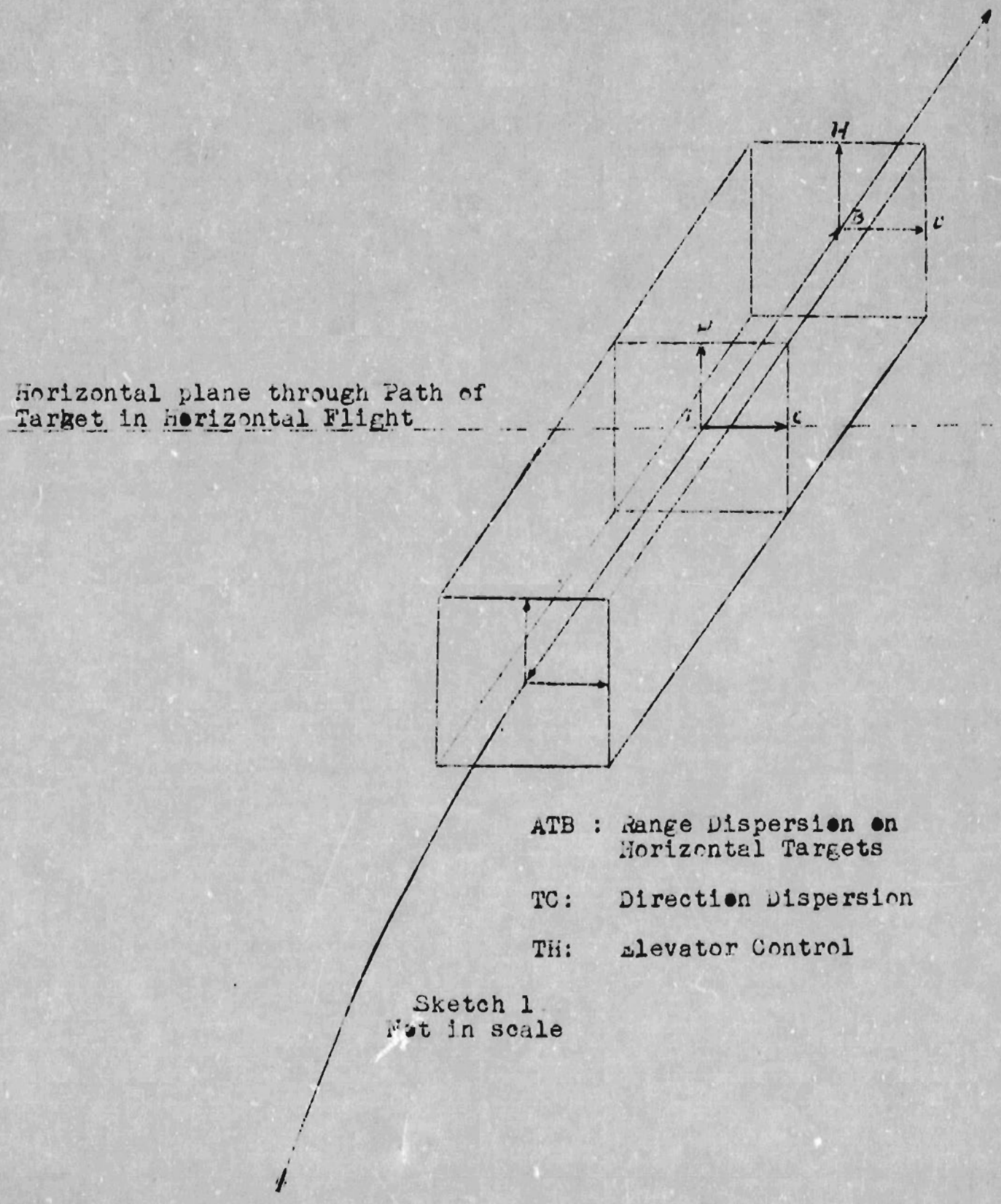
The method was very successful against densely flying formations in daylight raids at high altitude. However, it was also used with good results at night against the so-called "stream of bombers" in air lanes. The number of downed planes rose to three times as many as the so far obtained during day raids and doubled during night raids. However, the following fact has to be considered. With the ..... fire of the old method there were fewer downs, but the "indirect ..... effect", that is the damage done to planes and crews

by fragments was remarkably high (up to 60%) having the point of burst above the highest flying plane, means renouncing a part of this "indirect AA effect". For that one exchanges however a double to triple result of downed planes. Around the middle of April 1945 the new method was used for the last time during an air raid at noon against Air Fields surrounding Munich. The sky was covered approximately 6/10. The opponent approached his targets in echeloned small formations at various altitudes between 4500 and 6500 meters. The AA fired upon the single attacking squadrons with sudden concentration and a fuze setting for 7000 meters altitude in rapid fire.

The number of attacking planes was approximately 180 to 200. Seventeen of these planes were shot down. The author observed the attack from the position of a AA Battery located on the drill ground of the post of "New-Freimann".

The hit bombers burst in the air with great fire appearance and came down to earth in single parts. Several of these direct hits were seen over the Air Base "Schleissheim" only a few kilometers away from "New-freimann".

The firing with double fuze should be used, when the opponent disposes of large surfaced bombers and employs these in mass attacks against objects heavily protected by AA.

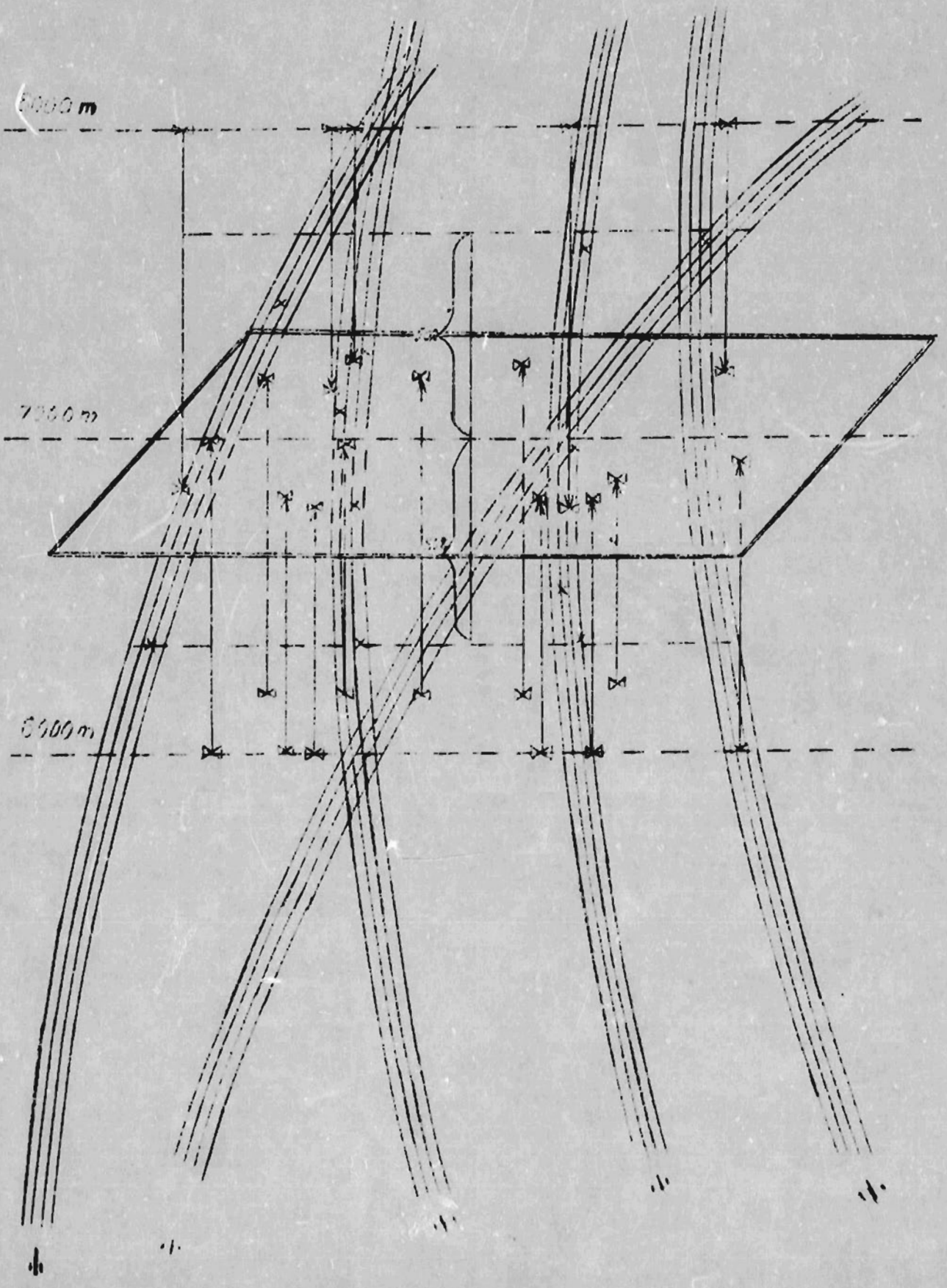


ATB : Range Dispersion on Horizontal Targets

TC: Direction Dispersion

TH: Elevator Control

Sketch 1
Not in scale



Sketch 2
Without Scale