Eugen Sanger's Hypersonic Bomber Project and Idea of it Realization in the USSR in 1946

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***Abstract*—Presented documentary material about the project of Professor Eugen Sanger hypersonic strategic bomber and the search of the author of the project and his assistants to work on its implementation in the Soviet Union in the first post-war years.**

Keywords-hypersonic bomber; Eugen Sanger

Eugen Sanger (22 September 1905 – 10 February 1964) was an Austrian aerospace engineer best known for his contributions to lifting body and ramjet technology. During the Second World War he worked at Professor Georgi's Institute in Ainring, Bavaria. Then Sanger designed a hypersonic bomber project powered by a rocket engine. Irena Bredt who later became his wife assisted him.

In August 1944 Sanger and Bredt published the results of their research in Germany as a report called "On a Rocket Motor for a Long-Range Bomber". It said the following:

"The takeoff is made using a powerful rocket motor... Having attained a speed of 500 m/sec, the aircraft rises off the ground and, with full engine power, it climbs to an altitude of 50–150 km along a trajectory that, at first, slopes towards the horizon at an angle of 30° and then becomes gently sloping. The time of the ascent ranges from 4 to 8 minutes. As a rule, all the propellant is consumed during this period... At the end of the ascending the rocket engine cuts off and the aircraft goes on flying thanks to accumulated kinetic and potential energy by means of characteristic gliding along a wave-like trajectory with decaying amplitude...

At a moment calculated in advance, bombs are released from the aircraft. The bomber returns to its aerodrome or some other landing site and the bombs, flying in the initial directions, strike the target... This tactic makes the attack absolutely independent of the weather over the target or time of day and deprives the enemy of any opportunity to oppose the attack.

... The task we set, which up to now no one anywhere has yet solved, consists of bombing and shelling targets located 1000 to 20,000 km away. An operational formation of 100 rocket bombers in several days can obliterate areas equal to world capitals with suburbs at any spot on the earth's surface" [1].

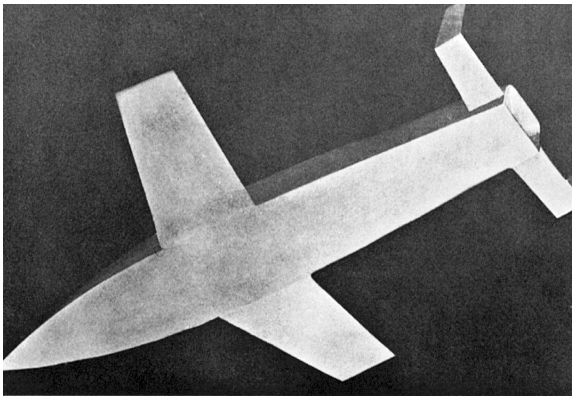

Figure 1. Sangers's bomber model

According to estimates, maximum speed had to be 20,000 km/h, landing speed 170–180 km/h, engine thrust 100 tons, takeoff weight 100 tons, including 90 percent for fuel, bomb load 1 ton, wing span 15 m, and the area of the wing and lift-generating fuselage 125 m^2 [2].

Despite all the project's allure, no practical steps were taken to bring it to fruition since the leaders of the Third Reich understood that Germany already had neither the time nor the resources to create such a "super plane".

In 1945, seconded to Germany engineer of Soviet Commissariat of the Aviation Industry Research Institute No. 1 (NII-1) Miklashevskiy happened upon one of the copies of the Sanger and Bredt report and sent it to his institute in Moscow. It was translated into Russian and 100 copies printed, but did not attract any special attention.

The idea to implement Sanger's project appeared later, in 1946, when aeronautical engineer I. N. Moisheyev found another copy of the report in Dessau and showed it to General Kutsevalov, Chief of the Air Forces Department of the Soviet Military Administration in Germany. The latter was inspired by Sanger's idea and addressed it with a long letter to his "patron," Air Forces Commander Marshal K. A. Vershinin. A proposal followed to establish a

special scientific and technical bureau in Germany comprising Sanger and other scientists who helped him in designing the hypersonic bomber and then unite them with leading Soviet specialists, setting up a special institute for this in the USSR. “If the project proves successful, there is no doubt that our country will have in its hands a frightful and irresistible weapon,” it said in the letter [3].

The Marshal supported Kutsevalov’s suggestion. In his letter to Minister of the Aviation Industry M.V. Khrunichev he wrote:

“In my opinion, realization of Sanger’s project coincides with further development of aircraft and rocket technology and, therefore, organization of the work on Sanger’s project and others like it is quite timely. Otherwise, we inevitably will be left behind in this respect. The proposal to enlist Professor Sanger and his assistants for this work is correct.

One must bear in mind that we are dealing here not only with an ordinary design bureau but with organization of a special institute with powerful test benches and a large team of specialists. Enlistment of Professor Sanger and his employees in this effort is necessary to speed up the start of this work and using experience accumulated in Germany....” [4].

The leadership of the Jet Technology Institute NII-1 also supported the idea to create the Sanger rocket bomber. “...A super long-range aircraft is of great significance for the USSR Armed Forces. That is why organization of the work to accomplish it is extremely necessary and pressing,” the institute conclusion stated [5].

The main task, naturally, was to find professor Sanger and his closest assistants. It proved impossible to find them in the Soviet occupation zone. Hence, it was necessary to search for Sanger in the western occupied zone of Germany or Austria, where he was born. The following plan was worked out:

A search center should be located in Berlin (Soviet Military Administration in Germany).

It is necessary to use from a Russian side:

a) Moisheyev Igor Nikolayevich

b) a responsible comrade from the Ministry of State Security Foreign Department

c) a responsible comrade from the Ministry of Foreign Affairs.

It is necessary to issue foreign passports to all Russian comrades and provide them the opportunity to visit:

a) The Western zone of Germany (in particular Braunschweig, Ainring, Lindau, Hamburg, Munich, Frankfurt am Main, Goetingen, Aachen).

b) Austria, Vienna.

After the aforementioned comrades come to Berlin, they will, with the help of Soviet Military Administration in Germany, hire Germans to go to the above cities to see professors assistants Ebeling, Tribbnik, Just, Seewald, Winkler, and so on. Security requires that “cutouts” be used to make the direct contact with the Germans.

The supervisor of this effort must have means to pay and stimulate the agents and Sanger’s employees. In addition, he must have at his disposal a stock of ration cards with high norms as well as the most essential foodstuffs themselves (cigarettes, fats, meat, bread, and so on). The group should have at its disposal automobile, U-2 and PS-84 airplanes, and telephone and telegraph communications with the Ministries [6].

But attempts to establish contact with Sanger or his colleagues failed. And besides, this was impossible, since after July 1946 the scientist was in France where he took part in work on experimental aircraft.

References

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[2] Rossiisky gosudarstvennyi archive ekonomiki, fond 8044, opis 1, delo 1647, p. 12, 28.

[3] Ibid, p.15.

[4] Ibid, p.2.

[5] Ibid, p. 36.

[6] Ibid, p. 57-58.

[7] D.A. Sobolev, Nemetskii sled v istotii sovetskoi aviatsii. Moskva; Aviantik, 1996.