

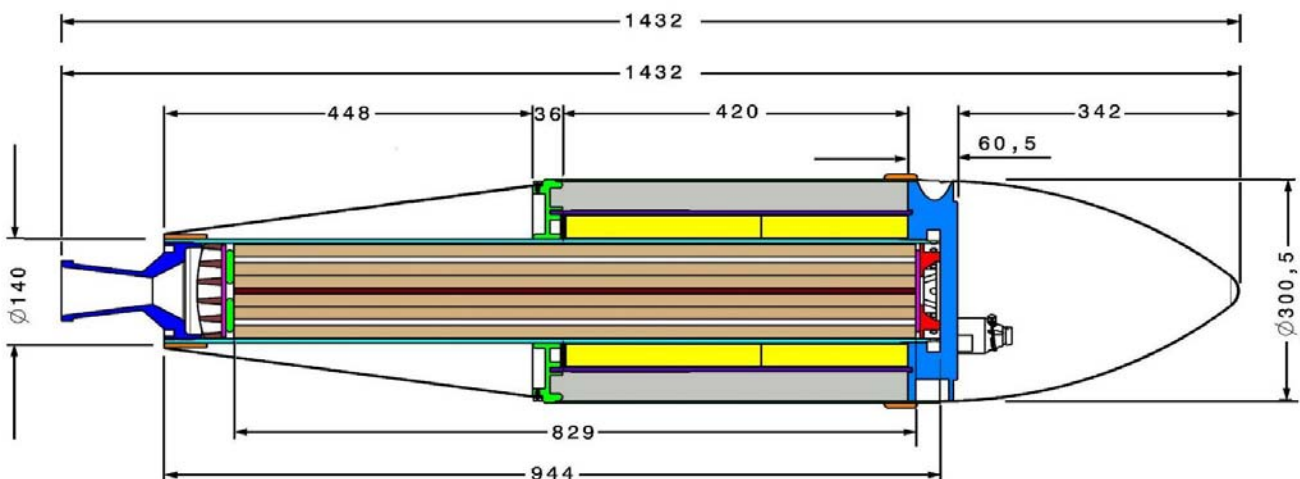
44M „LIDÉRC” rocket I

von András Hatala

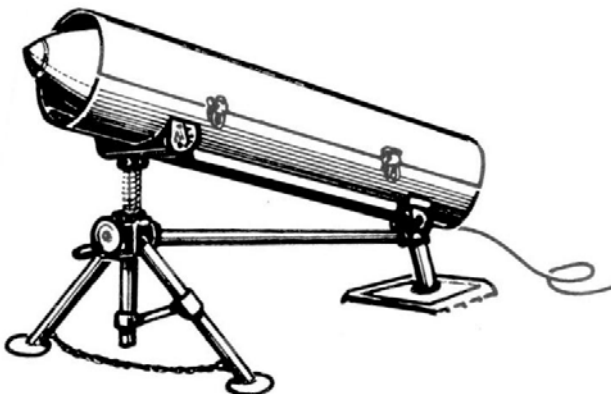
Historical background

We can dated its development beginning since Dr. Károly Pulvári physicist submitted his patent for acoustic proximity fuse. He constructed it because of the impression of the English- later the American mass bombing in 1943.

The management of the Military Thechnical Institute recognised the hidden possibilities of it and took up the denelopment. German help was impossible so the occuring problems had to solve by the home electrical industry's products. This settled that the construction will not a small. Such a big fuze in AA artillery shell not suitable, therefore remained the other way: using in a rocket. The Hungarian rocket technic still reached success in 1943 but serviced or well-tried piece was not. The development of the fuse had to stayed in a phase to determine its the size and weight. This was important to start the rocket's development too. This interdependence forecasted the long preparation.



The fuze was developed by the inventor and some engineer in Technological University, Budapest in secret. Without description it is anybody guess how operate the proximity sound-fuze. By way of introduction it can stated: only elektron tube apparatus comes up because the transistor was not knowed yet. Károly Pulváry and the developers surely choose a so-called squelch principle circuit – hereafter publish this schematic outline.



Contemporary squelch consisted of four basic unit: the first was the extreme sensitive microphone from which the soundfrequency got into a one- or two pieces of electron tube amplifier. At the output appeared significant A.C. sign wich went into rectifier the generated D.C. took the third electrical tube's grid. This regulator item keep itself close basicly, that was no current passing but when its open ingited the electrical blasting cups which finally caused the explosion of the rocket. This

valve's working point was set such way, that the general noise -which existed when the rocket flew - still not opened it. When the rocket approached the target the microphone on its tip heard the bombers engine sound and started giving higher and higher current due to this the electronics suddenly „allowed” the ignition for the „gate” valave.

Without doubt Pulváry thought about the delay because without it the rocket would exploded under the launcher fighter wing. This delay unit were any kind of knowed mechanical or electical solution – its armed the electronics 2-3 s after the launch surely. Not impossible that they set a passive screen made from condensers and coils after the microphone which allowed to pass the flying fortress engine's deep soundrange only. With this they would have increased the sensitivity and the safety.

As small place in the head of the rocket just the most simple apparatus comes up. They used German or Hungarian electrical tube? Theoretically any of them were possible as both country's factories could produce enough small parts in high quality. We still think Pulváry worked from the home produced parts. Almost sure that the soundfrequency fuse built up in modular system as its mass production was possible only this way.

Knowing the contemporary radios and soundfrequency devices we could determine the fuse size. Microphone was as big as a fist, the soundfrequency screen two middle size male's

palms on each other, while the 3-4 valve's electronics was approximately a 15-18 cm edge cube. Among them still was place for the joined battery which gave the anod- and heater current. This could be placed and wired under the ballistical dome just before loading. Such kind of small batteries had enough capacity to power the fuse during the some minute long operation.



During the development the most problematic tasks would be: the enough sensitive microphone finding, the amplify degree and the set of the working point. To find a suitable the soundfrequency screen would not be a problem because many were in the factory shops. They did many windtube and sound-frequency experiments, measurements while they recognised which and what kind of strength soundrange belong together with how big Voltage in a determined circuit. The set of the correct working point would not be as big as the previous problems. It took one year at least.

Such kind of fuse was unknown in that world's armies. This was pioneer work because today well known and used squelch did not exist. In summer 1944 they achieved the aimed purpose, the fuse worked by the artificial American bomber-engine sound in the Aerotechnical Institute's wind tunnel.

The rocket was made as an AA ammunition but due to theoretical and technical absences the Hungarian engineers couldn't create such a big rocket which would have started from the ground to attack aircrafts. The solution was a rocket-carrier aircraft which would have shot 2-4 rockets under its wing. In some opinions this was the motivation to grow up the Hungarian Me-210Ca bomber production ability at Danubian Airplane Factory Ltd. Later bought the rights of the Me-410 bomber with the same intention.

According to the conception the launch happened out of the enemy shooting range when the bombers fly in close formation and the rocket runs without guidance into aircrafts to devastate them by its explosion. It needs such a big amount of powder which could provide a 1-2 km aimable range and could transport 50 kg payload over the rocket motor itself weight. In the turn of 1943-1944 similar big rocket motor was busy developing in connection with other rocket projects. Although the German and the Russian salvo-rockets' powder was well known by the Hungarian specialists, at the early experiments they tried the normal artillery charge-

materials in Csepel experiment works after all. They got many uneven burnings and explosions in the wooden models. Further problem was the ignition system. Without enough experience there wasn't a consistent idea about it. Probably the solution was the purchased license of the German 158 mm Nebelwerfer launcher and rocket with contained the recipe of the powder sticks, the ignition system and the production technology of the rocket chamber as well.

During the German and Russian salvo-ammunition examination the Russian wing stabilized construction proved to be suitable for area firing only. The rotating rocket flew with higher accuracy gave smaller dispersion so they stand next to the spin stabilized ammunition. The disadvantage was the more machine work at production of the nozzle-wreath. New Hungarian set was the normal cylindrical rocket chamber with gas withdrawal at both ends: main or drive nozzle at the end and 3 pieces of rotating nozzles on the side. Maybe they hoped the higher accuracy by this construction.

In 27th. June 1944. the Manfred Weiss industry giant in Csepel was bombed by Americans and the rocket developer unit demolished. That time the thick-walled powder charge did its duty, gave the needed thrust and rocket motor was proposed. But neither the fuse nor the rocket documentation for production was not in hand when the bombing was getting.

Director of DIMÁVAG Col. Károly Bézler was ordered by the army's Chief of Ordnance that he had the available pieces and the documentation transported into Diósgyőr and finished the rocket as soon as possible. Completing the parts from Csepel they started to manufacture the rocket from steel castings and steel tubes. The rocket motor and the ignition system were finalized and operate well. At the beginning of October 1944. occurred the first launches in the factory test field.



But their time had already run out. Launch from airplane didn't arise and they wanted to use the some hundred manufactured pieces as ground-ground rocket. The proximity fuse development did not get to the trial series due to the lack of parts and producing capacity. Its using in „LIDÉRC” as in artillery rocket would have been foolish. The explosive surrounded the rocket chamber and

this occurred a problem. The Pulváry-type fuze would have given electrical ignition so the ring shape explosive charge would have detonated many points in the same time. There was nothing else to be, it had to use the normal impact fuze. That could fire only at one point which not surely enough for complete explosion. Uneven or local explosion's risk were high. The Diósgyőr-solution was the duplicate fuze using, the headdisc of the rocket was drilled and by bushes – compared at angle 120° to each other - fitted 2 pieces of modified 81 mm mortar shell fuzes. The rough Magyaróvár fuze factory machined fuzes were fitted only the impact mechanism with an additional transport safety feature. The original pyrotechnical long distance arming device leaved totally.

Because of the approaching Russian forces DIMÁVAG had to evacuate in October. Bézler gave the plans himself to Transdanubia and the finished rockets and rough parts transported too.

We know from memoir, that among all latest Hungarian weapons the „LIDÉRC” was showed to the Hungarian Royal Arthur Görgei Military Engineer Cadet School's leavers in November 1944. This eyewitness mentioned the launcher's construction exactly the foldable pipe design.

During the encircling operation of Budapest the available pieces actioned in turn of November-December 1944. Fireplace set near Érd- and Budatétény-area close to the Danube west bank and fired the offensive Russians on Csepel Island. Some unit fired from Csepel Island to Soroksár some salvo. In december the morning papers reported the explosions of the „Hungarian wonderweapon” caused bluish-green flash and big cloud. It might happened because of the thermite charge burning

Some mentioned that in Győr were had been experiments with the rockets but without industrial background they were unable to finish them from the rough parts. Maybe some remained pieces were fired by 7th assault artillery class at Balaton-Highland.

On 5th August 1987 Gyula Sárhidai managed to talk for a long with Dr. Imre Korán, who was the leader of DIMÁVAG's ammunition plant. He told the story of „LIDÉRC” at first. When the factory started to work under Russian control he was appointed to be the manager of the Artillery Factory. Commander Col. Mascsenkov ordered him to collect a report about the plant activity during the war and he mentioned the „LIDÉRC” as well. For command the stayed old guard drew the rocket's documentation from mind. The russian colonel took it back to the Sovietunion with himself.

Except the above mentioned story „LIDÉRC” counted among the legends because no documents or existing piece remained.

Around 1990 founded a copied cross section drawing between the dead stocks in the Military Technical Institut but it represents the rocket without fuze.

At the end of 2006 on River Danube bank – near Solt – the EOD patrol recognised the biggest Hungarian WWII rocket remains in a rusted metalwreck. This peace helped me to reconstruct this experimental weapon.

