

Booklet of theses

Title: **The target acquisition principles, practical issues and future of the Hungarian army field artillery support**

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The scientific problem

Previously, behind the concept of target acquisition subunits were procedures and equipment and was park of equipments as well as many professional theoretical knowledge and practical experience. The size of force has been decreased and during this process the the target acquisition unit has been disapeared as well, so not only the remaining number of artillery and destructive capability became less and less, but capability of target acquisition is also reduced. Today, however, have nothing or almost nothing left in the system.

The branch of tactical reconnaissance became larger and larger – and there is no doubt that there may be overlap between them –, however, each has specific task-system. The mission of target acquisition system is to ensure the special needs of fire units, and secondly – with other branches of intelligence – to ensure the datas to decisions of commanders.

It is concluded that there is a huge hole in the Hungarian Army capabilities-palette, because we don not have specifically target acquisition organization and do not have that kind of units which would be able to carry out these the tasks.

I am convinced to eliminate a full culture, or to further him wasting away – because it seems that there is not the opportunity of the explosion of a war expanding on more countries currently – is sin, since onto the country protection tasks not it is necessary to pay attention directly before only an armed conflict. That way a country's military force has to be ready always. To establish a working system for new one from the nothing is with heavier (and maybe more expensive), than to keep the one turning up on a level continuously.

Maybe, that the danger of a bigger war currently not real, but a numberless example supports it the smaller one, primarily local conflicts and the occurrence of arising against our soldiers accomplishing a service in the international environment that's right it more probable. Like this so I believe it so, the topic very timely, his proposition does not tolerate a deferment though, since quite a few persons which can be found are active in a service yet today on the one hand they, who tooke part in the target acquisition of Hungarian Army, it was organized and it was guided. It is possible to declare it on the other hand, that since the submission of the first indirect firemission the artillery of the military force of one single country can not be imagined without well-working and organized target acquisition system.

The research objectives

1. With the order of historical fundamental researches, the substances published already before me in the topic studying, and own – appeared earlier – to compile the story of the development of the Hungarian target acquisition exploration with the use of my publications, presenting the more capital stations of the road leading to this. In the begining. To prove with the presentation of conditions standing for taking action on the beginning of a World War I and his analysis, that this system came into existence

reasonably before with nearly 100 years, worked well, turned into indispensable one for the tasks of the martial strengths his fruitful execution.

2. After the clarification of the fundamental concepts coming forward in the topic, principles actual and detailed proposal onto the re-erection of a system like that. This may contribute to growing of the destructive ability of fiel artillery and it can may increase subunits or even soldiers' safety, his survivor ability, all in a fight, all peacekeeping operations equally.
3. Finally, creating of applications of the principles of the created new target acquisition system.

The expected results of research

1. The road leading to target acquisition subunits' first appearance happening to an occasion, historical one searching with thoroughness. After the presentation of the initial states and the examination of the then situation, the came into existence for subunits' importance, and the demonstration of his necessity.
2. To reproduce the definition and tasks of the target acquisition for the circumstances of the present age.
3. The item of proposals onto target acquisition organisations' restoration, concerned with this in parallel with – the theoretical and technical development of the target acquisition came into existence on his row – onto the erection of new elements. The presentation of the abilities of the created system and its examination they the demonstration of his necessity.
4. The fruitful engagement of the proposed target acquisition system creating his principles between different actions, peacekeeping operations and circumstances.

Research Methods

The substance of the dissertation includes a chapter of the past of the topic and the expected and hoped future for. I found it expedient because of this duality the research general-, and from among the special methods of the military science to apply number one. These were the following:

General research methods:

- observation;
- analysis and synthesis;
- comparison;
- abstraction;
- induction and deduction;
- hypothesis.

Special methods of military science:

- military history research;
- modelling of military activities.

In the essence of the first chapter a historical fundamental research, that applying the method of the army story research on his row – in the course of data collection – I digested it in the *Hadtötréneti Levéltár* can be found, the artilleryman spotter orders concerning the forming of a system, measures, commands, and it can be found written meanings, and published articles, studies.

I examined a subsystem of the system of the support fire and the exploration using the dialectic unit of the analysis and a synthesis in the second chapter, I got taking the artilleryman exploration to pieces longer then to the fundamental building stones, that his help – in a theory – I built up the system.

In the third chapter the target acquisition creating subunits with the method of the analysis and a synthesis, from below I made it building. The abilities of the developed subunits I called the method of the modeling of the military activities to his presentation help.

In the fourth chapter the developed spotter at the time of the examination of the application of a system – beside the use of my own practical experiences – I applied the method of the abstraction.

The row of my military career until now innumerable domestic ones and I attended more international practice, concerned – it was over in six years as a second-in-command of an artillery battalion, and as a battalion commander – I guided them. Planning my opportunity was him under this period and – until five years – to make the tasks of target acquisition. So the general research methods I complemented the special theoretical research methods with my got practical experiences.

As the member of Magyar Hadtudományi Társaság, a team test and public procurement commissions, and commander of the last artillery subunit I kept a continuous contact the experts of the topic. I was struggling along beside a continuous negotiation happening to my consultant and an exchange of views at what to ask more competent person's opinion, to lend an ear to their point of view, to recognise.

Brief description of the tests performed by chapter

1. Appearance of the target acquisition of the Hungarian armed forces

The artillery's development was a most slow process initially, it is possible to say it, that in the first 500 years not, you are scarcely serious changes happened. There was need for a catalyst it, that let revolutionary innovations be born, and let the development accelerate up. On an interesting manner this catalyst one at that of the cannon – theoretically – the increase of the abilities of a destructive weapon managing strength, the gun was much more picturesque. It was the sudden development of this weapon, that – with the search of new roads – the artilleryman persuaded the world's driving powers into the serious development of devices. Increase of firing range of the cannon and the new optical aiming equipments and other new development of devices created its conditions though, that already no only from the firing position let them fire at aims about which right can be been, that is – beside the direct fire – the leadership of the fire with indirect fire turned into possible one.

At the time of the eruption of a World War I the Hungarian royal army had 60 batteries but it increased continuously under all of the world war. This quantitative increase increased the number of the observation posts naturally, however this increase did not solve all problems merely, so the system of target acquisition units appeared.

What did not prove the organisations' tactics value, his doubtless necessity better, since – under very short time – from the squads created in the beginning sections, companies were

from the sections though. These changes though not only change of name, but serious staff number ones and – together with this – a determined picture increase was reported.

This largest moral is present looking out on our age though possibly. Our own teams' successful activity, and the Hungarian military force was increased by an ability which cannot be released then in terms of his self-defence. Today the world's armies keep above this intelligence branch with serious material, technical and organizational resources, and develop it continuously.

2. Theory of target acquisition

The target acquisition is one of the most important subsystem of field artillery's since the appearance of indirect fire. The World War I showed that it is indispensable and useful. Its emphasized role did not decrease between the two world wars, and it had important place. In the chapter – making use of related concepts with the intelligence branch – I created the new concept of target acquisition on the manner being equal to the challenges of the present age.

At the time of the appearance of the indirect fire primarily the artilleryman designate substance a map, manual compass made the intelligence tasks and plainer protractor with the help of instruments, angle telescopes. The experiences of a World War I shed light on it soon however, that to create worthy subunits dealing with this task separately. These subunits applied the traditional devices generally yet, although you start conquering space slowly the range-finders and sound-ranging systems. The the radar appeared in a world war II and the accelerated beat of the dynamic warfare made it necessary the the application of target acquisition vehicles. After the World War II the military forces started using it in the past century's years of sixty the unmanned air vehicles, then in the seventy years the night-vision apparatus and the laser range-finders. The last elements of the system used today appeared finally the firefinder locators. The on the end of the development process, that the artilleryman exploration on the reason of his manifoldness – taking the applied technical devices into consideration divides it up into optical-, radar-, and air reconnaissance.

The target acquisition subunits equipped with the special devices are struggling along in time and with the necessary accuracy onto the acquisition of so intelligence data, which essential ones to the fire units' fruitful activity and the decision making of the commanders of the martial strengths.

Onto its judgement though, that the got data in truth sound, in truth up can be used to the fruitful fire activity mentioned before and commanding decision making, a complex assessment system stands for the provision of the directing organs guiding the exploration.

3. Necessity of development of target acquisition and the possibilities in the future

On the dawn of the target acquisition, after the first serious war, according to a study, the field artillery's destruction was fruitful if his own observers revealed the targets and it was served the fire. In the contemporary idea already there were those elements figured, that, today, it characterizes a modern target acquisition system.

Before the transformation of political regime in a Hungarian mechanised infantry brigade can be found the elements of the target acquisition. In the self propelled artillery battalions and mortar (then for later self-propelled artillery) batteries there were six and one-one observation posts. But the technical target acquisition capability appeared only in the artillery brigades, so can be related, that with 20 years before in an army's mechanised infantry brigade had 9 observation posts with – stereo and laser – rangefinder.

This chapter proposes the organisations of the target acquisition system and the devices which can be applied by them. In this way the capability of the system would grow to 18 after

the forming of the outlined system, and more the brigade would increase his target acquisition ability seriously with 3 movingtarget locators, and 3 firefinder locators and 1 sound-ranging system too. At the brigade taller level though – on all this beside the carrying farther of abilities –could lean on the intelligence data of UAVs.

The subunits' sizes and the number of the devices systematized in them though partly the norms of the activity of the martial strengths, partly the common sense, the federal expectations shaped it concerned.

In the system suggested by me can be found on all that elements, on all that abilities, that one – for the requirements of the age – suitable modern field artillery target acquisition system is characterize, namely: optical observation posts, movingtarget- and firefinder locators, sound ranging systems and unmanned air vehicles.

In as much inside a couple of years – on the suggested way by me and for the governing principles mentioned higher up adequately – he manages to establish an operational system, it will cause Hungarian Defence Forces huge increasing of ability.

4. Application of the target acquisition units

In this chapter I examined in detail the application of the target acquisition forces between different circumstances. These analysing different circumstances, I drew that conclusion, that – for a field artillery working well – the mentioned equipments and capabilities are together necessary. If we loose any of the intelligence capabilities that will bring about the weakening of ability of target acquisition, because:

1. the optical observation posts – inside the frameworks of the ground and their technical opportunities – many times the most accurate sources, but the up-to-date data are able to be supplied on;
2. the movingtarget locators – primarily night and between bad visibilities –are able to be complemented the activity of the optical observation posts most successfully;
3. the firefinder locators – together with the sound ranging systems – are the primary sources of detection the fireunits of enemy, and for the service of counterfire;
4. the passive sound ranging systems – applied in a system – may be increased successfully the abilities of firefinder locators, while engaging independently capable to receive its parts of task;
5. the unmanned air vehicles are able to provide real-time data between almost all kind of circumstances from the enemy's strengths, and to survey its efficiency concerned following the destruction.

Summary of conclusions

The target acquisition, or its birth entered „measurement” or „artillery measurement”, was integral part of the field artillery from the beginning of indirect fire and and our days it as well. Our predecessors obtained the experiences that were struggling along after his processing continually in the smaller local wars and the two world wars right, to make the artillery of our homeland efficient.

Target acquisition is one of three subsystem of field artillery subsystem. The appearance of the indirect fire revived this intelligence branch. The artillery may reappear in 1912 in the military force of our homeland, and until 1917 in the artillery batteries can be found those persons whose task was the target acquisition. The experiences of the World War I indicated that the fruitful target acquisition requires a prepared organ and an organization They came

into existence the so-called measure units and besides the optical and the sound ranging subunits, and appeared the air reconnaissance too.

This system did not lose its necessity in the course of the history, indeed turned into more complicated one. The opportunity of the sound measurement increased continuously, and locators appeared and last but not least as the last element of the system the UAVs appeared.

In my work, I established that, today, field artillery cannot be imagined without a well organized target acquisition system! It is necessary to create this intelligence branch with different levels and different size but in a uniformized system. The system has to include optical equipments, locators, sound ranging systems, and UAVs. The subsystem is able to provide those data that are necessary indispensably for the artillery and those which are important for a commander before the fruitful making of the decisions.

New scientific results

1. I have **processed** the appearance and beginning of the newly published reconnaissance branch of our country's armed forces. The initial states, and with the help of the combat experiences of World War I, I have **proved** the importance indispensability of created system.
2. Onto previous theoretical bases building, **I created** the new concept of the target acquisition, and its partition.
3. **I drew up** the field artillery's modern target acquisition subsystem, its organisations, and **I proved** its necessity.
4. **I reshaped** and **redefined** and created the principles of single elements between different actions, peacekeeping operations and circumstances.

Recommendations

My opinion is that the doctoral dissertation is suitable to be a base of elaborating, planning and organizing work for development of Hungarian field artillery. So, I recommend that:

1. senior advisors of HDF Operational Directorate, teachers of Zrínyi Miklós Home Defence University and experts be formed into a research team, which continues the theoretical researches longer, and complements this dissertation;
2. inside the Fegyverzeti Állandó Munkacsoport be formed a separate working party, that replant the theoretical work in reality, and deal with planning and organizational problems of target acquisition system;
3. let a regulation thing work, which creates those theoretical bases in the subunits and devices deficiency, onto which the system can be built;
4. as the last moment of the development process be erected subunits at battalion, regiment, brigade and taller level.

The practical use of research results

I think my research results that can be used:

1. in the artillery and other officer training, naturally in different depth;
2. in the university additional training of the officers of other services;
3. in the course of the development of university notes which are dealing with the target acquisition;

4. in training of artillery warrant officers and non commissioned officers;
5. in preparing of units and subunits.

The list of publications of the subject matter made

Manual

Manual of the target acquisition units of mechanised infantry brigade

Publication of the Land Force Command

Author (100%), size: 126 pages

Issued: 2004

Scientific Students Works

Current issues of target acquisition of a mechanised infantry brigade

University SSW – 4th place, award of LFC

Author (100%), size: 54 pages

Issued: 27.05.2002.

To be located: Zrínyi Miklós Home Defence University, Bibliothèque

Planning of computerised modul of a staff excersice

University SSW – 1st place, royalty of LFC

Co-author (as a member of a 10-person working group), size: 250 pages

Issued: 27.05.2002.

To be located: Zrínyi Miklós Home Defence university, Bibliothèque

Current issues of target acquisition of a mechanised infantry brigade

National SSW – 2nd place, award of HDF General Staff Chief of J3

Author (100%), size: 60 pages

Issued: 29.04.2003.

To be located: Zrínyi Miklós Home Defence University, Bibliothèque

Studies

Forming the C²I (fire supporter functional subsystem) system of a battalion

Author (100%), size: 66 pages

Issued: 02.12.2002.

To be located: Honvédelmi Minisztérium Elektronikai, Logisztikai és

Vagyonkezelő Részvénytársaság

Fire support requirements of light infantry company, infantry battalion, armoured battalion and infantry brigade

Author (100%), size: 111 pages

Issued: 20.07.2004.

To be located: Honvédelmi Minisztérium Elektronikai, Logisztikai és

Vagyonkezelő Részvénytársaság

Engagement of the field artillery in military operations

Author (100%), size: 21 pages

Issued: 2006-ban

To be located: ZMNE Bibliothèque

Presentation

Target Acquisition of a mechanised and light infantry brigade

Author (100%)

Issued: Nemzetvédelmi Egyetemi Közlemények volume 8, issue 1

85-108 pages

Scientific articles

The present situation of the mechanised infantry brigade's target acquisition, possible changes

Author (100%)

Issued: „Kard és Toll” issue 2003/1, 32-42 pages

The documents to be used as the mechanised infantry brigade's target acquisition in the course of his planning

Author (100%)

Issued: „Kard és Toll” issue 2003/2

The organizational structure of target acquisition squads in the World War II

Author (100%)

Issued: „Kard és Toll” issue 2004/1, 125-132 pages

Engagement of the company fire support team in target acquisition

Author (100%)

Issued: „Kard és Toll” issue 2005/2, 94-103 pages

About the design of fire support sub-system of the „Tactical Command and Control and Information System” (HAVIR)

Author (100%)

Issued: „Kard és Toll” issue 2005/2, 104-112 pages

Possible engagements of artillery of the Hungarian Armed Forces in different missions

Author (100%)

Issued: „Kard és Toll” issue 2005/3, 34-51 pages

Examinations of the principles of target acquisition

Author (100%)

Issue: „Kard és Toll” issue 2006/3, 102-116 pages

Theory of the “Artillery-flight” in the Hungarian Royal Army

Author (100%)

Issued: „Kard és Toll” issue 2006/3, 117-130 pages

Ground surveillance and target acquisition system in the British Army

Author (100%), size: 7 pages

Issue: AARMS volume 10, issue 3 (IV.2011.)

The Hungarian artillery in the beginning of the World War I and apperarence of target acquisition in our country

Author (100%)

Issued: www.mhht.eu/hadtudomany/2011_e_17.pdf

The doctoral candidate's professional-scientific biography

Highest level of education

17.07.2003. University Degree

Zrínyi Miklós Home Defence University, Department of Military Sciences, Military Leadership

Language skills

25.03.2010. STANAG English 3.3.2.3.

Bournemouth Business School International (BBSI)

11.11.2011. Italian elementary (B1) – combined

ELTE Foreign Language Training Centre – Origó examination

Courses

28.04.1995. HDF HQ of Artillery, Battery Commander Course

Kossuth Lajos Military College, Rocket and Artillery Department

29.11.1996. NATO Orientation Course

HQ of 4th Mechanised Corps

Domestic Positions

- 01.09.1993. – 30.06.1996. HDF 108. Mészáros Lázár Mechanised Infantry Brigade
(2 years 10 months) 1st mechanised infantry battalion, mortar battery
1st platoon commander
- 01.07.1996. – 28.02.1997. HDF 62. Bercsényi Miklós Mechanised Infantry Brigade
(8 months) self-propelled artillery battalion, 2nd battery
battery commander
- 01.03.1997. – 31.01.1998. HDF 62. Bercsényi Miklós Mechanised Infantry Brigade
(11 months) self-propelled artillery battalion, 1st battery
battery commander
- 01.02.1998. – 31.10.2000. HDF 62. Bercsényi Miklós Mechanised Infantry Brigade
(2 years 9 months) self-propelled artillery battalion
battalion S2
- 01.11.2000. – 31.08.2001. HDF 62. Bercsényi Miklós Mechanised Infantry Brigade
(10 months) self-propelled artillery battalion, brigade fire support group
commander
- 01.09.2003. – 31.07.2004. HDF 25. Klapka György Mechanised Infantry Brigade
(11 months) self-propelled artillery battalion, brigade fire support group
commander

- 01.09.2004. – 28.02.2007. HDF 25. Klapka György Light Infantry Brigade
(2 years 6 months) 101. gun-howitzer artillery battalion
second-in-command
- 01.03.2007. – 28.02.2011. HDF 25. Klapka György Infantry Brigade
(4 years) combat support battalion
battalion commander
- 01.03.2011. – HDF General Staff
(8 months) operational directorate, arms branch
senior advisor (artillery)

Foreign positions

- 13.07.2005. – 23.01.2006. MH Guard and Security Battalion (KFOR 13)
(6 months) **chief of staff (second-in-command)**
- 14.07.2010. – 27.01.2011. MH EUFOR Contingent (EUFOR 7)
(6 months) **contingent commander**

Medals

- 20.08.2000. Service Medal of Officers III
12.04.2001. Service Medal of Flood Protection
04.12.2004. Service Medal Bronze
25.10.2005. Dancon March Medal
22.01.2006. Non-Article 5 Balkans
30.01.2006. Service Medal of Peacekeeping
30.01.2006. Service Medal Silver
23.05.2006. Service Medal of Flood Protection
29.09.2009. Service Medal Gold
20.08.2010. Service Medal of Officers III
10.01.2011. Althea Medal
08.02.2011. Service Medal of Peacekeeping