

NATIONAL UNIVERSITY OF PUBLIC SERVICE

Doctoral Council

CSENGERI, János

**The Air Base as Operational Capability
and its Complex Study – Air Bases Role
in Air Force Operations**

the author's resume and the official review of the PhD
dissertation

Consultant:

Colonel Professor Zoltán KRAJNC (PhD)

Professor and Head of Department

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The Actuality and Introduction of the Research Topic

After earning my BSc degree at Miklós Zrínyi National Defence University and became an air traffic controller I worked three years as an ATC at Hungarian Defence Forces 86th Szolnok Helicopter Base. During these years I started my MSc studies at University of Debrecen where my major was logistic management. In October 2012 me and my wife moved to Budapest and I started working at National University of Public Service as an instructor and I earned my first individual scientific scholarship of which topic was the civil-military common use of Hungarian airports or air bases. This is how my personal motivation raised.

The objective actuality of the theme selection is the following: from the characteristic of warfare in the past century and the current image, it can be stated that the air force has become a decisive mean during the development of success, but raising the proper number of aircraft for a certain mission or air campaign is a challenging task, therefore only an air base or rather a network of air bases with the appropriate capabilities and functions can meet this requirement. The geostrategic role of the Air Force is therefore significant, including the air bases, the literature does not fully reveal these connections, merely takes smaller areas into consideration, and the importance of air bases is not recognized.

Besides the possibility of landing and taking off, the air bases provide the venue for preparation and rearm of aircraft, during air mobility it has to be suitable for passenger and materiel handling and air bases also shall be capable of several other functions which will be examined in the thesis. Furthermore, it can be stated the security and safety issues also very important to be studied especially in overseas and operational areas.

During my PhD research I will examine different aspects of air bases of which topic, according to my researches so far, I divide three fields. One of them is the positioning of air bases or military airfields with which a state might protect its homeland and overseas interests in this case the air base not just an element of the infrastructure but an operational capability with combat and combat support functions. The second field is the capabilities with which the aviation

and air operations are being realised and their efficiency is being enhanced. And the third is the safety and security, without the appropriate level of safety and security the former two fields cannot be utilised or exploited.

The Outline of the Scientific Problem

The basic scientific problem is that the significance of air bases in Hungarian military sciences is not recognised and not researched. Thus I am convinced that the topic of air bases require scientific examination, analysis and proper observations. The Air Power theorists in their writings examine merely the operations of Air Power the significance and functions of the enabling platforms are almost forgotten.

However there are a vast amount of technical literature regarding the airfields and air bases, these literatures do not possess any military science aspects. Besides the former two sources there is a third one which is probably the most relevant. These writings deal with the overseas bases although these literatures do not focus only on air bases but military bases in general.

The Research Hypotheses

During the initial research of the topic and during my other but related researches I have found several scientific problem of which I express the following assumptions:

1. Hypothesis: comprehensive scientific works dealing with the relationship between air bases and aerial warfare can barely be found;
2. Hypothesis: Air Force doctrines do not recognize the geostrategic significance of air bases, the force projection function, and fundamental determinant role of air bases are also not being emphasized;
3. Hypothesis: air bases established beyond national borders and in domestic areas are not just locations for aircraft taking off and landing but also important geostrategic bridgeheads, with extensive diplomatic, combat and combat support and combatservice support functions;

4. Hypothesis: the employed military assets, the tactics, and the organizational structure have an impact on the number, territorial distribution and supportive capabilities of air bases involved into a conflict;
5. Hypothesis: not only the location of and the combat potential of forces at air bases are important but also have other significant elements like capabilities that make it possible to perform the operations efficiently and also have important functions that enable the integrity, security and applicability of air forces.

The Objectives of the Research

The objective of my research is to provide a comprehensive picture of the structure, capabilities and significance of air bases as a complex phenomenon. I will examine the positioning of air bases, their geostrategic significance; combat-, combat support-, combat service support- as well as their force protection capabilities.

To this end:

- At the beginning of the thesis I will accomplish the review of the relevant literature;
- In order to give an overview on the range of tasks of which the air bases shall provide a basis I will examine the role of Air Power in aerial warfare. I will conduct this examination from two aspects: on the one hand I examine the works of Air Power theorists who fundamentally determined the employment of Air Force. On the other hand I study the Air Power basic doctrines which record the current state of aerial warfare;
- I want to introduce a new approach about air bases (and in general about military bases) that these facilities are not just locations for taking off and landing of aircraft, ground handling and maintenance, but as a force projection an force multiplier platform. To achieve this objective, I will also explain the geostrategic aspects and importance of air bases;

- For airbases to provide the above function, they must be safe objects, and as it is well-known, numerous aspects of security that can be distinguished. In the dissertation, I draw three approaches covering most of the area. I will examine the force protection capabilities of air bases, which will enable to maintain a high level of operational sustainability; the security challenges and responses to air bases or airfields in peacetime, in non-operational areas; and in the operational area, the protection of the bases' immediate environment, in particular the use of remotely piloted air systems in the defence mechanism;
- Furthermore, as I intend to prepare a comprehensive dissertation, I will examine and summarize the combat service support functions of air bases that allow the operation, maintenance, preparation and deployment of aircraft; and that also provide the infrastructure for planning and command and control of air operations;
- At the end of my dissertation, I will summarize my research, deduct my summarized conclusions and outline my scientific results.

The Applied Research Methodology

The basic requirement of the research methods of the dissertation is the correct reflection of reality. During the research, I try to identify new relationships, so I found part of the research as a basic research. In most of the dissertation, based on the existing scientific results, I am looking for ways to exploit them in solving the problems related to the subject, which means that most of the research is applied research. When choosing the research methods I have applied several varieties of special (partial) methods.

When analyzing air bases, I have collected data to determine the starting state, and I have analyzed the basic attributes, the characteristics, the structural elements, and the given connections (analysis). After the analyzes, I have summarized the essential relationships revealed by the analysis and compared to the whole system (synthesis). I draw consequences from the processing of the available experiences and from the data and hypothesis of analyzes, supplementary theories and assumptions (induction). I draw conclusions from

the general phenomena for air bases (deduction). I apply the principle of consistency, compliance, according to which "the emergence of new theories does not invalidate the previously established theories, but only narrows their scope of validity, the latter become boundaries of the former."

Based on my research results, and on the existing international and national experiences, I will formulate useful results. Using the exploration method, I analyze documents and use my observations.

During the research, I supervised the information obtained, attended lectures and conferences. I studied Hungarian and foreign language doctrines, regulations, studies, PhD dissertations, notes, monographs, articles published in international and domestic scientific journals, and scientific content of Internet as well.

The Summary of the Research

In the first chapter I examined and I sorted one of the most important elements of the air base, the types of landing sites. With the help of lexicons and glossarys of terms and definitions, I introduced the definitions of bases.

In the second chapter I reviewed the work of the most important Air Power theorists, the basic principles they create, with which now the four fundamental roles of Air Forces can be separated. I did all this to give a thorough overview on Air Force roles they provide basis for. It can be stated that the fundamental roles of Air Force are currently divided into four main groups. These are: counter air, air-to-surface attacks, collecting information, and air mobility and logistic tasks.

In the third chapter I examined the geostrategic nature of the air bases. In this chapter, I reviewed military bases in general, I presented their design and utilisation in a historical context. I examined the types of overseas bases that cover different levels of size of facilities, as well as their important properties and considerations of their design, focusing on the issues surrounding the development of air bases. Starting from the tenet that the Air Force is an inherently offense service and its primal and fundamental application occur beyond national borders. To illustrate the former I demonstrated through case

studies from the 20th and 21th centuries in what way the air bases supported the achievement of geostrategic aspirations.

The focus of chapter four was placed on the conditions influencing the safety and security of the air bases, their protection, and the responses to these former. There are many aspects of safety and security that can be distinguished and examined, I intended to provide the most comprehensive approach. To this end, I discussed the issue in four subchapters, the last two of which are closely related to each other.

The last chapter details the contents of and responsibilities recorded in the Memorandum of Understanding among the sending nation, the host nation and the cooperating parties. The provision of host nation support or the role of the sending nation is not new to Hungarian Air Force as she has already participated in both roles. In the second subchapter I intended to give a detailed breakdown of the combat service support of the air bases, and I explained the capabilities of the air bases supporting the flying troops.

New Scientific Results

- 1. In the Hungarian military science scientific literature, I was the first to make a comprehensive analysis of the complex operational capabilities of the air bases, and I integrated the term of air base in the new New Military Science Lexicon, which has not yet been found in Hungarian lexicons.**
- 2. Based on the analysis of the doctrinal literary of the NATO and national (domestic and relevant Member States), I have determined that the determining doctrines do not discuss the contribution of air bases to air operations. Based on this, I made a proposal to present the functions and capabilities of air bases in doctrinal literature.**
- 3. In the dissertation, I introduced a novel approach on the roles and functions of air bases. I proved that these infrastructure elements are not only the location of taking off and landing of aircraft, but air bases should be interpreted comprehensively along with their**

combat, combat support and combat service support, and also with diplomatic functions.

- 4. I have verified that air bases constituted into a network represent more added value than the simple sum of system elements. I have also proved that organisational structure of forces has an impact on the shape of an air base network involved into a conflict.**
- 5. I have revealed the relationships and as a result of the analysis of basic documents, I have demonstrated that the safety, security, and combat service support attributes of air bases are a determinant precondition during air operations or air campaigns.**

Recommendations

By analyzing and evaluating the research problems, I first made a comprehensive analysis of the complex operational capabilities of air bases in the Hungarian military science literature. I did not find a scientific paper (study, article, analysis) published in Hungarian language or by Hungarian experts on this topic. This reinforced in my belief that the chosen topic addresses one of the current problems of today, so I consider the dissertation as a significant one.

The research might assist in the management of an air base or airfield as it occurred in Kabul Airfield, Afghanistan in 2009 for half a year; it can help to understand and contextualize the presence of the Heavy Airlift Wing at Pápa Air Base; or contribute to understand the significance of the Baltic Air Policing task contributed by Hungarian JAS-39 Gripens. In addition, as an option on the Kecskemét Air Base, an apron has been designated for receiving and operating allied aircraft, which in fact is relevant to all chapters of this dissertation.

I integrated and the editorial board accepted the definition of air base in the new New Military Science Lexicon which cannot be found in the domestic editions of the encyclopedias. The thesis contributes to the complex task system of doctrine development due to the fact that I have proved the

operational capabilities of air bases play a decisive role in the success of air and joint operations.

In my view, the results recorded and proven in my dissertation can be directly used in the improvement of Hungarian air bases, and in the further analysis of regulatory document systems.

Taking into consideration the contents of the dissertation, it can be used in the fields of military basic and master courses and professional courses in operational and logistic fields.

The Potential Practical Application of the Research Findings

The results of the research can be directly applied:

- By analyzing and evaluating the problems mentioned above, the scientific military literature of the Air Force deals only with a limited scope and non-comprehensive approach. This topic has not been published in Hungarian language. This fact confirmed me about the chosen topic looks for answers to actual scientific and practical problems and the dissertation examines the topic from a novel approach. The dissertation can contribute to the supplementation and development of the doctrinal literature of the Hungarian Defense Forces. Thanks to the comprehensive nature of the thesis, the place and role of air bases can be informative also to those who have been thought "the air base merely the venue of the taking off and landing of aircraft.";
- During the development of concepts of air base improvement, and also during the development of document systems regulating the operational application of bases;
- In the improvements of the educational material of the majors of military leader, operational logistics, military maintenance and military pilot training at basic levels; and at the master level education (also military leader, operational logistics and military maintenance); or in other professional courses;

- The results of the research can be utilised in the education of Doctoral School of Military Science, Doctoral School of Military Engineering and during the relevant courses of Erasmus+ mobility program as well.

I do not consider my research to be closed, I wish to continue with the analysis of the positioning and role of overseas bases and the examination of the force projection capability of various states, especially focusing on Air Power aspect. In the dissertation I did not discuss the issue of aircraft carrier ships, but I also consider this subject to be studied in the future from similar approach which was represented in this current work.

List of Publications by the Candidate Related to the Research Topic

Book chapters:

Csenegri János: A repülőterek futópálya és gurulóút tulajdonságainak bemutatása. In: Krajnc Zoltán, Csengeri János (szerk.): A hadtudomány és a hadviselés komplexitása a XXI. században. 289 p. Budapest, Nemzeti Közszolgálati Egyetem, 2015. pp. 228-240.

Csengeri János: A katonai repülőterek civil-katonai közös felhasználása. In: Közigazgatási és Igazságügyi Hivatal (szerk.): Így kutattunk mi!: Tudományos cikkgyűjtemény II.: A Nemzeti Kiválóság a Konvergencia Régióban Program ösztöndíjasainak tudományos cikkeiből. 508 p. Budapest, Közigazgatási és Igazságügyi Hivatal, 2015. pp. 113-115.

Vas Tímea, Csengeri János: Napjaink biztonsági kihívásai a repülőtereken. In: Finszer G., Sabjanics I. (szerk.): Biztonsági kihívások a 21. században. 838 p. Budapest, Dialóg Campus Kiadó, 2017. pp. 665-675.

Csenegri János: A légierő, mint a geostratégiai törekvések egyik meghatározó eszköze. In: Szilvássy László (szerk.): Repüléstudományi Szemelvények 2017. 220 p. Szolnok, Nemzeti Közszolgálati Egyetem Katonai Repülő Intézet, 2017. pp. 31-66.

Journal articles in Hungarian language:

Csengeri János: A katonai repülőterek polgári – katonai felhasználás (üzemeltetés) hazai jogszabályi hátterének bemutatása. In: Repüléstudományi Közlemények (1997-től) XXVI/2. 2014. pp. 160-170.

Csengeri János: Repülőterek távoli környezetének megfigyelési lehetőségei. In: Honvédségi Szemle: A Magyar Honvédség Központi Folyóirata 143/6. 2015. pp. 63-74.

Csengeri János: A légi járművek fel- és leszállóhelyeinek fajtái. In: Honvédségi Szemle: A Magyar Honvédség Központi Folyóirata 144/1. 2016. pp. 106-119.

Csengeri János: A légibázis és az információs tevékenységek kapcsolódásai. In: Hadtudományi Szemle 9/1. 2016. pp. 8-19.

Krajnc Zoltán, Csengeri János: A légierő képességei a hibrid fenyegetésekkel szemben. Hadtudományi Szemle X/4. 2017. pp. 112-125.

Komjáthy Lajos, Csengeri János: A távirányított és pilóta nélküli repülőrendszerek alkalmazási lehetőségei a felkelők elleni műveletek során. In: Honvédségi Szemle: A Magyar Honvédség Központi Folyóirata 145/6. 2017. pp. 81-92.

Csengeri János: A légi bázis, mint erőketitési platform. In: Repüléstudományi Közlemények (1997-től) XXX/2. 2018. pp. 55-66.

Journal articles in foreign language:

Csengeri János: One of the Basic Questions of Warfare: The Levels of Control of Airspace. In: Academic and Applied Research in Public Management Science 14/4. 2015. pp. 331-340.

Publications in conference proceedings:

Csengeri János: Material Management and Transportation Procedures in Air Force Logistic Operations. In: Manažment - teória, výučba a prax 2014: zborník príspevkov z me dzinárrodnej vedecko-odbornej konferencie. 380 p.

Liptovsky Mikulas: Akadémia ozbrojených síl generála Milana Rastislava Štefánika, 2014. pp. 222-233.

Krajnc Zoltán, Csengeri János: Early Concepts and Theories of Employment of Air Power. In: 12. medzinárodná vedecko-odborná konferencia: Management - Theory, Education and Practise 2016. 346 p. Liptovsky Mikulas: Akadémia ozbrojených síl generála Milana Rastislava

Krajnc Zoltán, Csengeri János: Hybrid Warfare from Military Air Perspective. In: 8. medzinárodná vedecká konferencia: National and International Security 2017. 614 p. Liptovsky Mikulas: Akadémia ozbrojených síl generála Milana Rastislava Štefánika, 2017. pp. 254-262.

Csengeri János: Air Bases as Power Projection Platforms. In: ГОДИШНА МЕЖДУНАР ОДНА НАУЧНА КОНФЕРЕНЦИЯ НА ФАКУЛТЕТ „АВИАЦИОНЕН“ 2018. 450 p. Dolna Mitropoliya: Vasil Levski National Military University; Union of Scientists in Bulgaria, 2018. pp. 218-227

Curriculum Vitae

- **Personal data:**

- Name: János CSENGERI; date of birth: 08.31.1986.
- Place of Work: Department of Joint Operations, Institute of Military Leadership Training, Faculty of Military Science and Officer Trainig, National University of Public Service
- Position: Assistant Lecturer

- **Educatoin:**

- Air Traffic Controller, Military Leader, Miklós Zrínyi National Defence University – 2005-2009.
- Logistics Management, University of Debrecen – 2011-2014.
- Doctoral School of Military Science, National University of Public Service – 2014-

- **Professional experience:**

- Assistant Lecturer, National University of Public Service – 2012-
- Air Traffic Controller, HDF 86. Szolnok Helicopter Base, Hungarian Defence Forces – 2009 – 2012.

- **Foreign languages:**

- English proficiency (STANAG 3.3.3.3); French threshold (Arma)

- **Scientific performance:**

- Number of publications: 26 pcs
- Earned scholarship:
 - Eötvös Lóránd Students Scholarship, National Excellence Program – 2013.
 - National Talent Program, Ministry of Human Resources – 2015.

- PhD Students Supporting Scholarship, Pallas Athene Geopolitical Foundation – 2015.
- Concha Győző Doctoral Program for Phd Students, National University of Public Service – 2017.
- New National Excellence Program, Ministry of Human Resources – 2017., 2018.
- Participation in projects and research programmes of the NUPS (Research Workshop of Military Science – 2014., 2016.; New Military Science Lexicon – 2018.)
- Conference participation:
 - Nights of Reasearchers – 2016., 2017.
 - Akademia ozbro jených síl generála Milana Rastislava Štefánika – Slovakia, Liptovsky Mikulas – 2014., 2016., 2017.
 - Conference of Aviation Science – National University of Public Service, Szolnok – 2018.
 - Aviation Faculty 2018 Annual Scientific Conference – Bulgaria, Dolna Mitropolia – 2018.
- Erasmus+ participation:
 - Slovakia – 2014., 2017.,
 - Bulgaria – 2018.
 - Serbia – 2018.