

Paper 16/65

Some comments to the presentation with the title

The principal method of

The Swedish Attack Helicopter Study

1996-98.

Abstract

The method employed by the Swedish attack helicopter study is presented. The study aimed both at identifying limitations and possibilities when using an attack helicopter system for Swedish purposes and at developing a Swedish concept of tactics. Part of this work was to compare different classes of helicopters in order to find and suggest a reduced number of classes for subsequent studies. One part of the comparison was to assess the need of different helicopter-capabilities for different missions. Methods such as war gaming of different missions utilising maps and discussion groups have been used for this purpose.

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Introduction

The aim of the presented method was to compare different helicopter systems and to evaluate helicopters in full scale military conflict, international operations (OOTW) and as support to the civil society. Of specific interest was also the influence of Swedish terrain and questions of vulnerability on the performance of the attack helicopters. In addition, older models describing the performance of attack helicopters on the battlefield were not satisfactory. There was thus a need for models to describe the combat effectiveness of the attack helicopter system in a Swedish environment, i.e. primarily for the purpose of comparison with other systems within the future structure of the Armed Forces in high (national) level war gaming.

The study group consisted of about 15 people from the Armed Forces, FOA and FMV (the Defence Materiel Administration) and was enforced with specialists when needed. This was usually the case when performing war gaming and addressing topics such as Electronic warfare and Command and Control.

Method

The overall approach

The knowledge and understanding of attack helicopters was initially quite low within the study group. Hence, a lot of effort was made in order to gather information both in general and from actual users, manufacturers and more specific from technical experts within Sweden such as FOA, universities and from industries such as SAAB and Ericsson. Several international users of attack helicopters were also visited.

The overall plan was to gradually increase the knowledge of the study group while performing war gaming and evaluation. A matter of importance was hence to have the ability to go back and correct previous results according to newly acquired information.

In order for the study to be as wide as possible the evaluation was directed, as much as possible, towards general properties and capabilities of the helicopters, i.e. not on a specific type of helicopter. Examples of capabilities are to:

- carry weapon systems able to destroy small ships and vessels at a specified distance
- carry a large weapon load
- carry external fuel tanks
- have a low signature as depending on the threat
- continuously observe the surrounding air space for enemy aircraft
- to conduct effective air to air combat (against helicopters and aeroplanes)
- use counter-measures efficiently
- use Fire and Forget missiles
- work within an advanced Command and Control system
- move with high agility and speed in darkness at low altitude.
- transfer target data to other units
- use precision guided munitions in co-operation with for example infantry using laser designators

However, four different groups (classes) of helicopters were constructed. Each group represented helicopters of specific common capabilities or intended usage as based on a certain combination of capabilities (active and passive main sensors, passive main sensors, a different concept of tactics, multipurpose helicopter systems).

A reference helicopter was assigned for each group that could be used in the method for principal discussions. The properties and capabilities of each reference helicopter were according to the knowledge of the study group in the beginning of the war gaming period. The capabilities of the reference helicopters used in the scenarios were thus not the same as the opinion of the real helicopter in the end of the study. To assess the performance of the real helicopter, in the scenarios, its estimated level of capability was compared with that of the reference helicopter and the performance adjusted accordingly.

Support to the civil society and international operations (OOTW)

Support to the civil society was discussed in a seminar with people from the Police, Customs etc. Of most interest was using the attack helicopter for its sensors and for purposes of command and control.

International operations (OOTW) was discussed as based on a scenario used for long time military planning. The OOTW-scenario consisted of ten phases. Nine of them involved the use of military units. Initially a number of possible helicopter missions in OOTW were noted, as based on international experiences from for instance Bosnia. The missions judged as of most importance for the commander, in each phase of the scenario, were noted and prioritised. The overall most frequent, important, missions were judged as documentation, surveillance, escort and force protection.

Full scale military conflict (war gaming)

The role of the attack helicopter in full-scale military conflict was mainly evaluated by the use of discussion oriented war games supported by simple mathematical models. Some observed benefits when playing these war games are presented below.

The method of war gaming as applied in the study:

- generated knowledge and insight into the helicopter system, i.e. both in itself and in combination with other systems in the Armed Forces
- was a tool to identify the most important parameters both on and outside the battlefield
- gave an idea of combat effectiveness
- provided the base for comparison of different helicopters
- spread knowledge of attack helicopters to the participants

Scenarios for the war games were constructed in co-operation with the HQ Joint Command North, South and Middle. 11 different scenarios were played. Each scenario was played two times using different reference helicopters, i.e. using the reference helicopter of group A the first time and the reference helicopter of group B the second time. One specific theme, such as electronic warfare, was discussed in more detail during each game.

The general process of war gaming began by the presentation of the scenario on a high (national) level. The limitations and possibilities of the helicopters in combination with more general aspects were identified through discussions at this level of action. This resulted in an operational plan describing the intended usage of the helicopters in the high level scenario.

In the next step, the tactical scenario including a limited knowledge of the enemy as, among other things, presented on a map (1:50 000) was discussed. Decisions were made relevant for this level of action and a plan of action (tactical plan) was constructed accordingly.

As mentioned above, the games were conducted more in detail on maps (1:50 000). Individual enemy vehicles and air defence units were placed on the map. Initially the placement of enemy units was only conducted in part reflecting the problem of limited intelligence. However, as the tactical plan of action had been constructed and implemented on the map the complete situation was revealed. By noting and comparing the way of approach that the helicopters used with that of the enemy units some estimate could be done regarding the potential loss of the helicopters. Also the potential consequences of these confrontations on the overall situation could be discussed and hereby estimated. The number of enemy targets destroyed was estimated for the different reference helicopters in two separate steps. The first step reflecting the initial moments of combat and the second the ensuing combat against an alerted and thus more cautious enemy.

The need of present and future capabilities in each scenario was estimated by observing the scenario in aspects of terrain, threat level, observed confrontations with the enemy units, possible synergies with other Swedish units and so forth. By comparing the need of capabilities with the properties of the group of helicopters and the individual helicopters a rough idea of their performance in the actual scenario/mission was derived.

Result and discussion

The presented method using capabilities, war games and so on resulted in knowledge of the missions likely solved by both present helicopter systems, future systems and upgrades of older helicopter systems. This gives also a wide choice of possibilities in aspects of future procurement. As a direct result of the war games we have models for combat, mobility etc that can be used for comparison with other systems in high level scenarios where the attack helicopters can be evaluated within the frame of a future structure of the Swedish Armed Forces.

We have reduced the number of helicopters for future studies by omitting both the group representing a different concept of tactics and the group consisting of multi purpose helicopters. It should in this context be realised that the helicopter needed is not necessarily the most advanced one but that which proves sufficient taking the whole future structure of the Armed Forces into account. However, in present configuration and with present capabilities and principles of action, these helicopters and concept of tactics still does not fulfil the Swedish need of attack helicopter capabilities.

The method and the results presented here are but a small part of the work involved in the Swedish attack helicopter study. Noteworthy is the large influence on future procurement by aspects not covered by this work. Other important aspects on future procurement are, among others, the influence of potential industrial co-operation and the ability to access vital technical information within the attack helicopter system.

Aim of the presented method

-Evaluate (attack) helicopters in full scale military conflict, in OOTW and as support to the civil society

-Improve previous models used in high level war gaming

-Compare a number of alternative systems and suggest a reduced number for subsequent studies.

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Which type of missions can be solved by which helicopter system?

Applied method:

- 1) Group helicopters in aspects of common capabilities.
- 2) Choose/develop relevant scenarios.
- 3) Assess the limiting capabilities needed to solve each scenario.
- 4) Compare the need with the general capabilities of each group of helicopters.

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War gaming (full scale military conflict)

- Generates knowledge and insight into the helicopter system
- A tool to identify the most important properties of the system on the battlefield
- Gives an idea of combat effectiveness
- Gives material for comparing different types of helicopters
- Spreads knowledge

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War game

High level scenario



Operational Plan



Tactical scenarios



Tactical Plan

- 1) Plan of action as based on limited knowledge of the enemy.
- 2) Apply plan of action noting the way of approach until estimated contact with main target.
- 3) Discuss consequences of enemy contacts during the approach.
- 4) Add complete enemy positions onto the map.
- 5) Evaluation and variation of parameters

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The helicopters ability to solve each scenario

Scenario/ mission	Group/ Hcp A	Group/ Hcp B
1	Yes	Yes
2	Yes	No
3	?	No

- Which helicopter system do I need?

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Results of the presented method of approach

Missions likely solved by

- present helicopter systems
- future systems
- upgrades of older systems

i.e. a wide choice of possibilities in aspects of future procurement

We have

- increased our general knowledge of attack helicopters
- models for combat, mobility etc that can be used for comparison with other systems in high level scenarios
- reduced the number of helicopters for future studies

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