

## **The planned communications system of the Hungarian Home Defence Forces**

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*With the advent of the digital signal processing and the development of digital technology, it has become possible to meet the extended communications needs with the high level services.*

*The new expectations include not only the high-speed voice transmission but faxing, data transmission, and video conferencing. The new communications network containing digital equipment is intended to be established by the Home Defence Forces, which has an important role in accomplishing the NATO requirements.*

*Communications is an essential element of the command and control (C2) of the military operations. It is necessary that the base of the military communications and its elements be compatible when cooperating with other NATO members.*

### **Introduction**

The society of the 21st century is called the society of the communications, because information is considered to be the most important means to achieve our final goal.

After the accession to the North Atlantic Treaty Organisation (December 4, 1999), the Hungarian Home Defence Forces had to meet new standards, which pressed for a change.

Due to the changes in the national and international political environment and the growing mutual interdependence, the Home Defence Forces is facing serious conformity challenges.

The final objective is to make the organization, the structure and the equipment of the Home Defence Forces compatible and interoperable with those of other nations. The modernization and the development of the communications and information systems have primary role.

### **The structure of the field communications network**

The C2 system greatly influences the effective fight of the troops. In the absence of the appropriate communications, the units are not capable of accomplishing their tasks perfectly, and fighting effectively.

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On different commanding levels, having more and more information ready when making decisions is becoming more and more important. It means sending through the appropriate information in time, which involves the need for the highest possible data transmission rate.

The extended requirements also demand the concealed, secure, continuous, and accurate data transmission. The location of the deployment area, the time of year, the time of day, the weather, and the terrain influence the C2 system.

That is why it is necessary to establish communications systems that are capable of providing services that can in spite of the above mentioned negative factors.

*These systems have to meet the following requirements: mobility, flexibility, ability to react, safety and standardization.*

The present analogue field communications network is not capable of meeting the new requirements. Being obsolete – older with some generations than the one used in the civilian life –, it is necessary to be replaced.

*The field communications network is set up to provide C2 infrastructure with strategic importance for the Land Forces Command (LFC) and its subordinate units. This network provides connections between the LFC and its subordinate units according to the need of the commanding staff.*

Taking the size of our force into account, it can be deduced that when conducting a defensive operation, the area needed to be covered by communications means is around 10–12000 km<sup>2</sup>.

If we take the distance of the connecting devices into consideration, this operational area is around 17–20000 km<sup>2</sup>. To cover this area, 24 nodes are needed. The maximal range is 40 km (Figure 1).

The objective of establishing a new network is to set up a digital system that is capable of providing integrated services even under field conditions for the commanding staff.

This system has to fit the National Telecommunication Network (NTN), the public, closed and special networks, the NATO Integrated Communication System (ICS), the peace-time communications network of the Home Defence Force, and the tactical signal network of other NATO members. To meet these requirements, a system conforming to both the international civilian standards and NATO STANAGs is needed.

According to the above mentioned requirements, the nodes have to be capable of establishing, and maintaining connections with the neighbouring nodes.

Additionally, it has to provide means to connect to other systems, the communications centre of the command point of different units.

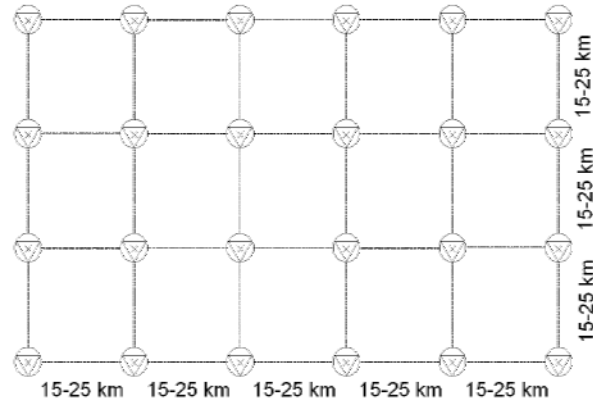


Figure 1. Covering the operational area

Besides these, the system has to be able to connect to other communications systems as well.

The frequency of the transmission is between 4.5 and 5 GHz.\* To receive different connecting command points, stations operating in the range of 15 GHz\*\* are needed.

Additional stations have to be integrated into the network so that the subordinated units using tactical radio relay stations operating in the range of 220 and 400 MHz\*\*\* could connect to it.

The possibility of the combat units to connect to the network can be ensured by radio entry points that can enter the user by radio-telephone style connect to the system, with the speed of 64 kbps.

It is possible to connect to the permanent communications network on ultrahigh frequency, or through cable with the speed of nx2 Mbps depending on the number of cables (Figure 2).

The function of the equipment that can be found in the node centre are the following:

1. HK-1/G\*\*\*\* (vehicle mounted communications centre)

This is a fundamental element of the integrated field communications network. Its role is to support the functional operation of the nodes of the communications network and the relay stations, and the communications centre of different-sized units such as division, brigade, regiment, or subunits with very important task.

\* NATO IV. zone

\*\* NATO SHF zone

\*\*\* NATO I. zone

\*\*\*\* HK-1/G – CC-1/V

In a node two HK-1/G equipment are needed to ensure the appropriate number of connections.

## 2. RR-1/G\* (vehicle mounted radio relay station)

Its function is to replace the analogue radio relay stations with digital radio relay equipment in the new system. It is able to connect to the communications centre of a battalion, battery or company command point in a maximum range of 40 km. Its operating frequency range is between 200 and 400 MHz.

## 3. RFP/G\*\* (vehicle mounted radio entry point)

According to the new organizational principles of the radio communications of the Home Defence Forces, the primary function of the radio entry point is to connect the mobile ultrahigh-frequency radio stations to the field communications network. (It is capable of transmitting voice and data in secure mode.)

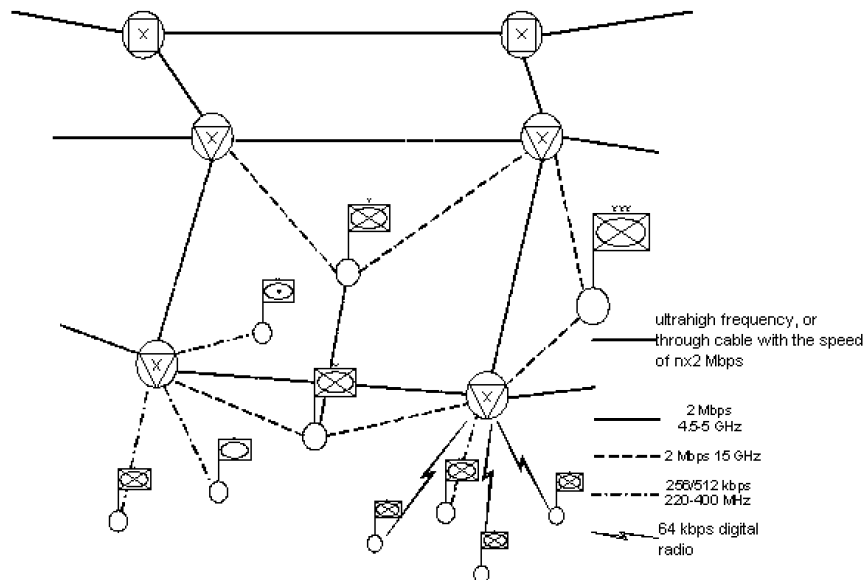


Figure 2. Connecting the permanent communications network

\* RR-1/G – RR-1/V

\*\* RFP/G – REP/V

The role of the radio relay stations is to establish connection between nodes or to make the communications centre of entering command points connect to the network. In each node the connecting points have to be terminated in a digital switch.

The nodes consist of the following elements:

- integrated digital stations
- digital radio relay stations
- radio entry points (Figure 3).

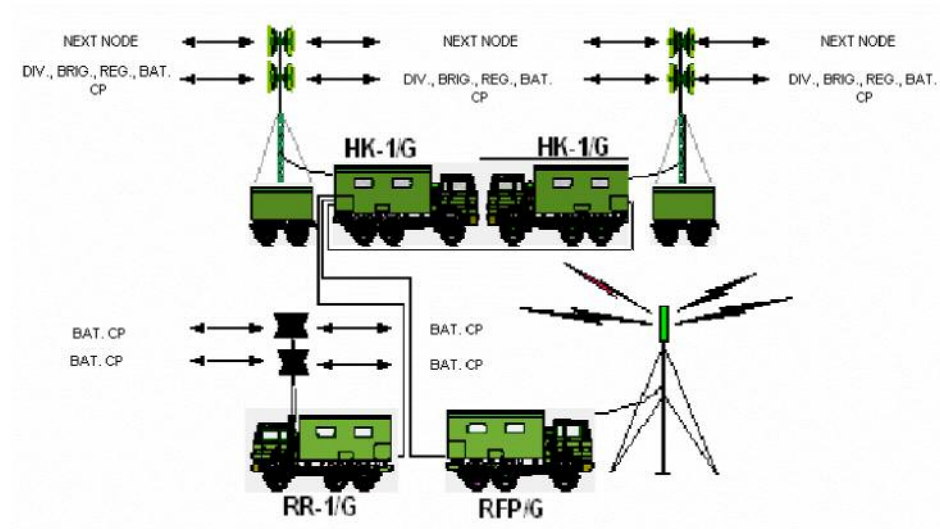


Figure 3. Radio relay stations

### Conclusion

To summarize briefly, it is obvious that the introduction of the new system make the HDF face serious difficulties.

The fact that the development of the information technology and the growth of needs for information are very fast nowadays cannot avoid notice. When making decisions, it is important to check whether the predetermined parameters such as transmission speed can meet the present requirements, and will be able to meet the future requirements as well.

The transmission with the present parameters will not be sufficient in the future, and cannot ensure the continuous, timely and efficient decision-making process.

The economical background is essential, when planning to introduce a new system. In the absence of strong economical background, the planning and organizing can be limited to a great extent.

The numerous equipment that are needed to establish the new system have to be chosen after the careful examination of the structure of the communications network of other countries.

It is more cost efficient to adapt a system that has been tested, and used in combat by other countries before. Besides this, establishing a new system can cost a lot more.

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