

MILITARY USAGE OF DATA FROM ROAD TRANSPORT

KÖZÚTI SZÁLLÍTÁS SORÁN KELETKEZETT ADATOK KATONAI CÉLÚ FELHASZNÁLÁSA

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Abstract

It is necessary to continuously examine the possibilities of development in military transports parallel to the development of technical tools, in order to create safe and resource-efficient transports processes. In his paper, the author describes the possible uses of the tachographs in military transport processes in order to improve them, after the introduction of the mentioned device in civil life.

Kulcsszavak: *transport, shipping, tachograph, military logistics*

Absztrakt

A technikai eszközök fejlődésével párhuzamosan folyamatosan vizsgálni szükséges a katonai szállítások fejlesztésnek lehetőségeit a biztonságos és erőforrás-hatékony szállítási folyamatok létrehozása érdekében. A szerző a cikkében a polgári életben alkalmazott menetíró eszközök bemutatását követően annak használatának lehetőségeit írja le a katonai szállítások fejlesztése érdekében.

Kulcsszavak: *szállítás, tachográf, katonai logisztika*

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INTRODUCTION

The progression of the information revolution in the 21st century is unceasing. We can substitute more and more physical activities with the help of IT achievements. We can speed up our daily activities thanks to these IT achievements (home, work, civil or military), although we may not forget about the hazards in them. It must be the task of the elite researcher to make forecasts and warnings regarding this topic. I believe it is important, that exploring the hazards of the new does not mean neglecting the use of tools, but it must urge the conscious and safe application. Certain IT achievements can only help the processes, but it may not be able to help the core activity. For example: the task of transporting goods and products between two predetermined places. The physical movement of materials and goods may not be substituted with any other alternate solution (except a few printing solutions which are only in their initial phases today). So we can effectively help the transport processes by information gathering and forwarding, but we can also utilize it in civil life and in military transports, and also in defense against terrorism.

„The most important ammunition in the fight against terrorism lays within fast and reliable information.” The primary targets of terrorism are densely populated areas, agglomeration areas, nearby industrial facilities, communal-infrastructure facilities. *„High human and industrial concentrations”* like these make the special environment of the essential provider and transport systems. [1] Horváth Attila's train of thought provides us with long term development necessities. The fast and reliable information, and the key role of the transport systems determines the necessary directions for development. More information is needed about the provider/transport processes, so for example the driver's identity, momentary position and speed may be queried and processed.

The importance of this train of thought is confirmed by the common thing in the terror attacks in the last few years: usage of vehicles and organization. Experience from acts of terrorism over the years shows that the planners spend more and more time planning and organizing.

„In order to achieve effective defense against terrorism and organized crime, it is necessary to analyze every information gained by any means, because it is the only way to uncover the mostly hidden, coded activity.” There are numerous up-to-date *semantic, classification, separation* conversion processes and GIS analyses to process big data. [2] It can be stated that the above mentioned prioritize the acquisition of information, so the production and processing of data regarding the vehicles and transports must be emphasized as well.

DATA FROM TRANSPORT AND DATA COLLECTION

A lot of various data and information is being generated during the transportation of materials and goods. A model can be applied to the traffic with the usage of measurable quantities in the vehicle-roadway-human system, and time of travel and distance parameters may be optimized.

Furthermore it is important to highlight a factor, which is emphasized in the stage of planning, policing, intervention, and that is road safety. While examining the safety of the traffic system, I am going to treat it in this article as a fact, that the main cause of the occurred accidents are human errors which thesis were verified and negotiated in many places. In order to reduce human errors, the European Union has taken its own measures and laid down rules for drivers in terms of daily working hours and other allowed activities. Henceforth I am going to examine these regulations' content and usage.

The basic rules of driving times and rest periods

In my article (due to its character limit) I will only review the significant regulation that is applied in the European Union. The regulation of the driving times and rest periods are written in REGULATION (EC) No 561/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85.

The point of the regulation is to define the times in terms of driving, resting and other activities, which are the following:

- rest: any period (which may not be interrupted) during which a driver may freely spend his / her time.
- daily rest period: rest time, in which a driver (according to the definition above) may freely spend his / her time and consists of a 'regular daily rest period' or a 'reduced daily rest period'. I am going to examine these two concepts.
- regular daily rest period: rest time, which is at least 11 hours long, but it may be divided into two parts. This division is only correct, if the first part is at least 3 hours long (without interruption), and the second part is at least 9 hours long (without interruption as well).
- reduced daily rest period: rest time, which is less than an 11-hour regular daily rest period, but it is at least 9 or more hours long.
- weekly rest period: weekly period (which is similar to the daily rest period's definition), in which a driver may freely spend his / her time. It may be either a 'regular weekly rest period' or a 'reduced weekly rest period'.
- regular weekly rest period: any rest time which is at least 45 hours long.
- reduced weekly rest period: if the rest time is less than 45 hours, but it is more than 24 hours according to the terms of the regulation, than this rest time is considered as a reduced weekly rest period.
- driving time: it is the sum of the time spent driving, which was recorded either by a capable and later explained tachograph, or it was recorded manually. Regarding driving times we distinguish 'daily driving time' and 'weekly driving time' as well.
- daily driving time: it is the sum of the time spent driving between specified moments. These moments are on the given day the end of the daily rest period and the beginning of the next daily rest period, and on the given day the end of the daily rest period and the beginning of the weekly rest period.
- weekly driving time: it is the sum of the time spent driving during the week that was recorded by the driver as specified above.
- break: the period of time that the driver may only use for „regeneration“. During this time the driver may not drive and may not do any other work either.
- other work: that part of the working hours, including the work done for another employer, which does not include driving. [3]

Basically the regulations distinguish the above mentioned activities, whereas defining is necessary, when the goal is to process the available data and information. The regulation details the activities further, such as among others it maximizes driving times and minimizes rest periods.

The recording of driving times and rest periods

The primary goal with regulating the driving times and rest periods is to minimize accidents (loss of lives and damages to goods), so compliance and enforcement are essential

requirements. A recording device (tachograph) built into the vehicle is needed in order to achieve this.

„Detailed description of the tachographs’ operation – which device records in digital form the daily activities of a driver’s workday, the vehicle’s movement and speed, speeding, technical data and every error in usage, and any illegal activities – in order to ease the professional drivers’ daily work. [4]

Appearance of the recording devices can be dated to the first half of the 19th century, when devices were built into railway vehicles in order to monitor the daily work of the engine drivers.

A version of the device that could be installed to a road vehicle was developed in Germany by the 1920s. From that date the advancement was uninterrupted. Also in Germany, the usage of these devices were made mandatory in the 1950s where the maximum permissible mass of the vehicle exceeded 7,5 tonnes. The initial tachographs that were using analogue recording principles were officially renewed in 2006 for the more modern digital tachographs which are using present-day technology. The European Union’s regulations for the tachographs are written in REGULATION (EU) No 165/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 February 2014 on tachographs in road transport, repealing Council Regulation (EEC) No 3821/85 on recording equipment in road transport and amending Regulation (EC) No 561/2006 of the European Parliament and of the Council on the harmonisation of certain social legislation relating to road transport. The goal of the regulation is to comply with the already mentioned REGULATION (EC) No 561/2006, and also with Directive 2002/15/EC and Council Directive 92/6/EEC.

In order to achieve this it determines the obligations and requirements of tachographs used in road transport in terms of *„construction, installation, use, testing and control”*.

The following terms in the regulation are the most important:

- vehicle unit: the tachograph itself without the motion sensor and the cables that are connecting the motion sensor. The vehicle unit’s main parts are the processing unit, the data memory, the time measurement function, the smart card interface, the printer, the display, the connectors and the facilities for entering the user’s inputs.
- motion sensor: the part of a tachograph which provides a signal about the distance travelled and the vehicle’s speed.
- tachograph card: it is a smart card, which realizes the identification of the card owner while using the tachograph, and also enables data transfer and data storage.
- driver card: it is a tachograph card, which was issued by an authority of a Member State, which identifies the driver and also stores the driver’s activity data that were mentioned above.
- digital tachograph: it is a tachograph, into which a tachograph card may be inserted for data storage.
- control card: it is a tachograph card issued for the competent control authority, and with it the authorized inspector may access the data stored in the driver cards or in the data memory in order to read, to print or to download. [5]

As we can see, the regulation gives a precise and clear description of the activities that can be carried out and also about their recording. The application of a regulation that is mandatory in civil transport processes must be safe and it shows that this process was well-trying in the practical life. We may get more applicable information for further use through the functions of the tachographs. Let us examine these in the following.

The devices are capable to continuously record the vehicle’s speed while measuring travelled distance as well. Its build contains a speed transmitter, which has a direct connection with the vehicle’s speedometer. Data is recorded on the tachograph card regarding

the driver's activity. (The tachograph records 'driving time' while moving, the activity may be chosen with a switch mechanism in standing position: rest, 'other work', or 'availability'.) We get accurate data about every minute of the driver's activity. The tachograph records the time and place of the insertion and withdrawal of the tachograph card as well, and there are options for additional data recording via manual input. Each tachograph is considered as an authentic measuring equipment, so it may only be used officially for recording the mentioned data, if it is calibrated at a given interval, therefore ensuring that it functions according to legal regulations. The tachograph stores much more data than only the vehicle's and its driver's. It is able to log e. g. controlling activities such as when was the last control by a competent authority using data memory reading. It records every event and fault regarding the tachograph cards and the device, including when someone is trying to hack the security system in order to manipulate. It has its own display, so the stored and measured data can be displayed on the onboard unit as well. There is the possible use of tachograph paper rolls in order to analyze data in print. Proper functioning is not only ensured by periodic calibration, but also by many built-in self-checking tests.

Possible military uses of tachographs

Regulations about tachographs include exceptions as well.

When examined, REGULATION (EC) No 561/2006 Article 3 (c) says: „*This Regulation shall not apply to carriage by road by:*

c) vehicles owned or hired without a driver by the armed services, civil defence services, fire services, and forces responsible for maintaining public order when the carriage is undertaken as a consequence of the tasks assigned to these services and is under their control;”

According to the mentioned (c) section, every vehicle and every driver is exempt from the regulations of the driving times and rest periods when the transport is done by a vehicle of armed services.

There is another clear indication about this in a honvédségi járművek fenntartásáról szóló 18/2009. (XII. 18.) HM rendelet 17.§ (4):

„*Military vehicles in N category shall not be equipped with a tachograph according to the proper Hungarian laws.*” [6]

After all this, the question is justifiable, why should we deal in the light of all this with the operation of the tachograph and with the data that can be downloaded from that? The answer lies within Attila Horváth's mentioned train of thought, quick and precise information provides positional advantage in military transports, whether it is a transport using civilian capacity. The regulation excludes the use of tachograph in terms of vehicles of armed services, which is justifiable by the nature of the transport. It shall not be an obstacle in case of a priority transport that the driver's daily driving time is limited. At the same time, we need to think about not only the usages of military vehicles, but also about the usages of civilian vehicles. With the usage of civil logistics, we can achieve significant cost reductions, because the special assets of civil service providers are able to provide it better and cheaper the given transport / logistics function. [7] One of the reasons to why is it important to consider the knowledge of the driving times and rest periods is that while planning civil capacity – when the transport is not excluded from any similar regulations, such as during special legal order – the regulation's restrictive effect must be considered, which maximises driving time, so that with the given travel speed the necessary time may be increased.

Doing this for a positive effect on road safety.

DIRECTIONS FOR DEVELOPING EQUIPMENT, SUMMARY

The functions of the tachograph devices can also have practical benefits utilizing the listed options. For example, during a military transport, the driver's activity will become traceable for the minute, who got into the vehicle, what activity the driver has been doing, and recording of the transport performance data will become available. For the time being, collecting this information is only available with manually produced delivery notes. [8]

The tachographs record every driver who have inserted their card into the device, and due to the signaling of every fault and unauthorized tampering, falsifying the data is much more difficult. All of this can make military transports safer, and it also makes it possible to make comparisons with the delivery notes. The currently used systems can provide security themselves by the usage of information, however the developments that are being introduced have many opportunities.

It is enough to examine REGULATION (EU) No 165/2014 Article 8:

„1. In order to facilitate the verification of compliance with the relevant legislation, the position of the vehicle shall be recorded automatically at the following points, or at the closest point to such places where the satellite signal is available:

- the starting place of the daily working period;*
- every three hours of accumulated driving time;*
- the ending place of the daily working period.”*

Mandatory changes in tachograph equipments require satellite positioning as a standard function, so the supervisor of the transport can have more efficient and more complex information on the entire route of the transport.

In summary, it can be stated that there is considerable potential in the vehicle-mounted, driver activity and vehicle movement recording devices in terms of identification processes and vehicle tracking.

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