

## ASPECTS RELATED TO THE INTERPRETATION OF DISASTER MANAGEMENT AT OPERATIONAL LEVEL

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**ABSTRACT.** With the transformation of the disaster management system in Hungary also the alerting system has changed fundamentally. The alerting and deployment nowadays is based totally on informational systems. The deployment of special-purpose trucks in disaster management interventions is often wrongly associated with the words “special” or “extraordinary” by the public, media or even within the disaster management system. In order to clarify the situation, it is important to define the circumstances when special-purpose trucks are deployed in a mission. The authors start with the description of ordinary fire interventions, requiring less forces and resources, and gradually arrives to the interventions with special-purpose trucks, exemplified with case studies. Furthermore, the factors that classify alerts as rescue situations requiring special interventions are also analysed. The paper highlights how the effectiveness of rescue activities can be increased starting with the alert and continued by the intervention. The paper offers insight into the alarm levels and special rescue activities and describes which events demand special-purpose units at the site.

**Key words:** *disaster management, firefighting and technical rescue, intervention, special, extraordinary*

### INTRODUCTION

Despite the efforts taken during the last decades for the reduction of fire prevention and fire suppression costs many problems can be identified in these fields. Several studies are discussing the higher level of fire safety of the society, focusing on the structures of the buildings (Majoros and Balázs, 2004; Czoboly et al., 2015; Lublóy et al., 2015), the safety of the intervention (Pántya et al., 2014; Restás, 2014a), more effective decision making (Cohen et al., 1996; Klein, 1999; Restás, 2015), economical efficiency (Gould, 2009; Restás, 2014b; Vincent et al., 2014) etc. In this paper the authors focus on the experimental or professional part of the effectiveness of the special interventions.

Professional interventions require minimum intervention time, minimum losses, but maximum quickness for starting the intervention and maximum saved goods. These requirements strongly correlate with the effectiveness of decision making. Many studies reflect on the fact that decision making at the fire scene is totally different from what we usually know or learn during trainings (Cohen et al., 1996; Klein, 1999; Restás, 2013a). Therefore, several studies modelling firefighter's decision making methods focusing on theoretical parts (Klein, 1999; Killion, 2000) or practical side (Restás, 2013b, Restás, 2014c) can be found. Even if different models can be very helpful and important, the real experiences are not avoidable.

With the restructuring of disaster management system in Hungary significant changes took place in the operation of the organization. Although several years since this restructuring have already passed, there are still regular misunderstandings from the part of society in connection with the operation of disaster management system. The change not only affected the legal environment, but also organizational restructurings took place and different measures have been introduced in terms of task execution. As a result of the restructuring in several cases the intervention staff took different actions in occasions of incidents with identical characteristics. There were also cases when laws applied according to the new system gave a reason for dispute among the experts.

With the restructuring of disaster management system, the work of the intervention staff has been transformed changed as an effect of the new laws. The classification and processing of alarms, the regulations of operation control are all made in accordance with the new stipulations (OKF, 2014). In public awareness and in media priority alarm degrees are often confused with special interventions. The difference between general intervention and special intervention is determined by the type of equipment and vehicles commanded to the site. There are incidents where the technical equipment of disaster management is not sufficient for carrying out the rescue, therefore it is necessary to involve the assistance of special units, equipment.

The paper also presents the laws which regulate the work of intervention staff in case of incidents, especially those related to the special interventions of fire fighters, as well as the organizations and units carrying out the special rescue tasks. The authors describe in detail the power-tool system applied by fire fighters. The study is based also on personal experiences of the authors and opinions of the special rescue teams' managers and staff.

### ***Primary activities for intervention***

Primary intervention lasts until the direct emergency situation is not over or the control of the event is taken over by a higher disaster management organization (defence committee).

The intervention is an activity for protecting human health and life, as well as protecting material goods. It is performed using the permanent tools and equipment of the fire brigade and it only lasts until it is considered primary intervention.

### **Statement of competence**

Although laws exactly define the notion of competence, it is worth explaining it because the fire brigade are entitled to (or must) intervene in the situation if the legal competences can be defined.

The chain of responsibility starts from the operator who gets the call, through the person who evaluates the call and finally the commander of the rescue team. The notion of technical rescue and the acceptance of the call should be subjects of periodical trainings. The person who evaluates the call has to be able to decide if the emergency situation necessitates technical rescue.

Primary calls are accepted by the operation controllers of the County Disaster Management Headquarters Main Control Department. Their tasks are to evaluate the calls/alerts.

As the operation controller decides that the situation is a technical rescue, he has to apply the regulations which require the commander of the rescue team to follow a continuous investigation, during which he has to analyze not only what kind of operations he has to accomplish, but also whether the conditions of technical rescue are available.

## **INTERPRETATION OF DEFINITIONS REGULATING BASIC OPERATION**

In order to clearly see the work of intervention staff carried out for incidents it is important to interpret the basic laws regulating operation.

We distinguish two types of incidents: A) Fire event and B) Technical rescue.

The paper describes especially technical rescue during the operation of the system, because during technical rescue special tools and organizations are more often applied. Basic definitions on intervention are interpreted precisely in the Fire-Fighting Tactical Regulation No. 5/2014. (II.27.) BM OKF (hereinafter: Fire-Fighting Tactical Regulation). The knowledge of the following definitions is essential for the correct execution of rescue.

**Fire (fire event):** *burning process which is dangerous to life, physical safety or material assets, causing damages (Law XXXI/1996).*

**Definition of technical rescue:** *natural disaster, accidents, incidents, abnormal technological process, technical failures, dangerous substance released or other plot-induced emergency during which protection of human life, physical safety and material assets is carried out by fire department as primary intervention activity with the available and utilized equipment (Regulation 39/2011. (XI. 15.)).*

**Fire trucks:** *standby vehicles of the fire department which are available together with the built in and mounted equipment, extinguishing and auxiliaries specialized for the enforcement of firefighting and technical rescue (Order no. 5/2014. (II.27.)).*



**Fig. 1.** Vehicle water hose (Photo: Authors)

**Squad:** tactical part of firefighting and technical rescue organization which is capable of independent intervention with its own tools, staff comprising 1+5 people (Order no. 5/2014. (II.27.)).

If necessary, several fire trucks can be commanded to the incident site at the same time, as there can be two or sometimes three fire trucks during the same period of time at certain fire stations. In these cases we cannot speak about special rescues (figure 1 and 2).



**Fig. 2.** Fire trucks during intervention (Photo: Authors)

In case of interventions for fire events, as well as technical rescue, in many cases special, specific fire trucks are required on site. The special fire trucks can be handled by a person who has performed a specific operator course. Special fire trucks are used in special situations. In cases of fire events the most often used equipment are the aerial ladder and the pumper vehicles. Several fire trucks are used during technical rescue as well. The most commonly commanded fire trucks are the rescue trucks as well as the regional crane vehicles.

The *rescue squad* commonly called the „*field*“, is a speedy light truck less than 3500 kg. Due to its capabilities, it reaches a higher speed, thus delivering very quickly the special tools (hydraulic cutter, aggregator) stored in the cargo space.

For interpretation of special fire truck, it is worth becoming familiar with the definition.

**Definition of special fire truck:** *All fire fighting vehicles which differ in construction and in equipment from the general fire engine constructed for multipurpose use. Its special construction and equipment makes it suitable for single-type fire extinguishing or technical rescue tasks (Order no. 102/2012).*



**Fig. 3.** *Egerszeg / Crain*

*Photo: Zalaegerszeg Department for Disaster Management*

According to the definition above, there are several types of special fire trucks (figure 3):

- Tanker
- Ladder truck
- Forest fire truck
- Rescue squad
- Hazardous material rescue container

Equipment found on the firefighting trucks are determined by the 29/2012 BM OKF General Director Measures. Interventions which can be carried out with this equipment are called *general firefighting interventions*. All members assigned to the vehicle should have qualification for using these tools.

### ***The area of operation***

Nowadays, it can regularly happen that in certain cases, several cooperating organizations are responding together. These organizations include disaster management organizations, fire brigades, as well as the workers of the National Ambulance. Of course, there could be some cases where other institutions, such as the National Tax and Customs Office, also have to intervene in the processes.

In case of a road accident which involves human injuries, the ambulance, the fire brigade and the police all have to participate in the rescue. However, it can happen that on arrival at the scene of the accident the commanders of the rescue teams cannot agree on the size of the area of operation, and also they cannot agree on the person with major responsibility. As soon as the ambulance crew arrive, they start saving lives, while the fire brigade actively take part in the rescue. If needed, they use their special equipment (tightening cutter) to cut cars and change the scene.

This operation disturbs the works of the crime scene investigators. The scene of the damage (the so-called area of operation) can be modified, that is why the investigators would like to start the examination on the spot as soon as possible, by securing the position of the vehicles and by taking photos. This can pose several threats, as the fire brigade has not finished the technical rescue and the intervention can cause further human injuries.

In several cases, during the rescue, the fire brigade had to give their own equipment (helmet) to the ambulance men, so that the doctors working on the scene would not be injured (by glass- or metal splinters).

Imagine a hazardous event, when a vehicle carrying dangerous chemicals is involved in an accident. The fire brigade arrives at the scene and they have to cope with this situation. The investigation requires special equipment and protective clothes. In such a case the police arriving at the scene enter the area of operation without protective clothes and do not take the danger into consideration, which can lead to arguments between the commanders. The fireman in charge instructs the policeman to leave the area of operation, but the policeman refuses to do so as he refers to the "60/2010, ORFK Instruction: in case of road accidents and in case of any criminal acts happening on the roads there is a regulation to be followed" which defines the main tasks and responsibilities of the police and entitles him to be present on the scene.

However, there are several laws in favor of the fire brigade entitling the firemen to perform operations independently considering protection of human life and property.

These problems frequently occur in interventions. As there are often arguments between the cooperating organizations, in our opinion a unified law should be introduced to define who should be considered the commander in the area of operation. In case of

a more serious damage it could become a disadvantage and it could affect the rescue operation if the commanders of the different organizations cannot agree on the execution of the rescue.

## ALARM DEGREES

We distinguish five degrees of alarm applied by the disaster management chief duties which are marked with roman numerals (I-V). If a special truck is commanded to the site then it qualifies as *special alarm* (figure 4). Commanding a special truck to the site does not mean that the incident is a special incident. Most of the branches have some kind of special vehicles i.e. ladder, tanker which are frequently used. In these cases, like in all cases, the rescue of lives and material goods are the priorities. According to this the question of efficiency arises.



**Fig. 4.** *Special alarm degree: 2 vehicle water hoses, 1 ladder*  
(Photo: Authors)

The definition of efficiency may have different meanings. One of these is the so-called professional efficiency which can be found when fulfilling the operative task of all organizations. To a fire department chief efficiency means saving lives with all available forces, equipment, eliminating fire and incidents, and reducing damages. The statement includes a rather serious restrictive factor, namely the words “with all available forces, equipment”. The mentality of the fire department chiefs naturally adjusts to this statement. Thus, they strive to decrease this restrictive factor in the interest of increasing efficiency. That means they require more and more special and – who would dare to disagree – automatically, more expensive equipment. This is clearly a correct endeavor from the point of view of the fire department chiefs and this ensures the increase of professional efficiency (Restás, 2012a).

The regional technical rescue stations established in the country have special vehicles (regional crane, dry powder or foam containers, chemical or technical containers).

Vehicles belonging to the rescue stations are only commanded to incidents requiring special intervention. The regional crane is only commanded once or twice or not at all during summer as the weather is ideal for transport.

In the winter period the monthly commanding increases considerably due to the weather conditions. In case of heavy snow or frost the number of daily incidents may multiply. The chemical containers are used in case of chemical accidents. Containers are used to deliver special equipment (protective clothing, storage containers). These are used once or twice or not even once throughout the year. Further corner stones can be formulated as conditions influencing decision or determining professionalism such as the priority of saving lives, the importance of safety and technicality (Restás, 2012b).

Due to the construction practice in Hungary the height of buildings in the cities generally does not exceed ten floors. A ladder or skylift vehicle can be found in each of these cities. The occurrence of these vehicles can be considered common in the country.

## **THE ACTIVITY OF SPECIAL RESCUE ORGANIZATIONS IN EMERGENCY SITUATIONS**

The fire department frequently asks for assistance from special rescue organizations to mitigate incident consequences. In most cases, external assistance is required as the fire departments do not have the special equipment or staff needed for rescue. In most cases they require the assistance of special rescue organizations established at county level because these have diving, aerial and deep rescue equipment (figure 5). Different prime movers are also required for traffic accidents. These rescues can be called special in almost every case as efficient intervention could not be carried out by the fire department alone.



**Fig. 5.** *Searching of missing person*



Zala Special Rescue Team is employed in most cases in the course of deepwater rescue. The skilled divers can efficiently intervene even in extreme weather conditions. Their intervention was successful in several cases within Zala County.

## CONCLUSION

The authors pointed out the characteristics of the general technical rescues and afterwards described the special units which are used during a special rescue procedure. Civil rescue organizations taking part in rescue missions were introduced, which ensures great assistance for fire departments.

Today the range of technical vehicles and machines is so broad that it is almost impossible for the staff of the fire department to be prepared for comprehensive rescue and also this is not possible from the economic point of view. There are certain interventions which occur only very rarely or not even once annually, such as gas outburst. Therefore, these are dealt with by the help of external assistance. The rescue organizations form an organic part in rescues and more and more special units will be required together to keep up with the industrial development.

Missions are regarded as special in every case as the solution can only be carried out with coordinated, special work. Incidents occur on a daily basis, but the fire departments have to cope in every case and, if necessary, they have to adapt to special interventions.

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