

Calling system of fire protection units

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Abstract

This article is focused on solving labour relationships and cooperation of selected units of the integrated rescue system through a new call system of fire protection units. These are specific components of the fire and rescue service and components of voluntary fire protection. The article is divided into several parts. The first part of the article is conceived as historical analysis and development of labour relations and cooperation of fire protection units. The following section, using comparative analysis, describes the integrated rescue system of the Slovak Republic and the Czech Republic. Subsequently, the article focuses on and discusses the fire and rescue corps as the primary coordinator of the integrated rescue corps. The definition of the fire and rescue corps is followed by a section dealing with voluntary fire protection in Slovakia and the Czech Republic. Based on the definition and definition of professional and volunteer firefighters, the article focuses on the comparison of the scope of fire protection units in Slovakia and the Czech Republic. Subsequently, the article focuses on the synthesis of analytical conclusions of current labour relations and cooperation of fire protection units. The last part of the article formulates a conceptual model and a proposal for streamlining labour relations and cooperation of fire protection units, through a comprehensive design of a new call system designed for fire protection units.

Keywords: Integrated rescue system, Fire and Rescue Corps, Voluntary fire protection, Call system

Introduction

In fulfilling its basic necessities, humanity seeks a sense and need for security. People began to create and improve this need and value. Gradually, groups of people who assisted began to form and organize. It is how the predecessors of the current components of the integrated rescue system began to emerge. Gradually, people began to demand more help and support, and so demand began to exceed supply. Based on this demand, brigades were created intended directly for the protection of the population. Semi-professional and professional fire and rescue corps began to form from voluntary corps. At present, these fire and rescue services, as state units, have begun to work closely with voluntary fire protection units. The task of creating a new call system is to improve communication between the operations centre, professional and volunteer firefighters.

1. Historical analysis and development of labour relations and cooperation of fire protection units

The history of labour relations and cooperation began to develop in ancient times. First, a voluntary activity was created, and later it became an activity on a professional level. The first mention comes from the times of ancient Rome, where fires were more frequent than in the past. A preventive unit was set up to monitor the terrain. The first municipal brigades to be voluntary began to form in Austria-Hungary. The first fire regulations were created. At the establishment of Czechoslovakia, a union of voluntary fire brigades was established. In 1950, a more comprehensive law on fire protection was issued. This law specified procedures and activities in fire protection. In the second half of the 20th century, a firefighting sport was established in Czechoslovakia. In the seventies of the 20th century, this sport was introduced for all professional fire brigades. A significant reorganization of the fire brigade occurred in 1993 with the division of countries. CTIF - International Association of Fire and Rescue Services was established in 1998. [1]

2. Integrated rescue system

The integrated rescue system is described by Act no. 129/2002 of the integrated rescue system, which defines it as a coordinated approach of its components in the implementation of activities related to the provision of assistance. It can be understood from two points of view - internal and external. The Ministry of the Interior, the Ministry of Health, district offices at the seat of the region and rescue services operate in the integrated rescue system within the Slovak Republic. Rescue units can be divided into primary, other and units of the Police Force. [2]

Within the Czech Republic according to Act no. 239/2000 of the integrated rescue system, there are ministries and other central administrative authorities, the Ministry of the Interior, the Ministry of Health, the Ministry of Transport and Communications, regional authorities, municipal authorities with extended powers, municipal authorities and rescue services, which are divided into primary and other components of the integrated rescue system. [3]

The main difference in the position of rescue units is that voluntary fire protection belongs to the group of basic rescue units as fire protection units included in the area coverage of the region by fire protection units within the Czech Republic. Within the Slovak Republic, voluntary fire protection belongs to the group of other rescue components of the integrated rescue system as municipal (city) fire brigades.

3. Fire and rescue corps

Among the laws and decrees regulating the competence of the fire and rescue corps is Act no. 314/2001 of fire protection, no. 315/2001 of the Fire and Rescue Corps, no. 121/2002 of prevention, no. 129/2002 of the integrated rescue system, Decree of the Ministry of the Interior of the Slovak Republic no. 611/2006 of fire brigades and no. 162/2006 of the properties, specific operating conditions and on ensuring the control of firefighting equipment of material means for fire protection. The primary tasks include the implementation of state fire supervision, firefighting, providing rescue assistance in various emergencies, assistance in endangering life, health and property, implementation of technical requirements, preventive education and other

tasks. Within the organization, the fire and rescue corps are divided into the praesidium, regional and district directorates, facilities and workplaces. [4]

Within the Slovak Republic, there are a praesidium, eight regional directorates, 50 district directorates and six facilities of the fire and rescue corps. The units are divided into a fire brigade, a company fire brigade, a company fire department, a general fire brigade and a general fire department. The primary service of the fire and rescue service is the mechanical service, the anti-gas service, the liaison service, the fire and rescue service and the flood rescue service. [5]

Each member of the fire and rescue corps has a certain rank and function. The ranks are ensign, officer and general. The functions of members of the fire brigade are intended for members who have completed basic training and includes the following functions: firefighter, senior firefighter, technician, engineer, team leader, platoon commander, change commander and unit commander. Individual rights and obligations also apply to members of the fire and rescue corps, which are detailed in Act no. 315/2001 of the Fire and Rescue Service. For emergency management, solution levels are divided into strategic, operational and tactical.

4. Voluntary fire protection

Voluntary fire protection also focuses on the protection of health, life and property such as the Fire and Rescue Service. Unlike state firefighters, voluntary fire protection activities are voluntary. Among the laws and decrees regulating the scope of voluntary fire protection is Act no. 37/2014 of Voluntary Fire Protection and Amendments to Certain Acts. Other laws are identical to those of the Fire and Rescue Service. The primary tasks of voluntary fire protection include educating the population, conducting preventive and tactical exercises, financial support for brigades, civil protection of the population, organizing fire sports, intervention activities and other activities.

Within the organization, voluntary fire protection is divided into a praesidium, a regional and territorial organization and a voluntary fire brigade. Within the Slovak Republic, there are a praesidium, eight regional organizations and 57 territorial organizations, a vocational school and 1766 active voluntary brigades throughout the territory. Fire brigades are divided into five categories marked: A1, A, B, C and D within the Slovak Republic. [6]

Within the Czech Republic, the units are divided into a unit of a region, a company, a municipality and a military fire brigade. Fire brigades are divided according to their scope into territorial and local numbers marked with numbers from 1 to 6. Each category defines the conditions that the corps must meet. [7]

Units according to scope are divided into territorial and local. Each member of voluntary fire protection also has a certain rank and function. The rank categories are executive firefighter, brigade master, technician and inspector. Officials in the framework of voluntary fire protection are the chairman, commander, prevention officer, secretary, treasurer, clerk and engineer. Exercises are performed tactically and preventively.

5. Comparison of the scope of fire protection unit

Within the Slovak Republic, there are 4,100 members of the fire and rescue service in 68 fire stations. The average number of professional members per 1 fire station has 60 members. It follows that for 10,000 inhabitants of the Slovak Republic, there are on average eight members. As part of voluntary fire protection, there are 81,526 members in the Slovak Republic at the end of 2019. These members belong to 1,766 voluntary fire brigades. It follows that the average number of members of voluntary fire protection is 46 members per 1 corp. [8]

Within the Czech Republic, there are more than 9,000 members of the fire and rescue service in 238 fire stations. The average number of professional members per 1 fire station has 38 members. It follows that for 10,000 inhabitants of the Czech Republic, there are nine members. As part of voluntary fire protection, there are 359,116 members in the Czech Republic at the end of 2019. These members belong to 7,662 fire brigades. It follows that the average number of members of voluntary fire protection is 47 members per 1 corp. [9]

The sum of members of the fire brigade and rescue corps and active volunteer members results in 25,627 members in 1,834 fire stations and armouries within the Slovak Republic. Within the Czech Republic, there are a total of 78,000 members in 7,900 fire stations and armouries. It follows that the average number of members of professional firefighters and active volunteer members per 10,000 inhabitants is 47 in the Slovak Republic and 74 members for the Czech Republic. Therefore, it is essential to unite these units and create a larger number of members who can perform rescue and liquidation work in the event of an emergency.

6. Synthesis of analytical conclusions of current labour relations and cooperation of fire protection units

The current state of labour relations and cooperation of fire protection units within the Czech Republic is at a higher level than within the Slovak Republic. It is mainly about the involvement of units and members of voluntary fire protection.

At present, when determining the number of units, it determines the specified degree of danger. This degree depends on the criterion of the number of inhabitants, the evaluation of the cadastral area of the municipality or city and the number of trips to interventions. Based on these criteria, seven levels of danger are determined within the Slovak Republic. Each level has a certain number of fire brigades and the time of arrival for the emergency. The Czech Republic has four levels of danger, which are divided into other categories. [5]

At present, a commercial system from the Czech company FRP Services, Ltd. is used as a call system for fire protection units which is called Fireport. This system was used in 2013 in the Czech Republic and 2015 in the Slovak Republic. Within the Czech Republic and the Slovak Republic, it is used by 416 brigades. It consists of a hardware part, a software part and additional modules. Additional modules include SMS sending, print service, control of external devices at the station and paging service. [10]

7. Proposal for streamlining labour relations and cooperation of fire protection units - call system

The proposal for streamlining the labour relations and cooperation of fire protection units is the creation of a new comprehensive design of a call system intended mainly for voluntary fire protection units. This system has the working name FANS (Fire Ability Net System), which is to increase the responsiveness of fire protection units. The central communication platform will be network communication, which should use the mobile phone interface. The main benefit of the new system will be the association of units of professional and voluntary members of fire protection.

Each corps enters into the system information concerning the seat of the fire station or station, the total number of members of the voluntary fire protection of the municipality and the fire and rescue corps, data on commanders, training, fire equipment, equipment and technology available to units and contacts for fire protection, which are capable of leaving immediately for the place of an emergency. The system would contact individuals via SMS in the event of an emergency.

Forty-seven categories of intervention type will be created within the system. Each category belongs to the given activity of fire protection units. Examples of intervention type categories are road traffic management, removal of objects from roads and public spaces, emergency inspection after the intervention, fire control, creation of flood barricades, removal of water, the rescue of human or animal from the inaccessible place, long-distance transport of water, disposal of objects and dangerous substances, fire-fighting, evacuation, traffic accident, first aid, explosives, suicide preparation, liquidation activities, removal of objects from heights or depths, removal of stinging insects and other activities related to fire protection.

For each category, there are set the minimum number of members of the fire protection unit, the necessary firefighting equipment, armaments and equipment, the intensity of the intervention, the presence of state firefighters, the number of fire protection units and the time required for the fire protection units to arrive at the place of an emergency.

Users of this system will be administrators, the operations centre, members of professional and voluntary brigades, and other stakeholders. The report is responsible for entering data about brigades into the system, the correct operation of the system and its technological development, solving technical problems, communication with the Ministry of the Interior and sending information to members of the system. The operation centre would communicate directly with the individual components of fire protection and control the fulfilment of the tasks of individual fire protection units. In the event of an emergency, members of the professional and voluntary corps would be sent information via SMS stating the minimum number of members required, the necessary firefighting equipment, armaments, equipment, the location of the emergency and the ideal time of arrival at the scene of the emergency. Other stakeholders are those who record an emergency and can send a message through the FANS application and possibly send a photo. If the system evaluates that it is an extraordinary event, then the price of the SMS will not be charged to the user of the sent message.

In the event of a declaration of an emergency, three situations can occur:

- The caller contacts the operations centre directly. The centre evaluates the situation according to the caller's indications and automatically contacts the fire protection

components and the FANS system. The FANS system evaluates the type of category and also contacts the fire protection components. After the intervention of the fire protection component, they will send information about the course and also whether the system has evaluated the category correctly;

- The caller contacts the Fire and Rescue Service directly. Professional firefighters evaluate the situation and automatically contact the FANS system. The system evaluates the type of category and contacts members of the voluntary fire protection. After the intervention of the fire protection component, they shall also send information on the course and the correct evaluation of the type of category by the FANS system;
- The caller contacts the FANS system directly via SMS. The system evaluates the report, evaluates the type of category and contacts the members of the fire protection. The system then contacts the operations centre as a control office. If necessary, the operations centre shall be involved in the management of the emergency and shall manage the fire protection units. After the intervention of the fire protection component, they will also send information about the course and the correct evaluation of the category type by the FANS system. System FANS sends this information to the integrated rescue system operations centre.

The basic functions of this system will include an interface for communication with the operation centre and emergency witness, evaluation process, distance calculation, category determination, determining the presence of professional and volunteer firefighters, sending SMS to fire brigade members and the final evaluation process after the emergency as a form of use: feedback or debriefing. The system will operate on the principle of notification and recording of an emergency and subsequent contact with the integrated rescue system, the fire and rescue operations centre or directly with the FANS system. The entire communication process will be automated, meaning that it will automatically connect the fire and rescue operations centre directly to the FANS system or to the integrated system. Within the FANS system, according to the information through the administrator, this system will evaluate the correct category of the type of intervention, the most ideal fire brigade and will send a message via SMS to the members of the fire protection. After evaluating the emergency, the operations centre will send to the FANS system administrator, whether the given category and the correct procedure have been evaluated correctly.

Example of system progress simulation

The caller contacted the FANS system, where a fire broke out in the village. At the family house, there are other family houses on the adjacent sides. The fire spread to the neighbouring house. There were three people and one dog in the house during the fire. The people were transferred to the yard after the fire was detected. There is no one in the neighbouring house during the fire. The FANS system evaluated the situation where it selected nine types of intervention categories.

Based on these categories, the system assessed the need to contact a professional fire brigade. For the needs of several corps, it is necessary to select three more voluntary fire brigades. The system automatically contacts the operational centre of the integrated rescue corps for the management of the components of professional and volunteer members of the fire protection. Based on the severity of the intervention, the distance and the time-travelled to the scene of the emergency, the system determined that it assigned professional firefighters the categories of the

type of intervention: firefighting in a family house and providing first aid to humans and animals before the emergency medical service arrives. He assigned the following categories to the first voluntary corps: evacuation of people, animals and destruction of objects in the event of a fire in a family house. He assigned a category to the second voluntary corps: long-distance shuttle transport of water. He assigned the category of road traffic management and emergency control after the intervention in the residential environment to the third voluntary corps.

After an emergency, professional and volunteer fire brigades will send feedback information on whether the system has correctly assessed the situation and assigned the correct intervention type categories to the corps. The system sends this information to the integrated rescue system operations centre.

The main advantages of the system will be fast communication between the operations centre, state and voluntary firefighters, evaluation of the category of the type of intervention and communication with ideal members of the fire brigade, feedback. [11]

Conclusion

Security is a term that is of interest to more and more people. Fire safety is one of the oldest types of safety that humanity has sought and institutionalized. Therefore, it is essential to pay close attention to this type of security and to continually improve and innovate it. The new fire protection call system should help fire protection units improve cooperation and responsiveness. The system will not compete with the operations centre but will try to involve more voluntary fire brigades more in rescue and liquidation work, in order to streamline and optimize fire safety.

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