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as Means of Increasing the  
Environment Security**

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## **VOLUNTARY COMMUNITY FIRE BRIGADES AS MEANS OF INCREASING THE ENVIRONMENT SECURITY**

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### **ABSTRACT**

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Nowadays, there are more and more emergency situations of natural character causing major damages to property. Handling them as well as dealing with the aftermath requires well-trained personal capacities. The article focuses on the importance and activities of voluntary community fire brigades. Despite the slightly downward trend of the number of drives of VCFB in Slovakia, based on the statistics of the Department of Home Affairs of Slovak Republic, the numbers of drives are increasing. The article provides results of an opinion survey of fire and rescue services members focusing on the activities and cooperation with VCFB. Based on the results, positive attitude towards the voluntary activities in this area from the perspective of professional fire fighters may be concluded.

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## INTRODUCTION

The security environment is a dynamically developing environment<sup>1</sup>. Between 1990 and 2015, Slovak Republic witnessed an increasing number and relevance of natural or man-made emergency situations, the increase having been significant mainly in case of natural disasters. It is expected that the situation will worsen in terms of the losses of human lives, damages to both economic and social infrastructure as well as of the quality of the already fragile ecosystems as due to climate changes, the frequency and relevance of extreme meteorological events such as heats, storms and heavy rains increases<sup>2</sup>. The reason for that is the change in the way the land is used which causes more and more frequent changes regarding the stability of the environment<sup>3</sup>. Slovak Republic is mainly endangered by the following:

- Floods (recently, mainly torrential floods);
- Landslides;
- Snow calamities;
- Whirlwinds;
- Fires;
- Dangerous substances (leakages, explosions, findings, dumping sites).

Landslides and floods have caused the greatest damages to property. Based on the Atlas of Maps of the Stability of Slopes of Slovak Republic, in Slovakia, there are 21,190 slope deformations. They disturb an area of 257,5 thousand hectares which is 5,25% of the overall area of Slovakia<sup>4</sup>. Since 2010 when, as a result of extreme rainfalls, loads of emergency landslides occurred, the ministry has been registering emergency landslides. Currently, the ministry registers 106 emergency landslides endangering human lives, property and environment.

In Slovakia, between 1996 and 2015, floods caused damages worth 1,254 billion €, which is approximately 62,7 million € per year. The statis-

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<sup>1</sup> M. Blišťanová, P. Blišťan, *Assessment data sources for security environmental analysis using GIS tools*, [in:] *Aspects of Security for the protection of the interests*, Politechnika Lubelska 2014, p. 50.

<sup>2</sup> MV SR, *National strategy management of security risks Slovak Republic 2015*, p. 22.

<sup>3</sup> M. Blišťanová, P. Blišťan, *Vplyv geohazardov na trvalo udržateľný rozvoj spoločnosti*, [in:] *Bezpečná spoločnosť – aktuálne otázky krízového manažmentu*, Vysoká škola európskych a regionálnych štúdií, České Budejovice 2015, p. 26.

<sup>4</sup> P. Ondrejka, P. Wagner, *Monitorovanie zosuvov a iných svahových deformácií v období rokov 2002 až 2009*, „Mineralia Slovaca“ 2012, No 1, p. 333–334.

tics are strongly influenced by the extreme year of 2010 when the amount of damages reached 481 million €. In the spring and summer of 2010, the territory of Slovakia was affected by extreme floods which affected more than 33,000 residents<sup>5</sup>. Nearly 28,000 residential and 7,000 non-residential buildings were flooded. That is an area of more than 97,000 ha<sup>6</sup>.

In case of forest fires, the damages reached more than 8.3 million EUR. Overall, between 2007 and 2012, 2,021 fires of forests were registered, out of which only less than 1% was caused by lightning whereas the rest of them occurred as a result of negligence and incautiousness of adults. Generally, it can be said that the protection from emergency situations heads into the following three directions<sup>7</sup>:

- Defining endangered areas,
- Monitoring,
- Technical measures.

In Slovakia, the definition of endangered areas is elaborated considering selected risks, namely floods, partially landslides and forest fires. The definition of endangered areas is also in accordance with the European Commission (hereinafter as EC) Decree for evaluation and mapping of risks in the context of catastrophes. It is expected that Slovak Republic will, too, be included among countries with a national strategy and regional strategies of managing safety risks. The aim of the risk evaluation is, based on the identification of risks, to decrease the vulnerability, increase the preparedness and resistance to protect lives, health and property as well as the sustainable development of the society (strategy).

The environment monitoring results from a number of agreements, conventions and international requirements resulting from the integration of Slovak Republic into the international system of environment protection. The monitoring also significantly contributes to the level of awareness of the actual state of the environment and represents a considerable element in terms of timely identification of environment changes

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<sup>5</sup> ME SR, *Analysis of the state of flood protection in Slovakia*, [http://www.minzp.sk/files/sekcia-vod/vlastny\\_material-analyza\\_stavu\\_ppo\\_na\\_uzemi\\_sr.pdf](http://www.minzp.sk/files/sekcia-vod/vlastny_material-analyza_stavu_ppo_na_uzemi_sr.pdf), p. 5.

<sup>6</sup> ME SR, *The report on the process and consequences of floods in Slovakia*, <http://www.minzp.sk/sekcie/temy-oblasti/voda/ochrana-pred-povodnami/sprava-priebehu-nasledkoch-povodni-uzemi-sr-roku-2009-01-08-2010.html>, p. 3.

<sup>7</sup> R. Ondrášik, V. Gajdoš, *Geologické riziká a ich hodnotenie pri projektovej príprave a využívaní krajiny*, „Acta environmentalica universitatis comenianae“ 2006, No 2, p. 345.

that may, in some cases, cause serious emergency situations with great economic consequences<sup>8</sup>.

The already mentioned measures represent preventive measures and lead to an increase of the resistance in case an emergency situation occurs. They provide important information regarding individual factors, the most risk-bearing areas etc. In case of some risks, such as flash floods or forest fires (resulting from the statistics), it is currently not possible to foresee the risk-bearing areas. In such cases, the presence and preparedness of rescue services is exceptionally important. The very preparedness for emergency situations mainly involves the provision of sources, forces and means and services necessary in the stage of reaction and restoration as well as the preparedness of individual communities ranging from the level of towns to the national level in terms of the definition of potential endangerment<sup>9</sup>.

Everyday cooperation of fire fighters, rescuers, police officers and other branches as well as the need for their effective coordination resulted in the creation of an integrated rescue system of the Slovak Republic (IRS). The IRS is the basic organizational and executive crisis management tool. The essential purpose of the IRS is to offer help immediately and without delays in case health, lives or property are endangered.

Basic branches:<sup>10</sup>

- Fire and rescue services,
- Health services providers,
- Civil protection control chemical laboratories,
- Mine rescue service,
- Mountain rescue service.

Other branches:

- Slovak armed forces,
- Community police,
- Community fire brigades – voluntary community fire brigades,
- Occupational fire brigades,
- Occupational fire divisions,
- Workplaces performing state supervision or activities based on individual regulations,

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<sup>8</sup> M. Blišťanová, P. Blišťan, *Vplyv geohazardov...*, p. 31.

<sup>9</sup> MV SR, National strategy management of security risks Slovak Republic, 2015, p. 13-15.

<sup>10</sup> Act No. 129 of 2002 Integrated Rescue System, p. 4-5.

- Civil protection units,
- Red Cross,
- Other legal or physical entities the subject of activity of which is to provide help in case of protection of lives, health and property.

Within the integrated rescue system, police forces occupy a special position. Through their activities and tasks, individual basic and other branches of the integrated rescue system contribute to an increased environment safety of Slovak Republic. Voluntary fire brigades are included in the strategy of full-area division of forces and means. Within the range of this strategy, based on the level of danger of a particular land register area, minimum requirements regarding the number of fire units, their drive time to the place of fire or other undesired event are defined.

#### **IMPORTANCE AND ACTIVITIES OF FIRE AND RESCUE SERVICES AND COMMUNITY VOLUNTARY FIRE BRIGADES**

Fire and rescue services and community voluntary fire brigades are both kinds of fire units based on a decree of the Slovak National Council No. 611/2006 about fire units. Therefore, they share certain common tasks involving the following:

- To rescue persons endangered by fire and to extinguish fires;
- To rescue animals and property endangered by fire;
- To facilitate rescue works in case of natural disasters;
- To provide help in accordance with their technical capacities and expert qualification in case lives of persons are endangered in accidents and in other emergency situations;
- To ensure the capacity of the fire brigade technology and its material means to act, to provide expert services, namely mechanical, antigas and assembling services;
- Within the range defined, to realize expert training of their staff and members etc.

Regarding the fire protection and safety, the basic and most important function is fulfilled by the Ministry of Home Affairs of the Slovak Republic through Fire and Rescue Services. Numbers of drives to fires, car accidents, leakages of dangerous substances or other wide-ranging technical drives represent a set of good-quality, dangerous and professional work. An example of the number and kinds of drives is covered in the following table evaluating the drives of the FRS in 2015.

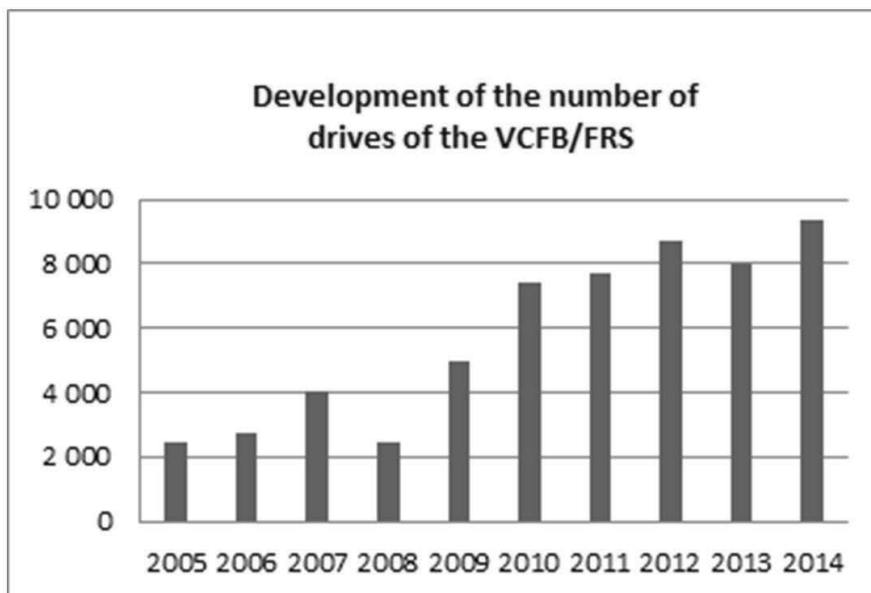
TABLE NO. 1. NUMBER OF DRIVES OF THE SR FIRE AND RESCUE SERVICES MEMBERS IN 2015

County	Number of drives									
	Fires	Fires without intervention	Fires altogether	until 2012 mentioned as "Rescue, technical and ecological interventions"				Trainings	False alarms	Altogether
				Technical support	Car accidents	Tech. support + car accidents	Dangerous substances			
Bratislava county	1 411	63	1 474	1 020	608	1 628	161	35	81	3 379
Trnava county	1 316	49	1 365	857	878	1 735	29	168	55	3 352
Trenčín county	984	65	1 049	816	702	1 518	72	135	74	2 848
Nitra county	1 126	27	1 153	1 399	875	2 274	18	277	78	3 800
Žilina county	1 180	60	1 240	1 322	1 212	2 534	148	70	103	4 095
Banská Bystrica county	1 331	96	1 427	1 676	1 301	2 977	132	87	113	4 736
Prešov county	1 885	74	1 959	2 094	1 345	3 439	41	79	69	5 587
Košice county	2 222	33	2 255	1 328	697	2 025	336	385	64	5 065
Rescue brigades of the FRS	135	2	137	86	37	123	25	43	0	328
FRS training centre Lešt	38	2	40	28	20	48	1	1	0	90
SR altogether	11 628	471	12 099	10 626	7 675	18 301	963	1 280	637	33 280

Source: statistics of the Department of Home Affairs of the SR

Drives of the community voluntary fire brigades represent just a small portion of the overall number of drives in the SR or of the overall number of drives of the FRS, though they have an upward trend as can be seen in the following graph.

GRAPHIC NO. 1. DRIVES OF THE VCFB/FRS BETWEEN 2005 AND 2014



Source: statistics of the Department of Home Affairs of the SR

TABLE NO. 2. AN OVERVIEW OF THE DRIVES VOLUNTARY COMMUNITY FIRE BRIGADES (UNTIL 2014, THOSE WERE CALLED COMMUNITY FIRE BRIGADES BETWEEN 2005 AND 2014)

An overview of the drives of the VCFB/FRS between 2005 and 2014					
Year	Drives to fires	Drives to technical and ecological interventions	False alarms	Trainings	Drives altogether
2005	1 177	1 250	53	0	2 480
2006	932	1 783	0	0	2 715
2007	1 401	2 641	0	0	4 042
2008	1 069	1 403	0	0	2 472
2009	1 229	1 891	57	1 802	4 979
2010	1 159	3 669	69	2 480	7 377
2011	1 638	3 110	76	2 885	7 709
2012	2 333	3 428	376	2 576	8 713
2013	1 558	3 438	101	2 887	7 984
2014	1 456	4 425	138	3 345	9 364

Source: Department of Home Affairs



## ANALYSIS OF AN OPINION SURVEY OF THE SR FRS MEMBERS FOCUSING ON THE ACTIVITIES OF VCFB

As a part of the partial objective of an institutional project of the University of Security Management in cooperation with the Technical University in Zvolen focusing on optimizing the preparation of members of voluntary community fire brigades, opinion surveys of the public and the FRS regarding the activities of VCFB were realized.

As the numbers of drives of VCFB are well-known due to the statistics, the objective was to discover the view on their activities during the drives from the perspective of professional fire fighters who often intervene in cooperation with voluntary fire fighters so they are competent to adequately evaluate their activities. The results of the survey are to be mentioned below.

In the process of evaluating the activities of voluntary community fire brigades, opinions of professional fire fighters represent a significant indicator. The analysis was realised by means of processing and evaluating a questionnaire survey.

**Objectives of the questionnaire** - To discover the perception of a need for voluntary community fire brigades and opinions on their activities, preparedness and effectiveness of the interventions of VCFB in cooperation with the FRS from the perspective of FRS members.

**Target group** - contemporary, previous and future (those in training or students, for instance) members of the FRS of the Slovak Republic.

**Methods and tools** - To collect the data, the following method was used: a survey. The survey was realized in form of an online questionnaire. To create, distribute and evaluate the survey, the "survio.sk" portal was used. The questionnaire was distributed by sending a direct link through e-mails, social networks and university intranet. Simple statistic methods were used to evaluate closed questions. Individual answers were assigned actual numbers of answers and subsequently, the percentage out of the overall number of respondents who had answered a particular question was defined. In case of half-opened questions, individual answers were assigned actual numbers of answers and subsequently, the percentage was defined whereas the answers covered by the option "other" – in which respondents expressed their opinion in their own words – were classified into groups and subsequently, these groups were, too, assigned a number and percentage of answers.

The survey was realized from February 23, 25016 to April 30, 2016, which totals 68 days.

#### RESULTS OF THE SURVEY

86 respondents participated in the survey, out of which four were previous FRS members, 64 (almost 75%) were current FRS members, 18 persons were in training or wanting to become FRS members in near future. FRS members of all counties of the SR took part in the survey, most of them coming from: Košice county (38,4%), Prešov county (23,3%), Banská Bystrica county (19,8%). (The question investigated the county where the FRS of a particular respondent – member operates.)

TABLE NO. 3. THE PERCENTAGES OF RESPONDENTS BY REGION

County	Percentage
Bratislava county	4,7%
Trnava county	4,7%
Trenčín county	1,2%
Nitra county	1,2%
Banská Bystrica county	19,8%
Žilina county	7,0%
Prešov county	23,3%
Košice county	38,4%

Source: self-research based on empirical research

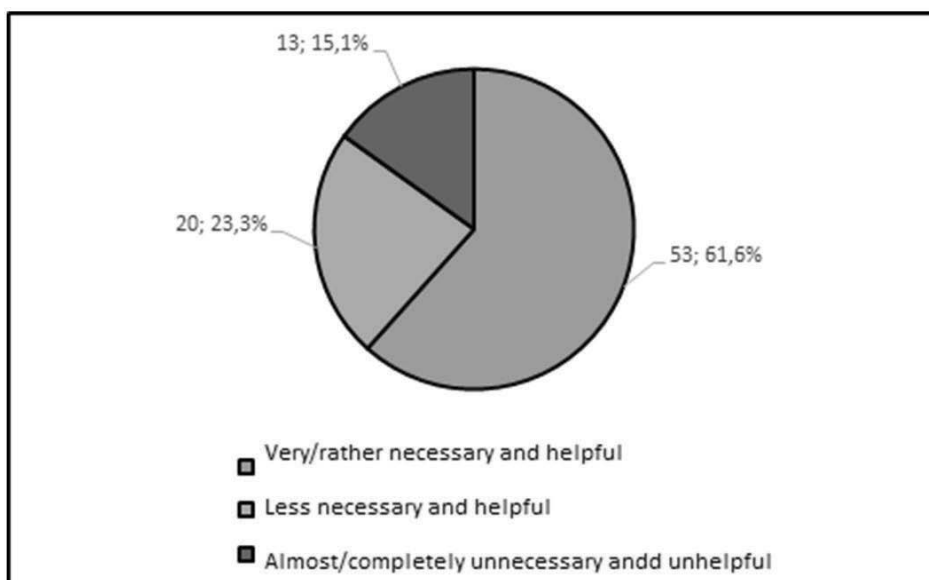
The fact that experienced members expressed their opinions may be considered to be an objective result of the survey, which is also proved by the answers to the question asking how long the respondents have been FRS members. The following may be deduced from the answers: most of the respondents (30,2%) have been members of the FRS for 5 to 10 years; those who have been members of the FRS for 10 or more years comprised the second biggest group (24,4%).

TABLE NO. 4. RESULTS OF THE QUESTION: HOW DO YOU PERCEIVE THE NEED FOR ACTIVITIES OF VOLUNTARY COMMUNITY FIRE BRIGADES?

Answer	Number	Percentage
Very necessary and helpful	31	36%
Rather necessary and helpful	22	25,60%
Less necessary and helpful	20	23,30%
Almost unnecessary and unhelpful	10	11,60%
Completely unnecessary and unhelpful	3	3,50%

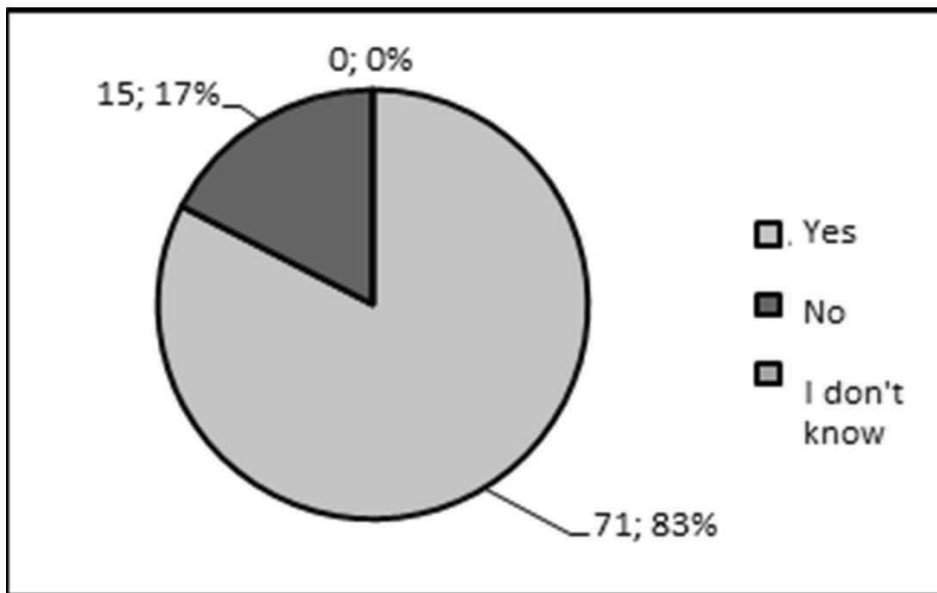
Source: self-research based on empirical research

GRAPHIC NO. 2. RESULT OF THE QUESTION: HOW DO YOU PERCEIVE THE NEED FOR ACTIVITIES OF VOLUNTARY COMMUNITY FIRE BRIGADES? AFTER GROUPED INTO POSITIVE AND NEGATIVE RESULTS



Source: self-research based on empirical research

GRAPHIC NO. 3. RESULT OF THE QUESTION: HAVE YOU EVER PARTICIPATED IN AN INTERVENTION OF THE FRS IN COOPERATION WITH A VOLUNTARY COMMUNITY FIRE BRIGADE?



Source: self-research based on empirical research

TABLE NO. 5. RESULTS OF THE OPENED QUESTION: IF YOU HAVE, HOW WOULD YOU CHARACTERIZE THE VCFB ACTIVITIES IN CASE OF SUCH INTERVENTIONS?

Answer	Number of persons	Percentage
The VCFB members were the first ones to intervene and they did most or all of the work.	11	13,4%
The VCFB members were very helpful, they acted professionally.	25	30,5%
The VCFB members were a rather passive support.	13	15,9%
The VCFB members acted very unprofessionally, chaotically, they were a burden to us.	11	13,4%
I have both positive and negative experience.	20	24,4%
Other	2	2,4%

Source: self-research based on empirical research

The option "other" enabled the respondents to express themselves in their own words. Out of the two answers, one was superfluous and the other one expressed positive experience.

To the question *If you have, how many times have you cooperated/intervened together with VCFB?*, 43,4% answered that it was 0-5 times, 24,1% answered that it was 5-10 times, 16,9% answered that it was 10-20 times and 10,8% answered that it was 20 or more times. It is therefore possible to talk about repeated experience and thus the capacity of the FRS member to evaluate the VCFB objectively. Based on the results, we may conclude that:

- The SR FRS members have much experience with interventions in cooperation with VCFB
- The SR FRS members consider the activities of VCFB to be necessary and helpful
- The SR FRS members have positive experience with the activities of VCFB and they evaluate the interventions positively
- The FRS members do not consider the actual training of FRS members to be sufficient
- The FRS members would welcome using the e-learning form in the training of VCFB members.

## CONCLUSION

The development of legislature in terms of voluntary fire protection along with the upward trend of drives of voluntary community fire brigades and the opinions and experience of the members of Fire and Rescue Forces of the SR represent the pillars of importance and positive heading of voluntary fire protection in Slovakia. Voluntary community fire brigades have become an important element of the fire protection and safety. Qualities of the members of fire units such as boldness, determination and mainly willingness to selflessly and promptly help people in need, to protect people, animals and property are undeniable. Only a person who is human and keeps this phenomenon alive is able to become a volunteer<sup>11</sup>. The importance and positive view on their activities are supported by the results of a survey made among the members of Fire and Rescue Services in Slovakia.

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<sup>11</sup> A. Pavlovičová, *Pohľad na dobrovoľníctvo z pohľadu profesionality a ľudskosti*, [in:] *Poslanie a práca dobrovoľníkov v Trnavskom samosprávnom kraji*, Trnavský samosprávny kraj 2012, p. 167.

With regard to specific requirements in terms of technical means of the VCFB in case of intervention, financial capacities of a particular division represent basic precondition of successful and good-quality work<sup>12</sup>. In this area, the situation has improved due to the acceptance of the strategy of full-area placement of forces and means of fire units as well as of the financial and material-technical support of individual voluntary community fire brigades based on particular categories<sup>13</sup>. In the future, it is expected that these fire units will be developed and supported and that they will cooperate with the FRS.

*The contribution was realized as part of the IP/44/2015/VŠBM project called "Creating an E-learning Module Called Basic Training of Members of Fire Units of Voluntary Community Fire Brigades in the LMS – Learning Management System".*

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<sup>12</sup> J. Drotárová, P. Palko, *Význam dobrovoľných hasičských zborov a možnosti ich finančnej a materiálno – technickej podpory*, „Košická bezpečnostná revue“ 2015, no 2, p. 55.

<sup>13</sup> M. Marcinek, *Efektívne využitie dobrovoľných hasičských zborov obcí v celoplošnom rozmiestnení na území slovenskej republiky a ich kategorizácia*, „Košická bezpečnostná revue“ 2015, no 1, p. 71.

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