

THE CASE FOR HELICOPTERS AND INTEGRATED COMMUNICATIONS IN BOSNIA-HERZEGOVINA: LESSONS LEARNED FROM THE FLOODS OF 2014.

Amer SMAILBEGOVIC
Nedžad KORAJLIC
Jasmin AHIC

Summary

Every year Bosnia-Herzegovina is affected by the various incidents of inclement weather, floods or other natural disasters requiring helicopter support and evacuation. Besides BH Armed Forces, the availability of multirole search-and-rescue helicopters is almost non-existent. Coupled with the aging of current communication systems and lack of integrated communications and other support systems, Bosnia-Herzegovina should seriously consider allocating the necessary resources to create a dedicated helicopter rescue force and improve the state and interoperability of its communications systems.

Keywords: Emergency response, Helicopter, Reconnaissance, Rescue, Communications

INTRODUCTION

A combination of rugged hilly and mountainous terrain of Bosnia and Herzegovina (hereinafter BH), bisected by gorges, ravines, as well as karst geomorphological phenomena (sinkholes, bays, reefs), coupled with insufficiently-developed road communication and heavy forest cover is a very complicated terrain to consider in the time of crisis; especially in conditions when the road infrastructure and other communications are threatened by floods, landslides, snow, etc. There are frequent occurrences when the populated places and entire regions are cut off from the rest of BH due to the failure of road and other communications.

A small number of airports / airfields in BH further complicates the situation when it comes to a quick response to a crisis situation. BH currently has 4 airports, 13 airfields, and about 7 landing strips registered with the BH Directorate of Civil Aviation (BHDCA, 2016). Apart from the main airports, other strips are used occasionally and do not have the infrastructure that could be used for mounting a quick response. The situation with heliports in BH is more troubling, and besides existing heliports of the Armed Forces of BH (Sarajevo, Banja Luka), there are only a handful of other locations suitable for helicopter landings (e.g. Sarajevo Clinical Center KCUS, Sarajevo; Bosmal tower; Zenica Police Training Facility, etc.); the location(s) suitable for

helicopter landing, according to the valid regulations (Official Gazette of BiH, 2009) are not registered and used in any of the crisis plans (CSS BiH, 2010).

PROBLEM

There is only a handful of operational and suitable helicopters that could be used in crisis situations in Bosnia and Herzegovina. The BH Armed Forces currently have ten operational helicopters, the Federal Police Administration (FUP) has one, while the RS Helicopter Service currently has two operational helicopters and plans to procure new ones. Somewhat smaller helicopters and the so-called gyrocopters (light aircraft that are a hybrid of helicopters and light aircraft) are privately owned and occasionally used in emergencies. Until 1992, the Republic of BH had ready access to helicopters through the Executive Council and the Municipal and Republic Ministry of Interior, but the equipment was requisitioned by Serbia during the war and replacement helicopters were never purchased. The only civilian helicopter that is somewhat suitable for operation during crisis conditions was originally part of the Helicopter Unit of the Ministry of Interior of the Republic of BH before 1992, and it was used by the police affairs and government ministries until May 1992, when it was effectively seized and was in possession of the authorities of the Republic of Serbia until December 10, 2010, when it was returned to BH (Ahatovic, 2018).

The emergency services radio-communication system in BH is in an even less enviable position. Most of the currently operation radio systems consist of analog radio devices, aged 5-20 years, which are already technologically obsolete. The reliability of such equipment is decreasing, while the maintenance costs are increasing because manufacturers are eliminating support for the old and phased-out models of analog radio devices as well as their corresponding relay systems (MUP ZDK, 2018). Although a framework agreement has been reached on the harmonization and use of the radio communication system between the BH police agencies, the RS Ministry of the Interior has opted against joining the agreement, and the agreement itself is still awaiting implementation. For the agencies that did not agree to participate in the unified communications system: the Ministry of Internal Affairs of the Republic of Srpska and the Brcko District Police, the provision was left in the Agreement for them to join and be part of this system at any time together with all other police agencies in BiH (DKPT, 2018).

Currently, police and security agencies in BH cannot easily communicate with each other due to different equipment and frequencies, and even less so with the BH Armed Forces, EUFOR or civil defense headquarters, which poses a considerable problem of coordination and field deployment during the emergencies. Most participants use their own mobile devices (phones) that are not intended for use in emergency situations, and can be compromised or left without a signal during an emergency.

LESSONS LEARNED FROM THE FLOODS OF 2014

The floods that affected BH in mid-May 2014 were the largest in the last 20 years; the natural disaster affected a quarter of the BH territory and about a million people. The total estimated damage was over 4 billion BAM or 15% of BH GDP. The emergency response was undertaken by the Armed Forces of Bosnia and Herzegovina (AFBH) with the aid of AF of the Republic of Slovenia, the AF of the Republic of Croatia, EUFOR, as well as the Ministry of Security of BH, who

were the main coordinators of the response activities in the field. All available AFBH helicopters were made available to the effort, but the number was not sufficient and helicopters from neighboring countries were called in and used to save more than 3,000 people and mitigate other potential dangers (BH Parliament, 2015).

In a later analysis of the situation, especially in Zenica-Doboj Canton (ZDK), where the situation was most critical, and certain locations could be reached only by a helicopter, it was concluded that the arrival of helicopters during the emergency period was “uncertain and dependent upon the complex chain of command in the AFBH as well as in the Units of the participating countries that sent helicopters, It was also important to point out the deteriorating technical, personnel and other state of resources in the AFBH, so that in a possible recurrence of similar events, the efficiency of helicopter units, over which we have no authority, would be questionable.”(MUPZDK, 2018).

According to the after-action reports (AFBH, 2016), the conditions during the evacuations or directed support towards ground teams were further hampered by the inclement weather conditions, difficulties in flying at night (lack of night flying equipment) and the inability to communicate with the deployed ground teams and/or other aircraft. The process of airspace de-confliction was performed by the pilots themselves, while the communication with teams on the ground was performed either via mobile telephony (SMS messages), or occasionally via radio communication, in aircraft that were equipped with a secondary analog communication devices (Mahmutovic, 2016). The situation was especially difficult near Maglaj, where it was difficult to find a suitable terrain for landing and embarking people who needed to be evacuated; AFBiH / FUP helicopters were not equipped with winches and baskets to pull people out of the flooded area and do not have the ability to land on or in the water.

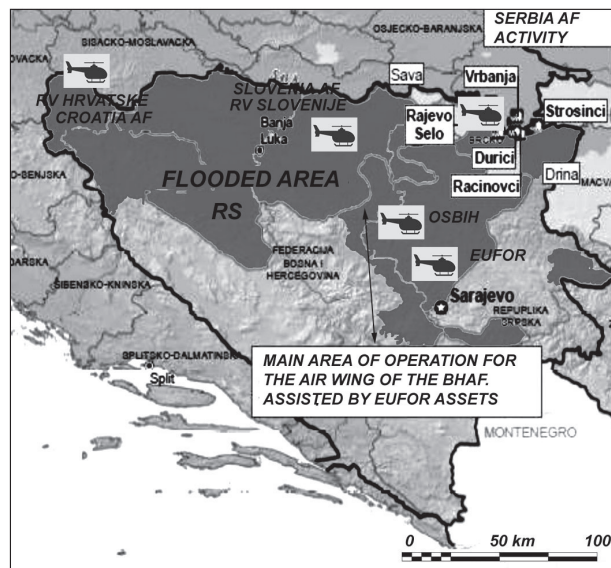


Figure 1. A depiction of the flooded area with the activities where helicopters played a special role. The most critical areas were in the northeast of the country, where the most evacuations had been carried

out by AFBH helicopters.

The main deficiencies observed during the floods were:

- a) small number of available helicopters,
- b) lack of equipment for performing operations in instrumental flight conditions; lack of sensor equipment and directional beams of light to perform night rescue
- c) lack of equipment to pull people out by the winch and basket,
- d) lack of ability to communicate with ground teams and other aircraft in the region,
- e) lack of provisions for temporary landing in the flooded area.

Some of this specialty equipment was installed on a small number of EUFOR helicopters in BH and proved to be very useful in carrying out the necessary actions as well as a wide range of applications in the protection and rescue system (OSCE, 2017).

PROPOSED SOLUTION

Although the engagement of the AFBH is provisioned during an emergency, the complicated and time-consuming decision-making process on the authorization of helicopters and the support of ground teams needs to be re-considered and develop alternative options for rapid action and deployment. In addition to capacity-building and modernizing the AFBiH, it would be highly desirable to make a contingency plan to improve the capacity of Federation Police, Federal Directorate of Civil Defense and certain cantonal police forces that may face natural disasters of this kind. Planning for the procurement of multirole helicopters for the dedicated protection and rescue tasks, as well as the improvement of the communication system should be some of the key priorities of the BH administrative entities and cantons (Kesetovic, Z., Korajlic, N. & I. Toth, 2013).

Some of the key aspects a multirole helicopter should have:

1. Capacity 1 + 6 (or more) persons
2. Possibility of towing suspended loads (at least up to 1200 kg)
3. Equipped with instruments for flying at night and all weather conditions as well as a digital navigation system (eg Garmin 1000).
4. Possibility of installing a thermal imaging system (FLIR) and a spotlight beam
5. Installation of rescue winch (crane) and basket
6. Installation of equipment for the possibility of temporary landing on the water surface (pontoon)
7. Digital communication systems for communication with the other deployed teams in the field

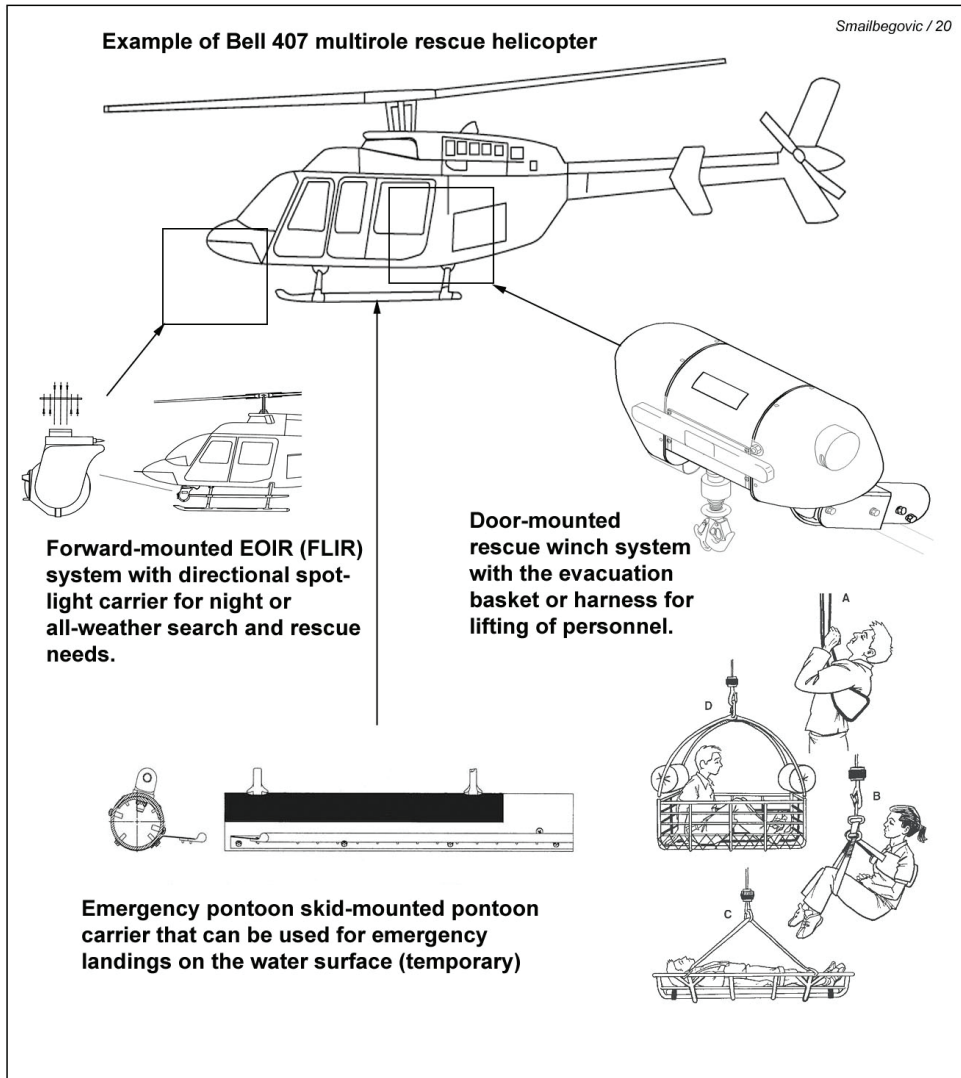


Figure 2. Overview of the basic elements necessary for conducting helicopter-borne civil protection and rescue missions in BH.

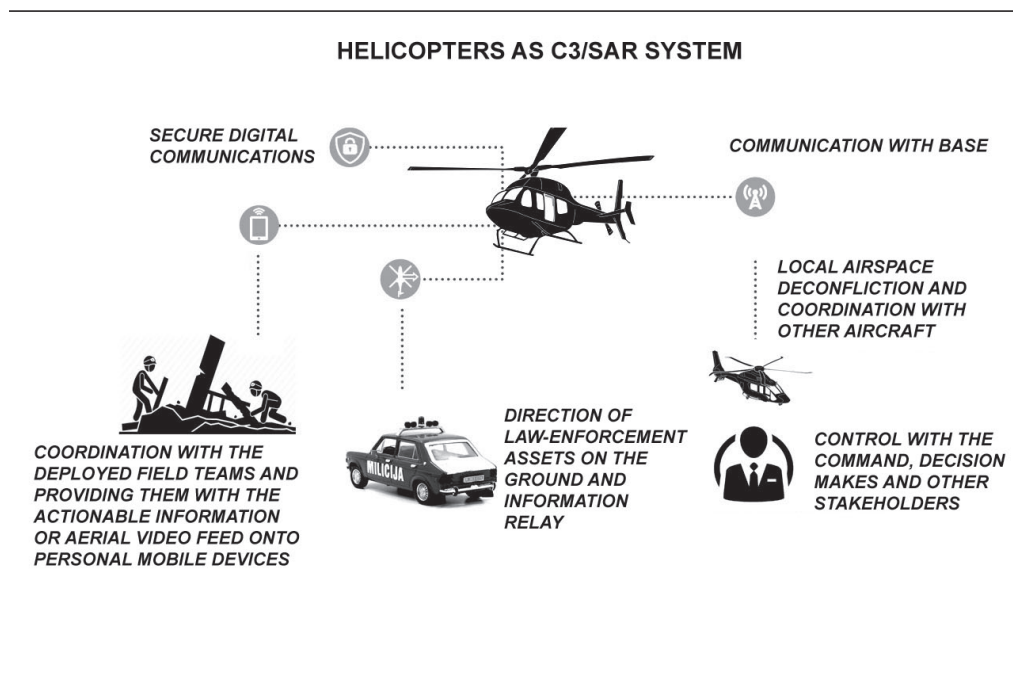


Figure 3. Example of a digital communication system network where a helicopter can serve as a mobile command-control-communications center. A single helicopter can manage a crisis and coordinate deployed teams on the ground.

Upgrading the existing analogue communication system to a digital communication system is desirable to ensure the expansion of field communication capabilities by sharing coordinates, notifications between the participants, and in some cases, using microwave communications (e.g. Teradek WiFi system) of short video content and aerial feed to the field teams. With the use of a digital communication system, a helicopter in the field can become a mobile command-control-communication hub.

CONCLUSION

Damages caused by the natural disasters which result in multimillion damages, significant loss of life and material goods are just one reflection of BH's unpreparedness to deal with the recurrent crisis management and form an adequate response. The Government of BH, governments of the administrative units of BH, cantons and municipalities still have not implemented concrete plans in order to improve, modernize and form an efficient rescue service, and that includes the use of helicopters as well as adequate communications.

According to the available information and analysis from BH (e.g. Zenica-Doboj Canton Police) but from around the world (Contra Costa Sheriff, 2016), a fully equipped helicopter (according to the specifications listed above) is in the price range of up to 5 million USD (8.7 million BAM) for a full a new unit, or about \$ 3.6 million (BAM 6.3 million) for a previously used but

usable aircraft with equipment. The aircraft requires the training of at least three pilots, two technicians for evacuation (crew-chiefs), rescue and medical transport, and two mechanics to maintain the aircraft and equipment. For the requirements of modernization of the communication system within a single canton, the estimated cost is about 1 million BAM (depending on the manufacturer and type of equipment offered). Once established, the system can function smoothly for a long time, and the cost itself is cost-effective on a long-term bases if taken into account on how much BH pays in costs for each year of unpreparedness for the crisis.

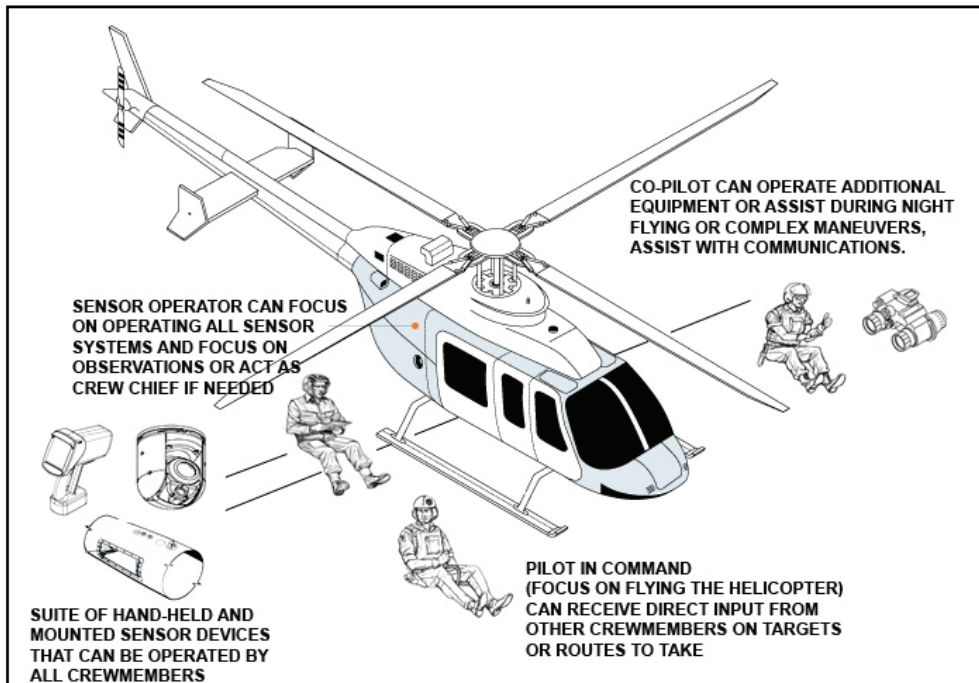


Figure 4. Example of an ideal crew configuration for a multi-role civil protection and rescue helicopter.

REFERENCE

- Ahatovic, N. (2018, 22 04). *Milorad Dodik mora vratiti helikopter državi BiH*. Retrieved from Index.ba: <https://www.index.ba/foto-ukradeni-1992-milorad-dodik-mora-vratiti-helikopter-drzavi-bih/>
- BHDCA. (2016, 01 03). *Aerodromi u BiH*. Retrieved from BH Direktorat za civilnu vazduhoplovstvo.: <http://www.bhdca.gov.ba/index.php/bs/aerodromi>
- Contra Costa Sheriff. (2016). *Sheriff's Helicopter Procurement*. Martinez, California: Field Operations Bureau.

- CSS BiH. (2010). *Zastita i spasavanje u Bosni i Hercegovini*. Sarajevo: Center for Security Studies.
- DKPT. (2018). *Srednjoročni plan rada Direkcije za koordinaciju policijskih tijela BiH 2020-2022*. Sarajevo: Direkcija za koordinaciju policijskih tijela BiH.
- Mahmutovic, V. (2016, 03 14). Letenje za vrijeme poplava. (A. Smailbegovic, Interviewer)
- MUP ZDK. (2018). *Elaborat uvodjenja digitalnog sistema veze*. Zenica: Ministarstvo Unutrasnjih Poslova ZDK.
- MUPZDK. (2018). *Elaborat opravdanosti nabavke helikoptera za potrebe MUP ZDK*. Zenica: Službene novine Zeničko-dobojskog kantona, broj: 7/10.
- Off.Gazette BiH. (2009, 02). Zakon o zrakoplovstvu Bosne i Hercegovine. *Sluzbeni glasnik BiH, Br. 39*.
- OSBiH. (2016, 20 11). *Specijalni prilog: poplave i odbrana*. Retrieved from Ministarstvo odbrane Bosne i Hercegovine: <http://www.mod.gov.ba/afoto2016/201118-1.pdf>
- OSCE. (2017, September). *NATO EADRC Field Excercise*. Retrieved from Ministry of Security of Bosnia and Herzegovina: <http://www.msb.gov.ba/PDF/031220181.pdf>
- Parlament BiH. (2015). *Upravljanje krizom: primjer poplava u BiH 2014. sa osvrtom na spremnost BiH za prijem veceg broja izbjeglica*. Sarajevo. : Sekretarijat Zajednicka Sluzba Parlamentarne Skupstine BiH.
- Kesetovic, Z., Korajlic, N., & Toth, I. (2013). *Krizni menadzment; drugo izdanje*, FKKSS UNSA., Sarajevo, Bosna i Hercegovina & Veleuciliste Velika Gorica, Velika Gorica, Republika Hrvatska.