Aeromobile forces in missions abroad

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Abstract: *This article shows the role of Aeromobile forces during missions abroad. Firstly it will be explained how to understand the concept of "Aeromobile forces". After that a short classification of missions abroad will be shown. Part I which is the main part of the article will introduce the using of helicopters Mi-17 and Mi-24 through the example from three different missions in Ethiopia, Chad and Afghanistan by showing their main tasks. Analysis included in this article should help with estimating capability of old types of helicopters. This chapter will raise an issue concern method for dealing with resistance. Last part will involve some costs explanation connected to helicopter operating costs. The conclusions contain the lessons learned from all missions mentioned in the article and some prospective possible solutions.*

Key Words: *Aeromobile forces, helicopters, cooperation, missions abroad, costs, experience.*

1. INTRODUCTION

Over the years, the Polish army took part in many foreign missions. They were both humanitarian and peacekeeping - but not only. Each foreign mission meant a new task for the Polish army. The circumstances, the current situation, the type of missions and the nature of the tasks faced by PMC (Polish Military Contingent) resulted in constant changes in the army namely training changes, upgrading or new equipment implementation or other modifications in the way of army leading.

The missions abroad that were realized by Polish military allow soldiers to get new experience which may be used for training others in the future. The way in which the Aeromobile forces were used in missions in Ethiopia, Chad and Afghanistan show the potential of this type of forces.

A wide variety of tasks performed by the Aeromobile forces during these three missions, reflects the high level of soldiers training, the ability to cooperate with other types of troops, flexibility and versatility in missions abroad.

This subject also raises very important issues regarding the modernization of the Polish army and the improved accuracy of the Polish helicopters. The question arises whether it is necessary to replace the existing equipment with helicopters of the latest generation.

Due to their great maneuverability the emergence of the high-performance helicopters aroused great expectations regarding their utility in air transportation and especially in those situations in which the aircraft could not be used.

2. AEROMOBILE FORCES - GENERAL CHARACTERISTICS

Aeromobile forces are included in the type of ground forces. Their basic tasks include support to onshore and offshore operations, capture of important enemy targets. These forces have the greatest tactical and operational maneuverability. That kind of forces can operate in conjunction with other ground forces or independently. The use of such forces allows commanders to provide a quick response across the entire area of responsibility.

Aeromobile forces include tactical units, divisions and subdivisions:

- Air cavalry,
- Landing and assault,
- Paratrooper,
- Land forces aviation.

Aeromobile units in Polish army comprise:

- 25 Air Cavalry Brigade,
- 6 Brigade Airborne Assault.

This kind of army is prepared to conduct diversionary activities, both offensive and defensive.

3. CLASSIFICATION OF THE MISSIONS ABROAD

Classification of UN peacekeeping missions:

- Preventive diplomacy – refers to diplomatic action taken to prevent conflict escalation and to limit the spread of conflicts.
- Peacemaking – refers to action intended for bring the warring parties to an agreement, mainly by the means provided for in Chapter VI of the Charter of the United Nations.
- Peacekeeping – This mission expands the opportunities for both conflict prevention and peace-building. It involves the disposition of the UN forces in the conflict zone, with the consent of all interested parties.
- Peacebuilding – is any action taken after the conflict, for the establishment and support of the structures aimed at strengthening and preserving the achieved peace in order to avoid the recurrence of the conflicts.

After the NATO summit in Lisbon, the concept of division of crisis response missions was introduced. This new classification replaced the previously used which were called military operations other than war. This classification looks as follows:

- Article 5 Crisis Response Operations,
- Non-Article 5 Crisis Response Operations,

The second one includes a couple of different types of mission such as:

- Peace Support Operations - the operation which impartially use diplomatic means, civilian and military ones, in accordance with the purposes and principles of the Charter of the United Nations in order to restore or maintain peace. We can distinguish several types of that kind of missions, like:
    - Conflict Prevention,
    - Peacemaking,
    - Peace Enforcement,
    - Peacekeeping,
    - Peacebuilding.
- Counter Irregular Activities,

- Support to Civil Authorities,
- Non-combatants Evacuation Operations,
- Extraction Operations,
- Enforcement of Sanctions and Embargoes,
- Freedom of Navigation and Overflight Operations,
- Search and Rescue.

4. EXPERIENCE OF USING THE AEROMOBILE FORCES IN MISSIONS ABROAD

4.1 Polish Relief Helicopter Squadron in Ethiopia

It's important to know this classification of peacekeeping operation from the NATO or UN point of view because in both situations the Aeromobile forces play a huge role. An example of participation of the Aeromobile forces under the UN humanitarian mission was the Polish contingent - Polish Relief Helicopter Squadron in Ethiopia.

The reason why the Polish helicopters were sent to Ethiopia was the drought that affected a significant part of Africa in the early ’80s of the twentieth century causing famine among the population of the continent. Ethiopia was one of the countries particularly affected by the disaster.

In 13/07/1985 the famous Irish singer Bob Geldof organized the big rock & roll concert Live-Aid at Wembley Stadium for rescuing millions of people starving in Africa. This action awakened many politicians and shortly governments of many countries rushed to help. Poland also joined to this mission, the government decided to send an autonomous team of helicopters to the territory covered by a natural disaster.

Between 1985 - 1987 Poland waged in relief operation for starving people in Ethiopia named Polish Relief Helicopter Squadron in Ethiopia (Polska Lotnicza Eskadra Pomocy Etiopii - PLEPE).

The code name for the Polish party of this mission was White Eagle. Poles performed their tasks in Ethiopia in the framework of a joint operation of the UN and the Ethiopian government under the name of TESFA (Hope).

Originally, helicopters designated to this mission have been repainted in white with red crosses, which was replaced after protests with white-and-red checkerboard of the Polish Air Force.

The Polish army designated to this mission the Mil Mi-8 type of helicopters (NATO reporting name of “Hip”).

It is a twin-engine medium utility transport helicopter developed by the Soviet manufacturer Mil OKB, today MIL Moscow helicopter plant, JSC (Russia). Those helicopters were properly prepared for the task to be fulfilled in Ethiopia by the Polish soldiers. On 10 February the Polish team in Ethiopia reached the operational readiness. The major tasks included:

- transport of the people to the areas dedicated to the new settlement,
- transport of the humanitarian aid to the affected areas,
- airdropping of grain over fields and in inaccessible areas affected by famine,
- medical transportation – added later.

“For hard-to-reach places we transport supply by ourselves, because the plane would never had got there. There were also no roads for cars. It happened that for the landing was so little space that the helicopter land on one wheel on the ground, and the crew quickly

unloaded the food" - mention colonel Pogorzelski, head of the Polish mission in Ethiopia and commanders:

- I shift (February - August 1985) - Col. Pil. Kazimierz Pogorzelski,
- II shift (August 1985 - February 1986) - Col. Pil. Kazimierz Chojnacki,
- III shift (June 1986 - February 1987) - Col. Pil Józef Gomółka,
- IV shift (February - June 1987) - Col. Pil Jan Soroka.

PLEPE pilots stayed more than 6,200 hours in the air and transported more than 9,000 tons of cargo (food, medicine and grain) and more than 6,000 passengers. During this mission there hadn't been any accident or serious malfunction. These figures show the effort and efficiency of the Polish crews.

The operation with Mi-8 was held in extremely primitive conditions and high dust. The pilots, have performed approximately 100-120 hours of flight per month on an helicopter while the country's limit for this type of helicopter was of 100 hours achieved during a whole year. Participating in the mission allowed the Polish pilots to gain more experience. Useful missions were carried out in Ethiopia using heavy Polish helicopters.

Our tasks consisted in conducting reconnaissance missions in areas at risk in order to determine the scale of aid and select the drop zone, to protect discharges and to transport of food, medical supplies and equipment for new-formed health aid points.

When in February 1985 the Polish helicopters unit joined the action, the UN had at its disposal only a small Swiss Bell-406.

The use of transport helicopters allowed reaching many needy people and saving their lives. This mission proved the predominant use of helicopters as compared to airplanes. Polish pilots had also the option to check their piloting skills in tough African conditions.

4.2 Mission in Chad

A successful example of the effective use of the Aeromobile forces during the foreign mission is the UN peacekeeping mission in Chad carried out in the years 2008-2009. The region of Sudan has been affected by the biggest humanitarian disasters in the recent years.

As a result of armed clashes, raids in villages and pogroms of the population, 200 thousand people were killed.

Fighting led to the creation of more than 3 million refugees, especially among the African tribes.

Refugees escaped mainly to the neighboring countries - the Republic of Chad and the Central African Republic.

Darfur, western Sudan province, an area of about 250, 000 sq km, is inhabited by two major communities - nomadic tribes (mainly Arabs) and indigenous inhabitants. The former, for decades, during dry period made use of the settlers' pastures.

Against this background, this became the reason for incidental clashes, which over time - fueled by ethnic and cultural enmities - have evolved into a regular fight. The escalation of the conflict occurred when the settlers accused the government of Sudan about secret agreement with the Arabian tribes, established paramilitary units - Sudan Liberation Army and Justice and Equality Movement.

The rebel forces, armed with smuggled weapons, quickly started to take control of the province. In response, the Sudanese government decided to quell the resistance by force. Victims of the conflict became civilian population. Fighting spread to the entire territory of the province. Peace negotiations started, however the agreement was signed only by the largest rebel fraction. Two others continued to struggle – rejected the final draft and invoked the National Redemption Front.

On 28 January 2008 the Europe decided to launch a Military Bridging Operation in eastern Chad and the north-east of the Central African Republic, acting in accordance with the mandate set out in United Nations Security Council Resolution 1778 (2007).

The purpose of peacekeeping forces was to stop the threat of the conflict spread in Darfur. It was not a classical peacekeeping operation, but an operation to ensure the safety of the UN humanitarian action. The operation in Chad had the following objectives:

- to protect civilians in danger, particularly the refugees and displaced persons,
- to facilitate the delivery of humanitarian aid and the free movement of humanitarian personnel by improving the security in the area of operations,
- to protect the UN personnel along with facilities, installations and equipment and to ensure the security and freedom of movement of its staff and UN and associated personnel.

The Tasks assigned to the Polish Aeromobile forces represented by helicopters Mi-17, were fulfill together with the French helicopters - Gazelles and Puma, which together created the Multinational Aviation Battalion during the mission in Chad. Poles operated among a dozen nations, from the beginning of the African mission demonstrating that they're highly skilled in their specific services. The major tasks for the Polish helicopters crews included:

- reconnaissance flights (in the border zone and around positioning place of the refugee camps),
- support for Quick Reaction Force or (QRF),
- air transport flights,
- training over the day and night,
- ensuring the transport of people and equipment to Forward Operational Base,
- combat air patrol in the area of responsibility.

The priority for the Polish pilots was the implementation of tasks for the soldiers stationed at the main base of the Polish contingent. A very good example of cooperation between Polish Land forces and helicopters was the action of combined patrols on land and air. During the mission in Chad, they contributed to the increase of the activity in the crucial points. These activities had enabled the intensification of the Polish presence in the region. The responsibilities of the Polish contingent comprises a very large area so that mission contributed to the monitoring of the situation and peculiar demonstration of our strength and maneuverability.

The big advantage of conducting combined patrols on land and air in the implementation of aeromobile tasks was the ability to transfer information about any potential threats. The ability for fire support from the helicopters decks was crucial.

The foregoing tasks realized by Polish soldiers during a mission in Chad had resulted in new experiences. It helped inter alia in the further professionalization of the Polish Armed Forces. Participation in the mission was a great test of training and preparation for the soldiers and for testing military equipment.

The cooperation with other countries (membership in Multinational Aviation Battalion) led to the enhancement of the interoperability of our military units. Participation in the Chad mission enabled Poland to become a country engaged in peacekeeping operations in the international arena. It is worth to highlight that aeromobile operations increased the security in refugee camps.

Once again, the use of helicopters ensured a higher mobility and efficiency of the implemented tasks and also an increased safety. However, we should be aware about the costs incurred during the transport of the helicopters to the mission area and the costs associated with their exploitation during the mission.

4.3 Mission in Afghanistan

The Aeromobile forces have also been used during the ISAF stabilisation mission in Afghanistan. ISAF – International Security Assistance Force was created in accordance with the Bonn Conference in December 2001. Afghan opposition leaders attending the conference began the process of reconstructing their country by setting up a new government structure, namely the Afghan Transitional Authority. The concept of an UN-mandated international force to assist the newly established Afghan Transitional Authority was also launched at this occasion to create a secure environment in and around Kabul and support the reconstruction of Afghanistan. On 11 August 2003 NATO assumed the leadership of the ISAF operation, ending the six-month national rotations. The Alliance became responsible for the command, coordination and planning of the force, including the provision of a force commander and headquarters on the ground in Afghanistan. ISAF's mandate was initially limited to provide security in and around Kabul. In October 2003, the United Nations extended the ISAF's mandate to cover the whole Afghanistan (UNSCR 1510), paving the way for expanding the mission across the country. In response to the invitation to participate in the International Security Assistance Force in Afghanistan, on March 16, 2002 the first group of Polish soldiers was sent to the region of mission. The scope of their actions mainly covered the mine clearing, the airport security in Kabul, and the construction of road and bridge infrastructure and other logistics support area, for the operation of the international military forces. During the mission a land-air component called self-reliance air group (pol. Samodzielna Grupa Powietrzna) was created. Their main weapon consisted in eleven helicopters Mi-24 and Mi-17, which contributed to the Task Force White Eagle greater mobility and to enhanced security in the operation theaters.

This group was formed during the third shift as the PMC in Afghanistan wanted to become independent from the transport provided by the Americans and to resume the maneuverability of Polish troops in the area of operations. The participation in the Afghan operation begins much earlier than the actual departure to undertake the tasks. All crews had to undergo numerous trainings in terms of mission specifications. These include:

- QRF training (Quick Reaction Forces),
- NVG training (Night Vision Goggles),
- Training in the crews proceedings after capture by the enemy,
- MCC training (Multi Crew Cooperation/ Coordination),
- CRM training (Crew Resource Management),
- ORM training (Operational Risk Management),
- CSAR training (Combat Search And Rescue),
- CASEVAC training (Casualty Evacuation) and MEDEVAC training (Medical Evacuation),
- CCA training (Close Combat Attack) and CAS training (Close Air Support).

All the above mentioned trainings are closely related to the tasks performed by the group during their mission in Afghanistan. Among the performed flights these are mainly helicopters Mi-17 transport flights. Among the planned combat flights there may occur reconnaissance flights (for example, for an exact reconnaissance before land patrol), missions with Special Forces, or participation in larger operations carried out in the framework of the ISAF coalition. Another task performed is the QRF duty or it could be also, the show of force which in many cases discourages the rebels to fight.

Statistics for one rotation are as follows: all operations – 860, including reconnaissance flights: 532 transport flights: 155, other flights: 179. The crew of this group are among the

most experienced pilots of Polish Armed Forces who, after returning to the country for years will be able to transmit their knowledge and skill sets to future generations of pilots and will constitute the strongest link in the ranks of the army. The difficult mission in Afghanistan revealed that even in extremely demanding conditions (base located at high altitudes and high dust) the Polish helicopters belonging to Aeromobile forces - Mi-17, Mi-24 - fulfill the requirements. These limits also apply to the range of maneuverability, the length of the flight and carried weapons. Mi-17 much better suited to these difficult conditions; however, it could be also subject to restrictions such as the reduction of transport capacity and maneuverability because of its additional armor.

5. STRATEGIC ASPECTS REGARDING THE POSSIBILITIES TO REPLACE THE OLD MILITARY ASSETS

In the actual military environment the debate regarding the possibilities of changing the old assets is an emerging one. In order to answer to the question of whether changing old types of helicopters with new ones is the best option right now, two types of strategic analysis, the SWOT analysis and the PEST analysis will be presented. The interest is to better understand the role of transformation in the context of resistance to change. In addition it will result the optimal strategies in different cases of analysis. SWOT analysis is a method used to evaluate strengths, weaknesses, opportunities and threats. In this case the analysis will include the use of Polish helicopters from Aeromobile Units in missions abroad. The analytical technique is based on classifying the available information about the case into four groups.

- **S**trengths: characteristic features that give an advantage over others,
- **W**eakness: characteristic features which set us in a disadvantage relative to others,
- **O**pportunities: elements which could be exploited to our advantage,
- **T**hreats: elements in the environment that could cause troubles.

As it was mentioned earlier SWOT analysis will focus on two types of helicopters from the Aeromobile units used in missions by the Polish army: Mi-8 and Mi-24.

Table 1 – SWOT analysis

Strength:	**Weakness:**
• high maneuverability • Possibility to reach places difficult to access • extensive experience crew • best-trained crew • exchange of experiences and knowledge through collaboration with allies from other countries • more time in air in different conditions for pilots • fulfilled tasks, providing thus the validity of their use during the mission • reliable and dependable types of helicopter	• old type of helicopters • cost of helicopters updating • repeated service activity • increased cost of utilization • deprecated technology

Opportunities:	**Threats:**
• further updating of helicopters	• acquisition of new helicopters (higher technology) • loss of compatibility with allies • elimination by new multitask helicopters • changing in laws according to requirements concerning the helicopters

Summarizing the results of SWOT we have to emphasize that even if we can find more strengths than weakness we should remember about the huge value of the weaknesses and related with these threats.

According to the results of SWOT analysis the final conclusion will depend mainly on the financial constraints.

The analysis highlights that these two types of helicopters have many strong features. Both of them were tested in missions abroad and both proved to be reliable and dependable types of helicopters with highly experienced crew.

The biggest opportunity for those helicopters is the relentless equipment modifications for example in cockpit or more efficient engines.

All of weaknesses and threats are related to the possibility of purchase new and technologically advanced types of helicopters.

PEST analysis is based on a framework of macro-environmental factors. It supports the decision makers to understand the impact and effects of possible threats on organization and also supports the organizations in identifying new opportunities for them.

There are many different versions of this analysis tool like ETPS, PESTLE, STEPE, however the basic one is PEST, which means:

P – Political,

E – Economic,

S – Social,

T – Technological.

The stages of this research are the following:

1. The analysis of the relevant factors relating to the individual segments of macro-environment
2. Establishing the influence of each factor on the functioning of the organization
3. Establishing the relationship between the organization and the macro-environment.

This analysis concerns the Polish army, especially Polish Air Forces according to the actual discussion about replacing old types of helicopter with new ones.

PEST analysis should help us make a decision about what will be the best for Polish Air Forces by showing the impact of macro-environment.

P	•high degree of the government interference •the government decides about sending troups on missions abroad, and also the amount and type of equipment •the entire amount of money for army come from the government •only political decisions are able to determine changes e.g. make a tender for a new type of helicopters •unstable political situation in Europe
E	•high costs for keeping old type of helicopters •investing money for updating the helicopters from endowment •budget cuts for the national defence •cost of sending and maintenance of army during missions abroad according to currency strength
S	•lack of assent from the society on sending army for missions abroad •Internal divisions in society about increasing government subvention on national defence •due deference from the society to all soldiers fighting in missions abroad
T	•limitation in access to new technology caused by tight budget •sufficient conditions for making own national technologies •sufficient research and development base

Table 2 – PEST analysis

The conclusions from the PEST analysis are related to four important environmental factors. The first one concerns the political factors represented by the possibilities for financial support in the case of large- scale projects. The Polish Air Force request is strictly related to the accept of the Polish government. The Second factor describes the influence of the economic issues. This factor includes problems like currency strength or size of budget assigned for national defense, which presently should be increased because of the real situation in the Eastern Europe. It is also mentioned the critical level of maintenance costs for keeping the old type of helicopters. The social factors includes the cultural aspects like due deference from the society to all soldiers fighting in missions abroad. This factor shows how variable the society could be and how much influence they have. The last factor is the technological progress and it is expressed by the research and development and the rate of technological change. Poland and Polish army benefits from a solid research and

development base for making their own national technologies. The biggest problem is the limitation in access to new technology in the context of budgetary constraints.

In table no. 3 a set of strategies for dealing with resistance to change. Six different situations show the possibility of using these methods and also the advantages and drawbacks of their application are presented.

Table 3 - methods for dealing with resistance changing

Approach	Education + communication	Participation + involvement	Facilitation + support	Negotiation + agreement	Manipulation + coopotation	Explicit + implicit coercion
Commonly used in situation	According to NATO Poland has to replace all of old types of helicopters. Polish government want to start the procedure for choosing the best offer. Polish society have object for this idea in that moment claimed that they see many other more necessary needs.	Poland receives from NATO new decisions regarding changing old types of helicopters to new one. Polish government has to find a solution to avoid resistance from the Air Forces members.	Polish government is making a decision about sending Polish soldiers on missions abroad. Army is afraid of soldiers' resistance. They're afraid of going to other countries without special training. Many soldiers feel affected by the missions attended previously.	The idea of reorganizing the structure of headquarters in army	In the Polish Air Force requirement for change occurred. Part of workers in Air Force will have to start fulfilling their tasks on their job positions in foreign language	Because of long period of trainings in other side of the country, part of soldiers with all needed equipment from the air base have to be moved to another base.
Solution	According to the situation when the Polish society has inaccurate information the best solution for the government is to start the informational campaign in which the need of change and entire costs will be explained.	This situation forced the government to found the committee which will integrate members from the Air Forces, Ministry of Defense and Ministry of Finance.	Army has to ensure support for soldiers. They will participate in special trainings. They will receive psychologic al support before and after the mission and also free time after return to country.	This situation forced to offer to officers and civilian employees who are supposed to lose their job the possibility to go on early retirement and other benefits including severance pay.	Cooperation with high rank officer from NATO can be the answer for resistance. It can enhance seriousness and need of change.	One of the possible solution can be using of explicit or implicit coercion. Soldiers from the air base can be afraid of demotion.

Advantages	After this campaign the Polish government can increase the number of supporters. Once persuaded they can help persuade others	People who participate in that committee have to share all relevant information they have which will effects into a change plan.	No other approach works as well with adjustment problems.	In this situation it can be a relatively easy way to avoid major resistance.	It can be a comparatively quick and inexpensive solution to resistance.	This solution is speedy and can conquer any kind of resistance.
Drawbacks	Changing people's way of thinking is time consuming.	This method also can be time consuming. It can be very difficult to find one solution which will suit to every member from the committee.	This will increase the costs of implementation change and will increase the time of changing.	It can be dangerous and too expensive if others will starts to negotiate for compliance.	It can lead to other problems in future when people will discover the manipulation.	Using this measure can attract people's anger on her initiators which can be risky.

As we can see each of the methods described can be used in different situations. It is also possible to connect methods, choose more than one to solve the problem with resistance. Each of these methods has advantages and drawbacks but by combining the methods we can get the way toward the optimal solution.

6. ASPECTS REGARDING THE HELICOPTER OPERATING COSTS

Considering the participation in missions involving own helicopters should be rethought the operating costs. When we think about operating costs during missions we should consider the real portfolio of helicopters according to their missions. Therefore, it is important to estimate the cost for each type. It is important to explain the difference between fixed and variable costs according to helicopter operating.

It is feasible to consider that in the case of fixed costs, the total cost remains constant as level of activity changes. As it relates to helicopter operations, fixed costs are those costs that the operator will incur whether the helicopter flies one hour or 1,000 hours. The behavior of a variable cost differs from that of a fixed cost. Whereas, the total amount of fixed costs stays constant regardless of the level of using, the total amount of a variable cost will go up as the level of activity increases. It is simple because, if a helicopter does not fly - total cost of variable cost remains zero, but if we will increase the flight hours also the total cost will increase. Fuel cost is an example of a variable cost. As it was mentioned if the helicopter does not fly the cost of used fuel will be zero, but this total amount of fuel cost will go up after using the helicopter. This factor has his own level of variability, for example the price per gallon/liter could change and also we still have to remember that many other factor could affect the fuel consumption i.e. type of mission, helicopter weight, speed, temperature or altitude. Helicopters can perform many types of missions such as search and rescue missions, flying point to point, circling during surveillance. Each mission will demand different combination of work parameters, like speed, weight, flight level, each of them can create

different rates of fuel consumption. Also the area where mission will take place is important. Generally, a mission performed at hot temperatures and lower altitudes will consume fuel at a higher rate than a similar mission performed at cooler temperatures and higher altitudes. During military missions the conditions could be very tough. According to this we can compare the fuel consumption and fuel economy for two military helicopters used by the Polish army - Mi-17 and Mi-24. The total tank capacity for Mi-17 reaches the number of 977.54 gallon which means 3,700.00 liters. For this type of helicopter the fuel economy is equal to 0.26 km per liter which means 0.61 NM per gallon. According to this its travel range is 960.00 Kilometer/518 Nautical Miles. Comparing to this big transport helicopter the total tank capacity for Mi-24 is 562.75 gallons which means 2,130.00 liters. For this type of fighting helicopter the fuel economy is equal to 0.21 km per liter and this is 0.49 NM per gallon. According to this its travel range is 450.00 Kilometer/243 Nautical Miles. There are also maintenance costs, which ensure that helicopters are maintained to a certain level of safety. This category of costs is one of the most significant. To prove it, the total maintenance costs represent 35 to 40 % of the total costs.

We should mention that the maintenance costs could rise significantly because the aircrafts are old and they're need additional funds in order to respect the limits regarding safety restriction. Nowadays it is difficult to consider purchasing a new military airlifter because of the budgetary constraints. In order to take the strategic decision it is necessary to examine all the alternatives and to optimize the problem by taking into account both the net present value life cycle cost but also the budget for purchasing new aircraft. The actual airplanes will need additional funds for maintenance but in the near future it doesn't exist a revolutionary new solution with far better efficiency. It is important to reconsider the reliability and to contribute with all the assets to architecting resilient systems. Aircraft systems are very complex technological systems with human components and we should reconsider the adaptability.

In this complex framework with both managerial and technical categories, the managerial capability is essential to achieve system resilience. The understanding of resilience is critical both at strategic and also tactical management responsible for all other capabilities. It is also important to understand the linkages among the nodes of the system both human and technological. This cross-scale connectivity involves communications, agreement collaboration, and date sharing among the organizations. The collaborations between subsystems are more than interaction and cooperation because coordination is changed. The treatment of risk (associated to technical aspects, the structure of costs and other elements related to mission planning) should consider multiple law probability risks (Epstein, 2006) and the dynamic non-linear risk analysis (Leveson, 2006). Technical capabilities are difficult to match with human performance and some authors recommend holistic methods.

7. CONCLUSIONS

Analyzing the results of the use of Aeromobile forces during a mission in Ethiopia, Chad and Afghanistan it should be emphasized the benefits of Aeromobile forces and the benefits of their participation in foreign missions.

During each of these missions helicopters showed high maneuverability, thereby allowed get to hard to reach places. Crews taking part in the missions are mostly crew with extensive experience from previous missions which guarantees the safety and effectiveness of tasks. Polish soldiers belonging to the Aeromobile forces are also the best-trained soldiers of the

Polish Army. The participation of Polish soldiers in foreign missions allows them to increase the already gained experience and also enables the exchange of experiences and knowledge through collaboration with allies from other countries.

For helicopter pilots involved in such missions it is also possible to spend more time in the air than in different conditions. Although these are not the latest helicopters generation, in the difficult Afghan or African conditions they fulfilled their tasks, proved thus the validity of their use during the mission. Despite many years of service in the Polish army helicopters of the Russian production of Mi-17 and Mi-24 proved to be reliable and dependable types of helicopter.

Aeromobile forces are fully prepared to independently fulfill tasks in the missions abroad and to cooperate with others for the benefit of Polish and allied armies. The most important question after analyzing the results of the use of Aeromobile forces during missions abroad is whether we should consider, after all, the purchase of new assault helicopters but not only those one?

In the actual post-crisis context, it is not possible to think about the acquisition of brand new helicopters. In this situation, it seems worth considering the purchase of the same type. The main goal of such a solution would be an effective use of human potential developed through participation in missions abroad.

It should not be underestimated and squander conclusions and experience from tasks realized during those conflicts or disasters. It is important also to remember them during finalizing the tender for the new multi-purpose helicopters.

We should rethink this problem of buying new helicopters from the cost perspective. Is it better to invest a huge amount of money in brand-new helicopters new generation? Maybe this solution will be more economic than investing smaller amounts of money for keeping helicopters in airworthiness but more often because of absumption. Further option for reconsideration, could be put money in used helicopters of the same type but newer ones? For this question it has to be found the best solution fiscally, technically and the best for the Polish soldiers for not to forfeit their precious experience.

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[11] * * * Stowarzyszenie Kombatantów Misji Pokojowych ONZ.

[12] * * * Polska Lotnicza Eskadra Pomocy Etiopii https://www.facebook.com/PolskaLotniczaEskadraPomocyEtiopi?fref=ts

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