HELICOPTERS DURING MARITIME MISSIONS

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Abstract: By maritime power we understand the state's political, economical and military abilities to impose its national interests to and from the sea. The emergence of helicopters and their further development diversified the missions that aviation can execute in the naval aviation service; they will provide operational capabilities necessary for the efficient execution of combat missions. The article highlights the use of helicopters for naval missions as platforms designed and constructed in accordance with certain standards so that they can meet the users of maritime security having an impact on the defense industry and military acquisitions.

Keywords: Maritime Power, helicopters, antisurface, surveillance

Acronyms:

ASW	*- antisubmarin warfare*	*VERTREP*	*- vertical replenishment*
CASEVAC	*- casualty evacuation*	ASuW	*- antisurface warfare*
SAR	*- search and rescue*	UAV/S	*- unmanned aerial vehicle/system*
MIO	*-mision interdiction operation*	*MSO*	*-maritime surveillance operations*
CNSAS	*- Corpul Naţional pentru Relief Alpin şi Speleologic*		

1. GENERAL CONSIDERATIONS REGARDING THE MARITIME DEVELOPMENT POWER

According to specialized references [1], through maritime power we understand the state's political, economical and military abilities to impose its national interests to and from the sea.

Using aircraft in aerial-maritime actions since World War I, led to the exploitation of maritime domain with implications for the exercise of rights of air supremacy. The first aircraft were seaplanes (1914) used in research assignments and then they were used to arrange and conduct vessels used for air vectors (carriers), see figures 1 şi 2, [2, 3].

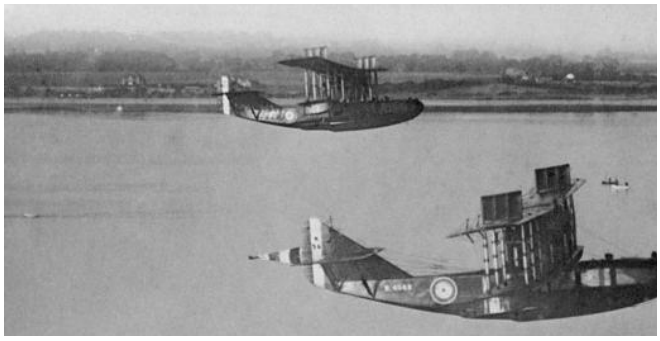

FIG.1. Hidroavion Felixstowe F5s

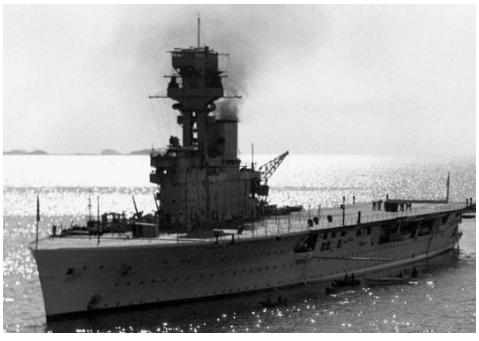

FIG. 2. HMS Furious (British Aircraft Carrier, 1917-1948), [3]

The first mission of a seaplane was executed on 31 May 1916 by the English squadron at Jutland, in research missions at sea and to discover the fleet and the actions of the German army, and the English are the first to release on water, in 1919, "Hermes", the first operational aircraft carrier during weather conditions specially built for this purpose, see figure 3. Aircraft carrier will consolidate its position among the already existing battleships during the second world war.

During the Second World War, the aviation was used in the complete range of missions: from the mission of neutralizing the enemy ships to the support of landing actions, missions independently executed and rarely in cooperation with forces whom benefits were acting.

Romanian hidroaviation was developed since 1920 in Constanța where seaplanes were (included in the structure of the Sea Division) catches of war, but which were requiring overhaul. Constanța Port had two depots equipped with ramps for launching and for raising to the shore of the acvatorium's seaplanes. First Romanian SAR seaplane 1 Getta was conducted at August 15, 1925 in Constanta Transport Society factory for air surveillance of the territorial waters, and the first flight took place on August 15, 1925, when it celebrates "Navy Day", see figure 3, [4, 5].

Fig. 3. RAS 1 *Getta*

During the Second World War hidroaviation had as main mission offshore exploration to discover enemy naval movements and close and distant escorting of ships.

After the Second World War, the use of joint air and naval forces changed the concepts regarding military power of maritime States. Current carriers are experiencing a considerable increase in their share, being able to achieve important strategic missions by destroying targets deep in the enemy territory. Naval forces are the aggregation element of naval power, and maritime navigation, river navigation, port infrastructure and the access to ports, submarines resources (oil and gas), fishing, maritime trade and submarine communications, all have to be seen as a unit, as a part of sea power [6, 7].

The emergence of helicopters and their further development diversified even more the missions that aviation service can execute for the benefit of naval forces, they will provide operational capabilities necessary for the efficient execution of combat missions against submarine threats (ASW) against surface ships (ASuW), in search and rescue missions (SAR), vertical replenishment (VERTREP) and casualty evacuation (CASEVAC).

Unlike terrestrial power, which generally can be defined only by military terms, maritime and aviation power cannot be separated from the economical, commercial or diplomatic elements.

Air power, as well as naval power, of a state or non-state actor, includes all Air Force military (which operates weapon systems which acts in/from the airspace), civil aviation (commercial and recreational), the aeronautical/radiocommunication manufacturing industry, aeronautical education and research, raw material resources necessary for aeronautical manufacturing, international research and procurement of equipment/weapon systems and munitions partnerships, thereby increasing the ability of a country to use its airspace for other non-military purposes, [7].

2. HELICOPTERS DURING NAVAL MISSIONS

2.1. Tactical helicopter group

Due to their technico-tactical characteristics, helicopters have become extremely flexible means that can be integrally utilized in the air, on land and at sea. The article highlights the use of helicopters for naval missions as air platforms created and designed according to different standards in such a manner that they can satisfy the maritime security users that influence the defence and military acquisitions industry.

At the moment there is a debate on military technologies with multiple utilization in order to develop system equipments capable of executing terrestrial and naval missions with both military and civil purposes.

The strategic helicopter grouping is the deployable structure used for executing various missions during operations; the grouping must be flexible and must focus on positioning their own units in the most favourable background when confronting their opponent.

In the beginning helicopters have been used only for transportation, search and rescue and MEDEVAC (the US military infantry in Nicaragua – 1932 and in Korea – 1950) missions; then the helicopter's role in the new concept of air mobility made it possible for the helicopter to become, for the Terrestrial Forces, an air mean used in air support missions as important as the airplane, see figure 4, [8, 9].

FIG. 4. Sikorsky H-19, [9].

FIG. 4. SH-3 Sea King, [10].

As of 1961, the marine infantry and naval forces of the USA have been equipped with SH-3 Sea King helicopters in order to be utilized in amphibious, anti-submarine and search-rescue operations, see figure 5, [10].

The use of helicopters in amphibious operations had as purpose the increase of mobility and fighting capability of the marine infantry, the helicopters being utilized mainly for: transport, for the unfolding and recovery of the seek-diversion grouping, the unfolding of the maritime assault in delta areas or on the opponent's depth for conquering some districts or determing the opponent to regroup his defenses on the shore, for air support, for supplying and recovering landed units, as well for the excuting aeromedical evacuation operation.

In anti-submarine operations, the helicopter use increases investigation possibilities of submarine-hunting surface ships, by searching for and discovering submarines at long-distance, and by striking the submarines with torpedoes. The convenience of using helicopters in anti-submarine operations is also due to the fact that they are more mobile and faster than surface ships and they are less vulnerable at the attack of the submarines that they discover.

In SAR operations, helicopters are used for rescuing the crew of the sinking ships, and for searching for and rescuing the crew of the aircrafts stricken above the sea. As of 1979, naval forces and the coast guard of the USA started to replace their search-rescue helicopters with Sikorsky S-70 SeaHawk, [17].

Despite all the advantages, it remains the most expensive weapon operated by human force that requires the most complex logistics and continual procurement with new technologies and has the longest training that human factor uses.

2.2. UAV during naval missions. Cooperation with UAV

UAVs air vectors were used by the US military in 1922 when there was the first release of an unmanned air target (RAE 1921) carried aboard HMS Argus, and in 1927 the British fleet used drones for shooting exercises [11, 12, 14].

The first use of a helicopter type UAV took place in 1962 when the naval version DASH (Drone Antisubmarine helicopters) for QH-50A entered into operational service of the US Navy, [13, 14].

To increase efficiency of the helicopter maritime missions there have been adopted a series of strategies for technological development and cooperation with other types of forces and combat equipment, an interesting cooperation that is worth mentioning is performed using unmanned vehicles (UAVs) that can provide real-time data in areas of interest without the risk of casualties, UAVs which have proven their capabilities, maturity and high degree of integration in a number of conflicts, [15, 16]. Currently, helicopter type UAS have been successfully used by the Australian Navy FOTEA, [21] and U.S.Navy [22], see figure 5.

FIG. 5. Landing RQ-8A unmanned elicopther [23]

3. CONSIDERATIONS REGARDING HELICOPTERS DURING MARITIME MISSIONS

3.1. Italy

Italian Naval Forces describe its own Naval Air Force features as a "weapon system for naval unit" which is rather an operational "long arm" than a system of autonomous weapons.

Italian Navy refers to the concept of maritime-air power and not the concept of air power, given the dimensions of air and sea are indivisible and Navy amplifies not only the capability of recognizing and observing the fleet but also the employment capacity. Navy Aircraft is used to carry out three main types of missions: anti-submarine warfare (ASW), against surface ships (AsuW) and fight amphibious (support forces amphibious / special "operations assault helicopters" [18]), see figure 6.

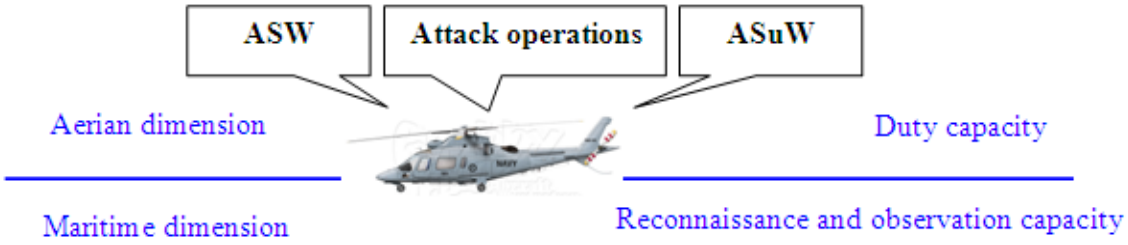

FIG. 6 Forţele Navale Italiene

Moreover, Navy helicopters contributes to maritime security and maritime interdiction operations (MIO), search and rescue missions at sea (SAR) in the context of counter piracy efforts.

A good example is the operation Nostrum Sea [19] started in October 2013 in which naval mission was conducted in parallel with humanitarian assistance operations and the maritime security. In course of action, the navy used five ships and 920 men. Regarding the use of helicopters, it is worth mentioning the participation of four AB-212 aircraft, an HH-139 aircraft for search and rescue and two EH-101 equipped with infrared optics and surface search radars.

In the context of operations that are not strictly military, but can still have a dual nature (civil and military) aircrafts are used both in support of the Department of Civil Protection and saving people affected by natural disasters or interventions in mountain areas with CNSAS . (The national body for alpine relief and Speleology) [20].

3.2. France

The most important feature of the French National Navy is to permanently cover the following two areas: combative (combat missions offshore) and non-combative (out surveillance, reconnaissance, research and its proximity to the coast).

In all cases, helicopters are not considered to be consistent operational tools capable of being carried out without naval support. They do nothing but to intensify the combat capability of the ship to which they are assigned.

In France, the helicopters are employed in four types of operation for maritime security: fight against threats submarine (ASW) against surface ships (AsuW) operations, maritime surveillance (MSO) and operations procedures at sea (MWO), see figure 7.

FIG. 7 Operaţiuni de securitate maritimă

For attack operations at sea, helicopters are used in close cooperation with the ships, both independently and in coordination with other ships or aircraft. Navy helicopters are under the command of the Navy, but when they are in action at sea, they are under operational command of the ship captain to whom he was assigned.

MSO maritime surveillance operations are the responsibility of the Coast Guard, carried out by the Navy with the support of frontier police and even the constabulary in some cases. It is coordinated by the charge d'its navy "maritime prefect" - a high-ranking admiral [24].

Military equipment involved in carrying out these operations consists of helicopters aboard surveillance frigates and ground-based helicopters. These missions have a wide range of tasks such as monitoring territorial waters, SAR, internal security operations (drugs). These missions can extend over into international waters, especially those designed to prevent drug trafficking, in which Navy helicopters are noted in tracking and capturing monitored fast boats.

Fleet armed forces will be numerical reduced from 481 equipped helicopters in 2013 to 392 in 2019. At the end of the six years program is intended as a third of the fleet to be made up of new generation helicopters (Tiger and NH - 90) [25], see figure 8.

FIG. 8. NH-90 elicopter [27]

3.3. United Kingdom

At the moment Royal Navy benefits modern helicopters both for training: Squirell, Wilcat HMA2 and for the usage for naval support operations (reconnaissance, surveillance, anti-submarine warfare) HT1 / HT2, Lynx HMA 8, Merlin HM 2, Merlin HC 3, Sea King MK7, AW159 Wildcat, [28], see figure 9.

FIG. 9 AW 159 Wildcat, [29]

According to the "British Navy Doctrine" [26] Air corps is an essential element of maritime power with the primary task ASW, AsuW, ASAC (Airborne Surveillance and Control Area), SAR and troop transport. In the near future Royal Navy will rely mainly on two Regina Elisabeta class carriers because the British Government believes that the United Kingdom must stick to military facilities which can provide rapid deployment of air forces anywhere on earth, the carriers being the only able of it.

The first aircraft carrier will start being tested in 2017 and will board helicopters with the capabilities necessary for reconnaissance missions, reconnaissance, SAR, ASW, AsuW.

Unlike the Italian and French model, British case shows a clear paradigm shift. The introduction of new Regina Elisabeta class aircraft carriers will serve to make these two ships the principal operating platforms at sea for aircrafts with fixed wing and rotary wing. Despite some controversy aroused among military doctrine specialists, the decision seems to have a deeper political motivation and important financial reasons. Participation in international waters on a planetary scale compels the UK Royal Navy forces in a pragmatic and modern approach. London's decision is understandable in the context of the growing role that aviation plays in maritime military operations. The sale of frigates and corvettes seems not only to solve financial problems, but rather be the sign of a new approach to marine British military presence in the world.

4. CONCLUSIONS

Sustained progress over the past century in aviation, especially in the last 20 years, has brought the aircraft at the heart of the military. We could not talk about removing the land and naval forces, but rather about a culmination of the military evolution and of the occupation of its naturally role by the aviation. Both on land and at sea starting from the ground or ship, rotary wing aircraft have become a mandatory attendance at theaters for nations which regard their own safety seriously.

Looking at the approaches from different point of views, we can observe the larger fighting power for the model with the carrier, but more easily bearable costs and greater adequacy to the modest needs of the second and amid the growing role of aviation is required an appropriate situation for the new situation, either to increase boarding capacity of the helicopters (2-3 helicopters) either to create tactical groups of two or more ships each with a helicopter on board.

After analyzing the use of the helicopters for naval missions in terms of realities, perspectives and missions in which they participate, it can be interpreted as follows: countries with access to enclosed seas with maritime ambitions confined to national security are those for which the binomial frigate/ corvette/ helicopter remains by far the most suitable unlike states with emphasized involvement with the planetary ocean and with ample resources are more inclined to adopt a different model: the aircraft carrier (and helicopters) together with corvettes and frigates without helicopters.

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