

ROMANIAN COMBAT DIVERS TECHNOLOGICAL PERSPECTIVES

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Abstract: *This paper aims to provide an overview of the technological perspectives of Romanian combat divers, to present the current status and possible development directions towards state-of-the-art capabilities in line with the needs of the Romanian Naval Forces and the Special Operations Forces Command as beneficiaries. The article uses domain observation and analysis, both longitudinal and cross-sectional, of military divers, dedicated to identify current capabilities, technological trends for combat divers as well as to highlight the importance they represent within the Naval Forces, taking into account the contribution and especially the role that combat divers play in countering the hybrid threats of the current security environment. For this paper, we have set out to identify the current state of the capabilities of Romanian combat divers, to this end we will present the possibilities of their use for military purposes and identify possible missions that they can perform in the Black Sea area. Moreover, we will highlight technological perspectives on the modernisation and development of the military capabilities concerning combat divers. The novelty of this article stems from the analysis and highlighting of the effective use of combat divers through new technological possibilities in response to the challenges of the new security context. Through this paper, we address to master students and personnel of the Naval Forces, to those who contribute to the implementation of feasible ideas at the level of the Romanian Naval Forces and wish to develop the capabilities of combat divers to deter the actions of a potential adversary.*

Keywords: *divers technological perspectives; Romanian combat divers perspectives; combat divers; divers modernization.*

Introduction

In this paper we intend to highlight some aspects of the technological possibilities of the modernisation and development of the military capabilities concerning combat divers.

The idea of our article is related to the fact that security at sea has grown as a European strategic issue in the last decade, but also because of the recent conflict between Russia and Ukraine in the Black Sea area, which brings new threats to the littoral countries, drifting naval mines and endangering Black Sea trade routes (Walter, Jan D.; Topcu; Elmas . 2022).

The Romanian Naval Forces responded promptly to ensure the safety of navigation in the maritime area of responsibility with ships, a helicopter and EOD combat divers in order to remove the mine hazard, thus "In rotation, 11 maritime military vessels and a Puma Naval helicopter have planned systematic search activities to detect and limit the mine hazard and to ensure the safety of navigation of all ships in transit to and from Romanian Black Sea ports.

The Romanian Naval Forces are prepared to act with appropriate neutralisation means, sea mine countermeasures capabilities and specialised personnel "(Statul Major al Forțelor Navale, 2022).

Using their specialised skills and equipment, military divers perform a wide range of critical tasks, including underwater reconnaissance, underwater obstacle clearance, clearing underwater improvised explosive devices, protecting critical water infrastructure, ship

maintenance and repair, search missions and underwater rescue and salvage operations. If we understand how to use military divers effectively in conflict, we will understand their growing importance in today's security environment.

One goal we have set ourselves is to raise awareness among Naval Force graduates and personnel, as well as those who contribute to the implementation of feasible ideas within the Romanian Naval Forces. Also, to determine the modernization needs of combat divers in order to strengthen interoperability with the armed forces of NATO member states in order to increase the effectiveness of military actions in the current security context.

Current capabilities of Romanian combat divers

Naval combat divers perform a variety of tasks and missions in underwater environments. Romanian military divers are operationalised or in the process of being operationalised forces, they have the capability to participate, when ordered, in actions to prevent and combat terrorism or to remove the danger generated by conventional or improvised explosive devices, on national territory and beyond, independently or in cooperation with other similar NATO forces, in areas where their intervention is required (Centrul de scafandri, 2022).

"The capabilities of combat divers to operate in the vicinity of unfriendly coastlines, well guarded by the enemy, heavily defended by both conventional and special forces of the enemy, in difficult hydro-meteorological conditions, recommend them for the execution of complex missions" (V. Stanciu 2011).

The combat divers' actions are aimed at ensuring the protection of objectives in the area of responsibility of the Naval Forces, deployed on land, on water or underwater . These may be ships, maritime platforms, pipelines for the transport of gas or oil products, cables for the transport of energy or communications, navigable canals and the river area, "The mission of combat divers is to ensure the protection of objectives in the area of responsibility of the Naval Forces, deployed on land, on water or under water (ships, maritime platforms, pipelines for the transport of gas or oil products, cables for the transport of energy or communications), navigable canals, and the river area."(Centrul de scafandri, 2022).

In Romania there are several categories of combat divers specialising in different areas, such as: incursion divers, river divers, EOD divers and naval special operations forces combat divers.

Incursion combat divers are the combat sub-unit designed to collect tactical data and intelligence both assembled and by formed elements within it. In certain situations, divers may execute missions from the spectrum of special operations forces, raids and direct action on targets at sea and ashore. In order to carry out search or surveillance and combat missions, the incursion combat divers operate by day or night, in a variety of terrain, in all weather conditions or with reduced visibility, as follows: by sea, by air and by land.

River divers have as their area of responsibility the course of the Danube and the Danube Delta area. River divers carry out amphibious reconnaissance missions, collect information and report on enemy activities and resources, or collect information on the hydrographic characteristics of an area for the use of their own forces. Another specific mission is the insertion and extraction underwater of combat diver teams, which are intended to infiltrate clandestinely to execute ground reconnaissance actions in designated areas. They can use underwater vehicles for missions in flowing water and are also easily adaptable to the use of state-of-the-art underwater technology in this area of operation.

In the following we will try to briefly present the combat possibilities of EOD divers specialised mainly in fighting with and against mines. EOD divers are trained to deal with any type of explosive both in water and on land, even more EOD specialists are trained in

complex areas from jumping from helicopter for search and rescue operations, to using explosive detection devices, from handling robots to destroy explosive charges to controlling ships against mines. They are the only experts qualified to respond to explosives underwater, regardless of depth.

Naval Special Operations Forces combat divers can perform the full spectrum of Special Operations Force missions with a particular focus on the maritime domain. They cooperate with institutions and public authorities that are part of the National System for Prevention and Fight against Terrorism (NSPFT), as well as with international partners. Naval Special Operations Forces are "THE TIP OF THE SPEAR" according to the Cambridge dictionary, a person or group of people who are the first to do something considered difficult or dangerous, especially a group of soldiers etc. who are the first to enter a combat zone (Cambridge Dictionary, 2022).

Therefore, eighteen years after Romania's accession to NATO, military divers have continued to transform, eventually becoming a specialized, rapid response, tactical level component producing strategic level effects, with specialized structures, trained and equipped to perform their missions in the maritime, land and air environment. These combat diver structures play a decisive strategic role in addressing risks and threats to Romania's security and defence, regardless of their type, conventional, asymmetric or hybrid.

Technological possibilities for the modernisation and development of the combat divers military capabilities

In this chapter we present the current situation and the possibilities for upgrading naval platforms and equipments for combat divers. According to the article, Romania's Naval Forces at the crossroads, more than ever, the implementation of the critical thinking concept has highlighted the Romanian military potential under the current force structure, identifying the lack of modern ships and modern equipment, but highlighting the professionalism of combat divers „The Naval Special Operations Squadron formerly known as Naval Special Operations Group (GNFOS) provides the Romanian Naval Forces with a special warfare capability. The squadron in its current form was established after Romania became a member of NATO. Its preceding special forces structure was centered around the 39 Diving Center which trained explosive ordnance disposal divers (EOD) and combat divers ("commando frogmen", "incursori"). Naval special operators are trained in diving, combat diving mountain warfare, demolition, survival, parachute training, mobility and vehicle maintenance. Insertion and extraction is done by high speed boats, rigid inflatable boats, helicopter and parachute (Vişan 2017).

The special forces component was created with the aid of NATO allies in particular U.S. Navy's SEALs and the unit regularly takes part in international exercises, A small detachment was deployed in Afghanistan as part of Romania's contribution to the ISAF mission and another was deployed on board Regele Ferdinand (F-221) during Atalanta antipiracy mission. Lately, GNFOS exercises have emphasized the protection of offshore oil and gas rigs” (Vişan 2017).

At the moment "in terms of overall capability, the Romanian Navy is significantly behind Turkish and Russian naval forces in the Black Sea, comparable in strength to the Bulgarian fleet, but still significantly ahead of the Ukrainian and Georgian navies," Omar Lamrani, a military analyst at Stratfor, a US agency specialising in military and geostrategic analysis, told HotNews.ro (Cozmei 2016).

He also pointed out the vulnerabilities to which Romania is currently exposed in the Black Sea: "Most of Romania's current ships were built in the 1970s and 1980s. Therefore, Romanian ships are ageing, and as in the case of air force aircraft, they need modernisation

and replacement. Romania has a solid number of frigates, corvettes and minesweepers (although these too are ageing), but is considerably disadvantaged by a lack of developed naval aviation, a low ground-to-air defence capability and a mediocre anti-submarine warfare capability. Romania also lacks an effective force on the submarine side," Lamrani explains (Cozmei 2016).

Once with Russian invasion of Ukraine on 24 February 2022 and the continuation of the war, the entire global security environment has deteriorated considerably and the conditions for global uncertainty in all sectors of society have been created.

Under these circumstances, Romania is obliged to develop and modernise the only force with which it can intervene in the Black Sea area, the Romanian Naval Forces. As Omar Lamrani mentioned above, we need an effective force on the submarine side, and this force includes military divers.

EOD combat divers perform operations to inspect the underwater hull of a submarine in order to locate and identify whether it has explosive ordnance placed on its hull and to pinpoint the location of a damaged submarine for subsequent intervention to rescue the crew in DISTRESS. For such missions, EOD divers are provided with two specialised vessels to carry out their tasks: NMS Grigore Antipa and RMS Grozavul. The Maritime Diving Ship "Grigore Antipa" was launched and joined the Diving Centre in 1979 (Marian Tănase, 2018). With multiple facilities in providing underwater activities from the surface, with decompression and treatment chambers, diving turret up to 120 m, gas mixing and storage installation, this vessel is a real floating laboratory that can reach the most remote intervention districts. The tugboat "Grozavul" was built in the Oltenița shipyard between 1989 and 1993 and entered service in April 1993. Designed as a maritime salvage tug, it can be used as an icebreaker in ports and coastal areas. It can perform rescue missions for ships in distress, crew rescue, fire fighting, evacuation of water from flooded compartments, logistical support for diving activities and can also provide diving activities with a barocamera mounted on board .

EOD divers and raid divers perform missions within the Naval Forces by insertion at targets with the maritime intervention diving ships "Venus" and "Saturn" (Cocea 2011). They are also equipped with 8 plus 1 seater rigid hull speedboats.

For the execution of the specific missions of military divers, an extremely important role is played by the platform which ensures the insertion or transport in the raion, the safe execution of dives to depths greater than 12 m, the need for a fixe hyperbaric chamber, the instrumental search using AUV, ROV, SIDE SCAN SONAR, as well as the extraction or transport from the zone of execution of the mission. Also, the length of time the platform is stationed in the zone is extremely important, as the effective execution of a mission requires on average three days of stationing in the area.

EOD divers are equipped to NATO standards and are familiar with specific techniques and tactics in the search, discovery and identification of unexploded underwater explosive devices, both conventional and improvised (UXO and IED).

As for the EOD divers' equipment during exercises, "they used specific equipment such as inflatable abstraction, Autonomous Underwater Vehicle (AUV) sonar, closed/semi-closed circuit magnetic diving apparatus and compressors. They trained in the use of NATO EOD documents and databases"(Trustul de presa al Ministerului Apararii Nationale, 2018).

It is imperative that military divers train under the same conditions in which they will fight. Military divers also need to be highly trained, equipped and equipped so that they can carry out their activities in optimal conditions, with the capability to operate in multinational maritime forces, regardless of environmental conditions.

Naval Special Operations Forces (NSOF) combat divers or similarly-structured naval force incursion combat divers are those combat divers equipped with RHIB-type fast boats who appear on exercises, "They are those sailors who execute sea insertion aboard fast,

inflatable, rigid-hulled craft, so-called RHIBs (Rigid Hull Inflatable Boats), with a capacity of 12-15 persons, on the sides of which are inscribed the name Fulgerul 1, 2 etc. , ready to carry out maritime interdiction, counter-terrorism, anti-piracy, anti-smuggling missions (all of which include the danger of retaliation by the adversary), as well as search and rescue missions at sea, or the transfer of personnel and material. They are those divers specifically equipped with closed-circuit breathing apparatus (so they cannot be detected due to air bubbles that might escape to the surface of the water in the process of breathing) who are unseen and suddenly emerge (the element of surprise), dressed in black neoprene suits and wearing swimming shoes, effectively dripping with water and frighteningly 'armed to the teeth', with personal weaponry and state-of-the-art sighting (including night vision) and sighting equipment, ready to carry out their specific missions and tasks, on shore, on land" (Ilie 2018).

In terms of equipping NSOF divers, according to mission needs and operational requirements, they need in particular fast surface insertion craft, tactical kayaks for operation on lakes or lagoon areas, underwater insertion means, including mini submarines, or electric underwater propulsion systems, diving screens, high performance parachutes, UAS or high precision drones, other land-based means of transport.

NSOF divers should be equipped with state-of-the-art technology to perform tactical-level surgical missions with strategic-level effects.

In this regard, it is interesting to note the current trend in the procurement of state-of-the-art equipment for similar structures such as US Navy SEALs (Ilie 2018). A suggestive example is USSOCOM's intention to procure suicide drones (Kamikaze), which are actually "loitering" smart munitions weapon systems for US Navy SEALs with undetectable equipment to improve capabilities against asymmetric and conventional threats at sea and on land (Trevithick 2018).

Suicide drones (smart "loitering" munitions) is a weapon system in which munitions fired from various mobile or static platforms can fly over the area of an enemy target for a limited time and only after a time can execute the attack on the target. These weapon systems significantly improve rapid response to camouflaged or concealed targets, a key feature of NSOF capabilities, and increase troop protection because they can be fired from a safe distance, reducing operator risk, mission risk and the risk of collateral casualties among civilians or friendly forces, thus" Commando Diver Insertion Platforms equipped with such weapon systems can strike from the sea, with discretion and surgical precision, certain terrorist elements, or targets designated by military operations planners and approved by decision-makers as being of strategic or operational importance. These could be enemy air defence systems, anti-ship defence systems, radars, mobile ballistic missile launchers, or mass-destruction weapons depots. NSOF detachments become capable of executing precision strikes on targets in depth, from a safe distance from the target, and will have more time for covert execution of exfiltration. NSOF operators can thus be more successfully employed in special search missions in the vicinity of enemy occupied positions in the beach area, and where they could land new forces, but also in other coastal areas where larger military operations are taking place.

Compared to manned or unmanned aircraft intended to provide close air support, with target-hitting capabilities that require air bases from which to take off, flight planning and direction, synchronisation of activities, and possibly ground indication of targets, complex resource- and time-consuming activities, these systems provide a much more flexible response to the dynamics of military action, the speed of change in military intelligence, and the battlespace. Depending on the configuration of the systems decided to be acquired, fast craft and their crews will also have much faster follow-on strike capabilities in case an initial attack has failed.

Intelligent loitering munitions launched from such fast insertion platforms on the water or even by commando divers once ashore, in the portable configuration, can be, even for a limited duration, a very important and much appreciated and expected close air support capability for other special operations force operators already executing missions deep in enemy territory and unable to be air-supported by their own forces.

At sea, suicide drones can be equally useful against small hostile craft that may be carrying weapons, equipment and contraband, can support maritime interdiction operations, with the systems providing a direct means of stopping or even destroying such hostile elements that may be trying to evade law enforcement, significantly reducing the risk of collateral casualties" (Ilie 2018).

Dedicated platforms for military divers must technically and operationally correspond to the current level of development worldwide and must be equipped with techniques and equipment interoperable with those in the naval forces of NATO member states, ensuring that all specific standards relating to both the seaworthiness and facilities of the vessels and the diving equipment and facilities on board are met. Communication systems installed on board must be interoperable with NATO systems and ensure encrypted reception and transmission of messages, documents, images and video.

Military diver support ships must be capable of performing missions at sea by surprise, during which insertion into the combat zone and support of military divers carrying out training or combat actions will be carried out, in order to help ensure the protection of military objectives, as well as the mitigation or elimination of mine hazards in the area of responsibility of the Naval Forces.

The current state of the Naval Forces' equipment calls for urgent, coherent and applicable measures to ensure that the process of transforming the military institution proceeds according to the planned stages, while fully fulfilling its national and international missions and obligations.

Starting from the current state of the Naval Forces, analyzing the probability of risks and threats in the region and taking into account the possibilities of financial support for development and modernization processes, we can assess that under the current and foreseeable conditions, the implementation of such an endowment is possible to be carried out only gradually, in the medium and long term and depending on priorities.

The Naval Forces' procurement strategy includes acquisition and modernisation programmes aimed at creating a balanced structure of modern capabilities needed to fulfil new missions. Such missions specific to military divers call for the urgent need to equip them with vessels that are indispensable for their success.

Recent military and security developments in the Black Sea provide an insight into the need to modernise the Romanian fleet and its components, and the decision to make major investments in the capabilities of the naval forces will bring, in addition to national benefits, a major contribution to increasing the defence capability of the Standing Naval Groups, as required by the current NATO Defence Planning Process.

Based on a firm commitment to increased defence spending, Romania has today become the sixth NATO member, along with the US, Greece, the UK, Estonia and Poland, to meet the percentage of GDP set for such spending.

Thus, on the basis of an effective procurement plan, Romania's military could be equipped with state-of-the-art capabilities that will enable it to face and contribute to the Alliance's joint effort to ensure regional security.

Conclusions

In conclusion, Romanian combat divers have actively participated in most of the Naval Forces missions both nationally and in the allied framework. Equipping them with state-of-the-art equipment is essential for the success of the actions, but it is closely linked to the Romanian Navy or Army's procurement programmes.

In the conditions of modern warfare and in the current geopolitical and geostrategic context of the Black Sea, the complexity and dynamics of combat operations that may take place in the area of responsibility create new specific tasks in the maritime combat domain. The role and importance of Romanian combat divers in the conduct of these operations has increased considerably.

As far as the technological perspectives for combat divers are concerned, they should be correlated with the equipment of NATO partners, because having standard tactics, techniques and operating procedures with NATO partners should also keep us abreast in terms of technological perspectives. The current situation is acceptable and we can successfully carry out our missions, but we must understand that this area of warfare must be regularly upgraded with state-of-the-art techniques and equipment in order to maintain our prestige as an elite force.

Despite recent rapid changes in the evolution of diving techniques and methods, the human factor remains fundamental to diving activities. Ongoing technological development of diving equipment and methods will also involve the development of human capabilities and skills, which cannot be replaced by any technology. The modern combat diver must have a broad understanding of the physics of the marine environment and a detailed understanding of its physiology and how it is affected by the environment. He must learn to adapt to environmental conditions in order to perform successfully.

Although the technique has evolved greatly, the combat diver is still the factor that executes the last stage of the action. Even if ROVs, sonars, mini-submarines or AUVs will provide us with complex information about the target, transport us faster and safer to the raid, the last stage of the action will still be executed by combat divers, regardless of their specialisation, SOF, EOD or river divers.

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