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Jacek Bartosiak
Tomasz Szatkowski

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Editors

Tomasz Szatkowski, Jacek Bartosiak

Technical editor and cover designer
National Centre for Strategic Studies

Cover photo

Wojciech Zalewski

National Centre for Strategic Studies
Al. Solidarności 115/2, 00-140 Warsaw
phone: +48 663 870 106
e-mail: office@ncss.org.pl, <http://ncss.org.pl/en>

Geography of the Baltic Sea Military Perspective

**IMPLICATIONS
FOR THE POLISH ARMED FORCES
MODERNISATION**

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Tomasz Szatkowski is a President of the Foundation of National Centre for Strategic Studies; holds MA in Law (Warsaw University) and MA in War Studies (King's College London), has also completed National Security Postgraduate Studies (Warsaw University) and a staff officer's professional development course (Naval Postgraduate School - Monterrey); is a winner of the UK Government's Ministry of Defence/Chevening scholarship (2004), and the US Department of State International Visitors Leadership Program grant (2007) as well as the Asmus Policy Fellow of the German Marshall Fund of the United States (2013). Tomasz Szatkowski possesses a multiannual and diversified experience within national security issues, in particular in defence, armament, defence procurement and defence industrial policies as well as in oversight of intelligence services, which he acquired with successful achievements on senior positions at the Polish Parliament, Chancellery of the Prime Minister of the Republic of Poland, defence industry, public media and at the European Parliament; he is an author and co-author of several articles, op-eds, analyses and commentaries regarding those issues, which have been published in a daily press, internet, political quarterlies as well as appeared in television, both in Poland and abroad (United States, Visegrad Countries).

Jacek Bartosiak is a senior security analyst, member of the Council of the Foundation of National Centre for Strategic Studies (NCSS); graduate of the Law Faculty of Warsaw University, attorney at law; expert of the Republican Foundation, member of the Polish Navy Ship Construction & Procurement Council. In NCSS his areas of expertise include strategy, national security issues and international relations on which he has frequently contributed to print and broadcast media.

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INTRODUCTION

The Baltic Sea is an important strategic spot in Europe, where the interests of the countries in region and important maritime transport routes intersect and overlap. Recently, increased cooperation on the underwater pipelines, transmission and maritime transport of key strategic raw materials in the Baltic Sea area has been expanding. Any analysis of the strategic and military importance of the Baltic Sea for Poland is strictly hinged upon the independence of the Baltic States, Belarus and Ukraine. More, a thorough analysis further elevates the necessity for regional cooperation prospects with Sweden and Finland on security issues. This study presents in detail the strategic and military implications of such cooperation in the event of rising tensions in the region. The report further indicates recommendations for the Polish Armed Forces' modernisation effort, with the particular emphasis on the Polish Navy assets.

AFTER 2008 CHANGE

Since 2008 Poland's geopolitical landscape has been changing and any plans to modernise the Armed Forces including the Navy must take the new developments into account. The most important changes include:

- economic and political crisis of the European Union and, consequently, its uncertain future – it is not unlikely that the EU will evolve in direction that was not conceived by EU founding fathers;
- relative military and political withdrawal of the United States from Europe and economic and fiscal crisis constraining Pentagon capabilities; weakening of the American primacy in shaping the world order that has – to a considerable extent – addressed so far Poland's security concerns;
- at least temporary increase of the Russian Federation political power and significance manifested in the Russian policy aimed to reconstruct the Russian zone of influence; Russian progress in strengthening close military ties with the army of Belarus;
- palpable new dynamics in the geopolitical state of affairs. America's challenge in the Western Pacific may lead to recalculating relations with other partners. New modus vivendi with the Russian Federation on energy issues in the Arctic and cooperation in containing the rising power of China may not be excluded. Such trends need to be analysed in a broad context of consequences for current cohesion of the NATO and U.S. support provided to the East and Central European countries;
- weakening of military capabilities and lack of essential cohesion of the North Atlantic Alliance which has been so far perceived as a main pillar of the Polish security; in 2010 the NATO Lisbon Summit agreed the New Strategic Concept that expanded the scope of assignments and in a way restored the emphasis on the collective territorial defence. As a result, the following military exercises focused on potential implementation of Art. 5 of the North-Atlantic Treaty were conducted. This positive development may not, however, blur the underlying negative trends within the NATO;
- “The return of geopolitics” applies also to the European continent. The above trend is related to emerging divergence of interests and a threat perception among individual countries in the Euro-Atlantic community upon which NATO and EU foundations were based, which may render NATO unable to implement and enforce Art. 5 of the Washington Treaty¹.
- given the reductions in European military spending the importance of regional defence cooperation groups is increasing. Apart from the role of

¹ More on this subject: The U.S. Department of Defense: *Sustaining US Global Leadership: Priorities for 21st Century Defense* available at: http://www.defense.gov/news/defense_strategic_guidance.pdf ; “*Strategy in Austerity*” – Center for Strategic and Budgetary Assessments; “*The Future of American Landpower: Does Forward Presence Still Matter? the Case of the Army in Europe*” - Strategic Studies Institute (United States Army War College). As an example please note the unsatisfactory level of participation of some NATO allies in Steadfast Jazz military exercises in autumn 2013.

creating more effective combat capabilities these groups can obtain a new geopolitical role. Due to Poland's geographical location the perspective of deepening cooperation with the countries around the Baltic Sea, especially Sweden and Finland, is particularly interesting. Recently, the U.S. growing interest in developing cooperation between Sweden, Finland and their NATO neighbours has been noted.

Any prospect of armed forces modernisation should reach out in its plans, at least, until the end of the next decade. In this perspective, Polish defence planning should therefore be prepared for a major shift in the security landscape of the region including increase of the Russian ambitions well supported and resourced by the post Georgia war profound modernisation of the Russian Armed Forces including the Russian Navy. The Russian policy constantly aiming to rebuild the influence zone and subordinate the neighbours in the western and southern peripheries result from objective geopolitical reasons and the Russian geographical location; as such that policy has always been a threat to the independence and prosperous development of Poland and other countries in the region. Russia modernises its military potential and seems to have jettisoned a conscription-based old army model designed to defend its own territory. The currently implemented model of the army is crafted to enforce the Russian interests abroad and is supposed to provide power projection capabilities in the region. This effort is augmented by significant increases (manifold over the last decade) in military spending. It is assumed that until 2020 the Russian army will continue making a significant military effectiveness leap, both technologically and with respect to combat capabilities, in particular enhancing the modern, non-linear and based on the information warfare/network fighting potential, also in the already noticeable cooperation with some of the Western countries². Increasing of Russian's conventional capabilities bears one positive consequence – this being the lowering of the peril of tactical nuclear strike.

From the perspective of geography and fundamental principles of geopolitics Poland is a land power and all wars with its participation or on its territory were being fought and won on land; not by means of sea blockade, key port landings or other use of naval forces or any sea power projection. This is why, militarily, the Baltic Sea constitutes for Poland a theatre of secondary importance, without decisive significance in major war³. In the event of global conflict, as well as of conflict of great intensity, this historically proven rule would repeat in the future. This fundamental contention must be taken into consideration in determining the Polish Army, Air Forces and Navy modernisation priorities and, respectfully, expenditures

² More on this subject: „*The Russian Military Today and Tomorrow*” – Strategic Studies Institute (United States Army War College); Steven E. Miller – *Moscow's Military Power: Russia's Search for Security in an Age of Transition*”; *Military Modernisation and the Russian Ground Forces*” – Strategic Studies Institute (United States Army War College); Marcel de Haas – *Russia's Military Reforms. Victory after twenty years of failure?*; *The Russian Military and the Georgia War: lessons and implications* – Strategic Studies Institute (United States Army War College); “*Can Russia Reform? Economic, Political and Military Perspectives*” – Strategic Studies Institute (United States Army War College); numerous studies of the Polish Eastern Study Centre available at: <http://www.osw.waw.pl/>; studies of the analytic Russian centre CAST available at: <http://www.cast.ru/>.

³ See „*Assuring Access in Key Strategic Regions*” – RAND Corporation; Collin S. Gray, Geoffrey Sloan – “*Geopolitics, Geography and Strategy*”.

to be made to that end. The allied defence operation of the Baltic States would be the only exception to the above principle but in order to have any chances for success such operation would need to involve major naval and air components of the allies as well as the possibility to use the Swedish and Finnish airspace and maritime territories.

The purpose of this study is to prove that in most probable crisis scenarios the ensuring that territories and airspace of Belarus and Ukraine would not serve the Russian Armed Forces' effort in the event of hostilities against Poland is of fundamental importance and bears direct effect on the importance of the Baltic Sea itself for any military planning or Polish Navy modernisation effort. The possibility of politically or militarily unhampered use of those by Russian forces renders any plan to use the Baltic Sea for Polish military operations much less vital since, then, the Baltic operation theatre will not have a significant impact on the course or fate of military operations conducted in the gravity and strategic centre of the conflict that will shift to the land area some 150 km east of Warsaw up to Warsaw itself and, additionally, is likely to engulf country's key infrastructure locations. Even optimistically assuming the feasibility of the allied defence operation of the Baltic States Poland need not invest in the blue water navy capabilities.

In view of the above trends and in relation to the long-term modernisation plans for the Polish Navy that were announced in 2012, there appears an obvious need for re-defining of requirements for the Polish Armed Forces operating in the broader Baltic Sea basin, including the role and strategic challenges facing the Navy over the next two decades. This is particularly important in view of the strategic, operational and technological requirements dictated by the Baltic Sea. Most all of, this pertains to a peculiar geographical environment of the region and the Baltic Sea itself which implicates serious consequences for the strategic assumptions based on which any armed forces operate, for the forces' operational capabilities and, in a broader perspective, for assets and equipment acquisition as well as for the nature of Baltic warfare, operation planning, crew and personnel training, etc.

IMPORTANCE OF THE BALTIC SEA

Historically, the Baltic Sea has been a water basin of relatively high importance for several reasons. In the past, many countries of the region had large deposits of raw materials required for ship construction e.g. wood, pitch, hemp, iron, copper etc.; essential raw materials were being imported to England, the Netherlands, France, and even to Italy. Today, the Baltic Sea is of great commercial importance as well; through the Danish Straits sail several hundred ships a day, amounting to app. 100,000 vessels⁴ per year. Industrial extraction of raw materials from the Baltic seabed has recently intensified; the NordStream pipeline project transporting natural gas from Russia to Germany had been successfully launched and some time ago became fully operational.

Countries of the region such as Russia (Soviet Union), Germany, Poland and Sweden significantly influenced the course of European and world affairs⁵. Baltic region countries are highly dependent on the Baltic trade and communication routes impacting the level of prosperity and well-being of nations⁶. From the military and strategic view the Baltic Sea after World War II was part of the northern NATO flank encompassing Norway, North Atlantic and the Kola Peninsula. Rapid expansion of the Soviet Northern Fleet⁷ on the Kola Peninsula after 1964 lasting until the mid-80s of the XXth century raised serious security concerns of the Western analysts. For the overall war effort in the East-West confrontation – the Baltic Sea was not a primary war theatre but the possibility of capturing the Danish Straits by the Warsaw Pact forces was being considered to have strategic effects for the land war effort in Europe, and for the communication/supply lines connecting the continent with the British Isles and the Atlantic.

Unimpeded passage through the Danish Straits would have also given the Soviet submarine fleet a robust capability of force projection⁸ in the North Sea and North Atlantic in close proximity to the British ports, regardless of similar operations carried out by the Soviet Northern Fleet.

From a strategic perspective the Baltic Sea must be regarded as a separate theatre of operations due to its geographical location practically closed from other seas in all directions. The importance of the Baltic Sea as a sea basin has also been

⁴ <http://www.janes.com/products/janes/defence/det-products/fighting-ships.aspx>

⁵ Therefore, tsar Peter the Great founded and built the city and port (and a capital of his state) of St. Petersburg; Poland, Russia and Sweden waged wars for domination over trade and ports of the Baltic Sea, primarily in Livonia, i.e. current Baltic States (without Lithuania).

⁶ The least dependent on maritime transport is Poland located in the centre of the land axis of the European east-west transport route; but the Baltic States and Finland would suffer painfully from any disruptions in sea transport and cargo carriage through the Baltic Sea.

⁷ From a strategic and also operational point of view, the Russian Navy (formerly Soviet) consists of four separate fleets, which basically will find it very difficult to work together and support each other in the event of a regional conflict in the Baltic Sea: Baltic, Northern, Black Sea and the Pacific fleets.

⁸ In this study, the term “force projection or projection of power” is used to illustrate the possible combat impact of an actor in a certain area to the extent compelling an adversary to reckon with these capabilities in the event of conflict.

significant for war shipping industry and crews training. The Soviet Union invested in the Baltic shipyards more than 50% of the shipyard production capacity as well as a majority of devices for sea trials. 85% of all surface vessels of the Soviet Northern Fleet were built in the Baltic shipyards and were subsequently maintained at the Baltic ports' technical repair and overhaul facilities. Russia has continued this tradition. New Soviet ships, as well as - currently - Russian ships, customarily used to hold several months long sea trials in the Baltic before being commissioned to active service. During both World Wars German submarine fleet trained its crews in the Baltic Sea.

GEOGRAPHY OF THE BALTIC – MILITARY PERSPECTIVE

The Baltic Sea is about 700 nautical miles long and between 100 and 200 nautical miles wide. The Baltic water is cold and shallow; rarely exceeding depth of 150 meters. The only exit from the Baltic Sea are the Danish Straits located in the south-west of the basin, which are a primary transport route to and from the North Sea. Approaches to the Danish Straits are divided into three groups: Jutland in the west, Funen Island in the center and Zealand in the east. The Danish island Bornholm, occupied by the Soviet Union in 1945, constitutes an excellent observation point between the main body of the Baltic Sea and the approaches to the Straits leading towards the North Sea. The southern approach to the Straits is very shallow and does not exceed 40 meters. Only in the northern part of the Skagerrak does its depth exceed 180 meters. Key exits from the Baltic Sea are narrow winding straits: the Little Belt between Jutland and Funen and the Great Belt between Zealand and Funen; and the Sound between Zealand and Sweden. None of these arteries exceeds 10 nautical miles in its width. During winter season a limited ice cover occurs restricting the movement of small vessels. The Danish Straits and the approaches have traditionally been places of great economic and political importance connecting Scandinavia with Central Europe. The Straits form a barrier controlling entrance to and exit from the Baltic Sea. In the European game for balance of power they were an area of key strategic importance. Seizure the control of that area was a strategic objective for both sides of the Cold War⁹.

An obvious implication of the geography of the Danish Straits is the fact that a state that renders control over the Straits will be in a position to impose political solutions on the country dependent on the sea lines for its economic or military survival. The war between thus dependent countries will be therefore rather short; assuring the favourable attitude of the state controlling the Danish Straits will be the key strategic achievement in the war. This contention applies by all means to the situation where Poland would expect assistance from the United States or the United Kingdom, while Germany, Sweden or Denmark would not support Poland in a local conflict in the Eastern Europe or in the Baltic Sea region.

The only other exits from the Baltic Sea are two man-made canals that were built for the safe passage of German ships and vessels from the Baltic Sea to the North Sea (the Kiel Canal) and for Soviet vessels from the Baltic Sea to the White Sea/Barents Sea (from St. Petersburg via Lake Ladoga) - the White Sea Canal. The Kiel Canal was completed in 1898 and facilitated for Germans dislocation of warships from the Baltic Sea to the North Sea. Both above mentioned exits from the Baltic Sea are easy to damage or block in the event of hostilities, and have obvious strategic weaknesses (poor throughput and possibility of destruction by air raids).

Looking at the Baltic Sea from the Arctic perspective, one can see a basin resembling a closed lobster claw, in which Norway and Sweden constitute the upper

⁹ More about military aspects of the Baltic Sea geography: John L. Green - „*The Baltic – a Sea in Transition*”, Naval Postgraduate School; *The Bundesmarine – Operational Capabilities and Contributions to the Alliance*” – National War College.

part, Germany and Denmark the lower part, and Poland, the Baltic States, the Kaliningrad enclave, St. Petersburg area and Finland constitute the inside of the claw. Endings of both parts of the claw have always been regions of primary strategic importance, and the interior has been an area of the most ferocious military struggles in the history of mankind¹⁰.

Most dominating and striking feature of the Baltic Sea, particularly its northern, central and eastern parts, is the presence of a large number of islands and islets. A few of them have a formidable strategic location, and many of them constitute a perfect place for bases, logistics centres, staging points and places for Special Forces' operations or ambushes. Zealand, Fyn and Bornholm islands are crucial for controlling the Danish Straits and for implementation of the plans to control the Baltic Sea waters at the strategic level. The Swedish island of Gotland, located in the middle of the sea divides sea routes into Swedish and the Baltic States' side, creating for the Swedes the possibility of complete control of all sea routes and movement of ships and vessels in the central Baltic Sea¹¹. The Finnish Aland Islands located at the entrance to the Gulf of Bothnia ensure control of all ship movement towards the north. Because of their location the Aland Islands were in the past perfect staging areas during all armed conflicts in the Baltic Sea¹². The narrow exit from the Gulf of Finland is another area in the Baltic Sea of the vital strategic importance. The Germans successfully used it during World War II for locking the Soviet Navy in Leningrad after laying minefields and setting up the anti-submarine nets across the entrance to the Gulf. These methods as well as the winter ice cover in the Gulf effectively limited Soviet Baltic Fleet operations¹³. The Gulf of Finland is particularly important now, since for the geographical reasons the very existence of independent Estonia makes the Russian fleet susceptible to being locked in their own ports in the Gulf of Finland¹⁴. This fact alone shows how important for the geopolitical situation of Poland is the existence of independent Estonia (along with

¹⁰ According to the grand geopolitical concepts this area is a crush-zone between a heartland and rimland, i.e. an area of clash of influences of political centres controlling the area positioned economically and politically towards the Mediterranean and the Atlantic with the political centres positioned towards the Eurasian continent and exploiting its resources. Further, as explained in those geopolitical concepts, the crush-zone, with Poland forming its main lowland midpoint, is one of the most important areas control of which is required to effectively exercise dominance in Eurasia as the most important land area in the world that is not inherently prone to be subdued from the sea-oriented economic and military power projection - see Halford Mackinder - "Democratic Ideals and Reality", Robert. D. Kaplan - "The Revenge of Geography".

¹¹ On the other hand, as duly noted by Gen. (ret.) Karlis Neretnieks of the Royal Swedish Academy of War Sciences the loss of Gotland and its use by enemy for operation of effective AA systems (e.g. S-400s) would seriously restrain freedom of action of the Western aircraft.

¹² In 1921, the Aland Islands were demilitarised, which was confirmed in the Treaties of Paris in an additional clause in 1947. It is known, however, that the Finnish Navy patrols the waters around the islands and in the event of war it will use and defend them.

¹³ Attack of German Army towards Leningrad forced the Soviet Baltic fleet to evacuate the port of Liepaja, Riga and Tallinn; after breaking the siege of Leningrad in 1944, the Soviet light naval forces aided flanks of the army operating towards the Baltic Sea by attacking German lines of communication, making successful landings and artillery attacks from the sea.

¹⁴ In the Baltic Sea Russia currently has only app. 100 nautical miles of the coastline; the Kaliningrad Oblast is strategically surrounded by Poland and Lithuania.

Latvia and Lithuania). This also proves how important and of what strategic potential is the cooperation with Finland and Sweden in the region.

The Baltic Sea basin contains a large number of bays, peninsulas, islands and islets; particularly numerous near its north and west coast. The average depth of the sea is 52.3 m, maximum - 459 m (Depth Landsort in the north - west from Gotland). The depth located closest to Poland - depth of Gdansk - is 118 m deep. Low salinity of the Baltic Sea is mainly caused by relatively low temperatures and, associated, lower rate of water evaporation in this latitude. The Baltic Sea is stormy and its waves are famed for being short and rough. A typical wave height is 5 m. The waves during severe storms are violent, disordered, often reflected and coming from different directions, their height reaches 10 m. The distance between the waves' tops is at the same time short - just 50 meters. Due to those reasons, the Baltic Sea is considered very demanding sailing environment. The strongest waves are caused by cyclones (lows), approaching from the west or the east. The sea is most violent in January, and quietest in June. The Polish coast of the Baltic Sea every year features 20-25 days of storms. Surface water temperature, depending on the time of the year, ranges from -0.5 to +20 ° C.

The Baltic Sea, especially in its northern part, represents sea conditions close to the Arctic ones. The Gulf of Bothnia, the Gulf of Finland and the Gulf of Riga are covered with ice in winter for 2 - 5 months. In this part of the sea the icebreakers are in high demand as well as other units adapted to operate in such severe conditions. Small attack units such as missile boats and surfaced submarines, smaller minesweepers and mine destroyers have difficulty in maneuvering and executing tasks in the event of ice cover existence.

CONSEQUENCES OF THE BALTIC GEOGRAPHY FOR THE MILITARY OPERATIONS

According to Professor Colin S. Gray sea warfare operations are merely an enabling factor and as such they do not constitute a decisive factor in a key strategic environment – that being a land – as it is the land that still matters most. Not trying to fully ignore the importance of sea blockade the above contention was repeatedly confirmed by history when Napoleon Bonaparte or Adolf Hitler dominated the European landmass despite the relative weakness at sea. And in order to bring them defeat the land victory had to be achieved – as battles at Lepizig, Waterloo, Stalingrad or Normandy proved. The Allies' upper hand at sea was an enabler but not a decisive factor. The same pattern was to be seen during the Cold War when the military attention was mostly paid to prospective land battle and any sea operations in the Northern Europe were of secondary importance. In principle, the maritime military theatre is all about three elements: First - insular character of landmasses engulfed by sea and ocean waters. The second element is a fact that a vast majority of human activity remains within 200 km of the sea coasts and navigable rivers; sea commons are the highways of the world trade. The third element has always been crucial for powers resting their wealth and prosperity on sea commerce (Fenicieans, Netherlands, United Kingdom, USA). As early as 100 years ago Halford Mackinder noted wisely that the development of land and air means of transportation, to some extent, would likely alter the perception of sea powers. The return of some of the western European countries to blue water navy strategy is a result of restoring balance after the Cold War period, when they were highly focused on the land-air danger from the Soviet Union, although it is not an universal trend.

The role of the above three elements in the Baltic war theatre is further limited due to exceptionality of geography of the Baltic Sea. The shape and proximity to shores combined with the weapon technological development (range and precision) of reconnaissance and strike capabilities make the Baltic Sea practically a lake. That diminishes the role of the navy as the striking capabilities covering the Baltic Sea may sufficiently be stationed on land. In a present geopolitical situation of Poland there exist at least a few options for land and air transportation routes reducing the dependence from sea supplies. At the same time the afore presented geographical conditions of the Danish Straits determine that in a possible future war in the Baltic Sea region maintaining of communication routes through the Danish Straits will not be in any way dependent on the capabilities and potential of the Polish Navy, which in case of hostile or unfriendly attitude of the countries at the Straits will not be able to control those crucial sea routes. Allied or at least neutrally favourable attitude of the countries controlling the area will be essential for maintaining sea trade routes from Poland to the Atlantic and the North Sea. The same applies to the Polish Navy capability to project power outside of the Baltic Sea. Regardless of how powerful and formidable the Polish Navy might be, its operations and fate outside the Baltic Sea will be entirely dependent on the attitude of the countries controlling the Danish Straits. In other words, the geography determines that the Polish Navy must be limited in its size and capabilities to the Baltic Sea, as all other operational plans are

entirely dependent on safe passage through the Straits. Calculating costs with effects, having in mind that construction and operating the sizeable fleet (in particular – surface fleet) is a very expensive undertaking, it must be assumed that possession of such does not make much sense when it comes to operations outside the Baltic Sea¹⁵. The commitments Poland would wish to fulfil to its allies may be better prosecuted by, e.g. use of effective air forces or special operation forces. Otherwise, any presence of Poland outside the Baltic Sea has only a symbolic dimension (flying the national ensign).

It will be utterly impossible to ensure the safe functioning of the liquid gas shipment in case of any major hostilities. The energy security will have to be achieved through pre-storage of spare gas. And in order to ensure safety from the terrorist attacks no advanced surface fleet equipped with advanced weaponry is required.

The other aspect, which must be considered from the Polish Navy's point of view, is an operational character of the sea conflict and the two fundamental differences between it and land operations. First of all, unlike on land, where according to the famous rule phrased by Carl von Clausewitz defence is the most efficient way of combat, at sea an offensive party is in favour as was duly noted by an outstanding theoretician of the sea warfare Alfred T. Mahan. Secondly, as regards the sea war operations it must be remembered that at sea the offensive action is aided by the sea environment itself as it relentlessly offers no shelter to a weaker party as a land battle terrain does thus favouring the defence. Therefore, according to Professor S. Gray and King's College London lecturer – Professor Sir Lawrence's Freedman the sea battle favours the mathematical strength and technological advantage. It is worth noting though that this rule applies to surface operations as the submarine warfare alters that calculus mainly due to the possibility to "hide" and take advantage of underwater anomalies. The rule does not apply to mine warfare where a weaker party may in asymmetrical actions effectively impede any sea operation of a stronger adversary. Other direction of asymmetrical strategies is A2/AD (*anti-access/area denial*) capabilities often based on cheap, easily sheltered and dispersed precise striking platforms that effectively deprive an opponent from the freedom of manoeuvre¹⁶.

The Baltic Sea is characterised by coastal (littoral) sea characteristics and this determines peculiarity of the development of naval forces in the region. Fleets of the region primarily have focused on the submarine warfare with the conventional submarines playing the key role, mine-warfare ships and smaller missile boats¹⁷. Recently, along with the revolutionary technological development of new

¹⁵ The so-called "blue-water capability" of a navy, very expensive in acquisition and maintenance, usually reserved for maritime superpowers like the U.S., and currently to a far lesser extent - the United Kingdom or Japan, as opposed to "white-water capability" or "littoral warfare capability" of fleets operating in the Baltic Sea and other closed seas or coastal waters.

¹⁶ More on the subject see at: <http://www.csbaonline.org/publications/2013/08/the-evolution-of-precision-strike/>

¹⁷ However, small missile boats do not have sufficient air defence weaponry, which makes them easy to destroy by enemy aircraft, particularly in a small basin.

generations of anti-ship missile system, armed forces in the region have acquired the coast-based mobile missile systems capable of aiming and hitting targets from covert positions on the coast.

During the last decade, with the operational development and maturing of technology of air-independent propulsion (AIP) for conventional submarines, it has become possible to use submarines operationally on a combat scale and with effectiveness previously unavailable. This will enable exploiting the strengths of conventional submarines in comparison with the nuclear ones, such as small size, low detection and much lower cost of acquisition and staff training. Technology of AIP (Air - Independent Propulsion) might have a significant impact on the Baltic Sea military operations in the coming decades and on the submarine warfare tactics. AIP allows a submarine to remain in non-stop submersion for a few weeks while remaining more quiet and more maneuverable than huge nuclear ships, which gives submarines with AIP system a huge operational advantage in the Baltic Sea littoral environment against all types of surface ships, submarines of older generations (especially against the Russian vessels known for their noisy underwater track¹⁸), and even against nuclear submarines. AIP system enables modern submarines to take advantage of the Baltic Sea features in the conduct of the so-called "littoral warfare", i.e. submarine warfare in the coastal sea conditions (shallow, sonar loud, demanding maneuverability), and therefore ideal for conventional submarines if enhanced by AIP capabilities. Notwithstanding the above, a key decisive factor might be the cost/effect ratio of the AIP submarines since such vessels are still far more expensive than the conventional submarines without AIP. This may change in time but for the time being the AIP submarine procurement should be decided based on the future operational roles of the Polish Navy submarines. Some experts claim that hunter-killer missions in the Baltic Sea could be effectively performed by a larger number of diesel submarines (without AIP) as the Baltic Sea does not require long transits. Should the submarines be designated the strategic tasks such as "blue water" operations or deterrence requiring the long range cruise missile launch capabilities then the AIP equipped submarines might be a more reasonable option. The most recent technological novelty worth considering, irrespective of a class of submarines to be procured is AA capabilities of German IDAS system improving survivability of submarines but also imposing costs on the enemy ASW operations.

In the Baltic Sea a mine and anti-mine warfare with the application of remotely controlled ships and means of detection/reconnaissance (especially in stealth technology) will remain a key capability. This, along with AIP submarine systems will have a significant impact on future maritime activities in the region. In its submarine operations the Polish Navy could adopt use of mine belts, which can carry dozens of mines on either side of a submarine for delivery.

Any actions against submarines in the Baltic Sea are more difficult than in other seas because of the cold and shallow waters of the Baltic. Difficulties in combating submarines are intensified by large deviations in water temperature, its

¹⁸ The Russians are trying to develop their own AIP systems for submarines, but so far without success, consecutive technical tests do not bring satisfactory results.

salinity, jagged and rough Baltic seabed, underwater archipelagos of seabed acclivities, numerous islands, magnetic interference characteristic of the Baltic, very poor visibility, strong currents of different, often unpredictable directions. Fresh water from ice cover and numerous islands supplying this small, closed sea make conditions of anti-submarine war even more difficult. All the above mentioned conditions underline efficiency of submarine fleets, combating which is so difficult in the Baltic Sea. On the other hand, the same difficult sea conditions apply to actions of submariners. The art of command and operating a submarine in the Baltic Sea is one of the most difficult challenges of marine craft. The small size of the basin, shallow water, and many islands favours relatively small quiet submarines with conventional propulsion. As a rule, smaller than the nuclear-powered ones, conventional submarines are more difficult to detect than larger and louder nuclear giants¹⁹. AIP technology has made them almost as efficient as nuclear ships, which, if the costs of procurement sufficiently drop, will probably revolutionise the submarine war²⁰, for sure in littoral waters.

Limited water depth makes also mine-warfare very effective. The Baltic Sea's water depth often corresponds with the maximum effective depth of bottom mines in many key maritime communication areas. Location of mines is particularly important for preventing landing operations; removal of mines takes days or weeks and carries the risk of damage or loss of a ship²¹. Mines are cheap and easy to use, while a wide range of their types makes it easier to plan the sensible use. During World War II the mines sank more ships and vessels than any other means of combat in total, and during the 1991 Gulf War damaged more coalition vessels than other means of warfare. It is important that all fleet units have the capability to lay mines; this should include submarines as well as aircraft.

A small size and oblong shape of the Baltic Sea (proximity of the shores) creates the situation where air forces (both attack and reconnaissance components) are a decisive element of the military strategy; air bases on the coast are a *sui generis* substitute for aircraft carriers. Hence, the countries of the region (e.g. Nordic countries) devote considerable effort to train their air forces for maritime operations. The main tasks of larger vessels (frigate, destroyer, force projection ship) of small navies of the Baltic Sea region (that means all excluding Germany and Russia) have changed. For the sake of geography location the navies of Norway and Denmark switched from the Cold War vintage selection of mine-warfare vessels and torpedo/missile fast boats to the larger blue navy ships (Absalon, Fridtjof Nansen).

¹⁹ They are also at least several times cheaper and easier in staff training.

²⁰ How important during wars, even today, submarines are, can be illustrated by the following example: during the Falklands War in 1982 a single Argentinian conventional submarine (without AIP system) with inexperienced and freshly assembled crew threatened the British Navy plans; the British being aware of the threat it posed, employed two helicopter ships designed and trained for ASW operations, fifteen frigates and destroyers, and additional ASW aircraft, as well as a few submarines; in spite of this formidable ASW force the Argentinian submarine cruised an 800 nm combat patrol lasting six weeks and made three torpedo attacks - the British used approx. two hundred depth charges and missiles being lucky not to have lost a ship; AIP technology will make the art of anti-submarine warfare even more difficult, especially in the Baltic Sea.

²¹ That knowledge brought about the decision not to carry out amphibious landing during the first Gulf War in 1991.

This metamorphosis has not found root in the navies of Finland and Sweden. In the post-Cold War era the largest Swedish vessel is a small (600 t) corvette Visby. Before 2008 Russia's war with Georgia Finland was considering replacing small mine-warfare boats with larger vessels more suitable for international commitments. It is being assumed now that due to the current enhanced Russian assertiveness in the region this idea will be reconsidered.

Assuming the territorial defence will remain a main challenge in the future and in context of the above mentioned reasons strictly related to the Baltic Sea geography the main war vessels of the Polish Navy should be the modern conventional submarines capable of attacks against surface ships and submarines using torpedoes and missiles, conducting mine warfare and combating aircraft. Performing a wide spectrum of operational and combat capabilities: deployment beyond the Baltic Sea, transportation of special forces operators, reconnaissance and strike drone (UAV) operations, underwater and surface robots operations should influence the decision whether to procure the AIP submarines. In particular this concerns the development of the Polish deterrence forces as the AIP submarines might make a perfect, albeit more expensive, platform to perform high-precision cruise missile strikes against key strategic high value assets located on the coast or inside the enemy territory.

Implications for the Polish Navy

For the above outlined reasons, the Polish contingency plans ought not to put too much hope in the maintenance of routes on the same level as in the peacetime. The geography determines that the naval forces assembled in the Baltic Sea are likely to remain in the region during the conflict. Technological developments in submarine (in particular AIP) and mine warfare (new types of mines, underwater robots, recon drones (UAVs) working with submarines, special forces or coastal missile squadrons, ships with non-magnetic hulls, etc.), will greatly facilitate actions against even a much stronger adversary²² who in order to enter the open waters of the Baltic will have to come out from its locked ports through narrow passages controlled by other countries and will have to pass through minefields just to face and overwhelm a fleet of quiet and difficult to be preventively destroyed submarines (in particular those equipped with AIP systems)²³.

Hence, there is a need for urgent consideration by the Polish Armed Forces of training multi-role combat aircraft squadrons intended also for maritime operations. This would necessitate a purchase of new aircrafts, ideally with a combat radius of

²² The Baltic Sea geography puts the Russian fleet in a highly disadvantaged position strategically and operationally; it is relatively easy to block Russian ships in ports: Kronstadt, Petersburg, Baltiysk and Kaliningrad.

²³ About the strategic importance of straits, narrow passages and channels for seizing control of sea and achieve the victory in sea combat see Alfred Mahan - "The Influence of Sea Power Upon History" and "Nicholas Spykman -" America's Strategy in World Politics".

app. 1,000 km²⁴, i.e. considerably longer than the radius of currently operated F16C/Ds, dedicated also for maritime warfare. Such operational radius would allow for the projection of Polish forces' power as far as in and around the Danish Straits and at the entrance to the Gulf of Finland - the two key areas for control of activities in the Baltic Sea, not to mention the activities around the Kaliningrad enclave. This radius would give an operational freedom of combat action in the Gulf of Riga, which would be of great importance for combat missions if need arises for the Polish forces to use airspace of the Baltic States. These aircrafts should be equipped with traditional anti-ship armament to engage the enemy ships as well as stealthy modern missiles, enabling the long-range striking capability against key targets located inside the enemy territory as far as from the entrance to the Gulf of Finland or the inside of the Gulf of Riga. Airfields with new aircraft squadrons should be preferably located in the western part of the Polish Baltic coast in order to cover within the operational radius the western (including the Danish Straits) and the north-eastern part of the Baltic Sea (up to the entrance to the Gulf of Finland). The same remark applies to the selection of a location for a new operation base for new submarines to be procured to the Polish Navy. Their importance, as the Navy's most powerful assets and their strategic deterrence and striking capabilities (in case of procurement of long-range cruise missiles) should be a convincing argument to station the future modern submarine fleet somewhere at the western border of the country.

²⁴ Those requirements are currently met only by the Eurofighter/Typhoon, Rafale and F35A Lightning II.

STRATEGIC IMPORTANCE OF THE BALTIC SEA. FUTURE CONFLICT SCENARIO

In predicting the possibility of occurrence of any future armed conflict within the broad Baltic Sea area one must take into account the risk of weakening cohesion, solidarity and military strength of NATO, as well as the recent gradual deterioration of the geopolitical situation of Poland. Those are the preconditions for occurrence of military conflict with participation of Poland. Should the NATO maintain its deterrence credibility and cohesion such scenario is becoming less viable. In case, however such a scenario takes place, either in the form of the threat to the Baltic States, or directly to Poland, Polish Armed Forces can specialize in land or to some degree in aerial dimension of warfare. Such an approach may be even facilitated by the present tendency to specialize the defence capabilities among the Allied States (within the Smart Defence or the Framework nations initiatives). Assuming, however, that the negative scenario, mentioned before, develops the geographical implications of the Baltic Sea region as well as of the Central and Eastern Europe give rise to conclusion that in any lower intensity conflict with the Russian Federation the Baltic Sea region can play an important role depending on various changing premises. The most important premises offering favourable possibilities for Poland are:

1. Allied cooperation with Finland and Sweden

Sweden occupies a geographically dominant position in the Baltic Sea²⁵, and has 1,100 miles of coastline and about 25 thousand islands, effectively doubling the length of its coast. Given the numerous and modern air forces and a relatively well-equipped fleet (submarines with AIP technology, stealth missile corvettes) Sweden may easily be a master of sea communication and air supremacy in the eastern and central Baltic Sea²⁶.

Finland's favourable strategic position at the northern coast of the Gulf of Finland gives this country the control over communication to and from the Russian ports of St. Petersburg and Kronstadt, potential control over Russian shipbuilding industry in the region responsible for construction and overhaul of ships - both of the Baltic and Northern fleets, and control over safety, welfare and prosperity of St.

²⁵ Thus, during the Cold War, NATO strived for being on good terms with formally neutral Sweden; and Sweden itself was taking into account waging the war against the Soviet Union and had, as far as conditions of the Baltic Sea allowed, a really robust navy (for example, in the 50s of the twentieth century Sweden had 7 battleships, 4 cruisers, 29 destroyers, 26 submarines, 21 torpedo boats, and was the strongest fleet in the Baltic. Being neutral during the Second World War Sweden had in the Baltic Sea by far a much stronger fleet than the German Kriegsmarine.

²⁶ The Swedish reforms of the defence sector over the last decade caused the decrease in traditional defensive capabilities. After the ostensible Russian military exercises in 2013, Sweden again in its operational plans puts emphasis on the defence of its territory.

Petersburg itself, the second largest city of the Russian Federation²⁷. The Finns are aware of their geographical location and expand their capacity to conduct mine-warfare. In addition, they took good care of requesting in 2012 from the Americans stealthy AGM-158 JASSM missiles for F-18C/D aircrafts, and introduced into service the mobile coastal missile squadrons significantly impacting the freedom of navigation in the Gulf of Finland.

The lack of Polish cooperation with Sweden and Finland allows the Russian forces the freedom of maneuver including the force projection capabilities on Polish coast and severing or seizure control over Poland's communication lines.

2. Independence of Baltic States and defence of Estonia

Keeping the Baltic States independent at least at the beginning of hostilities will render any Russian use of the Baltic States' ports impossible while putting up a defence of Estonia may block (scenario depending: either by NATO forces or allied Polish-Swedish-Finish-Estonian forces) the exit from the Gulf of Finland.

The Russian Baltic coast is now only 100 nautical miles long at the end of the Gulf of Finland with the ports of St. Petersburg and Kronstadt. Much further to the south a similar length of coastline is Russian in the close vicinity of the Kaliningrad enclave with the key ports of Kaliningrad and Baltijsk. Both Kaliningrad Oblast ports of the enclave are essential for sea operations of the Russian fleet in the Baltic Sea, but they could be easily closed by the Polish Navy cooperating with the air forces and mobile coastal batteries capable of destroying warships. The Russian fleet will be also locked in home ports or destroyed if it is made impossible for Russians by the Polish Armed Forces to obtain full dominance in the air²⁸ over the Kaliningrad Oblast and over its coastal waters. For the strategic situation in the Baltic Sea, the independence of Lithuania, Latvia and Estonia is essential, with the ports in Tallinn (a port that does not freeze for most of the year), Riga, Ventspils (a port that rarely freezes and with much larger shipping loading capacity than Riga), Liepaja and Klaipeda²⁹.

²⁷ The importance of southern Finland for the Soviet (now Russian) interests and the strategic position of Leningrad was one of the reasons of the Winter War with Finland in 1939/40. The aim of the operation was to gain control over both a southern shore of the Gulf (Estonia), as well as over a northern one (Finland). As a result of the war, Finland had to give in to the Soviets key islands in the Gulf and was forced to lease for 30 years a naval base in Hanko guarding the entrance to the Gulf; after World War II Finland was forced to lease the strategic, located next to Helsinki, Porkkala peninsula for 50 years (returned to the Finns in 1955).

²⁸ It is about preventing the Russians from assuring the total air superiority/domination and not about achieving Polish air superiority. Given the Polish favourable geographic position questioning the Russian air dominance will prohibitively increase the Russian cost/effect calculation presumably sufficiently enough to stop Russian vessels from going to sea or fly reinforcement/supplies into the Kaliningrad enclave; this is under assumption that Lithuania, Belarus and Ukraine remain sufficiently independent from Russia so that their territory will not be used by the Russian military offensive units, in particular ground troops trying to break to the Kaliningrad enclave from Lithuanian or Belarusian territory.

²⁹ The Soviet Admiral Czernawin was repeatedly saying that the Baltic States' independence would open a "window in the Soviet air defence system right on the key direction for the state existence and functioning - i.e. Pskov-Novgorod-Moscow-Petersburg, and would cut off supply routes to the Kaliningrad enclave".

From the military perspective it is crucial not to let the Russians take over control of the coast of Estonia which will effectively wind up a blockade. The blockade would facilitate Polish war operations enhancing the chances of barring the Russian forces the access to the Baltic proper and making the Polish long range cruise strikes more effective. These means may not suffice to defeat the adversary. It can be an element of deterrence strategy, in case of an enemy using tactical nuclear weapon, though. In such case, the danger of uncontrolled escalation (target selection depending) would give a chance for sooner intervention of allies in order to end conflict on conditions acceptable by Poland. Also, Russian A2AD countermeasures may limit the freedom of actions in the north-eastern Baltic and make the military assistance to the Baltic States illusory. Even in this scenario the Baltic Sea is of secondary importance as one must remember about the key land axis of the conflict located between Belarus and Poland.

3. Most “unrealistic” premise of independence of Belarus and Ukraine barring the use of their territories by Russian armed forces

Currently, the assumption of Belarus’ independence is risky at minimum, but still worth examining in order to show how this affects the importance of the Baltic Sea for any modernisation plans. Keeping the territory of Belarus and Ukraine away from the war prevents Russia from transferring forces and assets to the close vicinity of the war theatre and from supporting its forces in the Kaliningrad Oblast; it also creates for Russians huge planning and logistic challenges in terms of crafting any defence or carrying out attacks against Poland due to sheer distance and realities imposed by geography and geographical advantage of the Polish side in the theatre, assisted by the allies in the Baltic Sea region, proximity of Polish military facilities, possibility to operate along the internal lines and control by Poland over the course of ground operations aimed at the Kaliningrad enclave from the central position at the same time checkmating Belarus in case of this country joining the war. A Central Eastern Europe map analysis leads to an observation that if ports, land territory and air space of Lithuania, Estonia and Latvia were not controlled by Russia from the outset of conflict, and if Ukraine and Belarus³⁰ were not a Russian territory in military terms (no Russian forces were stationed there or possessed the capability to use the military assets from Ukraine and Belarus), then a future Polish-Russian conflict would take place in the Baltic Sea and in and around Kaliningrad Oblast.

Fulfilling all of above-mentioned prerequisites, to a degree, that Russian Federation will not attack or be able to conduct hostile military activities against Poland, that, in turn, would be able to use territory, ports or air space of the Baltic States, the strategic balance in Baltic Sea region would change due to favourable

³⁰ In case of Belarus it is now highly arguable whether this country is still sufficiently independent and its armed forces are not being controlled by the Russians; in particular, this pertains to air defence units that are reportedly integrated with the Russian AA systems. Notwithstanding the above as of June 2013 the Russian forces were not yet stationed in Belarus. But the recently announced plan to deploy in Belarus the Russian multirole aircraft unit proves how geopolitically important the independent Belarus is for the national security of Poland. This also shows how Belarus impacts the Poland’s defence planning and directly affects the meaning the Baltic Sea has for Poland and its Navy modernisation program.

geographical location. Moreover, it would allow the Polish Armed Forces operating from the inside of war theatre to move, to some extent, gravity of conflict into enemy's territory. This operation could be possible thanks to the Baltic Sea functioning as "sanctuary", i.e. an area where the Polish Armed Forces could deploy and stage attack without danger of Russian preventive strike.

In spite of favourable geographic position there still will be important limitations to the strategy: the danger of using tactical nuclear weapons or Russian A2AD capabilities enveloping the Baltic States would hinder application of adequate countermeasures in case of any Russian intrusion into those territories. In case of the Russian unfolding military successes the same capabilities would be moved towards the Baltic coast depriving Poland of its "sanctuary" and making the sea a mutual "no-go zone". Still, the cruise missile strikes would constitute the main damage inflicted on both sides and assuming that no nuclear tactical weapons will be used by Russia the scenario does not affect the vital interest for Poland and creates symmetrical threats for both adversaries.

The assumption that Belarus and Ukraine would not serve the Russian armed forces in the event of war with Poland, and the territory or airspace of these countries would not serve the Russia's war effort, is of fundamental importance. The possibility of using Belarus territory by the Russian army, let alone the Ukrainian territory, in the situation of evident difference of potentials, especially in quantitative terms, between the Polish and Russian Armed Forces makes impossible the plan of using the Baltic Sea as a sanctuary to carry out attacks against vulnerable elements of the Russian war machine since this will not have a significant impact on the course or fate of military operations conducted in the gravity and strategic centre of the conflict that will shift to the land area some 150 km east of Warsaw up to the border with Belarus³¹.

It should be also mentioned that from a strategic perspective it would be extremely important that Germany remain at least neutral in the conflict. Atrophy of the NATO paving the way for a German-Russian alliance, which would manifest itself in Germany providing Russia with intelligence information or blocking military aid for Poland, or preventing the existence of sanctuaries in the western Poland free from the Russian strikes, will make any war with Russia utterly difficult for Poland.

In case of prolongation of the war and the need to import war resources from the allies in Western Europe or the United States, the role of Germany as a Polish-Russian conflict arbiter will increase, as it would become impossible to conduct any longer war with Russia if land, sea and air supplies routes were blocked by Germany. An important factor will be the location and functioning of the NordStream underwater pipeline in the war conditions; as proper functioning of the pipeline might in the future directly affects the fundamental Germany's interests. An important element will be also exerting sufficient pressure on the public opinion

³¹ This is exactly a reversed position in comparison with the situation of September 1939 war, when Warsaw was located close to the German border.

in Germany in order to promote Polish political aims³². Essential will be also a skilful conduct of the information warfare right from the outbreak of hostilities. This will particularly be the case in a short conflict of low intensity. The result of such conflict will have significant geopolitical implications for Poland, Russia and the countries in the region over the next decades.

³² Poland should choose the right moment in which it would like to internationalise the conflict and prepare scenarios for internationalisation, also in case of indifference or hostility of the countries and powers in the region.

IMPLICATIONS FOR THE POLISH NAVY MODERNISATION

1. Negative shift in the region's geopolitical landscape is likely to increase the risk of political and armed conflict with the participation of Poland over the next two decades. The Armed Forces of Russian Federation are likely to be the potential adversary of the Polish Armed Forces. In particular Poland must be ready to militarily face the realities imposed by conflict of relatively short duration or of high intensity, a possibility of conflict will increase should the Western allies reiterate their support for Poland.
2. The Baltic Sea from the military perspective is a closed sea. The Polish Navy equipped with modern means of warfare should focus on the region. Assuming the priorities are coastal defence and communication interruption prevention there is no need to expand the fleet, especially of large surface vessels, in order to carry out operations outside the Baltic Sea – as it is not economically, militarily viable and brings insufficient political gains. Construction and maintenance of a large fleet is a costly endeavour; Polish commitments resulting from alliances can be sufficiently fulfilled by the Polish Air Forces and Special Operation Forces. Any participation of Poland in the allied operation aiming to assist the Baltic States in crisis does not necessitate the deployment of considerable surface fleet or force projection ships. Polish Navy will never be sufficiently formidable to fulfil this task on its own. Instead, the Polish Armed Forces are meant to perform many other essential assignments that need to be financed first and may provide a more effective contribution to the allied operations. To sum up, in the scenarios described in this study there is no military rationale for operations of the Polish Navy outside the Baltic Sea; a political entity that controls the Danish Straits would control the fate of the Polish fleet carrying out challenging and resource demanding tasks outside the Baltic Sea area.
3. Facing the necessity to wage a war (with NATO allies or without, in alliance of the willing or alone) the Baltic Sea becomes the primary war theatre only if the following conditions are jointly met: the independence of Latvia, Lithuania and Estonia is maintained, Estonia's coast is defended, the military alliance with Sweden and Finland has been fostered or formed, and the Russian forces are prevented from using the territories of Belarus and Ukraine for staging and prosecution of war against Poland. It is important for the Poland's prospect in any confrontation that at least a neutrality of Germany be ensured.
4. The operational implications of the Baltic Sea geography demand that the modern conventional submarines. Procurement of potentially more effective but also more expensive submarines with AIP technology should depend on their role/mission and offensive equipment capable of (in addition to the traditional means of warfare, including anti-ship missiles) long-range cruise missiles launching giving the Polish Armed Forces a much needed punching fist against the land based key targets. Instead of an ambitious surface fleet procurement (including coastal protection ships) it is recommended to commission more modern AIP submarines than the three vessels planned as of today, also for

boosting the Polish shipyards' capacity utilising the economy of scale. Given the above mentioned Baltic Sea characteristics modern submarines constituting the main combat and deterrence force of the Navy over the next decades, should have operational capability, of attacking surface ships and submarines using torpedoes and missiles, conducting mine warfare, transportation of special forces operators, reconnaissance and strike drone (UAV) operations, underwater and surface robots operations; depending on a chosen deterrence strategy capability to perform high-precision cruise missile strikes against key strategic high value assets located on the coast or inside the enemy territory. Permanent submarine combat patrols should be instituted and performed in the vicinity of the entrance to the Gulf of Finland and the Gulf of Riga and continuous detection and tracking of the Russian submarines and surface ships movements should be monitored, also as part of exercise and developing the submarine warfare doctrine and tactics so much in demand when the first hostilities break out. A system of shifts of submarine crews should be introduced allowing maintaining the principle of permanent distant patrols and permitting the seasoned sailors to rest after each patrol.

5. The capability of the Polish Navy to conduct mine warfare should be expanded by commissioning into service modern minesweepers and submarines capable of laying mines, as well as being able to cooperate with remotely controlled robots and drones (UAVs). Mine warfare plans should be consulted with the Nordic and Baltic states.
6. Given the effective blocking of the Russian fleet in the Gulf of Finland is hardly probable the consideration of procurement of additional mobile coastal missile launchers in order to seize full control over the entire Polish coast and the entire maritime traffic in the southern and western Baltic Sea and the approaches to the Kaliningrad Oblast is recommended. The staff of the squadrons should be fully completed, remain on high combat readiness and continuously practice defence and attack operations on land and sea targets, with employment of decoy defensive measures and high alert relocation drills of missile batteries while deceiving enemy recon devices. Coastal air defence and coastal mobile missiles are *sui generis* substitutes for the large surface combatants that are staff and equipment consuming and are considered a sensitive target.
7. In order to fully exploit new technologies the Armed Forces should be capable of extending patrol range and controlling sea waters, and enjoying over-the-horizon³³ surveillance capabilities as well as of uncontested transferring of real-time information thus enabling effective use of medium and long range cruise missiles³⁴.
8. Acquisition of additional multirole combat aircraft squadrons intended also for maritime operations and trained for these tasks. It would require training for aircraft, optimally of operational radius capabilities of up to 1,000 km, that is

³³ Poland should strive to acquire autonomous satellite reconnaissance capabilities; this is not beyond Poland's financial means anymore.

³⁴ For example, for the NSM coast based missile system to be fully effective the operation of drones enabling the proper target identification over-the-horizon is recommended.

longer than of currently Polish Air Forces' F16C/D models, optimised for maritime warfare and, additionally, having the capability to employ long range stealth cruise missiles.

9. The use of submarines in cooperation with aviation and coastal mobile squadrons to practice integrated defence operations, creating "death zones" for a numerically stronger aggressor, using coastal mobile missiles technologies, inflicting the prohibitive losses thus discouraging an adversary from continuing operations against Poland and its interests.