The Feasibility of Russian Amphibious Operations against Ukraine

An open source analysis

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As of the writing of this article, defense and intelligence professionals are discerning possible war plans should Russia invade Ukraine in January 2022. A Ukrainian assessment in late November predicted Russia might invade via multiple land axes of advance coming north from Belarus toward Kiev, west from Russia toward the Dnepr River, and south from occupied Crimea toward Kherson Oblast, which controls a fresh water canal to the peninsula. Chief of Ukrainian Defense Intelligence, BGen Kyrylo Budanov, also predicted that a Russian invasion would include amphibious assaults on the ports of Odessa and Mariupol.[1] If so, how feasible are amphibious operations against Ukraine and what are their odds of success?

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Amphibious Forces

Russia's Black Sea Fleet consisting of the guided-missile cruiser *Moskva,* five guided-missile frigates, and seven diesel attack submarines has enough naval power to establish sea control—the first prerequisite of amphibious operations.[2] Its amphibious capability is found in the 197th Assault Ship Brigade consisting of three Alligator and four Ropucha class landing ships.[3] The fleet has been reinforced with the Ropucha class landing ships *Korolev* and *Minsk* from Russia's Baltic Fleet.[4] This provides an amphibious lift capability of approximately two naval infantry battalion tactical groups (BTGs).[5] Eight smaller amphibious craft moved earlier in the year from the Caspian to the Black Sea via the Volga-Don Canal system.[6] However, this only increases the Black Sea Fleet's amphibious lift capability by approximately four tanks and six armored fighting vehicles—a two platoon-sized mechanized company.

The 810th Guards Naval Infantry Brigade is the Black Sea Fleet's landing force. The brigade has two naval infantry battalions, an air assault battalion, reconnaissance battalion, artillery battalion, and air defense battalion.[7] Russian army units could supplement follow-on landings, but the naval infantry would conduct the initial amphibious assault.

Tactical Amphibious Operations: Mariupol and Kherson

Amphibious operations to outflank Ukrainian defenses near Mariupol face inherent problems of distance, hydrography, weather, and suitable landing sites. To attack Mariupol's rear, the Black Sea Fleet must transit from its base in Sevastopol through the Strait of Kerch to the Sea of Azov—approximately 300 nautical miles or a 20-hour journey at 15 knots. The Strait of Kerch is a narrow, winding passage, which requires pilot assistance to transit, and could be blocked by a ship sunk in its channel. The Sea of Azov is the world's shallowest sea with an average depth of eight meters and a maximum depth of fourteen. The Alligator and Ropucha class landing ships have drafts of 4.5 and 3.7 meters respectively. The *Moskva* draws 8.4 meters and the Black Sea Fleet guided-missile frigates draw 4.2–4.6 meters. There is little margin for ship handling errors in such shallow waters and sailing an amphibious task force from Sevastopol to Mariupol would not be easy.

Weather is another challenge. The Sea of Azov's winter climate is influenced by the Siberian Anticyclone. The average temperature in January varies between -1 and -5°C, which can decrease to -30 °C because of cold Siberian winds. The sea's low salinity and shallowness favor the formation of ice during the winter season.[8] Rough seas, ice reaching out from dry land, and wind chill conditions have hindered amphibious operations in this region before. A Force 8 gale and -20°C temperatures helped stall a December 1941 Soviet amphibious operation across the Strait of Kerch.[9]

There are also few suitable beaches to offload a mechanized amphibious assault force. The coastline from Mariupol to Berdyansk is characterized by high

ground and cliffs to the shoreline with limited beach exits for vehicles. Coastal areas not bounded by cliffs are urbanized. These towns, if properly defended, would be difficult to fight through for a landing force going immediately from a beach assault to urban combat in a matter of meters.

After landing two naval infantry BTGs, amphibious shipping must sail twenty hours back to Sevastopol to load a second wave and then sail twenty hours back. Loading follow-on forces at Kerch or Feodosia could shorten that turnaround time to one day. But even if reinforcements arrive once every 24 vice 48 hours, the slow buildup of combat power could allow Ukrainian's army to defeat a landing force at the water's edge or attrit the amphibious task force as it sails back and forth through a shallow sea and a narrow strait.

An amphibious operation to outflank Ukrainian defenses at the Perekop Isthmus by landing on the western shore of the Kherson Oblast would require an eight-hour voyage at fifteen knots from Sevastopol, which in January could be done under cover of darkness. The western Kherson Oblast coastline is generally flat offering ease of movement into the area's road network and it has two small ports: Skadovsk and Zalizny Port. However, the sea depth near Skadovsk averages only three meters. West of Zalizny Port, the hydrography is constrained by similar shallow conditions between the shoreline and an offshore spit of land that forms a barrier island creating the Tendrivska Gulf with seas only four meters deep between the barrier island and the shore. The best hydrographic conditions for Alligator and Ropucha class ships are located along a fifteen-mile strip of coastline between Zalizny Port and Lazurne.[10] As this is the only place to land a large, mechanized force to bypass defenses along the Perekop isthmus, it would be a logical place for Ukraine to concentrate defenses.

Strategic Amphibious Operations: Odessa

The most dangerous amphibious threat to Ukraine would be a strategically focused landing to seize Odessa and present the West with a *fait accompli,* sealing off Ukraine's access to the sea, connecting Russia with the breakaway Transdniestria Republic, and placing a Russian army on the border of Romania. This would be a high gain operation but with equally high risks.

The sea distance from Sevastopol to Odessa or landing areas to north and south of the city varies from 160-180 nautical miles. One Russian option would be to attempt a *coup de main* landing directly at the city port or beaches with a parallel airborne operation seizing Odessa's airport. In April 2021, Russian forces in Crimea practiced a similar scenario with an amphibious landing and a coordinated airborne assault dropping 2,000 paratroopers and 60 pieces of equipment. This exercise also included a vertical envelopment with sixteen Mi-8 helicopters landing two companies of naval infantry supported by Mi-24 attack helicopters.[11]

A repeat of this exercise to seize Odessa is possible with two naval infantry BTGs seizing the port, then moving inland to link up with the paratroopers at the airport, and heliborne forces seizing key terrain inside the city. However, the timing of a combined airborne-amphibious assault is problematic. If the assault is coordinated with the outbreak of hostilities, the pre-H-Hour movement of naval forces would provide a half-day's warning to Kiev. If the attack comes after hostilities commenced in the east, there would be no tactical surprise. If operations to take Odessa were initiated by an airborne assault ahead of an amphibious one, the paratroopers would be dependent on the amphibious landings succeeding or the Russian military being able to reinforce and resupply them entirely by air.

This raises another prerequisite for both amphibious and airborne operations: control of the air. Russia would have to achieve air superiority and then maintain a continuous combat air patrol (CAP) over both the airborne landing and the naval task force. The flight distance to Odessa from western Crimea is within range of Russian combat aircraft, but also leaves limited loiter time. A continuous stream of fighters must be taking off, circling the battlespace, or landing, refueling, and rearming to support a CAP. It is an open question how long the Russian military could generate the sorties to support this.

Even if Russia established air superiority over Odessa, a landing force attempting a *coup de main* into Odessa would have to move immediately from a beach assault to urban combat and advance through several miles of heavily populated areas to link up with the paratroopers. Furthermore, the initial combat power put ashore by airborne, air assault, and amphibious forces would be approximately 5,000 men. Odessa is a city of a million and urban combat traditionally favors a defender.

These challenges could be mitigated if an assault against Odessa was not attempted until Russian forces had broken out of Crimea and were ready to advance further west. Instead of being part of the initial invasion, an assault against Odessa would be the final act of Russia's dismemberment of Ukraine. Also, instead of a direct assault into the city, landings could be made elsewhere. The coastline near Odessa consists of narrow beaches abutting sand-cliffs, but there are some limited landing sites to the northeast between Dofinivka Beach and Grigorevskii Beach near the town of Paluba—approximately 18–25 road miles from Odessa. Furthermore, at Paluba is an estuary that contains Odessa's industrial port with docking facilities for cargo ships and a commercial fuel storage capacity. This would provide a protected anchorage and wharfs for merchant craft to off-load supplies.

The rapid generation of forces ashore and logistics are the linchpins of any amphibious operation. Two Russian BTGs landing northeast of Odessa could secure a beachhead but not take the city. Depending on beach unloading times, weather, and reloading times back at Sevastopol, landings ships would need over 24 hours after H-Hour to bring a second wave of troops to the beachhead. This cycle would have to repeat itself again before the entire 810th Guards Naval Infantry Brigade with army reinforcements was landed. Its advance would depend on the rate that other shipping brings and unloads supplies to sustain the force. If the flow

of supplies is broken, the amphibious assault bogs down.

Clausewitz's "friction" in war lurks close by any amphibious operation. For the first week of any amphibious assault, shipping would have to operate at a nearly continuous pace, with hardly any time to rest men or machines. Like the strain of generating CAP sorties, a similar strain will challenge amphibious shipping built between 1966 and 1990. Mechanical breakdowns, storms, difficulties loading or unloading ships, groundings and collisions, etc., are all possible elements of "friction." It would also be foolhardy to assume that the Russian fleet will not sustain losses from Ukrainian air and missile strikes. With an amphibious shipping capacity in single digits, the loss of one ship is a major blow. The loss of two or more could be catastrophic.

Helicopters could help but they can only deliver company-sized infantry forces with little sustainability and all heavy units and bulk supplies must be delivered by sea.

There will also be a race between Ukrainian forces trying to destroy the beachhead and airborne forces and Russian forces coming from the east to relieve them. Paluba is approximately 100 road miles from Kherson. Along that route the Russians would have to conduct a major river crossing across the Southern Bug River. Unless the Ukrainian army disintegrates by this point, Russian units would face an opposing force using this and other natural water barriers to slow their advance. The Ukrainians will face "friction" too, so an amphibious assault to seize Odessa, that is supported from the sea, protected from the air, and links up with the Russian army coming east could happen—but it would be a high-risk affair.

The vagaries of weather and sea conditions, limitations of hydrography and topography, limitations of amphibious lift, the tyranny of distance between Crimean ports and possible landing sites, the challenge of maintaining air superiority over a beachhead, and challenges of logistics, all point to the risky nature of any Russian amphibious operation in the Black Sea. The Russian military may decide that such risks are not warranted and use their naval infantry and their amphibious capabilities to spearhead river crossings instead. If they should try an amphibious assault, many factors would all have to line up together for success. It would only take a few elements not in their favor to spell disaster and make any Russian amphibious operation against Ukraine a "beach too far."

Notes

1. Howard Altman, "Russia Preparing to Attack Ukraine by Late January: Ukraine Defense Intelligence Agency Chief," *Military Times*, (November 2021), available at https://www.militarytimes.com.

2. Staff, "Black Sea Fleet 2021," *KCHF RU*, (n.d.), available at https://www.kchf.ru.

3. Ibid

4. Staff, "*Russia Sends 2 Landing Ships to Black Sea*," UAWire, (November 2021), available at https://www.uawire.org.

5. This estimate is based on the results of a study by the Center for Strategic and International Studies: Suzanne Freeman, "Are Current Russian Expeditionary Capabilities Capable of a Coup de Main in Sweden?" Center for Strategic and International Studies, (September 2021), available at https://www.csis.org. This study estimated that four Ropucha class landing ships could carry one naval infantry BTG. Considering the vagaries of combat loading, I used this estimate to determine that six Ropucha class and three Alligator class landing ships could lift approximately two Naval Infantry BTGs for rough planning purposes.

6. Staff, "Novesti, Россия Направила 15 Кораблей Из Каспийского В Чёрное Мор (Russia Deploys 15 Ships from the Caspian to the Black Sea)," *RIA*, (April 2021), available at https://ria.ru.

7. Catherine Harris and Frederick W. Kagan, "Russia's Military Posture: Ground Forces Order of Battle," Institute for the Study of War, (March 2018), available at https://www.understandingwar.org; and Staff, "Naval Infantry: Organization and Equipment," *Global Security*, (n.d.), available at https://www.globalsecurity.org.

8. Staff, *Sea of Azov*, World Atlas, (n.d.), available at https://www.worldatlas.com.

9. Robert C. Citino, *Death of the Wehrmacht: The German Campaigns of 1942*, (Lawrence, KS: University Press of Kansas, 2007).

10. Hydrographic data for this article was obtained from NGA Nautical Chart 55001, Int. 310, Black Sea, printed by the Defense Mapping Agency, Hydrographic/Topographic Center, Bethesda, MD.

11. Argumenty Nedeli, "Войсковая российская группировка Крыма отразит высадку десанта вероятного противника в ходе учений (Russian Military Force in Crimea Repels a Likely Enemy Assault Landing in the Course of an Exercise)," *RIA,* (April 2021), available at https://ria.ru.

>Editor's Note: An earlier version of this article appeared in the U.S. Naval Institute Proceedings *available at https://www.usni.org/magazines/proceedings/2022/january/russia-ukraine-putins-amphibious-options-are-limited.*