



The Russian Navy: Distributed Lethality Through Modularity

OE Watch Commentary: The Russian Federation has made great efforts to enforce the principle of modularity throughout her Armed Forces. In tandem with the modularity push, the Russian Navy is implementing its own “Distributed Lethality” concept, which envisions one universal launch container system that is capable of firing a variety of anti-ship, land attack, air defense, and antisubmarine missiles. These launching containers will be installed on Russian submarines, cruisers, destroyers, frigates, and even corvettes.

The three accompanying excerpted articles describe another facet of the Russian Navy’s modularity push, the “shipping containerization” of military capabilities. Although these developments are relatively recent, Russia has long been interested in using shipping containers for military purposes. Russia sells the Club-K “shipping container” missile system on the export market. The Club-K is essentially the same system as the road-mobile Bal coastal defense system equipped with Kh-35 missiles (with a 300km range), except it is transportable in a few shipping containers. Russia has touted modular shipping container-based solutions for several reasons. The first is their ability to be rapidly moved to different ships, or if necessary, used at fixed shore sites or on trucks. Military capabilities will be able to be surged from one fleet to another, not by moving the ship itself, but simply by transporting the shipping containers by whatever means available (air, truck, rail, etc.). This is extremely advantageous for Russia’s auxiliary naval fleet and other state vessels that may be pressed into service in the event of hostilities. The second reason is the targeting difficulties that arise from rapidly transferable modular capabilities. At present time, if the class of vessel is known, it is fairly easy to determine what capabilities the ship possesses. In the future, with the advent of universal launch containers and shipping container-based military capabilities, extremely precise, and ongoing, intelligence will be required of each ship to know what it is capable of at any given time. The articles from *Izvestiya* describe shipping container-based solutions for underwater drones, sonar, and UAVs. **End OE Watch Commentary (Bartles)**

“The Russian Navy is now actively implementing the concept of modularity, which makes it possible to expand the functionality of warships while reducing costs.”

*- Dr. Vadim Kozyulin, director of the new technologies and international security project
at the Russian Center for Policy Studies*



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Container missile system Club-K in 20-foot variant with Kh-35UE missile.
Source: Vitaly Kuzmin Military Blog, <https://www.vitalykuzmin.net/Military/IMDS-2011/i-hwrK7DR>, CC 4.0.

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Continued: The Russian Navy: Distributed Lethality Through Modularity

Source: Nikolay Surkov, Aleksey Ramm, Yevgeniy Dmitriyev. “Подводного разведчика спрячут в контейнер (They Will Conceal the Underwater Reconnaissance Drone in a Shipping Container),” *Izvestiya*, 20 April 2018. <https://iz.ru/722017/nikolai-surkov-aleksei-ramm-evgenii-dmitriev/podvodnogo-razvedchika-spriachut-v-konteiner>

A system to conduct underwater work, which will fit into a standard shipping container, is being developed for Russian military seamen. The complex will consist of an unmanned submersible and operator workstations for its remote control. One will be able to install that shipping container on any ship (including the latest modular corvettes) or simply on shore. In the experts' opinion, the appearance of these complexes will significantly expand the employment of underwater unmanned vehicles in the Russian Navy. In particular, the effectiveness of the exploration of the bottom and the search for mines will increase.

*A Ministry of Defense spokesman told *Izvestiya* that the development of the “container” complex is being conducted in support of the military department. It will consist of an autonomous unmanned underwater drone (ANPA) and the equipment to command and control it. The system is designed for installation on the Navy's combat and auxiliary ships.*

The “Klavesin” ANPA family, which was developed by Rubin Maritime Equipment Central Design Bureau jointly with the Russian Academy of Sciences Far Eastern Department Institute of the Problems of Maritime Technologies, will constitute the foundation of the complex. This will most likely be the Klavesin-IR, which is designed for use with surface ships.

One can install the shipping container with the Klavesin directly on a ship's deck – for example, an icebreaker or rescue vessel. Upon arrival in the operational area, a standard ship crane will lower the unmanned vehicle into the water and it will begin to work. The ANPA can be used for search work, the exploration of bottom objects – both point and also extended searches – photography and seabed mapping, and remote reconnaissance of the bottom. Various equipment is installed on the drone to do this – side-looking sonars, an electromagnetic hunter, a digital video system, an acoustic profilograph to search for objects on the bottom, and temperature and conductivity sensors.

Outwardly, the Klavesin-IR resembles a yellow torpedo with a length of approximately six meters and a diameter of a little less than a meter. Its weight reaches two and a half tonnes. The drone's operating range is up to 300 kilometers, and operational endurance - 120 hours. The operational diving depth totals up to 6,000 meters...



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Container missile system Club-K in 20-foot variant with Kh-35UE missile.

Source: Vitaly Kuzmin Military Blog, <https://www.vitalykuzmin.net/Military/IMDS-2011/f-hwrK7DR>, CC 4.0.

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Continued: The Russian Navy: Distributed Lethality Through Modularity

Source: Nikolay Surkov, Aleksey Ramm, Yevgeniy Dmitriyev. “Систему обнаружения субмарин спрятали в обычный контейнер (Submarine Detection System Hidden in Ordinary Shipping Container),” *Izvestiya*, 6 April 2018. <https://iz.ru/719118/nikolai-surkov-aleksei-ramm-evgenii-dmitriev/sistemu-obnaruzheniia-submarin-spriatali-v-obychnyi-konteiner>

A compact system for detecting enemy submarines has been developed for the Russian Navy. The data-processing apparatus and the operator can fit into a virtually autonomous module the size of a standard shipping container. This kind of sonar station can be placed on practically any ship or support vessel. In expert opinion, having systems like this in service will expand the navy’s operational capabilities -- specifically by enabling a rapid increase in antisubmarine forces when they are needed.

*The Minotaur-ISPБ-M.2 “shipping container” sonar was developed for the fleet and is already undergoing trials, the Navy High Command said to *Izvestiya*. It is planned to complete them in the near future. The sonar is designed to be installed on the Project 22160 modular patrol ships and also on auxiliary ships and civilian vessels mobilized in times of threat.*

It amounts to a “shipping container” version of the Russian Minotaur-M sonar, which equips small frigates (corvettes) of the Project 20380 design. Thanks to its compactness, the station and all its elements fit inside a module the size of an ordinary sea cargo container...

*The Russian Navy is now actively implementing the concept of modularity, which makes it possible to expand the functionality of warships while reducing costs, *Izvestiya* was told by Vadim Kozyulin, director of the new technologies and international security project at the Russian Center for Policy Studies. According to him, the Zelenodol’sk yard is already building a whole series of modular ships that should enter service in the early 2020s and “shipping container” weapons systems are being developed for them in parallel.*

*“Having compact sonar systems means that at a time of threat (immediately prior to the opening of hostilities -- *Izvestiya*) the navy’s antisubmarine capabilities can be rapidly grown by ‘retuning’ warship modules and also by reequipping merchant ships,” Kozyulin commented. “The ‘shipping container’ system could have another interesting application, for covert information gathering on the underwater situation in various regions of the world’s oceans. Because this new sonar can if desired be concealed on an ordinary container ship.”*

In conditions of large-scale conflict, multirole submarines are the main enemy for the navy’s coastal forces. Having a large number of ASW ships makes it possible to push the adversary out of littoral waters and ensure defense of the coastline. The navy also needs antisubmarine assets in the Arctic and Pacific Oceans to provide cover for deployment of Russia’s nuclear weapons platforms.

Source: Nikolay Surkov and Aleksey Ramm., “«Стелс-патрульные» получают дронов-разведчиков: Для корветов проекта 22160 создан контейнерный комплекс с двумя беспилотниками (Stealth Patrol Ships Will Get Reconnaissance Drones: Containerized Complex With Two Unmanned Aerial Vehicles Has Been Created for Project 22160 Corvettes),” *Izvestiya*, 3 May 2018. <https://iz.ru/736124/nikolai-surkov-aleksei-ramm/stels-patruanye-poluchat-dronov-razvedchikov>

Project 22160 patrol ships (corvettes) will use unmanned aerial vehicles UAVs to hunt submarines and inspect vessels and the shoreline. Because of their comparatively small dimensions and displacement, however, there is no hangar on these corvettes, only a landing pad on the stern. Therefore permanent basing of helicopters on them is impossible, which limits combat capabilities. The containerized UAVs can solve this problem...

**Izvestiya* was told in the Main Naval Command that a modular unmanned aerial complex for equipping Project 22160 patrol ships has been developed and is being readied for tests. It is equipped with two UAVs capable of conducting reconnaissance using electro-optical equipment and a radar. All equipment, including the operator workstation, fits in one or two standard containers that can be set up on a ship’s deck.*

The complex includes two BPV-500 unmanned helicopters with a coaxial configuration. Their Army version was presented at the International Naval Salon in 2017 and tests began in the fall of that same year. This UAV’s maximum takeoff weight is 500 kilograms, hull length is a little under 5 meters, and the payload is up to 150 kilograms. The vehicle can be in the air for up to five and one-half hours and can operate at a distance of up to 320 kilometers from the platform.

The complex is designed for monitoring large areas from the air, including for ice reconnaissance, support to search and rescue operations, security patrol, and counterterrorist measures. Subsequently the UAVs can be armed with missiles and bombs, which will allow them to perform attack missions as well. The coaxial configuration gives the BPV-500 high precision of hovering and makes them less sensitive to wind gusts, which is important when landing on the deck of a small ship...An electro-optical system and onboard radar are used to collect data, which are transmitted to the ship in real time. The UAV can perform missions both autonomously (flight along a designated route) as well as under operator control...

UAV expert Denis Fedutinov believes that the UAVs are capable of suitably replacing conventional helicopters on small ships in conducting reconnaissance. “The use of such systems on Project 22160 patrol ships is dictated by the need for effective collection of data without risk to the crew,” the expert explained. “The use of unmanned equipment will permit a considerable expansion in the observed horizon. One ship will be able to monitor an enormously larger water area.”...