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The 'Kalibrisation of the Russian Navy: Progress and Prospects

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The Russian navy (Voenno-Morskoi Flot, or VMF) is now nearly a decade into an ambitious rearmament programme. When this programme was drafted in 2010, it was envisaged that between 2011 and 2020 over 50 new surface vessels and 24 submarines would be built. These would be complemented by the delivery of a further 15 modernised late Soviet-era major surface combatants and around 20 modernised submarines. This would, it was hoped, bring the Russian navy into the 21st century. However, this ambitious programme for fleet modernisation has not gone smoothly. Whilst considerable financial resources were allocated to support naval construction, and a large number of hulls were laid down, deficiencies in Russia's shipbuilding industry, as well as the impact of Western sanctions and the breakdown of defence-industrial relations with Ukraine, caused progress to be much slower than initially hoped. To date, only a small number of new surface vessels displacing over 2,500 tonnes have been delivered to the navy. And an even smaller number of genuinely modernised Soviet-era vessels are currently in service.

Amidst the gloomy news, one glimmer of hope emerged in the form of the apparent success in the so-called 'Kalibrisation' of naval vessels. This refers to the wide-scale deployment of the Kalibr 'family' of long-range missiles that can be used for striking surface vessels and submarines, as well as targets on land. These missiles can be launched from either vertical launch systems (VLS) on surface ships, or from certain types of torpedo tube. There was an aspiration to develop and deploy such systems in the late Soviet period. However, the disintegration of the Soviet Union, and the subsequent neglect and degeneration of the Russian armed forces in the 1990s, meant that the Kalibr system could only be deployed on naval vessels on any meaningful scale after 2012.

The operational arrival of these new capabilities came when over 25 of the land attack variants of the missile (the 3M14T) were launched at targets in Syria by a frigate and two corvettes from the Caspian Flotilla in October 2015. Carried out in full view of the world's media, this initial barrage, and a series of subsequent missile strikes carried out by different platforms, revealed new capabilities that, in many ways, compensate for the failures evident elsewhere in the programme for naval modernisation. As a result, Russia's most recent Naval Policy, approved in 2017, pushes the Kalibr family of missiles to the forefront of its statement of Russia's most important capabilities, declaring that the possession and deployment of long-range missile systems, with "the ability to use them in different ways" gives the navy the ability to destroy the "enemy's military and economic potential by striking its vital facilities from the sea".

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Given the extensive media coverage of Kalibr launches from naval vessels during Russian operations in Syria, and given the emphasis placed on the Kalibr's capabilities (as well as on the development of future hypersonic long-range missiles), it is worth assessing the extent and distribution of the Kalibr system across the Russian navy. To do this, it first necessary to examine the extent of Kalibrisation envisaged in the original plans for naval modernisation formulated at the beginning of the decade. These plans can then be compared with progress in the execution of these plans to date.

Kalibrisation: Plans

When the naval modernisation programme began in 2011, it was envisaged that the Kalibr missile system would be deployed on a large number of new surface and sub-surface vessels, and on a smaller number of larger, Soviet-era warships and submarines.

Plans were made to build at least six each of the Admiral Grigorovich-class (Project 1135.6) and Admiral Gorshkov-class (Project 22350) guided missile frigates. Each one of Admiral Grigorovich-class vessels is equipped with 8 VLS cells, and each of the Admiral Gorshkov-class vessels is equipped with 16 VLS cells. In addition, eight VLS cells were to be installed on the Gepard-class frigate (Project 11661K), the Gremyashchiy-class (Project 20385) corvette, the Buyan M-class (Project 21631) small missile ship (in Russian, *malyy raketnyy korabl'*), and the Vasily Bykov-class (Project 22160) patrol ship. It was hoped that a mixture comprising around 20 of these ships would be commissioned by 2020.

Plans to build a significant quantity of Kalibr-capable submarines were also put in place. Orders were placed for seven Yasen-class (Project 885 and 885M) nuclear-powered attack submarines (SSGNs), equipped with 32-40 VLS cells, as well as at least three Lada-class (Project 677) diesel-electric attack submarines (SS) and six Varshavyanka (Project 636.3) diesel-electric attack submarines (SS), each capable of launching Kalibr missiles from their six torpedo tubes.

In addition to the construction of new vessels, it was also hoped that a number of much larger surface ships and submarines built in the Soviet period could be given a deep modernisation that would involve, amongst other things, re-equipment with the Kalibr-capable VLS cells. Precise numbers are difficult to find, but it is clear that hopes were attached to the modernisation of two Kirov-class (Project 11442M) battlecruisers, each to be equipped with 80 VLS cells, and up to five Udaloy-class (Project 1155) destroyers. It was also hoped that several Shchuka-B-class (Project 971M) nuclear-powered attack submarines and several Antey-class (Project 949AM) nuclear-powered attack submarines, each carrying 32 VLS cells, would be deployed by 2020.

Kalibrisation: Reality

To date, many of these plans have not come to fruition. Progress in making a breakthrough in the construction of new surface ships, especially warships displacing more than 2,500 tonnes, has proven especially challenging. Western sanctions put in place in 2014, and in particular the breakdown of defence-industrial ties with Ukraine (which used to build and fit power units for larger surface warships), meant that a number of projects were thrown into disarray. By the end of 2018, only one of six planned Admiral Gorshkov-class ships had entered into service, along with three of the planned six Admiral Grigorovich-class vessels.

Plans to procure four of the Gremyashchiy-class corvettes were disrupted by the need to acquire replacements for the German-built engines that were supposed to be installed before sanctions. As a result, larger numbers of new but smaller designs, such as the Dzerky-class (Project 20386) and the Karakurt-class (Project 22800) corvettes, all equipped with eight VLS cells, were placed to fill the gaps that emerged.

The programme to construct new submarines also proved challenging. Chronic problems with the development of an air-independent propulsion system meant that the lead Project 677 ship, the *Saint*

Petersburg, took 13 years between being laid down (1997) and being commissioned in 2010. Even then, the ship has reportedly been plagued with problems. A further two are scheduled to be commissioned in the next year or so, and it has been reported that another two have been ordered. Whether these are equipped with air-independent power systems remains to be seen. Six of the older but more established Project 636.3 were ordered, built and delivered. Another six have been ordered for the Pacific Fleet. Finally, by the end of 2018, one Project 855 and one Project 855M have been commissioned, with reports suggesting that one new Project 855M will be commissioned each year until 2023.

Table 1. Vessels in service (number of Kalibr-capable launch cells installed), end of 2018

Category	**Platform**	**In service (*N* of VLS or torpedo tubes)**					
		Northern	Pacific	Black Sea	Baltic	Caspian	Total
SSGN	Pr. 885	1 (40)	0	0	0	0	1 (40)
SSGN	Pr. 885M	0	0	0	0	0	0
SSGN	Pr. 949AM	0	0	0	0	0	0
SSGN	Pr. 971M	0	0	0	0	0	0
SSK	Pr. 877M	0	0	0	0	0	0
SSK	Pr. 636.3	0	0	6 (36)	0	0	6 (36)
SSK	Pr. 677	1 (6)	0	0	0	0	1 (6)
CGN	Pr. 11442M	0	0	0	0	0	0
DDG	Pr.1155M	0	0	0	0	0	0
DDG	Pr. 11551M	0	0	0	0	0	0
FRG	Pr. 22350	1 (16)	0	0	0	0	1 (16)
FRG	Pr. 1135.6	0	0	3 (24)	0	0	3 (24)
FRG	Pr. 20385	0	0	0	0	0	0
FRG	Pr. 20386	0	0	0	0	0	0
FRG	Pr. 1166.1	0	0	0	0	2 (16)	2 (16)
FS	Pr. 22800	0	0	0	1 (8)	0	1 (8)
FS (MRK)	Pr.2163.1M	0	0	2 (16)	2 (16)	3 (24)	7 (56)
PB	Pr. 22160	0	0	0	0	0	0
PB	Pr. 23550	0	0	0	0	0	0
Total		3 (62)	0 (0)	11 (76)	3 (24)	5 (40)	22 (202)

Source: author's calculations based on Russian media reports

The modernisation programme for older vessels has fared even worse. Delays associated with insufficient design work (apparently, ships were sent for modernisation before clear designs had been finalised) has caused a number of vessels to be laid up in shipyards. This problem has afflicted the Kirov-class cruiser, the *Admiral Nakhimov*, the Udaloy-class destroyer, the *Marshal Shaposhnikov*, and several Project 971M and Project 949AM attack submarines. As a result, not a single Kalibr-capable Soviet-era vessel appears to have reached the Russian navy.

As shown in Table 1, the Black Sea fleet is currently the most Kalibr-capable of Russia's four fleets (and the Caspian Flotilla). The Black Sea fleet is home to half of the Kalibr-capable vessels, and just under 40 per cent of its installed Kalibr-capable launch capacity. Perhaps surprisingly, the Caspian Flotilla possesses around a quarter of the Russian navy's Kalibr-capable vessels and installed launch systems. The Pacific Fleet remains without any such capabilities.

Kalibrisation: Prospects

The process of Kalibrisation remains far from complete. A large number of ships remain under construction or modernisation, so it is likely that more Kalibr-capable platforms will be deployed in the near future. However, the chronic difficulties that have afflicted Russian shipbuilding in the post-Soviet period mean that media reports of progress being made in ameliorating production difficulties should be treated with some caution. This makes it very difficult to forecast with any confidence the number of ships that will be likely to be delivered to the Russian navy over the next five years, which in turn hinders any attempt at forecasting the probable number of Kalibr-capable VLS cells that will be deployed. As such, what follows below is an approximate calculation based on media reports of ships that have been either laid down, sent for modernisation, or have been ordered by the Ministry of Defence.

Table 2. Vessels under construction and scheduled to be built or commissioned by 2024 (number of Kalibr-capable launch cells installed), end of 2018

Category	**Platform**	**Under construction (incl. modernised or laid down)**					
		Northern	Pacific	Black Sea	Baltic	Caspian	Total
SSGN	Pr. 885	0	0	0	0	0	0
SSGN	Pr. 885M	3 (96)	3 (96)	0	0	0	6
SSGN	Pr. 949AM	2 (64)	2 (64)	0	0	0	4
SSGN	Pr. 971M	2 (64)	2 (64)	0	0	0	4
SSK	Pr. 877M	0	0	0	0	0	0
SSK	Pr. 636.3	0	6 (36)	0	0	0	6
SSK	Pr. 677	0	0	0	2 (12)	0	2
CGN	Pr. 11442M	1 (80)	1 (80)	0	0	0	2
DDG	Pr.1155M	0	1 (16)	0	0	0	1
DDG	Pr. 11551M	0	0	0	0	0	0
FRG	Pr. 22350	3 (48)	0	0	0	0	3
FRG	Pr. 1135.6	0	0	1 (8)	0	0	1
FRG	Pr. 20385	0	2 (16)	0	0	0	2
FRG	Pr. 20386	1 (8)	0	0	0	0	1
FRG	Pr. 1166.1	0	0	0	0	0	0
FS	Pr. 22800	0	6 (48)	9 (72)	3 (24)	0	18
FS (MRK)	Pr.2163.1M	0	0	5 (40)	0	0	5
PB	Pr. 22160	0	0	6 (48)	0	0	6
PB	Pr. 23550	2 (16)	0	0	0	0	2
Total		14 (376)	23 (420)	21 (168)	5 (36)	0 (0)	63 (1000)

Source: author's calculations based on Russian media reports

The figures presented in Table 2 show that, if successful, the existing shipbuilding programme should result in an additional 1000 Kalibr-capable launch cells (including torpedo tubes) being deployed in the Russian navy over the next five years. This would represent a significant increase on the 22 vessels and 202 installed launch systems currently deployed. If, and only if, construction takes place according to schedule, the number of launch platforms and launch cells in service in the Pacific Fleet will rise from zero to 23 and 420 respectively, making it the most Kalibr-capable of Russia's fleets. The Northern Fleet will also see its capabilities considerably enhanced.

Attentive readers will note that the massive expansion in Kalibr capabilities that is scheduled to take place in the Northern and Pacific fleets is, to a large degree, contingent on the successful modernisation of Soviet-era vessels. Because of the size of these vessels (much larger than most vessels currently being built in Russia), they will account for nearly half of all additional installed Kalibr launch capacity that is projected to be deployed in the next five years. If Russia's shipyards fail to make the breakthrough in upgrading these systems, the Kalibrisation programme will be severely compromised.

Notwithstanding these production difficulties, the main point to take away from this exercise is that by 2024, Russia could have around 85 Kalibr-capable platforms and over 1200 launch cells deployed across its four fleets and flotilla. This will represent a considerable degree of 'distributed lethality'. By 2024, it also possible that newer, longer-range and faster Kalibr missiles will be deployed, as well as hypersonic missiles. This should make the Russian navy a formidable force for years to come despite the well-documented problems the Russian shipbuilding industry has faced in constructing new and larger blue water vessels.