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# *Admiral Gorshkov* Frigate Reveals Serious Shortcomings in Russia's Naval Modernization Program

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Since 2008, as part of its ongoing military reform, Moscow has embarked on a large-scale program of naval expansion intended to recapitalize its ailing shipbuilding industry and rebuild and modernize its fleet. Rebuilding the fleet has received especially high priority in Russia's 2011–2020 State-Armament Program, with the navy set to receive nearly 5 trillion rubles (about US\$70 billion), or fully one-quarter of the total amount to be spent on military modernization of Russia's entire armed forces through 2020.<sup>1</sup> Russia's fleet development plans were further elaborated in its "Action Plan 2013–2020," an overall modernization road map released by the Ministry of Defense in 2013. According to this plan, the percentage of modern equipment in Russia's navy was set to increase from a level of approximately 40 percent in 2013 to over 70 percent by 2020.<sup>2</sup>

Despite substantial efforts to make good on its naval modernization plans, including significant state spending, what has been delivered thus far to the Russian Navy has fallen well short of expectations. While official Russian rhetoric routinely proclaims that the fleet is undergoing a major renaissance, in reality Russia's shipbuilding programs have been severely hampered by enduring problems, including budget shortfalls, underinvestment in naval R&D, poor design, obsolescence in its shipbuilding industry, system-integration challenges, reduced access to foreign technology, and widespread corruption, among other problems, all of which have led to long-standing delays in several naval programs and outright cancellation of others.<sup>3</sup>

## The *Admiral Gorshkov*-Class Frigate

A particularly important case in point is the seemingly endless project to build a new blue-water frigate. Officially referred to as the Project 22350 *Admiral Gorshkov*-class, the new frigate is named after the venerable Soviet admiral who presided over the massive expansion of the Soviet navy. Without question, this is the most ambitious naval shipbuilding project undertaken by the Russian Federation since the

<sup>1</sup> Dmitry Gorenburg, "Shipbuilding Constraints Drive Downsized But Potent Russian Military," Center for International Maritime Security (CIMSEC), November 25, 2015, <http://cimsec.org/shipbuilding-constraints-drive-downsized-potent-russian-navy/20150>.

<sup>2</sup> This action plan is summarized in Jakob Hedenskog and Carolina Vendil Pallin, eds., *Russian Military Capability in a Ten-Year Perspective—2013* (Stockholm: Swedish Defense Research Agency [FOI], December 2013), 122, <http://www.foi.se/sv/Sok/Sammanfattningssida/?rNo=FOI-R-3734-SE>.

<sup>3</sup> For a good general overview of Russia's shipbuilding problems, see Gorenburg, "Shipbuilding Constraints Drive Downsized But Potent Russian Navy."

### ***Admiral Gorshkov*–Class Frigate**



Source: Office of Naval Intelligence (ONI), “The Russian Navy: A Historic Transition,” December 2015.

collapse of the Soviet Union. It is intended not only to add critical capability for the fleet, but also to reinvigorate Russia’s shipbuilding industry by providing it with crucial experience in building modern large-scale warships.

On paper, the *Admiral Gorshkov* is a capable warship. Designed by Russia’s Severnoye Design Bureau, the ship is currently in low-rate initial production at the Severnaya Verf shipyard in St. Petersburg. While the navy eventually hopes to build up to 20 of these ships, the initial contract calls for building just six.<sup>4</sup> The *Gorshkov* is a relatively large frigate with a total displacement of 4,500 tons. It is the largest navy ship to be built by Russia since the Soviet Union’s collapse. For propulsion, the *Gorshkov* is equipped with twin gas-diesel turbine engines, enabling it to operate at speeds of up to 29 knots. It has an effective range of 4,500

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<sup>4</sup> Office of Naval Intelligence (ONI), “The Russian Navy: A Historic Transition,” December 2015, 23, <http://www.oni.navy.mil/Portals/12/Intel%20agencies/russia/Russia%202015print.pdf?ver=2015-12-14-082038-923>; and Karl Soper, “Russian Gorshkov Frigate Build May Slow without Ukrainian Gas Turbines,” *Jane’s Navy International*, January 27, 2015.

nautical miles, giving it true blue-water capability. It has a stealthy hull design with a reduced radar cross section, making it more difficult to detect, especially in the cluttered littoral environment.<sup>5</sup>

Moreover, unlike most Soviet-era designs, which tend to be highly specialized, the *Gorshkov* is a multirole warship designed for anti-air, anti-surface, and anti-submarine warfare. For air defense, the *Gorshkov* relies on the recently developed Poliment-Redut naval air defense system. The Redut is derived from Russia's S-350 Vityaz, a shore-based air defense system, which reportedly incorporates technology that Russia co-developed for the South Korean military.<sup>6</sup> For the anti-surface mission, *Gorshkov* comes equipped with a 16-cell vertical launch system (VLS) capable of hosting a variety of missiles. These include the supersonic P-800 Oniks anti-ship cruise missile (NATO codename: SS-N-26) and the 3M-54 Kalibr anti-ship cruise missile (NATO codename: SS-N-27).<sup>7</sup> For the anti-submarine warfare (ASW) mission, the ship is equipped with Kalibr 91RE2 ASW missiles as well as Russia's latest Paket-NK small ASW system.<sup>8</sup> The Paket is a point defense system reportedly capable of engaging both enemy submarines and incoming torpedoes.<sup>9</sup> The new frigate also hosts the deadly 3M-14 Kalibr NK land-attack cruise missile (NATO codename: SS-N-30A),<sup>10</sup> which Russia recently used to strike ISIS targets in Syria from ships located in the Caspian Sea.

Thus, on paper, the *Gorshkov*-class frigate is designed to provide Russia's fleet with advanced combat capability, much of which it currently lacks. The *Gorshkov*'s sophisticated sensors and weapon systems are superior to those currently deployed on Russia's older Soviet-era warships. Moreover, the new frigate is much stealthier than most existing Russian platforms. It also has a much smaller footprint than most other Soviet-era surface combatants, making it significantly less expensive to produce and maintain. Most importantly, the new frigate is incredibly well armed for such a small warship, enabling it to conduct the kinds of anti-air and anti-surface warfare missions traditionally reserved for much larger Russian vessels. In short it is a highly capable warship, designed to operate in both coastal regions and the open oceans, and would add significant combat capability to the fleet.

## Building the New *Gorshkov*-Class Frigate: A Troubled Program

Of course, none of this will matter unless Russia can actually produce the warship, and produce it in sufficient numbers to make a meaningful difference. Unfortunately for Moscow, thus far, Russia's shipbuilding industry has failed to deliver on the new frigate.

<sup>5</sup> Станислав Закарян, "Фрегат проекта 22350 'Адмирал Горшков' вышел на испытания в Белое море," arms-expo.ru, September 22, 2015, [http://www.arms-expo.ru/news/vooruzhenie\\_i\\_voennaya\\_tekhnika/fregat\\_proekta\\_22350\\_admiral\\_gorshkov\\_vyshel\\_na\\_isspytaniya\\_v\\_beloe\\_more/](http://www.arms-expo.ru/news/vooruzhenie_i_voennaya_tekhnika/fregat_proekta_22350_admiral_gorshkov_vyshel_na_isspytaniya_v_beloe_more/). For additional details regarding the *Gorshkov* frigate's performance characteristics, see Иван Анатольевич Вольхин, "Фрегат 'Адмирал Горшков' проекта 22350," fb.ru, December 10, 2014, <http://fb.ru/article/160510/fregat-admiral-gorshkov-proekta>; and Soper, "Russian *Gorshkov* Frigate Build May Slow without Ukrainian Gas Turbines."

<sup>6</sup> "Новейший ЗРК С-350 «Витязь»," Russian Top, October 24, 2015, <http://topru.org/25859/novejshij-zrk-s-350-vityaz/>.

<sup>7</sup> Soper, "Russian *Gorshkov* Frigate Build May Slow without Ukrainian Gas Turbines."

<sup>8</sup> Закарян, "Фрегат проекта 22350 'Адмирал Горшков' вышел на испытания в Белое море."

<sup>9</sup> Additional information on Paket-E can be found on the Tactical Missiles Corporation (manufacturer) website, [http://eng.ktrv.ru/production\\_eng/323/507/525/](http://eng.ktrv.ru/production_eng/323/507/525/).

<sup>10</sup> Александр Мозговой, "Нестерпимый жар «Калибра»," nationaldefense.ru, September 12, 2015, <http://www.nationaldefense.ru/includes/periodics/navy/2015/0903/200616785/detail.shtml>.

Currently, four of these warships are in various stages of completion. Two remain under construction at Severnaya Verf, another has been launched but is still being outfitted, and the fourth is undergoing sea trials. As of yet, however, none have been fully accepted into service, and just getting them to their current stage of development has been a long and arduous process. The *Admiral Gorshkov*, the lead ship of the series, was first laid down in February 2006, so it has been in construction now for nearly 10 years. The project has been hampered by major problems at every turn, dating back to its commencement. In 2009, for example, Vladimir Spiridopoulou, then-current general director of the Severnoye Design Bureau, admitted that his firm had had difficulties with the ship's design due to the need to integrate a complex array of equipment and new weapon systems.<sup>11</sup>

The lead ship then spent nearly five years undergoing initial construction and assembly at the Severnaya Verf shipyard, an inordinately long period characterized by repeated problems and delays. Funding shortfalls were partly to blame, as the project was hampered by a prolonged period of irregular state financing, especially early on.<sup>12</sup> Further delays were caused by repeated changes in the technical design, as various subsystems originally slated for the new ship were subsequently replaced by later designs.<sup>13</sup> System-integration problems proved even more troublesome. In part, these were caused by poor coordination between Severnaya and its many subcontractors. More important, however, were failures of subcontractors to deliver critical components and weapon systems in a timely manner.<sup>14</sup> And when they were finally delivered, too often they suffered from serious performance and compatibility problems, necessitating significant rework.<sup>15</sup>

Finally, after a prolonged construction period, the lead ship *Admiral Gorshkov* was formally launched in October 2010. But even then, according to reports, it was still only 40 percent completed,<sup>16</sup> and it would take another four years before it was fully outfitted. Throughout this period, performance problems and repeated delays in delivery of critical components continued to plague the project. According to the Russian naval expert Konstantin Bogdanov, for example, the project was hindered at various times by problems with the ship's new air defense platforms, its electronic subsystems, its ship-borne sonar systems, and its artillery.<sup>17</sup>

By 2011, the new frigate had become so problematic that the Russian Navy decided to commission the parallel construction of six new Project 11356 *Admiral Grigorovich*-class frigates, a proven alternative design, because by that time the need for new frigates to rebuild its Black Sea Fleet had become urgent.<sup>18</sup> Although work on the *Admiral Gorshkov* continued, the program suffered a further major setback in April 2014 when Ukraine announced that it would no longer supply Russia with the M-90FR gas-turbine engines

<sup>11</sup> Tim Fish, "Russia Lays Keel for Second Admiral Gorshkov Frigate," *Jane's Navy International*, November 27, 2009.

<sup>12</sup> Илья Крамник, "Новейшие фрегаты оказались слишком сложными и дорогими," *Izvestia*, September 15, 2011, <http://izvestia.ru/news/500810>.

<sup>13</sup> Алексей Михайлов and Дмитрий Бальбуров, "Новейший российский фрегат превратился в долгострой," *Izvestia*, November 29, 2012, <http://izvestia.ru/news/540466>.

<sup>14</sup> Крамник, "Новейшие фрегаты оказались слишком сложными и дорогими."

<sup>15</sup> *Ibid.*; and Konstantin Bogdanov, "«Железо» нового флота России," Russia Council on Foreign Affairs, July 21, 2014, [http://russiancouncil.ru/inner/?id\\_4=4094#top-content](http://russiancouncil.ru/inner/?id_4=4094#top-content).

<sup>16</sup> "Russia Floats Out First of New Class of Frigate," *Sputnik*, October 29, 2010, <http://sputniknews.com/military/20101029/161134416.html>.

<sup>17</sup> Bogdanov, "«Железо» нового флота России."

<sup>18</sup> *Ibid.*; ONI, "The Russian Navy: A Historic Transition," 6.

needed to power the new frigates.<sup>19</sup> While the first two ships had already received their Ukrainian engines, the lack of new engines will severely impact completion of the remaining four ships. In response, Moscow has decided to develop a domestic version of the M-90FR engine to serve as a replacement. But the new engine is not expected to be available until 2017 at the earliest,<sup>20</sup> and even that is likely to prove overly ambitious.<sup>21</sup> Meanwhile, completion of the remaining ships of the class will be further delayed. Moreover, Ukraine's cutoff of spare parts for the M-90FR is also likely to affect the performance of the two ships that have already received their engines, because spares will be needed to keep them operational.

Despite this parade of mishaps and missteps, by November 2014, the lead ship *Admiral Gorshkov* was finally ready to begin sea trials. Shortly after commencement, however, the navy was reportedly forced to suspend sea trials due to a fire in one of its main engines.<sup>22</sup> To enable sea trials to resume, the contractor was forced to cannibalize one of the two engines installed on the second vessel, the *Admiral Kasatonov*.<sup>23</sup> Problems with the engine also led Severnaya Verf in late 2014 to issue a new contract for 24 million rubles (about US\$328,000) for the disassembly and fault detection of the engine.<sup>24</sup> On a positive note, in early 2015, the *Admiral Gorshkov* apparently completed its initial round of sea trials in the Baltic Sea designed to test the ship's propulsion, navigation, communication, and sea-keeping capabilities.<sup>25</sup>

This encouraged the navy to undertake a second round of sea trials commencing in September 2015 to test the ship's weapon systems at the Northern Fleet's White Sea maritime target range.<sup>26</sup> Meanwhile, Russian navy officials continued to provide assurances that the lead ship was on track to enter service as scheduled by the end of 2015.<sup>27</sup> Unfortunately, however, this phase of sea trials proved less successful than the first. On December 18, 2015, the deputy commander of the navy for armament, Victor Bursuc, suddenly announced that not only would the *Gorshkov* not be accepted into service at the end of 2015 as originally planned, but that final commissioning would be delayed until sometime in 2016 (not sooner than May according to some reports, by the end of the year according to others).<sup>28</sup> Officially, the delay was attributed to the inherent difficulties of testing the ship's many new weapon systems.<sup>29</sup> But the delay was most likely

<sup>19</sup> Karl Soper, "Ukraine Crisis Generates Gas Turbine Dilemma for Russian Frigates," *Jane's Navy International*, October 31, 2014.

<sup>20</sup> Nikolai Novichkov, "Russia's 2015 Arms Programme to Be Slowed by Import Substitution Efforts," *Jane's Defence Weekly*, January 20, 2015.

<sup>21</sup> Vladimir Pluzhnikov, "Планов громаде или Цусима 2," *proza.ru*, 2014, <https://www.proza.ru/2014/06/26/1761>.

<sup>22</sup> Bruce Jones, "Delivery of Russia's First Project 22350 Frigate Delayed until May," *Jane's Navy International*, December 31, 2015.

<sup>23</sup> Антон Мардасов, "Крылья адмиральской мечты," March 2, 2015, *svpressa.ru*, <http://svpressa.ru/war21/article/114385/>.

<sup>24</sup> "Двигатель новейшей фрегата "Адмирал Горшков", необходимые ремонтные работы," *flotprom.ru*, January 28, 2015, <http://flotprom.ru/2015/181758/>.

<sup>25</sup> Soper, "Russian Gorshkov Frigate Build May Slow without Ukrainian Gas Turbines."

<sup>26</sup> "Russia's New Frigate Enters Atlantic Ocean on Route to Trials," *Sputnik*, September 24, 2015, <http://sputniknews.com/military/20150924/1027471814/russian-new-frigate-on-trials.html>.

<sup>27</sup> Закарян, "Фрегат проекта 22350 'Адмирал Горшков' вышел на испытания в Белое море."

<sup>28</sup> "Заместитель главкома: фрегат "Адмирал Горшков" пополнит ВМФ России в 2016 году," TASS, December 18, 2015, <http://tass.ru/armiya-i-opk/2540303>; Jones, "Delivery of Russia's First Project 22350 Frigate Delayed until May."

<sup>29</sup> Jones, "Delivery of Russia's First Project 22350 Frigate Delayed until May."

caused by more serious problems, especially continuing problems with the performance of key weapon systems, such as the ship's Poliment-Redut air defense platform.<sup>30</sup>

## Russia's Troubled Shipbuilding Industry

For those who have been closely following the misadventures (as well as the successes) of Russia's current naval rearmament program, the latest announcement of further delays in the *Gorshkov* program comes as no great surprise. In fact, in many ways the *Gorshkov*'s tortuous development history is exemplary of the many (more fundamental) problems that continue to plague Russia's shipbuilding industry during the post-Soviet period. Among these, the industry continues to suffer from technological backwardness, antiquated design processes, and aging shipyards. This has led Russian naval expert Ilya Kramnik to conclude that modernization of Russia's shipbuilding industry is now the key strategic task facing the industry.<sup>31</sup> Low productivity of Russian workers in the shipbuilding industry is also a critical problem. One report stated that as recently as 2011 average productivity of industry workers had fallen to just 20 percent of that for comparable foreign workers.<sup>32</sup>

The industry also continues to struggle to rebuild lost capacity after years of underinvestment, neglect, and loss of key shipyards to Ukraine following the collapse of the Soviet Union. While the industry has finally begun to rectify this problem, progress has been slow, and spotty at best, and much additional investment will be required to fully address the issue. Now this task has been further complicated by the need to develop replacements for Ukrainian defense components, especially marine engines, which are no longer being delivered due to sanctions imposed by Kyiv. System-integration challenges and problems of coordination between shipbuilders and their many subcontractors also continue to hamper production. According to Alex Kravchenko, a spokesman for the United Shipbuilding Corporation, subcontractors routinely fail to meet their delivery obligations because the old Soviet system of centralized industrial coordination was destroyed and nothing new has emerged to replace it.<sup>33</sup>

All of which makes the case of the *Admiral Gorshkov* frigate far from unique. Quite the contrary, since persistent shortcomings in Russia's shipbuilding industry continue to manifest themselves across a range of naval programs. As naval analyst Dmitry Gorenburg recently noted, "[M]any projects have faced lengthy delays and cost overruns. As a result, some of the most prominent naval procurement projects have been

<sup>30</sup> "Адмирал Горшков' вернулся на базу после ракетных и артиллерийских стрельб в Белом море," TASS, December 25, 2015, <http://tass.ru/armiya-i-opk/2556736>. For more on continuing technical problems with the *Gorshkov* frigate, see "Владимир Путин принял участие в едином дне приёмки военной продукции," *Putin Today*, July 16, 2015, <http://www.putin-today.ru/archives/13743>. For more on problems with the Poliment-Redut, see "Редут' не выдержал тест Известиям," *VPK News*, October 11, 2012, [http://vpk.name/news/76772\\_redut\\_ne\\_vyiderzhal\\_isspytani.html](http://vpk.name/news/76772_redut_ne_vyiderzhal_isspytani.html).

<sup>31</sup> Ilya Kramnik, "ОСК: найти точки роста Илья Крамник," *nationaldefense.ru*, <http://www.nationaldefense.ru/includes/periodics/navy/2011/1219/12027879/detail.shtml>.

<sup>32</sup> *Ibid.*

<sup>33</sup> "СМИ: Передачу ВМФ фрегата 'Адмирал Горшков' отложили из-за проблем с артустановкой," *flotprom.ru*, October 23, 2013, [http://flotprom.ru/news/?ELEMENT\\_ID=154987&usg=ALkJrhiXeB113\\_t8FMC1C8R\\_MJP7ElavPA/](http://flotprom.ru/news/?ELEMENT_ID=154987&usg=ALkJrhiXeB113_t8FMC1C8R_MJP7ElavPA/).

scaled back, while others have been postponed for years at a time.”<sup>34</sup> This has been especially true for programs geared to the development of larger ships.

Take, for example, two related corvette programs, one to develop the Project 20380 (*Steregushchy*-class) corvette and another to produce a more advanced variant, the Project 20385 (*Gremyashchy*-class) corvette. These vessels are both significantly smaller than the *Gorshkov* frigate, being designed primarily for coastal defense. Like the *Gorshkov* frigate, the *Steregushchy* corvette underwent a long and painful development process. The first ship of the class was laid down in 2001 but was not delivered to the fleet until 2007, an inordinately long development period for a ship of this class. The project has been plagued by a host of problems, including mismanagement, backward production facilities, and delivery and performance problems associated with its various weapon systems.<sup>35</sup> On a positive note, at least in this case four ships have now actually been delivered (albeit without all of their intended weapon systems), while four additional units remain under construction.

The same cannot be said of the Project 20385 *Gremyashchy* corvette, a larger variant of the *Steregushchy*-class. The *Gremyashchy* was designed as an improved variant of the *Steregushchy*, and it was to be outfitted with more advanced weapon systems, including a UKSK vertical launch system as well as Oniks and Kalibr cruise missiles. Collectively, these give the 20385 much greater striking power against both enemy warships and land-based targets. However, like the *Gorshkov*, these new corvettes have yet to be completed. Originally, the navy intended to procure up to 10 of them. However, due to significant cost overruns, this was later reduced to just two ships.<sup>36</sup> Now completion of even these two ships remains very much in doubt due to both continuing problems in their construction as well as Germany’s refusal, as a result of the Ukraine crisis, to deliver the diesel engines designed to power them. Similar problems can be found in several other Russian shipbuilding projects.

## Conclusion

After 10 long years, the Russian navy is still waiting for its first *Admiral Gorshkov*-class frigate. Meanwhile, to fulfill its expected mission, the fleet has been forced to continue to make do with a collection of aging Soviet-era vessels. But these can no longer be fielded in sufficient numbers to do the job because of the increasing costs and difficulties of just keeping them in service. According to Ilya Kramnik, the Russian fleet now needs at least 20 modern frigates just to maintain its existing operational capacity, which has been steadily declining due to the increasing obsolescence of the warships in its fleet.<sup>37</sup>

Perhaps 2016 will finally turn out to be the year that the fleet receives its first *Gorshkov*-class frigate. But given the ship’s tortuous history and continuing problems with the development of key weapon systems,

<sup>34</sup> Dmitry Gorenburg, “Shipbuilding May Limit Russian Navy’s Future,” *Maritime Executive*, November 27, 2015, <http://www.maritime-executive.com/editorials/shipbuilding-may-limit-russian-navys-future>.

<sup>35</sup> Karl Soper, “Steregushchiy Frigate Programme Makes Progress, But Faces Obstacles,” *Jane’s Navy International*, July 1, 2014.

<sup>36</sup> Bruce Jones, “Russian Navy Unhappy with Project 20385 Corvette Program,” *Jane’s Navy International*, March 7, 2013.

<sup>37</sup> Kramnik, “ОСК: найти точки роста Илья Крамник.”

further delays seem just as likely. In fact, the program has acquired all of the hallmarks of a runaway project. Given all this, it would be safe to assume that the real Admiral Gorshkov would not have approved.

## About the Author

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