SORMOVO’S WORKERS, WHO HAVE INSCRIBED THEIR NAMES FOREVER IN THE HISTORY OF RUSSIAN SHIPBUILDING

FIRST 170 YEARS

MAGAZINE OF THE UNITED SHIPBUILDING CORPORATION №1 (37) 2019

MAIN THEME

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SORMOVO’S WORKERS, WHO HAVE INSCRIBED THEIR NAMES FOREVER IN THE HISTORY OF RUSSIAN SHIPBUILDING

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Back in 2014 our revenue made up 237 bln roubles, and in 2018 it already reached 362 bln roubles. Working to get parity in the revenues from the sales of civilian and military products, we have achieved the status when today one third of our portfolio of orders are the commercial ones. Over the past four years, the volume of the USC’s civilian products has increased by 2.5 times and reached 57 billion roubles.

Kaliningrad’s Yantar, Vyborg Shipbuilding Plant, Admiralty Shipyards and Severnaya Verf have received orders for three and a half dozen of fishing trawlers. Plants Lotos and Krasnoye Sormovo are keeping on building cruise vessels of project PV300 and the “Golden Ring” wheeled motor vessels of project PKS-180.

This year we are celebrating the 60th anniversary of the nuclear-powered icebreaking fleet of Russia, and it is possible to state that today the construction of icebreakers is one of the obvious world trends. USC, being the leader of the icebreakers construction, is intending to continue its intensive development in this area. Meanwhile, three powerful LK-60 icebreakers are being built at the Baltic Shipyard.

2019 was declared in the USC as the year of science, and it is not by chance. We clearly see: the new world trend is the orientation on science, both basic and applied. In its work, the USC is focusing on the creation of high-tech products. Our flagship projects include the creation by the Admiralty Shipyards of the “North Pole” ice-resistant self-propelled platform, which should become a floating observatory for Russia’s research works and environmental monitoring.

The construction of the “North Pole” is aimed at the fixation of the Russian presence in the Arctic and the positions of Russia as the world leader in polar science. Another example is the last year’s commissioning by the Baltic Shipyard of the first ever in history mobile transportable power unit, i.e. the “Academician Lomonosov” floating nuclear power unit. Obviously, we are now at the beginning of the era of mobile power plants, and this experience is an important competitive advantage. The USC is building up competencies in order to be able to satisfy the existing demand for the update of the research fleet.

Currently, the USC employ around 100 thousand people, but our enterprises still need highly-qualified personnel. We annually accelerate the volumes of cooperation with field-specific colleges and higher educational establishments. We help educational establishments materially or organizationally, create on their base new research and technology centres and specialized departments, take every possible step to promote engineering specializations. Young USC’s engineers often become winners of the Worldskills contests of professional skills and a number of other engineering competitions.

The shipbuilding industry is famous for its traditions and dynasties. Many of our shipyards have been operational already for more than one century. This year we are celebrating anniversaries of truly legendary enterprises: 315 years of the Admiralty Shipyards, 170 years of the Krasnoye Sormovo plant and 80 of the Sevmash. A bit younger are the Almaz Central Maritime Design Bureau – 70 years old, and the Shiprepairing Center “Zvyozdochka”, which is 65. Each of them has its own unique history, but they are all united in their desire to continue to serve to our Motherland. And there is still a lot to do.
NUCLEAR KEYS TO NORTHERN SEA ROUTE
The launch of the third nuclear-powered icebreaker “Ural” of project 22220, devoted to the 163rd jubilee of the Baltic Shipyard

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SURVIVED TOGETHER, AND CELEBRATED VICTORY.
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Introduction of present-day automated control systems at the 33 Shipyard

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The Vympel design bureau is participating in the development of Russian ferries for all the key directions

IMMORTALIZED HISTORY OF SEVMASH
Monuments to shipbuilders

PROPULSION ACTIVITY
How to provide scientific and technological security of Russian shipbuilding
Dear reader!

In the previous edition of the USC corporate magazine (No.3, 2018) there is a mistake pertaining to the name of the author of the article "Victorious ‘canalia’". The author is Nataliya Korotchenko, a personal correspondent of the "Rossiyskaya Gazeta-Yug" publication.

On the first cover page:

Construction of a bulk carrier at the Krasnoye Sormovo Shipyard

Sormovo’s workers, who have inscribed their name forever in the history of Russian Shipbuilding

Senior years

Interview with the captain of the “Sedov” barque Arctic Force

Knowledge in open access

Education under sail

The launch of the most powerful icebreaker in the world “Ural”

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Memoirs of Vyacheslav Uvarov, senior constructor and responsible commissioner of submarines

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A driver of internal corporate cadre development

P. 56 EXPERIENCE IN SERVICE FOR SHIPBUILDING
A meeting of the Council of Elders of the United Shipbuilding Corporation was held in Saint-Petersburg
On May 26 the Baltic Shipyard will be celebrating its 163rd anniversary. On this occasion, the Baltic shipbuilders sought out a gift: launching their 3rd nuclear icebreaker, scheme 22220, the “Urals”.

**2019 IS THE JUBILEE YEAR FOR THE RUSSIAN NUCLEAR-POWERED ICEBREAKERS FLEET**

60 years ago, in December of 1959, a governmental commission signed a certificate on acceptance for operational testing of the first world’s civilian vessel with a nuclear-powered propulsion system, i.e. atomic icebreaker “Lenin”, which became the forefather of the new era in the history of the world shipbuilding.

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For the “Urals” shipbuilders, the hand-over day will come faster than it did for their forerunner who had built the “Arctic” and the “Siberia” icebreakers. The difference is the process design enabling them to cut the icebreaker construction time.

Three years ago, in the 160 jubilee year, the Baltic shipbuilders floated out the hull of the head nuclear-powered icebreaker, the “Arctic”, a year later – that of the first production icebreaker, the “Siberia”. At this very moment, on the outfitting pier, the shipbuilders are fitting them out, starting-up and commissioning them, preparing the nuclear fuel loading of the head universal nuclear icebreaker and preparing mooring tests on the second icebreaker. Distinctions between the three ship building approaches are well visible in the phase of shaping the hull on the stocks. Rationalizing from one icebreaker to another, the Baltic shipbuilders boost the launching weight of all ships under construction: the “Arctic” was floated out weighing ca. 14,000 t, and the “Siberia” weighing ca. 16,000 t. During the preparation to the “Urals” launch, the management of the shipyard directed to boost the ship’s weight to 19,000 t. This allowed loading the reactors RHYRHM-200 on the stocks without involving the crane vessel “Demag”. The shipbuilders had coped with the task; however, it turned out during the calculation that even upon the expansion of keel tracks the commonplace paraffin-vaseline mixture, the launching grease, could ill afford the required ship weight.
Neither did the compatibles made of organic components suit for it. In pursuit of an alternative, the Baltic shipbuilders have developed different testing of the launching grease in the lab and on the stocks. Lead designer Oksana Chupikova and project & launching works supervisor Valeria Ditkovskaya found the solution. During an on-the-spot visit to one of the USC shipyards, they discovered that the launching grease coated on the keel tracks of the shipyard, was tolerant to mild weather. Apropos: the words “launching grease” date back to the foretime, as ships were floated out by using green bacon. Further tests at the Baltic Shipyard showed its quality. When the “Siberia” icebreaker was floated out in 2017, the mixture showed greater thread slip and immunity to elevated temperatures. Thus, the asset of the Baltic shipbuilders not only broke the new ground to launch icebreakers in the summertime, but it also ensured the increase of ships’ launching weight without the need to refit the keel tracks.

LOADING REACTORS ON THE STOCKS

Today the launching weight of the “Urals” ready for the launch is close to 20,000 t. Whereas the “Arctic” icebreaker was launched being fitted out just with electric propulsion system components, on the “Siberia”, in its turn, the system was installed almost completely and the “Urals” will leave the stocks with reactor plants already loaded. As explained by the project manager 22220 Alexei Smirnov, the next two production icebreakers would be assembled not of structures/sections weighing 70–80 t each, but of structures/sections more saturated with marine systems, and they would be floated out with submerged steam-turbine plants. Such an approach allows easing the shipbuilders’ job, cutting the costs and time for construction to 5 to 6 years and therefore ending up with batch production to develop the Northern Sea Route.

Increasing the launching weight of the “Urals” icebreaker meant that the loading of the equipment for the first time should better take place amid the sloping pile. In the past, as icebreakers had been built at the Baltic Shipyard, loading of reactors had been carried out on the surface of the water by use of a crane boat. Primarily shipbuilders of the rigging sector, design-engineering support, solved the problem. Specialists of special energetics section, machine shop and Chief Metrologist Department were responsible for design implementation in the operating mechanism. The rigging in use enabled them to install the reactor to the ship under construction with pinpoint accuracy. This included casters and guiding grooves that declined the reactor axis by 2.81°. The reactor’s journals moved through guiding grooves being an extension of jacks in the shielding metallic tank. This scheme has ensured that the reactor is positioned properly.

FLAGSHIP AT THE NORTHERN SEA ROUTE

The construction of three nuclear icebreakers, scheme 22220, the beginning of the construction of 4th and 5th production icebreakers are, among others, part of the schedule chart for the implementation of the Federal Project “Northern Sea Route”. As President V. Putin said in his Address to the Federal Assembly, the Northern Sea Route would become a key to developing Russian Arctic and Far East regions”.

The Arctic Region is essential to the economic endeavors of Russia. According to official statistics, ca. 20% of GNP and over 25% of the national export are provided here. In the Arctic Circle,
the major raw material base is situated where over 80% gas, 25% crude oil, 60% copper, 95% Russian nickel and cobalt are located and produced.

The importance of the Northern Sea Route connecting European and Far Eastern ports is an obvious stuff. Its reclamation will enable us to considerably cut the GNC haulage cost, cut the gas delivery time to Asia by almost one hundred per cent. In accordance with the Project, by 2024 a year-round navigation must be organized at the Northern Sea Route with a transportation load of more than 80 m t/year. Nowadays, the global traffic flow between Asia and Europe leaves Russia out using the Suez Canal, whereas the Northern Sea Route is very nearly twice as short. Thus, the distance between Vladivostok and St. Petersburg via the Suez Canal makes 23,000 km, via the Northern Sea Route – 14,000 km, whereas 18,000 ships pass via the Suez Canal annually, via the Northern Sea Route – up to a maximum of 100.

Apart from reduction in expenses for fuel and reduction of the journey time, the haulage via the Northern Sea Route cuts labor costs and brings down the freight value. Another advantage is a no-queue state and non-payment for ship journey. Besides, the northern route is safer in terms of piracy.

Negative factors also have an impact on shipping in the North Polar Region: harsh weather conditions and terminable navigation season. The nuclear icebreakers solve exactly this problem, but their number is not sufficient as yet. Offshore from the Northern Sea Route, eight icebreakers are active today, just four nuclear ones among them (scheme 10521 “Yamal” and “50 years of Victory” as well as shallow-draught icebreakers, scheme 10580, the “Taymyr” and the “Vaigach”).

“The active nuclear icebreakers have next to reached the end of their service life and need changing, the project manager 22220 Alexei Smirnov says. – Now, amid brisk growth of natural gas extraction, liquefaction and deliveries, high-cube energy commodities are to be transported, particularly fuel gas. With this purpose, north polar tankers are built that need ice-routing services. The minimum requirement will be secured by three (under construction) and two future all-powerful nuclear-powered icebreakers, scheme 22220, which the Baltic Shipyard is supposed to hand over to Atomflot in 2020–2026. Besides, the Customer considers an option of building four gas-diesel icebreakers in their capacity as escort vessels able to operate in outlets of north polar rivers. Finally, the construction of three icebreakers “Leader” of 120-megawatt capacity would allow to launch a line of ice-routing services for gas carriers at a commercial rate of sailing of up to 12 knots per hour from Arctic center to the Far East. These are the major prospects in developing the Northern Sea Route”.

The universal nuclear icebreakers, scheme 22220, are being built “per class” of the Russian Registry of Shipping at the Baltic Shipyard by order of Rosatom State Corporation to become the biggest and the most powerful nuclear icebreakers worldwide. The keel of the head nuclear icebreaker, scheme 22220, the “Arctic”, was laid down November 5, 2013 and it was floated out June 16, 2016. The keel of the first production nuclear icebreaker, the “Siberia”, was laid down May 26, 2015 and it was floated out September 22, 2017. The keel of the second production nuclear icebreaker, the “Urals”, was laid down July 25, 2016 and it is to be floated out this year.

“We make preparations for this as for a blessed event. Day after day, month after month, we gently raise this ship, and soon it will touch water for the first time ever. We find it solemn and also frightening to a certain extent. This is the instant when we pride ourselves on doing his”, Valeria Ditkovskaya is getting things out in the open.

Icebreakers of this scheme are fitted out with a front-side split plant, whereas the steam major source is the new breed reactor plant, RHYRHM-200, of 175 megawatt capacity specially designed for this type of a vessel by I.I. Afrikantov Experimental Mechanical Engineering Design Bureau”.

The team of the Iceberg Central Design Bureau developed the engineering design of the nuclear icebreaker. Its dual-draught structure will allow utilizing the ships both in arctic waters and in the outlets of polar rivers. The vessels will be operating in western Arctic: the Barents Sea, the Pechora Sea and the Kara Sea as well as in shallower water areas of the Yenisei outflow and off the Gulf of Ob. ❗️

### SPECIFICATIONS

**ICEBREAKER [SCHEME 22220]**

<table>
<thead>
<tr>
<th>Capacity: 60 megawatt (shafting)</th>
<th>Width: 34 m (33 m design waterline)</th>
<th>Maximum icebreaking capability: 2.8 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of sailing: 22 knots (open water)</td>
<td>Height: 52 m</td>
<td>Full displacement: 33,540 t</td>
</tr>
<tr>
<td>Length: 173.3 m (160 m design waterline)</td>
<td>Draught: 10.5 m / 8.65 m</td>
<td>Rated effective life: 40 years</td>
</tr>
</tbody>
</table>

Keel laying ceremony, the second production nuclear icebreaker, scheme 22220, the “Urals”, July 25, 2018
A dancing icebreaker

Construction of the icebreaking support vessel Andrey Vilkitsky began in 2015 using large-block construction technology, which Vyborg Shipyard successfully employs in the construction of various classes of vessels. On July 4, 2017, the vessel was launched for further fitting-out and installation of equipment.

The icebreaker is named after the famous Russian hydrographer-surveyor, polar explorer Andrey Ippolitovich Vilkitsky (1858-1913). The vessel was built to operate in Arctic freshwaters covered by ice up to 2.5 meters thick for more than 200 days a year. The task is further complicated by shallow waters in the Gulf of Ob area and strong storm winds. To ensure uninterrupted off-loading of oil beyond the Arctic Circle, icebreaking vessels such as the Andrey Vilkitsky and the Alexander Sannikov, which became the first icebreaker built under the Time of the Arctic program, are needed. These vessels clear water channels through which tankers pass freely and safely to the Arctic Gate terminal.

Because of the impressive size of the vessel (121.7 m long, 26 m wide, with a draft of 8.2 m), it was impossible to build it the classical way, i.e., in a covered slipway, with further fitting-out on an open slipway and launching through a lift basin. That is why the semi-submersible barge Atlant was used, which was also used earlier in the construction of a series of Project 21900 M icebreakers. The blocks for the vessel were
is effective owing to a low draft of eight meters and maneuverability. Andrey Vilkitsky accelerates to 16 knots (30 km/h) in clear water, can make a 360-degree turn in a minute and, with propulsion power of 22 MW, it offers the icebreaking capability comparable to that of more powerful nuclear icebreakers. For its unique maneuverability, the vessel was called “dancing”. Such benefits of the vessel are provided by the hull design and three 360-degree rotating Azipod propulsors of which two are located in the stern of the vessel and one in the bow. They enable the icebreaker to carry out operations in difficult conditions in the area of operation of the vessel as effectively as possible.

Owing to equipping the icebreaker with digital facilities, a crew of twenty-one people is enough to operate the vessel, while the nuclear-powered ships have a crew two to three times larger.

Andrey Vilkitsky is the most advanced diesel-electric icebreaker in the world. Even at full speed of 16 knots, the icebreaker is controlled by just three joysticks.

**COMFORT AND SAFETY**

Everything is provided on the ship to create comfortable working conditions for the personnel. For example, metal railings on the ship’s deck are automatically heated to prevent icing of them. Andrey Vilkitsky is designed to work up to 40% comparison to last year. Logistics, the ability to continue oil off-loading and transportation via the Kara Sea regardless of weather conditions, is key in this regard. Therefore, the construction of icebreakers was a necessary condition for the further effective development of Novy Port.

built in a covered slipway and then were transferred to a painting shop using self-propelled trailer platforms. After painting, the blocks were transported to a fitting-out quay of the shipyard, where they were loaded on the Atlant using a floating crane. Thus, the icebreaker was finally assembled on the semi-submersible barge. As a result, the icebreaking support vessel was built by the Vyborg Shipyard on a turnkey basis within the shortest possible time.

**INNOVATION FOR MANEUVERABILITY**

The main advantage of the vessel is that it is an icebreaking support vessel rather than an icebreaker. Such vessels are designed to carry out operational tasks: icebreaker escort for tankers, mooring and loading operations, towing of vessels, fire fighting, participation in oil spill response operations, assistance in rescue operations.

In addition, Andrey Vilkitsky is designed to meet zero discharge requirements, which is safer for the ecology of the region – all solid and liquid waste is stored onboard and disposed of on shore. Remote automated control of the Arctic Gate terminal during mooring operations and off-loading of oil to tankers is provided from the icebreaking support vessel. A special shape of Andrey Vilkitsky’s hull enables the vessel to cut and break up the ice rather than crush it like nuclear-powered ships do. The vessel has a throw length of over 1250 m³ of collected oil storage and transportation via the Kara Sea regardless of weather conditions, is key in this regard. Therefore, the construction of icebreakers was a necessary condition for the further effective development of Novy Port.

**ANDREY VILKITSKY**

[ PROJECT IBSV01 ]

**Icebreaking Support Vessel**

**Length:** 121.7 m  
**Beam:** 26 m  
**Draft:** 8.2 m  
**Power:** 22 MW  
**Main deck width:** 26 m  
**Deadweight:** 3,400 tons  
**Speed:** 16 knots  
**Endurance:** 40 days  
**Crew:** 21

The vessel was built under the technical supervision of the Russian Maritime Register of Shipping, class Icebreaker8.

In terms of the level of equipment, Andrey Vilkitsky is superior to most existing icebreakers. It has its own fire station, a helipad, emergency boats, a powerful winch and a crane with a capacity of 26 tons. The vessel is equipped to collect oil spills, and 1250 m³ of collected oil can be accommodated in its tanks. A modern fire extinguishing system is also installed on the vessel whose water jet has a throw length of over 100 meters.
A half century of new ERA

The history of the Svetlovsky Enterprise ERA joint stock company dates back to January, 1969. Since the foundation and to the present, it has carried out electrical installation works during the construction of more than seven dozen ships and vessels of different purposes, as well as of a maritime stationary oil-extracting platform. Several hundred ships have received new life here.

Svetlovskaya ERA is located on the bank of a navigable canal, thirty kilometers from Kaliningrad. Since its inception as part of the ERA Riga Production Association, the company was oriented on servicing the Soviet large-tonnage fishing fleet. In addition, in cooperation with Svetlovsky Ship Repair Yard, on the production site of which ERA is located, a series of auxiliary vessels were built and experimental work on the construction of unique catamaran fishing vessels was undertaken.

Having gained independence and autonomy, Svetlovskaya ERA has made a number of successful attempts in its recent history to diversify production and was able to offer its numerous customers a full range of services related to the repair of marine and industrial electrical equipment: integrated diagnostics, alignment, rigging, fitting and assembly, and even welding works, as well as equipment delivery using its own transport vehicles. Such an approach enabled the enterprise to significantly expand its market niche and partially offset the production volumes lost as a result of the breakdown of Soviet-era cooperation ties by attracting new customers.

In 2002, ERA completed the full cycle of the most challenging electrical work on the fixed offshore ice-resistant platform D6 for Lukoil’s Kravtsovskoye field in the shortest possible time, thereby ensuring the Russian company’s control over the oil field of contested ownership.

On March 21, 2007, in accordance with Presidential Decree No. 394, Svetlovskaya ERA was the first to become part of the United Shipbuilding Corporation (USC), which was being established, by transferring its shares to the authorized capital of the Western Shipbuilding Center, a USC subsidiary.

In 2012, due to a significant change in market conditions and loss of its major customers, the company undertook efforts to expand into the naval ship repair and shipbuilding segment. ERA was able to quickly re-establish its whole workflow to meet the appropriate standards through the heroic efforts of its staff, and the company itself was certified and licensed to work with military equipment.

USC’s related enterprises, Baltic Yantar Shipyard and 33rd Ship Repair Plant, provided timely and invaluable assistance to ERA in ensuring proper capacity utilization. As a result, the company has acquired a number of new competencies and managed to achieve a five-fold increase in output and profits earned since 2012 without borrowing funds.

Today, ERA is involved in all projects carried out by the Corporation’s enterprises in the region. The most significant of these over the past few years include electrical work on the Project 11356Р frigates for the Yantar Baltic Shipyard and work with 33rd Ship Repair Plant under separate contracts for scheduled major repairs of the Baltic Fleet’s ships: the floating workshop PM-82, large landing ships Kaliningrad and Olenegorsky Gornyak.

By its 50th anniversary, Svetlovskaya ERA is implementing...
its largest-ever project involving a full cycle of electrical work on a series of three Project SK-3101R trawlers for the Yantar Shipyard. This project is new and, of course, challenging both in terms of project documentation, which is of the schematic nature and is being developed by a foreign company in real time, and in its engineering content because of the need to use state-of-the-art electrical equipment and extremely high saturation of the electrical part of the project. For example, an average of two kilometers of cable and fifty pieces of electrical equipment fall on every linear meter of the vessel. The result of the company’s work on the lead vessel Leninets looks even more worthy. Electrical work there was completed well ahead the contractual deadlines, and the trawler is ready for sea trials. With implementing such an order, Svetlovskaya ERA has demonstrated the ability to perform a full cycle of electrical work on virtually any order with zero defects and on time.

made it possible to exhaustively fulfill all the company’s contractual obligations over the past ten years, with no delivery delays and claims for quality of production. It is this professional approach that has shaped the Svetlovskaya ERA brand, which enjoys the well-deserved confidence of regulatory bodies and final consumers who do not want to entrust their technical problems to other companies. For its part, Svetlovskaya ERA exhaustively fulfilled its obligations to all participants of the company, having not a single case of wage arrears for the last decades and providing annual and steadily growing profits for shareholders.
ALWAYS AHEAD OF TIMES

Over its history, the Sormovo shipyard has many times been a pioneer of technical progress. It saw Russia’s first open hearth furnace, first Soviet tank, first all-welded paddle steamer, the country’s first industrial continuous steel casting plant, the world’s first passenger hydrofoil and the world’s first double-hulled floating crane. As Krasnoye Sormovo is celebrating a major anniversary this year, its people are recalling the shipyard’s glorious history and pondering over present days.

The founder and then the sole owner of the new shipyard on the Volga River near Nizhny Novgorod, central Russia, was Dmitry Yegorovich Benardaki, a Russian industrialist of Greek origin. Together with two Russian princes, Lev Kochubei and Vladimir Menshchikov, “retired poruchik” Benardaki established a company with a long name and ambitious plans: Nizhny Novgorod Machine Factory and Volga–Kama Steam Navigation Line.

In March 1849, the founders allocated 500,000 rubles in silver for the factory’s construction. And on July 21, the Balakhna County Court approved the purchase of the land for the future plant between villages Sormovo and Myshyakovka.

No doubt, the Sormovo shipyard, which will celebrate its 170th birthday on July 21, 2019, was Bernardaki’s favourite child. He invested his money, energy, will, intuition and luck to fulfill his dream to build ships. Like no one else, Bernardaki realized the importance of the Volga, this free Russian highway and the water artery that feeds the country’s economy.

The shipyard’s operational management was entrusted to Alexei Ivanovich Uzatis, retired major of the Mining Engineer Corps.

This “union” between Benardaki and Uzatis lasted for over 20 years and laid down the basis of Sormovo’s key activities for many decades to come.

Building commercial vessels (first wooden, then with a metal hull — for the first time in Russia); executing orders from the Naval Ministry; manufacturing steam boilers, ship mechanisms and a dredger; making vessels for the Caspian Sea; installing Russia’s first open hearth furnace — these are just some of the things the Sormovo shipyard did during the first, 20-year long period in its history, when it was run by Bernardaki.

As soon as in 1856, almost half of
all Russian steamers in the Volga–Kama basin were the ones built in Sormovo. And in the late 1860s, the factory launched production of railway machinery. The first Sormovo-built vessel was named Lastockha (meaning «swallow» in Russian). By 1870, the shipyard had already constructed 80 vessels: capstan vessels and anchor delivery boats for them, steam tugs, barges and others. A year after Dmitry Bernardaki’s death, in 1871, the Sormovo shipyard built the first Russian two-decked passenger steamer, named Perevorot (Russian for «revolution»; later she was renamed Colorado). This luxurious steamer provided unprecedented comfort and an upstream speed of 12 km/h. She marked a revolution in river shipbuilding: double-deckers became a trend in the construction of river steamers for decades to come, all the way till the mid-20th century. And the Sormovo shipyard, which was renamed Krasnoye Sormovo («red Sormovo») in 1922, has seen many revolutions like this, when the plant was ahead of the times.

**FROM AN OIL SCHOONER TO A CHEMICAL TANKER**

In 1887, the Sormovo shipyard launched an oil schooner, named Minin. She was a 320-horsepower screw tanker with a displacement of 500 tons. The schooner replaced barges with casks, which were used for transporting oil from southern Baku oil fields to inner regions of Russia. This gave a start to a new line of Sormovo’s commercial activities: construction of river oil carriers. The shipyard built 14 of them in four years. Featuring bold in-house technical solutions, a powerful power plant and high cargo capacity, these vessels were recognized the best in the class. Besides steam engines, they had sails on masts, which guaranteed a speed of nine knots.

In 1903, Sormovo shipbuilders launched the first river oil-carrying motor ship, named Vandal. She became the first diesel-powered ship on the Volga and in the world. A series of oil tankers were built in the 1930s. They were huge for the time and were considered as major achievements of the shipyard. Before World War II broke out, Krasnoye Sormovo had build 11 tankers of the class; their displacement was 11,940 or 7,600 tons. Over its entire history, the shipyard in Sormovo has constructed more than 200 tankers. And during the last 20 years, it has made 96 tankers and oil barges of different projects, meeting all the safety and reliability requirements stipulated in international conventions.

A number of vessels from Krasnoye Sormovo have gained recognition from foreign expert communities. Since 2004, Britain’s Royal Institution of Naval Architects (RINA) has added five Sormovo-built vessels to the list of Significant Ships of the Year. These are the lead Project 19619 tanker, President Heydar Aliyev (2004), and her sister ship Zangezur (2009), which underwent a major upgrade. For over 15 years, Project 19619 tankers have been the largest oil carriers in the Caspian Sea. Sormovo-built tankers are operating in the fleets of the Caspian countries on key Caspian fairways. Each of them can transport up to a million tons of oil and oil products.

Another Sormovo-built project, which was developed by the Volgo-Caspian Design Bureau, is the Project 19900 river-and-sea tanker with a deadweight of about 7,000 tons.

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**ALEXANDER TSEPILOV, Technical Director, Krasnoye Sormovo**

In the early 1990s, the shipyard went through a «zero conversion,» when all the military orders were cancelled and we had to look for our niche in the conditions of market economy. Today we can build ten river-sea class vessels a year and efficiently adapt to the construction of new projects. We would not have achieved this if, in the 2000s, we hadn’t started radical modernization of our production facilities and set up a technological conveyor, splitting a vessel’s construction cycle into separate technological operations. Since then, every year we’ve been re-equipping our production facilities, introducing automated equipment with modern numerical control systems. Only this is a way forward.
The lead ship of the project, Jeyhun, was constructed for Turkmenistan’s State Service of Maritime and River Transport and recognized as one of the Significant Ships of 2010.

The Project 19614 tanker with a deadweight of 5,400 tons is an eager beaver for rivers; sailors love this vessel for her superb reliability and maintainability. From 2002 through 2011, Krasnoye Sormovo built 25 vessels of this project, which had been designed by the shipyard itself. For the early 21st century, this is a record number of same-project vessels, built by one shipyard.

But the record did not stand very long: in 2017, it was beaten by this very shipyard with the construction of Projects RST27 and RST27M tankers. The Marine Engineering Bureau has designed the project; and Krasnoye Sormovo has already produced 28 tankers of this family. The lead ship, VF Tanker-1, continued the good tradition and was named among the Significant Ships of 2011. The first upgraded Project RST27M tanker, Balt Flot 16, also deserved a place on this list in 2017.

To achieve maximum economic effect, you need a cargo vessel with the highest possible deadweight. The efficiency of operating mixed-navigation ships, whose dimensions are limited by the conditions of internal waterways, can be increased through a rational hull design, higher block coefficient of fineness of displacement and an optimized propulsion system. The Projects RST27 and RST27M tankers enjoy the record block coefficient of fineness — 0.93. Continuous improvement of serial vessel projects and willingness to meet the customers’ requests constitute the foundation for long-term partnership ties between the shipyard and shipping companies.

When working on Project RST27 tankers, Krasnoye Sormovo staff together with specialists from the Marine Engineering Bureau and the Volgo-Caspian Design Bureau never ceased to enhance the project. As a result, the Project RST27M vessel became a chemical tanker, which can safely transport dangerous cargoes and a wide range of vegetable oils. Compared to the Project RST27, she also received better sea-going qualities and extra 880 tons of deadweight (up to 7,900 tons).

In 1913, the Sormovo shipyard built a self-propelled barge, named Danilikha. This light dry cargo ship could carry 800 tons of freight with a draft of about one meter. As a result, she could easily reach Moscow, which was impossible for other steamers. Dry cargo vessels have traditionally accounted for a large share in the Russian commercial fleet; and the Sormovo shipyard had to resume their mass production several times in its history. The biggest batch — 120 vessels — was built from the late 1960s to the 1980s under Krasnoye Sormovo’s Project 1557. These are mixed river-sea vessels, custom-made for the Volga-Baltic waterway. Paying respect to the shipyard, this class of dry cargo vessels was dubbed Sormovsky. In 1985, Krasnoye Sormovo began to build the Volga-type dry cargo vessels; a total of 45 have been launched.

To date, the shipyard’s order portfolio for the current and upcoming years includes fifteen Project RSD59 dry cargo vessels, designed by the Marine Engineering Bureau. In 2018, the shipyard completed five of such vessels, contracted by Russia’s State Transport Leasing Company for Pola Rise Ltd. During the construction, thanks to the joint efforts of the shipyard’s designers and specialists, the vessels’ cargo capacity was increased by 800 tons (their deadweight is 5,269 in rivers, and 8,093 in seas).

The Project RSD59 has borrowed the «super-full» hull lines from the RST27 tanker, thus ensuring a high coefficient of fullness. The vessel has two dry cargo holds, one of which is almost 78 meters long — a record figure for vessels of the Volgo-Don Max class. This enables shipping of long cargoes, which is currently quite topical for the Caspian region.

**A SELF-PROPELLED BARGE AND “SUPER-FULL” DRY CARGO SHIPS**

In 1929, the Soviet Naval Directorate ordered a submarine «with a displacement of 580 metric tons.» The order also mentioned that the shipyard was to be ready to «build up construction...»
to twenty submarines in case of war.«

The country’s leadership was preparing for a war, so it seemed reasonable to set up submarine production far away from the borders.

Krasnoye Sormovo laid down its first Shchuka-class submarine on February 23, 1930; and the Soviet Navy received her in 1934. Submarine construction is a separate record in the shipyard’s chronicle, proving the heroism and high professionalism of Sormovo workers. There were periods when they would launch a new boat in a special floating dock every month. And in certain times — every ten days! This is the case with the Project 613 diesel submarines, the most numerous post-WWII class.

During 75 years of submarine construction, Krasnoye Sormovo built, upgraded and handed over to the Navy more than 300 submarines of different projects, including six nuclear ones.

In October 1941, the shipyard began to manufacture the T-34 tanks. During the World War II, the shipyard produced more than 13,000 tanks, 27,000 submarines and over 3,000,000 projectiles for the legendary Katyusha multiple rocket launcher.

A TEAM OF PROFESSIONALS

Ability to undertake the most challenging tasks and re-launch production of immensely sophisticated vessel types on an absolutely new level have become distinctive features of Krasnoye Sormovo. Without a tight-knit team, you can never achieve strategic or tactical goals and comply with the construction schedule. The shipyard obviously has a team like this.

Engineers, workers, mid-level managers and the leadership of Krasnoye Sormovo are top-grade professionals.

The case with dredging vessels is quite indicative. The first Russian dredger was built by the shipyard in 1858. Later on, not once did the shipyard resume construction of this vessel type — a total of 47 dredgers were built in Sormovo. Then the shipyard did not have any orders like this for more than 60 years.

But when in 2014 Russian federal company Rosmorport signed a contract for the construction of three Project TSHD1000 dredgers, all of them were commissioned on time and assigned to Russian ports Ust-Luga, Saint-
Petersburg and Tuapse. In this case, it would be more correct to say that Kharsnoye Sormovo has opened up a completely new production area rather than resumed dredger construction. That’s because modern dredges differ radically from those of previous generations in terms of their equipment and productivity.

**PASSENGER SHIPS**

Sormovo’s first passenger craft, single-deck passenger paddle steamer Minin, was launched in 1856. In 1914, the company built cargo-and-passenger paddle steamers Velikaya Knyazhna Olga Nikolayevna and Velikaya Knyazhna Tatyana Nikolayevna for river navigation. Renamed after the Russian revolution into Spartak and Volodarsky, these steamers became legendary Volga vessels, which served until 1991 and 1986. Spartak «played the role» of steamer Lastochka in the famous Soviet movie A Cruel Romance by Eldar Ryazanov. Paddle steamer N.V. Gogol was added to the Guinness World Records. Built in 1911, she is the oldest Russian passenger steamer, which will do her 108th navigation in 2019!

In 1934, Krasnoye Sormovo built a special «government» steamer, named Maxim Gorky (initial name: Krasny Bogatyr), which had unique specifications. Another Soviet movie, Volga-Volga, showed the beautiful motor ship Iosif Stalin, which had been built together with three more vessels of the class for the Moskva–Volga Canal (now named the Moscow Canal). Having a streamlined all-welded hull with an unusual outline, these vessels looked really beautiful and were intended for 205 passengers.

Krasnoye Sormovo reached its peak in this field with the construction diesel-electric vessels Lenin and Sovetsky Soyuz. They were developed by the shipyard’s design bureau under the leadership of chief designer Vyacheslav Kerichev and commissioned in 1958–1959. Sormovo shipbuilders were the first in the country who began to build comfortable three-decked river vessels, which were 121.5 meters long, carried 440 passengers and could sail at a speed of 25 km/h.

In 2017, the shipyard kicked off construction of the latest generation of vessels like this. The gorgeous four-decked Project PV-300 cruise liner is being built under a three-party contract, concluded in January 2017. The partners are the United Shipbuilding Corporation, Mashpromleasing and shipping company Vodohod. The vessel is due to be handed over to the customer in 2020. The project was drawn up by the Marine Engineering Bureau — Design — SPb; the working design documentation is being developed by the Volgo-Caspian Design Bureau.

The cruise liner has the maximum dimensions (length — 141 meters; beam — 16.8 meters) that make it possible to operate in the Volga–Don system of waterways. The liner can carry 342 passenger and 144 crew members. On the main deck, there are restaurants; and the three above are for passenger cabins (all for two people) and recreation areas.

The ship is supposed to transport passengers along such long-distance cruise lines as Moscow – Astrakhan, Moscow – Saint-Petersburg and Moscow – Rostov-on-Don. The comfort level provided for the passengers makes her a five-star hotel on water.
Historians are yet to count how many people have worked at the Sormovo shipyard over 170 years. We have a list of 91 workers who started construction of the new factory in 1849. But the end of the 19th century, as many as 9,500 people were working in it. In 1930, by the time the shipyard began to make submarines, it employed 15,000 people. By the 1970s, when Krasnoye Sormovo was carrying out mass production of submarines, its headcount was 29,000 employees. If you count all the people who have worked at the shipyard over 170 years, their number would amount to the population of a Russian regional administrative center.

To date, Krasnoye Sormovo employs 3,500 people. On the one hand, this is a lot less than there used to be; on the other hand, it is enough to build ten civilian vessels every year. We should also take into account the profound modernization, which was started by the company in the 2000s and continues to this day.

History has preserved tens and hundreds of names, which will be etched in gold in the history of the shipyard and the entire Russian school of engineering. Among them are mining engineer Alexander Iznoskov, who built the first open hearth furnace in Russia, and many talented marine engineers: Konstantin Okunev, the shipyard's head; Alexei Nekrasov, developer of the first 1,000-ton steamer on the Volga; Vasily Kalashnikov, a famous shipbuilder, combustion engineer and designer of steam engines; Gustav Trinkler, inventor of the first diesel engine without a compressor; designer Bronislav Malakhovsky, who developed the S-series of locomotives, which were among the best Russian express locomotives; chief engineer Iosif Appak, who supervised the production of first Soviet tanks; marine engineer Nikolai Kuteinikov, the first Soviet designer who introduced the section method in submarine construction; engineer and production manager Mikhail Lerner, one of the prominent representatives of the generation that set up Soviet submarine construction; mechanical engineer Ivan Panteleyev, who introduced electric welding at the shipyard; Professor Vyacheslav Kerichev, an outstanding designer of new river vessels; Rostislav Alexeyev, a genius designer of hydrofoils; designer Albert Zhivotovsky, who developed river-sea dry cargo ships and the first Soviet passenger hovercraft. This list can be continued with the shipyard's directors Ye.E. Rubinchik, N.N. Smelyakov, M.A. Yuryev, N.E. Leonov and N.S. Zharkov; Heroes of Socialist Labor (supreme Soviet award for economy achievements) steelworker N.I. Anishchenkov, electric welder V.V. Paishchikov, assembly fitter A.P. Udalov; and many others.

Entire families would come to work at the shipyard. It is not only because the Sormovo district is like a separate city inside Nizhny Novgorod. Work at Krasnoye Sormovo is more than a job — it is a life journey. ...And you can see how excited local boys are when they look at new ships being launched, and how they try to get closer to witness the moment the new Sormovo-built vessel hits the water. And if you ask them, «What do you want to do when you grow up?» — they would answer, «Of course, I want to work at Sormovo!»

The article was prepared by the press service and the museum of the Krasnoye Sormovo shipyard.
Over the nine decades, the Sormovo literary society has grown up many good and different poets, some of them afterwards became members of the Union of Writers and leaders of the native literary society. The latter is respectfully called “the guards society” among the poets of Nizhny Novgorod. One of the main themes of the poetry writing of the natives of the Volga region was and still is the heroic history of the Sormovo plant, its glorious past and current everyday work.

An anthology of poems of Sormovo’s poets is being prepared for the issue by the 170th jubilee of the “Krasnoye Sormovo” plant, which is called “My Plant is my Destiny!”. This selection includes poems by the workers and production leaders, engineers and designers, journalists and cultural professionals. What they have in common is their sincere devotion to the native plant and pride of its achievements.

**MY PLANT IS MY DESTINY!**

In November 1927 the first issue of the “Krasny Sormovich” newspaper came out. It was the press organ of the Party Committee, Plant Committee, Komsomol Committee and of the plant management of the “Krasnoye Sormovo”. In May 1928 the first meeting of the “Volga” literary society of Sormovo’s poets took place at the newspaper editorial office. Today both the “Krasny Sormovich” and the “Volga” have passed the 90th anniversaries of their existence.
Alexander LYUKIN
(1919–1968)
Participant of the Great Patriotic War. He worked as a quality engineer at the Sormovo plant. Since 1961 – a member of the Union of Writers of the USSR. An author of twelve collections of poems. In 1960-ies he used to be the head of Sormovo’s literary society “Volga”. Nowadays the society is named after A.I. Lyukin.

Vladimir ZAMYSHEVSKIY
A former chief constructor and an expert on commissioning of Sormovo’s submarines. For ten years he used to head the Museum of history of the “Krasnoye Sormovo” plant. He is an author of four poetic collections.

Alexander KOLESOV
A former ship fitter, a veteran of the “Krasnoye Sormovo” plant. An author of several collections of verses.

Nikolay SIMONOV
Works as a ship fitter at the “Krasnoye Sormovo” plant. A member of the Union of Writers of Russia since 1999. An author of nine collections of poems, a holder of the award of Nizhniy Novgorod. Since 2004 he has been heading the “Volga” literary society in Sormovo.

Margarita FUNYUKOVA
Used to work for several decades as an executive secretary of the “Krasny Sormovich” newspaper. A member of the Union of Journalists of Russia. Currently – deputy director of the Museum of history of the “Krasnoye Sormovo” plant. She is an author of two poetic collections.

Andrey KHRAMOV
The oldest member of the Sormovo literary society. He started his professional career as a worker in the railroad workshop of the “Krasnoye Sormovo” plant. For many years he used to work as a correspondent of the “Krasny Sormovich” newspaper. An author of several collections of poetry.

Natalia YAROVA
NATALIA GEORGEVNA YAROVA works as a production engineer at the “Krasnoye Sormovo” plant. She is an author of two collections of poems.
Survived together.

75 years ago the most tragic period in the history of Leningrad ended – the fascist siege was lifted. The oldest plant – the Admiralty Shipyards – fought against the enemy for all those 900 dreadful days together with the tormented, but unbowed city.

AND CELEBRATED VICTORY TOGETHER!

The destinies of Saint-Petersburg and the Admiralty Shipyards, born practically at the same time, have always been inseparable. For all its 315 years of existence, the plant has been sharing with the city its victories and tragedies, ups and downs. The plant worked for the sake of the city and, not sparing itself, used to come to the aid to its senior brother.

TO SAVE THE CITY
Since the first days of the Great Patriotic War, the Admiralty workers raised to defend Leningrad, trying to avert the mortal threat from it. The plant workers formed two separate machine-gun and artillery battalions, which under the onslaught of dozens of tanks and powerful aviation attacks were defending the city at the turn of Old Peterhof, the Russko-Vysotskoye village and on the Babigon heights. Only 5% of the personnel survived in those battles. In total, more than 5,000 plant
workers were killed on the fronts of the Great Patriotic War.

In parallel, the shipyards transformed just in several days for the repairs of materiel coming from the battlefields and for the installation of extra armaments on mobilized civil ships. The plant produced military products, i.e. mines, bombs, field charges, entrenching shovels, spare parts for tanks. New models of ships were developed.

And all that unfolded on the background of an acute shortage of qualified cadres (a lot of experienced specialists went to the front), deficit of food stuff, permanent bombings. As many as 653 artillery shells had been dropped on the plant in the period from 22 June 1941 till 1 January 1944.

A power substation, several buildings and workshops were disabled.

In late December 1941, the supply of electricity was almost completely cut off. The premises of the plant were heated by braziers, and illuminated by improvised plates with wicks, where transformer oil was burned. Some workshops were temporarily stopped, part of the production equipment was evacuated to the rear.

But the enterprise kept on working in order to save the city in its rear and fronts. During the years of war, the Admiralty Shipyards built and handed to the Navy seven submarines, twenty armored boats, sixty-six submarine hunters, one hundred and sixteen self-propelled flat-bottom boats, repaired three hundred ships and submarines, including the Kirov and Maxim Gorky cruisers and the Leningrad – the flagship of fleet destroyers.

**LET THE MEMORY SPEAK**

In order to understand what it was for the shipyards, what an act of heroism and the strength of mind were behind these figures, one must plunge into that ambiance by reading documents, letters, issues of the plant newspaper “Patriot”, which was uninterruptedly issued even in the most difficult years of the siege.

**December 1942:** “Our plant was in extremely difficult conditions. At the same time, all the pieces of materiel in the workshops required emergency repairs. It was necessary to find the way out. And the way was found. Somewhere they found a half-broken old engine, repaired and gave life to workshop No. 17. It began to repair the systems, which were badly needed in the front. They found a compressor, put it on an electric motor, and the compressor gave air for pneumatic works. They launched an oil-electric engine of one of the systems and got electricity for welding. There was nothing at hand to cut metal. Then the “Marshall” of the welding area Comrade Stoma started to cut thick metal sheets of plating and main scantlings with electrodes. There was a lack of qualified workers, and the most experienced masters Kremer, Vladimirov, Klubov and many others became fitters, drillers and cutters themselves.

For one of the systems constructor Toptygin had to bend 28-mm sheets, and he was supposed to do it urgently. The reheating furnace of workshop No. 8 broke down. But even if it had been operational, it would have been useless as there was no oil. Constructor Toptygin came up to the old merited workers of the workshop and said: – Well, fathers, help out.

It is urgent to bend the sheets of the plating and main scantlings. The furnaces are not operational. Invent a way on how to bend. And they invented! Craftsmen Komarov and Rogalev with a group of sailors were quite quick to lay down a small coke-burner furnace, then they connected the air supply from an electric fan, and the work accelerated. The bending was completed in time…”

**April 1943:** “Turner of workshop No. 16 Petrov had been working for two days without leaving the workshop, and fulfilled the task, which required no less than six days. Comrade Karasev from the 5th workshop, a member of the Komsomol organization, every day brings up the score of revenge to the enemy by fulfilling no less than 2.5-3 norms a shift.”
LEKA SAVICHEV

The name of the plant is also connected with another world-known siege document, i.e. the diary of Tanya Savicheva, a symbol of courage of the Leningraders. We read the third page of this children’s notebook: “Leka died on 17 March 1942, at 5 o’clock in the morning”. Leka – that’s how Leonid Savichev, a planer from the Admiralty Shipyards, was called in the family. He was recalled as a very modest and hard-working young man: “He was never late for the shift though as everyone else in the workshop, he was extremely exhausted from hunger. Leka was 24 years of age.

Thousands of the Admiralty workers shared the terrible fate of the young man: around 3,000 plant workers died in the blockade. The administration did its best to save the lives of the team members. Yeast or lentil soup was prepared in a wooden one-story canteen. Each workshop received additional rations of bread, which were distributed in turn. A hospital was organized on the first floor of the main building, where weak and exhausted patients were nursed back to health.

70% percent of the shipyard’s employees at that period were women and teenagers. Working at the plant, they felt more secure than in cold and empty city flats. A dormitory was organized in the building of the plant management. A separate bedroom was allocated to the teenagers. Some extra food stuff, apart from the food stamps, was provided for them. Many people stayed in those dormitories, especially because in many cases the whole families came to work at the shipyards.

The plant needed labour force, and people needed the plant so that not to lose confidence in victory. When the workshops were operational, producing ships and vessels, there was hope and strength to wait. “The plant supported us, and we supported the plant. And we survived together. And celebrated the victory,” the veterans recall.

GUARDIAN CUTTERS AND SEA HUNTERS

This belief in victory helped the plant workers to stay overstretched, and not just work, but literally create. In 1943 alone, the shipyard experts submitted over 300 rationalization proposals, the introduction of which saved almost three and a half million rubles.

The Sudomech plant designed armoured sea hunters to fight enemy submarines. This project was implemented under the supervision of Chief Engineer Yuri Derevyanko. Due to the flow-positioning method of production, the plant managed to provide to the Navy three of such hunters a month. The design bureau of the same Sudomech plant designed a naval armoured cutter of project 61 (BK-503) in August 1943. These ships had reinforced artillery weapons, improved seaworthiness and habitability.

The November days of 1941 witnessed an event, which pre-determined the destiny of the besieged city, i.e. a route connecting Leningrad and the Big Land was laid on the ice of the Ladoga Lake. This route was called the Road of Life. So that this vital connection was not interrupted even in the warm season, means of crossing were badly needed. And the Admiralty Shipyards was one of the first to deal with the construction of those means.

A letter from the front-line men to Grigoriy Ivanivich Musorin, a fitter of workshop No. 15 (he was responsible for handing over the system to the customer):

“Dear Grigoriy Ivanovich, sorry that we are writing to you only now and did not write immediately upon arrival. We did so in order to let the cutter operate in a combat environment and to test the engines in combat conditions.

Our cutters were honoured to hit three German Ju 88 planes – “yuries” as we call them. Now we have to wage war against the enemy aircraft, as its aviation is trying in every way to prevent us from completing the task set by the command. But there is no problem for us, the fascists are disappointed about the cutters. The cutters are strong. And, despite the activity of their aircraft, our cutters survive and create problems to the Germans. On such boats you can revenge not only for Leningrad, you can revenge more, and we will avenge them. We will avenge them for Leningrad many more times.

Dear Grigoriy Ivanivich! We are going all right. Navigate safely. The material issues are in order. We thank you for the repairs and for your personal care of our cutters… We thank you and all the staff members for the repair of the cutter.

SEE YOU AND KIND REGARDS: REMAZOV, MARSUKOV, PAVLOV, KISELEV, ELESOV.”

A detachment of torpedo boats as part of the Baltic Fleet under the command of Hero of the Soviet Union Vladimir Gumanenko defeated several dozens of enemy ships.
barges with a displacement of 20 tons, and having overcome all the difficulties, commissioned the first batch already by the beginning of the summer navigation. The barges were built under artillery firing just on the banks of the Ladoga Lake, irrespective of hunger, severe frosts and overload. The Admiralty workers had to display incredible courage and firmness, as after the first and the most dreadful winter of the blockade, they definitely had a lack of energy. But by the end of summer the order for 30 barges was completed ahead of schedule.

Simultaneously they were producing flat-bottom cutters for carrying 35-55 passengers. They were equipped with automobile engines ZIS-5 and reached the speed of up to 5 knots. In 1942 alone these small vessels evacuated more than 250,000 Leningrad natives. The whole Ladoga was saying that those small boats were invulnerable. Those Leningraders, who came to Osinovets to be evacuated, asked to go on board of the cutter only. The simplicity of the design – this is what surprised all the specialists engaged in the commissioning of the vessel. Its strict contours seem to reflect the courage of Leningrad shipbuilders. Famous flat-bottom cutters were built by other plants too, but it’s certain that the Admiralty people contributed to the Road of Life a lot by creating a ship that became the main transportation asset on the route.

Nowadays the famous cutter is taking a place of honour in the Museum of the Road of Life on the Ladoga Lake.

The memory of the courage and firmness of the Admiralty people is carefully preserved and transmitted to the new generations of shipbuilders. A memorial plate dedicated to the shipyard workers, who died during the war, was installed at the Piskaryov Memorial Cemetery. Every year on May 9 and January 27, on the Leningrad Victory Day, ceremonial gatherings are held on the plant square near the Glory Memorials. For the enterprise, this is not just a tribute to the tradition, it is an honorable right to feel involved in the heroic acts of those who glorified the name of the Admiralty Shipyards.

The publication was prepared by the section of public relations of the Admiralty Shipyards.
SECURITY FIRST

The priority areas for the security departments are to ensure economic and information security, counter foreign technical intelligence activities, protect State secrets, provide counter-terrorist protection of enterprises, and take measures to prevent corruption.

The ongoing re-equipment of the Corporation’s main enterprises, the use of new domestic technologies in the construction of ships (often unique in the world), the options for deploying high-precision weapons on new and modernized warships - all of this causes increased interest from foreign potential competitors. Accordingly, the forms and methods, as well as the emphasis in the work of the corporate security service, have been adjusted more than once over the past five years.

From 2015 to 2018, the establishment of an effective vertically integrated security system was completed and uniform operating principles for all security units were developed in the United Shipbuilding Corporation and its subsidiaries. Today, our employees are actively involved in activities to prevent various offenses, identify and document crimes committed against USC subsidiaries and affiliates. They conduct internal...
investigations and audits on the evidence and cases of economic damage, contribute to its compensation, prepare and send materials to law enforcement agencies to make procedural decisions, represent the interests of the companies in law enforcement and judicial authorities and organize interaction with them on various issues of production activities of subsidiaries and affiliates.

In addition, security employees conduct systematic work to prevent corruption, which includes monitoring compliance with the USC Group companies’ anti-corruption policy developed on the basis of a national anti-corruption plan.

Security of companies is a continuous and complex process, requiring the combined efforts by all stakeholders and a systematic approach. Security units promptly inform the President of the corporation and the general directors of the USC Group companies about various risks of production activities, which allows the management to make informed management decisions, including those concerning the localization of threats of economic or reputational damage, as well as preventing the loss of information and products that constitute State secrets.

Thus, in 2018, as a result of timely measures taken, over 90 million rubles were returned to the companies’ revenue and potential risks of damage amounting to about 2.5 billion rubles were localized. In total, security units reimbursed more than 570 million rubles of the economic damage caused previously to the USC Group companies and prevented damage amounting to more than 5.7 billion rubles between 2015 and 2018.

The main efforts are focused on preventing and deterring various violations and abuses, as well as minimizing damage. This is a common challenge facing the heads of enterprises and production units, as well as security units. At the same time, certain specific issues are resolved by the corporation’s security service units in cooperation with the employees of the regulatory and enforcement authorities of the Russian Federation: the General Prosecutor’s Office, the Federal Financial Monitoring Service, the Investigation Committee, the Ministry of Internal Affairs and the Federal Security Service of Russia.

Unfortunately, despite the measures taken by the management of the Corporation and its subsidiaries and affiliates, there are still cases of non-compliance by individual officials with the requirements of local regulations and abuse of office. In 2017–2018, USC Group companies sent 167 complaints about the cases of material damage totaling more than 893.7 million rubles, on the basis of which 99 criminal cases were initiated. As of January 2019, the courts have completed the consideration of 53 criminal cases, upheld the companies’ claims within the framework of 43 criminal cases and made decisions on partial compensation of material damages.

An illustrative example of joint work with law enforcement agencies was the suppression in 2015 by Sevmash Production Association’s security unit of illegal activities of an organized group that consisted of employees of Sevmash, the Severodvinsk representative office of the Kursk Mayak Plant, and Russian Defense Ministry’s military acceptance officers, which, for personal enrichment, committed theft of funds allocated under the state defense order for several years by submitting false information about the work performed. The total amount of damage to Sevmash amounted to more than 200 million rubles.

As a result of the painstaking work of documenting this criminal activity, by a court decision, all persons involved in the criminal case were sentenced to various terms of imprisonment, and the organizer of the crime was sentenced to nine years with serving in a penal colony.
Another example is the suppression by the Proletarsky Plant’s security unit in 2016–2017 of the illegal activities of Alexander Bolokhonov, Deputy General Director for Legal Affairs, who had planned and implemented a fraudulent scheme of embezzling almost 10 million rubles by transfer of the right to claim debts under a contract with the Zvezdochka Ship Repair Center to a third party using forged documents. The security unit sent a corresponding application to law enforcement agencies, and in July 2017 a criminal case was initiated in connection with this case under the article “Attempted Fraud”.

In total, over 250 investigations and inspections were carried out with the direct participation of the subsidiaries and affiliates’ security units last year which led to disciplinary action against 73 officials. In addition, as a result of internal investigations conducted in 2018 with the participation of the USC security department employees, the director of the Petrovsky Branch of the Zvezdochka Special Design and Technology Bureau, general director of the Proletarsky Plant, general director of the Lotos Shipyard, chief engineer of the Admiralty Shipyards, as well as a number of other managers at various levels were dismissed for abuse of office and non-compliance with corporate local regulations. A decision was made to dismiss an assistant general director of the Sevastopol Marine Plant, a branch of the Zvezdochka Ship Repair Center, for abuses.

Employees of economic security units are involved in the organization of the procurement and contract activities in USC subsidiaries and affiliates on an ongoing basis. All incoming procurement documents and materials in respect of potential counterparties are studied to identify and prevent possible risks of damage to USC companies. Upon detection of cases of unjustified selection of a single supplier, procurement of goods and services at inflated prices, participation of organizations that provided biased documentation in procurement, and threats of non-performance of planned contracts, economic security units, together with relevant departments, take measures to minimize such risks, including preventing the entry into contractual obligations with potentially unscrupulous counterparties.

There are examples of damage prevention in the course of effective interaction between the security units of USC Group companies and the United Shipbuilding Corporation. Thus, as a result of an audit conducted between December 2016 and February 2017 by Sevmash’s economic security unit together with the USC security department, the theft of more than 800 million rubles allocated under the federal target program “Development of the defense-industrial complex Of the Russian Federation for the period 2011–2020” was prevented.

The USC Security Department established that the bank guarantees provided to Sevmash by the head of one of counterparties were forged, and the bank did not actually issue them. Together with Sevmash Production Association’s security unit, it was confirmed that the counterparty had a criminal intent to steal money by deception, coupled with deliberate non-performance of contractual obligations in the field of entrepreneurship. Taking into account this information, Sevmash’s management terminated the contract with...
the supplier, the inspection materials were transferred to law enforcement agencies.

Last year, a total of over 29,000 draft contracts and supplementary agreements to them were reviewed by employees of economic security units, and about 7% of them were returned for revision for various reasons. More than 20,000 potential counterparties were inspected, of which about 20% were not allowed to participate in the procurement procedures.

During the monitoring of contractors’ performance with the participation of economic security units, cases of payment for unperformed work, unjustified overcharging during construction work, replacement of some materials with cheaper ones, etc. were repeatedly suppressed. In particular, in October last year, in cooperation with the USC’s capital construction department, the case that the Admiralty shipyard transferred about 40 million rubles to a contractor for unperformed work was documented. These funds were returned to the shipyard. During the proceedings, it was established that the contract was not sent for approval to the security unit, which had information about the counterparty’s bad faith and information about its lobbying relations with some of the shipyard’s officials.

In accordance with the USC President’s instruction, the security units, together with the legal units, are also involved in returning overdue and problem receivables. Thus, receivables amounting to more than 453.5 million rubles were collected in 2018 (332.8 million rubles in 2017).

In the past three years, USC Group had made significant efforts to protect secrets defined by the Corporation’s information security concept: government, official, commercial secrets and personal data.

A corporate chain of counteraction to foreign technical intelligence and technical protection of information has been built and functions effectively – it implements the coordinating, methodological and supervisory functions of the parent company in relation to the USC Group companies.

A contract of accession to the common procedure for organizing the protection of confidential information that has been put in place in the Corporation is our know-how. The accession of our companies to this regulation enables them (subject to certain conditions) to exchange confidential information without entering into bilateral information security agreements. Thus, a legal basis has been prepared for building an ENTERPRISE PROTECTION SYSTEM, planned work is underway to upgrade security equipment: alarm, electro-optical surveillance, lighting and communications systems have been modernized at some enterprises. Checkpoints were equipped with access control systems, anti-ram barriers and other security systems.

In accordance with Russian Government Decree No. 1413 of December 18, 2014, security data sheets were developed for all of the USC Group companies to be protected against terrorist attacks and are updated in the prescribed manner.

In 2017–2018, together with the Russian Guard’s Okhrana (Protection) units and the security agencies concerned, inspections of counter-terrorist protection were carried out at most of facilities and measures were taken to eliminate the identified deficiencies.

In view of the specifics of the work done by a number of the USC Group companies, special and constant attention is paid to the protection of State secrets. As practice shows, the challenges facing the security units can be effectively addressed only in cooperation with managers and personnel of companies. And such support is provided to the security service in almost all of the companies. Feedback tools such as telephone and mail of trust have also proven themselves. For example, last year, three internal investigations were conducted at Baltiysky Zavod after reviewing the information received, and ten executives were brought to disciplinary action.

In general, the USC security units effectively cope with new challenges and help the management of the Corporation and its companies to meet the challenges facing them.
It is not yet time for sailing ships to go to a museum, this is not a spectacular antique, but a fully functional, environmentally friendly, energy-saving and sporting vessel, believes Eugeny Romashkin, captain of the barque Sedov. In his interview, he told how to preserve unique maritime culture, learn to look through binoculars and see the future.
The four-masted barque Sedov was built in 1921 at a Krupp shipyard in Kiel. During her long life, she changed several owners and names. The first owner, Karl Vinnen, named her Magdalena Vinnen II after his daughter:

In 1936, the barque was bought by Norddeutscher Lloyd, a shipping company, which equipped her with quarters for 70 cadets and began using her as a cargo and training ship. At this time, the ship was named Commodore Johnsen. After World War II, the barque was handed over to the USSR as war reparation and received the name Sedov in honor of the polar explorer Georgy Sedov. Since January 1946, Sedov has become primarily a training ship.

In 1991, the barque was given to the Murmansk State Technical University, and in 2017, she changed her homeport to Kaliningrad.

We talked to Captain Eugeny Romashkin about how the legendary sailing ship lives and sails across the sea today.

**Eugeny Nikolaevich, the geography of your expeditions is very extensive. What are your immediate plans?**

– For many years, sailing ship schedules have been made up on the basis of advance invitations to European maritime festivals, holidays and international regattas. A visit to any port by such a large sailing ship like ours is always a holiday, and if there are several such events, it attracts tens of thousands of tourists. Today it is impossible to imagine the Sail Amsterdam and Hanse Sail festivals, the Hamburg Port Anniversary or the Kiel week without Russian sailing giants.

In recent years, interest in sailing ships has been steadily growing around the world, and such historical ships as Sedov and Kruzenshtern fully justify their title as museum barques - thousands of guests visit their decks. Residents of all continents are interested in how these vessels are designed, how they worked before and how they continue to train future generations of sailors.

Since such sailing ships were built as transoceanic freighters, even today the geography of our voyages is not limited to a separate area or sea basin - everything depends on plans that life itself suggests. For example, ten years ago our founder, Rosrybolovstvo (Federal Agency for Fisheries) planned to celebrate the 90th anniversary of the formation of the fishing industry and the 60th anniversary of the first herring
expedition. We decided to repeat the historical route to the fishing area in the North Atlantic. Then, knowing that we would be off the coast of North America during this period, the Russian Olympic Committee suggested that we support the national team at the Winter Olympics in Vancouver. We combined these two striking events in one expedition of 2009–2010.

Our immediate plans include preparing the barques for the voyages dedicated to the 200th anniversary of the discovery of Antarctica by the Lazarev and Bellingshausen expeditions. We would like to remind the world that the discovery of the youngest continent of the planet was made by Russian navigators exactly on sailing ships. And although it will not be sailing to Antarctica itself, the sailing ships will symbolically meet in the South Atlantic area, as close as possible to the route of their heroic predecessors.

Today, such a ship is still exotic, and many perceive sailing ships as objets d’art or museum exhibits. But it is not true, right? Please tell us about the technical capabilities of Sedov.

– A sailing ship is far from exotic. In Russia, for many reasons, yachting is simply perceived as the occupation of extremely wealthy people, while sports sailing is not popular enough. In fact, water is the most democratic way to get closer to nature, and it doesn’t matter what boat the family has, big or small: wind and wave are free for everyone! This is confirmed by the sailing festivals of thousands of people, when a variety of floating craft are launched. We have partnership programs aimed at developing children’s sailing sports and sailing clubs in different regions of Russia. The work has not yet progressed enough, but it will be fruitful in due time. There are so many water bodies, lakes and rivers in Russia, this is real wealth! And sailing is leisure developing strength, dexterity, knowledge, a thirst for traveling around the native land, sport fishing, recreation culture – everything young people and people choosing a healthy lifestyle need.

Sedov is not just a very large sailing ship, although even the very possibility of complete autonomous navigation with a crew of more than 220 people during about three weeks speaks for itself. Not having been with us on a sea voyage, it’s quite difficult to imagine how the barque – a floating city with its bakery, four-time hot food factory, ambulatory, laundry, sail workshop, museum, marching chapel and many others - lives. But the main thing for the barque’s mentors is the life of the cadets, their classes, extracurricular activities, excursions at ports and acquaintance with a variety of people, creativity and amateur performances, and also growing-up that takes place in a voyage before our eyes. That’s what our sailing ship is!

– Sailing ships played a major role in marine research. Are there such pages in Sedov’s history?

– Sailing ships are convenient for marine research, primarily because they do not generate vibrations and noises. It is a stable platform for sensors, ideal for studying the inhabitants of the seas and the water element itself.

Like Kruzenshtern, Sedov had served decades as an oceanographic vessel in the Soviet Navy’s Atlantic Expeditionary Group. In the 1960s, when the large-scale development of oceans and seas began, detailed hydrological, hydrochemical, meteorological and geological studies of the seabed, animals and plants, studies of the magnetic and electric fields of the Earth’s crust, and the deep currents of the Gulfstream periphery were carried out under the USSR Academy of Sciences’ programs. Many studies were distinguished not only for their novelty, but also scale. Before these expeditions, the influence of the World Ocean on the Earth’s climate was not studied, the system of circulation of water masses remained unclear, and there was no seabed geology data. Even the phenomenon of giant ocean waves had no scientific justification then. That’s what sailing ships are capable of right now.

– Is Sedov also used as a training ship?

– The name «training» in the category of the vessel is not a coincidence. Today this is the main mission of Sedov, everything else is secondary. It is for the first sailing practice of cadets from the Federal Agency for Fisheries’ maritime educational institutions that the barque goes on expeditions, participates in regattas and
makes her memorial voyages. During training voyages, cadets not only continue their studies according to their educational institutions’ training programs, but also, under the guidance of ship specialists, acquire the practical skills of their future professions, keep duty watches, and maintain the sailing vessel. It is, as we say, “school under sail”, which gives the most accurate picture of the ship’s behavior on the water, wave, down the wind, in coping with the elements...

Throughout the world, practical training on a sailing ship is considered fundamental maritime education and is very prestigious. Permanent crew members try to prepare a young seaman not only for the profession, but also for real independent life. After all, people working at sea, as a rule, are able to serve themselves and create a habitable environment around. It is very valuable for young people. In addition, it is important to understand whether you are capable of working in this profession, whether you have made a good life choice. Of course, in the future, cadets will come to a modern fleet, but training on a sailing ship is a very important stage in the marine career, because it forms a personality, there are both romance and a healthy psychological climate in the team. Mentoring on a sailing ship is a system for transferring expensively gained experience rather than a pedagogical theory.

Do you think it is necessary to expand the Russian sailing fleet by building new, modern sailing ships?

– The number of sailing ships – not only training ones – is extremely low. After all, our national maritime culture, so little known to the land population, is perfectly preserved on sailing ships, as nowhere else. Today, sports yachts and recreational vessels are mainly being built, while projects for other purposes practically do not exist: there’s no demand for them from either ship owners or industrialists. It’s a pity!

Strange as it may seem, when the sail is referred to as an outdated propulsor, they overlook the fact that the sail is very promising in the 21st century due to the development of innovative materials, ecology and energy saving: it is environmentally friendly, inexpensive, sporty, and when applying new technologies in shipbuilding and design, the construction of new sailing ships becomes a very progressive project. Our sailing ships always have time to become museum exhibits - we work to ensure that they live on the water as long as possible!

Tell us about interesting stories that happened to you at sea.

– Of course, there have been a lot of events both interesting and difficult, significant and minor, dangerous, sometimes funny and instructive since 1999 when I happened to undergo sailing practice on the sailing training ship Kruzenshtern as a cadet of the navigation faculty at the Baltic Fishing Fleet State Academy. Something remains in the memory, something is forgotten.

To answer your question, it is enough for me to open my diaries and read out any record for the past twenty years. But today I will tell a story about binoculars.

In 2000, Captain Gennady Vasilyevich Kolomensky, an epic man, a person of huge proportions who made our sailing ships famous all over the world, a gambling racer (he won many regattas, and all the upgrades to Kruzenshtern were exclusively to his merits), was invited to the awards following the results of the regatta.

The information was received from a liaison officer assigned to Kruzenshtern: the representative of the vessel had to go on stage four or five times and receive prizes in different nominations. Our head of practice was tasked to find an exemplary cadet for this purpose – well-pressed, trimmed and, accordingly, without penalties and comments. In fact, such a cadet was found in seconds. He fitted all the criteria: an athlete and all of the above ... but Gennady Vasilyevich unexpectedly said: “He is very tall, we need someone shorter. You have such a smaller, darker one from the 1st mainmast, so he’ll fit!” I had several seconds to change clothes, but physical shape is always maintained at the level, therefore, an hour later we were invited to the stage to receive prizes and gifts. Among them was a pair of binoculars, which many years later, in 2012, Captain Kolomensky gave me for the birthday along with the wish: “You should be able to look through binoculars not only forward”. It was then that I really understood how to look through binoculars: look into the future and into the past, and not just forward on the bow and backward on the stern.
One of the facilities of the United Shipbuilding Corporation (USC), the 33 Shipyard, which is located in the westernmost tip of Russia, the town of Baltiysk, has become the leading site where the new IT-project will be implemented.

The implementation of the ERP management system was started in 2016 within the framework of the common USC company driver. The IS swap made it possible to celebrate a genuine IT-breakthrough, and is based on domestic information products.

The remarkable thing is that no suchlike systems have been implemented at ship repairing facilities in the defense-industrial sector in Russia until now. Modules of this scheme were developed and adapted solely to the needs of a ship repairing facility considering the fleeting nature, the input increment, the arrhythmia, the stochastic nature, the complexity and diversity of the tasks. The basic consideration of the scheme, as explained by the General Director Ilya Samarin, involves the cohesion of fundamentals: flexibility, scalability of modules, integratedness and safety.

The first deputy general director, Oleg Kasyanov, has himself contributed greatly to the implementation of the scheme. Promoted by hardworking of the workers’ team and their unquestionable professionalism, the automatic system was successfully implemented and shows its high efficiency today.

The formula for success is a strategically good choice and a lucky combination of functionality. The Ship-Repair yard started to apply business process reengineering and software progressive elements like the bar-coding system. The EPC (Electronic Product Code) technology allows to give a new look at the inventory records control, make efficient use of human resources, ship and adopt commodities and materials error-free.

The appellation of each product easy to read through the instrumentality of the corresponding device and to add it to the program, takes a lot of the hard work out of the routine process keeping it to
a minimum, because the control engineer does not need to enter the product data manually any longer. Generating of an order today, i.e. the bill authorizing receipt of commodities and materials, is done by way of scanning, which contemporarily allows to optically check the product remainder and state.

The barcode mode is an innovation in ship repairing, allowing to codify the inventory management of spare parts, tools, accessories and components, which is without doubt important, since the substantial number of products are in storage.

Another goal objective reached because of the scheme implementation is the capacity to be quick in managerial decisions. This is due to the atomic data access and the integrated reporting on all business processes. Process preparation time and cost have declined considerably, the product quality increased, the failure rate in all phases of work preparation and planning decreased, the timeline to the report preparation for the customer shortened.

Data support of the production infrastructure fully covers all the company main business-monitoring systems. Promoted by the understandable and simple indicators the manager evaluates and assesses the problem probability, checks up on the causes and mitigates risks of harms, particularly, determines the extent of eventual non-fulfilment of the state defence order before the deadline and probable deviation from target figures.

IT IS DIFFICULT TO ORGANIZE THE PRODUCTION MANAGEMENT AND ACCOUNTING AS STATUTORILY REQUIRED WITHOUT A MODERN OPERATIONAL SYSTEM

for each working position helped adopt host of functions.
The system availability and fulfilment were originally demonstrated at the forum "IT in the service of Russian defense-industrial sector" in May 2018. The issue of implementing ERP systems at a ship repairing facility aroused keen interest and triggered a debate, especially in terms of PC - process solutions.

Today, the functionality of the ERP system is implemented in form of a set of integrated components, computerizing such functions as financial accounting and book-keeping, value engineering, personnel management, stockage, production, projects, quality and maintenance, as well as production scheduling, whereby, unlike the earlier function-oriented systems, the ERP systems are focused upon the procedures, displaying them in a fly-by mode at all modules involved.

Making a universal scheme for the whole defense-industrial sector is hardly a feasible task, as each company in the branch has its own needs and a potential capacity. Such works or a design bureau should be treated individually with ad hoc tools, but it is difficult to organize the production management and accounting as statutorily required without a modern operational information system, therefore the best practices and the work experience should be further communicated.
It is quite common that, irrespective of a feasibility from the technical point of view to build a bridge or a tunnel between two coastal points, the choice turns finally to a ferry crossing option as it comes to be more economically viable.

Being part of the international transport corridors, ferry lines help to carry out transportation of cargoes without transshipment, providing for the through railroad and highway traffic on segments with an increased cargo and passenger flows. The «Vympel» design bureau has been actively participating in the development of Russian ferries for all the key directions.

A LITTLE HISTORY

The development of the country’s transportation system and the increase of the volume of motor and railroad transportation in the post-war years led to the necessity of building ferry crossings. After a long pause in the design and
construction of ferries in the territory of the Soviet Union, the «Vympeľ»
design bureau was one of the first in
the country to start development of
ferries for railroad passages.

For instance, due to the
construction of the Khabarovsk-
Komsomol'sk-Sovetskaya Gavan
railroad line, the bureau's design was
used for the creation of ferries to cross
the Amur river, which were unique for that
period of time.

The first ferries of project 723
«Volga» and «Don» started operation
in the summer of 1945, and in
1951 they were joined by two more
vessels of the same series - «Amur»
and «Komsomol'sk». Those were
the train-ferries, which had to provide
the transportation of thirty two biaxial
rail cars. The ferries had an open
car deck, which was equipped with
an 80-tons car lift in the fore, which
was capable of receiving rail cars with
a due lifting range with the ups and
downs of water level within five meters.
They were called to fulfill the strategic
task of providing exit to the Tartar
Strait, participated in the liberation of
the Southern Sakhalin and the islands
of the Kuril ridge during the anti-
Japanese campaign. The ferries
had been providing the crossing for
over 30 years before a bridge across
the Amur river was opened in 1975.

The development of the design of
the ferry for the Amur crossing
laid foundations for the
new specialization
profile of the bureau.

In early 1950-ies, railroad
diesel-electric ferries with ice
reinforcement «Nadym», «Chulym»
and «Severny» of project 723B were
built to provide crossing over the river
Ob on the Salekhard – Igarka.

But later, as the construction of
the artery was halted, the vessels were
redirected to the new line in the Kerch
Strait and reequipped with the account
of the area of operation and design
features of the ports. The car lifts were
taken away from the ferries, the fore
parts were changed for the mooring
facilities of the passage, it became
possible to carry motor vehicles on
an open deck. Thus, thanks to the

A limited draft, constrained by
the depths of the Krasnovodsk Canal,
led to the necessity to apply low-weight
alloys for the project. The distinctive
feature of the designed train-ferries
was their diesel-electric propulsion
installations with the use of the electric
propulsion principle, which provides
for the reliable operation of ferries
in ice conditions and flexible remote
control over the works of the propeller
blades, which is needed by the ferries
considering their frequent moorings
and complicated maneuvering.

The “Soviet Azerbaijan” type
ferries are rightly considered to be
the nicest vessels in the Caspian Sea,
and their high technical and operation
qualities have been proved by the long-
term experience of operation without
limitations due to weather conditions in
difficult hydrometeorological conditions
of the Caspian basin.

FIST “SAKHALINS”

A landmark project for
the bureau was the development of
ice-breaking ferries of the “Sakhalin”
type for the Vanino-Kholmsk line.
The Kaliningrad shipbuilding plant
Yantar built ten ferries of project
1809, which are powerful means of
transportation for the all-year sea
transportation of all the types of the
railroad rolling stock, wheeled
and tracked vehicles and passengers.
The ferry capacity allowed it to

THE VYMPEL DESIGN
BUREAU HAS BEEN
ACTIVELY PARTICIPATING
IN THE DEVELOPMENT
OF RUSSIA’S FERRIES
FOR 70 YEARS
accommodate 26 quadriaxial rail cars on the car deck and 72 passengers in cabins. The vessels had a full load displacement of 7730 tons, the length of 127 meters, twin-shaft diesel-electric installation with generators for the overall power of 11480 kW and reached the speed around 18 knots.

The development of this technically complicated vessel required a considerable volume of experimental works at the design bureau. Its own station of testing ship models on open waters held tests of a self-propelled ferry model. While testing the propulsion/steering unit of the ferry, the Kholmsk port was simulated. The trials were recorded by a motion picture camera and demonstrated later when the project was being considered on Sakhalin and Vladivostok. As a result, as it was proved by the practice of operation, an effective composition of the propulsion/steering unit was chosen with the use of blades in the stern and the forebody, which were providing a capability of ferries to work in solid ice with a thickness of up to one meter and a reliable controllability in difficult conditions of entry and mooring in the port of Kholmsk.

Later, in 1989, the «Vympel» design bureau developed a designed proposal on the creation of a second generation ferry for the Sakhalin passage, but the issue of renewing the ferry fleet at that time did not get any further development.

The «Vympel» design bureau came out as the developer of the first Russia’s automobile-passenger icebreaking ferry of the “Andrey Korobitsyn” type with a capacity of 390 passengers and 12 trucks. The construction of a series of four ferries of this type in late 1960-ies provided the all-year-around operation on the Lomonosov-Kronstadt line, which existed until November 2011.

Having proved itself as an experienced developer of reliable vessels for the river and sea ferry passages, in 1990-ies the «Vympel» bureau took part in the creation of international ferry complexes on railroad passages USSR-People’s Republic of Bulgaria and USSR-GDR as an expert, as well as a developer at the stage of the conceptual design of ferry boats of the “Shipka Heroes” and “Klaipeda” type for those passages. At that time the design bureau carried out some design exploration works on how to create new generation railroad and automobile ferries for the Sakhalin and Kerch passages, the Caspian basin and the Baltic Sea.

In those years of hardships the «Vympel» design bureau became one of the first Russian design organizations to introduce in its work computer-aided design systems. Having gained a possibility to work in cooperation with other firms based on the creation of 3-dimensional ship models, the bureau jointly with Finnish companies took part in the design and pre-production engineering of automobile and passenger ferries, e.g. SeaFrance, Tallink, Brittany, Viking Line and others. Later the bureau managed to spread the experience of cooperation and parallel documentation development on several ship specializations with the use of a shared 3D model for the work with Russian and foreign design organizations.

In the beginning of the new millennium the interest from the part of the state and private companies to ferry transportation kept on growing. The fleet, built in the Soviet period, was aging morally and physically, the operation of old ferries was becoming unsafe, and the volume of construction of new vessels to replace the decommissioned ones were not able to fill the gap in requirements for cargo and passenger transportation.

THE BALTICS

The world leader from the point of view of the intensity of ferry crossings is the Baltic region. In 2009, in order to provide transportation of passengers and rolled-on equipment, the Vympel design bureau, under the order of the Russian Agency of Sea and River Transport, developed an engineering design of a cargo and passenger ferry to be used for all-the-year-around operation on line Ust-Luga – Baltiysk – ports of Germany.

During the development of the engineering design of the ferry a special attention was paid to carrying out experimental and computational analysis to determine the propulsion
qualities, seaworthiness, controllability and also aerodynamic qualities of the floatage in the experimental basins of the Academician A.N. Krylov Central Research and Development Institute and the «Vympel» design bureau. As a result, optimal hull lines were found and the propulsion and steering complex was selected, being capable of providing high maneuverability and consisting of two steering pitch screws, two semi-balance steering wheels, aft and bow thrusters.

Railroad cars, autotrailers and motor-cars are placed on three cargo decks. The rolling of vehicles from the pier is done through the stern gates on the lifting-transitional bridge to the main deck, from the unequipped shore - with the help of two ramps integrated into the aft closure; for the rolling on other decks special lifts are used.

To ensure the comfort of passengers, including disabled people, the ferry provides cabins of various classes, a business lounge, restaurants, cafes, a canteen, a bar, a shop, gyms, walking areas, saunas, a ship hospital, and a dental office. The design takes into account the requirements of all applicable national and international regulations and conventions, including regional requirements pertaining to the Baltic Sea. The design of the vessel includes advanced solutions, which will help to build a future ferry meeting the increased requirements of both environmental and passenger safety.

Within the federal target-oriented program “Development of civil maritime equipment for the period of 2009-2016”, the «Vympel» design bureau developed designs of advanced speedy river ferries of different capacity on air cushions with skegs, having small draft in the hovering mode, especially in the fore part of the vessel. Such ferries can approach not only the existing floating berths, but also poorly equipped shorelines for loading and unloading operations, which is especially important when operating in areas with poorly developed coastal infrastructure, for instance, on the northern and eastern rivers of Russia. A practically rectangular shape of the cargo deck with ramps in the aft and fore parts ensures the through passage of automobiles and accommodation of a bigger number of them in the vessel.

**THE TARTAR STRAIT NOWADAYS**

Over the past several years the issue of passage in the Tartar Strait has become extremely topical: as many as seven “Sakhalin” type vessels of project 1809 have been decommissioned, and the operation of the passage is being provided by the three remaining vessels of this series, one of which is designed for the transportation of hazardous cargoes. It is obvious that they have exhausted their lifespan, have become obsolete physically and morally, and that new ferries are needed so that the passage could continue to be operational. In late 2016 the Amur Shipbuilding Plant signed a contract with the State Transportation Leasing Company on construction of two cargo/passenger automobile-railroad ferries with the Агс5 ice category. It is these ferries that should replace the old “Sakhalins” in the passage.

The Vympel bureau has developed new design documentation of vessel in construction for the new ferries, is completing the development of the working design, acceptance and operational documentation. A business partner in the process of developing design documentation for vessel in construction is the author of the ferry.
The propeller-rudder complex consists of two screws of adjustable pitch and semi-suspended semi-balance steering wheels located behind them, providing the vessel with the specification speed and controllability. The power plant consists of four main engines (diesels) working in pairs through gearboxes on the screws of the steering pitch.

The vessel has specific hull fittings, which provide its operation as a ferry and as a ro-ro ship. There is a cargo elevator with a lifting capacity of 55 tons to load and unload automobile equipment from the main deck to the lower one. The opening in the deck above the elevator is closed by a waterproof closure. The aft loading port is closed by a closure, which is equal in strength to the main body and made in the form of a single lifting top-section of the door. In the stern of the vessel on the starboard side, a ramp is installed for loading and unloading wheeled vehicles to the main deck. To ensure floatability, the cargo space on the main deck is divided into two parts with a folding waterproof closure.

A flexible cargo handling system, the implementation of all current norms and rules of international conventions in the project, as well as an unlimited navigation area and ice reinforcement make it possible to operate the ferry not only in the Tatar Strait for the Vanino-Kholmsk ferry crossing, but also for many other terminals intended for ro-ro ships.

**THE CASPIAN SEA**

Presently, a lot of attention is paid to the transportation system of the Caspian region. Its strategic importance, apart from hydrocarbon resources, is explained by a trans-boundary position between Europe and Asia at the intersection of promising intercontinental and international transport corridors East-West and North-South. From
this point of view, the most promising ferry lines are Makhachkala - Aktau (Kazakhstan), port Olya - Anzali (Iran).

The ferries operating in the Caspian region have a capacity of around 50 truck trains. Their length is not more than 150, width is nearly 18 and the draft is up to 4.5 meters, which is explained by the parameters of the navigation pass, as well as the need to escort ships on inland waterways from the place of construction to the place of operation and their docking. Forecasting a considerable expansion of the cargo traffic, an economically viable solution may be the construction of ferries with a principally bigger cargo capacity.

To fulfill this task, the «Vympel» design bureau is elaborating options of catamaran-type ferries with a capacity of up to 130 truck trains and 330 passengers.

For the Makhachkala-Aktau and Makhachkala-Anzali passages a catamaran type ferry is offered, having a length of 150 meters and the width of 45 meters. As it is possible to do the dredging in these ports, the ferry has an optimal draft of 6.5 meters.

In connection with the growing interest in shipments on line port Olya - Anzali, a catamaran ferry with reduced draft is proposed, however, shallow waters in the port of Olya and in the Volga-Caspian Canal reduce the efficiency of such a vessel. It should be noted that the creation of ferries for operation in the port of Olya will require large expenditures on expanding and keeping necessary parameters of the navigation pass in the Volga-Caspian Canal, and its work in the winter period will be significantly limited due to ice conditions.

Construction of catamaran ferries is possible at the USC enterprises located in the Astrakhan region. The hulls with the propulsion unit and equipment will be connected in a floating dock, the fitting-out is to be made with the use of a floating crane. Crane catamarans of the “Titan” type, which are now operating in the Caspian Sea, were assembled using the same technology.

Creating a ferry line with large-capacity ferries will require significant investments in infrastructure: arrangement of harbors, provision of docking for vessels, construction of a dock, development of infrastructure of the port area (access roads, parking for the backups of transport). For operation on the Olya-Anzali line, additional dredging will be required in the port of Olya and the Volga-Caspian Canal. But the increasing cargo traffic in the Caspian region in any case will require construction of a series of new, modern vessels.

### MAIN CHARACTERISTICS OF THE CATAMARAN-TYPE FERRIES

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Catamaran-type ferries</th>
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<tbody>
<tr>
<td></td>
<td>Ferry for the line</td>
</tr>
<tr>
<td></td>
<td>Makhachkala-Aktau</td>
</tr>
<tr>
<td>Length, m</td>
<td>around 150</td>
</tr>
<tr>
<td>Width, m</td>
<td>around 45</td>
</tr>
<tr>
<td>Draft, m</td>
<td>6.5</td>
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<tr>
<td>Deadweight, tons</td>
<td>around 4800</td>
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<tr>
<td>Cruising range, miles</td>
<td>1500</td>
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<tr>
<td>Speed, knots</td>
<td>16</td>
</tr>
<tr>
<td>Power of the propulsion system, MW</td>
<td>16.2</td>
</tr>
</tbody>
</table>

The ferries may operate on liquefied natural gas.
We are continuing a series of publications about monuments to shipbuilders and today we’ll tell about Severodvinsk, where the Sevmash Production Association is located. For almost eight decades, the company has gone through a lot of difficult times, but it has always been focused on strengthening the defense capacity of our country. Today, there are four monuments and twenty-one memorial plaques honoring the prominent people associated with the nuclear submarine fleet.

**IMMORTALIZED HISTORY OF SEVMASH**

Capsules with holy ground are laid in the niches of the slabs. The memorial is surrounded by blue spruces and flower beds. Its total area is 1300 square meters.

**MONUMENT TO NUCLEAR SUBMARINE K-3 LENINSKY KOMSOMOL**

The idea to perpetuate the merits of shipbuilders belongs to Sevmash and the Kurchatov Institute. The monument was designed by Sevmash designers and architects. A sculpture of a worker holding a submarine with a flying national flag above his head was chosen from several variants. The monument was opened on September 22, 1983, in the year of the 25th anniversary of the construction of the first Russian nuclear submarine K-3. The monument became the hallmark of Shop 42. That’s where the acquaintance of young workers and specialists with production begins. “You enter the shop where the first nuclear submarine was born” - with these words the acquaintance with the monument ends.

**MEMORIAL OF MILITARY GLORY AT THE SEVMASH MUSEUM**

The authors of the Memorial of Military Glory, located at the plant museum, are Leningrad sculptor Anatoly Dema and the Sevmash chief architect department’s specialists Sergey Barabash, Eugeny Egorov, Nikolai Zykov, Lyudmila Leschenko, Eugeny Nazarov, Natalya Nedobezhkina, Yury Kambarov and Nikolai Mardensky. Edge plates and letters for surnames were cast at the plant. Granite for the memorial was brought from Kiev.

The memorial was opened on May 7, 1985. A sculpture of the Mother Victory in an image of the ancient Greek Goddess Nike is in its center. She holds a laurel branch in one hand and a bowl with an eternal flame in her other. Two steles, assembled from pieces of metal, carry gun and machine-gun barrels, cases, cartridges, torpedo and bomb cases. The steles are mounted on a podium, on the granite slabs of which the names of the enterprise’s employees who never returned from the war are cast. The first slabs with the names were laid by war participants Nikolai Kubintsev, Gennady Vershinin and other veterans. A path leads from the sculpture to a memorial stone, which is a firing base. A helmet, a PPSh submachine gun, and a ground sheet are on it. Two sea mines at the entrance personify the port of Molotovsk during the war. There are thirteen granite slabs with the names and stars of the hero towns along the perimeter of the memorial.

The memorial is surrounded by blue spruces and flower beds. Its total area is 1300 square meters.
MEMORIAL PLAQUE TO ACADEMICIAN ANATOLY ALEXANDROV
Soviet physicist, Academician Anatoly Alexandrov assumed scientific supervision of the development of the country’s first Project 627 nuclear submarine built at Sevmash. In memory of his work and stay at Sevmash during the construction of the nuclear submarine K-3, memorial plaques were installed on the Shop 42’s building, as well as on the house along Sovetskaya Street in November 1995.

MEMORIAL PLAQUE TO PROFESSOR ALEXANDER ALPIN
On 8 August last year, the ceremonial opening of the memorial plaque to Alexander Alpin, the inventor of highly reliable thrust and support bearings for ships and vessels of all classes and purposes, the designer of noise absorption devices, unique shock absorbers, was held at the Sevmash’s design bureau. His designs are protected by 44 patents and copyright certificates, he published over 80 works. He started working at Sevmash in 1956 as a builder in Department 5 and then moved to the design bureau.

MEMORIAL PLAQUE TO PLANT DIRECTOR SERGEI BOGOLYUBOV
Shipbuilding engineer Sergei Bogolyubov ran the plant in 1942-1949. Difficult war and post-war years fell to his lot, but, despite the difficulties, Bogolyubov made an enormous contribution to the development of Sevmash. In wartime, he managed to mobilize the personnel, establish production process, improve the day-to-day lives of the people, and to bring the plant among the leaders in the industry. Bogolyubov was repressed unreasonably and then rehabilitated in 1954. On September 8, 2007, a memorial plaque in his honor was solemnly opened on the building of Sevmash’s repair/mechanical shop 17, where the plant’s management and the director’s office were previously located. The plaque is installed on the day of the 100th anniversary of Bogolyubov’s birth.

MEMORIAL PLAQUE TO DESIGNER SERGEI KOVALEV
Sergei Kovalev, an outstanding Soviet and Russian scientist, shipbuilder, general designer of strategic nuclear submarines, supervised the development and construction of a submarine powered by a steam-gas turbine unit. In 1958, he was appointed chief designer for the project of the first nuclear submarine armed with ballistic missiles launched from a surface position. Later he became chief designer of the Project 941 nuclear submarine - the third-generation giants. Kovalev worked closely with Sevmash specialists during the construction of these boats and often visited Severodvinsk. One of Sevmash’s embankments was named in his honor on August 15, 2011. There is also a plaque commemorating the designer.

MEMORIAL PLAQUE TO PAVEL KONOVALOV, HERO OF THE SOVIET UNION
Pavel Konovalov, process engineer of Plant 402, tanker, participant of the Great Patriotic War, Hero of the Soviet Union, arrived in Plant No. 402 in Severodvinsk upon graduation from the Ural industrial Institute where he worked from 1940 to 1942, before leaving for the front. Konovalov died heroically in a battle for the city of Stolzbergen. The title of Hero of the Soviet Union was awarded to him posthumously.

MEMORIAL PLAQUE TO SHIPBUILDER INNOKENTY BAKHTIN
The shipbuilding engineer, head of a hull shop at Sevmash, Innokenty Bakhtin was one of the few veterans of the city and the plant who saw the birth of the plant and was personally involved in it. He made a personal contribution to the construction of almost all the ships delivered by the plant during his
The bas-relief of Egorov is distinguished for its fine workmanship. The author managed to convey a portrait likeness and note the most characteristic features of this strong-willed and highly intelligent person. A copy of the memorial plaque, also cast at Sevmash, was sent to Nikolaev and installed in the Naval Institute, which Egorov graduated from in 1931 and where he taught in the last years of his life.

MEMORIAL PLAQUE
TO SHIPBUILDER
ISRAEL KAMAI
The shipbuilding engineer, head of building-commission facilities at Sevmash, worked at the plant from 1941 to 1991. In wartime, he was directly involved in the implementation of defense programs, repair of warships. He taught in the shipbuilding college and was repeatedly elected to the Council of People’s Deputies. Sevmash took the initiative to perpetuate the memory of Kamai. The opening of a memorial plaque on the facade of house along Sovetskaya Street was timed to the anniversary of the death of Israel Kamai.

MEMORIAL PLAQUE
TO THE FOUNDER OF THE PLANT IVAN KIRILKIN
The first head of the construction of shipbuilding plant 402 and the town of Severodvinsk. In May 1936, Ivan Kirilkin was appointed head of the construction of plant 402 and the working village of Sudostroy, which later received the name Severodvinsk. In 1938, Kirilkin was repressed, died in 1942 in one of the camps in the Kirov region. In 1956, he was fully rehabilitated. In October 1982, one of the new streets of the town was named after the first head of construction. In August 1988, a memorial plaque was opened at 13 Kirilkin Street.

MEMORIAL PLAQUE
TO CHIEF ENGINEER OF THE PLANT YURI KONDRASHOV
The shipbuilding engineer, chief engineer of Sevmash from 2004 to 2008, worked at the plant since 1964 and went from assistant master to chief engineer of the enterprise. For more than twenty years, Kondrashov was a commissioning mechanic on all lead ships of each project. Between 1986 and 1997, he led the entire development and research activities at Sevmash. Kondrashov made a great contribution to the development of shipbuilding. Sevmash took an initiative to perpetuate his memory in Severodvinsk. A memorial plaque was solemnly opened at 8 Lenin Prospect on May 6, 2009, on Kondrashov’s birthday.

MEMORIAL PLAQUE
TO SEVMASH VETERAN NIKOLAI ORLOV
The shipbuilding engineer, honorary veteran of Sevmash, chairman of the Severodvinsk
In 949A nuclear submarines. built Project 941, 949, his direction, Sevmash participation and under Center. With his direct to the development of naval made a great contribution of Russia, David H. Pashaev the Russian State Nuclear Sevmash, president of Shipbuilder, director of DAVID PASHAEV TO MEMORIAL PLAQUE 39 on Pervomaiskaya Street. plaque on the facade of house decided to mount a memorial to perpetuate the memory city leader in his 33 years. of the Severodvinsk city and reconstructed. In 1961, Orlov made the chairman of the Severodvinsk city administration and worked in this position for eleven years, becoming the youngest city leader in his 33 years. Sevmash took the initiative to perpetuate the memory of Orlov in Severodvinsk. On November 23, 2003, it was decided to mount a memorial plaque on the facade of house 39 on Pervomaiskaya Street. MEMORIAL PLAQUE TO SEVMASH DIRECTOR DAVID PASHAEV Shipbuilder, director of Sevmash, president of the Russian State Nuclear Shipbuilding Center, and Hero of Russia, David H. Pashaev made a great contribution to the development of naval shipbuilding and was at the forefront of the Russian State Nuclear Shipbuilding Center. With his direct participation and under his direction, Sevmash built Project 941, 949, 949A nuclear submarines. In the difficult 1990s, David Pashaev made a lot of efforts to preserve Sevmash and Severodvinsk and literally saved the entire nuclear submarine shipbuilding industry in Russia from destruction. A plaque on the facade of house 50/12 on Sovetskaya Street was opened on July 19, 2011.

MEMORIAL PLAQUE TO SEVMASH DIRECTOR GRIGORY PROSYANKIN Shipbuilding engineer, director of Sevmash from 1972 to 1986, came to Severodvinsk in 1943 after graduating from the Nikolaev Shipbuilding Institute. At the plant, Prosyankin worked as foreman, section head, and shop foreman. In 1956, he was appointed director of the Zvezdochka enterprise. In February 1972, he became director of Sevmash and worked in this position until his retirement in April 1986. On January 6, 2000, a memorial plaque was opened at 10 Lenin Prospect on the 80th birthday of Grigory Prosyankin.

MEMORIAL PLAQUE TO DESIGNER NIKOLAI SEMIKHATOV Control systems for all ballistic missiles launched from submarines were developed under the direction of Nikolai Semikhatov, chief designer of the control Systems for submarine-launched ballistic missiles, Academician of the Academy of Sciences of the USSR and the Russian Academy of Sciences, Hero of Socialist Labor. He worked closely with Sevmash on the deployment and operation of control systems of ballistic missiles deployed on Sevmash-built submarines. On June 21, 2007, a memorial plaque was solemnly opened in his memory at 57 Pervomaiskaya Street.

MEMORIAL PLAQUE TO CHIEF PROCESS ENGINEER OF SEVMASH SERGEI SLESAREVICH The would-be chief process engineer of Sevmash and the Hero of Socialist Labor arrived at plant 402 in 1941, after graduating from the Leningrad Shipbuilding Institute. Slesarevich began his career as assistant foreman in the hull shop. During the war years he worked as head of the process bureau. Since 1952 he led all the process services at the plant. He made a great contribution to increasing the plant’s capacity for the development of completely new construction technologies required for nuclear submarines. He was one of the initiators of using computer technology in the design and process activities, re-equipping the enterprise, applying the latest science and technology achievements, and introducing advanced technologies. Slesarevich worked at Sevmash for 40 years, was directly involved in the construction and delivery of all ships, without exception, which were under construction at the plant at that time. A plaque was installed on the initiative of Sevmash on December 21, 2001 at 24/2a Tortshev Street.

MEMORIAL PLAQUE TO THE FIRST BUILDER NIKOLAI CHESNOKOV Nikolai Chesnokov, the first builder of Severodvinsk, veteran of the Great Patriotic War, Hero of the Soviet Union, arrived in the village of Sudostroy in May 1938 on Komsomol assignment. In 1939 he was drafted into the Red Army. After demobilization, the senior sergeant Chesnokov graduated from the evening department of a technical school, worked as foreman, senior foreman, and then as section chief at plant 402 for a long time. In August 1983, a memorial plaque in his honor was installed on the facade of house 24/2a on Polyarnaya Street, in which Chesnokov lived.

MEMORIAL PLAQUE TO SHIPBUILDER LEONID SHMIGELSKY Shipbuilding engineer, historian and regional ethnographer Leonid Shmigelsky taught at the Severodvinsk Shipbuilding Technical School. In 1961–1984 he worked in the design department at Sevmash, was a head of group, a head of pressure hull and strong structures bureau, a head of the bureau for strength and load analysis and the theory of the ship. He is the author of over 200 publications on the history of northern navigation and shipbuilding. On November 9, 2001, a memorial plaque in his honor was opened in one of the classrooms of the Severodvinsk Technical College.

MEMORIAL PLAQUE TO SHIPBUILDER FYODOR SHOUSHARIN The shipbuilding engineer, organizer of the shipbuilding industry, and the participant in the development of the first nuclear submarine Lenininsky Komsomol and boats of subsequent generations worked at Sevmash from June 1950. Since 1981, Shousharin was the chief process engineer of the enterprise, since July 1988 the chief engineer. In addition, Shousharin was directly involved in establishing the State Russian Nuclear Shipbuilding Center around the Severodvinsk defense facilities, and was the author of many works in shipbuilding. On May 20, 2010, the ceremony of opening a plaque in his memory was held at 3 Sedov Street.
Propulsion activity

The USC Group has been steadily expanding the production of ships and vessels in recent years. Like other domestic corporations, it is tasked to increase the share of civilian products in the total sales to 50% propulsion units, and this is possible only in close partnership with manufacturers of power plants of various types.

USC sees this process as the integration of domestic developers and manufacturers of propulsion unit components around the USC Group, with the involvement of power plant developers and manufacturers. In our opinion, such a model of interaction will help establish close contact between developers and manufacturers of propulsion units and power plants, ship and vessel designers, as well as research organizations.

A major area of focus is maintaining and developing the existing research and technology groundwork laid by the NPO Vint Research and Production Association (the major subsidiary of the Zvezdochka Ship Repair Center) and the school of thought in hydrodynamics, which was one of the strongest in the country in the Soviet times and served as the basic ship propulsor design bureau in the industry. For more than 60 years of its existence, the school has accumulated vast experience in the development of various types of propulsion units.
The priority objective to be achieved through integration is to improve in-production propulsion units, improve their operating efficiency and competitiveness in the commercial market.

We need to form our own model range of propulsion units for the whole lineup of USC Group vessels and ships to further develop this area. New units should have high performance combined with the total delivery cost, not exceeding competitors’ offers in the market.

In addition, a major challenge is to establish our own service network for maintaining propulsion units produced and supplied by the USC Group. A potential operator of our products should be sure of the quality of the purchased product and one-stop services in case of any problems in operation.

Today, these services are in demand in the market in a package comprising development, production, complete delivery and services of propulsion units for all ship projects of the USC Group and external customers.

Zvezdochka’s Propulsion Systems Center and NPO Vint Research and Production Association, its major subsidiary, have their own portfolio of projects for propulsion units of various power, such as propulsion/steering units, adjustable pitch propellers, fixed pitch propellers, thrusters and water jets.

NPO Vint has been successfully engaged in reengineering projects on external customers’ requests. It also has its own pilot plant with test tanks specializing in the manufacture of prototypes and series products. Zvezdochka’s Propulsion Systems Center has been undoubtedly the USC Group’s major and best-equipped production site for high-power propulsors and propulsion units in recent years.

To be able to offer competitive prices and high-quality products, the USC Group needs to establish its own service network and centers for repairing propulsion units produced by Zvezdochka’s Propulsion Systems Center.

In 2019-2020, USC intends to establish the USC-Propulsion Product Specialization Center...
Tests of weapon systems onboard a ship – the culmination of all tests, its very essence, what the submarine is being built for – are carried out after all the others. Moreover, for each type of ship armament, there is a specific training target, on which the whole engagement process, from detection to its complete “destruction”, will be fine-tuned.

A built warship is considered to be a shipyard’s production order until its full acceptance. This is despite the fact that there is already a military crew on it subordinate to the fleet. But the military has enough own tasks and issues to address, so the attitude towards the unaccepted boat in the fleet is like to a stepchild: it seems a pity, but the heart is not in him (her), hands do not reach. They may not allocate a sea area in time, or will forget to provide the necessary escort, or will

Everything, even a microclimate on the ship, depends on the chief delivery commissioner. Isolation from the shore for many days noticeably exacerbates the feelings. People are under continuous stress that sometimes drives them towards rather strange antics, and sometimes makes them look for something for peace of mind.
pretend that they did not understand the question and give a test plan for yesterday. And time is ticking. And each delay affects the human psyche, let alone the delivery deadline.

One early autumn morning, when the still cold sun had just risen over the horizon, we went out to sea to test a weapon system by test-firing at a surface target defined by the fleet command as a large anti-submarine ship. We’re on station in our area and waiting, there is no one: neither big, nor small, nor even medium. Nerves are frayed and all sorts of thoughts climb into my head, right up to the most desperate and dashing ones. And in the meantime, a real-life antisubmarine cruiser bearing the proud name Varyag, with a full package of weapons against us, is undergoing necessary checks near the shore, preparing for independent cruise.

– “Well, here comes a target,” one of the senior acceptance officers says with sadness in his voice, “it would be good to work with it for half an hour, detect, aim, bang...”

He just said so, but I decided to keep up the conversation because of my youth and short temper. “What,” I say “prevents us from making a feat of labor by joint efforts?”

– So, according to regulations, it is supposed to be included in the fleet’s training plan. We are not there yet...

Well, I think: whether we are in the plan or are not there...

In the end, everyone knows that we are in a particular grid square of the sea, that we have to test weapon systems. If so, what’s the problem? Electronic and sonar systems came into action, and the hunt for the «enemy» began. In conclusion, the command to place the weapon in ready position must have been sent, while the ship’s recorders would record the whole process for report.

The rested and vigorous brigade commander in a jacket over a T-shirt, who came in the control room to check things
out, was very surprised when, in response to a simple and almost rhetorical question, he heard: "We are attacking a large anti-submarine cruiser."

- Have we got OK? – he asked.
- Negative, – he was told.
- What are you fucking doing?!! – He rushed to the bridge and started giving abort and other commands.

Meanwhile, the cruiser saw on its instruments that someone was trying to establish contact. And, apparently, the ship did not like it very much. Having turned around and headed straight for us, it began smoking and moving at emergency speed to attack the "enemy"! And the "enemy" is already signaling it by all its means that we’re not serious, we’re not the enemy, and we did not want anything like that. The cruiser probably understood, because it turned off the course and moved away at full steam...

A quarter of an hour later we received a "radio message" from the fleet HQ: immediately stop unauthorized firing and return to base. Upon arrival, a staff vehicle took the officers to their command to explain, and later they explained me, the chief delivery commissioner, what I was wrong about, to say the least.

I’m not arguing: there are such features in any endeavor that cannot be found in any smart book. This is imprinted in the mind only with the experience gained. In the fleet, this is called sailing practice. As for the knowledge of the chief delivery commissioner, it should be much more extensive in order to be responsible for own actions and control the situation on the ship.

**UNEXPECTED TARGET**

Following the ill-fated "hunt" for the cruiser Varyag, after I gained experience and the same sailing practice, which presupposes that the chief delivery commissioner gets some sanity and responsibility in actions, the idea that sea trials could be carried out on our own, engaging as few outsiders as possible in the process, found lodging in my mind. It all began with a tug. During the testing period, the ship is usually provided with a shipyard’s vessel for support. In our case, it was a small dockyard tug Strogy that became the hero of the day.

As has happened before, after waiting in vain for a target in our area, in desperate and irate at the entire Pacific Fleet and its gaffers, we’re stuck in our area for four hours, and everyone clearly recognizes the strict silhouette of Strogy, very close.

Tell me, what’s the difference for the ship’s weapon systems being tested, whom they to recognize, catch at the sight, whom to aim and fire at?

Military specialists did not see any difference and perceived the proposal even with some enthusiasm, noting that the smaller the target, the more difficult it is to keep it in the ship’s means of acoustics, aiming and firing. After all, it is they that are tested.

Strogy peacefully and calmly stood by nearby the ship and did not suspect anything of the fate prepared for it. Meanwhile, we were preparing for an attack. Our maneuvers (we surfaced to periscope depth several times and then dived) alarmed the experienced captain of the tugboat considerably. Unaware of our plans to use his ship as a target, he moved quickly away towards the shore. With its eleven-knot speed, the tug would reach the saving coastal shoals in about an hour. Our plans were to work with it for at least two hours.

We were hunting for Strogy for a long time, but the goal of the tests was finally achieved. After "working out" on a small tug, the ship’s systems showed their capabilities. But the task facing them and the military testers was not simple at all. The fast Strogy couldn’t understand that, as a target, it should not get away from the ship, but facilitate its early "sinking" in every possible way. But, probably, it is this circumstance that became an intrigue and added a little variety to the heavy and intense test program.

Having "fired" at a surface target, thus having fulfilled all the plans and having done without the help of the fleet, we returned to base. Much later, on the shore, in a friendly conversation with the captain of Strogy, we recalled this episode as one of the most fascinating and interesting. And the captain honestly admitted that our "hunt" for his little ship injected a fair dose of adrenaline into his calmly flowing blood.

The escort ship, allocated by the fleet headquarters for weapon systems development, arrived in the test area with a delay of three days. In order not to quarrel with the fleet, we repeated the same thing with it. However, a small dockyard tug has done us a favor and truly saved the situation. If it hadn’t been around and if the idea to carry out the test program on it hadn’t started up, who knows how long this process would be delayed. And the test deadlines were tight. Whatever it was, everything turned out, and the winner is always right. You must win to avoid being accused of excessive initiative or you’ll be responsible for everything, because you are the chief delivery commissioner.

**ANVAR SADATYCH AND NOISE CONTROL**

A submarine is the most sophisticated and expensive military vehicle and, among other things, a kind of home, a hostel for a lot of people. The profession of a submariner, naval sailor or test specialist is difficult and sometimes unsafe. Diving into the depths during tests, people who are under permanent stress and pressure associated with working moments are forced to see the same things and the same
people around themselves for a long time. It’s no secret: every day looks like the previous one, and you can’t get away. And sometimes stress is handled in a very original way...

The engineering officer on a ship being handed over was Ivar Khugovich Purnis, a Latvian. I have to tell you, this was the most amusing personality. He was so round, strong, blond-haired man who, unlike native Balts with their straw-colored hair, had buzz-cut thick hair. He spoke smoothly, in a singsong fashion, but when he began to swear – it’s better to hide from him even in a torpedo tube. Somehow we got off on the wrong foot either in work or in a relationship. Well, in short, I got angry with him.

The engineering department is one of the largest on the ship, and its representatives are responsible for the entire electric equipment and machinery of the submarine, and it doesn’t matter whether we talk of the ship’s motion and control or the operation of a vacuum cleaner in a mess room. When the latter is out of order, it is either because there is not current in the outlet, or it is broken, but the engineering department is responsible for everything. The department is also essential and useful during some test modes, and therefore it is sometimes just a production necessity to make friends with its officer and earn his trust.

So, I had a psychological breakdown about the same engineering officer Ivar Khunovich Purnis. Having driven anger inside myself, I felt that I would not last long. And then there’s a specialist from the Academician Krylov Institute, who specially came to participate in the trials, is bothering me with questions. “How to address our department officer?”, he asks. And I said: “Anvar Sadatych”. I myself do not understand why the Egyptian ruler, who terribly disliked me, changed his countenance and barked:

– Hello, Anvar Sadatych!

Purnis changed his countenance and barked:

– What?! Go away!

The specialist was then sought across the ship for long. And I had to apologize to Purnis. But, surprisingly, having laughed enough with the trial crew and naval sailors over the stupid joke, I felt relieved and unburdened the soul. Ivar Khugovich, of course, got angry first, but gradually got relaxed. And what to do – work is work, everyday and hard.

Among other things, the ship being tested should carry out search modes. This is when the boat, debugged and tested for noise in the factory conditions, travels below acoustic buoys, and a hydrographic vessel records its noise. Then the latter transfers information, and noise reduction activities on the ship begin. It so happened that one of the brightest representatives of the Pacific Fleet was on my ship during such tests. There is a ton of work around and everybody is busy reducing the noise. He also decided not to be left behind, but his noise reduction methods were, to put it mildly, somewhat peculiar.

– “Here I go,” he says “around the compartments on the ship, and the floorings knock beneath me.” Is it good?

– No, - I answer, - it’s not good.

He goes and writes this «defect» in the findings journal! Hello, we came ... A joke is a joke, but we had to glue these rubber floorings at base.

Next time, after visiting a water closet, he noted that the spring-loaded wooden toilet seat, knocked hard on the wall. And he wrote this shortcoming in the journal. Eliminate - and that’s final.

– Well, to hell with him! Don’t we have anything better to do?! - my men are outraged. There is a generator, pumps are still noisy, and he is here with his closet.

– Well, no. If you must, you must.

I suggested to the distinguished noise fighter: go and knock this lid, and we will measure the noise level.

There are few toilets on the boat. So he sits down in one of them and starts knocking with a lid. The people are angry and demand him to clear the common room.

– “Quiet,” says the noise fighter, “test mode is on.”

And keeps on knocking.

When he got bored with it and stopped “testing”, he did come up to me and asked:

– Well, did you record the noise level?

Honestly, I forgot about him. Nevertheless, he was shown a curve of his noises. And then a thick piece of foam rubber was glued to the wall in the water closet. Sitting was not very comfortable, but the wooded lid stopped knocking and thudding into this original noise absorber.

**ACCEPTANCE SORTIE OR “SHOWERED”**

The completion of all works on the boat is called the acceptance sortie. It is ordered, as a rule, by the admiral, who heads the state commission for the acceptance of the ship. He also writes something like a program, where he indicates everything of interest to this bright head under a cap with a golden crab. The participation of the trial crew in this event is minimal. Since we have already done everything we could, there is a minimum of specialists led by the chief delivery commissioner on the boat. Everything is completed, painted and tested.

Just a week before the New Year, the admiral decided to go to sea. Well, let’s go. The boat is in order, we are in happy mood, the weather whispers... The end of December was surprisingly cloudless. The sea is calm. The water in the bay is like a mirror, reflects the sun, which blinds the eyes and flashes of sunlight play and dance on the smooth and black board of the submarine.
However, at the sight of such a calming picture, seasoned sailors, and especially submariners, their most superstitious representatives, have an underlying feeling of anxiety and the heaviness of the heart. No wonder they say that too good is also bad.

The boat went to sea, to the point of diving. Having looked around, the commander commands “Dive! Periscope depth” and goes into the cabin to change clothes. In the conning tower, he left his chief mate in charge who stuck to the periscope to sweep the horizon. Two minutes later, the entire crew (and the admiral as well) hear his everyday and some colorless voice over the announcing system: “Interestingly, someone’s emergency buoy is floating past us.” The commander, of course, wonders: “What are the inscriptions on it?” “So I’m looking, comrade commander, our board number is written on it,” the chief mate replies.

A minute later, the half-dressed commander burst into the conning tower, and then it started! “Turbine - stop! Boatsman, surface!” And the picture in the periscope is really funny: our emergency buoy, like a giant float during the bite, dives and emerges. I personally had the impression that it exactly follows the rhythm of the propeller revolutions. There is only one conclusion: a lose cable of the buoy is wound on the propeller blades.

This was the end of the acceptance sortie. However, what happened to the boat further is called “showered” in the seaward language. Two dockyards tugboats towed us to the base, and then the storm, and turmoil, and everyone is looking for someone to blame ... Then all kinds of emergencies began to arise, and the trial team rushed to eliminate them.

The boat, however, was handed over on time. On December 31, the admiral signed an act of final acceptance of the ship without fanfare and champagne, and I understood one interesting thing: whatever happens on the boat, it’s very easy to find someone to blame. No wonder he is called the chief delivery commissioner.

A MOONLIGHT PATH AS A GIFT

The birth of the ship is long, difficult and sometimes painful process. In the endless succession of working days, thousands of people, familiar and unfamiliar with each other, well-educated and not so much, both aged and wise and enthusiastic young people, are obsessed with one goal: to build, outfit, breathe life and teach the multi-ton mastodon to live autonomously.

For the sake of this goal, many pleasures of life are forgotten and the plant and the workshop become a place of almost permanent habitat (with a break for a short sleep at home) for those who build a ship centimeter by centimeter.

A modern submarine is the embodiment of a perfect engineering thought. All the most advanced achievements in science and engineering are present here. It’s said that cosmonaut Valery Ryumin, our illustrious countryman, who saw a newbuild submarine under construction during his visit, was struck by the uniqueness of the submarines and uttered the phrase that was permanently imprinted in the memory of Amur shipbuilders: “What you are building is truly fantastic. Like a flight into space, which is reality for me now, was once a fantasy. You have gone further; you forced the spacecraft to sail under water...”

It’s not the Gods who bake pots, and people build ships. The senior builder on a newbuild order can be compared with the orchestral conductor, who is obliged to know the part of each musical instrument and when each of them should sound, so that, filling up with the new sound, the orchestra’s many voices would draw a complete and colorful picture of the symphonic work in the imagination of the listeners. The duty of the senior builder is to achieve the most even progress in the construction work, without advancing or lagging behind the schedule in certain areas. For that, you need to know the whole ship, every “part”, and every “instrument”. That is not taught in the classroom. That comes with every new built and delivered boat, with a pile of closed building and mooring certificates, which, like a score, are put on the desktop of the “conductor” of the ship symphony...

The boat was moved out of the shop on April 15. According to all calculations, the time frame seems like something from science fiction. There was still slush ice on the Amur River at this time. The degree of the boat’s readiness for sea trials was the most appropriate, therefore we first went out to a sea area reserved for trials as soon as late June. Sea trials ended in late December and during the entire this period the ship was at the base no more than three days. This is just a clean, illustrative example of the fact that the tests of the ship were underway all time frame allotted for this process. And this time is yours. Former senior order builder, now appointed by the order of the director of the enterprise as the chief delivery commissioner of the built ship, you alone make decisions at sea and take responsibility. Without even noticing how, you become the “author of the work,” and, like him, either booing or laurels of a winner, a bonus and a vacation await you in the final.

A well-built ship handed-over with no pressure is just a dream. However, it does not work without pressure. On tests, you lead a trial team of over one hundred high-class specialists. You yourself choose those with whom you go to the sea, and they choose you too. It turns out as in the song: “Who will make a mistaken, who will guess...”
Test engineer’s bread is salty from sweat, is black from dirt and gets stuck on the teeth with the monotonous day routine. Someone is joking: a tin can and you’re sardines in it. Indeed, it’s packed at sea on trials. You could stand in the line for the toilet all day.

However, there are no useless passengers on the ship, because everyone’s busy doing their own thing and everyone will find it. It is inappropriate, believe me, to leave a specialist ashore, so that later, if something happens, to break the test program, rush after him to the base, and go back to the sea. None of the guys grumbles, does not require a separate cabin and an eight-hour working day. And riots at sea are suppressed harshly and mercilessly: a discharge and exclusion from the list of the trial team. As a result, the «rebel» loses neither more nor less than a third, or even half of what he earns on the shore in a year. Damn it, money is not the point…

It is known that astronauts are checked for psychological compatibility for a long time. There are a lot of tests, techniques and schemes according to which you can build a highly comfortable team. But will it be productive? Will it be able, following the techniques, to maintain the purity of the relationship while doing hard work? Moreover, this work is hard both physically and intellectually: sometimes the cause of misunderstanding a malfunction becomes the starting point of mental overstrain.

No one has ever built a trial team on the basis of psychological compatibility, professional one was preferable. Indeed, if there is one joy for all, there is one problem for all. In an enclosed space, when the past day looks like today, when sometimes you lose track of days at all, living not by hours, but by the periods of time allotted by the test program for your work, when the same, already rather annoying faces and the chief delivery commissioner, who thinks he is God on the ship, around you...

I noticed how carefully and sometimes greedily the guys read my various orders and announcements, which I post on the order board from time to time. How they miss newspapers, the usual coastal phenomenon. Someone had the idea to release a handwritten wall newspaper at sea under the poetic name “Not in core”. This is not in the sense of life, but in the sense of electrical cable. Every issue of this newspaper was accompanied by a rush to read it - they took a turn. A healthy friendly laughter of adult men turned them into boys for some time laughing at a senior mechanic (“grandfather”) or at friendly laughter of adult men turned them into boys for some time.

Something inexplicable, just wonderful happened sometimes. Suddenly, out of nowhere, tiny, nimble birds a little larger than a fly flew across the ship’s compartments. At first we took them for flies, but, looking closer, someone recognized them as Japanese flycatchers. Their appearance on the boat was perceived with a almost childlike immediacy...

The ship being handed over is still the property of the shipyard, but from the moment of its launching, the ship’s crew begins to settle down, get used to and train. The commander of the future warship is not a minor person during trials. The success of the whole testing process depends sometimes (and more often always) on its readiness for cooperation, mutual understanding and an even relationship with the chief delivery commissioner. The relationship between the commander, a military man, limited by regulations, and the chief delivery commissioner, a “free” man and a little tyrant, are at the core of not only the working process. These people are not shy about displaying warmth and humanity towards one another while working conflicts and misunderstandings proceed, as a rule, without exacerbations.

The commander of one of my boats was Captain 1st rank Sergei Golobokov. Once we travelled a surface run from one sea area to another. At this time, the commander must be in the conning tower together with a signalman or a navigator (to read the navigator’s observation, if it happens at night). The chief delivery commissioner is the only civilian admitted to the command post. So, I receive an invitation from the commander to go up to him as soon as possible. I rise, take a deep breath of fresh sea air and hear the muffled voice of the commander, as if he is afraid to scare away someone: “Look,” he shows somewhere ahead. And there is a huge mountain of water in front of the boat, a white breaker reared up by the smooth blunt nose of the multi-toned submarine. On both sides of this mountain are two waterfalls of sea water. And suddenly... What a delusion? On the very border of the reared sea, where splashes do not reach,… a gray heron stands motionless.... With its leg tucked in, like a sturdy tin soldier, it rests on the black «back» of the sea monster. How did she get here? ..

The brightest and most precious memory of Golobokov is associated with his unusual gift for my birthday. It happens that birthdays fall just on the testing period. And what will you give to a man on the high seas? Only that which is impossible to find on the shore and that it will be difficult to forget...

We worked in surfacing mode. The commander, as expected, in the conning tower, I went to rest in my cabin that looked like a wardrobe. Suddenly, the commander calls me, I hear, he gives some commands. Then he turns to me and says: “People get presents for their birthday. I want to give you this...” I glanced - and, honestly, my heart sank with delight ...

The commander turned the boat and set it so that it rested with its blunt, shiny nose right at the beginning of the golden path lined by an immaculately round Moon hanging over the horizon. Without a single splash of the sea, this moonlight path lay on the black velvet of water. “Happy birthday, comrade chief delivery commissioner,” said the Captain 1st rank, smiling.

Prepared by Marina Radaeva
In order to effectively implement modern technologies in shipbuilding industry, to create new products within the framework of the diversification programme and to increase the efficiency of the Corporation’s management system, it is necessary to carry out a systematic work on the training and professional development of the personnel. The USC Corporate University, being a driving element of internal personnel training, will focus on meeting the abovementioned tasks.
This year it is planned to launch three programmes at once. The first one is “Business Diversification”; it will focus on developing competencies for introduction of new products to the market and creation of centres for product specialization. The second one is “The School of Production Management”; it involves two areas: forming up the business processes of production in the USC Group of companies and improving the quality of implementation of managerial functions at the linear level. And finally, the third programme “Avangard” aims at shaping a systemic idea of managing a high-tech corporation in the aspect of all business processes and inclusive of digital transformation.

Training programmes will be based on priority management tasks set by the management of the Corporation. The ones to complete these tasks will be the teams from the candidate pool – specially chosen specialists from whom the management expects project proposals and effective actions on implementation of organizational and technical transformation of the Corporation and on building a management system that ensure the development of a portfolio of products and services.

The activities of the USC Corporate University suggest a close coordination with external educational structures: universities, colleges, training centres and corporate universities of other organizations. It will become a platform that brings together the best practices in fields of staff training and development. Experts in the sphere of shipbuilding and other industries as well as lecturers from leading technical universities will be involved in formation and implementation of educational programmes that will be able to adapt the theory and practice for the production needs.

At the same time it is important to simultaneously form so-called centres of competence on key and most critical areas of knowledge, such as production planning, diversification, product line upgrading, new product development, optimization of product lines, new materials and technologies in shipbuilding, as well as development of after-sales system and service.

Given wide geography of the Corporation’s enterprises, as well as high levels of man-loading, it is planned to create a system of a remote learning. Training courses designed to introduce new technologies and implement the corporate strategy, to support management decisions, and, moreover, to transmit the values and corporate culture of the USC will be developed. It is planned to create training courses on such topics as “Product lifecycle management”, “System engineering”, “Management of a distributed shipyard”, “Tools
of the production system”, “Additive technologies in shipbuilding” etc.

These measures will ensure the solution of priority strategic tasks via the forces of engineering and management personnel, as well as it will train managers and candidates pool focused on achieving technical and technological breakthrough in the industry.

NEW GENERATION OF SHIPBUILDERS

Corporate training system is an element of the system of continuous education in the following model: School – Post-secondary training institution – University – Enterprise, which implies the close interaction of educational institutions and the Corporation at all stages of specialists' training.

The United Shipbuilding Corporation is actively involved in career guidance activities. Employees of the Corporation tell the younger generation about the profession of the shipbuilder ever since they are at school, which allows engaging young people and keeping them interested in the industry.

For example, the enterprises within USC participate in such social and educational project as the “Tsar-carpenter” contest. The ones to take part and compete in it are the teens: children and grandchildren of our shipyard and design bureaus workers, Nakhimovets and Cadets. This is a complex of career guiding events, training workshops and quizzes. The main prize is a trip on a real sailboat.

Specialists of the USC enterprises conduct career guide lectures, guided tours, and actively participate in the All-Russian event “A Week without turnstiles”. The USC supports institutions of additional education with technical focus: sections on ship modelling and robotics. The Corporation also stands as a partner of federal competitions and competitions for schoolchildren, including the multi-disciplinary engineering Olympiad “Zvezda”. In addition, professional forums and scientific conferences are held for students and young specialists of the USC, as well as the annual engineering-management competition “Together we are the future” aimed at forming the youth candidate pool of the Corporation.

An important project in terms of developing professional competencies is the corporate championship on WorldSkills standards (the USC has been participating in this movement since 2015). Last year, the number of participants and experts doubled; competitions for five competences were held for the first time, including the newly developed “assembly of metal ships hulls”.

Within the framework of the “Engineers of the Future” forum a Shipbuilding Faculty for young engineers was organized in 2018 for the first time, which includes a special programme for training and work on topical for the Corporation issues: development of production system, prospects for the introduction and development of PLM-, PDM-systems, product life cycle management, creation of a united information space at the enterprises of the shipbuilding industry, and many others.

I would like to highlight that at the enterprises of the Corporation for the period up to 2022 the demand for approximately 1150 graduates in the sphere of engineering is preserved. Nowadays, more than 900 students of the Russian higher educational
institutions are studying on the target training programmes; they will come to work for the enterprises of the USC.

More than 3000 students of higher and secondary vocational education, including about 900 final-year students, annually intern at our enterprises. Primary chairs play a key role in the training of qualified specialists and the ace of aces screening. The USC in collaboration with different universities has founded ten such chairs.

Many large Russian organizations, such as “Rosatom”, “Sberbank of Russia”, and “Russian Railways”, already have their own corporate universities and academies. The idea of continuous training of employees within the company and in accordance with its own vision and strategic goals for further development is becoming increasingly popular, which is not accidental. We are confident that a systematic approach to personnel training will allow us to effectively implement organizational changes and enhance the competitiveness of the Corporation.
Experience in service for shipbuilding

On 12 February in Saint-Petersburg, USC’s President Alexey Rakhmanov chaired a meeting of corporation’s Council of Elders. The Council, created in 2015, unifies experienced professionals, who have contributed significantly to the development of the industry and have shaped the present-day profile of Russian shipbuilding.

Among those, whose names are familiar to many generations of shipbuilders and need no introduction, are Yuri Kormilitsyn, Oleg Shulyakovskiy, Alexander Shilyakhtchenko, Vladimir Yukhnin, Viktor Tatarskiy, Igor Pashkevich, Velery Levchenko, Georgiy Poryadin, Alexey Oryshchenko and Leonid Grabovets.

The meeting was held at the Severnaya Verf shipbuilding plant with participation of the enterprise’s director Igor Ponomarev. Opening the session, Alexey Rakhmanov noted that the USC managed to cope with the inherited delayed construction projects, but the issue of fulfilling contractual obligations in the area of state defence order and commercial projects remain the priority of the corporation. In many ways the problems are explained by the imperfection of bidding procedures and delays in the supplies of equipment.

“As an option to solve this problem we consider the creation of a panel of the USC suppliers in the area of commercial shipbuilding and a list of guaranteed supply companies for the state defence order. There is nothing other than pre-qualification. We are not forerunners, which is why we will keep on monitoring the work of suppliers, create a database,” said Alexey Rakhmanov. According to him, this will help to avoid appearance of dealers, which do not produce anything and the operation of which is questionable. Another option to find a way out of this situation might be the holding of tender at the stage of the technical project preparation jointly with the design bureau and the plant. As an outcome of it, a list of winners is handed over to the plant for contracting, which is done actually on an uncompetitive basis. “But, it was a catastrophe when every time you have to redo the drawings and waste a year and a half just because the wrong choice was made. And this will consume incredible amounts of time and money. How can we find a way out?” said Alexey Rakhmanov in his address to the meeting participants.

Oleg Shulyakovskiy gave the Soviet experience of the state defence order as an example, which, according to him, was in many aspects adopted for the creation of the US system. “Nothing will be solved fundamentally unless the principle is changed: no tenders whatsoever. Suppliers are the responsibility of the design bureau, which has to deal with the problem, make a thorough analysis of their real situation and allocate responsibilities for concrete equipment among the suppliers,” said Shulyakovskiy. He was supported by Yuri Kormilitsyn and Igor Pashkevich, who also stressed the importance of involving the Navy in this work as it is the main customer. Leonid Grabovets touched upon an acute problem of the industry, i.e. the lack of reliable suppliers on key positions, including suppliers of engines and valves. In Alexey Rakhmanov’s view, the solution here may come with the Program on the Modernization of Machine-Building, which is being prepared now, and with the appearance of a “national champion in engine building” in the market. Besides, the USC President told the audience about the corporation’s plans on establishing a Centre of Propulsive Technologies.

The participants also discussed the training of specialists for the shipbuilding industry. “Even in the context of numerous orders we came across the problem of the lack of professional cadres,” underscored the USC president. In the words of Alexey Rakhmanov, it is necessary to reconsider the approaches to the training of engineer students and return to the traditional model of training specialists with a follow-on specialization in research studies, design bureaus or in production. The members of the Council of Elders expressed their support to the proposal pointing to the decisive role of the human factor and personal responsibility for the results of the enterprise operation.

To illustrate this argument, Alexey Rakhmanov mentioned the recent experience of the Krasnoye Sormovo plant, where a team of specialists on lean manufacturing has increased just in one year the number of produced steam boats from nine to fifteen without any extra investments, having eliminated all the inefficiencies.

In conclusion, the USC president thanked the members of the Council of Elders for an informal and subject-matter discussions and presented memorial commemorative coins “350 Years of the Russian State Shipbuilding”, issued by the Bank of Russia at the request of the USC.

On that day Alexey Rakhmanov also took part in a meeting chaired by Deputy Defence Minister of the Russian Federation Alexey Krivoruchko, which was devoted to the fulfilling of the state defence order.
STRENGTH AND POWER AT SEA
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The United Shipbuilding Corporation celebrates 12 years of strength and power at sea.