PANORAMA

CASPIAN PIPELINE CONSORTIUM

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DEAR COLLEAGUES AND FRIENDS!

I congratulate you on professional holiday — the Day of Oil and Gas Industry Workers!

The fuel energy industry retains its position as the flagship of the global economy, and our company's contribution in this area is significant. For the third decade, the Caspian Pipeline Consortium has been steadily and continuously exporting oil from the fields of Kazakhstan and Russia to the international market. In August 2022, another "round" mark was passed — 800 million tons.

Consortium is progressively implementing Debottlenecking Program at its facilities. Most of construction and installation work has been completed, the commissioning process is underway, followed by a period of pilot operation.

A significant increase in the number of work teams and the fleet of special equipment at construction sites makes it especially important to control compliance with the rules of labor protection, industrial safety and environmental protection. The Company has established a for the Safe Work Culture Committee, and both CPC managers and employees and our contractors participate in its proven work.

This summer, Consortium expanded the range of support for the regions of its presence. The environmental and educational project "Protect Nature of Our Native Land" has also stepped into the Kuban. We will actively help the Utrish State Nature Reserve, located next to the CPC Marine Terminal.

On Oilman's Day, I would like to congratulate and thank the entire close-knit multinational team of CPC — from young professionals who have joined the team as part of the implementation of DBNP, to company veterans, experienced professionals who have been working on the project for decades. In September, their work will be recognized by well-deserved departmental and corporate awards. To our dear veterans, youth and all colleagues, I want to wish new labor achievements, success in everything planned, good health and firm confidence in the future. Happy holiday!

N.N. GORBAN,
GENERAL DIRECTOR
CASPIAN PIPELINE CONSORTIUM

AUTHOR
PAVEL KRETOV

KEY BRICK

KOMSOMOLSKAYA PS IS THE LARGEST PLANT IN THE CPC CENTRAL REGION. THE PRODUCTION FACILITY LOCATED EXACTLY IN THE MIDDLE OF THE PIPELINE SYSTEM PROVIDES BOTH TRANSPORTATION OF KAZAKHSTAN'S HYDROCARBON RAW MATERIALS AND RECEPTION FROM THE RUSSIAN COMPANY LUKOIL

The head of the Komsomolskaya PS, Gapur Kuzhuev, has been working here for more than two decades. With his participation, the station was built, expanded, modernized many times.

"In 2023, it will be 20 years since the official commissioning of Komsomolskaya PS", Gapur Salimovich notes. "Together with me, another 14 station specialists have been working since the very beginning of the pipeline commissioning and have commemorative corporate badges".

Effective organizational measures taken in a timely manner allowed the personnel of Komsomolskaya PS to work reliably during the acute period of the COVID-19 pandemic in 2020 and 2021.

"The management of the Central Region planned the shift schedules so that the personnel of both Komsomolskaya PS and A-PS-4A (where the main pumps are also driven by turbogenerators) could replace each other", says Gapur Kuzhuev. "Sometimes there was a need for this, but the situation always remained under complete control: we did not stop

our facilities for a single hour due to cases of coronavirus".

Also, according to the schedule, despite any external factors, Debottlenecking Program is being implemented at the station. As a part of the DBNP, two facilities are being implemented at Komsomolskaya PS: a fifth turbopump is added and a fifth tank is added to the pressure mitigating system.

"On the scale of DBNP compared to other stations, such as, for example, Astrakhanskaya PS, this is quite a bit, but we are bringing our "brick" into the common cause", says Alexander Goryunov, Construction Service Head of the DBNP Headquarters.

The fifth turbine is selected of the same type as the third and fourth. These units have shown special reliability over the period of operation, while they are equipped with their own local fire extinguishing system.

By the end of April 2022, turbine No 5 was already 90% assembled. Its site is completely concreted, pipelines with air, gas and diesel fuels are connected. The shut-off valves were filled with oil, the intake and pressure pipelines were prepared for testing.

"Now the final grouting of the anchor bolts is being carried out, the stiffening core is being poured", says Alexander Goryunov. "Contractors are preparing to run cables to the turbopump control cabinets located in the indoor switchgear. This will allow commissioning and checking the passage of signals along the lines".

Installed under the Debottlenecking Program, the fifth tank of the PMS has a double-walled design, which completely eliminates the risk of leaks. If the inner cavity is depressurized, oil will enter the nitrogen-filled space, which will be immediately signaled by special sensors. The builders completed the installation of the tank and the connection to the common "breathing" system and the buildup line of the drainage tanks of the PMS.

"The tank is partially filled in, it remains only to insert a 1000 mm inlet line into it, which is planned to be done in June during a 72-hour shutdown of the pipeline", Alexander Goryunov continues. "Then the level gauge sensors will be adjusted, which will allow the new equipment to be fully integrated into the overall PS system".

Alexander joined the DBNP team from the Far East with extensive construction experience. For 13 years, he has been constructing the facilities of the Eastern Siberia – Pacific Ocean pipeline system belonging to Transneft. Moreover, he built both the first and second stages of the ESPO.

"The conditions are different", says Alexander Goryunov. "It is easier here with the delivery of equipment and materials, closer to manufacturing plants and laboratories. But the local climate, in comparison with South Yakutia and Primorye, also has its own features that affect the pace of construction. If frosts are stronger in the east of the country in winter, and cyclones are flooded with water in the warm season, then strong winds have a negative impact here".

Weather and other risks are carefully taken into account when planning work on DBNP. During the implementation of this program, not a single case of industrial injuries was recorded at the station, which indicates a high level of the Safe Work Culture at this "middle" facility of the Tengiz-Novorossiysk pipeline.

AS A PART OF THE DBNP, TWO FACILITIES ARE BEING IMPLEMENTED AT KOMSOMOLSKAYA PS: A FIFTH TURBOPUMP IS ADDED AND A FIFTH TANK IS ADDED TO THE PRESSURE MITIGATING SYSTEM

ALEXANDER GORYUNOV

At the time of preparing the issue for printing, the installation of the fifth mainline pump with GTU was carried out in full. The connection of cable and wire products was completed, work began on the commissioning of gas turbine systems with the participation of representatives of equipment suppliers. Works on installation, piping and testing of the new PMS tank were completed, preparatory work for the integration of instrumentation equipment was underway.

AUTHOR
PAVEL KRETOV

AT THE FINISH LINE

THE IMPLEMENTATION OF DEBOTTLENECKING PROGRAM IS BEING COMPLETED AT PS-2. THE MAIN PEAK OF WORK WAS HELD BACK IN 2021

Four years have passed since the commissioning of PS-2. Built as a part of the Expansion Project, the station today looks like a real oasis in the middle of the dunes of Kalmykia.

"Every year we increase the area of grassy lawns by 20%", says Konstantin Kolyanko, Manager of PS-2. "Now about 260 trees grow on the territory of the station, 180 of them are fruit trees. The whole team willingly participates in landscaping, brings seedlings from home. We spend a significant part of our lives here, and a good view from the windows, which pleases the eye, is very important".

Konstantin has been participating in the CPC international project since 2002. Previously, he worked in the Tikhoretsky District Department of Main Oil Pipelines of JSC AK Transneft, built facilities for the Sukhodolnaya-Rodionovskaya pipeline.

Sometimes it seems that nature is watching the efforts of oil pipeliners to improve the territory with a certain degree of jealousy: either it releases abnormal heat (over +46 ° C in the shade), or it "organizes" an invasion of locusts. Strong winds up to 30 m/s often hit the PS, and this becomes a test of strength, including for the equipment of the production facility.

"The station was built taking into account all climatic conditions, but still during the wind season we significantly increase the control over the condition of electrical overpasses, ventilation ducts, covers, hoods and other elements", continues Konstantin Kolyanko.

The team members of the Debottlenecking Program (DBNP) have also adapted to the climate, which is generous with surprises. Let us recall that the program will allow to optimize the transportation process and obtain additional capacities for pumping oil from the fields. After completing work under this program, CPC will be able to transport up to 72.5 million tons of oil per year from Kazakhstan with the optimized use of antifriction additives and up to 81.5 million tons of oil per year together with raw materials from Russian shippers.

VITALY SILANOV

"Storm warnings are announced several times a week", says Vyacheslav Reshetnyak, head of the construction service of the DBNP Headquarters. "We are adjusting, transferring work to the premises. During abnormal heat, we increase the frequency of rest, for which we provide employees with rooms equipped with air conditioners".

By mid-April 2022, when CPC Panorama correspondents visited PS-2, the volume of work of the DBNP at the station was completed by 90%. This scope included the transfer of a backup diesel power plant to a new location, the assembly and installation of the foundations of the beam cage of the platform for frequency control of the speed of rotation of a high-voltage electric motor (VFD), the installation of four VFD block-boxes, in which the power equipment and the control units themselves are located. A cable rack was built from the closed switchgear to the VFD. It took about 10 tons of metal structures and about 12 km of cable products.

The contractors also built the fifth tank of the pressure mitigating system with a volume of 100 m³. It was installed on the foundation in the pit, equipped with instrumentation and automation devices.

SERGEY SMOLYANINOV

The main pumping station is currently undergoing commissioning of the unit "B" with control via the VFD. First, we carry out a break-in at idle, then under load. Unit "A" worked well, "C" and "D" are ahead", notes Vyacheslav Reshetnyak.

In the control room, the commissioning process is monitored by Vitaly Silanov, shift supervisor at PS-2. For 11 years in the Consortium, he had the opportunity to work at Astrakhanskaya PS, Komsomolskaya PS, and A-PS-5A.

"I gained useful and interesting experience during the implementation of the Expansion Project, participated in the launches of new facilities", Vitaly recalls. "Now we have an equally important period: the station was honored to be the first of all CPC PSs to test new equipment – VFD. We will definitely share this practical knowledge with colleagues at other oil transportation facilities.

From the first day of operation of PS-2, the operator of the pumping station, Sergey Smolyaninov, has been working at it. He also participated in the Expansion Project, built the A-PS-4A located on the border of Russia and Kazakhstan and other facilities of the Consortium.

VYACHESLAV RESHETNYAK

"For two years now we have been working side by side with colleagues from DBNP", says Sergey. "We ensure the safe operation of existing equipment, monitor compliance with labor protection requirements".

The fact that DBNP at PS-2 has reached the finish line is evident from the contents of the station's warehouse.

"Warehouse fullness has noticeably decreased", says Viktor Zhundrikov, storekeeper at PS-2. "Now you can see only the remnants of installation materials and spare parts that will remain at the pumping station after the completion of work with the VFD".

By the end of April, about 45 workers and specialists were involved in the implementation of the Debottlenecking Program at PS-2. The pace they picked up showed that all tasks would be successfully completed. In August, when this ussue was being made up, all commissioning work at the PS-2 had already been completed and pilot operation was underway for the second month. The new equipment works normally, without comments.

AUTHOR
PAVEL KRETOV

TWO STAGES OF UPDATE

DURING THE IMPLEMENTATION OF DEBOTTLENECKING PROGRAM AT ASTRAKHANSKAYA PS, AN ALMOST COMPLETE RENOVATION OF THE ENTIRE PRODUCTION ZONE IS UNDERWAY

A new main pumping station with new units, a new indoor switchgear, a complete transformer substation, mud strainers, a foam generating unit – all this is being built at the Astrakhanskaya PS within the framework of DBNP. Denis Lipovtsev, Project Coordination Group Leader, accompanies "CPC Panorama" reporters on construction sites. A graduate of the Tyumen State Oil and Gas University, he was involved in the operation of the ESPO pipeline system and for several years led PS-38, located in the area of responsibility of the "Dalnerechensk" RPD, Transneft Far East.

By mid-spring 2022, the implementation of the Debottlenecking Program at Astrakhanskaya PS reached 50% of the total scope of work, and by the end of July – 88%. This includes all foundations, installation of buildings, construction of technological pipelines and other.

"Now the general construction works are coming to the finish line, we are completing welding and painting", says Denis Lipovtsev, Project Coordination Group Leader at Astrakhanskaya PS.

The focus of construction has shifted to connecting new equipment

to power supply and automation systems. Cable lines are being laid, communication between control cabinets is being set up, commissioning is being carried out in a closed switchgear and in a complete transformer substation.

IN APRIL, ABOUT

200

SPECIALISTS AND CONTRACTORS

WORKED AT THE CONSTRUCTION SITES OF ASTRAKHANSKAYA PS

DENIS LIPOVTSEV

Variable frequency drive units for the pumps (VFD) constructed within the framework of DBNP are block-modular buildings. At the PS, concrete bases were prepared for them, a beam stand was assembled, and the assembled VFD modules were installed on it. Power equipment was installed inside and the commissioning started.

The construction of a new main pumping station is the largest complex of works at Astrakhanskaya PS in terms of volume within the framework of DBNP.

"The assembly of the building and general construction work are being completed, which will allow us to move on to the installation of the pumping unit", continues Denis Lipovtsev. "At the beginning of summer, we will fill the reinforced concrete foundation under the pump frame with special non-shrinking concrete mixtures, align the shafts of pumps and electric motors, connect auxiliary technological systems: bearing lubrication and oil cooling, high-voltage motor purge and others".

At the time of the journalists visit, the pumping units are still on the frames in their original plywood packaging. This is how they are protected in the conditions of general construction work, while contractors apply a fire retardant from above on the metal structures of the building.

"This compound holds well to metal", comments Denis Lipovtsev. "If it drips onto the unit, then you can't wash it off with any solvent. Therefore, we removed the packaging during the incoming inspection procedure, and then, having installed the pumps on the frames, closed the equipment again".

In April, about 200 specialists and contractors worked at the construction sites of Astrakhanskaya PS, a quarter of whom were employed in large-scale assembly operations at a nearby production base. The builders had seven truck cranes and aerial platforms per construction site, two wheeled excavators and small cranes, four mobile crane units based on KAMAZ at their disposal.

Builders perform a significant part of the work at height: assembly of buildings, installation of roofing and cable racks. We have to take into account various weather factors: precipitation, wind.

"With a wind speed of 15 m/s and above, we suspend all work at height", says Denis Lipovtsev. "Control over safe working conditions and safe performance of work is carried out by labor protection specialists of CPC and the contractor".

According to the plan, it is planned to gradually connect the facilities under construction to the power supply sources. Initially, a voltage of 10 kV will be supplied to a indoor switchgear and a complete transformer substation.

THE CONSTRUCTION OF A NEW MAIN PUMPING STATION IS THE LARGEST COMPLEX OF WORKS AT ASTRAKHANSKAYA PS IN TERMS OF VOLUME

The second start-up complex provides for the connection of modular VFD buildings and high-voltage electric motors, which will allow them to run in idle in September. In October, it is planned to connect the technological pipelines under construction (from mud strainers to the entrance to the main pumping station) to the existing ones, filling them with oil. After that, it will be possible to proceed to a comprehensive testing and commissioning of new facilities for trial operation.

In mid-August, when the material was being prepared for publication, general construction works on the indoor switchgear, transformer substation, VFD, starter for high-voltage electric motors, block gas control point facilities were completed, power was supplied, and commissioning work on control systems and fire and gas detection began. Landscaping of the territory of the PS was also carried out. In the MPS building, work on engineering networks was being completed and preparations were being made to supply 10 kV voltage to the electric motors of the main pumping units for subsequent adjustment and testing of this equipment.

AUTHOR
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TEST OF STRENGTH

IN THE MIDDLE OF SUMMER, THE CPC MANAGEMENT MADE A WORKING TRIP TO THE PRODUCTION FACILITIES OF THE TENGIZ-NOVOROSSIYSK OIL PIPELINE LOCATED ON RUSSIAN TERRITORY. UNSCHEDULED INSPECTIONS OF EMERGENCY PREPAREDNESS OF OPERATIONAL PERSONNEL AND CONTRACTORS WERE CARRIED OUT AT THE PS, THE LINEAR PART AND THE MARINE TERMINAL

The first object of the inspection was A-PS-4A, located on the border of Russia and Kazakhstan. Here, CPC General Director Nikolai Gorban, together with the heads of the Operations and Construction Departments, monitored the progress of work under the Debottlenecking Program. The readiness of a new mainline pumping unit with a gas turbine unit mounted on foundations, as well as the technological piping of the unit and pipelines of auxiliary systems was checked.

At Astrakhanskaya PS, where almost 90% of the production area is being renovated thanks to the DBNP, the builders reported that the new buildings of the indoor switchgear (ISG) and the complete transformer substation are ready to supply voltage in the near future. In turn, this will allow to proceed with the phased implementation of commissioning work on new equipment. Block boxes of variable frequency converters (VFD) are also fully ready for commissioning.

The company's management also inspected the new main pumping station, where the installation of engineering networks, fire and gas detection systems (FGDS) and technological pipelines of auxiliary systems of new main pumping units was carried out.

Unscheduled exercises were held at the stations and the linear part of the oil pipeline to determine the readiness of CPC personnel and contractors for emergency situations (ES).

At 5 am (4:00 Moscow time) an introductory message was received about the "depressurization" of the oil pipeline at the 668th km of the route. The forces and means of the emergency recovery center (ERC) — 25 specialists and 12 pieces of equipment — promptly moved to the place of the conditional emergency. To eliminate the consequences of emergencies, a mobile pumping unit, slotting devices, collapsible containers and other types of machinery and equipment were used. The participants of the exercises eliminated the "accident" by meeting the established standards.

EXTENDED WELL TEST OF VFD SHOWED RELIABLE OPERATION OF EQUIPMENT

The next day, A-PS-5A in the Astrakhanskaya Oblast, Komsomolskaya PS and PS-2 in the Republic of Kalmykia were inspected at the sites of the main and auxiliary equipment, the progress of work under the DBNP and the conditions for placing personnel in rotational camps. At A-PS-5A, the readiness of the new, mounted on a beam crate, block boxes of the VFD were inspected as part of the implementation of the DBNP.

At Komsomolskaya PS, the builders reported on the final stages of installation supervision at the new mainline pumping unit with a gas turbine unit. The CPC management also inspected the new site of the pressure mitigating system (PMS) tank, where construction and installation work was being completed. At the nearest stop of the PS, it is planned to integrate the instrumentation equipment of the tank into the SCADA system.

At PS-2, the station's operational personnel reported on the stable operation of all four VFDs put into pilot operation on June 7, 2022. The management of the company reviewed the power quality monitoring log, making sure that all parameters are within the allowable values.

Unscheduled exercises were also held on the Chernozemelsky Canal near PS-2. Here, during the liquidation of a simulated oil spill, the participants demonstrated the coherence of actions when deploying booms and practical skills in using specialized oil gathering equipment.

At A-PS-5A, the operational personnel of CPC and contractors worked out an algorithm for extinguishing a simulated fire at the site of the pressure control unit (PCU). At Komsomolskaya PS exercises were held to eliminate the consequences of "depressurization" of the metering unit with subsequent "ignition of oil". The exercise was positively assessed by the CPC management: the participants demonstrated coordinated actions in the deployment and use of fire-fighting equipment.

Territorially, PS-3 completes the Kalmyk section of the pipeline and "transfers watch" to the stations of the Stavropol Krai. PS-3 is going through the installation of VFD, as well as installation of additional PMS tanks. A similar stage of work was controlled at two stations in the Stavropol Krai — PS-4 and PS-5.

At PS-3 and PS-4, operational personnel and employees of contractors took part in exercises to localize

and eliminate a simulated oil fire at the mud filter site. At PS-5, measures were worked out to extinguish a simulated fire in the PMS.

Next to PS-4, on the 1031st km of the pipeline route, personnel of the contracting company STARSTROY at the Ipatovo ERC passed an emergency readiness check. 26 specialists, equipped with 11 pieces of equipment, promptly eliminated the consequences of a conditional oil release at the site for launching and receiving cleaning and diagnostic tools.

The CPC management noted the high level of professional training of PS-4 and PS-5 specialists. The need for further improvement of the management system of contractors in the field of labor protection, industrial safety and environmental protection was also emphasized.

A day later, Nikolai Gorban and the management of the Operations Department visited the largest CPC station in Russia, Kropotkinskaya PS, as well as PS-7 and PS-8. Equipment at production sites, administrative offices, workshops, fire depots and warehouses were checked at each facility.

On the 1237th km of the oil pipeline, unscheduled exercises were held according to the legend "oil release on land" in the area of responsibility of Kropotkin ERC. 23 specialists of STARSTROY LLC, equipped with 12 units of equipment, completed the entire range of measures to eliminate the "accident" in the scheduled time.

At PS-7, exercises were held to localize and eliminate the fire at the site near the main pumping station. After the combat deployment, the workers successfully carried out the foam attack of the "fire point". As part of an unscheduled inspection of the available forces and means, operational personnel and representatives of contractors at PS-8 extinguished a simulated fire at the site of dirt filters.

On the final day of the working trip, the mining section of the oil pipeline in the Western Region and the CPC Marine Terminal near Novorossiysk were inspected. At the 1484th km of the main oil pipeline, exercises were held to eliminate the "oil release". The message was received by the personnel of two emergency recovery centers at once – Novorossiysk ERC and Krizhanovsky ERC. In total, 35 specialists equipped with 26 pieces of equipment took part in the training session. The participants of the exercise, using the necessary arsenal of specialized tools, coped with all the tasks set in the scheduled time.

An unscheduled fire-tactical exercise took place in the Tank Farm, in which 30 specialists equipped with 6 pieces of equipment took part. According to the legend, the fire brigade received a signal about the "ignition" of the oil tank of the VFRT No 6 with a capacity of 100 thousand m³. Fire and rescue crews promptly arrived at the reservoir, which successfully deployed the "Fishcon" high-performance mobile system, stationary monitors and carried out a foam attack. The participants of the exercises received a satisfactory assessment for the coherence of actions in extinguishing a simulated fire and practical skills in the use of specialized equipment.

CPC PERSONNEL AND CONTRACTORS DEMONSTRATED HIGH READINESS FOR EMERGENCY SITUATIONS

On the territory of the Shore Facilities of the Marine Terminal, the CPC management checked the readiness of the new oil quantity and quality measurement system (LACT) created as part of the implementation of the DBNP. During the inspection, units of measuring lines No 1 and 2 were checked, ready for hydraulic testing.

At the construction site of the control room building, builders reported on the completion of reinforced concrete work and the start of finishing works. In addition, the existing pressure control units No. 1 and 2 were demonstrated to the CPC management, the technical re-equipment of which was carried out as part of the DBNP.

The on-site inspection of the facilities of the Tengiz-Novorossiysk oil pipeline by the management of the Consortium made it possible to identify both the compliance of the results of work within the framework of the DBNP with the project schedule, and the readiness of CPC personnel and contractors for emergency situations.

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MT DEPUTY REGIONAL
MAINTENANCE MANAGER
OF STARSTROY LLC

OVERLOOKING THE SEA

MONITORING AND ENSURING THE OPERABILITY OF ELECTRIC DRIVES OF BLOCK AND CONTROL VALVES OF THE MARINE TERMINAL IS A TYPICAL EXAMPLE OF SUCCESSFUL INTERACTION BETWEEN SPECIALISTS FROM REGIONAL DIVISIONS OF STARSTROY LLC AND CPC OPERATIONAL STRUCTURES WHEN PERFORMING MAINTENANCE AND REPAIR OF OIL PIPELINE SYSTEM FACILITIES

Pipeline transportation of oil has its own specifics regarding the organization of maintenance. In turn, the CPC oil pipeline system has its own features that distinguish it from other pipelines. This is a high-tech oil transportation complex with remote control of processes and systems using modern digital technologies and a SCADA information collection and control system. Hundreds of thousands of sensors collect information about the state of the oil pipeline systems, after processing it in automatic mode, decisions are made to change the operating mode of the main and auxiliary equipment, to decommission faulty systems and sections.

At the CPC Marine Terminal in Yuzhnaya Ozereevka, the specialists of the Consortium and the MT Maintenance Group of STARSTROY have over twenty years of experience working together. This allows to solve both current daily and more complex tasks that require the involvement of special equipment and specially trained personnel while maintaining constant readiness for prompt response to emergency situations.

In 2022, as part of the planned maintenance and repair of MT block valves, the mechanics of STARSTROY LLC monitored and maintained the performance of block valves devices. In accordance with the developed technological maps, training sessions on eliminating potential emergency situations and equipment failures were conducted monthly for the personnel of the MT Maintenance Group. One of the examples of the performance of high-quality, safe and professional work in the shortest possible time can be the restoration of the operability of the electric drive of the gearbox of the four-way valve of the prover (electronic verification device) of the oil quantity and quality measurement system (LACT) of the Shore Facilities of the Marine Terminal. This operation was carried out as part of scheduled maintenance, repair and timely replacement of the necessary mechanisms. The repair of the drive made it possible to continue unimpeded shipment of oil on time without disruption and loss of economic indicators and transportation obligations. It should be noted that this work, like all others, was carried out in strict compliance with the requirements of safety and environmental protection, as well as the requirements of technical regulations and internal regulatory documents (IRD) of CPC-R.

In the field of support and advanced training of specialists of maintenance divisions of STARSTROY, special attention is paid to training personnel in the specifics of servicing new equipment being introduced. This work is carried out as planned. Thus, in 2021, in the MT Instrumentation and Control Group, employees were trained in the maintenance of AUMA and ROTOR electric drives, and also completed the course "Technical means of automation of fire detection and fire extinguishing manufactured by SINCROSS, Bolid, BOSCH".

IN STARSTROY SPECIAL ATTENTION IS PAID TO TRAINING PERSONNEL IN THE SPECIFICS OF SERVICING NEW EQUIPMENT BEING INTRODUCED

Cooperation between CPC and STARSTROY LLC is not limited to equipment maintenance and repair. As part of the planned shutdown of the oil pipeline, the specialists of the companies jointly and promptly developed and approved work plans for the sequential emptying and cutting of sections of process pipelines intended for connecting new equipment, their degassing, sealing and preparation for welding and installation work.

The main attention during the development was paid to the prevention of accidents, the exclusion of the impact of hazardous and harmful production factors, the use of certified protective equipment, including respiratory organs (PPE). Thanks to careful preparation and rich experience in performing such work, the tasks were completed with high quality and in accordance with the schedule of the planned shutdown of the oil pipeline.

Scheduled maintenance is a necessary process to ensure the smooth operation of an oil pipeline system. In this area, the MT Maintenance Group of the STARSTROY company completed 3,135 work orders in 2021. Work was also carried out on the routine replacement of equipment that has spent its operational life.

The current year sets a new scope of tasks for the specialists of the MT Maintenance Group of STARSTROY company. Among those already completed is the replacement in June 2022 of ball valves 42-ESV-050 and 42-ESV-080, blocking underwater pipelines leading to single-point moorings. Also, work is underway on emptying and cutting the DU1000 pipelines, cleaning them from oil deposits, degassing and installation of pneumatic seals.

All these works are carried out by the personnel of the MT Maintenance Group of STARSTROY company, together with specialists from the CPC operational divisions, with high quality and on time.

THE CURRENT YEAR SETS A NEW SCOPE OF TASKS FOR THE SPECIALISTS OF THE MT MAINTENANCE GROUP OF STARSTROY COMPANY

AUTHOR
PAVEL KRETOV

IT'S ALL GOOD ON THE SHELF

IN 2024-2025, THE CASPIAN PIPELINE CONSORTIUM WILL REPLACE 25-YEAR-OLD SINGLE-POINT MOORINGS AT THE MARINE TERMINAL. PREPARATORY WORK, INCLUDING BOTTOM SURVEYS, IS ALREADY UNDERWAY

It's no secret that significant part of the CPC oil pipeline route runs through the places of fierce battles of the Great Patriotic War. Historians have estimated that only near Novorossiysk, for every Soviet soldier participating in the defense of Malaya Zemlya, the Germans brought down about 1250 kg of deadly metal. Shells, mines, air bombs in the Stavropol Krai and in the Kuban are still found very often. Therefore, in 1998, based on the results of a field examination before the initial construction of the pipeline system, a decision was made to completely clean up the area along the CPC route from the Kuban River to Yuzhnaya Ozereevka.

On a strip 82 km long and 32 m wide, sappers completely cleared

IN JUNE, A COMBINED TEAM OF THE EMERCOM OF RUSSIA WORKED AT THE CPC MARINE TERMINAL – 41 PEOPLE AND 17 PIECES OF EQUIPMENT

the ground of all explosive objects. And later, with the beginning of the laying of the oil pipeline, the demining group continued special support for construction work. Before welding the "golden joint", a total of over 7 thousand ammunition and many remnants of damaged military equipment were found.

In 2013, during the implementation of the Expansion Project at the Marine Terminal, the Consortium increased production capacity and installed a third single-point mooring. Before that, divers carefully examined the bottom of the water area. They identified five suspicious items, two of which were destroyed at that time, the rest, which turned out to be safe, were taken on board the ships and handed over for metal processing.

In 2023, CPC plans to begin installation of caisson anchors designed to fasten two replaceable single-point moorings. According to the requirements of the regulatory documents of the Seaport of Novorossiysk and the Black Sea Fleet of the Armed Forces of the Russian Federation, before work related to touching the seabed, in the water area of the Marine Terminal, it is required to perform a set of measures to detect and eliminate explosive objects.

"By decision of the Minister of the Russian Federation for Civil Defense, Emergencies and Disaster Relief, on June 12, work was organized to prevent and eliminate emergencies at underwater potentially dangerous facilities in the area of the Marine Terminal of CPC-R JSC", explains the head of diving operations of the consolidated detachment of the EMERCOM of Russia, colonel of the internal service Nikolai Tiselsky.

The consolidated detachment of the EMERCOM of Russia,

consisting of 41 people and 17 pieces of equipment, deployed an operational headquarters on the territory of the CPC and deployed its fleet in the harbor of auxiliary vessels. The equipment available to the unit – magnetometers, side-scan sonar, remote-controlled uninhabited underwater vehicles and special equipment – allowed the diving team to perform tasks at depths of up to 100 m. For the duration of these missions, the operation of two CPC single-point moorings (SPM-1 and SPM-2) was suspended. The oil port continued to ship tankers only using SPM-3.

"The work was carried out at a depth of 56 m", says Alexey Sitnik, CPC Offshore Maintenance Manager. "Additional difficulties were created by the undercurrent – about 2 knots. An auxiliary multi-purpose vessel Arktik was placed on duty near the work site. The vessel is intended for maintenance of CPC offshore facilities and for rescue operations, but in this case, it provided additional safety for divers. The pressure chamber on board could be required, for example, in case of an emergency ascent of a diver.

On June 18, 2022, under the leadership of CPC General Director Nikolai Gorban, a working meeting was held at the CPC Marine Terminal with the leadership of the combined team of the EMERCOM of Russia. Employees of the department reported on the survey of 6.7 thousand m^2 of water area as a result of 12 paired diving descents with a total duration of 31 hours and conducting underwater surveys on an area of 164,200 m^2. During the meeting, a procedure was developed for further work on the side-scan sonar survey of a number of targets.

As of June 28, the site survey indicators reached 764 thousand m^2, the survey by remote-controlled uninhabited underwater vehicle reached an area of 8.2 thousand m^2, 24 paired diving descents were carried out with a total duration of 53 hours and 40 minutes.

AN UNDERWATER SURVEY WAS CARRIED OUT ON AN AREA OF 764 THOUSAND M^2, AN UNDERWATER DRONE SURVEY OF AN AREA OF 8.2 THOUSAND M^2, 24 DIVING DESCENTS

According to the results of a diving survey in the SPM-2 safety zone, a deep-sea mine defender of the 1943 modification was found and identified with an estimated explosive weight of 8.8 kg. Taking into account the possible risks of the impact of a hydroshock wave on production facilities, it was decided to move the explosive item for destruction outside the SPM security zone. The explosive find was connected to a system of underwater "parachutes", which were filled with air until neutral buoyancy was achieved. Then the structure raised to the middle layers of the sea was towed from the SPM area at a distance of about 2 km to the place of detonation.

In total, according to the results of search operations in the water area of the CPC Marine Terminal, specialists of the EMERCOM of Russia worked out three hydroacoustic and magnetic targets: they confirmed the destruction of an explosive object carried out at the end of 2021 by the forces of the Black Sea Fleet of the Russian Federation, eliminated the aforementioned deep-sea mine defender, and the third item turned out to be a non-hazardous reinforced concrete product.

"On June 29, 2022, all major works were completed, which made it possible to remove restrictions on navigation and return SPM-1 and SPM-2 back into operation", Regional Manager of the Marine Terminal Alexey Pelipenko told CPC Panorama.

The completed scope of demining works in the water area of the Marine Terminal will allow safely proceeding with the operations necessary for the replacement of SPM-1 and SPM-2 related to touching the seabed: replacement of underwater manifolds, installation of anchors-caissons, installation and laying of chains and other equipment of single-point moorings.

"SPM-2 is planned to be replaced in 2024, SPM-1 – in 2025. Both new single-point moorings will be of the same type as the SPM-3, which has proven itself in operation", says Oleg Likhomanov, Leader of the Group for construction and installation works and commissioning of CPC single-point moorings.

This means that the new SPMs will be equipped with convenient access for mooring and boarding of personnel. The SPM superstructure will provide a safe, waterproof placement and serviceability for all mechanical and electrical equipment.

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THE COURSE FOR INVOLVEMENT

IN THE SPRING OF 2022, THE SAFE WORK CULTURE COMMITTEE WAS FORMED IN THE CPC STRUCTURE. TWO MEETINGS OF THE NEW COMMUNITY HAVE ALREADY TAKEN PLACE, THE THIRD IS SCHEDULED FOR SEPTEMBER

Issues of labor protection, industrial safety and environmental protection are always a priority in the work of the Caspian Pipeline Consortium, and today they are especially relevant. This is largely due to the implementation of the Debottlenecking Program. The large-scale construction and installation works deployed within the framework of DBNP require the involvement of hundreds of specialists from contractors and dozens of special equipment units to CPC production facilities. At all construction sites from Tengiz to Novorossiysk, work is not only in full swing, but production risks are also increasing in a natural arithmetic order.

The corporate standard "Leadership in the Safe Work Culture Development" adopted on February 1, 2022, is called upon to counter the increase in risks with the consciously safe and responsible labor activity of each employee of CPC and contractors. Almost at the same time, company began forming the Safe Work Culture Committee — a new platform for dialogue, exchange of experience and ideas, as well as making key decisions in the field of implementing the corporate policy to achieve zero injuries and accident-free operation.

The first meeting of Safe Work Culture Committee was held at the CPC Moscow Office on April 29, 2022. It was chaired by CPC General Director Nikolai Gorban in the format of a videoconference — the heads and specialists of the Eastern, Central, Western regions and the Marine Terminal were in touch with Moscow. During the meeting, priority areas for the development of the Safe Work Culture were identified, a cascade hierarchy of substructures was formed — from the "control center" to committees at each PS. The formats of communication support, employee engagement, plans and monitoring of the implementation of leadership practices were also discussed.

The next, second meeting of the Safe Work Culture Committee took place on July 25, 2022, in Moscow and was also held in the format of a teleconference with the regions. At the same time, the quorum was expanded by the heads and specialists of contractors.

The reports of the meeting participants discussed the company's progressive solutions in the field of health, safety and environmental protection, statistics for the first half of 2022 in this area, key trends in the analysis of industrial risks, as well as the progress in fulfilling the tasks set at the April meeting. Thus, in July, the Consortium introduced the enterprise standard STP CPC 04.06.2022 "Procedure for recording and investigating incidents", as well as a glossary of definitions and terms in the field of HSE.

ACCORDING TO THE RESULTS OF THE FIRST HALF OF 2022,

3,894

OBSERVATION CARDS
WERE RECEIVED FROM CPC EMPLOYEES AND CONTRACTORS

According to the results of the first half of 2022, 3,894 observation cards (OC) were received from CPC employees and contractors, which is one and a half times more than in the same period of 2021. According to the results of the analysis of the OC, there was an increase in the share of cards with suspension of work in the total number of cards of unsafe observations. This indicates an increase in the effective exchange of information and the provision of feedback, which, in turn, shows the positive dynamics of the development of the level of Safe Work Culture.

The draft architecture of the Committee, presented in April, was successfully implemented by mid-summer, earned and gave regional results. Its effectiveness was analyzed by the participants of the July meeting and, as a result, it was decided to use the algorithm of the CPC Western Region: hold regular meetings of the site (station) committees at the beginning of each month, followed by meetings of regional committees in the second half of the month, to be able to promptly consider issues that require regional participation. For such meetings, which are led monthly by the heads of the PS and regional managers, respectively, developed a template for a system analysis of observation cards, initiative proposals, checklists and instructions.

In turn, CPC employees and the company's contractors received tools for register and monitoring the implementation of leadership practices planned in spring. OC digital form was supplemented with a new block for registering «field» leadership practices, and QR codes for registering OC in the corporate database via mobile phone were tested on 2 PS. The possibility of full implementation will be considered in the 4th quarter of 2022.

Leading role in the implementation of leadership practices belongs to the leadership, and at present,

SERGEY POLOVKOV, CPC DEPUTY GENERAL MANAGER FOR HSE:

«The architecture of the Safe Work Culture Committee is built on the principle of a cascade hierarchy. Thanks to this, it is possible to replicate local initiative decisions horizontally — from the "place of birth" to other CPC facilities. It also provides an active exchange of information "from top to bottom" and "from bottom to top". Top-level committees can provide strategic solutions, best practices, support, assistance and methodologies. And from the lower level, suggestions, problematic issues, information from the PS and best practices can be received.

the Eastern Region is an example in this direction. At the CPC facilities in the Republic of Kazakhstan, PS managers and their deputies actively support the implementation of the Leadership standard and show an example in mastering leadership practices – the best results, both personal and among the employees of their PS. CPC observes a high percentage of the implementation of initiative proposals (77%).

...Make a hole for the gas analyzer tube in the manhole cover so that the specialist does not make unnecessary (and dangerous to health) efforts during gas analysis. Apply warning strips on the edges of the machine pedestals in the workshop to prevent workers from tripping. Adjust the air flow from the ceiling air conditioner in the dining room so that employees do not catch colds. Lay walking paths at the site of the Shore Facilities of the Marine Terminal so that "guests and hosts" do not deviate from the most rational and safe routes. These and other initiative proposals are received regularly, not only from the CPC team, but also from contractors.

The general contractor for the construction within the framework of DBNP – the VELESSTROY company – is currently the most active among other CPC contractors in the common cause of the involvement of labor collectives. The company has rich experience in working at oil and gas facilities, its own experience in the field of health, safety and environmental protection. In particular, within the framework of the July meeting of the Committee, VELESSTROY management was asked to update its internal mentoring program for newcomers, who are statistically leading in violations of labour protection rules that directly lead to an increase in accidents, according to the specifics of the implementation of DBNP. One of the tools to increase the activity of contractors (including non-production ones – security, cleaning and others) within the framework of the Safe Work Cultural development will be the introduction in new contracts with them the economic component, the value of which may vary depending on the involvement of the contractors in CPC initiatives aimed at improving the safety of employees.

As noted at the July meeting by the head of the Consortium, the situation when a violation of labour protection rules during earthworks, for example, is first pointed out not by the boss, but by an electrician passing by and seemingly unrelated to the problem, suggests that the Safe Work Culture in the company is moving in the right direction. According to the Bradley curve, precedents like this mark the transition to the next, independent level of maturity of the company in the field of Safe Work Culture. At the same time, in comparison with other industry companies practicing such initiatives, CPC has an unprecedentedly large territorial coverage: 1.5 thousand km, two states, five regions.

The next meeting of the Safe Work Culture Committee will be held in Atyrau in September 2022 as part of the CPC Safety Day. The chosen time and place contribute to holding the meeting in full face-to-face format and with the participation of representatives of the shareholders of the Consortium.

ELENA BULATOVA,
CPC HEALTH AND SAFETY MANAGER:

«We have seen an increase in the number and quality of observation cards since the introduction of practices of monthly events dedicated to CPC Life Saving Rules in the company. Every month, the attention of CPC employees and contractors is focused on a certain rule selected based on an analysis of production risks. Thus, every month CPC and contractor's employees pay increased attention to the work that poses the greatest risk in the current period, thereby controlling and reducing its potential.

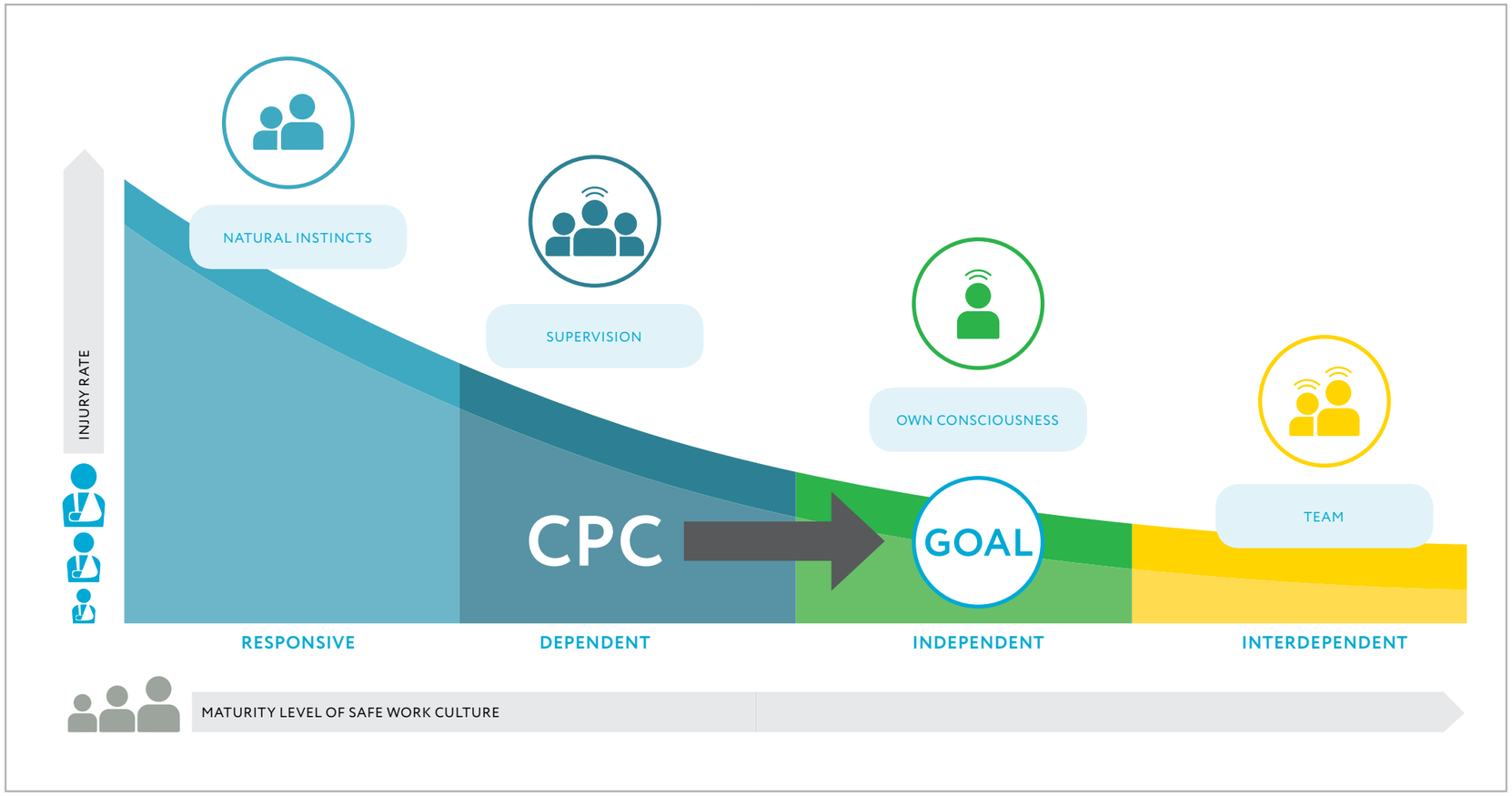
MATKO NOVAK,
DEPUTY HEAD OF CONSTRUCTION MANAGEMENT DIRECTORATE, VELESSTROY LLC:

«It is advisable to supplement the existing system for monitoring the implementation of leadership practices with an observation matrix created during the period of our work at Tengizchevroil facilities. It has a list of key people and a list of activities with quarterly control. For example, I have a need to make a certain number of rounds per month and fill out a certain number of observation cards quarterly. Other leaders have their own to-do lists. If you have not completed at least one, a red signal appears in the reporting. They didn't punish him for this, but anyway, everyone saw it, and the "culprit" felt quite uncomfortable.

When evaluating the coefficient of participation of contractors in the general statistics of observation cards, it is important to take into account the specific indicators of each such company – the number of employees employed at the facilities.

CPC'S GOAL IS TO MOVE TO AN INDEPENDENT LEVEL OF SAFE WORK CULTURE

BRADLEY CURVE ®



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JUBILEE ECONOMIC

AS A BUSINESS PROGRAM PARTNER, CPC PARTICIPATED IN THE ANNIVERSARY XXV ST. PETERSBURG INTERNATIONAL ECONOMIC FORUM (SPIEF-2022), HELD IN THE NORTHERN CAPITAL FROM JUNE 15 TO 18, 2022. WORLD LEADERS, MANAGERS OF LARGE RUSSIAN AND FOREIGN COMPANIES, LEADING EXPERTS AND REPRESENTATIVES OF CIVIL SOCIETY DISCUSSED THE MOST CURRENT ISSUES OF THE MODERN ECONOMY ON THE PARKS OF THE FORUM

Sergei Kulakov/Roscongress

The SPIEF 2022 business program was divided into four thematic areas. As part of the first block "The New Economic Order: Responding to the Challenges of Time", the participants discussed the changes taking place in the world and stated that the restructuring of the entire economy of the planet has deep reasons and is not of a short-term nature. The second track of the business program – "The Russian Economy: New Challenges and Horizons" – was devoted to the anti-crisis agenda, the investment climate in the regions, the development of the financial market and key industries. Discussions on the third topic "Modern Technologies for Humanity: Creating a Responsible Future" touched upon topical issues of information security and digitalization. Participants of the sessions of the fourth block "Investments in Humans – Investments in Development" discussed issues related to the development of human capital.

Over 14 thousand people from 130 countries of the world took part in the forum. The main event of SPIEF-2022 was the plenary session, the speakers of which were the presidents of Russia and Kazakhstan – Vladimir Putin and Kassym-Jomart Tokayev.

The President of the Russian Federation presented his vision of the most important principles for the development of the state: "The first is openness. Truly sovereign states are always committed to equal partnership, to contribute to global development. The second principle is the reliance on entrepreneurial freedoms. The third principle is a responsible and balanced macroeconomic policy. The fourth is social justice. The fifth principle on which Russia builds its economic policy is the priority development of infrastructure. The sixth, cross-cutting principle of development that unites our work is the achievement of true technological sovereignty, the creation of an integral system of economic development, which, in terms of critically important components, does not depend on foreign institutions".

A CHARACTERISTIC FEATURE OF THE FORUM WAS THE ACTIVE COOPERATION OF LARGE COMPANIES WITH THE SUBJECTS OF THE RUSSIAN FEDERATION

In the format of business dialogues, contacts were held between domestic entrepreneurs and foreign partners from Egypt, China, Africa, Latin America, Turkey, Iran, as well as meetings with representatives of the BRICS countries, the Shanghai Cooperation Organization, the Eurasian Economic Union and ASEAN.

The four days of SPIEF 2022 included more than 200 official events, where about 1.5 thousand speakers spoke. Nearly 700 cooperation agreements have been signed. Thus, the Caspian Pipeline Consortium and the State Atomic Energy Corporation Rosatom agreed to develop environmentally friendly technologies, introduce Russian-made digital software and platform solutions, and also localize the production of equipment at the facilities of the enterprises of the State Corporation Rosatom. The cooperation agreement was signed by the heads of the companies – Alexey Likhachev and Nikolay Gorban.

"We consider the signed agreement as the basis for the start of cooperation in a number of promising areas", said Nikolay Gorban, CPC General Director. "This cooperation will help us to continue to improve the efficiency of the company and bring industrial and environmental safety of the Consortium facilities to a new qualitative level".

"Enterprises of the State Corporation Rosatom have all the necessary competencies and experience to implement projects for the oil and gas industry. The signing of the agreement marks the beginning of a long-term cooperation aimed at developing the business of the parties", Alexei Likhachev, General

Vladimir Smirnov/TASS

Director of Rosatom State Corporation, expressed confidence.

A characteristic feature of the forum was the active cooperation of large companies with the subjects of the Russian Federation. For example, CPC signed another cooperation agreement with the administration of the Stavropol Krai. The provisions of the new five-year agreement will make it possible to continue developing the industrial and transport infrastructure of the Stavropol Krai and the Consortium's facilities, to strengthen the financial and economic position of the region and the investment climate in the region. CPC will continue to actively support the development of the social sphere in the Stavropol Krai in the field of education, healthcare, culture and other areas.

"Over the many years of our cooperation, CPC-R has established itself not only as a reliable partner, but also as a representative of a socially responsible business. The company is actively involved in the life of the Stavropol region: it opens new production facilities, helps in the development of the medical and educational industries. During the presence of CPC-R in our region, dozens of units of medical equipment, ambulances, school buses were purchased, polyclinics and outpatient clinics were opened. I am sure that our cooperation, including in the social sphere, will be as effective as before", said the Governor of the Stavropol Krai Vladimir Vladimirov before signing the document.

This year, the CPC delegation's schedule of bilateral meetings was quite busy. Negotiations were held both with the leaders of the regions of presence (Astrakhan Oblast, the Republic of Kalmykia), and with the heads of the subjects of the Federation known for their industrial potential — Udmurtia and Mari El.

A working meeting was held between CPC General Director Nikolay Gorban and the head of the CPC Shareholder company, Chairman of the Management Board of NC KazMunayGas Magzum Mirzagaliyev. The parties discussed a wide range of issues of joint work within the framework of the CPC international project, including the implementation of the Debottlenecking Program, which will increase the throughput capacity of the Tengiz-Novorossiysk oil pipeline to more than 80 million tons per year.

For a quarter of a century, the St. Petersburg International Economic Forum has become a popular platform for establishing cooperation ties, an authoritative and representative world-class event. Today, this is an authoritative event that meets expectations every year, guaranteeing a constructive exchange of views on all issues of the international and domestic agenda.

CPC HUMAN RESOURCES

THINK FORWARD

HOW OFTEN HAVE YOU THOUGHT ABOUT WHAT YOUR LIFE WILL BE LIKE AFTER RETIREMENT AND WHAT ACTIONS YOU NEED TO TAKE NOW TO ENSURE IT IS THE USUAL LEVEL? MANY PEOPLE AVOID THIS QUESTION, BECAUSE IT IS STILL NECESSARY TO LIVE UNTIL RETIREMENT. BUT WHAT WILL HAPPEN WHEN THE "SILVER AGE" DOES COME? TIME TO TAKE CARE OF THE FUTURE WITH THE CPC CORPORATE PENSION PROGRAM


Victoria Fedoseenko

William Potter/Shutterstock/FOTODOM

In the context of a periodically transforming pension system, the question of how to ensure a comfortable standard of living becomes especially relevant. CPC, as a socially responsible employer, strives to support employees in this direction.

Since 2009, CPC-R has been implementing a corporate pension program, the main purpose of which is to help the company's employees in the formation of pension capital. Currently, VTB Pension Fund acts as a contractor assisting in the implementation of this program.

It is important to note that the sooner you start taking care of your future pension and make contributions to your personal pension account (PPA), the easier it will be to accumulate the desired amount before retirement age. In this case, the amount of your contributions can be quite small – 2–3% of wages, which will not have a significant impact on the family budget. Therefore, anyone who says that pension is a topic for pensioners is greatly mistaken. In this case, everything is exactly the opposite: it is advisable to start forming a pension at a young age, so that by the time you reach retirement grounds, you have enough savings in your account that allow you not to change the standard of living that has become habitual.

What is the essence of the program and who can become its participant?

The terms of the program are regulated by the Regulations on the Assistance Program in Additional Non-State Pension Provision for Employees of CPC-R JSC.

The program participants are employees whose work experience in CPC is two years or more. Attachment to the program is carried out automatically upon reaching the required work experience and does not require additional actions from the employee.

A corporate personal pension account (CPPA) is opened in the name of the program participant in the VTB Pension Fund, and CPC quarterly transfers contributions* to this account, the amount of which depends on the length of service of this employee in the company.

If the length of service is from two to three years, then the amount of contributions will be 3% of the official salary. If it is from three to five years – 4%. For those who have been with the company for five years or more, the contribution is 5% of salary.

In addition, each participant of the program can conclude a personal agreement with the VTB Pension Fund and make quarterly voluntary contributions to a personal pension account (PPA). In this case, CPC will additionally transfer 1% of the employee's salary to the corporate personal pension account (CPPA), provided that the amount of the employee's voluntary contributions is at least 4% of his salary.

The VTB Pension Fund annually accrues investment income for the amount formed from CPC contributions and personal contributions from employees, increasing the pension capital of program participants. It must be borne in mind that the investment income is not known in advance and it changes every year. You can control the amounts accumulated on your PPA and CPPA online on the VTB Pension Fund website (in the personal account of the program participant).

Upon the occurrence of pension grounds and after dismissal from CPC-R, the program participant chooses one way to receive payment: lifetime pension, fixed-term pension or pension until the pension account is depleted. At the same time, after the emergence of the right to claim corporate pension savings, the program participant has the right to receive a one-time payment in the amount of 40% of the funds formed on the pension account and receive the rest of the savings in the form of a monthly pension.

How does the fund earn returns for its clients?

The fund attracts management companies to invest pension savings, which, in turn, invest savings in various financial instruments: bonds, government securities, deposits, etc. Each fund discloses the structure of the portfolio on its website. The main objective of investing the funds of the fund is to preserve and increase them on the basis of the principles of reliability, safety, profitability and liquidity.

Due to the events that have taken place in the financial market since the end of 2021, the return on investing VTB Pension Fund on depositors' funds for the specified year turned out to be significantly lower than the inflation rate. In this regard, the CPC management made a decision aimed at supporting the effectiveness of the non-state pension program for its employees. The investment portfolio formed by the VTB Pension Fund from CPC funds was changed from balanced to corporate. This involves reducing the level of risks associated with fluctuations in the market value of assets and obtaining a stable return on investment in them.

How to get access to the personal account?

To gain access to the personal account of the NPF, the employee fills out the consent form for the processing of personal data and transfers it to the HR department to the specialist responsible for this program.

After the consent form is received by the fund, access to the employee's personal account is opened within a few days. The IIAN number is used as a login, and a six-digit passport number is used as a password. If necessary, the employee can change the password in his personal account.

BENEFITS OF THE NON-STATE PENSION PROGRAM COMPARED TO OTHER CAPITAL FORMATION OPTIONS:

- **RETIREMENT 5 YEARS EARLY.** OPPORTUNITY TO RECEIVE A NON-STATE PENSION 5 YEARS EARLIER THAN THE STATE ONE (WOMEN AT 55, MEN AT 60).
- **YIELD.** HISTORICALLY, THE YIELD OF NSPP CONTRACTS EXCEEDS THE RATES OF BANK DEPOSITS.
- **OPPORTUNITY TO RETURN 13% (PERSONAL INCOME TAX) OF THE AMOUNT OF PENSION CONTRIBUTIONS**.**
- **PRESERVATION.** CONTRIBUTIONS AND THE INCOME ACCRUED ON THEM AT THE STAGE OF ACCUMULATION OF FUNDS ARE NOT SUBJECT TO COLLECTION OR ALIENATION BY A COURT DECISION IN CASE OF BANKRUPTCY OR DIVORCE.
- **SAVINGS ARE INHERITED IN FULL, INCLUDING INVESTMENT INCOME.**

** Social tax deduction. Article 219 of the Tax Code of the Russian Federation.

Program clients are provided with services for monitoring the state of their pension account and conducting transactions online: personal account and mobile application (available for download in the App Store, Google Play and AppGallery), online chat on the fund's website, 24/7 information support service.

Where to contact if I have any questions?

To conclude an agreement or get advice on the program, you can contact the CPC Human Resources.

Features of the pension program for CPC-K employees.

In accordance with the legislation of the Republic of Kazakhstan, pension contributions are made to the unified accumulative pension fund of UAPF JSC (the amount of deductions is 10% of the employee's total income). In this regard, CPC-K employees are provided with the Program of partial compensation of mandatory pension contributions, which is regulated by the Regulations on the Program of partial compensation by the employer of mandatory pension contributions to accumulative pension funds for employees of CPC-K.

The program participants are employees whose work experience in CPC-K is two years or more. In this case, the date of commencement of work in the company is considered the first day of work.

When calculating wages, the company makes partial compensation of the mandatory pension contribution to the accumulative pension fund to participants.

If the length of service is from two to three years, then the amount of contributions will be 3% of the official salary. If it is from three to five years – 4%. For those who have been with the company for five years or more, the contribution is 5% of salary.

Upon reaching the retirement age, the employee applies to NJSC State Corporation "Government for Citizens" for paperwork and further assignment of pension payments.

* From the employer's contributions, 1.4% is deducted to the NPF for the formation of an insurance reserve with an annual decrease in this percentage to 0.5%.

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SECRETS OF SPEED READING

THE SPEED READING SKILLS NECESSARY FOR WORKING WITH LARGE VOLUMES OF DOCUMENTS HAVE AND BEEN POSSESSED BY MANY CELEBRITIES OF THE PAST AND PRESENT. AMONG THEM ALEXANDER PUSHKIN, NAPOLEON BONAPARTE, THOMAS EDISON, BILL GATES AND OTHERS. HOW TO ACHIEVE THIS WITHOUT LOSS IN THE QUALITY OF INFORMATION PROCESSING? PERHAPS YOUR COLLEAGUES WILL NEED A FEW TIPS FROM THE GREAT

Nigita/Shutterstock/FOTODOM

The main task in mastering the skills of speed reading is to leave in the past the school habit of pronouncing the text to yourself. The average rate of such pronunciation is about 300 words per minute, while, having got rid of the "ballast", you can perceive the text with your eyes five times faster. Such a skill allowed, for example, American President Franklin Delano Roosevelt to read a book of any thickness in just one evening. It is enough for the human brain to write a word to identify its meaning, and this happens automatically. The extra "voices in the head" are not helping, but rather a factor distracting from the process of comprehension. The exception to this rule was perhaps the reading technique of another American president, George Washington, who claimed that it was the pronunciation of words that helped him distinguish truth from lies.

in me. Sometimes, in one word, I understood the meaning of a whole phrase", said the novelist.

The writer Maxim Gorky could compare with him in the speed of reading. Contemporaries recalled that the eyes of the petrel of the revolution glided diagonally across the printed pages so quickly that it seemed that he was simply leafing through them.

There are other tips on how to quickly master voluminous texts in a limited time. First of all, it is worth scrolling through the entire material, paying special attention to headings and subheadings, as well as everything that is in bold or underlined. This will give you a preliminary idea of the nature of the topics covered, and especially of those that require more detailed attention in further reading. For the same purpose, it will be useful to study the introduction and conclusion of the text material, and if they are missing, the first and last paragraphs.

OUR BRAIN IS ABLE TO RECOGNIZE AND PROCESS NOT ONE, BUT SEVERAL WORDS AT THE SAME TIME

It is important to note that our brain is able to recognize and process not one, but several words at the same time. Try to visually divide the line into three parts and perceive the text in each third as a whole. And you will immediately see how the speed of reading will increase proportionally without loss of understanding.

At the next stage, you can connect the capabilities of peripheral vision – it will help you instantly identify the entire line as a whole. The French writer Honore de Balzac did not stop there and learned to comprehend seven or eight lines at once with one glance. "The absorption of thought in the process of reading has reached a phenomenal ability

Remember: diagrams, tables, illustrations and diagrams contain a lot of information that is convenient for quick assimilation. They are also worth studying first of all in order to quickly prepare for immersion in the topic.

An important aspect of reading is self-organization. As you run through each paragraph, keep in mind the questions: "What did the author want to say? Do you agree with him?" Then your brain will continuously look for answers to them, keeping the reading process in the necessary tone and concentration. The American inventor Thomas Edison, who has read many studies, dissertations, articles

and multi-volume works during his life, advised taking short breaks to "digest" information.

Markings contribute to the understanding and memorization of the text. Pen, marker and pencil help to mark key points in the text, interesting facts and conclusions, topics for further discussion. Here librarians and museum curators are unlikely to agree with us, but not in essence, but solely in the name of official responsibility. Numerous books read by the famous German public figure and philosopher Karl Marx are full of notes. American entrepreneur and philanthropist Bill Gates recommends making notes in the margins.

VLADIMIR KUPRIYANOV

The editors of "CPC Panorama" conducted a kind of blitz survey among colleagues: how do you manage to process a large flow of information during the working day without losing productivity?

CPC Deputy Procurement Manager Vladimir Kupriyanov advises planning and setting clear priorities: "I distribute daily tasks according to their importance, completing the highest priorities in the first half of the day, concentrating on them as much as possible. As for how not to miss details when studying working documents, this is, first of all, experience and professional outlook. Never stop learning, show a lively interest in everything, improve your knowledge in all the "narrow" areas of your profession".

The set of unwritten rules of the Lead Specialist, Material supply

YULIA BEZRODNAYA

contracts, Yulia Bezrodnaya, begins with the clause "every case requires completion".

"The most difficult tasks should be started with fresh energy at the beginning of the working day. And remember: there are no "unmanageable" tasks, you need to learn how to correctly divide them into subtasks", advises Yulia.

CPC Document Control Specialist Lyubov Zorina processes dozens of incoming letters per day.

LYUBOV ZORINA

"In order to quickly understand the essence of the message, I first run through the entire letter, paying special attention to numbers, dates and addresses", she shares her speed reading secrets.

Recently, we have all become accustomed to the digital transformation of corporate document management, and it is already difficult to do without it. Obviously, adding to this the "transformation" of our own perception of the text, we will be able to process more information in a day, which will increase the efficiency of working time.

dajngjing/Shutterstock/FOTODOM

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KING FISH

CPC HAS BEEN IMPLEMENTING THE ECOLOGICAL AND EDUCATIONAL PROJECT "PROTECT NATURE OF OUR NATIVE LAND" IN THE ASTRAKHAN OBLAST FOR THE SEVENTH YEAR. IN MAY, THE RESULTS OF THE 2022 PROJECT WERE SUMMED UP

On May 19, 2022, in the regional fishery center – the village of Ikryan – as part of the summing up ceremony of the project "Protect Nature of Our Native Land – 2022", sturgeon juveniles were released into their natural habitat. "Babies" weighing about 350 g, grown in special pools under the supervision of specialists from the scientific and experimental complex of aquaculture "BIOS", were sent on a long voyage by schoolchildren – winners and laureates of the creative competition. Children seem to remember this Volga Day for a long time.

"For the first time, I saw and released a sturgeon into the Volga", says Tanya Fedyanina, a young participant in the project, sharing her impressions. "I didn't even think that it would be such a big and unusual-looking fish!"

Schoolchildren submitted 270 works to the creative competition: installations, drawings, crafts and videos. In the nomination "Reporter" the winner was Artur Musaev with a video on the topic of saving water at home.

"There is not much fresh water on the planet; it feeds the trees that fill the atmosphere with oxygen. Therefore, we must help nature so that it helps us", the young laureate is convinced.

Children's awareness and enthusiasm are the best arguments in favor of the fact that the project, which has been implemented for the seventh year jointly by the Consortium and the Volga-Caspian branch of the Russian Federal Research Institute of Fisheries and Oceanography (FSBSI VNIRO), successfully fulfills its main task-fostering a careful attitude of children and adolescents to the environment.

This year, young scientists and specialists from the Volga-Caspian branch of Russian Federal Research Institute of Fisheries and Oceanography conducted 30 open environmental lessons in 10 schools and social rehabilitation centers in the Kharabalinsky, Enotaevsky, Limansky, Narimanov and Krasnoyarsk districts. CPC production facilities are located here, and for the seventh year in a row, ichthyologists have been professionally and intelligibly educating schoolchildren on the topic "Sturgeons are relic fish that have come down to us since the time of dinosaurs. Let's save them for future generations."

CHILDREN'S AWARENESS AND ENTHUSIASM ARE THE BEST ARGUMENTS IN FAVOR OF THE PROJECT

The unique scaleless family appeared about 85 million years ago. Some "trends" of those distant years distinguish sturgeons from modern fish: a soft cartilaginous skeleton; a body covered with rows of bone plates with sharp spikes to protect against predators; a tail with a strongly developed upper lobe; four antennae at the mouth, allowing them to grope for prey at the bottom.

Sturgeons lived in almost all large continental water bodies, including the Moscow River. Heavy losses to the family at the end of the 19th – the first half of the 20th century were caused by industrial fishing and industrial water pollution. During this period, the Atlantic sturgeon completely disappeared, and the abundance of sturgeon in the fresh waters of the Great Lakes of North America decreased by three orders of magnitude. Chinese, Japanese, Sakhalin and other sturgeon populations have lost their commercial value.

They survived the shift of the planet's magnetic poles, the transformation of continents and seas, ice ages and other natural disasters. Sturgeons were served at the table of Pharaoh Djoser, Julius Caesar, Ivan the Terrible. Archaeological finds dating back to the third millennium BC indicate that sturgeon caviar was used by ancient sailors in canned form. In the army of Alexander the Great, black caviar was carried in a wagon train as provisions for soldiers.

Currently, the last truly large sturgeon population lives in the Caspian Sea. In order to stop the process of its disappearance here too, since 2007, all countries with access to the Caspian Sea have agreed to stop sturgeon fishing in all its forms.

NOT BY NUMBER, BUT BY "SAMPLE"

"The ecological and educational project has become a real revelation for our children", notes Gulyuzem Dzhumanova, a teacher at the Dzhanai school in the Krasnoyarsk district. "Children learned that they live in a region with an absolutely unique ecosystem. With the modern abundance of school subjects, it is not easy to concentrate on important information, but the visit of researchers, their interesting stories and participation in a wonderful competition will be remembered forever. The guys are completely delighted with the fact that today they personally got acquainted with the subject of their study, releasing small sturgeons into their natural habitat. Thanks to the CPC team for what they are doing for the future of our country".

"We strive to do everything so that the younger generation realizes that they live on the great Astrakhan land, so that children are proud of their native nature and love it", said Mikhail Grishankov, Deputy General Director of CPC-R for RF Government Relations, in an interview with Russia Astrakhan TV channel.

The final ceremony was attended by Oleg Petelin, Minister of Social Development and Labor of the Astrakhan Oblast, Oleg Malkin, Head of the Volga-Caspian Territorial Administration of the Federal Fisheries Agency, and Vitaly Plyukhin, Head of the Volga-Caspian Branch of Russian Federal Research Institute of Fisheries and Oceanography. As part of the ceremony, a spectacular concert was also held with the participation of school groups and an exhibition of works by laureates of the creative competition.

OVER THE YEARS OF THE PROJECT "PROTECT THE NATURE OF OUR NATIVE LAND"

On the same day, about 69,000 Russian sturgeon fry weighing 3–5 g were released into the Volga delta under the control of the Federal Agency for Fishery. Thus, the results of the growth of the sturgeon population over the years of the "Protect Nature of our Native Land" project in the Astrakhan Region amounted to 207,455 pieces of juvenile Russian sturgeon, beluga, spike and sterlet. The number, if not a record, then significant, while the parameters of the so-called "fish sample" play a key role. Fish weighing up to a kilogram are sent to their natural habitat. The risk for their survival is significantly reduced due to "special training" in the pools of the fishery complex.

ROMAN BEREZIY,
2ND GRADE OF SCHOOL NO 2 OF THE LIMANSKY DISTRICT.
BEADED MOSAIC, APPLIQUE

207,455
STURGEONS
WERE RELEASED INTO THE VOLGA DELTA

AUTHOR
MARIA SHEVCHENKO,
CPC-R GOVERNMENT RELATIONS DEPARTMENT

GREEN LIGHT TO ENLIGHTENMENT

IN THE SUMMER OF 2022, THE CPC ENVIRONMENTAL EDUCATION PROJECT "PROTECT NATURE OF OUR NATIVE LAND" WAS LAUNCHED IN THE KUBAN. AS YOU KNOW, THIS LARGE-SCALE INITIATIVE IS NOT CHARACTERIZED BY CLICHES, BUT BY THE MOST ACCURATE ADJUSTMENT TO THE NEEDS AND PECULIARITIES OF THE REGION. ON THE BLACK SEA COAST, EVERYTHING WILL BE EXACTLY THE SAME, THAT IS, IN A DIFFERENT WAY

Concerns and corporations in the oil and gas industry of the fuel and energy complex have two areas of environmental policy. The first is offset measures, when the company invests in supporting biodiversity by regularly planting plants, growing and releasing animals into their natural habitat.

The second option is to combine the support of biodiversity with education, the education of eco-consciousness among the younger generation. It is on this model that the Caspian Pipeline Consortium develops its environmental policy, since 2014 it has been implementing the environmental education project "Protect Nature of Our Native Land" in the Astrakhan Oblast, Republic of Kalmykia and Stavropol Krai. And this summer the project finally stepped into the territory of the Krasnodar Krai.

There are many industrial enterprises in the world, no fewer nature reserves, but where else can you see

both with a common border? There is such a unique place: CPC Marine Terminal in Yuzhnaya Ozereevka, which borders on water and practically on land with the "Utrish" State Nature Reserve.

From the Adyghe "utrish" is translated as "downfall". The name is quite justified, given the mix of feelings of danger, flight and dizziness, embracing on the edge of a cliff. A fantastic sea panorama opens from here, the wind refreshes the face, the smell of juniper and pine needles is in the air.

Geographically, the reserve is located on the Abrau Peninsula, between Anapa and Novorossiysk. From the east and north, the territory is bounded by the Durso and Sukko rivers, from the west and south by the Black Sea. The flora and fauna of the reserve with a total area of over 9 thousand hectares is rich and unique, it is the only example of an untouched sub-Mediterranean ecosystem in the world. Relic forests, endemic plants: yew berry, Pitsunda pine, high juniper and others. The Nikolsky Mediterranean turtle, an endemic subspecies listed in the Red Books of the Russian Federation and the Krasnodar Krai, the Caucasian red deer and other rare animals are found here.

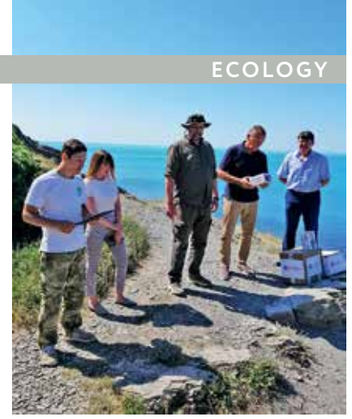
From the first years after its creation, the Consortium, which has been implementing large-scale social, charitable and environmental programs and projects in the regions of its presence, could not ignore and support such a neighbor as the "Utrish" Nature Reserve, established by Order of the Government of the Russian Federation dated September 2, 2010 No 1436-r in order to preserve the unique biodiversity of the Abrau Peninsula and has the maximum status of a specially protected natural area of federal significance. Joint plans of the CPC and the reserve have already been outlined and have begun to be implemented.

The project logo depicts a turtle and a dolphin. Symbolically, this unites land and sea, besides this, Nikolsky's turtle lives only here, on the Abrau peninsula. Few people know, but on September 15, 1968, a pair of these leisurely reptiles, in company with Maybugs, flew around the Moon and returned safely. The "Vasily Golovin" research vessel fished out the "Zond 5" lunar module from the Indian Ocean on September 21 and fed the "cosmonauts" only in Moscow on October 4. The turtles of Nikolsky perfectly endured this inconvenience.

The grand opening of the project "Protect Nature of Our Native Land! CPC – Utrish" was attended by Mikhail Grishankov (CPC Deputy General Director, Government Relations), Oleg Chikhachev (Acting Director of the "Utrish" State Nature Reserve), Vitaly Kozyrev (deputy of the Novorossiysk City Duma). On the same day, representatives of the Consortium handed over to scientists 10 Balever BL480-LP ORIGINAL camera traps, which optimize monitoring of the number and condition of animals living in the reserve.

The first stage of the project also provides study tours "Along protected paths" for student activists and their teachers. At the second stage, the environmental campaign "We are for a green planet!" starts. Its participants will hold community workdays for garbage collection with subsequent processing, arrangement of new recreational areas with planting trees and shrubs. They will be replaced by open lessons for schoolchildren and preschoolers on the topic "Briefly about the important. Protect nature of our native land together".

The 2022 program also provides for creative contests "What do I know about the protected areas of the region" and "Attention! Turtle". The best works will be presented at the exhibition, all contestants will receive memorable gifts. The results of the environmental education project will be summed up in December 2022 in the form of a reporting concert "CPC – Utrish – Novorossiysk citizens".



Within the framework of the project, it is also planned to print and distribute three books created by the authors of the reserve: the scientific study "Amphibians and reptiles of the Utrish reserve", children's publications "The Reserved ABC" and the coloring book "Meet Xylocopa!". The book about the xylocopa, the black carpenter bee, delighted not only children, but also adults. The ABC was no less enthusiastic – the only educational publication of its kind with a biological bias, a beautifully illustrated, kind interactive book.

This is how – through the upbringing of a sense of beauty, education and enlightenment – we will receive the understanding and trust of children's hearts, we will get a generation with eco-consciousness. A generation that won't be in the habit of throwing trash at their feet or out of a car window, that will have completely different nature-protecting skills, a penchant for analysis and critical thinking that will allow us to sift the truth from the fakes. Harmony and balance in everything, conservation of nature and reasonable interaction with it – this is the recipe that we all need today.

AUTHOR
PAVEL KRETOV

NON-MONOTONIC WORK

IN MAY 2022, LEONID SVERDLOV, LEAD SCADA ANALYST, CELEBRATED HIS 50TH ANNIVERSARY. OF THEM, MORE THAN 20 YEARS OUR COLLEAGUE DEDICATED TO WORK IN THE INTERNATIONAL CONSORTIUM

During the time that Leonid is engaged in automated control systems, an entire era has changed in information technology.

"It was like I went through all the stages of computerization externally", he recalls. "When I entered the institute in 1989, computer centers were still switching from punched cards to magnetic media. At first, we had large Mainframe cabinets, then Soviet computers appeared without hard drives, which were loaded from a floppy disk. Personal devices came into use in the middle of my student days".

Leonid graduated from the Faculty of Cybernetics of the Obninsk Institute of Atomic Energy with a degree in Automated Information Processing and Control Systems in 1995. Pre-graduate practice was held at the Kalinin NPP near Tver, where, together with the scientists of the department, he was sent to develop an automated system for diagnosing steam generator collectors.

"Specialists installed them at the junction of the so-called dirty and clean circuits in the pressurized volume", Leonid continues. "We worked in shifts during the scheduled preventive maintenance of the reactor plant. And it turned out that already at the age of 22 I wrote a program that allows me to give a responsible conclusion about the readiness of the subsystem of a nuclear reactor for further work".

This student project formed the basis of his postgraduate work, at the same time as Sverdlov began working as an automated control system engineer in the Obninsk division of Gazprom. Here, the young specialist performed the functions of digitalization of business processes in the field of accounting, warehousing, personnel services and other areas.

"The development of automated workplaces was carried out at the head office of the Lentransgaz enterprise of Gazprom in St. Petersburg, and I was responsible for their

implementation and staff training", notes the hero of the day.

In 1997, he himself was transferred to the northern capital. Leonid participated in commissioning at the border with Finland compressor station driven by American-made turbines. New modern equipment was connected to the SCADA system, for which the Finnish company Valmet Oy was responsible. The station was successfully put into operation, and in 1999 foreign colleagues invited Leonid with them to a new international project – CPC.

Valmet was responsible for the SCADA system and programming of logic controllers for shelters of main line valves. Leonid Sverdlov is proud of the fact that the program he wrote 22 years ago works on all 87 CPC mainline valves seven days a week, 24 hours a day. Of course, it has already been changed and supplemented many times, but it is still the same program.

It was with great pleasure that he took part in the creation of a unique pipeline system, which became the bearer of the best world experience and a testing ground for the introduction of the latest technical developments. From a professional point of view, it was also interesting that Leonid, having started at CPC with gate valves, then took up the control systems of PS and such a large and important production facility as the Marine Terminal.

"Even today, the Caspian Pipeline Consortium has practically no equal in the field of control

and communication systems", Leonid believes. "And at the turn of the 1990s-2000s, there was nothing similar either in Europe or in America. At that time, even the most modern oil and gas pipelines had only local control systems 400-500 km long, which could not be compared with the 1,500-kilometer CPC pipeline, which, in addition, was equipped with its own fiber-optic communication line throughout its entire length. Our foreign and Russian colleagues then controlled telemechanics using copper wires and radio relay, so even 15 seconds was considered a good reaction time.

At CPC, using the SCADA system, the signal from the OCC to Tengiz and back reaches in just milliseconds. Twenty times per second, 600 logical controllers "interrogate" all the parameters of various subsystems and automatically or at the command of the dispatcher set a control action so that some mechanism starts, works, or stops.

"The speed of signal transmission plays a significant role in the CPC oil pipeline system, which operates in a hard mode "from pump to pump", Sverdlov explains. "If even one main unit stops, in a short time the conditions in the pipeline will change even a thousand kilometers from the pumping station. This is one of the important differences from the gas pipeline I worked on before CPC: the liquid does not compress like a gas and is capable of creating a hydraulic wave".

To enhance the safety of operation of the facilities, the Consortium specialists introduced a system to protect the oil pipeline from water hammer in case of unauthorized closing of the main valves. During the implementation of the Expansion Project, it was regularly upgraded – after the commissioning of each additional PS, the shutdown logic changed at all stations. Also, SCADA improved the pressure mitigating system and the operation of oil systems on main pumps. During the implementation of Debottlenecking Program (DBNP), SCADA specialists actively joined the work related to the introduction of frequency-controlled converters at the stations.

"Our division has a wonderful, friendly team", notes Leonid Sverdlov. "It cannot be otherwise with such specifics: an error in programming, for example, the protection logic, even by one digit, can have the most serious consequences. Therefore, we repeatedly check the work one after another, conduct cross-checks, test software solutions on the stand before implementing them on existing equipment. When monitoring errors in the SCADA system, we closely cooperate with the services of electricians and signalmen. In short, this is a non-monotonous work and every working day teaches us something new.

AUTHOR
PAVEL KRETOV

HELP WITH THE CHOICE

THERE ARE ABOUT FIVE THOUSAND SCHOOLCHILDREN IN THE KHARABALINSKY DISTRICT OF THE ASTRAKHAN OBLAST. THE EQUIPMENT FOR TECHNOLOGY CLASSES PURCHASED IN 2022 WILL HELP THEM TO DECIDE THE CHOICE OF THE FUTURE PROFESSION

Secondary school No 1 is named after the outstanding scientist and forester Mitrofan Orlov. In the first half of the 20th century, the researcher organized the fight against desertification of pastures and other agricultural lands of the Volga-Akhtuba floodplain. At that time, due to the onset of loose sands, entire villages had to migrate from place to place. Mitrofan Alekseevich proved in practice that with the help of forest plantations it is possible not only to effectively resist dry winds, but also to gradually win back territories from the sandy steppe.

As you might guess, school No 1 has an environmental specialization, and it also instills patriotism, hard work, optimism and perseverance in achieving its goals to new and new generations.

"Our school has existed since 1939", says director Elena Sergeeva. "The first graduation took place in 1941, immediately after graduation, 18-year-old guys went to the front. During the war, the building was used as a hospital.

Elena Semenovna also graduated from this school, as did the technology teacher Dmitry Ganyushkin. For 30 years, he has been teaching boys carpentry and the ability to independently repair any household item — from an outlet to a landline phone.

"A few years ago, thanks to the help of CPC, the school was included in the program for equipping the technology room with modern equipment", says Dmitry Ganyushkin. "Preparatory work was carried out for three years, including the renovation of the premises".

Now the cabinet is equipped with two machines with numerical control: milling and turning. Parents of pupils working at a local furniture factory took an active part in setting up the equipment. The machines are controlled remotely, via computers, which can also work in simulator mode.

A 3D printer is actively used in the educational process. Children print on it various small details, tool handles and much more. The capabilities of the device are also in demand for modeling in fine arts lessons.

Suspended ceiling power supply systems (220 V, as well as reduced AC and DC voltage, USB and other outputs) with telescopic adjustment are used both for teaching the technology program and for laboratory work in physics, chemistry, computer science. At the disposal of young masters are sets of tools, measuring instruments and consumables — everything that is necessary for practical work and theoretical research.

Fyodor Zolotov, a 8th grade student who was briefly distracted by "CPC Panorama" correspondents from building a complex electrical circuit, considers the most attractive industries for further employment to be maritime transport, shipbuilding, oil and gas production and processing, and IT technologies.

"The task of teachers is to help the child decide on the choice of a future profession", emphasizes the director of school No 1 Elena Sergeeva. "We have an agricultural and shipbuilding region, where good welders, locksmiths, specialists in the repair of various equipment are always needed. Young people who own in-demand professions are the key to further successful development of the region".

Irina Voropayeva, director of secondary school No 3, agrees with this. As part of the CPC charity project, the school received equipment for training in sewing. A branch of the Astrakhan State Polytechnic College

operates on the basis of the school, where a wide range of specialists are trained – from commodity specialists to developers of oil and gas fields.

"Not everyone can be the luminaries of mathematics, physics or chemistry", smiles Irina Voropaeva. "Skilled working specialties are also in demand in society – this is the right direction for success in life and self-realization".

"THE TASK OF TEACHERS IS TO HELP THE CHILD DECIDE ON THE CHOICE OF A FUTURE PROFESSION"

The park of equipment transferred to the school includes 20 machines: sewing, stitching, knitting, overlockers, ironing complexes. Some of them have software control.

"In the age of digital technologies, children master such equipment faster than adults and immediately get joy from the results", teacher Tatyana Solovieva shares her impressions. "Even when sewing skills are still not enough, the output is still quite aesthetically pleasing".

7th grader Valeria Klimashevskaya agrees with the teacher, she goes to sewing lessons with pleasure.

"I like to sew, knit, make soft toys. In the future, I want to become a designer, design beautiful and comfortable clothes", says Valeria.

"IN THE AGE OF DIGITAL TECHNOLOGIES, CHILDREN MASTER SUCH EQUIPMENT FASTER THAN ADULTS AND IMMEDIATELY GET JOY FROM THE RESULTS"

Her friend and classmate Anna Shipilova presented the "CPC Panorama" correspondent with a badge "Happy Victory Day" made from a composition of sewing materials with her own hands. Anna sees her future as a doctor or veterinarian.

The next one on our route is secondary school No 2. It named after the Hero of the Soviet Union I.N. Galkin. The sergeant accomplished his feat as a guard in the fall of 1943, when capturing and holding a bridgehead on the right bank of the Dnepr near Kiev.

One of the desks at the school is memorial and is always empty. The sailor of the Marine Corps of the Russian Navy Rasul Maharramov, who was posthumously awarded the Order of Courage, studied here. On October 7, 2018, during exercises in the Caspian Sea, while practicing landing from a ship, one of the floating armored personnel carriers scooped up a storm wave into the hatch and began to sink. Rasul, being the driver of this armored personnel carrier, helped eight colleagues get out, but he himself could not escape.

The Caspian Pipeline Consortium donated equipment for the culinary classroom to School No 2. The renovated premises were zoned according to functionality. Now there is a laboratory in which schoolchildren (more precisely, schoolgirls, since boys are learning other professions at this time) check the quality of products. In the cooking area there are induction cookers with powerful hoods, the third "post" is equipped with ovens, the fourth will be the envy of the most luxurious kitchen: there is almost everything here, including meat grinders, kettles, blenders, mixers, deep fryers, toasters, a microwave and a dishwasher.

"Such equipment is the dream of any housewife", says the director of the school, Olga Sadovnikova. "Now we have everything to teach girls how to cook tasty and healthy food. We are very grateful to our benefactors for the opportunity to master and then choose useful and necessary professions based on the most modern equipment".

AUTHOR
GULNAR MALGAZHDAR

"JAS-TOLQYN" ANNOUNCES THE WINNERS

ON JUNE 8, ATYRAU HOSTED A GALA CONCERT OF THE LAUREATES OF THE "JAS-TOLQYN" YOUNG TALENTS COMPETITION. GRAND PRIX WINNERS WILL PERFORM IN MOSCOW AT THE FINALS OF THE "CPC FOR TALENTED CHILDREN" FESTIVAL

The "Jas-tolqyn" charitable project has been implemented in the Republic of Kazakhstan with the assistance of the Caspian Pipeline Consortium since 2019. The competition is aimed at supporting gifted children and adolescents living in Atyrau, Aktobe, Mangystau and West Kazakhstan regions. The goal of the project is to preserve the original culture and folk traditions.

"Jas-tolqyn" consists of three stages. The first of them is a correspondence-distance competition, which takes place online on the website jas-tolqyn.kz. The full-time regional stage takes place in the city of Atyrau, the winners of the first take part in it. And the third stage – a unifying cultural forum – is taking place in Moscow. Winners of the Grand Prix in each nomination participate in it.

Before the performance, master classes with well-known experienced teachers are held for the contestants. This gives young talents the opportunity to reveal their talents and gain new skills.

As the jury of the competition noted, the number of participants has almost doubled compared to last year, which indicates the demand for the project.

"At the first stage, which took place in an online format, 254 creative works were received. These are more than 600 children and adolescents", says Raisa Musakhodjaeva, chairman of the jury of the "Jas-tolqyn" contest, Honored Worker of Culture of the Republic of Kazakhstan. "It is very good that this year we finally have the opportunity to implement such a wonderful project in a full-fledged format, without epidemiological restrictions. As the history of the competition shows, "Jas-tolqyn" constantly discovers new names, which in the future represent both their region and our country at republican and international creative competitions. Each participant has a talent, but it is not always possible to develop it. For the contestants, "Jas-tolqyn" is a whole event for which they carefully prepare: they rehearse a lot, sew costumes, come up with stage images. Therefore, we greatly appreciate the support provided by the Caspian Pipeline Consortium to young talents".

The Grand Prix in the nomination "Choreography" was awarded to the ensemble "Ak Kaiyn" (Isatai district, Akkystau village). Abish Zhanseit (Mangistau region) received the Grand Prix in the nomination «Дәстүрлі ән» ("Folk Song").

The team of the "Kulan saz" ensemble from the city of Atyrau was awarded the Grand Prix in instrumental genre, and Aslima Shakhat from Aktau took the first place in the individual performance. The winners of the Grand Prix in the "Vocal" nomination were Sanzhar Daukenov (West Kazakhstan region, Terekty village) and Dinmukhamed Nurkabaev from Atyrau.

Now the finalists of the "Jas tolqyn" competition will have to prepare for the next, final stage – participation in the international festival "CPC for Talented Children" in Moscow. This project, initiated by CPC, has been implemented in Russia for more than 20 years and covers all regions of the Tengiz – Novorossiysk oil pipeline.

AUTHOR
PAVEL KRETOV

OIL OF ST QUIRINOUS

HISTORIANS CANNOT CONFIDENTLY ANSWER HOW LONG AGO HUMANITY LEARNED TO USE OIL FOR ITS NEEDS. MOST LIKELY THIS HAPPENED EVEN BEFORE THE INVENTION OF WRITING, OTHERWISE SOMEONE WOULD HAVE DEFINITELY NOTED THIS SIGNIFICANT FACT IN THE CHRONOLOGY OF CIVILIZATION

Six thousand years ago, in Mesopotamia, oil was used to seal joints on river boats and strengthen city walls, creating a basis for mosaic decoration from it. Four thousand years ago, the Egyptians used oil components in embalming and as a building material in the construction of the pyramids.

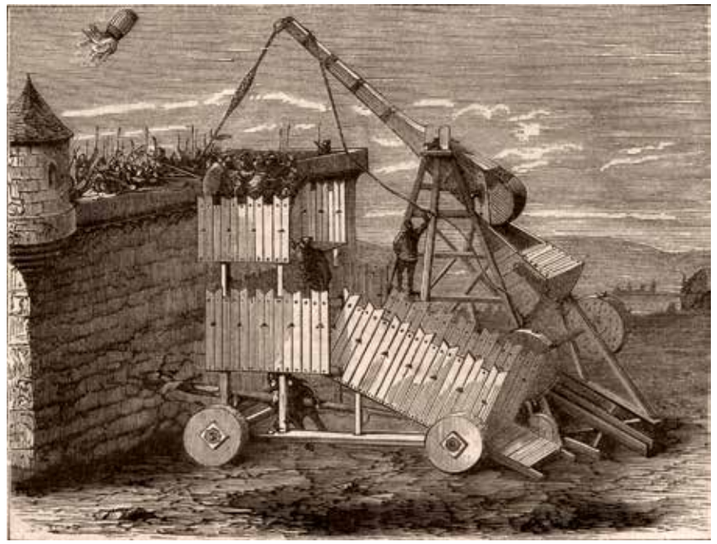
But where did the ancient peoples extract oil? The historian Herodotus (V century BC) mentioned such a deposit on the island of Zakynthos, a military doctor and pharmacologist Dioscorides (I century AD) – in Sicily. Therefore, one of the names of oil associated with its use for lighting is "Sicilian oil". The Romans and Greeks also called oil "mountain tar", the Slavic peoples – "ropyanka".

The ancient civilization was also familiar with bitumen, a product of oil weathering. Large-scale construction work on the construction of temples, palaces, canals and aqueducts required significant amounts of binding and insulating materials.

Oil and bitumen were widely used in this capacity. Bitumen was especially popular when mixed with brick or pebbles. Ancient authors testified that the strength of the walls made in this way was not inferior to iron. During the excavations of Babylon and Nineveh, archaeologists found pieces of asphalt plaster. Well-preserved bitumen floors found in the ruins of houses near Baghdad.

Researchers also believe that a mixture of bitumen and sulfur has long been used to control pests in gardens, protecting fruit trees from worms and ants.

The combustible substance could not be ignored by the military. It immediately became a strategic raw material, used for both defensive and offensive purposes. Oil illuminated the tents and lubricated the axles of the war chariots. The ancient Roman erudite writer and, as they would say now, a contract warrior, Pliny the Elder (I century AD) wrote that during the siege of cities in the East, local residents threw pots with a burning mixture of oil and sulfur on the heads of the attackers. Arrows soaked in oil and set on fire were the favorite weapons of the Persians. The encyclopedia of Sextus Julius Africanus (III century AD), containing information from the field of natural sciences and military tactics, provides a recipe for a self-igniting fire, which included "mountain liquid tar".



THE ANCIENT PERSIANS AND ROMANS USED OIL IN INCENDIARY ARROWS AND PROJECTILE

HIPPOCRATES RECOMMENDED ADDING OIL TO BARLEY FLOUR TO MAKE A PLASTER TO STOP BLEEDING

For several centuries, the Byzantines owned the secret of the "Greek fire", which was prepared on the basis of oil and used against the enemy fleet. The combustible mixture was poured onto the surface of the sea, after which it was set on fire. Flamethrowers-siphons and catapults were also used. In the VIII century A.D. Byzantines destroyed the Arab ships that participated in the storming of Constantinople with "Greek fire".

Of course, people paid attention to the healing properties of oil. The ancient Greek healer and philosopher Hippocrates, as well as the Roman scientist-encyclopedist Vitruvius, left many recipes for medicines in which oil was mixed with lard, sulfur, wine and other components. For example, adding oil to barley flour could make a patch to stop bleeding.

For a long time, and also as a medicinal substance, oil was known to the North American Indians. They found reservoirs with an oily "membrane", which they collected with the help of tissues, squeezing them into vessels. The African peoples who lived in the Niger Delta believed that literally everything of underground origin had healing properties. They used oil to treat burns, ulcers, gastrointestinal disorders, and poisoning.

The famous traveler of the XIII century Marco Polo, in his treatise "On Great Tataria," mentions a well with "mountain oil", which was used to treat skin diseases in people and livestock. The Italian met this well on the territory of modern Azerbaijan on the way from Venice to China. The traveler noted that sometimes entire caravans traveling along the Great Silk Road deviated from their usual routes in order to experience the healing properties of naphthalan oil. It was also exported in large volumes to Iran, India and Asia Minor, where it was sold in bulk as a remedy. The name of naphthalan oil comes from the Median word "naphtha", which means "flowing", "leaking".

AT FIRST, OIL WAS EXTRACTED BY OPEN-PIT MINING, EQUIPPING WELLS WITH "CRANES"

World History Archive/akg-images/East News

BENZ'S FIRST CAR HAD TO BE FILLED UP AT A PHARMACY, WHERE GASOLINE WAS SOLD AS A DRESS CLEANER

akg-images/East News

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In the XVIII century, French doctors defended more than one dissertation, describing the healing properties of oil and asphalt. On the territory of the modern Czech Republic, liquid hydrocarbons were used against all diseases and were called "the oil of St. Quirinus". In Romanian villages, tuberculosis was successfully treated with oil.

In the XIX century, the manufacture of medicines and ointments received an industrial basis — a factory for the production of "Naftalan" ointments was opened in Germany, which were recognized throughout the world. For example, in the Japanese army, naphthalan ointment was included in the mandatory kit of a soldier's first aid kit and served as a first aid. There was even an inscription on the jars: "Whoever has this ointment is not afraid of wounds".

Many doctors of that time considered naphthalan ointment not only as a remedy, but also recommended its use for cosmetic purposes to soften the skin of the face and smooth wrinkles. Such drugs were used in beauty parlors in Germany, England, France, the USA, Japan and a number of other countries.

And today, oil continues to be widely used in pharmaceuticals. The composition of the most famous antipyretic and analgesic "Aspirin" includes oil components. Various types of antiseptics, antibiotics and sedatives are also produced from it.

AUTHOR
DMITRY KONSTANTINOV

PONTUS EUXINUS

THE BLACK SEA IS MYSTERIOUS AND ATTRACTIVE, PROBLEMATIC AND MUTUALLY BENEFICIAL. EVERYTHING OR ALMOST EVERYTHING ABOUT THIS MULTI-LAYER LOW-SALINITY RESERVOIR WITH AN AREA OF 436,402 KM²

Scientists suggest that 10 million years ago the Black, Azov, Caspian and Aral Seas were one body of water. Either fresh or salty, depending on the opening "gateways" to the oceans. 6 million years ago, the Black Sea was finally separated by the Caucasus Range and became the deepest freshwater lake in the world. The water level in it was 100 m lower than in the neighboring Mediterranean Sea.

The Ice Age ended 10 thousand years ago, and the melt waters, having destroyed the Bosporus Isthmus, made the Black Sea a "communicating vessel", washing away all the organic matter that got in the way. There is an opinion that this is how a layer of hydrogen sulfide was formed in the Black Sea, today starting from a depth of 200 m and spreading to the bottom, which in the Yalta region drops to 2.21 km.

The most unlikely hypothesis of the origin of the Black Sea today is that it is a mining quarry filled with water, dug out by one of the previous earthly civilizations or aliens from outer space. The apologists of this

Victoria Fedoseenko

theory believe that the relief of the Black Sea basin resembles a quarry with worked-out terraces-aprons, along which bucket-wheel excavators and 350-ton dump trucks drove around at one time. Opponents retort that the platforms only record the level of water in the sea in different periods. Over the entire history of the planet, a layer of sedimentary rocks with a height of more than a kilometer has formed here.

SEALS AND OYSTERS

The volume of the Black Sea "bath" is 555 thousand km³. The Danube, Dnieper, Dniester and other rivers annually pour 310 km³ of fresh water here, another 230 km³ add precipitation and 30 km³ – the Sea of Azov. 360 km³ annually evaporates into the atmosphere and 210 The Black Sea gives to the Bosporus, where the water difference with the Sea of Marmara is about 30 cm.

In 2010, Leeds University scientists discovered an underground river at a depth of 35 m under the bottom of the Bosporus, through which the salty water of the Marmara Sea enters the Black Sea at a rate of 22,000 m³ per second. A similar kind of underground "reverse" was also found at the confluence of the Amazon into the Atlantic Ocean.

There are two main currents in the Black Sea, and both are circular. They are called "Knipovich glasses" by the name of the oceanologist-discoverer. There are no ebbs and flows here, the height of the waves during winter storms reaches 8 m.

The resort-subtropical Black Sea climate in the vicinity of Novorossiysk is characterized by a local bora wind. The wind from the northeast, named after the ancient god Boreas, rages here on average 40 days a year, mainly in November. At this time, the Atlantic anticyclone drives the Arctic air to the south. Having crossed the low (400 m) Markhotsky ridge, this air mass, due to a sharp drop in atmospheric pressure, collapses down the slope, towards the sea, at a speed of 60 m/s. The air temperature drops sharply, icy rain covers everything around with a thick crust.

Kuprin, Uspensky, Paustovsky wrote how the bora rips ships off the anchors in the Tsemess Bay, overturns the wagons, and the cab drivers weight their crews with stones so that on the way through the Markhotsky pass they are not carried away to the sea. In 1912, in Novorossiysk, the roof was blown off the weather station, and in 1935, the Danish ship Bornholm was thrown onto the pier.

Closer to Sochi, the mountains become higher, and boron no longer reaches here. Bora also blows over Lake Baikal, however, from the northwest and is called sarma. Bora can be black and white (with and without precipitation) and is also found in other places – from Trieste to Novaya Zemlya. In Croatia, the bora blows out at the end of September, it is called skura and is appreciated by yachtsmen. In France and Spain, this wind has close relatives – mistral and tramontana.

THE VOLUME OF THE BLACK SEA "BATH" IS

555

THOUSAND KM³

The meromictic structure of the Black Sea water is layered immiscible. The upper layer with lower salinity is separated from the hydrogen sulfide layer by a cold intermediate layer (CIL), which begins at a depth of 30–100 m and does not have time to warm up over the summer. Above and below the CIL, the water is noticeably warmer. No one lives deeper than 200 m in the Black Sea, except for anaerobic sulfate-reducing bacteria, which, they say, have already produced over 3 billion tons of hydrogen sulfide and about 50 trillion m³ of methane in the form of bottom gas hydrates here.

There are enough fish in the upper layer of the Black Sea water: Turkey alone annually fishes 300 tons of anchovy in its waters. Off the coast of the Caucasus, mullet, flounder, mackerel, horse mackerel, garfish, sprat and gobies are hunted. Less common, but there are sturgeon and salmon. The cetaceans here are the bottlenose dolphin, the white-backed dolphin. There is a small, harmless shark for people – the Black Sea katran. Previously, they even had their own seal – the white-bellied Phoca monachus. In 1913, the monk seal was still found near Sevastopol, in Bulgaria the fishing village of Tyulenev was named after him. The last wild monk was seen in 1997 near Trabzon.

The Black Sea coast also serves as a habitat for turtles, mussels, oysters, and crabs. The story of the appearance here in 1947 of the rapana mollusk is noteworthy – it was brought from the Sea of Japan by Soviet torpedo boats. Since 2020, a colony of giant oysters Crassostrea Gigas has existed in the Tsemess Bay – Transneft traditionally breeds aquatic organisms in places of sea shipment.

The ecology of the Black Sea is in approximately the same condition as that of all European water bodies. Until the end of the 1980s, it deteriorated rapidly. Then improvement began, but still, biologists today register an alarming amount of Escherichia coli in the water of the Black Sea coast. The reason may be sewage drains, privately carelessly combined with stormwater.

FLEECE AND MINES

The first Black Sea sailing directions – peripluses – date back to the IV century BC. These were reports to the rulers from travelers containing useful information and route points. The campaign of the Argonauts for the Golden Fleece took

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ONE OF THE POTENTIAL ROUTES OF THE ARGONAUTS

place in 1300 BC, half a century before the Trojan War. 50 people — Jason, Hercules, Theseus, Orpheus and other heroes (which in ancient Greece meant kinship with the Olympic gods / surviving representatives of an antediluvian civilization) — set off on a sailing 20-oar unireme "Argo" from Iolk (Volosovsky district of Thessaly) by the Aegean Sea to Black.

After making a stop on the island of Lemnos along the way and having reached the entrance to the Hellespont (Dardanelles) strait, the Argonauts' ship proceeded further along the Sea of Marmara and through the Bosporus went to Pontus Euxinus. Cabotage along the current Turkish coast ended in the capital of Colchis, Phasis (modern Poti), where, after lengthy negotiations and honorably passed the tests of King Eta (son of the god Helios), it was decided, without wasting time, to simply steal the precious fleece. The king's daughter Medea became an accomplice, in connection with which she had to replenish the team of the Argo, which raised the sail in an attempt to escape from the chase.

The attempt was a success, but the Argo went back by a different route along the Scythian coast, returning a quarter later to Iolk ... through Sicily. There is a version that the Argonauts were let down by a periplus map and they confused the Bosporus with Istres (modern Danube), then dragging a 16-meter ship by drag to the Adriatic. According to another version, Jason and his comrades sailed along the Dnieper, accidentally opened the way from the Varangians to the Greeks and having made a "small circumnavigation", returned home through the Atlantic and the Strait of Gibraltar. It is also believed that the fleece was a purely symbolic prize, but in reality, the Argonauts conducted reconnaissance and reconnaissance for the founding of the Black Sea port city-polis.

These settlements are already noted in the periplus of 134 AD, compiled by the student of Epictetus, the geographer and legate of Cappadocia Flavius Arian for the emperor Hadrian. There is Dioscuria (Sukhumi), Masaitika (Sochi), Patus (Novorossiysk) and Sindika (Anapa). Flavius then did not sail to Taurida (Crimea), where from 421 BC there was another polis — Chersonese.

In the Middle Ages, getting along the way from the Varangians to the Greeks from the Baltic to the Black Sea by rivers and drags, Novgorodians and Viking Drakars coasted along the coast of modern Romania and Bulgaria and further through the Bosporus to Constantinople. When trade considerations gave way to predatory ones, the Roman Byzantines began to meet the Varangians with chains stretched across the strait, and even with Greek fire, an analogue of modern napalm, which included oil.

Thanks to the oxygen-free environment of the bottom layer, everything is perfectly preserved in it — both the aircraft of the Great Patriotic War and ancient triremes. The Byzantine merchant ship of the VII century is considered the oldest ship raised from the bottom of the Black Sea in the Sinop region.

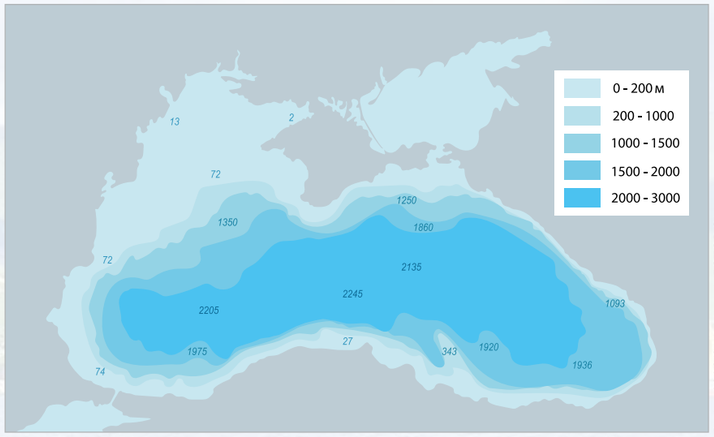
As a theater of operations, the Black Sea has seen a lot — from the assault on the Ochakov bastions by the sailing squadron of Admiral Nikolai Mordvinov (1787) to the shelling of trains following the shore from Adler to Tuapse (1943) by the U-24 submarine of Lieutenant Commander Klaus Petersen. In the Black Sea battles of the Great Patriotic War, six German submarines of the small class U / Lochkriecher with a displacement of 250 tons were opposed by 47 Soviet submarines of the Sch, M and L classes.

Submarines fought in the Black Sea and during the First World War. 16 submarines of the Russian Imperial Fleet fought with a dozen German submarines of classes U, UB and UC.

THE RESORT-SUBTROPICAL BLACK SEA CLIMATE IN THE VICINITY OF NOVOROSSIYSK IS CHARACTERIZED BY A LOCAL BORA WIND

According to a secret report signed by the chairman of the CherChK Lvovsky on February 1, 1921, the train going to Sochi was stopped under the threat of shelling from a cannon and machine gun and examined by the crew of a submarine approaching close to the coast under a tricolor flag. By that time, it could only be a Russian submarine hijacked by the Wrangels from the harbor in Sevastopol, since the British took the German counterparts for reparations.

During the Great Patriotic War, virtually every square meter of the Black Sea coast and shelf took on hundreds of kilograms of deadly metal. Especially got Novorossiysk and Tsemesskaya Bay, where explosive objects are still found — in the water and on land. Previously, CPC Panorama published a historical essay on the legendary landing in Yuzhnaya Ozereevka (No 1 (36), February 2022).



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ISOMETRIC BLACK SEA DEPTHS

OIL AND GAS

Captain Klobukov's report addressed to His Serene Highness Prince Potemkin-Tavrichesky said that by 1792 oil was being produced in 10 places in the Crimea. Archaeologists still find ceramic amphoras with oil in the Black Sea region to this day; radiocarbon analysis dates their age to the V century AD. The Black Sea oil and gas region formed in the Paleozoic "crosses out" the sea diagonally from bottom to top and from left to right, being marked by both developed and promising fields in Bulgaria and Romania, in the Crimea and Kuban.

The explored recoverable hydrocarbon reserves of the Black Sea shelf of Russia amount to 895 million tons of oil (together with gas condensate) and 415 billion m^3 of gas. The largest offshore gas field to be developed out of eight discovered is the Golitsyn field with recoverable methane reserves of about 12 billion m^3.

In 2020, Turkey announced the discovery of the Sakarya offshore gas field, located 170 km from the coast at a depth of 2100 m. The total depth of the well is 4775 m. The recoverable methane reserves are estimated at 540 billion m^3. In March 2022, construction began on a gas pipeline connecting the production equipment, a bottom manifold, with the Turkish coast.

If on land the oil pipeline is more efficient and economical than all other methods of transportation, then at sea it is inferior to tanker transshipment. For ship transportation of gas it needs to be liquefied, which requires the construction of additional capacities, so the gas pipeline is better.

Currently, the Black Sea is crossed along the bottom by two main gas pipelines. Built in 2006, the Blue Stream connects the Beregovaya compressor station (Arkhipo-Osipovka area) with the Turkish Samsun. The longer and opened in 2019 Turkish Stream leads from Anapa to Kiyekoy for further supply to both Turkey and the countries of Eastern and Southern Europe.

To date, over 20 terminals for transshipment of oil and oil products operate in the Black Sea: in Burgas, Varna, Constanta, Mangalia, Erdemir, Samsun, Trabzon, Hopa, Poti, Batumi, Kulevi, Tuapse, Novorossiysk, Taman, Kerch, Sevastopol, Ochakovo, Yuzhny, Chernomorsk, Odessa.

There are several such terminals in some ports, for example, in the Novorossiysk region. The berth in Sheskharis ships oil and oil products onto tankers. In Yuzhnaya Ozereevka, three single-point mooring (SPMs) carried 5 km out to sea are offloading oil from the Caspian Pipeline Consortium pipeline to tankers.

TO DATE, OVER **20** TERMINALS FOR TRANSSHIPMENT OF OIL AND OIL PRODUCTS OPERATE IN THE BLACK SEA

Over the years of development of the oil and gas industry of the world energy industry, a stable paradigm has been formed: in terms of hydrocarbons, the transport potential of the Black Sea significantly prevails over the production one. Whether something will change in this direction under the influence of circumstances, time will tell. In the meantime, Pontus Euxinus remains quite an attractive and mutually beneficial place on the planet, with its resorts, nature reserves and industrial zones, which are often confused not only by tourists, but also by indigenous residents.

Turkish Olympic Committee

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AND LET THE WORLD WAIT

CROSSING THE BOSPHORUS STRAIT IS AN INTERESTING, IMPRESSIVE AND AT THE SAME TIME LITTLE-KNOWN CHALLENGE, WHICH GIVES THE STATUS OF AN CROSS-CONTINENTAL SWIMMER

Luzhniki, Summer 2016. Drinking coffee with my friend, who shares the news and, by the way, tells how he swam across the Bosphorus. What did you swim across, where, how?! I want it too!

Intercontinental swim across the Bosphorus recognized by the World Open Water Swimming Association (WOWSA) as "the best mass event in the world". About 2,500 swimmers from more than 50 countries take part in the swim, organized by the National Olympic Committee of Turkey.

The swim is truly cross-continental. Its participants start from the coast of the Asian continent, and finish already in Europe. And it's not so easy to do it – from year to year, the direction and speed of the current, weather conditions change – it all depends on you, on the level of preparation, luck, perseverance, the ability to navigate and make decisions.

The competition is unique, first of all, because for the period of its holding the movement of ships along the Bosphorus Strait, one of the busiest in the world, is completely blocked. The distance from the starting point to the finishing point is approximately 6.5 km, the path is not straight, but rather winding. Swimmers need to overcome this stayer distance in a maximum of two hours. Record holders fit in an hour or even less. A fair current from the Black Sea to the Sea of Marmara helps, which has fast zones (rapids) with a speed commensurate with the speed of the swimmer and slow zones closer to the coast. There are also stagnant zones along the route (in which, as it turned out, a lot of garbage and jellyfish) and reverse flow zones along the coast in some sections.

SWIM ROUTE

ABOUT **2,5** THOUSAND PEOPLE TAKE PART IN THE SWIM EVERY YEAR

To cope with the task, keeping within the allotted time, the swimmer needs to reach the fast (cold) current in the middle of the strait after the start as soon as possible. In this zone, the main part of the route is sailed, but it is important to have time to leave the rapids before the finish line. Next, you will have to overcome the reverse oncoming current with whirlpools. If it is too late to start doing this, there may not be enough time and (or) energy and the current will carry you beyond the swim zone.

There are several mathematically calculated theories for overcoming this route. There is, in particular, the so-called parabola of Andrey Volkov (developed by our compatriot coach who has repeatedly

bogazici.olimpiyatkomitesi.org.tr/en

conquered the Bosphorus), when you turn to the finish line at a right angle and, under the influence of the current, enter it from behind. This is a game for well-trained swimmers – who have enough strength to make a 500-meter dash towards the shore and get out of the passing current right at the finish.

The intrigue begins with the purchase of a slot on the website of the Turkish Olympic Committee. There is even such a joke: it is more difficult to buy a slot than to swim across the Bosphorus.

January 3, 2017, midnight. I'm sitting at the computer hoping to buy a slot in the coveted Bosphorus swim, which a friend told me about with such enthusiasm. The start of sales starts at 00:00 on the fourth of January. At the same time, the site usually immediately "collapses" due to the growth in the number of visitors, and you have to refresh the page every five seconds with the F5 key for several hours. The hype is huge, the quotas are small, and in Russia slots usually sell out in the first 5 minutes at the speed of light. In 2017, luck never smiled at me, although I honestly tried – until four in the morning...

2018, 2019, 2020... all the slots flew apart instantly, and I didn't have time to catch it.

February 1, 2021. I did it – became the lucky owner of the slot for participation in the "Bosphorus – 2021" swim.

I did it – I became the lucky owner of the slot for participation in the "Bosphorus -2021" swim. Perhaps the pandemic, the postponement of the sale of slots to February 1, and the increase in cost from $100 to $400 affected. Perhaps the Universe just realized that it's better to give what you want to someone as stubborn as me...

March 2021. In addition to intensive, almost daily training, the collection of documents begins (medical health certificate, certificate of the level of sports training signed by a certified trainer swimming), book tickets to Istanbul, book a hotel. Previously, documents in the originals were sent to the organizers by mail, now it has become easier: everything is uploaded to the swim website in electronic form.

SECRET FAIRWAY

The more extravagant the adventure, the sooner a strong team of like-minded people is formed from previously unknown people. It seems that Otto von Bismarck noted this when he said that Russians abroad tend to "reunite with each other as quickly as particles of a cut piece of mercury".

Our community of potential intercontinental swimmers was formed in a Telegram chat, where issues related to swimming were discussed. First of all, upon arrival in Istanbul, it was necessary to register, which took place in the starting town – Topuzlu Park. Here we got a branded backpacks with a set of necessary accessories. There was a pass-badge with a start number, an anklet with a chip (which records the start and finish times), a schedule instruction, a t-shirt with the symbols of the swim, two nutritional bars, water glasses and a rubber cap.

This cap, colored according to the age group (I had a red one), serves as a signaling tool for rescuers. If you take it off your head and wave it in the air, they will see it from the boat and come to the rescue. Safety floats, as usual for water stayers, are not required here. The chip works only on the start and finish magnetic mats, in the water you will not be tracked by it. So, as they say, the rescue of drowning people is the work of the drowning people themselves.

Traditionally, the next meeting takes place the next day on the water – the organizers gather the participants of the swim on pleasure boats and take them to get acquainted with the route. In 2020 and 2021, due to the pandemic, such excursions were canceled, but we agreed in the chat, chipped in, and hired a boat on our own to explore the place of "meeting with beautiful."

While preparing for the flight to Istanbul, I read on the relevant forums about the poor fellows who did not get out of the fast current in time. At the finish line, it turns left and carries away from the point without any possibility of reaching it by human forces. Therefore, on board, I, like everyone else, was predictably interested in the question of landmarks along which the correct fairway is built and which change every year due to a change in the speed and route of the current.

The captain of the ship, who spoke Russian, acted as a guide, and it was he who confused us all. Thanks to his advice to cuddle as much as possible to the coast of Galatasaray Island, where the current is allegedly stronger this summer, some of the passengers on board encountered a reverse current and a stagnant zone with garbage and jellyfish long before the finish. As a result, precious time was lost.

A MINUTE TO THINK

August 22, 2021. Desired moment has come: I am standing on the starting pontoon and only one and a half meters height separates me from the Bosphorus water. The finish line is not visible from here, it is hidden behind the cape. It is scary to be alone without safety equipment at a distance of a kilometer from the shore. I stood for perhaps a minute, not daring to jump, and then I just stepped forward, towards the unknown. And as soon as I felt the water, I immediately realized that I had made the right decision. The water was affectionate, friendly, giving a feeling of lightness and comfort. During the jump, my glasses fell off, but I prudently held them (as I was warned in training) and did not lose them.

And I swam – all the skills practiced for hours in training came to mind and came in handy. It was a pleasure to swim: to feel the sliding of the body, the resistance of the water. So I spent two thirds of the way, do not forget to contemplate the magnificent views of Istanbul from the water.

After the start, I headed for the center of the strait, focusing on the right support of the Fatim Sultan Mehmet Bridge. Having reached the middle of the Bosphorus, I did not feel the change in water temperature promised by the organizers, which should have indicated that I was in a zone of strong current. By this time I was already swimming under the bridge exactly in the middle, which was the first evidence of the right course. Then it was necessary to keep the course, focusing on the left power line support or a large Turkish flag on the mountain.

AND NO ONE AROUND

I switch to the breaststroke to look around for a landmark. There is no one around in the visibility zone, I am alone in the middle of the strait. I looked around and noticed several swimmers in the distance to the left. Having scrolled the route in my head, I decided to continue acting according to the plan without adjustments. Along this trajectory, I had to swim to the third tower of the Rumeli fortress, located on the right bank. Having reached it, I again switch to the breaststroke to find the next landmark – the lower point of the power lines hanging over the strait, which corresponds to the middle of the Bosphorus.

Again, alone and no one around... But the water is pleasantly

Turkish Olympic Committee

invigorating, I turn right and head for the power lines. Swimming is still easy, I enjoy the process, every movement pleases. A couple of times I had to take a sip of Bosphorus water, it tastes not very salty.

Slowly, the muscles begin to tire. I noticed that the legs sank and now I have to do more movements to keep the body in a horizontal position. Resting on my back, I see power lines above me. From afar, they seemed to be one line, but now you can see how far apart each wire is.

FROM THE ISLAND TO THE MIDSTREAM

Here it is, the point of timely turning. Then I head for the right support of the Martyrs' Bridge on July 15 (renamed from the Bosphorus in 2016. — Ed.), I pass the island of Galatasaray 100 meters from the coast — I do not have time to get closer, as the captain advised — and actively go to the right. Here I am waiting for a stagnant zone with increased waves. Swimming is no longer easy: waves, jellyfish and garbage interfere. The next landmark is not approaching. There is steeplechase, and now there is also the same swimming.

With general fatigue, the head works worse, but it still thinks something. I decide to return back to the rapids and again turn to the shore almost at a right angle, only when the final pontoon with a flashing light appears in the visibility zone. I remember that a treacherous oncoming current is also waiting near the shore, which can blow you off the finish line. It's getting crowded around, even cramped, everyone is swimming with the last of their strength. A slight panic is gathering, stories come to mind about how people 100 meters from the finish line struggled with the current and could not move. To my right, rescuers are loading a girl onto a boat... But anger comes, mobilizing the remnants of strength. I work with my arms and legs, forgetting everything and thinking only about swimming technique and overcoming the current. The finish line is slow, but it's getting closer, so I can make it.

I swam to the finish line and exhaled, only holding the handrail. I was pleased with the result on the electronic scoreboard: 1 hour, 28 minutes and 15 seconds — I met the allotted 2 hours! I did it, the dream came true — I became a cross-continental swimmer!

PS. The Bosphorus became the starting point in my passion for open water swimming. Now I plan several interesting swims every year. So, for example, in 2022 it turned out to take part in a swim at the Istra reservoir and swim across the Oka with the Volga at their confluence in Nizhny Novgorod.

THE FIRST INTERCONTINENTAL SWIM ACROSS THE BOSPHORUS TOOK PLACE ON JULY 23, 1989, WITH 64 MEN AND 4 WOMEN TAKING PART.

THE ORGANIZER OF THE SWIM IS THE TURKISH OLYMPIC COMMITTEE, THE GENERAL SPONSOR IS SAMSUNG.

IN 1990, THE START OF THE SWIM WAS MOVED FROM THE ÇUBUKLU REGION TO KANLICA, THEREBY INCREASING THE DISTANCE TO 6.5 KM. THE FINISH LINE REMAINED IN PLACE (KURUCESHMA PIER).

IN 1992, THE COMPETITION BECAME INTERNATIONAL, DUE TO THE PARTICIPATION OF ATHLETES FROM THE USA AND CZECHOSLOVAKIA.

IN 2006, RECORDS THAT HAVE NOT YET BEEN BROKEN WERE SET IN THE SWIM: TURKISH SWIMMER ALISHAN ALASHLI AMONG MEN WITH A SCORE OF 39:07.11, BEREN KAYRAK AMONG WOMEN WITH A SCORE OF 40:50.35.

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