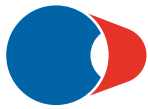
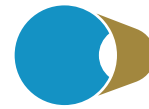


# Panorama CPC



JSC Caspian  
Pipeline  
Consortium-R



JSC Caspian  
Pipeline  
Consortium-K

Caspian Pipeline Consortium Corporate Edition

№ 1 (16) April 2017



*In Focus:  
Ecology*

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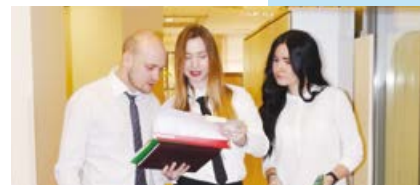
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## QUOTE OF THE ISSUE

*"He who does not love nature, does not love man, he is not a citizen."*

*Fyodor Dostoyevsky*



# Completing the Expansion Project

DEAR COLLEAGUES AND FRIENDS,

WE WORK IN A UNIQUE INTERNATIONAL COMPANY WHOSE ACTIVITIES ARE OF GREAT IMPORTANCE FOR RUSSIA, KAZAKHSTAN, AND FOR ALL ELEVEN SHAREHOLDERS REPRESENTING THE WORLD'S LARGEST OIL AND GAS COMPANIES.



Having started operations back in 2001, a close-knit professional team of the Consortium managed to create an effective and reliable route for transporting Caspian oil to global markets within a short time.

Since then the dynamic development of CPC has never stopped. According to the 2016 results, a record 44.3 million tons of oil were shipped through the Tengiz – Novorossiysk pipeline system. This

impressive result was made possible by operations specialists and all those involved in the Expansion Project, working as one team. In 2016, the capacity of the tank farm at the Marine Terminal near Novorossiysk increased from 700 thousand to 1 million tons; the reconstruction of the Operations Control Center for the oil pipeline system was completed, a new pump station, A-PS-4, was commissioned, another three pump stations were filled with oil, making it possible to proceed to comprehensive testing.

I do not doubt that 2017 will also be a year rich in milestone events and work achievements – we will complete the Expansion Project commenced in 2011. In the first half of the year we plan to start up A-PS-4A and A-PS-5A in Astrakhan Region. After that PS-8 in Krasnodar Krai and PS-5 in Stavropol Krai will be commissioned. The last pump station to be put into operation in the Russian Federation will be PS-2 in Kalmykia. Finally, A-PS-3A is scheduled to be commissioned in the second half of the year in Kazakhstan. By operating 15 stations, the CPC mainline will reach

the design capacity of 67 million tons of oil per year.

Redundant pipeline capacity created in a timely fashion will contribute to further development of the most important oil production centers in the Caspian region. The largest international oil transportation project will continue to develop steadily, strengthening cooperation among the states and enhancing global energy security.

I thank all the CPC employees and contractors for their commitment to our cause, for fulfilling the set tasks, and for strict compliance with the occupational health and safety requirements. I would like to ask everyone to remain vigilant and self-disciplined in order to safely and successfully complete construction, and move on to reliable operation of new CPC facilities. ■

A stylized signature of Nikolay Gorban in black ink.

*Nikolay Gorban,*  
CPC General Director





# Moving on to Maximum Mode

IN THE SECOND HALF OF MARCH NIKOLAY GORBAN, CPC GENERAL DIRECTOR, VISITED FACILITIES IN THE RUSSIAN SECTION OF THE TENGIZ – NOVOROSSIIYSK PIPELINE.



During the visits, he inspected both existing pump stations and those under construction, received reports from operating personnel, and held meetings with specialists.

In Kalmykia General Director visited PS-2, PS-3 and PS Komsomolskaya.

Let us remind that at the end of last year PS Komsomolskaya began receiving oil from Russian oilfields located in the Caspian region into the CPC system. During the walk around of this station special attention was paid to the metering units, analytical laboratory, and control room.

At PS-2, which is currently under construction by contractor Stroynovatsiya LLC, a working meeting was held, at which the completion dates for all work activities were defined more specifically. As of mid-March 2017, the contractor had completed 92 % of the entire construction and installation work scope, with installation of control and communication systems progressing, individual equipment testing being underway, and PS site improvements being made.

At PS-3 commissioned at the end of 2015, Nikolay Gorban had a meeting with the contractor, during which the amounts of work completed were discussed and appropriate adjustments were made to the design solutions. The meeting also addressed the progress in the water disposal operations. Besides the main and auxiliary equipment of the pump station the CPC CEO inspected dwelling accommodations for shift workers.

In Stavropol Krai, the CEO visited PS-4 and PS-5. PS-4 was commissioned in January 2016 as part of the Expansion Project for increasing the capacity of the oil pipeline system. PS-5 will be put into operation in mid-2017.

At PS-4, an unscheduled fire drill was conducted. The drill scenario



PS-2



PS-3





PS-4

involved a pig launcher/receiver catching fire. A firefighting crew was deployed on the scene and a foam attack was launched. The PS-4 firefighting personnel met the required standards in full.

Works at PS-5 are also being carried out by Stroynovatsiya LLC. General Director was updated on the preparations for PS-5 tie-in into the CPC pipeline. It was mentioned that the contractor's operational personnel had been mobilized in full and were on standby. After a pre-start safety check specialists were preparing for filling the PS with process oil.

In Krasnodar Krai, the Consortium CEO visited PS Kropotkinskaya – the largest CPC's pump station in Russia. Following a full refurbishment of three mainline pumps completed in 2016, the station reached



PS-5

the highest throughput rate ever of 9,700 m<sup>3</sup> per hour. Specialists reported on the progress in preparatory work for replacing PS block valves.

The next facility visited was PS-7. The pump station was constructed in 2015 within the scope of the Expansion Project. In December 2016, it reached its maximum throughput rate, just as PS Kropotkinskaya. A working meeting with specialists was held at the station.

At PS-8, which is currently under construction within the CPC Expansion Project, specialists reported on the successful completion of a comprehensive testing of the pump station equipment. The facility is expected to receive an operating permit after the final inspection by Rostekhnadzor.



PS Kropotkinskaya

Nikolay Gorban met with personnel at the CPC Marine Terminal near Novorossiysk. In 2016, the capacity of the Tank Farm at the Marine Terminal was increased from 700 thousand to 1 million tons of oil. The operational scheme of the terminal's offshore facilities was significantly improved: using all three single point mooring buoys for mooring tankers made it possible to save from 6 to 10 hours in handling time for one vessel.

At all facilities special attention was paid to compliance with occupational health and safety regulations, as well as best production practices. During this trip the CEO noted the reliable operation of equipment and high professionalism of the Consortium's operational personnel. ■

*by Pavel Kretov*



PS-7



Tank Farm at the CPC Marine Terminal



PS-8



# Operation Department Coordinated Positions

IN THE FIRST DAYS OF SPRING, AN ANNUAL MEETING OF CPC OPERATIONS DEPARTMENT WAS HELD IN MISTRAL HOTEL NEAR MOSCOW. THE CONSORTIUM TOP MANAGERS AND LEAD SPECIALISTS DISCUSSED 2016 PERFORMANCE RESULTS AND SHAPED PLANS FOR THIS YEAR.



“Tough conditions, increasing number of simultaneously working equipment, intensification of line facilities operation require appropriate professional competence of operational and maintenance personnel”, he stressed.

Effective co-operation of regions, strict control over condition of facilities will be provided, among other things, by a new electronic health, safety and environment management system. Alexey Mingareev, CPC’s Deputy General Manager HSE stated that the new system was introduced in 2016 and was fully integrated into the management system of CPC Operations Department.

40.8 million tons of crude oil of 44.3 million tons run through CPC pipeline in 2016 were shipped by Kazakh producers. Sarsembay Muri-nov, CPC Eastern Region Manager, said nearly 27.5 million tons of that amount were received into the pipeline system at PS Tengiz, and approximately 13.3 million tons were received at PS Atyrau. Therefore, oil transportation through Tengiz – Novorossiysk

The meeting was opened by Dennis J. Fahy, Operations Consultant, who stated that such meetings have always been conducted productively and in a positive environment and invited to be active at launching initiatives and proposing ideas for improvement of performance and productivity of the Consortium team.

Mr. Dennis J. Fahy described the past year of 2016 as productive for the Consortium and mentioned a record-setting amount of crude oil taken by CPC pipeline system, accident free commissioning of a large number of the Expansion Project facilities, and high performance in the field of health, safety and environment protection.

The Operations Consultant congratulated teams of CPC Eastern

and Western Regions on passing the mark of 15 million man-hours completed without LTIs. This information was greeted by participants of the event with applause.

2017 year will see CPC pipeline system reaching its project capacity of 67 million tons of oil per year that is twice higher than before the Expansion Project was started. For this purpose, many new facilities and additional equipment have been, and continue to be, commissioned. CPC has already employed and trained highly-qualified specialists for their operation. Enhancing the human capacity, the Consortium management focused on issues of technological safety and reliability of equipment.

This idea was expanded by Vladimir Shmakov, General Manager, Operations:





Dennis J. Fahy

Vladimir Shmakov

Alexey Mingareev

Sarsembay Murinov

Ivan Sharay

Sergey Potryasov

Oleg Ivanishchev

system in Kazakhstan increased for more than 7 %.

Ivan Sharay, the Manager of CPC Central Region which both transports oil to Novorossiysk and accepts crude oil from the Russian shelf deposits in the Caspian Sea, stated that transportation volume in his area of responsibility reached 41.6 million tons. That task was performed without any incidents and injuries and total operating time without LTIs was 8 million man-hours in the region. As in other regions, a great attention is paid to occupational training of personnel in the Central Region. All employees are assessed in the field of occupational health and safety, industrial and fire safety. In August 2016, comprehensive training exercises were carried out together with the Astrakhan Region Directorate of the Russian Ministry for Emergency Situations and were highly appraised by supervisory authorities. Ivan Sharay also mentioned that after completion of full testing at A-PS-4A in December 2016

and commencement of full testing at A-PS-5A in March 2017, mainline pumps of five pump stations were commissioned in the region which appeared to be a significant event both in the history of the Central Region and in the history of CPC.

The Manager of CPC Western Region Sergey Potryasov also reported on faultless operation without injuries and incidents in 2016. 116 fire safety drills were conducted in the region with the largest one held in June together with the Krasnodar Territory Directorate of the Russian Ministry for Emergency Situations. The expanded training involved 154 people, 63 units of equipment and a helicopter. Annual amount of oil transportation within the area of responsibility of the Western Region was 44.3 million tons with 2.7 million tons of oil received at PS Kropotkinskaya from Russian producers.

According to Oleg Ivanishchev, the Marine Terminal Manager, 435 tankers were handled in

Novorossiysk in 2016 and that is 26 tankers more than in 2015. From the beginning of Consortium operation, the total number of oil carriers making sail reached 4390 (as of December 31, 2016). In 2016, modernization of the Marine Terminal Tank Farm was completed and its capacity increased to one million tons. In the period of unstable weather during the winter season, the terminal employees successfully tested a tanker mooring pattern using all three SPMs and thus enabled to save 6–10 hours for handling of one oil carrier.

At the end of the event, the participants suggested that such large meetings of the Operation Department should be conducted more often than once a year: oil pipeline infrastructure, the amount of crude oil transported through the pipeline system increased considerably requiring for on-going coordination of positions in all key focus areas. ■

by Pavel Kretov





# "Cast-Iron Logic" of UACS

RECENTLY, A GROUP OF THE CASPIAN PIPELINE CONSORTIUM' SPECIALISTS VISITED FACILITIES OF TRANSNEFT FAR EAST JSC (TRANSNEFT FAR EAST, LLC) WITH AN IMPORTANT MISSION.



## OUR PEOPLE IN Khabarovsk

The delegation included Control Systems Team Leader Alexander Krinitsyn, Lead Instrument/Control Systems Engineer Anton Krekhov, Senior Instrumentation Engineer Sergey Nikitin, Process Calculations Team Leader Alexey Ivanin, Dispatching and Process Control Manager Sergei Samsonov, as well as representatives of OCC dispatchers Alexander Nosov, Vitaliy Khikhlovskiy and Roman Feoktistov. The main purpose of the visit to the Far East was to get familiarized with the Unified Automated Control System (UACS).

"Increased volumes of crude transfer via CPC pipeline system and increase in the number of pump stations require creation of such system on our pipeline in order to ensure safe and quick commissioning of a pipeline, control of process modes, protection in case of stops

and change of modes, with minimum participation of operating personnel. In the course of discussion of this idea there were doubts in the Company as to possibility of its implementation. That is why our visit to the similar Transneft facility was arranged", Anton Krekhov informs us.

## UACS "OBLIGATIONS"

At Transneft Far East LLC, a fully operational and finely tuned system was demonstrated to our specialists. Familiarization with UACS operation experience showed the possibility of development of such system for CPC pipeline system.

"What does UACS include?", we ask Anton Krekhov.

"The system is a sophisticated hardware and software complex that includes several subsystems", he explains. "Unified Control System is responsible for accumulation of information on condition of technological process equipment of the facilities; Centralized Emergency Control System ensures continuous monitoring of crude oil transfer parameters, condition of process equipment of the oil trunk pipeline (TP) and its automatic switch to safe state in case of emergency situations; the name of Leak Detection And Activity Control System speaks for itself; Decision Support System on a real time basis carries out analysis of deviations of actual transfer mode from the rated one and excludes exceeding process parameters; Pipeline Model is calculation of modes, modelling of stationary and transient TP operation connected with variations of pressure, capacity, temperature and physical and chemical properties of oil; Seismic Impact Control System controls seismic

activity in the area of process constructions location."

## SMART SYSTEM

According to Sergei Samsonov, our specialists' first encounter with UACS took place during their visit to ESPO-1 pipeline system.

"It was in 2016", he specified. "As a result of that visit, we came to conclusion as to necessity of development of UACS for CPC pipeline system."

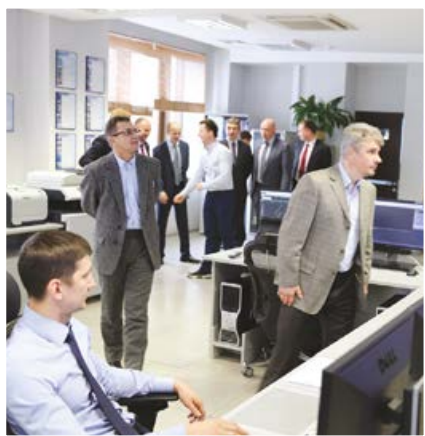
"What is so good about this system?"

"UACS serves the very important purpose that is improvement of reliability of oil transportation processes and provision of the necessary safety level. The system allows elimination of personnel mistakes from the control logic by carrying out of pre-set pipeline control algorithms. It automatically ensures switching to safe transfer mode in case of emergency situations."

"The CPC system is smaller than the Transneft pipeline system..."

"I would not say so. The Transneft – Far East control centre manages three process sections, and there are only 12 pump stations. The UACS covers only the ESPO-2 oil pipeline, there are no operations related to oil loading to tankers. The CPC transportation system is much more complicated. It includes 15 stations, metering units for oil reception from vendors, the Marine Terminal; there are no intermediate tank farms, but the oil pumping mode from pump to pump is very severe. Even now, when not all new PS are brought into operation, dispatching personnel has lots of work.





*At the control centre of Transneft – Far East JSC*



*Photo as a memento*

Thus, the UACS is essential for CPC”.

“What are the terms for such a project to be implemented within the CPC?”, we asked Sergei Samsonov.

“Only engineering will take at least one year”, Sergei Samsonov supposed. “Due to the UACS is not an artificial intelligence, it is necessary to write all possible sequences, all potential scenarios. It will need not only hydraulic calculations but also changes in equipment at the hardware level, so installation of additional control cabinets at PSs, equipment in OCC, additional information processing servers will be required... It should be done with due regard to all the CPC requirements in terms of network

security, backup and conformance to the standards of the equipment used in the CPC”.

### **DIALOGUE OF PROFESSIONALS**

“The trip to Khabarovsk has been very informative for me and my colleagues, the OCC dispatchers”, Alexander Nosov noted. “This trip may be said to be the days of questions and answers, and the interest was mutual. We observed the Transneft operations in order to profit from the learning experience. The employees of the Far East subsidiary of the giant company were also interested in our work. It turned out to be the valuable experience exchange. We made sure of the high

efficiency of the Unified Automated Control System of the Eastern Siberia – Pacific Ocean oil pipeline. The implementation of such system in the CPC will undoubtedly increase the safety of our pipeline system and will significantly simplify the work of dispatchers”.

“We have been extremely pleased with communication with specialists from the Far East! They are high-class professionals in their field, open to a dialogue and discussion of issues of any complexity. I find continuation of experience exchange between our companies useful and mutually profitable”, Anton Krekhov added. ■

*by Ekaterina Suvorova*



*The CPC specialists have visited PS No. 34*

# "I Am a Lucky Person"

JOYFUL, OPEN-MINDED, FRIENDLY, ALWAYS CHEERFUL, SHE IS READY TO HELP AT ANY TIME. SHE IS ALSO RESPONSIBLE, STRAIGHTFORWARD, A WOMAN OF HER WORD, DEMANDING AND ADHERING TO PRINCIPLES AT WORK. OF COURSE, THIS IS MY KAZAKH COLLEAGUE MRS. LYUBOV EVSTIFEEVA.



## MORE THAN JUST A START

Lead PR specialist of CPC-K, Lyubov Evstifeeva was to work at a research institute in Magnitogorsk where she was appointed to work after the University as a reward for good academic results. However, having met her future husband, she turned her life 180 degrees around – they left together for his native town of Guryev, now called Atyrau.

Working path of the new Kazakh citizen started at the Petrovsky Machine-Building Works of Atyrau, where she became an engineer, head of the forging shop. Her major as an engineer of cold and hot metal forming helped her to get the job that she recalls with great affection. She worked there for seven happy years and was even a candidate for the position of the works' manager in the HR reserve. This was more than just a start.

"I liked the works itself and I liked my job very much," explains Lyubov Evstifeeva. "Working there taught me the correct approach to the job. When you start working fresh from the University, you just get your assignment, run to execute it, and then again. Running all day long there and forth exhausts you. But I had a good manager, I always remember what he said: "If the head does not work, the feet do." I remembered this statement and it guides me through life. Before acting, I try to think everything through several steps ahead."

## PARTY SAID: DO IT!

The talented and active employee was noticed by the works' management and invited to take part at the political work.

"It was an interesting story," smiles Lyubov Evstifeeva. "I came to

a forum of the Atyrau regional Party organization. They ask me to stand up and then they say, "We appoint you as an instructor of the regional Party committee." I say, "Have you lost your mind? I don't want to leave my job at the works!" And everyone looks at me weirdly, like "What's wrong with you, you are approved!" And I need to say that it was almost impossible to get to the regional committee. Frankly, I still think I was not lucky that day, for I loved the works, was giving all my heart to it. However, it happened as it happened, I could do nothing. If you are a communist, you must go wherever the Party sends you. And I was a dedicated communist, an idea-driven one!"

This position gave new skills to Lyubov Evstifeeva that came in handy at the future jobs. The Party taught her how to draw up papers, prepare analytical reports, talk in front of



Opening of athletic fields at Atyrau University of Oil and Gas



an audience. And all of this accompanied by constant lack of time and irregular schedule. Moreover, considering that just half a year before entering into this position, Lyubov had given birth to her daughter, the velocity of “action” was exorbitant.

Then she worked at the state bodies of the regional administration where Mrs. Evstifeeva reached the position of the head of Administration of the Oil and Gas Sector, External Economic Relations and Investment Policy of the regional Akimat. And this experience also appeared useful later at CPC, where her high authority among the local bodies of executive power came in handy.

“I am lucky to have the great experience in working with the authorities,” says Mrs. Evstifeeva. “I know how they operate, what would be better to tell them. I possess a so-called «phone right» – I do not have to go to their offices, Akimats, I can just call. And they take my calls, they do talk to me, because they know me and know what I am capable of. It really helps me in my present job.”

## MIND EXERCISE

Lyubov Evstifeeva joined the Consortium in 2003, when the oil pipeline was starting up. Initially, the Department for Cooperation with the Government of the Republic of Kazakhstan was composed of two people – a manager and an officer. With her manager Mr. Kanatbek Zhumin, Lyubov has worked together for almost 11 years. But it had to be a fresh start.

“When I came to CPC as a PR specialist, we had nothing – neither a developed policy for cooperation with third parties, nor regulations for sponsorship and charity,” she reminisces today. “I had to develop the policy and together with the manager we elaborated on it in order to prepare operating guidelines to rely on. I should say that I was lucky to have this manager – he was a great professional,



Lyubov Evstifeeva is well known and valued at the medical, cultural and educational bodies of the region, at the non-government organization of the people with sight disabilities, auxiliary boarding school of Atyrau, community of the World War II veterans and other social associations of the region, whose members constantly feel attention and care of the Consortium. She often receives letters of gratitude with warm and touching wishes.

extremely experienced, and he arranged the work based on high speed, precision, and punctuality. Also, he was just a very pleasant person. Besides, we had nobody to count on, that is why we were working as one.

The time of the pipeline start-up was accompanied by numerous production issues that had to be solved, among others, by the Department for Cooperation with the Kazakh Government. The issues had various natures. They were about registering of land plots, calculations of power rates, taxation, etc. Once we even had to assist in construction of the city gas pipeline.”

“One would think that we have nothing to do with gas,” recalls Lyubov Evstifeeva. “But it turned out that due to extremely low temperatures, the city’s (and

the Consortium’s) demand for gas grew, and the diameter of the existing pipeline was insufficient. And the work started. We were persuading local authorities to include the issue of the construction of the new gas pipeline into the Republic’s budget. Half a year later, a decree passed saying that Kazakhstan would give 1.6 billion tenge for this purpose. And when 90 % of the gas pipeline was already built, the local Akim escaped – the construction was on hold for the time of the court proceedings. The property of the Akimat was under arrest, including equipment needed for construction. And it was then that we had to work a lot. We went to the attorney office, to the financial police, other authorities in order to get a permission to seize the available equipment. In December, the pipeline was put in operation. I believe it is our Department’s achievement.” »

## View of a colleague

Mrs. Evstifeeva is much loved by the managers and employees of the organizations, who were taken care of by her even for short periods of time and whom CPC-K assists in building maintenance, arrangement of the New Year Eve and other celebrations. No matter how strict she was to them (we worked at the same office for a long time and were witnesses to that), explaining requirements of policies and procedures of the company, literally studying documents together with them, all of them felt the warmth of her heart. She can rant and rave when she sees that she is not wanted to be understood, when people do not want to work. And she is happy like a child when a serious issue is finally solved.

Also Mrs. Evstifeeva and her family have a place where they go to rest – it's their favorite country house. In the summer, the office is filled with the smell of strawberries, raspberries and currant – she likes treating her colleagues to what she has harvested. In her orchard, she has the most delicious apricots and pears, apples and grapes. We know that for sure, we tried them!

*by Marzhan Diarova*

Mrs. Evstifeeva recalls this period with gratitude as a very interesting and busy one. She was gladly taking care of issues that were different from her routine job and gave her some mind exercise. It was pleasant to see the results and feel satisfaction with what they have accomplished.

### DIALOG MODE

"I really like working at the CPC," Mrs. Evstifeeva admits. "Here, they consider your opinion, and you can always count on a dialog, searching for solutions together. Working together with colleagues is easy. You know, I am always happy to go to work."



*Among colleagues, any corporate event turns into a truly festive occasion*

Thanks to her communicative nature, Lyubov Evstifeeva maintains friendly relationships with colleagues even outside of the CPC-K. The closest collaboration is with the employees of the Department for Cooperation with the RF Government, which she explains by similarity in professional issues and simply by personal qualities of her Russian colleagues.

"We became friends and we made a good team," says Lyubov Evstifeeva. "Whether I need some information quickly or just help in resolution of some issues, I always get a prompt response. It is important when you have contacts with co-workers from another region. They are all unique in their own way. Everyone is a professional in what he/she does. For example, I can always consult with Dmitry Gerasimuk or solve issues together with my colleague from Astrakhan Alexander Ignatyev, I can ask for his advice. The guys are always forthcoming. In my turn, I am always glad to hear from them and also ready to help."

### PERSONAL

A happy person shall also have a happy home. Mrs. Evstifeeva has two wonderful daughters. Although, they had to grow up mostly on their own.

"All my life was orbiting around my work. I recall those times: I was working, my husband was flying. The kids grew up, got education. They were practically doing everything by themselves. But this is what those times were – there was no other way. On the plus side, now I treat my grandchildren with great care, try to give them all that love that I could not give to my kids."

The Evstifeevs family is very united. They do everything together. Each summer Mrs. Evstifeeva tries to go somewhere with her grandchildren in order to give them new emotions



*Lyubov Evstifeeva with her husband and granddaughters on vacation in Mineralnye Vody*

and let them get some rest from the studies. The children live nearby, so they have family gatherings every evening. Moreover, her husband is always ready to support his Lyubov and to cheer her up.

"I value my family highly, most of all because we are together," confesses Mrs. Evstifeeva. "I am very lucky here. I think I am extremely lucky in general. I was always sure that everything would be smooth." ■

*by Ekaterina Krapivko*



# "The Best Company in Russia"

OLEG DANILYUK CAME TO THE ADMISSION EXAMS AT THE LVOV POLYTECHNIC INSTITUTE TO HELP HIS FRIEND WITH A WRITTEN EXAM IN MATHEMATICS.



*Oleg Danilyuk: "Electrochemical protection in CPC is truly top level!"*

Since the day before he himself was not admitted to a flight school – a leg trauma put an end to his dream – Oleg made up his mind to join his friend and enter the power engineering program. And he was admitted. He thought he would dedicate his life to the power engineering for a short term, but it appeared to be forever.

## PRICELESS NORTHERN EXPERIENCE

Having graduated in 1976, the newly-fledged power engineer headed to Tyumen, as he was appointed to

work at the Uray Oil Trunk Pipeline Directorate (a branch of Sibnefteprovod, a daughter company of Transneft). Uray is where the first Tyumen oil was extracted. In 1960, the first oil field in the Western Siberia was discovered here: Shaimskoye. Oleg Danilyuk has worked in Sibnefteprovod for 28 years – first as a commissioning specialist for electrical equipment, then as a head of the electrical equipment maintenance and commissioning office, deputy of the chief power engineer, and finally as the head of the department. He was participating in commissioning of equipment for the tank farm of the Konda station – one of the key oil pumping stations of the pipeline between Surgut and Polotsk. Apart from this station, he personally took part in construction and launch into operation of another 14 oil pumping stations.

"I was lucky to become a commissioning specialist at once," recalls Mr. Oleg Danilyuk. "At first, I came into construction and building enterprise No. 8 that was performing installation and commissioning of electrical equipment for oil industry all over the country. For what is a commissioning specialist? It is a highly qualified worker. It is now

that they build, install equipment, and everything works at once. In the past, the devices had to be "fine-tuned". On top of that, the equipment we had to deal with was diverse – one had to study it well before starting. It was hard sometimes. The work demanded for you to be here one day and somewhere else another day. At times, I had to sleep in construction trailers. You wake up in the morning, and on one side, you feel hot from the stove, on the other side, your jersey is frozen to the wall. In the beginning, I was concerned by the fact that I graduated from a university, and my fellow students sit there at the research institutions, making drawings, wearing neat suits and ties. And I am here... But on the other hand, the experience I gained there is priceless. There is no other way to acquire it."

Having become the head of the electrical maintenance and commissioning office, Mr. Danilyuk was grateful for the time he was on military service as an officer in Transbaikalian Region. There he was taught a major thing, working with people, with subordinates. Thanks to a good method competence, it was easy for him to manage the office, in spite of the fact that it was »



huge and the conditions of working with people were tough: some were sick, some had problems at home, and you had to fly over taiga, cross the swamps... Anything could happen in those places.

“Once, when we were putting into operation the main line Surgut – Polotsk, we were scattered along the oil pipeline by a helicopter,” recalls Oleg Danilyuk. “We were delivered to shelters 10–15 km from each other. At that time, we were

just introducing telemechanics and everybody had to participate in the installations, including managers and engineers. First, a helicopter delivers people to their stations, and later picks them up. It happened so that I had already completed my job, but the helicopter was nowhere to be seen. For your information, after an oil pipeline is built, usually it is protected by a rampart of soil, which in about two years bursts with raspberries. And they are so delicious and sweet! So I walk along the pipe, eating raspberries, paying no attention to anything else, making rounds and... I’m suddenly face to face with a bear. It has been moving along on the other side of the rampart also eating raspberries. Never before had I run so fast! I got inside the shelter, closed myself in and started calling on the portable radio: “Take me from here immediately! There is a bear outside!”

### PROTECTING OIL PIPELINE

Oleg Danilyuk joined CPC in 2004 as a specialist in cathodic protection with a duty to commission electrochemical protection stations, inspect and maintain them. Nowadays, twelve and a half years later, Mr. Danilyuk confessed that even with his eyes closed he could imagine in details all facilities where he had a chance to work.

“Oil pipeline is a steel pipe that would rust if you just bury it underground,” clarifies Mr. Danilyuk. “In order to prevent it from destruction,

it needs anti-corrosion protection: a passive one, when a pipe is wrapped with insulation, and an active one, i.e., electrochemical protection itself. Here is what it means. At points where the insulation is damaged, electrons abandon the pipe and it starts wearing. In order to stop this process, you have to deliver a negative charge, lower than the one of the iron oil pipeline itself, to balance the potential.”

“The stations of cathodic protection with their anodes interact with the pipe that represents a negatively charged cathode, to balance electrical potential that directly affects the integrity of the oil pipeline.”

Experience of Oleg Danilyuk immediately came in handy. In 2004, due to aggressive environmental impact, a part of oil pipeline from Tengiz to Atyrau was deteriorating. It was laid over a so-called salt marsh, where salt water from the Caspian Sea was coming from time to time.

“In the Soviet times, they were making film insulation – a pipe was wrapped in black film and laid underground,” recalls Oleg Danilyuk. “But the pipe is like a snake, twining in a trench due to expansion and shrinking of metal because of seasonal changes in oil temperature. With these movements, the insulation became loose as a stocking and started leaking. Corrosion took the oil pipeline immediately. Some measures had to be taken. We restored the old cathode stations



Oleg Danilyuk grew up near an airfield. Since he was a child, he was fascinated by the impressive winged machines and dreamt of lifting them into the sky one day. His love for aviation was brought to life in his hobby: his vast collection includes over 300 various airplane models.





because the new ones, built according to the design, did not keep up: the current that needed to protect the whole system was grounded, and only 10–20 % of protection was allotted to the oil pipeline. The most dangerous points were protected with couplings by the cablemen. And we were giving it additional protection by means of the recovered stations. Like this, we managed to keep it safe until the new part of pipeline was built between km 0 and km 116 bypassing the salt marshes.”

“However, even with the preliminary manufacturer’s insulation, the quality of which is much higher, damage can occur, for example at the joints, at the areas scratched during transportation and laying of a pipe. That is why it is important to continuously monitor electrical potential of the pipeline.”

“As soon as it is the time for routine maintenance, a squad of specialists goes to the site. As a member of a permanent committee, the Lead Cathodic Protection Engineer personally checks the quality of



*Meeting with colleagues from Chevron Company at the CPC Marine Terminal*

have been significant. I should say that we did what no other major pipeline companies of the industry have. Cathodic protection here at the CPC is at the very high level. I think there are few places in Russia where one can encounter such a high level.”

“But even at such a high level, the Consortium keeps on development. Gradually, we are introducing an automated monitoring system.

and environment of the company result in fruitful work. I have never heard subordinates to be insulted as it happens in other companies. To the contrary, they do respect specialists here and trust their experience. No one works sloppily in such environment. Everyone does a good job. Besides, the policy against alcohol is really wise, since in my opinion, drinking at work may lead to accidents. Here, I have never heard of such things. People value their jobs, they get decent salaries. They are respected and they respect the principles of the Company. So, our team is fantastic, it comprises premium competence specialists! Specialists with such qualifications are hard to find.”

### *We did what no other major pipeline companies of the industry have*

work on site twice a year and makes trips with special inspections. Apart from that, we measure potential every kilometer twice a year along the whole pipeline. Based on the acquired values, the Lead Engineer decides whether any extra optimization of potential is required.”

“Balancing of the potential optimizes operation of the whole system.” explains Oleg Danilyuk. “For example, during the Expansion Project we equipped all PSs with insulating inserts that “separated” the linear part from a pumping station. That allowed us to prevent potential jumps. For the station is an enormous quantity of iron, there is a lot of grounding there and its influence on the nearest pipeline spools could

Similar system is already in operation at the Marine Terminal. About 50 stations collect potential data on site and transfer it to the cathodic protection engineer’s computer. Currently, such telemechanics system is being implemented at the linear part of the Central Region, where some of the stations are already equipped with it.”

### **GOOD WORK**

“I am really impressed by the work management system at the CPC,” says Oleg Danilyuk. “Everything is well-thought, calculated, there is no rush. What is more important, the management considers the opinion of specialists. Any matter can be solved here. The spirit

At the same time, the older specialists of the Operation Department try to pass their knowledge and expertise to the young colleagues. Thus, Mr. Danilyuk proudly mentioned Dmitry Martynov, whose occupation (Lead Specialist on Standards and Regulating Documentation) suggests wide knowledge in different spheres. And every older colleague did his/her best to share this knowledge with him, bringing up a worthy substitute for themselves.

“I am very happy to have worked at the CPC in the end of my career,” added Mr. Danilyuk. “I think it is the best company in Russia!” ■

*by Ekaterina Krapivko*

# The Right-Flank Man

LAST YEAR WE LOST A TOP-RANKED SPECIALIST, AN EXCEPTIONAL COLLEAGUE, AND REMARKABLE MAN. VITALY ROMANOV WAS ABOUT TO GO TO THE WORK HE LOVED, WHEN HIS HEART FAILED...



*Vitaly Romanov contributed a lot to CPC facilities modification*

Mr. Vitaly Romanov contributed considerably to development of the CPC facilities. In 2003, he came onboard PS Kropotkinskaya to work as Gas Turbine Specialist at the most critical site and, perhaps, the area of most concern.

Mr. Vitaly Romanov joined the Company upon the recommendations of Mr. Aleksandr Astashkin, the first CPC turbine specialist, retired I Rank Captain of the Russian Navy, who previously gave courses on operation and maintenance of gas turbine units to the Navy men of different countries of the world in the military academy. Thanks to this specialist, the turbine-generator units at the Marine Terminal that had brought in lots of problems began to operate nearly fault-free.

However, there still were more than enough weak points in the equipment operation; competent specialists thinking out of the box were required. Mr. Aleksandr Astashkin recommended Mr. Vitaly Romanov, his comrade-in-arms, retired I Rank

Captain as well, for the position of a turbine specialist at PS Kropotkinskaya; during his military service, Mr. Romanov was in charge of operation and serviceability of machinery including power turbines of the entire Black Sea Navy Fleet.

## MAN IN WHITE

In April 2003, a tall man bearing a soldierly semblance made his appearance at PS Kropotkinskaya. Vitaly was dressed all whitish during his first working day. There were the turbine manufacturer's service engineers and almost all managers of the Western Region at the station. How glad they were to see him there! He was brief in introducing himself, "Vitaly Romanov, appointed to the position of a gas turbine specialist, ready to work." After a brief review of the commissioning state, he was assigned with the first task: to put the turbines into service.

As Vitaly recalled later: he tushed and saying, "Here again marine rules!", he rolled up the sleeves of his snow-white shirt and got started with the turbines. And he successfully started them up! Vitaly described this process in one of his numerous humoristic stories "Only fools and horses work" published in Mr. Pokrovsky's Project "Off-shore, Onshore, and Above – 4". In such a way his work at PS Kropotkinskaya commenced and lasted for 9 years.

## BE FAMILIAR WITH HISTORY

A rental apartment. The family is in Novorossiysk. On weekends he rushed home, of course: In his car and rarely alone – there were people from Krymsk and Novorossiysk working at PS Kropotkinskaya.

On his way home Vitaly liked to talk to young people. How upset he was that the young did not know the history of Russia, did not read classics, did not know films we had been raised with! He intentionally did not turn on the music in the car; instead, the literary works by Karamzin, Soloviev were played, mainly historical ones.

He, himself, knew the history of Russia perfectly well.

## SOLID HOMEFRONT

It was not frequent that he managed to go home. It used to happen that on Friday, after work, already in the car, he received messages about yet another trip of the turbine generator unit. The travel was postponed. The turbine generator unit was started up, but they carried on thorough failure cause analyses and troubleshooting. Such brainstorming mostly happened outside working hours and at nights. Without the support of his wife, Tamara, he could hardly keep up with this work pace. It is indeed when 50 % of moving up through lieutenant to general is a wife's credit.

Last year I got the idea of how affectionate he was to his family. One weekend I received a call to my mobile phone: It was Vitaly calling. I could hear excited children's voices and water splashes.

"Marat, guess where I am."

"On a beach, probably."

"Wrong answer! At the datcha with the whole family (wife, two daughters and two granddaughters, – M.I.). The girls like so much to splash about in the pool. I am happy to tears!.."



And he suddenly whispered, "They have grown up, you know. My granddaughters have always had boyish angulous figures, and now they are just about ladies..."

Or another episode. Vitaly was about ten days away on a business trip – covering for one of the colleagues for the time of his vacation. And he suddenly said, "Let me go home. Everything is almost done; the regional turbine specialist has his vacation over in two days."

"What's happened? Are you sick?", I asked him.

"No, I am not. I just miss my wife."

I was completely disarmed by this statement.

## EXPANSION PROJECT

In the course of the Project implementation and on the threshold of the modernization project for the gas turbine mainline pumps, it became clear that we required a specialist capable of solving complicated technical issues and coordinating activities of numerous contractors. Mr. Vitaly Romanov was singled out. In April 2012 he was transferred from Senior Engineer to Lead Engineer to organize operation and maintenance of the gas turbine units having his work station at the Marine Terminal. Holding this position, he was now in charge of all facilities at which gas turbine units were operated and constructed. In February 2014 he became Deputy Mechanical Supervisor.

Failure analyses performed by Vitaly were noted for completeness and thoroughness. Sometimes there were very surprising solutions proposed, up to amendment of the design concepts of the turbine manufacturers. Despite this, (and maybe for this very reason) Mr. Stuart Sharp, Siemens Project Manager, said that Mr. Romanov was a finding for CPC. All of us could feel it. A total dedication of him combined with in-depth knowledge of the turbines paid off. ►

## He Had Something to Say to Others

I GOT TO KNOW MR. VITALY ROMANOV IN 1996 IN ENGINEERING DEPARTMENT OF NAVAL BASE OF NOVOROSSISK. THOUGH I KNEW HIM WITHOUT SEEING FROM MY FELLOW SOLDIERS – MECHANICAL ENGINEERS – THE WORLD OF NAVAL OFFICERS IS QUITE SMALL.

Our encounter was quite simple and ordinary. "Hello, where are you from?" – and off we go together to the port of Temryuk to prepare a medium landing ship for a cruise to Crimea for Marine Corps training. We were jointly training seamen and lieutenants, and joint work grew into friendship. Our approaches to life and service appeared to be the same.

These were hard times for the Russian Navy, which was kept afloat thanks to the officers devoted to their Motherland and profession. Vitaly and I got onboard with own wrenches and testers since there was nothing on these ships!..

It did not surprise me that Vitaly knew his profession through and through: I have spent all my life with fleet officers, and I am absolutely sure that there are very few stupid men there, particularly, among mechanical engineers, which have risen to the rank of the commanders of the guided missile cruiser combats. The captivating thing about him was that he remained extremely polite and humanly kind in any circumstances; no one could ever feel aggression from him, though he was quite a big fellow with anything but a Christian-like peaceful temper... He has been always seeking the truth, but not evidence on who is tougher or smarter. That is why disputes with him were extremely complicated, enjoyable and useful. I think Vitaly was a unique person in this count. It's a pity that one begins to understand such things only when Vitaly has gone.

We served and served in the Navy, when a high tide had come: the year of 1998. The year without prospects and hopes, when the country heeled over so that we thought it would not break surface. Thefts were flourishing at the Naval base, the ships did not have diesel fuel to sail. We were aware of the theft level, but could do nothing. Vitaly had never entered into any deal, had never committed any theft, and had never used anything belonging to the fleet for his own advantage; maybe, this drew us so close later.

I was demobilized in 1998 due to reduction in force, and I was very upset, but Vitaly lent me a moral support. In retirement I have spent not a single day idling around – when you are 42, can you be a true pensioner?!

I was invited to join CPC for construction of the Marine Terminal (I am writing these words with capital letters because I may say that this construction project offered a hand of hope not only to me but to many friends of mine), where I have been working since the first day till the end of commissioning. Though I think that commissioning never ends – it is just the name that is changed to repairs and maintenance.

In the course of time, I helped my friends – Mr. Aleksandr Astashkin at first, and later Mr. Vitaly Romanov, to get hired. What is more, it was quite easy – the Company required top-ranked specialists for operation and maintenance of gas turbines. Among the Terminal management, there were very remarkable persons, however, one stood out from them – Mr. Oleg Sadovsky, a hard-line manager and a very kind person who had experienced all severities of northern oil and gas fields – techie-minded. It was him to whom I addressed with a request to consider job applicants. And the further we go, the easier it becomes – after a short conversation it became clear that Aleksandr and Vitaly were the very specialists that CPC required.

I did not meet very often with Vitaly – a work away from home, he traveled, and me as well. However, we had something to talk about when we finally met. Talking of the Motherland and patriotism was neither a pompous topic nor a standing dish for Vitaly. He was a patriot in his life and work: doing bad things or acting poorly was unacceptable for him. There are not so many people that explain their doings as Vitaly did, "I could not do other than I did for I am from Russia!"

When Vitaly began to write stories about the naval service, I was reading them and I was always astonished that we had seen one and the same things, but he could see things that I did not notice. Even if I noticed them, it was impossible for me to describe them like he did! It is a special gift; I am sorry that there was so little put on paper; I am sure he had something to say to others. ■

*by Aleksandr Vasin,  
II Rank Captain*

## He Encouraged and Helped

I AM ALWAYS IMPRESSED BY THE PEOPLE WHO ARE ABLE TO FIND COMPETENT AND PROFESSIONAL SOLUTIONS NEVER STRAYING FROM THEIR MORAL PRINCIPLES. IT IS THE VERY PERSONAL TRAIT, QUITE INFREQUENT ONE, WHICH I WOULD LIKE TO SPECIFICALLY HIGHLIGHT WITH MR. VITALY ROMANOV.

In the course of work for the upgrade project, we have had many events I would like to mention. Among them are offsite meetings, interesting rundowns on football the day before the meeting in Astrakhan, and a lot more...

However, the most important I would like to mention is the power of his words. More than a few times I witnessed a scene when a lot of different opinions were coming up in the meeting room, often turning into heated discussions. Vitaly was always patient to listen to all his opponents, and at the very end, by one crystal-clear argument, he convinced the attendants of the rationality of his viewpoint. During our collaboration on PS equipment, he encouraged me and gave valuable advice more than once; I really appreciate it a lot.

We, the Orthodox Christians, truly believe that if people have lived a bright life in harmony with others and themselves, their life goes beyond material existence. An engineering conception has always strived to find exact answers and explain in simple terms what is going on around. However, as Mr. Belyaev, a known literary figure of the late 19th century, wrote in his novel about a person who devoted most of his life to the water element as Vitaly did, "... the sea keeps its secret." ■

*by Maksim Sonin,  
Modernization Project Coordinator*

## PACIFYING THE TURBINES

Since the CPC system operation commencement in 2002 two-shaft 4.7 MW turbines with a new, at that point of time, DLE combustion system have been used as mainline pump drives at PS Kropotkinskaya. At PS Atyrau and Komsomolskaya MPI combustion system was in service. Before 2009, PS Kropotkinskaya ran on diesel, and PS Atyrau and Komsomolskaya – already on gas.

Due to these differences when turbines with DLE ran on diesel in certain modes (rpm and load) there were unwanted effects related to increased dynamic pressure fluctuations in the combustion chamber recorded by PT200 transmitter. During the next routine inspection of these turbines, damages of the hot path assembly were discovered– wear and tear of the adapters and seals in the burner – liner – transition piece assembly. This necessitated replacement of high-priced assemblies, i.e.

liners, transient pieces, and seals between them.

Mr. Vitaly Romanov was the first to explain and bring this problem to the manufacturer with a request to pay attention to the processes inside the liners. After that, trial tests were performed several times in 2007–2008 at PS Kropotkinskaya to collect data wherefore numerous instruments were installed in each combustion chamber. Mr. Gennady Bulat handled this problem from Siemens side. When sufficient data were collected, he developed a mathematical model of the effects occurring in combustion chambers.

During the turbine specialists' meeting at the Marine Terminal, to which Mr. Gennady Bulat was invited, Vitaly reported that the temperature variations on the burners and dynamic fluctuations commenced when a certain mode was reached whereat the operators stopped loading the turbine in order to stabilize

the situation. PS Kropotkinskaya turbine-driven pump start from OCC panel signal was demonstrated on the monitor screen. When a critical threshold was reached and the operator reached out to press the shutdown button, Mr. Bulat gave an order to go on loading. Finally, they passed the critical point surprisingly fast, and the turbine started operating properly. Such startup mode in future reduced greatly the number of failed turbine starts.

By May 2009, following these efforts, Siemens proposed several modifications to PS Kropotkinskaya turbines that provided for installation of a bypass valve between P2 air chamber and exhaust system. This valve was initially designed to reduce pollutant emissions during the turbine operation at low loads, but it also allowed reducing the dynamic fluctuations in case they increased. This modification was implemented. Siemens respected the CPC specialists' opinion, and began to complete all two-shaft DLE-system turbines with bypass valves.

Meetings concerning reliability of the gas-turbine units, including those at the turbine manufacturer in Lincoln, the United Kingdom, were almost always held with Mr. Vitaly Romanov present. It was him who was entrusted to prepare minutes of meetings. Owing to his writing skills, a competent technical document in a perfect literary form was the result, whether that was a minutes, certificate, report, or analysis.

## HANDY AND BRAINY

Vitaly's work time was not limited to the prescribed eight hours: he did not leave his work place until a task in hand was solved.

Pre-commissioning of the gas distribution station equipped with TAKAT gas compressor manufactured by Kazan Compressor Plant was in progress at PS Kropotkinskaya. For CPC it was a critical facility. Each turbine was consuming up to one ton of diesel per hour. Change-over



to gas would reduce purchased fuel cost by seven times; and a number of failures would also reduce drastically. The gas distribution station commissioning was delayed due to the gas compressor. It's single lube oil pump continuously tripped on the end seal failure. It was found out on site that the oil pump should be horizontal but the container design allowed only for a vertical installation. As a result, oil did not reach the end seal, it overheated and failed. There was a manufacturer's representative on site. To a question "What were the reasons to install the lube oil pump like that?" he replied, "Probably, there was not enough space in the container." "Do you have spare end seals?" "Yes, quite a lot." An urgent decision was required. Breaking the container wall was out of question. Lube oil could be force-fed to this assembly. For this purpose a hole had to be drilled in the end seal housing, a threaded nozzle welded and a line from the tank assembled. A modified end seal was delivered by six in the evening. Mr. Vitaly Romanov was there and met them saying, "I can't believe it! All the rest is with me; by the next morning the line



*With mechanical engineers and turbine specialist at PS Atyrau*

will be assembled and pressurized." He kept his word – the next morning everything was ready. Vitaly had designed, equipped, and assembled a vital line with his own hands. He was indeed handy and brainy.

That very day the gas distribution station and the compressor were put into service, and that very pump operated for almost nine years without any failure until the compressor was dismantled.

One more episode. Once a power turbine broke up. In order to roll the dismantled turbine out to a place where the crane could reach it, a rollout frame was to be extended. A sketch was drawn, the required components – defined, everything was submitted to Senior Procurement Engineer in Western Region. The required materials were delivered and the line assembled within four hours. By that time Siemens specialists disconnected the turbine.

Mr. Aleksei Fomenko, Operation and Maintenance Manager, Western Region, managed the overall process from the moment of the damaged turbine dismantling through the new turbine installation and start-up. It seemed to me that Mr. Vitaly Romanov was concerned most of all. After the new turbine start-up the dismantled turbine inspection commenced to determine the root causes of destruction.

It turned out that everything started with one blade breakup at a rotation speed over 300 m/s. When the turbine was opened, I even doubted at first: how in that bunch of metal would you find the one and only part that initiated the destruction? Vitaly was at his best: he had dug the part out, and everybody including the insurance company representatives agreed that the destruction initiated from that very blade. And then there was a round-the-clock work to »



*Analyzing the causes of the turbine failure*



## My Colleague & Friend

HE WAS NOT A LOUD AND BOISTEROUS MAN AND HE NEVER BRAGGED. HE NEVER DOMINATED A CONVERSATION BUT WHEN HE SPOKE EVERYONE LISTENED.

During our business meetings he would sit and listen when a certain problem was being discussed. Then when it was his turn, he would provide his thoughts and input. His understanding of issues brought clarity to the problem. He was able to explain issues in a way to help others understand it better and then gave recommendations for addressing them. He was willing to take on responsibility by doing this and he led by example. It was natural for him.

Vitaly stood out as a leader and was someone you could approach. He was always willing to share his expertise, experience and wisdom. He mentored those that were younger and less experienced, but also those that were older and more experienced, though he did it in a way that it was not always so obvious to you.

Outside of work when we had an opportunity to socialize, I got to know him better. My respect for him grew even more. It was evident his dedication was not only to his work but to his family and his country also. He wanted what was best and was willing to try and find out what that was. He had no problem trying something new. I saw Vitaly as the embodiment of what is best about Russia and of a person.

We had good times outside of work also. I remember once in the UK, we had dinner at an Australian pub. When Vitaly saw what was on the menu he had to try something new, Kangaroo. After sending that raw roo back to the kitchen three times to get it cooked as he wanted, he finally gave up and he ordered a hamburger. He had more courage than me that night, I started with the hamburger. It was not so funny then but we had a good laugh about it later.

I don't know if Vitaly realized how many people he truly touched and helped or how much he was liked and respected, I can only hope he knew. I can say how thankful I am to have known him, and to have counted him as my close colleague and friend. ■

by Edward Ashbridge

compare various facts and determine the root causes.

The work performed by CPC, Siemens, and insurance company specialists involved in this investigation resulted in the exemplary report of the destructed turbine inspection prepared by Mr. Vitaly Romanov, including conclusions on the destruction causes. At this point he surpassed himself: the report turned out to be unprejudiced, extensive, with the pictures of each stage. In the end, the insurance company settled the claim; Siemens covered CPC expenses with spare parts. And only after that Vitaly relaxed...

## LOVING INFINITELY

Mr. Vitaly Romanov was born in a family of a military officer. He spent his childhood in Karelia. Woods, lakes of indescribable beauty... Loving infinitely Karelia, he tried to visit this region every year. His stories about him picking mushrooms and berries while staying in the car were impressive.

During school time he lived in military communities with his parents, where his character matured and ability to stand up for himself in confrontations with local boys developed. He did karate.



A cosy house built by Vitaly for his family and meeting with his friends

His Alma Mater was the Higher Naval Engineering School of Leningrad situated close to the Catherine Palace. In Saint Petersburg where he had spent his student years, there were a lot of his fellow-students and fellow-soldiers, whom he tried to meet with under any circumstances.

One episode gave me the idea of the way the sea soaked in his blood. One day at the weekend we went to Gelendzhik with him. As soon as a view of a waste of waters and ships greeted our eyes, Vitaly was transformed. He got in



Ed and Vitaly: colleagues and friends



In the city of Lincoln. Satisfied with a well-done shot



touch with his fellow-soldier, and an untranslatable marine jargon started flowing. As far as I understood from all his speech, a military destroyer that had been prowling high seas of our Earth for more than four months had come back to the port. Feeling high on the sight of the cruiser, Vitaly was apparently upset that the commanding officer had not let the seamen come ashore. Then a thought came to my mind, "Was it his desire to show me "Slava", a cruiser he served aboard, that made him invite me to Gendzhik?.."

His last affection was the Caspian Pipeline Consortium to which he devoted 14 years of his life. He had a good many friends there due to his interpersonal skills. He treated with a special sympathy those like-minded people with whom he had worked side by side.

Vitaly often said that he liked the practices adopted by CPC with a primary focus on occupational health and safety compliance. He compared the local discipline with the naval one. The fact that no one was looking for someone to blame in case of equipment failures, but was getting to the bottom of issues appealed to him. He never let down the Company and his colleagues.



Mr. Vitaly Romanov with his trainees, Mr. Ivan Nesterov and Mr. Vitaly Gondarev

## People looked up to him

I HAD THE PLEASURE OF KNOWING AND WORKING WITH MY COLLEAGUE AND FRIEND VITALY ROMANOV FOR THE LAST 11 YEARS.

Vitaly was a very knowledgeable and insightful engineer, he thrived on getting to the bottom of complex issues, understanding them fully and was then able to advise his colleagues the best way for the issues to be resolved.

All Vitaly's colleagues looked up to him. He was of a good temper, a charming, approachable, trustworthy and sincere man.

I had the pleasure of working with Vitaly at site and attended many meetings with him both in Russia and the UK.

Vitaly is a great loss to our Company, his family and his friends. I will miss him very much. ■

*by Stewart Sharpe,  
CPC Maintenance Systems Manager*

## WORTHY NEW GENERATION OF SPECIALISTS

Mr. Vitaly Romanov looked for young professionals with a potential to self-education and independent thinking. Upon his recommendation, Mr. Vitaly Gondarev and Mr. Ivan Nesterov were employed at PS Kropotkinskaya. The first one is now in the position of Senior Engineer for Gas Turbines Operation and Maintenance, the latter one became Deputy Mechanical Supervisor for Gas Turbines. Being an elder mate, Mr. Vitaly Romanov spoke highly of

Mr. Andrey Ryadovoy employed as Engineer for Gas Turbines Operation and Maintenance of the Central Region.

One day Vitaly summarized his observations over the work of the young professionals saying, "The turbines are in safe hands!"

Vitaly himself attended many training courses, visited manufacturing plants for the turbines and compressors in Russia, Kazakhstan, the United Kingdom, and Scotland. Wherever he went, he tried to study the local places of interest.

One may recall such episode. After the meeting in Moscow, our team of close-knit turbine specialists went to a theatre to see "The Queen of Spades" with Vera Vasilieva in the lead. Everyone was delighted with it. However, on the way out Vitaly remarked sighingly, "If only Mr. Aleksandr Pushkin knew that with time, his "Queen of Spades" would be staged in such interpretation..."

Vitaly often recalled when he, being a right-flank man, was at a military parade staged on Red Square. This memory of him will always dwell with us – the Right-Flank Man. ■

*by Marat Ibragimov,  
Mechanical Supervisor, Operations  
and Maintenance Department*

# In the Tradition of Charity and Mutual Help

"RUS" SOCIAL AND REHABILITATION CENTER HAS BEEN WORKING IN ASTRAKHAN REGION SINCE 1995. SERGEY BEREZIN, THE HONORED DOCTOR OF RUSSIA, THE CENTER DIRECTOR AND FOUNDER, IS SURE THAT THE NAME CONVEYS THE VERY ESSENCE OF THIS HEALTH CARE INSTITUTION HEADED BY HIM, AND THAT IT REMINDS OF THE CHARITY AND MUTUAL HELP TRADITIONS SO COMMON FOR OUR COUNTRY SINCE ANCIENT TIMES.



Sergey Berezin

"We built the Center from scratch, quite literally. We had to reconstruct the ramshackle buildings completely, to connect district heating, water supply, and sewage lines," Sergey Berezin remembers.

The founders spared neither time nor expense to develop the social and rehabilitation institution. During its first years, "Rus" could accommodate 60 patients maximum, but today up to 215 persons can stay here simultaneously for rehabilitation. The Center has eight units including medical rehabilitation units for children and adults, where they can have physical recovery and social rehabilitation, remedial treatment, kinesiotherapy, and so on.

"Rus" Rehabilitation Center is the institution within the national social safety network, and it is under

the direct control of the Ministry for Social Development and Labor of Astrakhan Region. This institution provides free social and medical assistance to physically challenged people, indigent senior citizens, handicapped children, and children from a deprived background (those from multi-child or low-income families, orphans, etc.).

Close cooperation between the Center and the Caspian Pipeline Consortium began about 10 years ago. Since then, CPC purchased plenty of training devices, robots, and innovative equipment. In 2015 alone, the Consortium handed over to the Center the necessary rehabilitation, physiotherapy, and diagnostics equipment with the value of approximately 10.5 mln roubles.

"We would hardly be able to attain such equipment status without the Consortium help," Sergey Berezin says. "Thanks to the support from CPC, we can treat people with high effectiveness, high quality, and most importantly, achieve long-lasting results.

Over the years, equipment and training devices purchased with the Consortium charity funds for "Rus" Rehabilitation Center have literally put hundreds of patients, i.e. children and adults, back on their feet.

"According to our records, this walker helped 943 kids," Zulfia

Niurzhanova, Head of Kinesiotherapy Unit, tells us.

And now, five-year-old Artem is working hard on his motor skills with this very walker. The Center specialist, and the boy's mom, Olga, are both looking carefully after him.

"It is the second time that we are here for rehabilitation, and we are glad we've got the appointment here. The main thing is that we get the result. The experienced personnel find a personalized approach to every patient. They develop exercises specifically for us to do at home, and we do them earnestly," she points out.

On the nearby walking bars presented by the Consortium to the Center in 2016, patient Irina is practicing her vertical standing skills. The training device can be easily adjusted to height and width depending on individual features of a person. Seeing the girl confidently moving along the bars we can hardly believe she could not even raise from her wheelchair a short while ago.

In the next room, Alina is working on the Alter Step dynamic device, essentially the walking bars and the staircase in one. The patient learns poising and walking anew after a car accident.

"We visited many similar centers in Russia and we can say that ours,



The equipment donated by the Consortium expands the capabilities of Rus Centre





Armeo Robotic Complex



Five-year-old Artem will definitely regain the use of his legs!



Alina and Svetlana: recovery takes quite an effort

in Astrakhan, is the best equipped one. Thanks to the Caspian Pipeline Consortium!" – Svetlana, her mother, says. "We are progressing step by step. We have the incentive. Don't we, daughter?"

"We do!" Alina answers without stopping her exercise.

Among the range of rehabilitation tools of the Center, there is an unique innovative equipment as well. It has been purchased by CPC for "Rus", too. For example, here is the veloergometer that is not only suitable for workouts, but also allows making tests of cardiovascular system and displays results on the screen. While making his/her exercise, a patient can see if his/her limbs are working steadily. The effectiveness of this treatment is increased by the use

of mobile electro myostimulators that are also available in the "Rus" Center.

"Armeo", the robotic center purchased by CPC, is another piece of high-tech equipment. It seems to onlookers that a patient tired from training devices has sat down to play a computer game. But in reality, he/she works on restoring his/her hand motor skills, on correcting his/her motor coordination with the help of an active game therapy. The robot software provides the patient-specific feedback and records all peculiarities of human movements. When one tries again to repeat this or that manipulation, the mechanical arm facilitates the process repeating the movements of a human arm, which gives a good incentive and stimulates the rehabilitation potential. As

a result, even patients unable to make the simplest movements with an injured hand in the beginning of the robotic mechanotherapy course, can manage all assigned exercises successfully.

At the end of 2016, the Caspian Pipeline Consortium purchased a comfortable Ford Transit bus for the "Rus" Center. And this gift is very important, too. This is because the Center provides not only physical but also full-scale social rehabilitation for its patients. Transport is needed for visiting movie and concert halls, theaters, circus, which is especially important for people with restricted mobility that arrive to the rehabilitation center from remote districts of Astrakhan region. ■

by Pavel Kretov



# The Upmost Principle

THE YEAR OF 2017 IS DECLARED A YEAR OF ECOLOGY IN RUSSIA; IT IS A CALL FOR EVERY BUSINESS ENTITY TO COMPARE THEIR COURSE OF DIRECTION WITH THE MAIN COURSE OF THE GREAT COUNTRY: DO THE MAXIMUM FOR THE FUTURE GENERATIONS TO BE ABLE TO ENJOY THE BEAUTY OF THE NATURAL LANDSCAPES, DRINK PURE WATER, AND BREATHE FRESH AIR.

By the way, in CPC we are sure: each year of our activity should become a year of ecology. The Consortium has initially given a top priority to the factor of environment protection. The CPC principles specify that the investment decisions made by the Shareholders are not exclusively economical; they pay a significant attention to social reality and environmental safety considerations.

The Consortium cares for its goodwill and aims for maintaining high international standards of quality in all spheres of activity. An environmental approach is an everyday practice. CPC uses the sustainable technologies and is working on improving the methods of ensuring occupational safety at the facilities for oil transportation; its environment-oriented initiatives, i.e. stocking water bodies with fish, support to natural reserves, outreach activities among school children, etc., evoke a keen response from the population of the territories where the Consortium operates.

The CPC pipeline system is one of the most technologically-advanced and environmentally friendly: it is an international project that has accumulated the best world-class technologies of oil transportation.

The main oil pipeline is assembled from the pipes capable of providing a long-term and accident-free operation of the system. The current CPC Control and Monitoring System (SCADA) enables the specialists to monitor on-line the process of oil transportation and shipping, as well as the facilities conditions, thus anticipating any problems. A Surge



In the course of construction of the new facilities, CPC pays a lot of attention to the construction waste collection and disposal both by the contractors and the customer. The issues on implementation of the modern protection systems that reduce negative impact on the environment, i.e. Leak Detection System, industrial stormwater runoff treatment system, systems of energy consumption reduction (energy efficiency) are of the upmost priority.

Each employee personally contributes to the environmental protection; it is reflected in the strict compliance with the environmental safety requirements. We all seek to preserve and augment the natural heritage in order to hand it over to the next generation.

*by Sergei Dubograi, Electrical Engineer  
and Anton Kolesnikov, Instrumentation Engineer  
Western Region*

Relief System ensures surge relief at the oil pump stations.

In order to cross large water barriers, i.e. the Volga, Kuban and Ural rivers, HDD (horizontal directional drilling method) was used that enabled laying a pipe below the river

bottom and eliminating influence on the ecosystems of the rivers.

While choosing a place to locate the Marine Terminal by the Black Sea, the key aspects were those of marine navigation safety. CPC has used the most reliable and safest





tanker loading technology for the moment – by means of three Single Point Mooring units positioned more than 5 km offshore. It eliminates the risk of emergency even in the most adverse weather conditions.

The oil tanks at the Marine Terminal and the oil pump stations are equipped with floating roofs, which rise or fall as the oil level changes.

It eliminates oil vapour releases to the atmosphere. The tanks for storing oil have a high safety factor of process and seismic strength; their design service life is 40 years.

The effect of switching over from diesel generators to external power supply of the CPC facilities is the reduction by 50 % of hazardous substance emissions to the atmosphere.

At all Consortium facilities there is a strict control over the use of natural resources, waste collection and disposal. All process and domestic effluents are treated by the up-to-date treatment facilities.

It is but a small part of the process solutions and approaches that provide for a high level of industrial and environmental safety of the CPC activities. ■





# Under the Company's Protection

BY USING THE PRIVATE HEALTH INSURANCE POLICY PROVIDED BY THE COMPANY, WE FEEL PROTECTED. THE WORK BEHIND THIS PLEASANT FRINGE BENEFIT IS DESCRIBED BELOW BY THE OCCUPATIONAL MEDICINE MANAGER ALEXANDER AVDOKHIN.



**Alexander Avdokhin:**  
“People are the Company's key asset”

“Provision of the private health insurance policies is just a part of the scope of work of the occupational medicine officers group. The issues that we deal with may be divided into two categories. Partially, they are related to the occupational health and safety, partially – to the social policy of the company.

Any industrial company faces issues of the health of its employees, and the quality of their management influences the production in one way or another. During the transportation of oil, people work with materials and equipment, facilities of CPC are located at particular geographic and climatic zones. Altogether, it brings risks of injuries, occupational diseases, or complications of diseases that workers already had. Our task here is to assess those risks correctly; and we do that in accordance with the laws of Russia and Kazakhstan.”

## “Are these procedures different?..”

“There are differences. In Russia it is called “Special evaluation of labor conditions”, and in Kazakhstan – “Certification of industrial facilities according to the labor conditions”. However, the general approach is more or less the same for both countries, the conditions in which people work are the center of attention.

For example, a laboratory technician performs sampling and analysis, due to which he or she deals with crude oil and various agents. As a result, the air of a workplace contains substances that have maximum allowable concentration values, exceeding of which can be harmful for health. Any work bears its own risks, even office work: illumination level, parameters of microclimate such as humidity, temperature, velocity of air, etc. We control all of these parameters.”

## “How frequently do you evaluate safety of workplaces?”

“According to the law, every 5 years. Plus, a so-called sanitary

occupational monitoring that we carry out at different facilities from time to time. In this way, we have arranged inspection of laboratories recently.”

## “Who exactly performs this function?”

“Specialized contractors, one in Kazakhstan, and two in Russia, for which we manage contracts.

In Russia, in accordance with the results of the labor environment assessment, we issue a so-called “map”, its main indication is whether the labor conditions at a particular workplace are optimal, acceptable, or hazardous. According to law, people working in hazardous conditions shall be paid certain compensations; this can be the payments in addition to salary, extra vacations, shorter working schedules.”

## “Do we have “hazardous” positions here at CPC?”

“Several years ago, a whole range of occupations was falling under this category; but continuous improvement of labor conditions played its







part and now only two occupations are considered “hazardous”. I mean laboratory technicians and MOCC personnel at the Marine Terminal.

Since the introduction of new laboratories, the labor conditions of our laboratory employees are classified as 3.1 grade instead of the previous 3.2, i.e. they improved. But no matter how many exhaust hoods we install, some quantity of substances still mixes with the air. They are unidirectional substances and though concentration of each of them individually does not exceed the maximum allowable level, together we have some exceeding that is potentially harmful for the health of the employees.

As for the OCC operating personnel, the reason to consider this occupation hazardous is the intensity of labor. The volume of information an operator has to follow is quite big, but there is nothing one can

do, it is a distinctive feature of such occupation.

If at least minimal harmful factors are present, there are risks for health. Besides, the legislation also describes so-called “hazardous jobs” which include for example driving motor cars or maintenance of electrical installations. Thus, the employees at whose workplaces hazardous factors are present, or employees performing hazardous jobs, are subject to compulsory medical examinations. That is why all of our drivers, including drivers of loading trucks and those using company cars undergo compulsory medical examinations.

In Kazakhstan, the list of occupations subject to scheduled compulsory medical examinations by the state law is even longer. Both in the RF and in the RK, the state regulates those issues by defining schedules and scope of such examinations for representatives of one occupation or another and what specialists shall examine those people, what tests are to be performed. The law also sets forth the list of contraindications which prevent a person from performing specific jobs and prescribe transfer to a workplace with different labor conditions.”

*“Were there such cases at CPC?”*

“Fortunately, no occupational diseases were registered so far (touch wood) neither at CPC-R, nor at CPC-K. We have rather few pure

occupational hazards, since we are not a metallurgic plant, nor a coalmine. Even our operational personnel are “white collars” of a kind, who from time to time put on their helmets and leave the administrative facilities in order to check the equipment.

The main risks at CPC are related not to the production itself, but to the area where the facilities are located. The PSs are usually located far from the infrastructure, including the medical one. If in the city an ambulance can arrive in just a few minutes, the situation at the PSs, especially the rotational ones, is not that easy. That is why CPC facilities have operating medical stations where a qualified medical assistance can be provided, and there are ambulance cars ensuring the quickest and most comfortable possible transportation of patients to hospitals. There are about 10 cases a year within the entire CPC when we need to use ambulances to drive employees and contractors to a hospital.”

*“To the nearest one?”*

“If it is a CPC employee, he/she has a private insurance policy and the doors of the best hospitals of the region are opened for this person. That is why, if the condition allows that, we try to bring the patient to such a hospital. As for the contractors who might not have a private insurance policy, any local hospital can provide care to them with just a compulsory »







to insure relatives of CPC employees on favorable conditions.

We also have a program for assistance to employees in difficult life circumstances when people face severe diseases themselves or in relation to their close-ones, and the private insurance policy does not cover the treatment. In emergencies, and it is about 10–15 cases per year, employees ask the Company to help, and it does. In addition, there were situations when CPC provided significant amounts of money for these purposes.

health insurance policy. Although in reality, there could be different situations and sometimes we need to take “preventive actions” towards state in-patient hospitals to avoid rejections of medical aid.”

*“While at different facilities, employees of the press-office visited medical stations once and again and talked to the medical personnel. Everywhere they have good equipment and qualified specialists!”*

“Medical personnel are provided by our contractors chosen by bidding. The rotational PSs have doctors at the medical stations; the ones that work in shifts have paramedics. All equipment for medical stations is purchased by CPC, it is quite a wide range. And the employees are chosen on the basis of their ability to work with this equipment. We prefer medical staff members that used to work on ambulances or at

the intensive care units of in-patient hospitals.”

*“And what can you say about the most distant PS Tengiz?”*

“On Tengiz, CPC has a mutual assistance agreement with Tengizchevroil, in the framework of which the latter, among other things, assists us in case of medical emergencies. If necessary, we use the medical station of Tengizchevroil and their medical transport. Nevertheless, we plan to acquire our own ambulance car for PS Tengiz.”

*“You have mentioned the issue of occupational medicine relevant to the occupational health and safety. Please tell us about occupational medicine as a part of the fringe benefit package that CPC provides to its employees.”*

“First of all, it is the private health insurance that includes a possibility

I would make an example of a case when a child of one of the CPC-K employees was diagnosed with the Wilson disease, a severe liver damage that leads to hepatic insufficiency. The child needed liver transplantation, which could not have been done in Kazakhstan. Finally, CPC undertook to pay for the surgery in Moscow, which cost around 100 thousand dollars.

A child of CPC-R employee was diagnosed with lymphoid cancer, the cost of treatment was also significant. CPC covered all the expenses and the boy was saved.”

*“In these economically difficult times, it is a great luck to work at a company that takes care of you and your dearest and nearest ones!”*

“The Consortium insures its employees against diseases and incidents for the amount of two annual salaries.







Unfortunately, we are all mortal... It is my 10th year in CPC, about 10 employees passed away during this time. And although neither of these cases was at work, their heirs received significant payments due to this program. The program also covers for disabilities and injuries.

It is quite a serious support. One should understand that not all of the employers insure lives of their employees (as well as not all of them provide private health insurances). I have many colleagues working in different companies, and I know the contents of the private health insurance programs. For example, our health insurance program covers oncology cases of 1 and 2 degree, not everyone has that. The CPC spends quite a lot of money on these programs and each year we try to add something.

Just to take any program in the regions, we have no limitations on clinics in any of them, all the best clinics of Astrakhan, Krasnodar, etc.. are included. In Moscow, where the cost of medical services has almost no top limit, we are guided by the principle that the policy shall cover clinics of the quality not lower than the top part of the middle class. Thus, our employees can go to any clinics included in the program. By the way, a colleague from the Expansion Project shifted to work at a large petrochemical company was then surprised that the employees there might have chosen only one clinic to visit from a list. Here,

you may change clinics every day! At the same time, we constantly monitor the market for new good clinics and include them into our program."

*"Do you consider wishes of the employees?"*

"We often receive applications for including this or that clinic into the insurance policy and we try to meet the requests. But one thing is to include all requirements into a bidding specification during a tender, and another thing is to do so when a contract with an insurance company has already been signed. Nevertheless, often we can manage to reach some agreement with the insurance provider in favor of CPC employees."

*"Do the employees have a possibility to insure their kin that live outside of the regions with the CPC presence?"*

"There are employees whose parents live in Belgorod, Omsk, Samara and other cities, and they would like to receive medical care there. None of the employees' applications on this topic is ignored, and in most cases, we manage to help these people."

*"This is what is called «individual approach».*

"Exactly. I think that almost no company can be compared to CPC in this matter. In the other companies, it is the management who decide on who is going to be granted

an opportunity to receive medical care at the company's expense, and who is not. In CPC, any employee can come to us with a problem and it will be solved.

Of course, people always want more. Clearly, not all requests can be satisfied, but I hope that the medical care for CPC employees will maintain its high level."

*"Alexander, please tell us a little about yourself."*

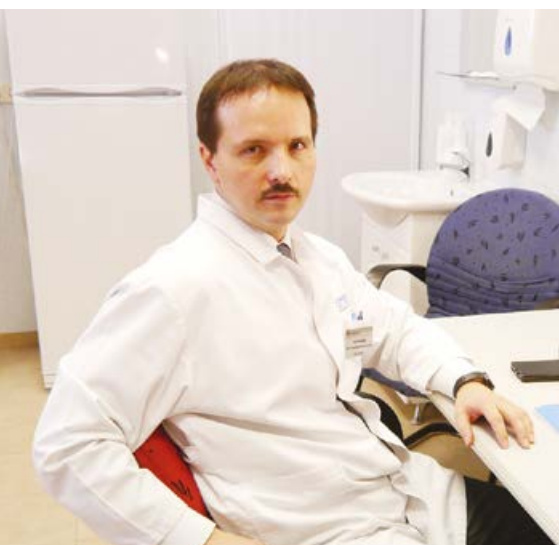
"In 1997, I graduated from the Moscow Medical Academy, then for several years, I was working in the field of health insurance and later became a health and safety manager at the RUSAL company. It was a plenty of experience: 110 thousand employees in different countries and even in different continents. The bigger the company is, the more often emergencies happen that require quick actions, including the medical ones. But if we compare it to CPC, I would say the following: working in a big company gives you a drive, but often it does not leave you much time to take care of more strategic matters.

In 2007, I joined CPC, where I could have both drive and strategy; and the first priority was to take care of people. It is especially pleasant for a person responsible for medical support of the staff." ■

*Recorded by Darya Margelova  
and Ekaterina Suvorova*

# It is Hot...

CPC PRODUCTION FACILITIES ARE SITUATED IN SOUTH REGIONS. THAT IS WHY SUMMER MEANS A REAL HEAT TEST FOR MOST EMPLOYEES OF THE COMPANY. HOW CAN YOU REMAIN HEALTHY, MAINTAIN WELL-BEING AND HIGH CAPACITY TO WORK IN THE FACE OF FORTHCOMING ARDENT HEAT?



**Konstantin Kartashov,**  
«The best protection for a person  
is their knowledge and skills.»

## KEEP BALANCE

Our body is able to live only in a limited range of environmental conditions which allow tissue, organs, and systems maintaining homeostasis (physiologic equilibrium).

To maintain life activities in a dynamic state, every minute the body adjusts a heat balance between biologically produced heat (normal body temperature equals to 36.6 °C) and environment by means of heat emission. In a state of tranquillity the body emits about 50 % of the produced heat.

If heat exchange with the environment is performed without effort from the thermal control system, a person feels comfortable, and performance efficiency is at a high level.

## SUN, AIR AND...

When the ambient temperature rises, the body increases the heat emission in order to maintain heat balance that leads to overexertion of the thermal control system. Simultaneous exposure makes the things worse for a person – the ultraviolet spectrum of the sun causing skin burns and eye damage.

High humidity, air flow, dust level, including various plant pollens, also worsen the negative impact of the hot weather. The additional risks are intestinal infectious diseases attributed to insects and rodents, snakebites, contact with poisonous plants, sudden temperature drops due to use of the air conditioners, skin irritation due to increased sweating, and aggravation of chronic diseases.

When it is hot, one may get a heat burn when contacting heated surfaces. For instance, when the air temperature is 25 °C, the metal can be heated up to 50–60 °C, and at air temperature of 50 °C – up to 70–90 °C when exposed to the sun.

## HARMFUL HYPERTHERMIA

When the skin and environment temperatures are equalized, the heat ceases emitting from the body surface due to convection and thermal radiation. At higher temperature the body cooling is caused only by sweat loss. The termination of this process may cause heat collapse even at 33–34° C. It leads to excitation of all systems,

abrupt acceleration of breathing (thermal dyspnoea) and heart-beat, increase in arterial pressure, temperature rise to 41–43 °C, hemoconcentration, blood-clotting disorder, erythrocytosis, and intoxication. A person may even have hallucinations.

If the air temperature is above 50 °C (or 40° C at humidity over 80 %), a harmful hyperthermia is advancing which leads to a heat stroke in case of exposure for more than one hour. Overexertion of the thermal control mechanisms leads to their exhaustion and is accompanied by suppression of all body systems. It may result in collapsing, heart pump decrease, high oxygen deficiency, and respiratory arrest.

To prevent hyperthermia and heat stroke, it is necessary to behave in a conscious and safe way: stay in shadow when outside, have headwear and air-ventilated clothing on, take rest in a cool and well-ventilated place, when possible, avoid staying close to surfaces that reflect sunlight and near highly heated machines. A bottle with cold water applied to a breastbone for 10–15 minutes will help cool down an overheated body. It is advisable to drink slightly salted water during the shift.

## OVER-INSOLATION

If solar ultraviolet application is correct, it has a general stimulating effect: body resistance is increased, physical and mental performance improved, vitamin D<sub>3</sub> built up.



In case of over-insolation one may get a photochemical skin burn followed by the body temperature rise, headache, general uneasiness. During a direct or indirect sunlight exposure or work with an artificial ultraviolet source (electric welding, bactericidal lamps), eye damage may occur: eye redness, burning and gritty sensation, lacrimation and light sensitivity. I suppose it is unnecessary to remind about a proper eye protection in such cases. In case of a long-term overexposure to ultraviolet radiation, skin cancer may develop.

**Photosensitizers may amplify the UV-radiation effect. They include some medications, perfume, lotions, lipstick, creams, and other cosmetic products.**

Antibiotics, antifungal drugs, diuretics, neuroleptics, antidepressants, sleeping pills, heart disease drugs are those medications that do not particularly get along with the sun very well. Even harmless vitamins B<sub>2</sub> and B<sub>6</sub> may be a cause for the sun burns. Different herbs used in herbal therapy and dietary supplements (hypericum, clover, melilot, angelica, agrimony, caltrop) may also cause adverse skin reactions to the sun beams.

Burns from cosmetics use are, of course, less common, however, if perfume or cologne contain bergamot, lime, lemon, grapefruit, orange oils, patchouli, hypericum, dill, musk, amber, one may have several dark spots on the skin, sometimes they may become even black. Thus, minimum cosmetics in a heat wave!

Hypersensitivity to ultraviolet radiation is caused by petrochemical products, bitumen, asphalt, tar, chrome, lead, manganese and ferrum salts, mercury compounds, and commercial colorants.

It should be remembered that parsnip, parsley, celery juices, as well as freshly-pressed citrus juices may increase the skin sensitivity to

ultraviolet radiation both in case of skin contact and if drunk. Fig, rose-leaf preserves, spicy food may sometimes produce the same effect.

The burns often appear in case of skin contact with meadow grass – the so-called rhus dermatitis. Nettle, orach, fraxinella, buttercup family, fig tree leaves and even sedge may cause the sun burns. Cow parsnip should be noted in particular – contact with this plant leads to the most severe burns!

### ZERO-LOSS

Dehydration may be a major threat during the hot weather. By sweating we lose water and salts, electrolytes, proteins, amino acids, and hormones dissolved in it. Intensive perspiration may cause local irritation and secondary bacterial and fungal infections.

There may be up to 10–14 litres of sweat exuding through skin depending on physical exertion during hot weather. In order to maintain cell activity, water and salts should be restored.

In the hot weather, the effect of water deprivation may accumulate for a few days when water and salts gradually disappear. For this reason a person may suddenly faint one day, and a heat or sun stroke may occur. Moreover, cardiac diseases, diseases of blood vessels, kidneys and brain may progress as a result of intense blood thickening and electrolyte loss.

**To prevent dehydration, it is better to use special salt solutions, such as Regidron, Trigidron, Gastrolite, Gidrovit. In this case, not all sorts of mineral water may be useful, as, for instance, water containing magnesium may cause even greater dehydration due to diuretic effect.**

### WITH AND WITHOUT AIR CONDITIONERS

Improper air conditioning is also fraught with problems – acute

respiratory diseases, bronchitis, pneumonia, cystitis, nephritis, arthritis, myositis... It is also known that air' parameters affect labour productivity. For instance, within the temperature range from +24 to 30 °C, the body temperature rise by 1° C reduces productivity by approximately 1 %.

Comfort conditions for life activity indoors are possible at a temperature of 18–20 °C and relative humidity of 40–60 %.

If the air is dry, the high temperature has a less negative effect on a human comfort. However, if the relative humidity is reduced down to 30 % and below, the skin and mucosa begin to dry out, one can feel discomfort in throat and nose, and lips may begin to chap.

The dry air may still be comfortable and helpful for those people that suffer kidney diseases because in hot and dry conditions, stress on kidneys is reduced as the skin takes on the main emission function. However, the strong heat, i.e. 40–45 °C, is an intense impact on other systems and organs, especially heart and vessels.

With temperature rise, oxygen and other gases content in the air is reduced. The oxygen content in summer is less than in winter for about 5 %. It is worth noting that during different seasons, exactly the same effects of the environment may be felt in a different way by people. For instance, one and the same temperature and humidity may be felt as warmth in autumn, but as cold in spring.

In any case, understanding the effects of high temperatures onto the body, each employee is able to create the most comfortable conditions for their efficient work. ■

*Konstantin Kartashov,  
Primary Care Physician of MEDIS, LLC*

# Save Our Common Home

STARTING FROM 1972, THE WORLD ENVIRONMENT DAY HAS BEEN CELEBRATED EVERY YEAR ON THE 5TH OF JUNE. IN THIS CONTEXT, A GOOD TRADITION HAS ARISEN AT THE CPC-K EXPANSION PROJECT SEVERAL YEARS BACK.



There is an environmental campaign that traditionally starts in the early June at the facilities under the Expansion Project in Kazakhstan – a month campaign devoted to the environment protection under The Planet Earth is Our Common Home slogan.

Under this campaign, the environmental specialists from the Expansion Project Team give presentations to IPMT KPV (Integrated Project Management Team Kazakhstan Pipeline Ventures) Project Management Contractor, contractors: JSC OGCC KazStroyService (Joint-Stock Company Oil and Gas Construction

Company KazStroyService) and LLP PSE (Limited Liability Partnership Promstroy-Energo). Our target is to enlighten the contractors' employees about environment-oriented issues and draw attention of all Project parties to a necessity of environment protection and enhancement during construction and installation activities at the CPC-K facilities. We have strained for every party of the Project to make conscious steps supporting the environment protection measures initiated at the construction sites.

This campaign is implemented in accordance with the developed program which includes activities,

following the results of which we select the most active participants out of the employees involved in the Project and award them with recognitions. Over the Expansion Project implementation period, there have been already hundreds of such employees.

The Planet Earth is Our Common Home emblem dedicated for this environmental campaign has been worked out and distributed among all participants as a sticker on the hard hat.

JSC OGCC KazStroyService, involved in the construction and







refurbishment of the oil pump stations, has defined a slogan for each of them. For example, Save for Future Generations slogan for A-PS-3A; Our Earth is Our Future. Save it! slogan for A-PS-4; Development Without Destruction slogan for PS Atyrau; In One Breath with Nature slogan for PS Tengiz; The Planet Earth is Our Common Home slogan for the Expansion Project office employees in Atyrau. The employees' training is organized in accordance with these slogans. KSS involves TEN and Aden Services service companies rendering life support services for rotation camps at A-PS-3A and A-PS-4, and Interteach medical service employees.

Volunteer clean-ups are carried out at all construction facilities in the course of the month campaign – they clean up the areas around the construction facilities, production shops and camps; they plant flowers.

Following the results of the Month Campaign for Environment Protection at the Project, the most active participants are defined among the personnel of the contractors and sub-contractors. The winners are presented with letters of appreciation and incentive gifts.

Ecology is our common business. We can save our environment and our Earth only all together.

We need to think about future: our children and grand children. A true desire of every person is to preserve those living things that we have today undisturbed as much as possible for our future generations. We need to remember that even a minor act aimed at environment protection is a major step forward. ■

*by Aizharyk Kenzhalyeva,  
Environmental Specialist of  
CPC-K Expansion Project*





# A Day in the Life of Office

THIS ARTICLE REFLECTS ON HOW TO BUILD BUSINESS AND PERSONAL RELATIONSHIP BETWEEN EMPLOYEES INVOLVED IN THE SAME WORK PROCESS TO IMPROVE TEAM ENVIRONMENT AND WORK EFFICIENCY IN GENERAL.



*We spend most of our lives at work with colleagues, and friendly atmosphere in the team is of paramount importance!*

## "I'M WRITING YOU..."

E-mail is a key means of communication between specialists. It is no secret that quite often we receive electronic letters with no indicated subject. It complicates a lot the work of people who receive quite a number of messages from their colleagues during a day. Let us start with ourselves and always indicate the subject of a letter.

"Privet, Bonjour, Hello!", sang the Bre-men Town Musicians. When you start an electronic letter, do not forget to greet a person and address him/her by name (or by name and patronymic).

Try to communicate the essence of an issue in the beginning of the letter and describe details in the rest of the text. Be laconic, precise and literate. Read your letters before you send

them as thoughts may run faster than your fingers on a keypad and a text can turn out incoherent.

Make it a rule to answer any letter you receive! It may be of great importance to a sender. Even if you cannot provide the required information at once, write a confirmation of receipt of a message. Good manners require any letter be answered within 12 hours upon its receipt.

Keep all participants of your project informed. Copy them in when exchanging details of the project via e-mail.

You are going on vacation! Give your colleagues a reason to be happy for you. Give a week's notice of it to the employees of your department. And, indeed, do not forget to leave a message notifying that you are out of office and a contact number for resolving urgent issues.

If you are aware that you are leaving for more than one day, leave a message notifying that you are out of office as well.

Always sign your letters in strict accordance with the existing CPC corporate signature form:

Sincerely yours, .....

Name .....

Title .....

Caspian Pipeline Consortium-R, JSC /

Caspian Pipeline Consortium-K, JSC

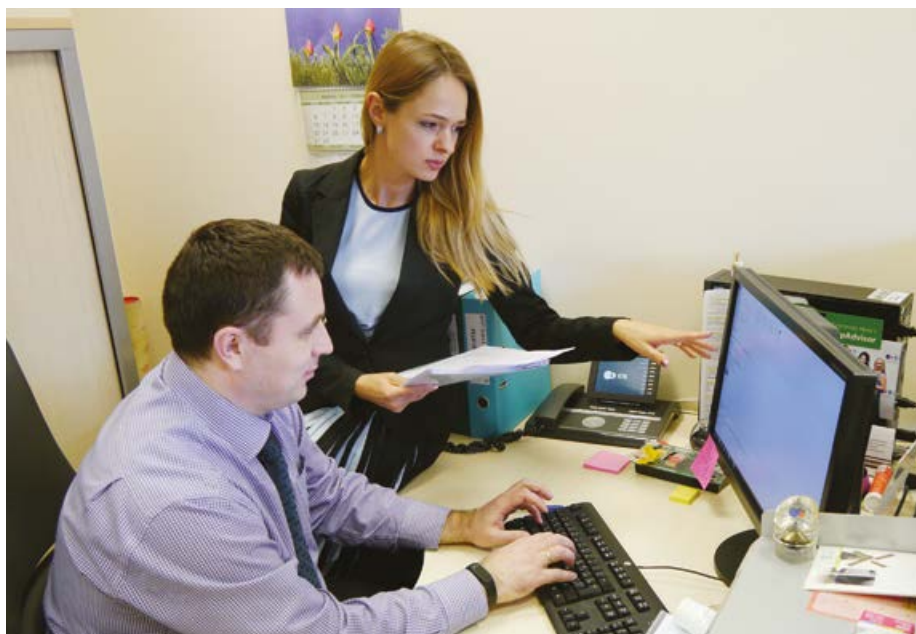
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Communication, communication and more communication!

### CRITICISM = SUGGESTION

Openness, positive thinking and respect towards the colleagues are our companions at work. If we criticize, we have to suggest something in return. It is so great to share your expertise with the colleagues involved! We all have to accomplish our own tasks, but we act in the best interests of the Consortium.

### "SMILE AND THE WORLD SMILES WITH YOU"

We are so different, yet we are all under CPC's wing. Each of us has unique nature and temper; we all have different interests and vision of life. And sometimes we can be in low spirits. But is there any use in showing our ill humour to people around us and have it passed over from one person to another?

Positive thinking is the key to success! While walking along the corridor greet even those employees you are not personally acquainted with. It is absolutely inappropriate not to answer somebody's greeting! And how will we treat those who ignore our wishing of good health and day? Let's smile to them, and some day they will smile back to us. ■

*by Anna Volina*

### "I'VE JUST CALLED TO SAY..."

"Hello!" I always wonder what comes next. There are some rules, sticking to which will not only make our communication more informative but also more pleasant in terms of personal conversation.

Even though in the majority of cases every employee has its desk phone and your name appears on its display, do not forget to greet the person and introduce yourself. It will not go amiss.

Is no one answering the phone? Do not be too persistent. 3-4 dial tones

will be enough to understand that an employee is not at his/her workplace. By waiting for a longer period you distract other employees.

Telephones are equipped with a wonderful "missed call" button. Check it when you get back to your workplace and always call back. What if your superior wanted to contact you?

Personal calls must not distract your colleagues from work. Try to make them brief and out of the office.

Make sure that you can be reached by your mobile phone during work hours.



# Pagodas in the Steppe

TRIPS TO THE CPC FACILITIES LOCATED AT THE ENDLESS STEPPE OF KALMYKIA ALLOWED ME TO WITNESS THE ORIGINAL CULTURE OF THE STEPPE PEOPLE BASED ON THE CANONS OF BUDDHISM.

## IN THE SILENCE

While visiting the villages, where thanks to the Consortium one can find kindergartens, schools, and sports grounds nowadays, I couldn't help taking notice of the pagodas giving a distinctive look to the local landscapes. I always wished to get a better look at a structure and find out its purpose. But usually there was no time for that in my tight business trip schedule.

Viktor Sandzhiev, the head of the Iki-Burul Administration, having found out about the wish of the CPC representatives to familiarize themselves with the main religious structure of the region, the stupa, kindly arranged a meeting with Padma Sherab, the local Khurul's abbot, and personally accompanied us to the villagers' place of worship.

"You see, our life here is quiet, unlike in Elista, and for sure unlike in Moscow," reasoned Mr. Sandzhiev on our way. "Look at us, we walk calmly, no rush, and in the capital everybody is running, running somewhere... We are used to the quietness, wide spaces, spicy smells of the steppe..."

The silence over the steppe village illustrated those words very well; only sometimes, it was broken by bleating of sheep walking freely on the side of the road. My eye was drawn to an idyllic picture: a sheep feeding a newborn lamb that had difficulty standing on its long white legs. Yes, one cannot see this in the city...

## FOLLOWING ANCIENT CANONS

Padma Sherab greeted us cordially near the stupa. According to the Buddhist tradition, he put white thin-silk scarves over our shoulders. This scarf is called "khadak", it symbolizes hospitality, unselfishness and clear intentions of the one who gives it to you.

"In the East, there are many peoples whose confession is Buddhism, but in the European part, it is us, the Kalmyks, that are the only ones professing it," commented Viktor Sandzhiev. "I reckon that it would be only appropriate to show our religion in your magazine, apart from the stories of the positive impact of the CPC onto the Iki-Burul Region's development."

"Our stupa is the tallest in Kalmykia and one of the biggest in Russia. It was built in compliance with all ancient canons," tells Padma Sherab, with whom we are walking around this grand but yet unclear to us structure. "Basically, a stupa is a reliquary for storage of sacred texts and a range of relics. It contains two pieces of the relics of Buddha Shakyamuni given to us by the Japanese Buddhists, substances of Buddha Makhapashyapa and Pagba-Lama,

the main keeper of the Buddha's teachings in Tibet, China and Mongolia, and the founder of the Mongolian alphabet. This is our history, for we consider ourselves a Mongolian people."

"Part of the priceless sacred substances buried in the stupa were given to the Iki-Burul people by the lama Chartal Rinpoche who achieved nirvana in 2015 at the age of 104 years," Padma Sherab goes on. "The famous and respected teacher Chartal Rinpoche was a strict vegetarian and gave people an example of true love to all living beings. He was spending all financial offerings on buying out living beings destined to be butchered and eaten, and releasing them. This practice had impressive extent. So, for example, in 2007, the Rinpoche family bought out 88 cisterns with live fish in Calcutta and released it into the waters."

According to Padma Sherab, the stupa contains 108 volumes of Kangyur Tibetan Buddhist canon and about 200 volumes of other ancient texts. Earth from 24 sacred places where great Buddhist saints were meditating was brought here, that is why for the representatives of this confession, a visit to the stupa in Iki-Burul can somehow replace a pilgrimage to India, Nepal or Tibet...

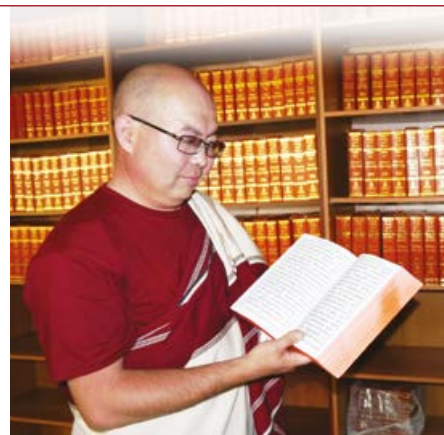
We study the design of the stupa, which symbolizes spiritual rising of a person and is represented by a complex of nine structures. It reflects all elements: earth, air, fire, water,







Group shot – Padma Sherab, Lama Dava, Viktor Sanjiev, and Ulyumji Chidzhiev



Reading *The Ganjour* is like a conversation with the Buddha himself

aethyr. The numeric symbolism, combinations of shapes, proportions and various colors here help encrypt the laws of the world order.

“Each part of the complex has its own history. The central part of the stupa was built 12 years ago, inauguration of the other eight elements was scheduled for the 70th anniversary of the victory in the Great Patriotic War,” tells Padma Sherab. “For all participants of the ceremony, this day became a day of victory of the spirit over ignorance, over our obscurity.”

The construction of the complex was funded by public, many people were involved in its creation – those are the people of Iki-Burul themselves and their neighbors from the Achinery area, Buddhists of Murmansk and the Russian Far East, Japanese monks... These diverse people were united by the intention to build this ensemble of spirit. For example, a Korean monk Bank Yuk who believes that in his past life he was from Iki-Burul came here often and helped to bring this dream to life. The construction was also sponsored by the RF State Duma deputy Gennady Kulik who invested in the foundation and actually initiated the construction. The local authorities also did not stand back, they helped with machinery, carried out a great part of landscaping.

The ensemble which was literally created all together, was called the “Peace Park” (“Park Mira”). There is a stela where the participants buried their wishes for this place to

become a blessing for this earth and for it to serve peace, prosperity and overall happiness.

Indeed, ideas and good will of people work wonders! They have noticed in the region that since the stupa was built here, many things have started to change for the better. Not only the general mood of the public became friendlier and gentler, but even the climate improved: now it rains here more often, the region became greener.

### TIMELESS

From the Peace Park, we go to the local khurul, a small Buddhist temple which was opened at the end of the 90s of the previous century in the building of the former village council. At the door, we were met by the lama Dava, a young monk from Nepal who performs daily services here. By the way, lama Dava left sunny Nepal forever in order to come here. He has been living in Iki-Burul for five years already and is about to get the Russian passport.

Breathing in the fragrances of incenses in the internal premises of the khurul, one involuntary feels piety and inner silence. It is as if time stopped here...

The central part of the temple is occupied by a 200-year-old golden Buddha statue. There are many various relics partially donated to the temple by the locals.

The local khurul is also a kind of an educational center. Padma Sherab

shows us the bookshelves with a sweeping gesture:

“Last year, our teachers from America donated to the khurul a collection of Kangyur, i.e., the word of Buddha with comments. Those are beautifully published 300 volumes in the Tibetan language, which include knowledge of theology, philosophy, history, logic, mathematics, medicine, astronomy, and linguistics. It gives recommendations on how to perfect and understand oneself. It is considered that reading of Kangyur is equal to talking to Buddha.”

Padma Sherab is a great narrator, time flies fast with him.

### THAT EXACT LINK

I repeatedly visited Kalmykia previously, gathering information about the Consortium’s charity in the regions of its operations for the corporate magazine, talking to administrative officers and simple villagers. But some link was missing in achieving greater understanding of the people that I met. And today I have made another, though small, step towards comprehending the inner philosophy of the steppe inhabitants, which is partially reflected in the following words of Buddha:

*“Better than a thousand useless words is one useful word, hearing which one attains Peace. Better than a thousand useless verses is one useful verse, which shows you Beauty. Better than a thousand useless songs is one useful song, which gives you Joy.” ■*

by Ekaterina Suvorova

# Being Able To «Switch»

SO MANY INTERESTING PEOPLE WORK AROUND US! WE DO NOT KNOW MUCH ABOUT MOST OF THEM, AND SOMETIMES, THE COLLEAGUES THAT YOU HAVE KNOWN FOR A WHILE REVEAL THEIR MOST UNUSUAL TRAITS.



My revelation was an assistant in a financial group Irina Shamba. The diversity of the hobbies and interests that fill up her life outside work is staggering! Let me tell you about just two of the most opposite hobbies of Irina – choir singing at a catholic cathedral and working out at a boxing ring.

## UNDER THE DOME OF THE CATHEDRAL

Our protagonist was drawn to the Cathedral of Saint Louis of France, one of the three operating catholic cathedrals in Moscow, by her interest in the Italian language and love for singing.

“Nothing religious!” she explains. “I was interested in Italian since going to the musical school. I enjoyed singing in this beautiful and musical language. Its sound and temperament appeal to me; I understood that clearly having visited Italy. I wanted to master the language to perfection, so for a couple of years I was taking lessons with a teacher

who once invited me to the choir of the Italian church. And it has already been almost two years that I rehearse with them, we take part at Sunday, Easter and Christmas masses. Part-singing under the high dome of the cathedral is really beautiful! Even my colleagues came to listen.”

It is not that easy to dedicate one's weekends to rehearsals and masses at the cathedral after a busy working week. The more so, because it is a hobby for Irina and other members of the choir, they do not get paid for their devotion.

## ITALIANS IN MOSCOW

The Cathedral of Saint Louis of France is one of the places where the Italians who live in Moscow together with all their families gather not only for the sake of Catholic masses, but to socialize as well. It is like a small sunny Italian island amidst the Russian capital.

“Italians are warm, kind-hearted people, they really appreciate that we sing for them at the cathedral, being of a different faith ourselves. There is even a so-to-say fan club that has formed around us; some come to the cathedral on purpose to listen to our performance of Italian and Gregorian pieces,” Irina smiles.

The churchgoers have a tradition: after every Sunday mass, they gather at the library, share homemade snacks, listen to padre Giampiero talks, discuss various topics.

“Sometimes we also attend these gatherings; for me personally, it is first of all an opportunity to talk to the native speakers,” Irina shares with me and goes on: “Once a mass was visited by the performers of La Scala who were in Moscow on tour. They started to sing along with us. It was so nice to hear their wonderfully trained voices! That was when I wished to achieve more at the singing trade and started to take lessons



Church of St. Louis of France – a meeting point of choice for Italian expats in Moscow



with an opera singer. By the way, first several classes were given to me by my colleagues as a birthday present, and I'm really grateful for that! The result was prompt – I was transferred from the position of the second soprano at the choir to the first one."

### FROM A CRISTAL CLEAR SOURCE\*

"What does the singing give you?" I ask Irina.

"If you breathe right, singing can cure," she replies. "For me singing is a great anti-stress therapy and a possibility to realize my potential and grow spiritually."

This passion for music that accompanies Irina all her life has family roots. Her mother was teaching at a musical college, her brother plays instruments and composes, and her mother's brother (uncle) is a quite famous composer in Abkhazia.

Depending on her mood, Irina equally enjoys listening to blues, rock, jazz, and pop music. But it is opera that became a goal for our protagonist on her way to self-perfection: She dreams to someday perform arias from Puccini and Bizet. And it will definitely happen for Irina is persistent and determined in everything she does.

### WINNING AGAINST YOURSELF

Having her mind set on victory, above all – victory over herself – helps her in sports as well, which Irina took on due to a medical condition. She tried herself in different kinds of sports, including those based on methods of V. Dikul and D. Pilates with a personal trainer. And now she is quite able to endure exhausting two-hour wrestling practices based on the program of Drugoi Boi ("Different Fight") club.

"It's a special program developed by professionals for young women;



*Choir service in a Catholic church is both a service to art and a devotion*

it is aimed at an effective response to aggression in the streets, i.e. it's an active attacking position," Irina clarifies. "In the past, I have experienced an unpleasant episode in the street and it was then that I realized how important it was to stand up for yourself at any situation. By mastering the basics of the club's method and having become stronger physically, I feel more confident and safe."

"What does Drugoi Boi mean?"

"Us women, we are naturally weaker than men are, and far from always there will be someone around to protect us in the hour of need. The authors and teachers of Drugoi Boi method became such honorable protectors by undertaking the mission to defend each of us "remotely". They give us necessary self-defense skills at the practices, teach us to attack, and help get in good shape."

"And how do your close-ones take your interest in martial arts?"

"Initially, I did not tell my mom that I joined Drugoi Boi club. Sure, they were surprised at home when they found out about that, and it took them some time to accept my decision," Irina confessed. "The understanding came when they saw changes in me: I became healthier and more confident, more positive,

and live. Our trainers present this martial art in a wise and philosophical manner."

"In life, one shall be able to find balance between hard work and self-improvement," Irina believes. "Otherwise, the energy depletes and it becomes impossible to achieve good results at work. I learned that from my foreign colleagues: after 6–7 p.m. to switch to something productive in order to recover both spiritually and physically."

### WHILE THE ISSUE WAS IN PRODUCTION

When this article was ready to be printed, Irina informed me that she is transferring to another company. Well, this is a new milestone and a new perspective for our motivated protagonist!

"I would like to say many thanks to all of my colleagues who worked with me at the Finance Department and Financial Group of the CPC-R Expansion Project. Working alongside them gave me a possibility to develop both professionally and creatively. The CPC managers always support and encourage creative development of employees, and it yields positive results at work," Irina summarized. ■

*by Ekaterina Suvorova*

\* Reference to the lyrics of a famous Russian song

# The Passing Present

IN OUR AGE OF RAPIDLY DEVELOPING TECHNOLOGY AND GLOBALIZATION, INDIGENOUS CRAFTS AND TRADES ARE RECEDING INTO THE PAST, PEOPLE'S TRADITIONS ARE GETTING LOST. THEREFORE, IT'S SO IMPORTANT TO STOP THE TIME, EVEN FOR A MOMENT, AND IMPRESS IN OUR MEMORY THE PASSING PRESENT BEFORE IT VANISHES ENTIRELY...



## WE ARE STARTING A MARATHON!

There are many locations in Russia and around the world whose history deserves our attention. CPC Panorama is starting a marathon called "The Passing Present" and invites its readers to send in their materials on the vanishing traditions and crafts of their region, country, and other locations they have been to.

## MSTYORA

My family, just as most of you, loves travelling. Once a year we try to discover for ourselves and our children new destinations that we have not explored so far. Perhaps, one of the most popular and yet, as it has

turned out, underexplored routes is the Russian Golden Ring. Now, Mstyora ...

Mstyora is a small town or, more precisely, an urban-type settlement lost in the Vladimir Region and regretfully not included in the Golden Ring route. Despite its tiny size and a pretty untidy look, the town has a great history linked to original Russian crafts. Our family found itself there just by chance. On strong advice from a priest from Vladimir, we turned from the planned route, and never regretted it.

## AWAY FROM CIVILIZATION

Since olden times, Mstyora has been famous for its icon painters,

embroiderers, and artists specialized in painting on small boxes and wooden lacquer articles. It's rather hard to reach by oneself. The nearest railway station is located about 15 km away from the town; probably there are buses, but their timetables are only known to their drivers. However, it is its remoteness from civilization that creates that deep, authentic and clear impression of the town and its residents which lasts a lifetime.

In Mstyora (on a tip from that same priest) we met with the director of the art museum, Valentina Pozdnyakova, who personally conducted an excursion for us. Founded in 1919, the museum features about three thousand unique exhibits highlighting Russian artistic culture of the 18th–21st centuries: icons, lacquer miniatures, canvases embroidered in white satin stitch and the Vladimir stitch, and paintings by local artists.

Valentina Pozdnyakova told us that the method of embroidering elegant designs known as "Mstyora embroidery" had appeared in the Vladimir Region more than two hundred years ago thanks to nuns of the Nunnery of St. John the Merciful in Mstyora. By the end of the 19th century, Mstyora became famous for white satin stitch embroidery. There were rare families where there was no embroiderer knowing complex techniques. And at the beginning of the last century, tablecloths, napkins, spreads, and shirts started to be exported.



*Lacquered miniatures in Mstyora style*



## BEMEDALLED

The hostess of the museum told us the story of an embroiderer that had happened in the Soviet times. The woman was urgently called to the district office of the Communist Party. She walked 25 km on foot (in the springtime the roads were washed out and getting there by transport was impossible). Not knowing the reason for the urgent call, the woman was very worried; many thoughts flew through her mind as calls to that place were never accidental. And the visit indeed turned out to be special – the embroider was awarded with an order. The way back was easy – the woman was literally flying back home!

In the Soviet times, craftswomen embroidered pieces depicting nature, Komsomol construction sites, folk festival scenes; there even exists an embroidered portrait of Stalin. And the embroidered panel called “Metro” by Tatiana Dmitrieva-Shulpina was specially made for the 1937 World Exhibition in Paris.

These days the center of traditional Russian embroidery is dying: the famous stitching factory is closed, with over two hundred unique craftswomen having lost their jobs.

## FROM ICONS...

Another traditional craft, icon painting, appeared in Mstyora at the beginning of the 18th century, and it didn't take Mstyora long to become one of the most famous icon painting centers of Russia. The Mstyora icons were famous for their special beauty and distinctive painting manner: highly detailed small elements, elements of architecture and landscape, and a distinctive color palette.

A casus: despite the fact that Mstyora icon painters were famous all over Russia, these days the church in the Theology Monastery has been painted by icon painters from other Russian towns.



*The famous art of Mstyora craftsmen may now be admired only in the museum...*

## ...TO MINIATURES

When most of the monasteries and churches were closed after the revolution, icon painting almost faded away in Mstyora, but the traditions and the school of painting did not disappear completely. They were reborn in lacquer miniatures: in the painting of small wooden boxes and boxes made of papier-mâché

The Mstyora lacquer crafts are considered to have been born in June 1931, when former icon painters came together to form the Proletarian Art cooperative, and in 1960, a lacquer miniature factory was established. Based on their own icon painting traditions, Mstyora miniaturists developed a unique style of art where a highly detailed landscape background with the finest color transitions plays an important role. Subjects depicted by artists of

the Mstyora factory are quite varied and include flowers, motives of Russian folk tale, workaday life of Soviet people, Komsomol construction sites, portraits of leaders.

## KEEPSAKES

After a short walk around the town, we came across a gift shop. Its shelves were dominated by imported boxes with decals and factory-made nylon embroideries.

And the genuine, native Mstyora lacquer boxes made by local craftsmen occupied just a small part of the showcase. There were also a few totally unique embroideries by local needlewomen. We really didn't want to believe that these pieces of popular art soon would only be seen in a provincial museum. ■

*by Anna Volina*



# Restrictions in Singapore Paradise

OUR FAMILY TRAVELS A LOT. UPON OUR RETURN OUR FRIENDS ALWAYS ASK US HOW SAFE IT IS TO VISIT FARAWAY COUNTRIES FROM THE VIEWPOINT OF HYGIENE, ESPECIALLY SINCE WE OFTEN TRAVEL WITH OUR CHILDREN. WELL, SINGAPORE BEATS ALL RECORDS IN TERMS OF CLEANLINESS AND ENVIRONMENTAL SAFETY FOR TRAVELERS.



*Alexandra and Andrey in an orchid paradise*

## CLEANLINESS AND SAFETY

In just 40 years, Singapore has evolved from a poor country in Southeast Asia to the richest economy in the region and probably in the entire world.

The almost sterile cleanliness of the streets is amazing. We spent three days in Singapore, walking around a lot, but our shoes remained perfectly clean.

You would immediately notice a relatively small number of cars compared to Moscow and the absence of traffic jams. Lee Kuan Yew, the founding father of modern Singapore and the mastermind of the Singapore economic miracle, resolved the problem quite simply, but toughly in relation to car owners.

The thing is that cars are subject to high taxes. On top of that, car owners pay a large fee to get a driving license. As cars older than three years face a higher annual tax, the car fleet in Singapore is constantly renewed. Most roads are toll roads. Traffic rules are observed in the strictest way – the city is

literally filled with video cameras, and traffic fines are very high.

## CHANGING THE MENTALITY

The system of fines in Singapore is a story in its own right. The priority task that Lee Kuan Yew set for himself was to re-educate the population and introduce new life values. In general, changing human mentality is not an easy task, but doing it within a short time without antagonizing people seems to be an impossible mission.

The first thing the nation's leader started with in the 1960s was a campaign against... spitting! The thing is that the Chinese never considered it shameful to express natural body needs, including spitting in the streets, in public places, and even out of car windows. The government disseminated information through educational







*What is the “no way” worth?*



*Use caution and watch your step at all times*



*Even concrete walls of expressways are lined with lianas*

institutions, offices and public agencies stating that spitting contributed to the spread of dangerous infectious diseases, including tuberculosis.

While strolling around the city, we were astounded by the numerous prohibitory signs and notices. The fine for smoking in public places is SGD 1,000; the one for dropping litter or cigarette butts is up to SGD 500, and a repeated violation is punished by

imprisonment. Bad language and indecent behavior in the public is punishable by a fine of up to SGD 3,000. There are two rivers in the city, but fishing from the embankment is strictly prohibited. Drug trafficking attracts death penalty in Singapore.

It is not allowed to import and, accordingly, use chewing gum in the country, so my kids gladly substituted it with exotic fruits and freshly squeezed juices.

## UNDERGROUND RESTRICTIONS

When we went down to the subway the first thing we noticed was the perfectly and functionally designed space. Even during rush hours flows of people are distributed around the platform very wisely. Stations have many exits – footways, escalators, and elevators for people with disabilities. The approaching train is closed by a wall, i.e. a passenger »







*Subway formation without a driver and coaches*



*"Give place to passengers with children, pregnant women and disabled people"*



*Heliconia as you please*

cannot see the train until it stops, the same way as it is done in some stations in Saint Petersburg. Information about the approaching train is displayed on electronic boards.

What amazed the kids the most was that the trains were driverless. The train is in fact a long car without internal partitions, so one can walk through it from the beginning to the end.

The subway is as perfectly clean as the streets, and has its own rules and regulations. As in other public transport, food and drinks are not allowed in the subway; the fine for violating this rule is SGD 500. There are even no litter bins on the platforms. Right before our eyes, a Hindu couple that scattered some chips crawled around collecting the chips into a bag up to the last bit. The subway is fitted with CCTV cameras, as is the entire

city; thus, it is not difficult to figure out wrongdoers.

It is not allowed to sleep, and to bring durians – an exotic fruit with a peculiar unpleasant odor – in the local subway, and anyone carrying flammable items, including lighters, can face a fine of SGD 5,000.

There are some other prohibitions in the country, with penalties





imposed in particular on those who piss in elevators or fail to flush the toilet. It is not allowed to sunbathe topless on the beaches, and nudism is punishable with caning.

## GARDEN CITY

Singapore produces nothing but consumes a lot, and my children asked a pretty natural question: Where does all garbage go if the country's area is just 160 km<sup>2</sup> (i.e. ¼ of the area of Moscow)? It appears that in addition to waste disposal factories garbage is widely used to create entire islands. Semakau Island is completely artificial. Its construction started 7 years ago. As of today the island's area is 350 hectares, and it is still growing: garbage will be dumped here until 2035. The entire "garbage island" is planted with trees. The local Environmental Monitoring Service checks the quality of water around the island on a continuous basis.

The Singapore Botanic Gardens impressed us greatly. If it weren't for 35 degrees heat, we would have spent the entire day there, but we lasted only the first half of it. The gardens, as well as Singapore itself, were founded by Sir Thomas Stamford Raffles 150 years ago. Originally the gardens were planned to be used as a plantation

to cultivate agricultural crops. After a while, a garden with decorative plants was laid out in their place. It includes a rainforest, a fern valley and a palm valley. Lakes full of fish became the real paradise for swans and other waterbirds, whose names we never remembered.

We spent a whole hour in the orchid park. There is a so-called VIP area, where orchids with the most amazing shapes and colors are collected from around the world. They are named after various political and cultural figures and organizations (Margaret Thatcher, Jackie Chan, Nelson Mandela, etc.).

Though the city-state Singapore is rather small, it can be talked about infinitely: about paradise for children in Sentosa Island, where the Universal Studios entertainment park is located, about the diversified local cuisine based on Chinese, Thai, Arabic, Hindu, European traditions, about parks and gardens, about architecture, about the quality and level of education, about family practices and traditions, and of course about shopping.

Everything is just fine, only too hot! ■

*by Anna Volina*



Singapore is located almost on the equator, just 135 km to the north of the border between the northern and southern hemispheres. It is an island state. The capital of Singapore and the city's central river have the same name as the country.

Legend has it that Singapore was founded by Raja Sang Nila Utamam, who landed on the island in the 13th century, and called it the Lion City. That was the first animal he came across in the island. Though it is historically established that these lands were populated back in the 11th century and were known as Temasek (the Sea Town).

The official history of Singapore began in 1819 with the establishment of a British colony on Singapore and the outstanding political activities of Sir Thomas Stamford Raffles. As the island was situated at the crossing of important sea trade routes between Europe, Australia and Asia, it soon became a significant trade hub in Asia.

After the World War II Britain lost its power over the island. In 1955, Singapore was granted partial internal self-government. In August 1965, the island became an independent nation. Lee Kuan Yew, one of the creators of the Singapore economic miracle, served as Prime Minister for 31 years and took an active part in governing the country until his death in 2015. Since 1990, the state has been governed by Goh Chok Tong.





# Little Fighter

MATVEY WAS BORN ON JUNE 27, 2011, AND «CHOSE» RELATIVELY HARD TIMES TO COME INTO THIS WORLD. THE EASTERN REGION OF THE CPC WAS BUSY WITH AN OVERHAUL AND REPLACEMENT OF INSULATION FOR THE MAIN OIL PIPELINE FROM TENGIZ TO NOVOROSIYSK AT KP 204 KM TO KP 390 KM SEGMENT WHERE I WAS ALMOST CONSTANTLY PRESENT.



*Matvey is always primed for victory!*

## MIRACLE OF BIRTH

Of course, me and my wife Olga knew that the baby shall be born in the end of June. But frankly speaking, I was shocked when I heard the conclusion of the doctors on coming home for a weekend: if the labor does not start within the next several hours, on Monday Olga has to go to the Atyrau Regional Perinatal Center with her belongings.

On Monday morning, I drove my wife to the maternity hospital and went to the pipeline. I was following the miracle of birth by phone, climbing on the tallest piles of soil created by an excavator since the network coverage was bad in that area. At 5:30 PM I finally got the news that my son was born.

The “experienced” colleagues told me that they usually let young mothers go home on the third day. Can you imagine my surprise when having arrived home on the second day after my son was born to prepare a warm welcome for them, I saw... my wife and the baby!!! Great

condition of Olga and Matvey allowed the doctors to discharge them from hospital earlier than usual.

## TASTE OF VICTORY

Matvey is an active, happy and absolutely non-capricious child. Having learnt to stand up, he did not miss a single opportunity to dance with BABY TIME. When he was 2.5 y.o., he started attending the kindergarten.

A year ago, while visiting a fitness center at one of the local clubs, my wife and me noticed the following advertisement: children over 4.5 years old are invited to take classes in Kyokushinkaikan Karate. And we decided to enroll Matvey.

The results were quick: Matvey took the second place in his category at a friendly competition between four clubs of our city.

Seeing his will and determination, we had to arrange a gym at home. Participation in the fights made him taste the victory, and neither the tough practices, nor the lack of time to play his favorite computer games could outweigh it.

## MOSCOW TOUR

I was going for one of my business trips via Moscow. Having found out, my parents asked me to bring Matvey along to visit. Then, we had an idea to combine Matvey's visit to his grandparents with practices.

Upon consulting with the trainer in Atyrau, we chose a Moscow club with good trainers. This trip was full of events and very useful for our little sportsman! After the “advanced course” in Moscow, our son got positive reviews from renowned trainers: Dilshoda Umarova, twice



*Timofey and Matvey Gushchins in their home gym*







*Dilshoda Umarova teaches to win*



*With favourite trainer Andrey Kotov*

champion of the Cup of Russia in Kyokushinkaikan Karate, and Alejandro Navarro, ten-times heavy weight champion of Europe in Kyokushinkaikan Karate.

*Master class from  
10-time European  
champion  
Alejandro  
Navarro*



## TO THE NEW HORIZONS

After he came from Moscow, my son participated in a variety of competitions in Kyokushinkaikan Karate in pound-for-pound category with great results: Matvey took the first place in an open championship of the Atyrau Region, first place at the open championship of the city of Atyrau, got the gold in the championship of the city of Atyrau in overall physical training at the pound-for-pound category of the Kyokushinkaikan Karate Federation and in the open championship of Aktoobe...

We are currently anticipating the open championships for the Cup of the cities of Astrakhan and Atyrau, for which Matvey is preparing by balancing between the practice and regular studies at the senior grade of kindergarten No. 18 "Baldyrgan" where he learns to make playdough elephants, dishes, and write his first letters of the alphabet.

## STRENGTH AND KINDNESS

Our family respects physical training and sport. When I was younger, I myself was seriously involved in sports; while attending the Moscow State Technical University "MAMI" I was doing power-lifting for the University's team. Although now I do not have enough time for regular training... My wife Olga is still working out. So, Matvey definitely has "sport genes". We are happy to see our son's determination to win and how he outrides losses that are inevitable on this path.

Sport is a great companion in life, it makes you tough and teaches to overcome difficulties. In general, strong people possess kindness. And our Matvey grows up to be like this. He is kind, at times even too much, in my opinion... When I give him money, he puts them into a box. To my question about what he is saving for he replied that there is an unfinished house near the kindergarten attended by his younger sister Nastya. "I will collect money, finish the house and give it to them." said Matvey. Although he did not clarify, who "they" are. ■

*by Timofey Gushchin,  
Senior Inspection Engineer,  
CPC Eastern Region, office Atyrau*

# Special Sport

MY PASSION FOR HORSES STARTED WHEN I WAS A KID. THE FIRST TIME I SAW EXPERT HORSES RIDING WAS IN THE CIRCUS; SINCE THEN, I WANTED TO LEARN TO PERFORM TRICKS AS MASTERLY AS THE PROFESSIONALS DO.



Poklonnaya Gora, any parks – everywhere where there were horses I looked for an opportunity to ride them. At the age of 17, I took on horseback riding. For sure, professional sport was out of the question. Although I was young, it was too late to become a professional rider.

One might think that it is not hard to control a horse. Riding, turning, going up on horse seem quite natural, they seem not to require a lot of effort. In reality, it is a very difficult sport that requires not only elaborate technique and good stamina, but also sensitivity towards animal's moods. A horse is a living being with its own temper, mood, and fears. Each training you should feel your horse's disposition.

Apart from riding, there's a procedure of taking care of the horse, preparing it for training. It is needed not only to make your horse look clean and groomed,

but also because it helps to earn horse's trust.

First, a rider takes a horse from its stable and leads it to a special box. Despite the fact that many horses are taught to stay still while being cleaned, it is safer to tie them up. One also has to remember not to stand behind the horse. Even when a rider combs the tail, he/she must stand on the side, since any noise or movement may scare the horse, and a hoof-strike is very strong and can seriously injure a person.

Horse cleaning requires thoroughness and skill. First, you clean the animal with a dandy brush from sawdust and dust, then you can start working with the groomer. Horse's body produces salt that has to be cleaned away. As soon as the grooming is completed, the accumulated dirt is removed by a brush.

Then we proceed to the mane, tail, legs, and hooves. Mane and tail are combed with special combs, you use a hoof pick to remove manure, hay and other rubbish from the hooves, otherwise the skin near the hoof may be damaged.

After cleaning you may start saddling. First, you wrap elastic bandages around the legs of the horse or put ankle boots – rigid brackets for the fixation of joints. Then you put a housing cloth with fur or gel on the animal's back in order not to damage the skin with the saddle during the ride. Having placed the saddle itself, you tighten the girth when the horse inhales. Making sure that the saddle





is tight on the horse's back you should put a halter on it and take it out of the box.

It is important to warm up the horse before training, that is why the first 15 minutes we just walk with it. Only then the training can start.

There are two major types of horseback riding: dressage (the art of spectacular riding with artistic elements and music) and show jumping (jumping over obstacles). The horses are also divided into relevant categories: dressage, jumping, and triathlon horses. The future sport for a horse is determined when it is a colt, considering temper, genetics, and physiology.

Of course, the required accessories for riding are also selected based on whether a rider practices dressage or show jumping. Each type has its own special saddles, differing in mounting and flap length.

Unfortunately, my first months of riding were very hard. The horse that was given to me had really bad temper. It liked goofing with inexperienced riders by sudden stoppings or accelerating fast. One could easily fall out of saddle. Also, my horse used any chance to hit the fence of the arena with its side



*Preparing a horse for training or competition, I try to feel the animal's mood*



causing bruises all over my body, and due to frequent falls, the stock of sand in my body was unlimited. So it continued until I started feeling more confident in the saddle.

Frankly speaking, any parent enrolling their child to a horseback riding school should be prepared for traumas and possess remarkable self-control skills. I thank my parents for patience. By the way, not only riders but also horses get seriously injured during training and competitions.

Any sport toughens a person, makes him or her determined, strong, ready to accept defeats as

well as victories. But the horseback riding is really special, it trains patience and helps both morally and spiritually in life. A rider learns not only to understand horse's mood, but also treat other animals and, of course, people with care. A person develops compassion, becomes responsible and reliable, having taken care of those he/she domesticated since his/her childhood.

My passion for horseback riding is the passion for independence, power, grace of the animal which can also be weak with a strong instructor. ■

*by Darya Margelova*

# Technology from Ancient Times

A PIPELINE IS ONE OF THE GREATEST INVENTIONS OF THE MANKIND. HOWEVER, NO ONE CERTAINLY KNOWS WHO WAS THE FIRST TO CONSTRUCT IT AND WHEN IT HAPPENED. FROM THE EXTANT WRITTEN SOURCES IT IS KNOWN THAT PIPELINES WERE CONSTRUCTED IN THE ANCIENT EGYPT, MESOPOTAMIA, INDIA, AND CHINA.

Pipeline construction had become really widespread in the first millennium B.C. – together with the development of the urban culture of the Mediterranean countries. At first, the acknowledged leaders in this respect were the Phoenicians. They had been constructing complex waterworks in Tyr and Carthage: Water was lifted over the ground surface, flew over the accumulation tank, drove several mills, and then was supplied to the town houses and gardens by a network of open and underground galleries and pipelines. Phoenician engineers were able to deal with rather complicated tasks: One of the fresh water pipelines was pulled to the island over the bottom of the sea strait!

## WATER FOR TOWNS

None of the Ancient Greek polises could do without running water. Only in Athens there were two

dozens of pipelines supplying river and spring waters. In Pergamon (this city was founded in the Asia Minor in the XII century B.C. by the colonists from the continent Greece) a pressure pipeline was filled with water from the springs located 60 km from the town on the rise.

The first Roman water supply line with the length of 16 km had been built by Roman legionaries in the year of 312 B.C. These works were performed under leadership of the censor Appius Claudius Caecus. The water supply line was called after him – Aqua Appia. The second 70-kilometer Anio Vetus pipeline was pulled several decades later – in the year of 274 B.C.

## INCREDIBLE AS IT MAY SEEM

But by the middle of the II century B.C. both pipelines could no longer meet the needs of a spreading city



*For pipelines construction the Romans used different materials: Clay, tin, copper, and lead pipes*

both in terms of a quantity of water supplied and its sanitary condition.

In the year of 144 B.C. praetor Quintus Marcia Rex gave an order to create a new 91-km water pipeline that became the longest pipeline throughout the history of the ancient Rome. An aqueduct during the construction of which powerful arched structures had been used supplied water directly to the Capitoline.

It is incredible as it may seem: Marcia's aqueduct is still one of the elements of the water supply system of the modern Capital of Italia!

## WATER TEAM

Let us come back to the ancient history: Rome water supply was mostly based on the spring waters. Due to the city enlargement the water supply system included the waters from the springs of the suburbs of increasing radius located



*It is not difficult for the modern archaeologists to define time of construction of the Ancient Roman pipelines because they have well preserved trade marks, workmen's marks, and customers' stamps*



*Sometimes during excavations we find metal pipes with channeled edge bents packed with sealant. However, to preserve their air-tightness they had to be embedded into the masonry constructions*



at greater height to provide required pressure.

The rate of extension of the Roman water pipeline can be judged by the fact that Vipsanum Agrippa had constructed 130 tanks, 700 water extraction wells, and 150 gushing fountains just within one year.

The Roman pipeline systems were serviced by the so-called water team comprising the slaves possessing different qualifications: Blacksmiths, bricklayers, patrolmen, etc. The documents saved the references about the “drillers”, that were at first considered by the historians as the representatives of one of the non-professional occupations; but it appeared that they were water thieves that illegally connected to the water supply systems.

### REGINA AQUARIUM

In the I century B.C. there were about a dozen of the main pipelines in Rome. The spring water was supplied along them to the water distribution facilities from which it was supplied to many consumers along the vast number of the underground lines. The total length of the pipeline exceeded 400 km by that time. Every day 1 million cubic meters of water was fed through them. At that time the Eternal City of Rome got its second nickname to the first one – Regina Aquarium.

Water supply pipelines were constructed not only in Rome, but also in other cities of the Roman

Empire. Some of the elements are preserved in Italy, Spain, France, and Turkey.

### WOOD FOR EVER

In the medieval European countries there were wooden pipelines in operation. The pipes were fabricated from the trunks of trees the core of



which was removed. To distribute the pipes tree branching drilled through was used.

In the XI-XII centuries water pipelines appeared in the Kievan Russia largest cities, i.e. Kiev and Veliky Novgorod. During the last 30 years of the XX century in Veliky Novgorod the archaeologists found a well preserved gravity pipeline from the springs to the princely palace. The wooden pipes were made of two halves of tree trunks with caved out cores. This seemingly

primitive pipeline certainly passed the test of times: even during excavation work there was spring water running along it.

They started to use pipelines to transport hydrocarbons from the 20-ies of the XIX century. In 1821 in the USA a gas pipeline made of wooden pipes started to operate. In 1823 gas transmission system was developed.

### AGE OF STEEL TRUNKS

The first productive and profit bearing American oil pipeline appeared in Pennsylvania in 1865. It was composed of steel pipes of 50 mm in diameter, the length of which was about 10 km connecting the oilfield with the railway station. After 10 years oil workers laid a pipeline of 100 mm in diameter and 90 km long from Pennsylvania to Pittsburgh. In 1879 after putting in operation of the 200-km oil line of 150 mm in diameter the specialists first spoke about the oil pipelines as the most reliable and safest means of raw material transportation to the long distances.

The first Baku – Batum trunk line designed to transport hydrocarbons was constructed in the Russian Empire in 1907. But this was a kerosene-supply line. And by the end of the XX century together with the construction of Grozny-Tuapse main line an era of rapid development of the main oil pipeline transportation had started. ■

*by Pavel Kretov*



## Caspian Pipeline Consortium: a time-tested international project



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*Operational reliability and environmental safety of the CPC facilities are already provided for at the design stage.  
The picture above shows a fragment of the crude oil tank construction in the Tank Farm of the Marine Terminal:  
Hydrocarbon contact with the soil is impossible!*