

# PANORAMA

## CASPIAN PIPELINE CONSORTIUM



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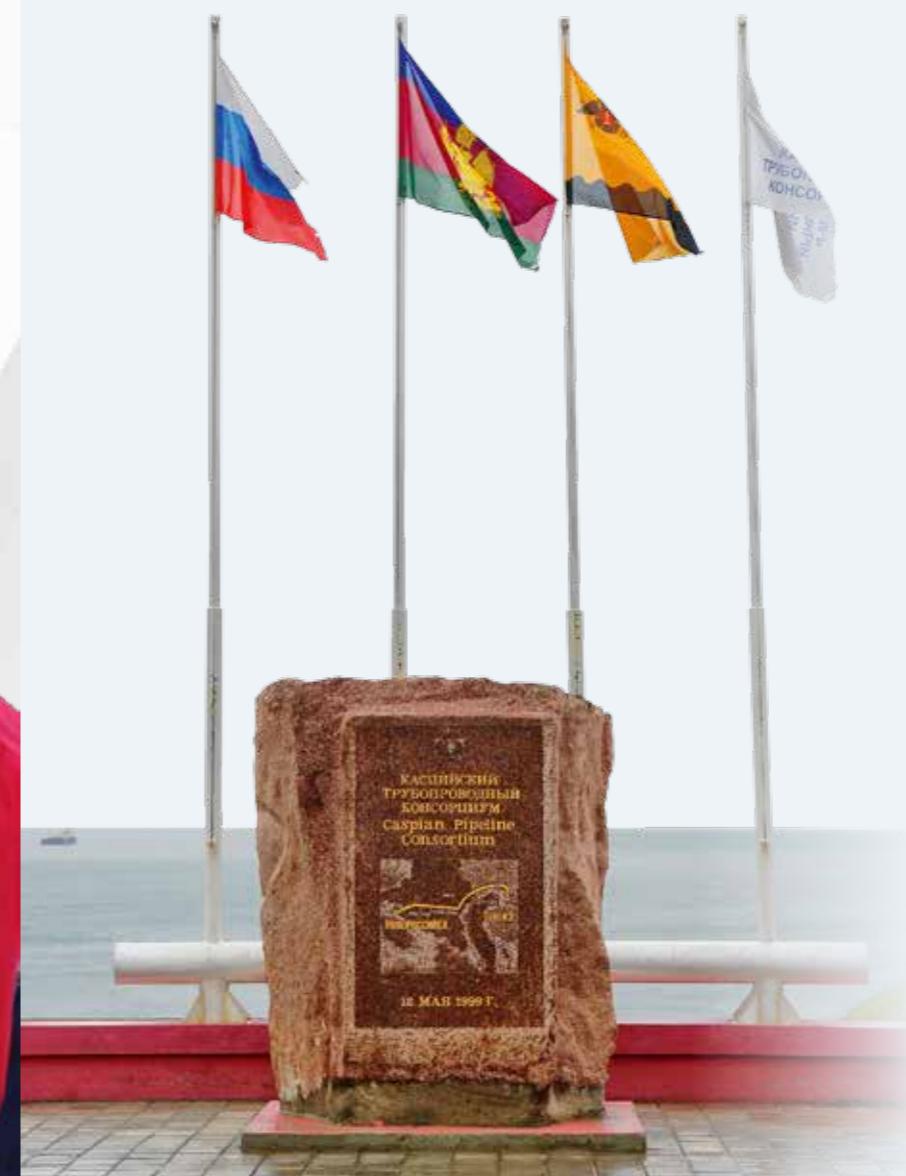
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# THE WAY TO THE 21ST CENTURY

IN THE 1990S, WHILE STILL  
ON THE DRAWING BOARD,  
THE CPC PIPELINE SYSTEM WAS  
CHRISTENED BY EXPERTS "THE WAY  
TO THE 21ST CENTURY". THE SUBSEQUENT  
HISTORY OF THE CONSORTIUM  
DEMONSTRATED THAT THEY MADE  
NO MISTAKE IN ASSESSING THE ROLE  
AND SCALE OF THE PROJECT



**F**or nearly two decades now, 11 shareholders from various countries have been operating a 1.5-thousand-kilometre pipeline system that stretches across Russia and Kazakhstan.

On 8 April 2019 the CPC Marine Terminal marked a milestone—it loaded its 600 millionth tonn of export oil. You will recall that the previous 500-mln-tonn milestone was reached less than two years ago—in August of 2017. These are major achievements for the entire team of the Consortium, which operates totally safely, accident- and incident-free, in full compliance with the health, safety and environmental standards.

The CPC's achievements in 2018: 10 mln hours without accidents and 25 mln km without recorded MVAs. The teams of the CPC's Eastern (Kazakhstan) and Western (Stavropol and Krasnodar Krais) Regions have already reached the milestone of 21 mln hours without DAFWC incidents. Over the first four months of 2019, CPC reached 4 mln hours without incidents across the board.

The CPC's focus is on state-of-the-art technologies and international standards for management,

20 YEARS AGO, ON 12 MAY 1999,  
THE CORNERSTONE WAS LAID FOR THE CPC  
PIPELINE SYSTEM NEXT TO THE VILLAGE  
OF YUZHNAЯ OZEREYEVKA OUTSIDE  
NOVOROSSIYSK



design, construction and operation of oil pipeline infrastructure. Having completed its expansion project, the Consortium continues to actively develop its infrastructure and improve the reliability of equipment operation. Thanks to the successfully implemented measures, operation factor of CPC oil pipeline system is 98% vs the global average of 90-95%.

Over the four first months of 2019 alone, five types of smart pigs were used to survey nearly 400 km of the Tengiz–Novorossiysk oil pipeline on the section from Atyrau PS to Astrakhanskaya PS, plus 200+ km of oil pipeline on the section from Tengiz PS to Atyrau PS will be surveyed in May 2019.

From January through April the findings of an additional defect survey were used to repair 18 defective sections in the CPC pipeline system. In January and in April, the oil pipeline was shut down twice as per the yearly plan for oil pipeline maintenance on the line infrastructure facilities and PS. As part of the measures, seven ball valves, three gate valves and other equipment were replaced.

As always in the spring, energetic efforts were made to prepare the industrial facilities for the flood season. The CPC regularly checks the condition of the under and over-water sections of the crude oil transmission, and alluvial crossings. Specifically, monitoring is conducted of the water level in the Chernozemelsky canal, in the rivers Ural, Emba, Volga, Kuban, Manych and others, including mountain rivers, for purposes of early identification of threats to oil pipeline facilities.

The preparatory works included a comprehensive testing of 200 block valve units for full opening and closing in local and remote modes on the pipeline infrastructure, including 27 units in water crossings and 1500+ block valve units on the on-site pipelines of oil pump stations and tank farms.

The flood season measures included the preparation of additional 17 fire engines, prompt availability of 274 special-purpose vehicles for emergency response and recovery, 100 vehicles for oil spill recovery, availability of the required

quantities of equipment, facilities, materials and sorbents for oil spill containment.

Since its inception, the CPC international project has emerged as a success story of cooperation between different countries in international oil business. The CPC pipeline system today is one of the most profitable and reliable routes for crude transmission from the Caspian region to the world markets. The Expansion Project has delivered a dramatic boost to the resource base of the CPC oil pipeline system: major fields such as Tengiz and Karachaganak have been joined by Kashagan and the Filanovsky field. Oil is currently injected into the CPC pipeline system from ten-plus fields.

Note that the development of the Tengiz–Novorossiysk pipeline system is a major socio-economic driver in the areas hosting the Consortium's facilities. In 2018 CPC-R paid in excess of 15 bln rbl. worth of taxes, levies and charges all told. Of which the RF Federal Treasury received more than 2.6 bln rbl., Krasnodar Krai 6 bln rbl., Moscow 1.3 bln,

Astrakhan Region 2 bln, Stavropol Krai about 1.2 bln rbl., and the Republic of Kalmykia more than 1.6 bln rbl. The taxes paid by CPC-K for 2018 totalled 31.3 bln tenge.

And today, working as a single team with all its shareholders, the CPC closely monitors the development of the major centres of oil production in the Caspian and is always ready to develop such additional capacity of the pipeline system as may be needed to meet the rising requirements of shippers. Which means that the time is close at hand when the CPC Marine Terminal has loaded 1 bln tons of oil. I am confident that you and I will do whatever we can to reach this milestone earlier by our endeavours in compliance with the highest international standards.

NIKOLAY GORBAN

GENERAL DIRECTOR  
CASPIAN PIPELINE CONSORTIUM

8 APRIL 2019  
CPC LOADED

600  
MILLIONTH TON OF EXPORT OIL

CPC CLOSELY MONITORS  
THE DEVELOPMENT OF MAJOR CENTRES  
OF OIL PRODUCTION IN THE CASPIAN



AUTHOR  
PAVEL KRETOV



12+1 CPC  
LIFE SAVING  
RULES

## CPC TO BECOME AN OFFICIAL PARTNER OF ALL-RUSSIA HEALTH AND SAFETY WEEK

IN LATE APRIL 2019 CPC DELEGATION TOOK PART IN THE 5-TH ALL-RUSSIA HEALTH AND SAFETY WEEK THAT TRADITIONNALLY TAKES PLACE IN SOCHI UPON INITIATIVE OF RF MINISTRY OF LABOUR AND SUPPORTED BY RF GOVERNMENT

**C**PC took part in All-Russia Health and Safety Week as an official partner. A major exhibition stand of Consortium was rolled-out at Partners' Lane, the most visited place of Sochi main media center. The Forum created an extensive experience-sharing all days long—CPC representatives, colleagues and partners discussed innovations, reviewed occupational health programs.

Consortium leadership and top management visited the most critical business event of All-Russia Health and Safety Week program—strategic plenary session “Occupational Health Prospects—Prevention and Safety Culture”, and became speakers of multiple round-table discussions. CPC representatives have a lot of experience to share with partners. For example, based on the outcomes of Y 2018 CPC was included to Top-25 Best Companies of the International Association of Oil and Gas Producers (IOGP) as to the total injuries rate.

CPC combines state-of-the-art technologies with human resources development and uses the best occupational health, industrial safety and environmental safety practices. CPC developed a range of programs allowing a credible review of Contractor's occupational health management system and bringing it in line



### A MAJOR EXHIBITION STAND OF CONSORTIUM WAS ROLLED-OUT AT PARTNERS' LANE

with requirements of Consortium's standards, engagement of own staff, Contractor's staff to correct unsafe behavior and working conditions, including works suspension to prevent any emergencies", noted Nikolay Gorban, General Director, during the round-table discussion "Current Issues and Best Practices of Occupational Health and Safety: Experience of European Companies in Russia".

CPC's current objective is to reach zero injuries rate. To make it happen, the Company introduced 12+1 Life Saving Rules in addition to other various programs. These are key requirements for CPC staff and contractors which are crucial for more efficient management of risks specific to oil and gas industry. These rules are used together with other relevant RF and RoK legislation requirements.

During the Forum, Mr. Hans-Horst Konkolewsky, General Secretary of International Social Security

Association, awarded CPC with a partner's certificate under "Vision Zero" ("Zero Injuries") program. The partners of this program demonstrate a progressive approach in injuries prevention combining three disciplines—safety, occupational health and employees' well-being throughout all business levels.

The results of All-Russian contest "Health and Safety-2018" for the best solution in providing safe working conditions

were announced in progress of All-Russia Health and Safety Week. CPC received the Grand Prix of the Contest for up-to-date approach and outstanding safety performance.

Please be reminded that in 2018 CPC won All-Russia Contest "Health and Safety 2017" and took the first prize in the nomination "Methodology for monitoring and assurance of safe working conditions" for its innovative project "Shaping the Concept of Incidents and Injuries Free Culture".



AUTHOR  
PAVEL KRETOV

# CPC TOP MANAGEMENT MEETING

ON APRIL 22 AT THE CPC TOP MANAGEMENT MEETING HELD AS PART OF ALL-RUSSIA HEALTH AND SAFETY WEEK THE RESULTS OF CONSORTIUM BUSINESS ACTIVITIES IN 2018 WERE SUMMARIZED

## NEW FORMAT

In the opening remarks Nikolay Gorban, General Director highlighted that the year-results meeting was held in this format for the first time. The event objective—to compare the 2018 performance targets with the achieved results and through a joint analysis to identify problems that require comprehensive decisions. "Some decisions can be made today, some will require follow-up actions" he said.



61 MILLION TONS OF OIL SHIPPED  
FOR EXPORT IN 2018,  
558 TANKERS HANDLED

Nikolay Gorban devoted a significant part of his speech to introduction of the occupational safety culture, emphasizing, that all CPC subdivisions shall make commitments performance whereof shall be reported at the annual meetings. "The concept we are introducing is for everyone to demonstrate personal commitment to safe work and to undertake specific obligations as

we should start with ourselves", highlighted Nikolay Gorban.

## IMPLEMENTED AND PROVED

Presenting the results of 2018 Mukhit Mazhenov, Regional Manager, Eastern Region, CPC mentioned the number 54.24 mln tons: that is how much crude oil JSC CPC-K pumped, which is 9% higher than 2017 throughput. ER team worked



20,322,343 man-hours injury-free, drove 1,228,474 km with no recordable MVAs. In 2018, 366 drills and fire tactics trainings in oil spill response and fire extinguishing were held at CPC facilities in Kazakhstan.

In November 2018 JSC CPC-K introduced a procedure establishing the pre-job tool box talks process for hazardous works and works under general work permits to brief the work performers and persons involved about hazardous factors and safety measures in process of work execution and about actions taken in response to accidents and elimination of consequences thereof. This procedure was implemented following the experience exchange at the All-Russia Health and Safety Week in Sochi in 2018, ER team successfully tried it in Kazakhstan and recommends extending it to other CPC divisions.

## AS PLANNED

Ivan Sharay, Regional Manager, Central Region reported the 2018 oil throughput of 59 mln tons and over 3 mln hours worked incident and injury free. All specialists in the Region are certified in the field of occupational, industrial and fire safety.

A special assessment of working conditions (SAWC) is applied in CR whereunder 156 workstations were

assessed. 80% maintenance works performed in the region are preventive and scheduled demonstrating high level of CR facilities maintenance arrangements. Following the previous All-Russia Health and Safety Week the region introduced checklists in 2018.

## SAFE WORK

Impressive numbers were reported by Sergey Potryasov, Regional Manager, Western Region: since the beginning of operations WR team worked 20,640,721 hours incident and injury free, drove 43,083,629 km with no recordable MVAs. Last year these parameters were respectively 2,798,570 hours and 8,314,201 km. Taking into account the crude oil

BY  
**534**  
HOURS

**CPC STUDIES AND SUCCESSFULLY IMPLEMENTS PROCEDURES  
RECOGNIZED USEFUL IN THE COURSE OF SHARING EXPERIENCES BETWEEN VNOT (ALL-RUSSIAN SAFETY AND HEALTH WEEK) PARTICIPANTS**

fire brigade members and PS personnel. Last autumn a comprehensive joint drill was conducted at 1412 km for oil spill response and simulated fire extinguishing with participation of RUERS for Krasnodar Krai. Booms were installed in parallel at all three Kuban river stationary containments during the drill.

As of August 2018, WR has been using the unsafe working conditions monitoring and registration system

**IN 2018 THE "ONE LIFT" AND "THREE TANKERS" PROCEDURES REDUCED THE TIME OF PREPARATORY OPERATIONS**

involving observation cards. Each PS and Krasnodar office had boxes for the cards collection, 25 cards were filled in between August and December 2018.

Last year 12 defects earlier identified following the pipeline inline inspection were repaired in Western Region. Including a complicated repair in Bakanka riverbed using a 6 m long repair sleeve assembly installation method. After the pipeline defect repair, river bed stabilization works were performed for the first time in CPC in the river crossing area using flexible concrete mats.

#### TIME FACTOR

Alexey Pelipenko, Regional Manager, Marine Terminal presented the following 2018 indicators: 61 mln tons of export oil was shipped, 558 tankers—loaded, which is 6 mln tons or 34 tankers more than in 2017. There were no accidents and MVAs at the Marine Terminal. As explained by the regional manager the high rate of oil tankers handling is successfully maintained, among other factors, thanks to the expedited tanker processing procedure “one visit aboard” (by authorities) introduced at the Marine Terminal. Three tanker loading operations also help to save the loading time—while one tanker loading is being finished the next tankers



are being moored allowing significant time saving. In 2018 the “three tankers” procedure was used 89 times which allowed reducing the preparations timing by 534 hours.

#### USING ROAD SAFETY PRINCIPLES

Alexey Bunarev, CPC Transportation Manager highlighted a positive fact:

based on the in-vehicle monitoring system records CPC achieve a higher defensive driving level than some other companies equipping their corporate vehicles with similar systems. In 2018, CPC drivers achieved significant improvement in the breaking indicator.

In 2018, after assessment of the actual theoretical knowledge and

practical skills of CPC drivers and employees by Transportation Team specialists as part of targeted and comprehensive inspections, the decision was made to shift to the annual periodical training of CPC drivers and employees in specialized companies instead of once every three years. The training efficiency improvement efforts are ongoing, specifically in terms of the training program contents. Speaking about key transportation security activities Alexey Bunarev highlighted increase in the frequency of the road safety alerts issued to CPC employees and contractors. He also reminded that company fully introduced the electronic transport request processing system including trip-monitoring components.

AVERAGE WORK  
EXPERIENCE IN CPC  
IN 2018 WAS

7  
YEARS

Presenting the certificate of achievement to Ivan Sharay, CR Manager Nikolay Gorban said: “Congratulations! Keep it up!” The competition component was introduced in 2018. I hope in 2019 the regions will take it seriously and the competitive spirit will be visible not only at the Safety Day but in day-to-day work as well”.

#### COMPETITION COMPONENT

Vladimir Shmakov, General Manager, Operations reminded the audience that any job should have motivators. An important motivation component is availability of a clear system of CPC divisions’ performance appraisal. “We developed the criteria based on which the regions performance may be evaluated. They include compliance with the industrial safety, occupational safety, fire and environmental safety requirements, traffic rules. Important criteria also include equipment failure indicators, the quality management system (QMS) functioning, evaluation of one-off projects implementation results” highlighted Vladimir Shmakov.

In 2018 regions competition the Central Region team was the best scoring one point higher than their colleagues from the Western Region.

badges for years in service. This year we started presenting badges for 20 years of work! In 2018 4 CPC employees were awarded state awards and medals, 16—Russian and Kazakhstan Energy Ministry awards, 22—regional letters of award and acknowledgment”, advised Alexander Berezhanov and the meeting attendees greeted this information with applause.



## CPC MEANS HIGH TECHNOLOGIES AND PROFESSIONAL TEAM



**AUTHOR**  
VALERY CHERGINETS,  
CHIEF ELECTRICIAN, CPC

# ENSURING POWER SUPPLY FOR CPC'S FACILITIES

CPC FACILITIES ARE FULL OF SOPHISTICATED POWER-SUPPLY EQUIPMENT. FOR THE PURPOSES OF PREVENTING, CONTAINING AND MITIGATING ACCIDENTS, THE POWER SUPPLY SYSTEM IS SUBJECT TO STRICTER REQUIREMENTS

## IN TRANSITION MODES

Due to high industrial automation penetration, sophistication of industrial processes and automated systems and backward compatibility requirements, CPC relies heavily on uninterruptible power supplies (UPS) to supply electricity to the powerful systems of main-line pumps (MLP), gas turbine units (GTU),

station automatic control systems, communications systems, SCADA, servers and PCs that enable the operation of the entire process system of a crude oil transmission pipeline and whose unexpected and even

## THE CPC RELIES HEAVILY ON UNINTERRUPTIBLE POWER SUPPLY UNITS (UPS)

brief shutdown results in data loss, shutdown of main-line units and of the entire crude oil transmission pipeline or other upsets.



Should the supply of electric power via the national grid be suddenly interrupted, the UPS will supply all of the above-listed systems with electricity for a specified time, which makes it possible to save the data and safely continue operating the core equipment, as well as providing the supply of electricity in the context of the so-called transition modes of blackout.

The choice of power supplies for the CPC is determined by the nature of load, electricity requirement and supply mode: line-interactive, online and off-line.

The CPC's quality of electricity supply-sensitive systems directly involved in the oil transmission supervisory control and data acquisition process use mostly online UPS, which are essentially dual voltage converters and can dampen (filter out) electrical surges. Such UPS operate by converting AC to DC and then back again to AC.

## UPDATE TIME

Given that CPC has been operating since 2001, quite a few issues have

arisen to date due to equipment wear and tear, necessitating replacement of UPS components and modules with the manufacturer-specified service life of up to 20-25 years. CPC mostly uses UPS made by major global manufacturers such as Benning, Chloride and LTI.

It is no secret that the industry of alternative power supplies, self-contained power supplies and batteries has risen to a whole new level since the 2000s due to better manufacturing processes and the discovery of new technologies and semiconductors.

CPC has developed and put in place a programme to replace 178 UPSs by 2025. The programme has been custom-designed based on industry solutions for the replacement of existing power supplies and the actual

MARINE TERMINAL TANK FARM.  
GENERAL VIEW  
OF UNINTERRUPTIBLE POWER SUPPLY UNIT (UPS)



MARINE TERMINAL.  
ANDREY NEVRODA,  
A MAINTENANCE  
ELECTRICIAN



operational environment of the crude oil transmission pipeline.

It must be understood that replacing one UPS with another without a sound plan and measures is not an option while the PS is on stream because the automatic pumping control system transmission cannot be taken down even for a short time. In light of the above, the operations department and the project and design department have been jointly

CPC HAS DEVELOPED  
AND PUT IN PLACE A  
PROGRAMME  
TO REPLACE

178  
UPSs

developing designs and work plans that factor in these nuances, labour input and replacement challenges, as well as a critical consideration such as the UPS supply time, which in turn is determined by the procurement and logistics department. All of the above must be coordinated and accomplished.

#### CUSTOM-MADE FOR CPC

In 2018 the CPC was engaged in replacing three UPSs at the Marine Terminal and Shore Facilities. Chloride UPSs were replaced with UPSs made by a Russian-based manufacturer—NPP EKRA (research, development and production centre). The manufacturer's and pilot testing of NPP EKRA UPSs demonstrated the sophistication of the engineering solutions used

stability and good electrochemical properties, which ensures robustness and long service life.

The research, development and production centre created the UPS virtually from scratch based on standard characteristics and load parameters. This led to a number of issues with the transition processes typical of the pulsating load systems at the CPC's facilities. In response to feedback from CPC experts, the developers and manufacturers at NPP EKRA improved the UPS and made the novel equipment perform as required. At the end of the day, two UPSs were successfully put into service at the facilities of the Marine Terminal in 2019.

Another element of UPS is rechargeable batteries that store an adequate charge and release it when required. The service life, storage conditions and set-up of the batteries are regulated in detail. For full compliance, the CPC has developed process flow diagrams for UPS replacement as part of the programme



in place. Consideration is also being given to the use of state-of-the-art nickel-cadmium batteries with an extended service life of up to 30 years, and lead-acid gel batteries with a service life of 20 years minimum.

#### TEAMWORK

CPC launched its UPS replacement programme in 2018. The technicians of the operations department and the project and design and logistics department are engaged in well-oiled teamwork to put together and develop data sheets with technical parameters meeting the global standards.

INSIDE VIEW  
OF UPS ENCLOSURE. OUTPUT  
MODULE WITH ISOLATION  
TRANSFORMER



THE PLANS FOR 2019 PROVIDE  
FOR THE REPLACEMENT  
OF 10 UPSs MADE BY NPP  
EKRA IN THE VALVE SHELTERS  
OF PIPELINE INFRASTRUCTURE  
IN THE WESTERN REGION.  
THE BULK OF THE OBSOLETE  
UPSS IS EXPECTED TO BE  
REPLACED IN THE PERIOD FROM  
2020 TO 2022

**AUTHOR**

EKATERINA SUVOROVA

# ENERGY MANAGEMENT AT CPC: GOALS, TASKS, TACTICS

ENERGY EFFICIENCY OF MANUFACTURING PLAYS AN INCREASING ROLE IN OPERATION OF MODERN ENTERPRISES. SINCE 2017, CPC HAS A DEFINITE GOAL: TO ORGANIZE AN EXACT CONTROL OF ENERGY CONSUMPTION AND ENERGY EFFICIENCY MANAGEMENT IN OIL TRANSPORTATION. WE HAVE ASKED SOME QUESTIONS ON WHAT IS BEING DONE IN THIS DIRECTION TO CHIEF POWER ENGINEER ELENA GLYBINA AND PROCESS CALCULATIONS GROUP LEADER

ALEXEY IVANIN

**AUTHOR**

EKATERINA SUVOROVA

**A LITTLE HISTORY**

Before 2017, all decisions regarding oil pumping modes were made by our sales department on the basis of statistics on previously implemented modes. Under the conditions of increased oil transportation volumes, those modes not always proved to be the most optimal, including in respect to energy saving and energy efficiency. But in order to evaluate this, we needed the corresponding methodology. Developing both such a methodology and tools for energy resources cost control was entrusted to the chief power engineer's group and the process design group.

ACCORDING TO ISO 50001:2011, ENERGY EFFICIENCY IS DEFINED AS THE RATIO BETWEEN THE RESULT OF AN ENTERPRISE'S OPERATIONS AND THE CONSUMED INPUT ENERGY. OWING TO THE FACT THAT MAIN ENERGY EXPENDITURES AT CPC ARE A COMBINATION OF THE THREE KINDS OF ENERGY RESOURCES (ELECTRICITY, GAS FUEL AND DRA), THE CONSIDERED ENERGY EFFICIENCY CRITERIA INCLUDE NOT ONLY SUPPORTING THE OPTIMUM PERFORMANCE OF PUMPS AT OPSS, BUT ALSO TAKING INTO ACCOUNT THE COST COMPONENTS OF ALL THREE KINDS OF ENERGY RESOURCES. IN OTHER WORDS, SUPPORTING THE MAXIMUM PERFORMANCE OF PUMPS AT OPSS IS NOT ALWAYS ECONOMICALLY VIABLE IN TERMS OF TOTAL TRANSPORTATION COSTS



"We had the task of creating a methodology that would have allowed us to clearly determine what quantity of resources—turned on pumps, started gas turbines and the additive—were required for achieving optimum modes of oil transportation. It was also necessary to develop quantitative indices that would have helped us in assessing all these factors. A separate task was to establish communication of the process design group and the chief power engineer's group with the sales department that was to directly deliver recommended modes," Alexey Ivanin tells.

**THE COMMON TASK**

In the first half-year, communication was quite difficult due to some discrepancies in understanding of the mode control process, and then, at the suggestion of Exxon Mobile representative Jeroen Herpels who had just joined CPC, the group on energy efficiency that involved all interested parties was organized. The group has united some experts on the basis of disputing. They began meeting regularly to discuss ways of achieving the common goal—creating a system of planning and implementing energy-efficient modes of oil transportation.

"That activity has captivated everybody, and within a year we reached the level at which all processes worked flawlessly, the participants were of the same mind, and each division was very much aware of its tasks on the way to the common goal. Eventually, in 2018, thanks to right planning and choosing the most optimal transportation modes



ELENA GLYBINA,  
CHIEF POWER ENGINEER, CPC



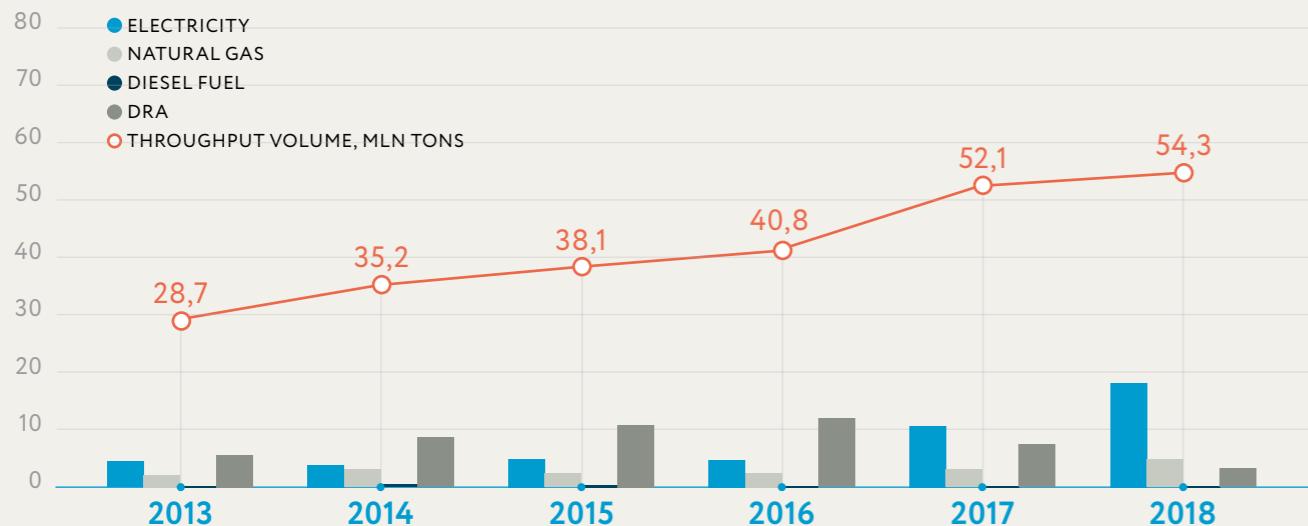
ALEXEY IVANIN,  
GROUP LEADER, PROCESS  
CALCULATIONS, CPC

along with the increase of oil pumping volume by 10.5%, we managed to save specific financial expenses for energy consumption at the level of 2017, i.e. USD 1.1 per 1,000 ton/km of transported oil, which is undoubtedly a very good result," Alexey notes with satisfaction.



## JSC CPC-K

OIL PUMPING BEHAVIOUR AND BEHAVIOUR OF COSTS FOR ENERGY RESOURCES AND DRA



CPC regional branches made their own contribution to this achievement. It involved safe operation of the facilities, as well as readiness and availability of the main process equipment and DRA addition plants, which allowed the project

design group and the sales department to implement the most energy-efficient transportation modes. My partners in conversation drew attention to seamless interaction between experts of the Moscow office and experts of the regional

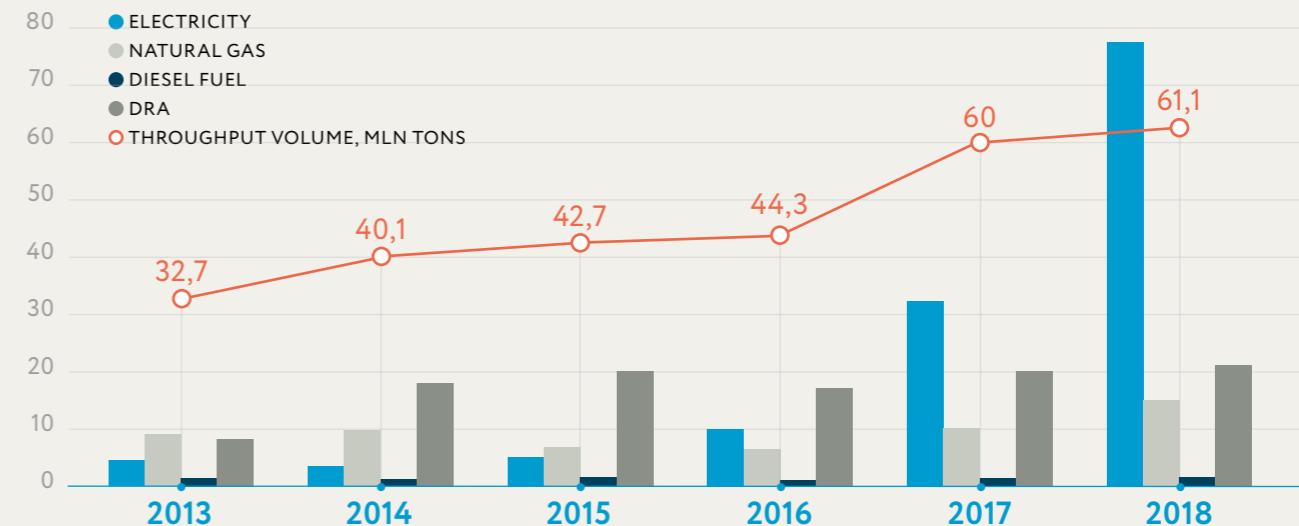
branches, who inform in advance of normal and abnormal situations that wield major influence on the oil transportation modes. It has enabled to correct the energy resources consumption plans, thus minimizing electricity bills.

**ENERGY MANAGEMENT IS A BROADER CONCEPT THAN ENERGY EFFICIENCY AND ENCOMPASSES THE ENTIRE RANGE OF COMPANY ACTIVITIES. OUR ENERGY MANAGEMENT SYSTEM IS PRIMARILY AIMED AT DEVELOPING TOOLS OF CONTROLLING THE COMPANY'S ENERGY EXPENDITURES, I.E. SETTING CALCULABLE GOALS AND MEASURES, DEVELOPING A SYSTEM FOR MONITORING MEASURED DATA, AS WELL AS DEVELOPING PROCEDURES AND POLICIES FOR ATTRACTING THE PERSONNEL OF THE COMPANY TO THE DECLARED POLICY, AS WELL AS MOTIVATION METHODS**



## JSC CPC-R

OIL PUMPING BEHAVIOUR AND BEHAVIOUR OF COSTS FOR ENERGY RESOURCES AND DRA



### IN THE MARKET CONDITIONS

I asked Elena Glybina, "How does the ever-increasing cost of energy influence over the energy efficiency measures?"

"We can control this factor, and we endeavour to influence

over it by working on decreasing the cost of energy for our company. In particular, the logistic support group did a great job of optimizing the cost of additive and gases for CPC in 2018. In the conditions of working in wholesale electricity

kind of energy resources. That way, our task is to maximally use the current market environment to the benefit of our company, and we do our best," Elena Glybina notes.

"Are there any differences in the approaches to increasing the energy



### AN OIL PIPELINE CANNOT BE DIVIDED BY THE REGIONAL PRINCIPLE; IT IS A SINGLE HYDRAULICALLY CONNECTED SYSTEM

market, we manage to attain a discount on electricity consumption and, accordingly, the best tariff on it via careful planning of oil transportation modes. We strive to maximally control these factors and keep their values as low as possible. For example, in Kalmykia it proved to be more profitably to leave the wholesale market and come over to an energy producer in the retail market, thanks to which we saved about USD 700,000 last year. And in Kazakhstan on April 1st, 2018 we entered the wholesale market with the two new stations, A-PS-3A and PS-4, which also allowed us to save near USD 1,000,000 on this

efficiency at the CPC's facilities in Russia and Kazakhstan?"

"An oil pipeline cannot be divided by the regional principle, because it is a single hydraulically connected system," Alexey Ivanin explains. "All the objects are typical, and consolidating groups that are responsible for planning and reporting conduct their activities within the whole oil pipeline. Also, any solutions regarding energy efficiency and energy saving are unified and typical in application for all the regions. In other words, if we plan to provide any new materials or equipment within the context of energy saving, it will be done throughout the system."

## THE SUCCESS FORMULA

"Could you describe in general terms what energy efficiency is with regard to CPC and how you choose optimal oil transportation modes in practice?"

"Energy efficiency in an energy management system is a quantitative ratio between the result of work and the energy that was input for performing the work," Alexey Ivanin explains. "Since the most energy-intensive equipment at CPC are crude booster pumps, our task is to provide their work in the most optimum area, thus reducing expenditures for input energy and getting maximum performed work therewith. CPC is a unique company in the sense that we utilize different kinds of energy resources, namely electricity, gas fuel and drag reduction agent (DRA). DRA is a conventional energy resource, but applying it allows to lower electricity and gas costs. Unlike "classical" oil transporting companies, we have to consider all three factors in a body."

"What ratio of the three kinds of energy resources is the most optimal for CPC?"

"It is determined by the transportation mode profitability index adopted by us within the group on energy efficiency. It shows how many dollars will be received for transportation as a tariff return while investing one dollar in these three kinds of resources. This purely algebraic formula allows to assess which mode is the most effective and apply it in real conditions of transporting a definite oil

### THE MAIN STRATEGIC GOAL OF CPC IN THE AREA OF ENERGY MANAGEMENT

IS TO CONSTANTLY INCREASE THE ENERGY EFFICIENCY OF THE ENTERPRISE OPERATIONS AS AN INTEGRAL PART OF OUR BUSINESS AND CONTRIBUTION TO THE SUSTAINABLE DEVELOPMENT OF SOCIETY.

IN ORDER TO IMPLEMENT THIS GOAL, IT IS NECESSARY TO PROVIDE:

- **CONSTANT IMPROVING** THE ENERGETIC RESULTS OF CPC OPERATIONS;
- **STRICT OBSERVING** THE STATUTORY REGULATIONS RELATED TO ENERGY SAVING AND ENERGY EFFICIENCY INCREASE;
- **PURCHASING** ENERGY-EFFICIENT EQUIPMENT, PRODUCTS AND SERVICES, AND INTRODUCING PROJECTS AIMED AT IMPROVING THE ENERGETIC RESULTS;

● **BUILDING UP** OPEN ONLINE SYSTEMS OF BUSINESS ANALYTICS WITHIN THE CPC PORTAL TO PROVIDE INFORMATION FOR ALL INTERESTED CPC EMPLOYEES;

● **SYSTEMATIZING** THE WAY OF ENERGY RESOURCES ASSESSMENT THROUGH INTRODUCTION OF TARGET INDICATORS AND BASE LINES WITH THEIR PERIODICAL REASSESSMENT AND MONITORING THE TREND OF HOW THESE INDICATORS ARE ACHIEVED;

● **ENGAGING** THE PERSONNEL IN ACTIVITIES AIMED AT SAVING ENERGY RESOURCES OF THE ENTERPRISE;

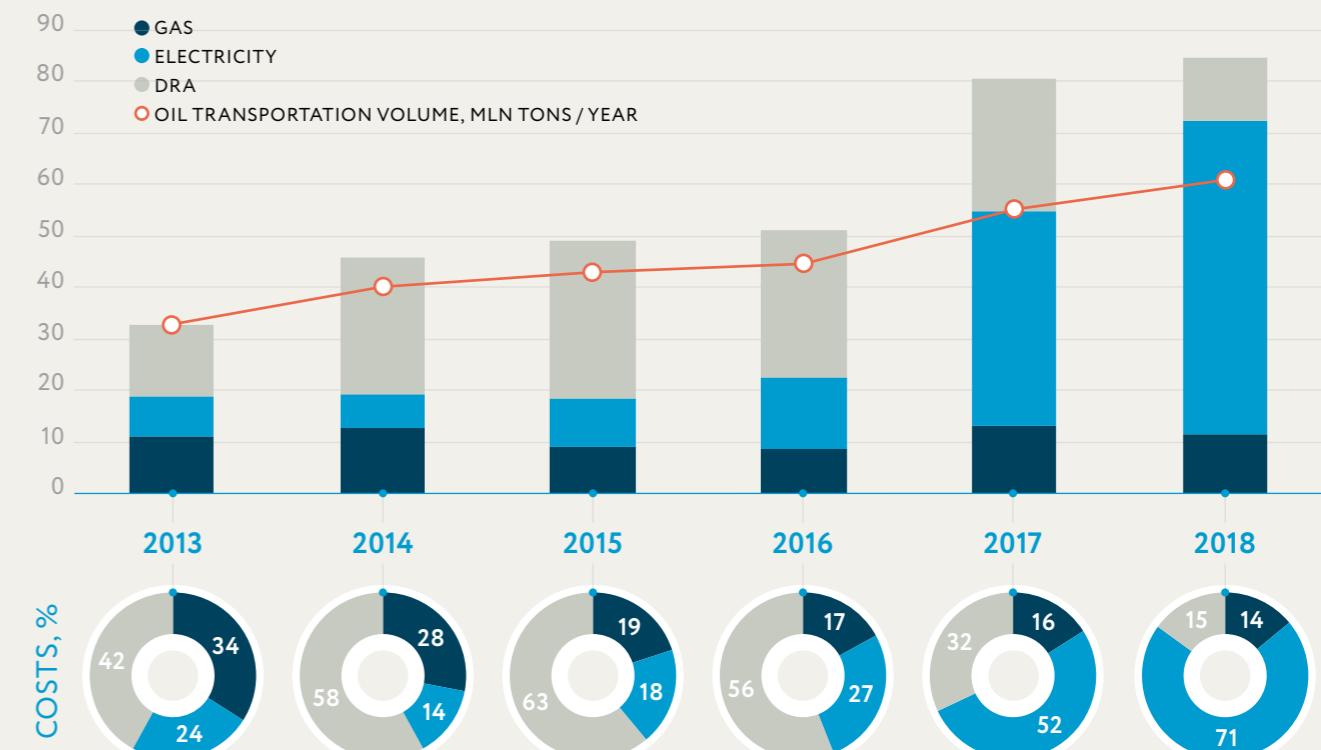
● **INTRODUCING AND CONSTANT ADVANCING** THE ENERGY MANAGEMENT SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF ISO 50001:2011.

volume. This index contains both physical and economical energy efficiency measures; it takes into account ratios of utilized energy resources in various combinations. If somewhere there is a possibility to switch off one pumping unit and upon that slightly increase the volume of consumed DRA, thus achieving the index with the largest value of received income, we recommend this mode to the sales department to be implemented in practice.

An important factor for CPC is a substantial unevenness of raw material supplies into the system. This factor seriously affects the profitability index and the common energy efficiency of transportation. Due to this we organize so called short haul planning. It means that we, being informed in advance about the fact of excess delivery or deficient delivery, accordingly correct our plans



## CHANGES IN STRUCTURE OF COSTS FOR ENERGY RESOURCES AND DRA FOR OIL PUMPING, %



CURRENTLY, THE ENERGY MANAGEMENT SYSTEM CORRESPONDING TO THE INTERNATIONAL STANDARD ISO 50001:2011 IS BEING INTRODUCED AT CPC

in line with the developed methodology, by the profitability index, taking new conditions into account," Alexey Ivanin gives details.

## COGNITION COMES THROUGH COMPARISON

"Is the experience of CPC shareholders used in setting the energy efficiency policy of the company?"

"We consider not only the experience of our shareholders, but also best practices in the industry," Alexey Ivanin answers. "Thus, from 2016

the Consortium is one of the supervisors in the International Association of Oil Transporters (IAOT) created by PAO Transneft, a shareholder of CPC. Currently, IAOT consists of PAO Transneft, OOO NII Transneft, AO Mero Ch.R., AO Transpetrol, OAO MOL, AO KazTransOil, JSC CPC-R, and CNPC. Within this organization an annual benchmarking research on energy efficiency of each IAOT member's operations is conducted, and the results are discussed at cooperative congresses. The participation of CPC in IAOT activities enables us to adopt best practices in the industry and evaluate the level of our operations in terms of energy efficiency against the backdrop of the largest oil transportation companies."

## AFTER THE INTERNATIONAL STANDARD

Advancing the energy efficiency measures is inherently an infinite process. Currently, the energy management system corresponding to the international

standard ISO 50001:2011 is being introduced at CPC. The main work for introducing the system has been undertaken by the group of the chief power engineer as the keeper of the standard.

"Under the requirements of the international standard, we have adopted the corresponding company policy, developed the appropriate calculation methods and performed many other preparatory works," Elena Glybina comments. "We hope that we will successfully undergo the international certification audit this Summer. Operations of our enterprise as per ISO 50001:2011 standard significantly improve the enterprise's image. This is a serious humanitarian act, because our following the standard promotes positive changes of an uneasy ecological situation in the world. Effective use of energy resources allows us to reduce electricity generation and, as a consequence, decrease the environmental impact and grapple with the greenhouse effect across the globe."

AUTHOR  
PAVEL KRETOV

# RELIABILITY STRATEGY



## AN OASIS OF CIVILIZATION

**P**S-2 is the CPC's remotest facility, situated in the Chernozemelsky District of the Republic of Kalmykia at KP 845 km of Tengiz–Novorossiysk oil pipeline, within the area of responsibility of the CPC's Central Region.

This is the Consortium's cutting-edge pumping station, brought on stream a year ago, in April 2018. It brought to completion the Expansion Project, raising the capacity of the CPC's pipeline system to 67 mln tonnes of crude oil per year.

The station is an oasis of civilization amidst unending steppe, blending into the surrounding landscape. The green solutions implemented here make it possible to keep the local flora and fauna in their primordial form.

Being far out from centres of civilization, PS-2 is manned on a rotational basis. It has a rotation camp, which offers comfortable accommodation to the operating personnel and contractors' staff. ●



NIKOLAY GORBAN,  
CPC GENERAL DIRECTOR:



AFTER SUCCESSFUL COMPLETION OF THE EXPANSION PROJECT, THE CPC'S STRATEGIC OBJECTIVES ARE TO MAINTAIN AND IMPROVE THE RELIABILITY OF EQUIPMENT OPERATION AND MAKE INDUSTRIAL OPERATIONS SAFER. TO ACHIEVE THESE OBJECTIVES, THE CONSORCITUM'S STAFF IS DEALING WITH A GREAT NUMBER OF IMPORTANT SECONDARY TASKS. A SPECIAL PROTOCOL HAS BEEN PUT IN PLACE, AIMED AT IMPROVING RELIABILITY. WORKPLACE MONITORING CARDS HAVE BEEN INTRODUCED; THE STOP WORK AUTHORITY WAS ROLLED OUT; OTHER MEASURES ARE BEING ACTIVELY IMPLEMENTED

## THE MAGNIFICENT SEVEN

**P**S-7 is a new asset in the CPC's Western Region, built as part of the Expansion Project.

PS-7 was put on stream some four years ago. The role of PS-7 in the CPC pipeline system is to accept incoming oil from the Kropotkinskaya PS and to send it on to PS-8 and the Tank Farm of the Marine Terminal.

PS-7 pumps oil through the pipeline using four mainline pumps, three of which are on stream while one is on standby, with a total capacity of up 12 thou. m<sup>3</sup> of crude per hour. They are driven by asynchronous motors of 8300 kW each. For power supply to the PS equipment, a 220/10kV electrical substation has been built nearby, with two transformers of 40 MW each.

The high level of industrial safety at PS-7, just like at any other station of the Consortium, is ensured by the pressure surge relief system in place. It provides reliable protection against a hydraulic surge to the line as well as the equipment of PS-7 and the Kropotkinskaya PS, which is upstream on the pipeline.

For environmental protection, the station has its own high-performance treatment facilities. They provide full treatment for all industrial and household wastewater.



FOUR MAINLINE PUMPS OF PS-7 DELIVER

12 THOU. M<sup>3</sup> OF CRUDE PER HOUR



**KENNETH YOSS,**  
FIRST DEPUTY  
GENERAL DIRECTOR OF CPC:

ON MY FIELD TRIP, I SAW MANY TOP-NOTCH PROFESSIONALS WHO ARE PROUD OF THEIR WORK AT THE CPC. HAVING TALKED WITH LOCAL PROFESSIONALS, I LEARNED A LOT ABOUT THE CONSORTIUM'S BEST PRACTICES. SUCCESSFUL IMPLEMENTATION OF HIGHLY EFFECTIVE PRACTICES IS EVIDENCED WITH FIELD PROVEN, CONSISTENTLY HIGH PERFORMANCE ACHIEVED BY THE CPC 24/7/365

## THE LAST OF THE IN-STREAM

**P**S-8 is a new station in the CPC's Western Region, situated in the Krymski District of Krasnodar Krai. This is the last downstream pump station on the Tengiz–Novorossiysk oil pipeline. It was brought on stream as part of the Expansion Project in August 2017, which

made it possible to increase the pipeline's throughput capacity by 20 mln MTA on the western section of the Tengiz–Novorossiysk oil pipeline: from Kropotkinskaya PS to the Tank Farm of the CPC's Marine Terminal.

PS-8 has four mainline pumps driven by 7.0MW electric motors.

There have been put in place the mud strainers, a pressure control unit, AFE injection system, PS life support systems (drinking water pre-treatment system, treatment facilities), an automatic foam fire suppression system and a surge relief system.



**CPC TOP MANAGERS  
INSPECTED REGIONAL  
UNITS**

## FIELD VISIT

**T**he facilities of the CPC's Central and Western Regions—PS-2, PS-7 and PS-8, as well as the Marine Terminal outside Novorossiysk—were

visited in early 2019 by CPC General Director Nikolai Gorban, First Deputy General Director Kenneth Yoss and Vladimir Shmakov, General Manager, Operations. The top managers



**VLADIMIR SHMAKOV,  
GENERAL MANAGER, OPERATIONS:**

DURING THE TRIP WE INSPECTED THE EQUIPMENT IN OPERATION AND SATISFIED OURSELVES THAT THE FACILITIES WERE MAINTAINED IN NORMAL SERVICEABLE CONDITION. THE LOCAL TECHNICIANS DEMONSTRATED HIGH PROFESSIONALISM: THEY ANSWERED ALL OUR QUESTIONS COMPETENTLY AND COMPREHENSIVELY

inspected the regional units and held meetings with technicians.

Following a detailed inspection of the mainline pump stations PS-7 and PS-8 and a tour of the repair workshops, Kenneth Yoss, when talking with a CPC Panorama correspondent, said with satisfaction that the equipment that needs constant care from operations personnel was performing to specifications, with all running repairs being made as per schedule.

At the CPC Marine Terminal, the top managers inspected the tanker loading units and the Operations Control Centre and toured the Shore Facilities and the Tank Farm. As was reported earlier, in 2018 the CPC Marine Terminal loaded more than 61 mln tonnes of crude oil—a record high for the Consortium. It took 558 oil tankers to ship that quantity of "CPC blend".

As part of the management's tour, the locations conducted surprise emergency response readiness inspections of the staff and contractors..



**AUTHOR**  
KONSTANTIN SAVCHENKO,  
TELECOM GROUP LEADER,  
MARINE TERMINAL

# TEAMWORK

THE CPC PANORAMA HAS HAD QUITE A FEW REPORTS ABOUT LARGE-SCALE EXERCISES REGULARLY CONDUCTED BY THE MAINTENANCE FUNCTION, BUT FEW PEOPLE KNOW THAT OTHER CORPORATE UNITS TOO PAY A GREAT DEAL OF ATTENTION TO TRAINING THE PERSONNEL IN EMERGENCY RESPONSE. TODAY WE WILL TELL YOU ABOUT THE TELECOM GROUP'S DRILLS



#### PROVIDING COMMS

The telecom group makes sure of smooth operation of the CPC's various communications systems such as cable communications infrastructure, the process data communications networks for the SCADA, safety and security systems, on-site telephone and radio communications, SPM communications systems, satellite and radio relay communications systems etc. In the space of a year the CPC's FOCL (fibre-optic communication line) is used to make 5+ mln telephone calls and 2+ mln wireless calls, and the SCADA data transfer rate is 14+ TB a week.

The exercises and drills conducted at various regions are an integral part of the telecom group's activities. The OCC's lead communications engineers organize and hold regular exercises for the operating personnel in radio and telephone system disaster

recovery. Regional communications engineers and PS ICT administrators develop a hardware failure response plan. Let us now take a look at what annual repair drills are like on the CPC's trunk cable.

#### ATTENTION: FOCL!

All of the CPC's communications services are based on the FOCL

MORE  
5

control of oil transmission process. In very broad brushstrokes: optical fibre is glass, and glass is known to be brittle. Any shock is certain to damage it, which can hinder or block optical transmission, making it impossible to use communications services.

In an attempt to prevent damage to the FOCL cable, the engineers

CPC FOCL  
IS USED FOR 5+ MLN  
TELEPHONE CALLS A YEAR

trunk cable stretching along the CPC pipeline for over 1500 km. It is used for corporate email, telephone calls to the CPC's facilities, radio calls, manned safety and security monitoring of facilities, and OCC

of the CPC telecom group provide regular maintenance on it. Based on survey findings, appropriate repairs are organized as needed. Note that all maintenance and repairs on the CPC FOCL, except for earthwork, are

carried out by communications engineers in-house.

#### TIME FACTOR

The CPC's regional branches employ technicians with superb knowledge and experience in FOCL maintenance. At their disposal are measuring and welding instruments, specialist fibre-optic measurement laboratories (FOML), special tools and emergency stock of materials.

During repairs of damaged cable, special emphasis is placed on the recovery time objective because critical communications services are indispensable to oil pipeline control. It is speedy emergency response in compliance with all safety precautions that the drills are supposed to teach the personnel.

#### AS LEGEND HAS IT...

It all starts with the development of a programme that details the drill

FIBRE-OPTIC NETWORKS SUPPORT THE HIGHEST BITRATES: DEPENDING ON THE TYPE OF ACTIVE EQUIPMENT USED, THE TRANSFER RATE CAN BE DOZENS OF GIGABIT AND EVEN A TERABIT A SECOND



After the break has been located, the next step is to check all job tickets for the section because such damage is most likely due to unauthorized works next to the FOCL cable.

So, the break has been identified and located, but this information is still insufficient to undertake repairs. It is necessary to formulate a protocol for them, to which end the FOCL as-built documentation is consulted. It includes a detailed alignment sheet and shows the locations of couplings, wells, types of crossings over other communication lines and much more. It is very important that the documentation be exact; this is why the engineers of CPC telecom group are deeply involved in all stages of construction of FOCL lines—both long-distance and on-site.



## CLEAN ENVIRONMENT IS KEY TO OPTICAL FIBRE HANDLING

The repair methodology is important in that any extra fibre-optic connections downgrade FOCL performance. With time, as such connections become more numerous, the cable will not support the required bitrate or become unserviceable. Knowing the location of the wells or couplings closest to the break, repairs can be made using cable stock.

### AT THE BREAK

So, the repair crew has been put together, all the necessary drawings are available, and the repair methodology has been formulated. Once



OPTICAL FIBRE WELDING STARTS WITH THE RECOVERY OF CRITICAL SERVICES

at the scene, the head of repairs will coordinate site preparation and earthwork, and a technician will set up a FOML workstation, which is a special desk with a space to set up an optical welder. It is no coincidence that we draw your attention to the workstation. You will probably have seen how communications

cables are repaired in population centres: a technician sits on a stool under a pole, a welder in his lap and wires everywhere, trampled by his helpers... What kind of quality can you expect here?

Our situation is the direct opposite: a workstation, comfortable and ergonomic, is in a clean room. A clean

environment for handling optical fibre is an important success factor. Even a single speck of dust can necessitate a reassembly of a coupling already in place, and this is a critical waste of time.

The handling of FOCL cable has its dos and don'ts. E.g., you need to make sure you don't bend the fibres beyond a specific radius when placing them into a repair coupling. Failure to meet this requirement results in fibre breakage and necessitates redressing the cable. The communication line recovery time will also increase as a result.

## THE CPC HAS SATELLITE COMMUNICATIONS SETS IN EACH OF ITS REGIONS

on the condition of satellite communications facilities, and hone the skills of setting up and configuring them. In each of the CPC's regions are satellite communications sets that enable telephone communications, Internet access, and if necessary video conferencing with oil pipeline sections without adequate mobile coverage.

The drills over, the communications engineers do a post-mortem and identify issues that are always addressed in scheduled maintenance and emergency recovery.

Well then, the cable has been dressed, inserted into the FOML, divided into cassettes, and the technician starts welding fibres. The fibres being spliced are fed into a special welding mechanism, which bunches the fibres up together. A discharge is applied, which generates an electrical arc, and two

to be repaired are the fibres that enable the operation of the data communication network for the SCADA and telephone systems so that the operator can return to the normal arrangements for CPC pipeline control.

AUTHOR  
PAVEL KRETOV

# OUR OUTPATIENT CLINIC

“OUR” IS EXACTLY THE WORD THAT CPC EMPLOYEES IN NOVOROSSIYSK USE WHEN SPEAKING ABOUT THE MUNICIPAL OUTPATIENT CLINIC No 2, AND THIS WORD EXPRESSES THE LEVEL OF INTERACTION BETWEEN THE INTERNATIONAL CONSORTIUM AND THE TREATMENT FACILITY TO THE FULL EXTENT

In 2017, CPC carried out a large-scale reconstruction of the outpatient clinic by renovating its building (which dates back to 1956) and adding almost 200 sqm of premises to it. The Consortium allocated nearly 48 million rubles for this charity project. The construction workers replaced all the utilities, the roofing, the floors, the windows and doors, and used the shotcreting method to reinforce the walls. Finishing works were carried out in the foyer, the consulting rooms, the service rooms, and utility premises. Cracked plaster, draughts from leaky windows, and worn and torn linoleum—all this is in the past now.

The opening of the reconstructed outpatient clinic became a significant event for a large area with a population of 43 thousand people, a traditional place of residence for the port workers, workers employed at oil and grain terminals, and their families.

The building is equipped with up-to-date security systems, including a video surveillance and a fire protection system. As a result of the reconstruction, 12 new doctor's offices appeared, having increased the capacity of the clinic from 200 to 400 patients per day. Today, the staff of the outpatient clinic counts 65 people.

“CPC representatives have taken all our requests into account. They employed an individual approach when it came to each floor and each office. As a result, one feels almost at home here,” says Nadezhda Lepilkina, Chief Physician at the outpatient clinic No 2.

In previous times, the patients would cross the threshold and find themselves at the front desk, and only after that could they approach the cloak room. The administration switched these two locations; and, what is more, the old-fashioned front desk where the patient had to communicate with the staff through a small window,

with a reception area where smiling friendly personnel are interacting with the visitors face-to-face.

In carrying out the reconstruction, CPC representatives were also mindful of the doctors' preferences concerning the finishing colours. Calm shades were chosen for the walls and the furniture.

According to Nadezhda Lepilkina, the main task of the outpatient clinic is to teach the people to care about their own health. For this purpose, men's and



women's health days are held at the clinic on a regular basis. The personnel makes calls and sends SMS messages to local residents who haven't sought medical advice for two years, as well as to those belonging to risk groups. Personal invitations to attend the clinic are performing really well, having resulted in a significant increase in people's activity.

Dennis Fahy, Chevron Neftegaz. The First Deputy Head of Novorossiysk Svetlana Kalinina hosted the event.

On that day, the outpatient clinic No 2 received a RENEX-RTS X-ray system and OMICRON mammographic X-ray system worth 15 million 880 thousand rubles in total. The need in this equipment cannot be overestimated, as it facilitates early detection of se-

CONSORTIUM ALLOCATES ALMOST  
**48**  
MILLION RUBLES

FOR RECONSTRUCTION  
OF OUTPATIENT CLINIC

The latest medical equipment which CPC handed over to the clinic in February 2019 helps the personnel make the detection of diseases much more precise and efficient. The ceremony of presenting the equipment was attended by the Consortium General Director Nikolay Gorban, First Deputy General Director, Operations, Kenneth Yoss, Deputy General Director for Government Relations Mikhail Grishankov, and CPC Shareholders Representative

rious diseases, including cancer, and improves the treatment prognosis significantly.

“Every woman who has turned 40 should undergo a mammograph examination. There are only two such diagnostic devices in the whole Russia,” mentions Yelena Donukova, Radiologist of Superior Expert Category.

Digital devices operate much faster than analogue equipment, and generate high-resolution images, which helps to avoid diagnostic errors. The

laboratory assistant takes X-ray using the workstation, and the image immediately appears on the doctor's desktop. The doctor examines the image in detail in several views and writes a medical conclusion.

Today, diagnostic mammography using the new OMICRON equipment is available to women residing in Vostochnyi district of Novorossiysk; furthermore, one of the weekdays is dedicated to servicing women living in suburbs and in neighboring areas of Krasnodar Territory. The RENEX-RC X-ray system is also in high demand.

“We are incredibly grateful to CPC for such a beautiful, comfortable, and well-equipped outpatient clinic. It is a great pleasure to come here,” says Valentina Zhdankina, a local resident, to the correspondents of Panorama CPC while waiting in front of the X-ray office for the results of her examination.

As a socially oriented company, CPC has been implementing various charity programmes and projects in Novorossiysk for almost two decades. Since 1998, the municipal entity has received assistance in the amount of about 900 million rubles. In 2018 alone, the Consortium allocated about 195 million rubles for social projects in such fields as education, health, culture, and youth sports.



**AUTHOR**  
KONSTANTIN LEMZIKOV,  
SENIOR ANALYST, NETWORK MONITORING  
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# HOW TO FOIL A HACKER

FIRST, I WILL TELL YOU A STORY THAT IS NEARLY TRUE. IT IS BASED ON REAL EVENTS, AS THEY SAY IN THE CREDITS



FOR SECURITY CONSIDERATIONS,  
IT IS IMPORTANT NOT TO USE ONE AND  
THE SAME PASSWORD FOR ALL WEBSITES

could guess for a million years, and you'd never figure it out.

#### THINK AGAIN, VASYA!..

Vasya's oversight is that he uses this password everywhere. And so it happened that black hats hacked the website of the restaurant where Vasily ordered his sushi. The website was built by a freelance, security was non-existent, and the user database and passwords dropped into the lap



Photo: Sergey Nivens/Shutterstock

of the hacker. As is usually the case, the user name, i.e., his email address, and Vasya's inbox become available to the hackers right away. And in it were not only the photos that Vasya sent his girlfriend, but all messages from all instant messengers, social media, e-merchants and banks.

The hacker will try to log onto Amazon.com with Vasya's email address as a login and the same password, voilà! The happy hacker buys himself a couple of iPhones, using Vasya's bank card saved on the website, and starts changing the passwords for all services he can access with this password, and using the occasion to buy expensive goods at the shops where credit cards are on file. And he can access everything! And meanwhile on Facebook and VKontakte Vasya's friends receive messages such as: "Drop me a couple Ks on my card, I need it right now, I'll repay you tomorrow."

And many do make a transfer—to the hacker's card, naturally.

#### OVERBOARD

While the hacker is maxing Vasily's credit cards, the latter is getting texts from banks. Panicking, Vasya calls the bank, blocks all his cards, and one of his friends, suspecting that the texts he received were a con, is trying to reach him by phone. And when he does, Vasily becomes twice as horrified. Vasya attempts to log onto Facebook, but the password has already been changed. He tries to reset the password, Facebook emails him a link to change his password, but he can no longer access it—the hacker has changed the password! And the same thing happens on VKontakte! Vasya is frantic; he calls his friends, says that he's been hacked, that nobody pay anything, promises to repay everybody, but his legs feel wobbly and

his hands are shaking... The Internet is central to our lives, and Vasya has lost everything in a blink... And card payment reversals are an uphill struggle... At least the hacker only wanted money—after all, a "joker", posing as Vasya, could have also posted indecent photos and criminal texts; try proving from behind bars that it was not you.

#### TWELVE OR MORE

Current information security standards recommend creating passwords at least 12 characters long. In this day and age, a hacker can use hundreds of thousands of computers in parallel to brute-force a password. The only defence against such computing

**SECURELY PROTECTED**  
WHEN CREATING A NEW PASSWORD, YOU ARE REQUIRED BY THE CPC INFORMATION SECURITY POLICY TO ABIDE BY THE FOLLOWING RULES:

1. YOUR PASSWORD MUST INCLUDE CHARACTERS FROM NO FEWER THAN THREE CATEGORIES FROM AMONG THE FOLLOWING FOUR:
  - CAPITAL LETTERS OF THE ENGLISH ALPHABET FROM A TO Z;
  - LOWER-CASE LETTERS OF THE ENGLISH ALPHABET FROM A TO Z;
  - DECIMAL DIGITS (FROM 0 TO 9);
  - NON-ALPHABETIC CHARACTERS (!, \$, # ETC.);
2. YOU NEED TO CHANGE YOUR PASSWORD AT LEAST ONCE EVERY 90 DAYS AND NOT MORE OFTEN THAN ONCE A DAY.
3. YOUR PASSWORD MUST NOT REPEAT ANY OF THE 8 PREVIOUS ONES.
4. YOUR PASSWORD MAY NOT INCLUDE YOUR FORENAME, SURNAME, LOGIN OR ANY PART THEREOF.
5. YOU MAY NOT USE CPC WORDS ON OTHER WEBSITES OR SYSTEMS



ACCORDING TO THE INFORMATION SECURITY STANDARDS, A PASSWORD MUST HAVE A MINIMUM OF

12  
CHARACTERS

capabilities is a longer password. Yes, long passwords are more difficult to memorize, but here are a few pointers on how to make it easier:

**1.** A password can contain a fixed component and a variable ending, which will change over time or based on the website where it will be used. The fixed component can be something few people know such as your nickname as a child, the name of the streets where you were born, words from your favourite song, film title etc. This will make it easier for you to memorize your passwords. For example:

- Perovskoy26KV14A=o—a password for the avito website
- Perovskoy26KV14Vk—a password for VKontakte

**2.** Use no dictionary words or misspell them intentionally in your passwords. For example:

- Mannitor8541%
- 2186TrOnslator\$
- Fotografiya9na12

**3.** Black hats know that if a password requires capitals and digits, people nearly always capitalize the first letter, and tag 1, 123 or 321 on to the end of the password. Password crackers take this into account. Don't leave them an opening—capitalize the



WE MUST KEEP THE CPC INFORMATION SYSTEMS SECURE AGAINST PENETRATION. HACKERS HAVE ENOUGH TOOLS AT THEIR DISPOSAL: PASSWORD GENERATORS, DICTIONARIES, STOLEN ACCOUNTS AND PHISHING, TO NAME BUT A FEW. OUR PASSWORDS MUST BE SECURE FROM HACKING THREATS!



Photo: Tommy Lee Walker/Shutterstock



STRONG PASSWORD—  
GOOD!

LONG PASSWORD—  
EXCELLENT!

LONG, STRONG  
AND EASY TO REMEMBER—  
GREAT!

UNIQUE PASSWORD—  
THE BEST  
PASSWORD!

second (or any other letter), and use digits far from 0 or 9!

**4.** The best password is a long password. Use combinations of words that you find easier to remember. Avoid

common phrases—criminals will certainly try them. For example:

- iLoveSuperFriday55 is a strong password
- MamaMylaPiloramu812raz is a very secure password
- IloveYou123 is a weak password

#### WHAT PASSWORDS NOT TO USE

• A password that is a word followed by a digit. Hackers have password dictionaries for this; the tool takes each word, adds digits to it and tries

common phrases—criminals will certainly try them. For example: you will curse yourself when you try typing it on a non-Cyrillic keyboard. • A password that includes the day and month of your birth. Once a black hat has you in his crosshairs, it will not be a problem for him to find out your date of birth. You can take it for granted that the hacker already knows half of your password; the rest is easier to figure out. Choose digits that are difficult to associate or guess.

## OUR PASSWORDS MUST BE SECURE FROM HACKING THREATS!

it. It starts by adding 1 or 123, and if this fails, it goes on to try other digits.

• A Russian word transliterated into English. This trick has long been ineffective; there are now dictionaries available for this too. It is only natural that to crack a CPC password (or one for a Yandex mail account) hackers will use a Russian dictionary.

• A Russian word typed using an English keyboard layout. This is even worse! First, there are password

• A password with an ordinary word in which the letter S is replaced with the digit 5, the letter A with the digit 4 or the character @, and the letter O with a zero. Please! Dictionaries for this appeared before Yandex or Rambler!

#### SO WHAT TO DO?

Now take a piece of paper and create your password template using my advice. A good and long one, but easy to remember. Better two or

three different ones. Add a variable part to each of them. Use one type of passwords for your work, a second one for your email accounts and online banking, and a third one for all the rest. And start change your passwords without being prompted. And then your money, your reputation and your personal data will remain yours!

#### POST-MORTEM

So how did Vasya's story end? He succeeded in cancelling some of the purchases and regaining access to some websites, but in general he had to rebuild his online life from scratch. The hacker is being hunted by the police, but the chances of him being caught are not good... Vasya was wise enough to write off his financial losses as the costs of information security 101.

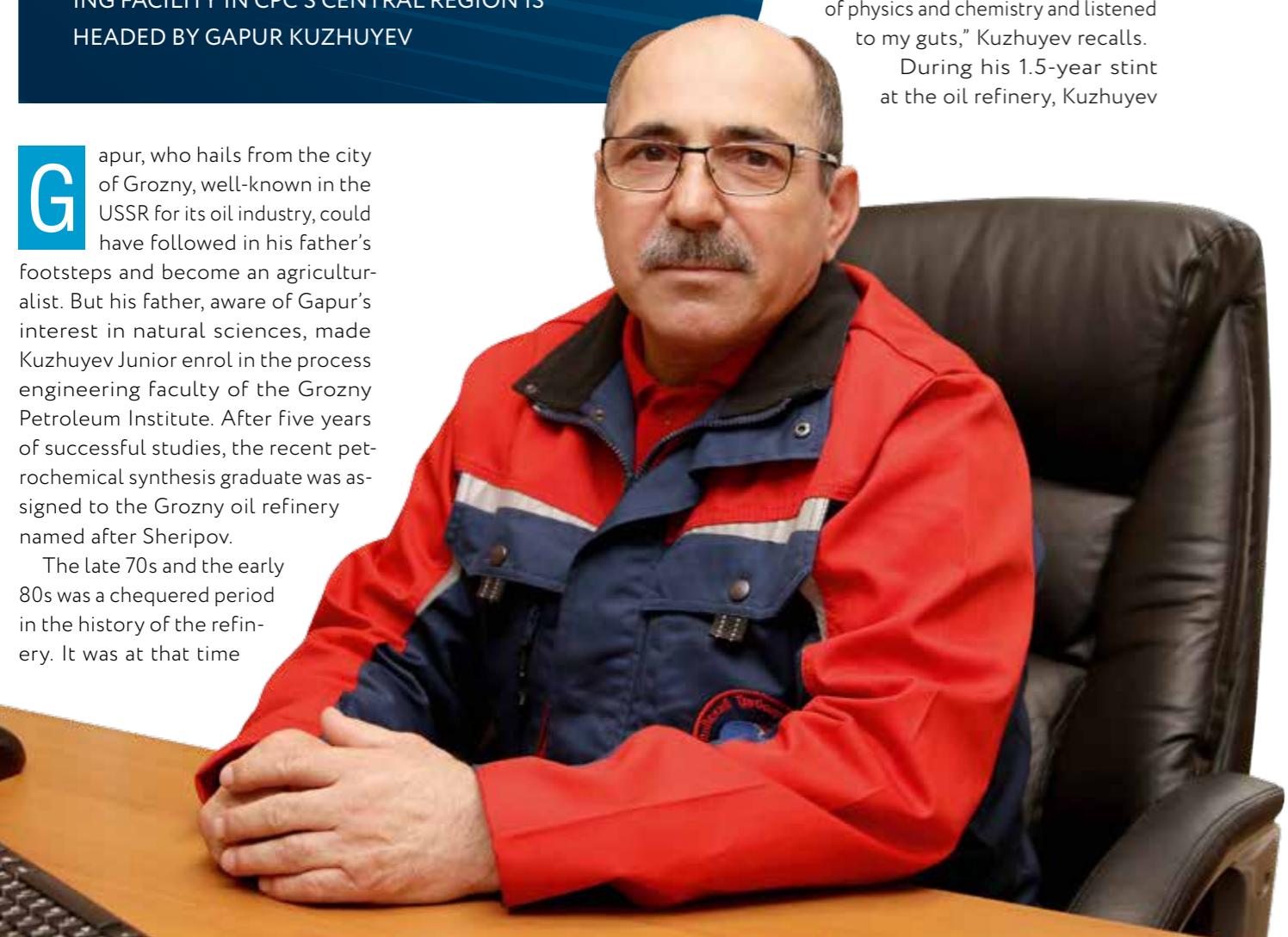
Now Vasily creates a unique, long and strong password for every website. And lest he forget them, he enters all combinations into a software application called Password Manager, which securely encrypts and stores them. By and large, the only password he has to remember now is that for the app itself. It's a great piece of code; I will tell you about it the next time.



AUTHOR  
PAVEL KRETOV

# THE AGE OF PIONEERS

WHEN UNDER CONSTRUCTION, KOMSOMOLSKAYA PS WAS ASSIGNED NUMBER ONE IN CPC PIPELINE SYSTEM. TODAY THE TEAM OF THIS MAJOR CRUDE OIL PUMPING FACILITY IN CPC'S CENTRAL REGION IS HEADED BY GAPUR KUZHUYEV



**G**apur, who hails from the city of Grozny, well-known in the USSR for its oil industry, could have followed in his father's footsteps and become an agriculturist. But his father, aware of Gapur's interest in natural sciences, made Kuzhuyev Junior enrol in the process engineering faculty of the Grozny Petroleum Institute. After five years of successful studies, the recent petrochemical synthesis graduate was assigned to the Grozny oil refinery named after Sheripov.

The late 70s and the early 80s was a chequered period in the history of the refinery. It was at that time

that the enterprise was refurbishing its cable oil percolation treatment plant. It was imperative that the unique, the USSR's only installation be brought back on stream on schedule because it was key to the development of the entire energy sector on the Moscow region. That is why the party's leadership and the government kept close tabs on the situation. A stream of government telegrams flew from Moscow to Grozny, ordering that the project's completion be expedited.

"It is a very serious matter. If we fail, then we will both surrender our memberships—you in the Komsomol, I in the party," says Kuzhuyev, clearly recalling the conversation in the office of the oil refinery's manager.

And the young graduate did not fail. He found the source of the installation's corrosion in the heat exchanger, repaired the malfunction and personally brought the first glass of perfectly clear oil to the manager.

"When troubleshooting is the problem, I put to good use my knowledge of physics and chemistry and listened to my guts," Kuzhuyev recalls.

During his 1.5-year stint at the oil refinery, Kuzhuyev



rose through the ranks from operator 5th grade to installation manager. Then he did his military service as a lieutenant. He served in the fuel unit of a regiment and then a division, and later represented the Ministry of Defence as the customer before defence contractors: he took delivery of road tankers, pumps, face seals and other equipment for the army. The Far East, Estonia, the GDR and Kabardino-Balkaria—the officer and his family had to relocate time and time again.

In 2001 he retired from active duty in the rank of Major. It was precisely at that time that construction started on the Tengiz–Novorossiysk oil pipeline, and acting on some friendly advice, Kuzhuyev submitted his CV to the Caspian Pipeline Consortium. As a result, in May 2001 he found himself on the front line of CPC's major international construction project, which the media christened «the way to the 21st century». At Komsomolskaya PS, what Kuzhuyev had learned in the army when taking delivery of all

manner of equipment came in very useful. In his capacity as shift supervisor, he monitored progress, issued job orders, was directly involved in the acceptance and trial operation of equipment and systems and then in the shakedown of PS.

## GAPUR KUZHUYEV FOUND HIMSELF ON THE FRONT LINE OF THE CPC'S MAJOR INTERNATIONAL CONSTRUCTION PROJECT

over and over: while one turbine was on stream, the other one was down for maintenance. And when a turbine managed to stay on stream even three days without shutting down—that was seen as a genuine miracle!

"Back then, the CPC had no turbine maintenance contractor. So the operators of core equipment, electricians, instrumentation technicians and shift



IN APRIL 2014, KOMSOMOLSKAYA PS COMPLETED EQUIPMENT UPGRADING AS PART OF CPC EXPANSION PROJECT PHASE ONE

supervisors themselves crawled over the turbines, studied the documentation and made repairs," says Kuzhuyev.

Those efforts were not wasted: extensive experience was gained. When the station was visited one year later by representatives from the foreign

the PS team received, it became like a training school for the CPC's entire Central Region. It is no joke: all six station managers in the region trained at Komsomolskaya PS, and all shift supervisors at PS-2, PS-3 and A-PS-4A interned here as well.

### GAPUR KUZHUYEV'S CONTRIBUTION HAS BEEN ACKNOWLEDGED WITH CORPORATE AND GOVERNMENT AWARDS

equipment manufacturer to provide training, it turned out that they had nothing to teach the PS operations staff: the "trainees" already knew more than the "teachers"! Thanks to the serious on-the-job training that

In 2011 Gapur Kuzhuyev took the post of deputy PS manager. After the start of work on the CPC Expansion Project in July of the same year, his job description was expanded to include construction quality

control, conformity to design and HSE compliance.

"We closely monitored all activities of the building contractors, drawing on the experience we gained in the original construction project. The construction works were compliant with all safety measures; for example, to preclude interference with the operation of the vibration sensors installed on the process equipment, we used powerful pile sinkers rather than conventional pile drivers," said Kuzhuyev.

The station experienced hectic time in 2014 when crude transmission had to be done in parallel with unit and integration testing of new equipment. As part of the Expansion Project, a fire house, supply and POL depots and metering units were built at the station, a laboratory unit with

a reagent room was put into service, and new pumping units, petroleum and fire water tanks, straining filters and a pressure surge relief system were put in place.

In April 2014, Komsomolskaya PS completed equipment upgrading as part of Phase One of the CPC Expansion Project. This allowed the station not only to boost its crude oil transmission rate but also to start receiving Filanovsky offshore field oil into CPC pipeline system, being developed in the Caspian by LUKoil.

In 2014 Gapur Kuzhuyev was appointed manager of Komsomolskaya PS. After 18 years there, the station became his home from home.

"The team has done a lot to turn it into a true oasis amidst unending steppe—a comfortable environment for work and leisure. These days few



if any can recall that in the noughties there were no asphalt pavements here and one had to walk over cardboard flooring. That water had to be brought from Lagan, and used sparingly when watering the shrubbery, and now we have centralized water supply. To say nothing of the rotation camp with all modern amenities such as satellite television, sauna, a fitness gym and a sports ground. Our station continues to grow to this day," says Gapur Kuzhuyev.

Gapur Kuzhuyev's contribution to the development of the international crude oil transmission system has been acknowledged with corporate and government awards and decorations, including a Commendation from the RF Energy Ministry and a Certificate of Merit from the Ministry of Natural Resources and the Environment of the Republic of Kalmykia. ●

AUTHOR  
EKATERINA SUVOROVA

# THE WANDERLUST

I MET OLGA SAVCHENKO, SPECIALIST, OIL MOVEMENT DOCUMENT CONTROL, DURING THE PHOTO CONTEST HELD AMONG THE EMPLOYEES OF THE CONSORTIUM...

**O**lga was among the winners of the photo contest, receiving personal congratulations from CPC General Director Nikolay Gorban at the Moscow office. The employees are not just human resources for our company but self-filled creative personalities.

#### STRAIGHT-A STUDENT

Olga was born in Krasnodar Krai. She was a straight-A student and loved mathematics above all subjects. When she was in the 8th grade, she was among winners of an academic contest and was invited to study at the school of mathematics under Moscow State University, but declined the invitation, as she was not yet ready to leave home.

#### “I’VE ALWAYS WANTED TO TRAVEL”

After finishing high school summa cum laude, Olga went to the nation’s capital on her own to continue her education. No one was guiding her when she went from one college to another, choosing her path in life. She passed the entrance exams at the Aviation Institute almost effortlessly but changed

her mind and applied to Gubkin Russian State University of Oil and Gas, as she decided to follow in her mother’s wake and become a geophysicist.

#### NOT A WOMAN’S JOB

Placement: In Soviet times, all the graduates were waiting both anxiously and excitedly for this moment. Young specialists were obliged to “work out” their degrees: they received compulsory appointments at different places of our enormously big country. Only the best of the best had some choice of their future place of work, and they were usually the first to be interviewed by the Graduate Placement Board. Our heroine was among those lucky ones when she graduated from Gubkin.



“I reviewed the list of vacancies and stated my willingness to go to Baikal. ‘No,’ they said, ‘that’s a man’s work.’ Then I asked for a place in Kaliningrad where an offshore job was available. Another rejection: ‘You will



OLGA SAVCHENKO BECAME ONE OF THE WINNERS OF THE PHOTO CONTEST HELD BY CPC AMONG ITS EMPLOYEES

have to carry heavy probes, this is not a woman’s job.’ The boys who were listed on the graduate’s list right after me were sent to work to the Arab countries—where a girl couldn’t go either...”

Olga is smiling while telling me her story, but at that time it felt really bitter, as her “choice” turned out to be a “no-choice”, despite the brilliant graduate project defense. They wanted her to stay at the institute, under the condition that that she would be responsible for extracurricular activities to facilitate her academic career. But that option was at variance with her principles.

#### AT THE PROSPECT WELL

As a result, Olga got placement in her home region, Krasnodar Krai, where her knowledge and ideas were in demand at a relevant organization.

OLGA  
SAVCHENKO  
HAS BEEN WORKING AT  
CPC FOR ALMOST  
**18** YEARS

“Our organization was in charge of testing prospect oil wells and covered a vast territory which included several republics of the Soviet Union, among them Georgia, and that was where I was sent as a drill stem test specialist. I was very enthusiastic.

However, they greeted me with mistrust when I arrived, and I could hear derision in their voices when they handed the first chart to me and suggested that I interpreted it. I had no practical experience, but I went deep into the subject, which was quite exciting, and understood everything quickly. There were no computers at that time, so



everything had to be done manually. Two vehicles would arrive at the prospect well, one serving as the base for the unit with a wireline to move the sonde along the well to the “heave up” and “lower away” yells. The other vehicle carried the station itself which recorded the chart depending on the sonde impulses. If the formation resistivity was high, there was a chance

path to it ran through black volcanic sands. During the day, the sand got as hot as a frying pan in the sunlight, and at night, when the scorching heat was cooling down, white dwarf lilies would blossom—a true miracle!

In fact, Georgia became the starting point of Olga’s research of the mentality and lifestyle of different nations. Local cuisine played a certain part in it. Georgian food was so spicy that it seemed impossible to eat it for those new to it. Once Olga witnessed a funny scene in a cafe. Two Georgians were having lunch at the next table. When one left for a minute, the other took an opportunity to joke over his companion and heavily peppered the dish brought by the waiter. His friend returned, tasted the food, added some more pepper to it and started eating with great appetite.

#### GETTING TO SEE THE WORLD

“I really wanted to travel, but our country was sort of closed-off at that time, and it was almost impossible to see other countries unless your job was related to trips abroad,” Olga Savchenko recalls. “Therefore, a friend of mine and I tried to get a job on a fishing boat. When the captain asked us at the interview, ‘What are you after?’, we answered frankly, ‘We want to see the world!’ So the captain rejected us both with the words, ‘If you were after money, I would take you. But we don’t want

any romantic dreamers here! This is hard work."

The dream of faraway lands brought Olga to the Department of Linguistics at Odessa University. Studying there was very exciting, and the whole class was really obsessed with English! After graduating from the university, Olga entered school teaching.

"A teacher of English is some kind of heavenly work. The efforts you put in return multiplied—this is really amazing!" she admits.

Over time, the young linguist had a need for self-improvement. It was time to go beyond the school curriculum and dive deeper into English. So Olga decided to try herself as a translator. Saying goodbye to the school



**OLGA SAVCHENKO'S HOME ARCHIVE INCLUDES PHOTOGRAPHS TAKEN IN THE MOST EXOTIC CORNERS OF THE WORLD**



and the students she loved was hard, but she wanted to move on.

#### DREAMS COME TRUE!

Working as a translator at a design engineering bureau and at a production facility required mobilization of Olga's knowledge and skills that hadn't been in demand at school. She gained valuable experience in translating technical texts and could communicate with native speakers.

#### "MY KEY DUTY IS PAPERWORK"

performing unique surgery for patients with cerebral palsy.

When Olga brought the exciting news to her friend, the girl's mother showed little belief in the whole undertaking being possible at all, and shrugged it off with the words, "Do whatever you find necessary." Olga translated the girl's medical records and test results into English, and Jim acted as the medium between Olga and the hospital, forwarding the girl's photos and documents at the hospital's request. The efforts worked out well: an invitation from the overseas followed. The inspired mother suggested that Olga joined her and her daughter and helped them to communicate with the physicians in a qualified manner.

The surgery performed at Shriners proved successful, and the girl was now able to move on her own. It made everybody so happy! Thus, helping a child in need of treatment, Olga had her own dream come true—she discovered her America.

#### THE BEST COMPANY

Olga joined CPC in 2001. She started working in the Novorossiysk office, and after some time she was offered a Records Manager position in Moscow at the Oil Movement and Commerce Department, where she has been working to this day. When asked if any of her

previous background came in handy, Olga answers, "Geophysics and oil transportation are like two completely different departments at a college. Common points are very few. Here, measurement of environment parameters (oil quality) also takes place, still it is a completely different system, and the measuring instruments are different: LACTs, density meters... But the English language and my experience as a technical translator was a real asset."

"What does a records manager have to do?"

"Everything!" laughs Olga, "The key duty is paperwork. In these 18 years, I've drawn up powers of attorney, directives, business trip certificates, official letters; I launched electronic memorandums, drafted contracts and supplementary agreements—the list is endless... I can't even say for sure which area my job belongs to, legal perhaps?.. I have to learn all the time, I even completed Chevron's correspondence class in tender procedures in English. Quite often I have to do the "finishing work" on the documents drafted by other specialists, removing all rough edges, bringing the formatting in compliance with CPC standards, and taking care of the approval process. This requires that a logical chain is built, taking the managers' schedules into account, as they might be out of the office, going on business trips or on vacations. If you fail to follow this plan, it is unlikely that you will have the document signed on time. And there are real people standing behind each document, responsible for vital production tasks and working for our common success.

"What does it take to feel satisfied in the end of your working day?"

"When there are no documents left on my desk. Everything is done, and you go home, leaving a perfectly clear desk behind."

"How is your work changing?"

"CPC has embarked on a course to optimization and unification of all the processes. Everything has become more structured now, with each person being responsible for a certain area of work. In 2001, you had to do everything manually: create documents,



compile tables and graphs, track the approval process. With the electronic document flow, all the processes have become automated to the maximum extent possible, and more convenient and transparent than before."

"You have been with the Consortium for almost 18 years. What are the advantages of working here?"

"With the benefit of hindsight, I must say, to be perfectly frank: I am grateful to CPC as a company. People are highly valued here. You will never face an attitude based on someone's personal enmity. CPC protects its employees. Our company is distinguished by its moral values; it is a company that you can rely on."

#### "MY HOBBY IS THE WHOLE WORLD!"

It was owing to her work at CPC that our heroine was able to make her dream of seeing distant lands come true entirely. When I ask her about her hobby, she answers, "My hobby is the whole world!"

"It is very important that a person has an escape. Both a computer and a human being need a reboot," she contemplates. "This is why CPC pays a special "vacation allowance" to its employees. Our management understands how important it is for the people to change their environment, and travel is costly."



Olga is always joined by her son on her trips. She started taking him with her from his early age.

"When my son was little, we would mostly go on beach holidays. And when he grew bigger and stronger, we started traveling with tents—to Sweden, Norway, Finland, Iceland, Gibraltar... Sometimes we would stay on campsites, or it could happen that we would simply put up our tent where we were caught by night," Olga tells me.

Olga believes that the best way to get to know any country is to avoid the routes preferred by crowds of tourists but to choose one's own route impossible to find in travel guides.

To understand a particular country, you need to communicate with its inhabitants and immerse yourself in the local atmosphere.

It happened once that our travelers set up a tent by one of Norway's picturesque fjords. It was quite dark already, and only the lights of some vessel anchored by the shore could be seen below. When the dawn broke, Olga got out of the tent and found herself... in the center of an excursion. The visitors were curiously eyeing their small camp with a USA flag streaming in the wind above it. In the dark, Olga and her son did not notice that the site they chose for

the rest stop was the meeting point of American tourists.

"Nobody even made a comment to us. We pulled down the tent and continued our way," smiles Olga.

In Iceland which they fell for, they happened to collect puffins. A puffin is a cute-looking red-beaked bird resembling a clown. In autumn, when they take off to the warm lands, some immature young birds might lose their flocks. The locals collect such birds and bring them to rehabilitation centers, where the birds are taken care of. When they are strong and mature enough, they are released into the wild.

"My son and I were carrying one of those pretty little puffins when we were stopped by the police. I was battening down the hatches, as we were foreigners and maybe we were not allowed to pick up local birds and take them anywhere. But when the policeman heard that we were going to hand our foundling to the specialists at the rehabilitation center, he gave us one more puffin so that we would take it there, too. It was late in the evening, so we took the birds to the hostel. We were given a plastic tub for them. They looked so sad sitting in that tub that we let them out into the room. The birds walked around the room for some time until they fell asleep. And in the morning



we took them to the rehabilitation center," Olga recalls.

"I love Morocco!", she continues, "It is an agile country, and traveling there is both exciting and educational. Visitors are treated respectfully there. The locals invited us home and treated us to tagine, a national dish similar to Irish stew. Tagine is eaten with hands, you simply scoop it

#### DUE TO WORKING AT CPC, OLGA WAS ABLE TO MAKE HER DREAM OF SEEING DISTANT LANDS COME TRUE

the donkey, it didn't like it, so it fell onto the ground and growled. We turned out to be incompatible, I'd say," my interlocutor laughs.

Olga can talk about her travels for hours. Her home archive includes photographs taken in the most exotic corners of the world. "I don't remember the dates, I remember the emotions," she says, laughing contagiously, and promises to share her photos.

When you talk to her, you feel charged with positive emotions and start believing that if someone has a treasured dream and the will to achieve it, life itself becomes the stream that carries the person to the cherished banks. ●

AUTHOR  
PAVEL KRETOV

# HOLDERS OF OWL

THE CPC TEAM IS ONE OF THE LEADERS IN THE INTELLECTUAL ALL-AROUND QUIZ IN NOVOROSSIYSK AMONG THE STAFF OF BUSINESSES, ORGANIZATIONS AND SCHOOLS. IN EACH OF THE STAGES IN THE 2018-2019 SEASON, REPRESENTATIVES FROM THE INTERNATIONAL CONSORTIUM HAVE BEEN CONSISTENTLY IN THE TOP THREE AND WON THE OWL—THE STAGE TROPHY

**I**ntellectual all-around is a type of general knowledge team quiz very popular in Russia. It is normally staged in a café where each team has its own table. The quiz has 10 rounds, each of which asks six questions, to be answered in 30 sec-

and organizer of quizzes modelled on the What? Where? When? show, which, naturally enough, predetermined the nature of quiz questions. About half of the questions requires the quizzers to demonstrate their general knowledge,



THE TEAM HAS BOTH HUMANITIES AND ENGINEERING GRADUATES

onds or less. The answers are entered into forms, to be handed in to the jury by the teams after every round, and the jury awards scores," says administrative assistant Tatyana Bigayeva.

The intellectual all-around in Novorossiysk is run by Artash Arikov, who is well known among the young as a player

the other half close teamwork and brainstorming.

"We play charades, find obscure word meanings, decipher encrypted classics titles and identify major films by minimalistically styled posters. In short, this is a pleasant pastime, when you can feel intelligent or otherwise, having discovered once again that you understand nothing about modern music," says Aleksey Zakharenko, senior EDC specialist.

Whereas Aleksey Zakharenko is a leading player on the CPC team, its leader and prime mover is senior translator Alina Ivaschenko.

"Our team has both humanities and engineering graduates, which gives us expertise in a wide spectrum of all-around questions. In our corner are Aleksandr Savich, lead analyst, technology group, Marine Terminal, Anatoly Kravchenko, control systems and SCADA engineer, Konstantin Buinov, senior coordinator, shipping documentation, and Dmitry Shanin, information system analyst. We make every effort to bring in family members and legionaries, which is not against the rules," said Alina.



Interestingly, quizzes have their roots in the distant past. From around the early 6th century BC, intellectual contests were staged to honour the god Apollo as part of the Pythian Games in Greece. By that period the ancient educators and philosophers succeeded in persuading society that it was unfair to confer high awards at the Games on athletes for corporal achievements, while neglecting poets, thinkers and philosophers whose ideas and works were bringing not

only personal glory to the intellectual luminaries themselves, but also benefits to Ancient Greeks. This is how the winning sages started receiving national acclaim. ●



THE INTELLECTUAL ALL-AROUND IN NOVOROSSIYSK IS RUN BY ARTASH ARIKOV, WHO IS WELL KNOWN AMONG THE YOUNG AS A PLAYER AND ORGANIZER OF QUIZZES MODELLED ON THE WHAT? WHERE? WHEN? SHOW

**AUTHOR**  
EKATERINA SUVOROVA

## MOVING OF IT AND COMMUNICATION SERVERS

THE MOSCOW OFFICE ON BOLSHAYA ORDYNKA WAS EMPTYING OUT FAST. THE LAST BUSINESS UNIT WAS GETTING READY TO MOVE TO PAVLOVSKAYA. EVERY NOW AND THEN TROLLEYS CARRYING MARKED BOXES FILLED WITH DOCUMENTS ARRIVE AT THE ELEVATOR HALLS. BUSY EMPLOYEES ARE SHUTTLING ALONG THE CORRIDOR. THEY ARE WEARING GREEN T-SHIRTS WHICH SAY, "MOSCOW OFFICE RELOCATION". AND THIS RELOCATION IS A MILESTONE IN THE COMPANY'S HISTORY!



**O**n the eve of Women's Day, on the last day before the three-day weekend in March, our computers were operating in offline mode, and the fixed phones were silent, which was not a surprise: we were warned that the communication lines would be off.

I was permitted to look into the sanctum sanctorum—the server room that ensured our connection with the world until yesterday. And here we are, me and Network Security Monitoring Analyst Alexander Savich, standing amidst the “no admittance” area which no unauthorised person could ever enter. Alexander shows me the empty cabinets. Some of the dismantled equipment is on the floor, ready for the relocation, with hundreds of metres of rolled coloured wires lying next to it—I've always wondered how the IT specialists understand which is which... Of course, I couldn't but ask how the pipeline was

being operated and how other important services were functioning while the server was being moved to a new location.

“The process control of the oil pipelines takes place at the OCC (Operations

Control Centre) at the Marine Terminal, therefore the relocation of the Moscow office does not affect it in any way,” explained Alexander Savich. “And the dispatcher service can contact the people working in the Moscow



office by their mobile phones. Three structural units have been identified in the company which must function smoothly despite the relocation—the Commercial Group which processes the information on oil transportation and shipment, the Treasury Group which makes payments, and the EDMS Group. To ensure uninterrupted transportation and shipment of oil, the database used by the Commercial Group was copied to the server located at the Marine Terminal in advance. The Commercial Department employees working with this data are also staying at the MT while the relocation goes on. When the relocation is over and all the services are restored, the database will be copied back to the server in the Moscow office.

The personnel of the Treasury Group had all the payments planned in such a way that the relocation days would be free from scheduled payments.

### RELOCATION IS A MILESTONE IN THE COMPANY'S HISTORY

As for the EDMS functions, numbers were assigned to the documents manually, and were later entered into the database after the restoration of the services.”

“Yes, the process of moving the IT and communication services is all-thought-through to the smallest detail at CPC!..”

“Of course, as this is not the first time that our team is doing this,” Alexander Savich smiles. “We have relocated CPC offices multiple times, both in Moscow and in the regions. Thus, the Moscow office was once residing at Aerostar hotel, then it moved to the office centre at Radisson where it stayed until 2005

when it relocated to Legion office centre which we are now leaving. This time, we have a contractor responsible for dismantling, transport, and installation of our server infrastructure. As for the network infrastructure, this is what we are taking care of ourselves. Right now, we are dismantling the remaining small batches of equipment. Today we will move everything to the new office and start installing the equipment there, so that the employees would discover on Monday March 11 when they come to work that everything is connected, everything is on and functioning, as if they hadn't been away at all!”



AUTHOR

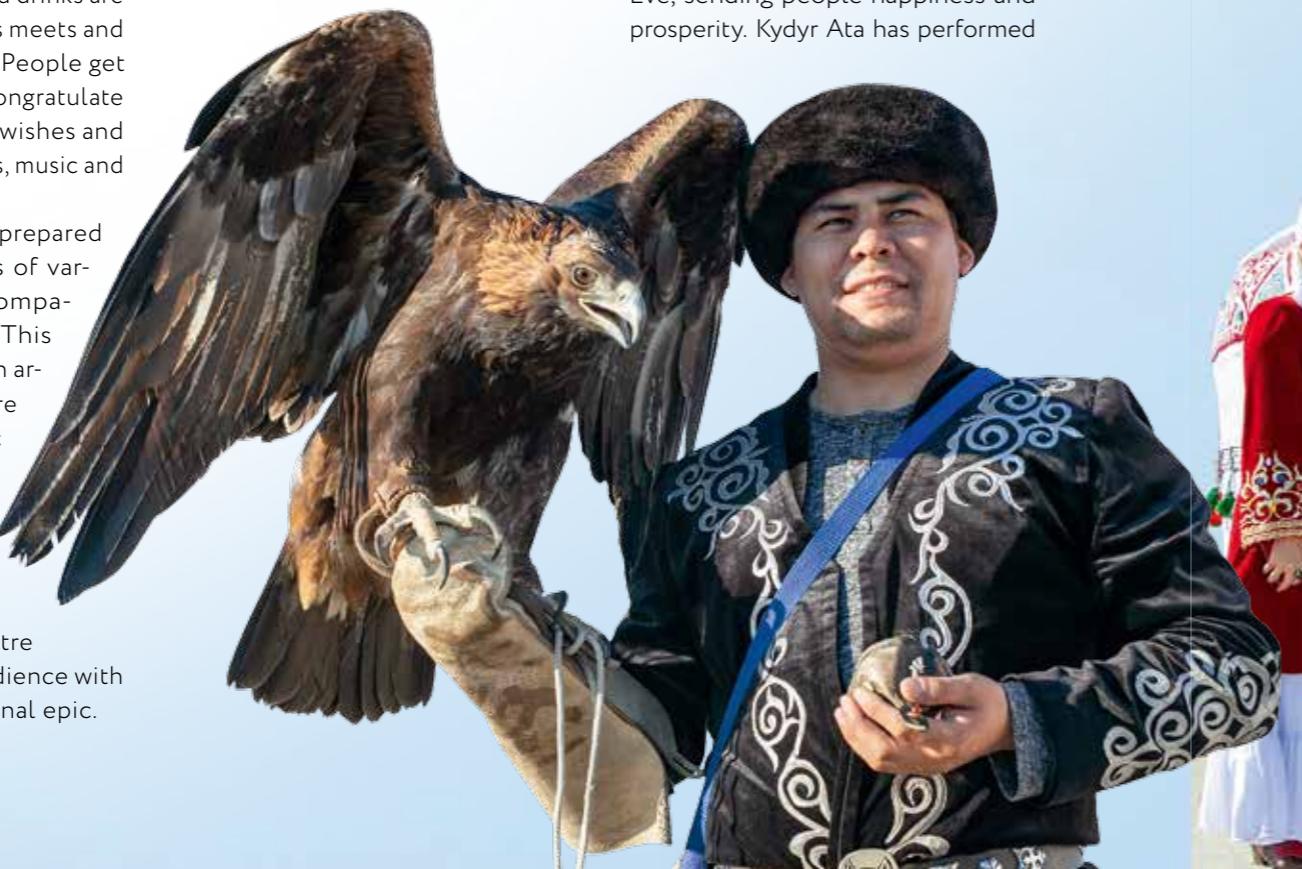
AINA ZHETPISBAYEVA,  
SENIOR SPECIALIST, PUBLIC AND MASS MEDIA RELATIONS, CPC-K

## THE HOLIDAY OF SPRING WITH CPC-K

NAURYZ MEYRAMY IS THE HOLIDAY OF SPRING AND NEW YEAR RECEPTION IN KAZAKHSTAN. THIS DAY IS EAGERLY AWAITED IN EACH FAMILY. CPC-K ANNUALLY TAKES PART IN ORGANIZING THIS NATIONAL HOLIDAY IN ATYRAU

**O**n this day, large yurts are installed in the central squares in all regions of the country, the best treats and drinks are cooked for visitors, sports meets and contests are conducted. People get into national garments, congratulate each other, extend good wishes and forget resentments. Songs, music and laughter flow like water.

Public festivities are prepared for by combined efforts of various enterprises and companies, including CPC-K. This year, a whole aul has been arranged on Beybars square in Atyrau. Traditional music sounded from the stage. CPC-K has presented a vivid theatrical performance to the viewers—the artists of Atyrau Regional Academic Theatre were exhilarating the audience with immersing into a traditional epic.



In the grand white yurt decorated by our Consortium in a traditional style, the guests were welcomed by elder Kydyr

Ata. According to the ancient legends of the Kazakhs, this white-bearded old man treads the ground on New Year's Eve, sending people happiness and prosperity. Kydyr Ata has performed



the national ceremony "Bata beru" ("Blessing").

Some other traditions and folkways of the Kazakhs have also been shown to the guests, and anyone who wished to do so could participate in the show. The audience has appreciated a beautiful staging of the ceremony "Syrga salu" ("Putting on earrings"), with which any Kazakh traditional wedding begins. The ceremony symbolizes the final agreement between marriage brokers. Although the modern Kazakh society embraced the "Western" manner of marriage proposal—with

getting down on one knee, gifting a wedding ring, bachelorette and bachelor parties, no one has repealed the national traditions yet, and the ceremony "Syrga salu" is without dispute one of the most favorite and crucial for every girl.

And, of course, what a holiday without the national creativity competition "Zhumbak zhanyltpash"! The participants were competing in tongue-twisters ("zhanyltpash")

and guessing ("zhumbak"). The most ready-witted and virtuosic ones have received gifts and stormy applause.

For two days the residents and guests of Atyrau, from baby to adult, were enjoying the atmosphere of "Nauryz Meyramy" which has latterly become the national day of friendship and unity. Nowadays it is equally dear to all nations that live in multinational Kazakhstan. It is a satisfaction to know that we, employees of JSC CPC-K, contribute to conservation of the national traditions through our participation. ●



IN THE TRADITIONAL KAZAKH CALENDAR THE DAY OF VERNAL EQUINOX IS CONSIDERED TO BE NEW YEAR'S DAY AND CELEBRATED AS THE HOLIDAY "NAURYZ MEYRAMY". SINCE 2009, THE DAYS OF MARCH 21-23, WHEN "NAURYZ MEYRAMY" IS CELEBRATED, ARE DECLARED TO BE DAYS OFF IN THE REPUBLIC OF KAZAKHSTAN



AUTHOR  
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# FROM THE VOLKHOV TO THE VISTULA

THE RECOGNITION THAT A MODERN ARMY CANNOT  
DO WITHOUT PORTABLE PIPELINE SYSTEMS IN THE FIELD WAS  
REACHED IN THE USSR AS EARLY AS 10 YEARS BEFORE THE  
GREAT PATRIOTIC WAR, WHICH BROKE OUT IN JUNE 1941

## PIPELINES IN LIEU OF TANKERS

The experience of the wars and conflicts of the '30s brought home the shortcomings of road tankers and

of motors deployed there, it is advisable to set up fuel supply by building pipelines. This will save a lot of motor traffic and fuel itself."

## 63 PIPELINE SYSTEMS PRODUCED OVER WAR YEARS

high-sided vehicles used in logistical support. E.g., during the hostilities between the USSR and Japan around lake Khasan and the river Khalkhyn Gol, the Soviet battle group of 500 tanks, 500 aircraft and 300 armoured cars was supplied with fuel using almost as many as 6 thou. vehicles. A great number!

In December 1940 the high command of the Red Army held a conference focused on post-action review of the Six-Week War between Germany and France. In his report, General of the Army Georgy Zhukov said: "For purposes of using fewer motor vehicles to carry fuel along the main axes of advance with high numbers



## FROM IDEA TO SOLUTION

With the outbreak of the Great Patriotic War, efforts resumed to develop field supply pipelines in the USSR. The Nefteprovodstroy engineers D.I. Shinberg and T.Ye. Khromov suggested setting up a portable pipeline system 100 km long, pressurized using 10 pumping stations. The initiative was endorsed by I.K. Sedin, people's commissar of the USSR oil industry.



It did not take long to develop and put in place a plan providing for setting up a modular pipeline and pumping station system using field header pipes. The pipeline was expected to be installed in the autumn of 1941 to supply fuel to the troops defending Moscow outside Yukhnov. The front line being unstable, however, the plan was not implemented.

## IN THE FIELD

During the Great Patriotic War, the standard pipeline used by the fuel units of the Red Army was a portable pipeline system of 1939. The line was assembled using pipes 90 mm in diameter and with walls 2 mm thick. The couplings consisted of two coupling flanges and two bolts with nuts. The couplings allowed the pipes to turn 9 degrees without compromising structural integrity. The seals used rubber rings.

In December 1942 the Fuel Supply Directorate of the Red Army set

up Central Workshop to make portable pipeline systems with a staff of nearly 350 people. By the end of the war they had produced 63 pipeline systems each 1.5 km long.

## WATER CROSSINGS

Those portable pipeline systems were widely used in major river crossings. E.g., in spring 1942 they were used to supply fuel to the Soviet troops

defending the bridgeheads on the left bank of the river Volkov. The front line being unstable, however, the plan was not implemented.

the enemy left behind demolished bridges, railways and transport hubs. The railway troops of the Red Army promptly repaired the tracks from the North Caucasus to the river Don; the bridge across it, however, was impossible to restore in short order. The solution was to run a portable

**IN FEBRUARY 1938 THE RED ARMY  
ONLY HAD 25 CERTIFIED FUEL  
SPECIALISTS VS 2500 REQUIRED**

SOURCE:  
VOYENNAYA MYSL [MILITARY  
THOUGHT] NO 6(11-12)/2001



pipeline system on the bottom of the Don. Its throughput was more than 700 tonnes per day.

#### FLOATING PIPE

In autumn 1943 the Soviet troops reached the Dnieper outside the city of Dnepropetrovsk, crossed it and captured small bridgeheads on the right bank. As soon as a month later, the bridgeheads were used by the armies of the 2nd and 3rd Ukrainian fronts to launch an offensive, which advanced 70 km from the Dnieper by the end of November. The bridge across the river was blown up by the retreating Germans; so the Soviet troops were supplied across the ice in winter time. With the arrival of spring, however, another way had to be found to transport fuel. The problem was solved by the fuel unit of the 3rd Ukrainian front. A 2.7 km pipeline was run across the Dnieper, which crossed the river's main bed, the island of Komsomolsky and the channel between the island and the bank. The pipeline run by the soldiers across the bed itself was 1km long. There being no river traffic, it was decided to float the fuel line using rafts made of empty barrels rather than running it under water.



**OF VARIOUS  
FUELS  
WAS USED IN THE GREAT  
PATRIOTIC WAR**

#### FOR THE FRONT, FOR VICTORY!

In the spring of 1945 the troops of the 1st and 2nd Belarusian fronts were on the offensive in East Pomerania. The Red Army had to advance in the area with its supply lines overextended (with supply depots up to 300 km behind the front line) across muddy, forested and waterlogged terrain. The adversary destroyed dozens of bridges, and cargoes had to be moved over temporary bridges, which were difficult

to keep in place because of the flood season and drifting ice.

A special challenge for the Soviet military was the river Vistula, 400 m wide and 6 m deep. Two lines of portable pipeline systems were set up here, outside the cities of Forden and Graudenz. Writing about that period of the war in his memoirs, Marshall K.K. Rokossovsky said that home-front workers were never out of ideas.

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# A TIME-TESTED INTERNATIONAL PROJECT!



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