

SURVIVAL TEST:

Everyday life
of housing and utilities
infrastructure
for civilian population
in the conflict zone

Report on the monitoring of application in armed conflict
in eastern Ukraine of means and methods prohibited
by international treaties of conducting military operations
on the objects of infrastructure and communications
necessary for the survival of the civilian population



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please contact alterpravo@gmail.com

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Authored by: Denys Denysenko, Valerii Novykov

English translation by: Olena Miskun, amiskun@gmail.com

Design and layout: Mykhailo Fedyshak

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The information and views set out in this study are the ones of the authors and do not necessarily reflect the opinion of individual members of the Coalition Justice for Peace in Donbas and Helsinki Foundation for Human Rights.

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List of abbreviations

MCA	military-civilian administration
GCU	gas control unit
GDS	gas distribution station
SOE	state-owned enterprise
SESU	the State Emergency Service of Ukraine
OSCE	Organization for Security and Co-operation in Europe
SDDR	selected districts of Donetsk region
SDLR	selected regions of Lugansk region
PJSC	public joint stock company
RSA	district state administration
DEG	district electricity grid
JMCC	Joint Monitoring and Coordination Center for ceasefire and stabilization of the line of delineation of the parties
TPP	thermal power plant
LLC	Limited Liability Company



Introduction

The armed conflict, which has been ongoing for more than four years in Donetsk and Lugansk regions of Ukraine, causes significant damage to civilian infrastructure and communications that provide vital resources for the civilian population living in the conflict zone — water supply systems, gas pipelines and electricity grids.

During December 2017 — August 2018, a monitoring study was conducted to document the facts of use in the armed conflict in eastern Ukraine of means and methods prohibited by international humanitarian law in terms of attacks on infrastructure and communications necessary for the survival of the civilian population.

According to the information provided by the Ministry for Temporary Occupied Territories and Internally Displaced Persons of Ukraine, as of January 1, 2018, 606 objects of social infrastructure in Donetsk and Lugansk regions are in need of priority reconstruction as they were damaged by military actions.

Provisions of international humanitarian law provide the protection of facilities necessary for the survival of the civilian population, as well as installations and structures containing dangerous forces, in particular, it is prohibited to attack or destroy, take out of service or making such objects unusable. It is prohibited to use weapons, missiles, substances and methods of warfare, which can cause unnecessary damage or excessive suffering.

International law also establishes restrictions on the use of permissible weapons and methods of warfare — it is forbidden to attack or bombard unprotected towns, villages, houses or buildings, provided that these buildings and cities are not used for military purposes.

“Protecting civilian infrastructure is important not only for the well-being of those who live in Donetsk and Lugansk regions, but also because the damage caused by the conflict ... poses a serious threat to the environment. Damage to any of these objects can lead to an environmental catastrophe, which will further complicate the difficult situation of the long-suffering population on both sides of the collision line,” said the Chief Monitor of the OSCE Special Monitoring Mission to Ukraine, Ertuğrul Apakan, stressing the need to comply with the norms of international humanitarian law regarding the protection of civilian infrastructure objects and the possible consequences of their violation¹.

¹ <https://www.facebook.com/oscesmm/posts/829834840501556>

Methodology

Within the framework of the project study, in accordance with the Law of Ukraine “On Access to Public Information”² the information on the facts of armed attacks and other violations of international humanitarian law regarding civilian infrastructure and damage caused to it was collected from central and local government bodies, local governments, Ukrainian-controlled districts of Donetsk and Lugansk regions, law enforcement bodies and business entities that own objects civilian infrastructure and provide relevant services to the population living in the conflict zone.

Representatives of state authorities and local self-government, managers and staff of enterprises that provide the population living in the conflict zone with water, gas and electricity services, witnesses of events and other persons with relevant information were in-depth interviewed (using elaborated questionnaires) on the circumstances and consequences of armed attacks and other

violations of international humanitarian law in relation to civilian infrastructure.

During the project implementation, the monitoring and analysis of open source information directly related to the focus of the study were conducted.

The testimony resulting from the project activities has been analyzed for compliance with the requirements of national and international humanitarian law.

In general, 34 in-depth interviews were conducted within the framework of the project, 37 information requests and appeals were sent, open sources related to the research objects were analyzed from the beginning of the armed conflict in eastern Ukraine.

For the security reasons references to respondents are given in the text of the report without specifying their personal data.

² <http://zakon5.rada.gov.ua/laws/show/2939-17>

Short Review

The results of the study of the impact of the armed conflict on the functioning of civilian infrastructure and communications provide reasonable grounds for arguing systematic violations by the parties of the conflict of international humanitarian law as regards the protection of the objects necessary for the survival of the civilian population and the protection of installations and structures containing dangerous forces.

The parties of the conflict do not show constant concern for the preservation of the civilian population and civilian objects, do not take all necessary precautionary measures when choosing means and methods of attack in order to avoid casualties or injuries among the civilian population, as well as accidental damage to civilian objects.

Water supply, gas pipelines and electricity supply facilities have been subjected to and continue to be subjected to armed attacks, which cause numerous breaks in supplying vital resources to civilians living in the conflict zone.

Thus since July 2014 at the territory of Lugansk region that is controlled by Ukrainian authorities there were damaged 746 gas pipelines of various pressures and equipment on them. More than 1754.5 thousand UAH were spent on emergency repair works. Natural gas leaks due to damage to gas pipelines amounted to 38 million cubic meters the the amount of 300 million UAH.

In August 2014, a high-pressure gas pipeline on the section from the village of Crimske to the villages of Trekhizbenka and Kryakivka of the Novoaydarivsky district of Lugansk region was damaged, which resulted in the disruption of their gas supply. This route passes through the line of delimitation of the parties in a dangerous area, where constant bombings are conducted, there is a probability of mines of sections of the pipeline route.

In June 2017, the Lugansk-Lisichansk-Rubizhne main gas pipeline was damaged as a result of the bombardment. Starting from the that time, gas supply to village of Crimske of Novoaydarivsky district, townships of Nizhniy and Toshkivka of Popasnyansky district ceased.

According to PJSC Donetskoblغاز and Mariupolgaz in Donetsk region 1706 gas pipelines of various pressures were damaged (destroyed), including 991 gas pipelines, which are currently in non-controlled territory of Ukraine. In addition, 26 gas control units, 12 cabinet-type regulation points, 21 buildings, and 2 garages on the balance of PJSC Donetskoblغاز were damaged. For repair works of damaged gas pipelines and equipment 24249,145 thousand UAH were spent.

The settlements of Donetsk region — Svitlodarsk, Myronyvske, and Luganske are suffering from regular gas supply breaks as a result of hostilities. From 2014, inhabitants of the township of Zaytseve township of Donetsk region live without gas, more than a year gas supply is unavailable to residents of Avdiivka and 7 neighboring villages of Yasinuvatsky district. The issue of restoration of gas supply to the towns of Marinka and Krasnogorivka remains unresolved.

According to the information of Lugansk Energy Association LLC (hereinafter — LEA) 13 substations, about 250 overhead lines, equipment, in particular, auxiliary transformers, power transformers, disconnectors, oil circuit breakers, short-circuiting switches, etc. were damaged during 2014–2015 at the territory of Lugansk region.

Since the beginning of military actions Luganskaya TPP has been subjected to bombing more than 80 times, due to which buildings, structures, expensive equipment, and power lines have been damaged. A critical situation arose on September 17, 2014, when the transformer at the station was set on fire due to hit

the projectile. The break in the work of station led to blackout of settlements in northern Lugansk region. About 1 million inhabitants were left without light, as well as 21 mines receiving electricity from Luganskaya TPP.

As for Donetsk region, according to the data of the Department of Basic Industries Development (hereinafter — DBID) of Donetsk Regional MCA, starting from July 2014, 79 overhead lines, 23 substations, 12 underground power cables, 8 cable communication lines, 4 closed switchgears and other equipment, owned by state enterprise “Regional electric networks”, a separate subdivision “Northern electric power system” of Ukrenergo and PJSC DTEK Donetskoblenenergo for the total amount of 143148.59 thousand UAH.

According to PJSC “Donbasenergo”, 5 workers of the Slavic Thermal Power Plant were killed as a result of hostilities; 9 people, including station staff and their families, were injured in varying degrees of severity; more than 342 units of fixed assets were damaged or destroyed. The sum of the damage, which is confirmed by the results of the independent expert examination, amounts to UAH 202784, 688 thousand.

The shelling of the territory of the Myronivska TPP in Donetsk region caused the stoppage of the thermal power plant. During the period of military operations, Vuglegirska TPP has repeatedly been subjected to shelling. Two units — the auxiliary transformer of unit number 1 and the transformer of block number 4 — were damaged. As a result, both units ceased the work.

For more than a year there was no light in the front-line township of Zaytseve in Bakhmut district of the Donetsk region. In June 2016, shells damaged the electricity grid and two substations on both sides of the collision line. An absolute peace and quiet order was required for the necessary repairs. In the homes

of local residents, light appeared in August 2017 after lengthy repairing works.

At the territory of the Lugansk region that is under the control of Ukrainian authorities 67 water supply and sewage facilities were damaged for a total amount of 232.5 million UAH.

As of January 2018, as a result of hostilities 42 water supply and sewage facilities were damaged at the controlled territory of the Donetsk region.

Donetsk filtration station (hereinafter — DFS) is one of the most important infrastructure facilities, providing water to settlements on both sides of the line of demarcation, in total about 400 thousand inhabitants. The DFS is situated in the area of fire and from time to time ceases its work because of damage to buildings and equipment due to shelling, as well as due to the lack of electricity. The shutdown of the DFS leads to break in water supply and the announcement of a local level emergency situation in the region. Due to damage to the DFS, there is the possibility of chlorine leaks, which is stored at station in volumes from 4 to 5 tons. In the case of simultaneous damage to chlorine, stored at DFS, the damage zone will constitute 3–3.5 kilometers.

The settlements located directly next to the demarcation line, in particular, township of Zaytseve of Donetsk region regularly suffer from water supply breaks due to military actions.

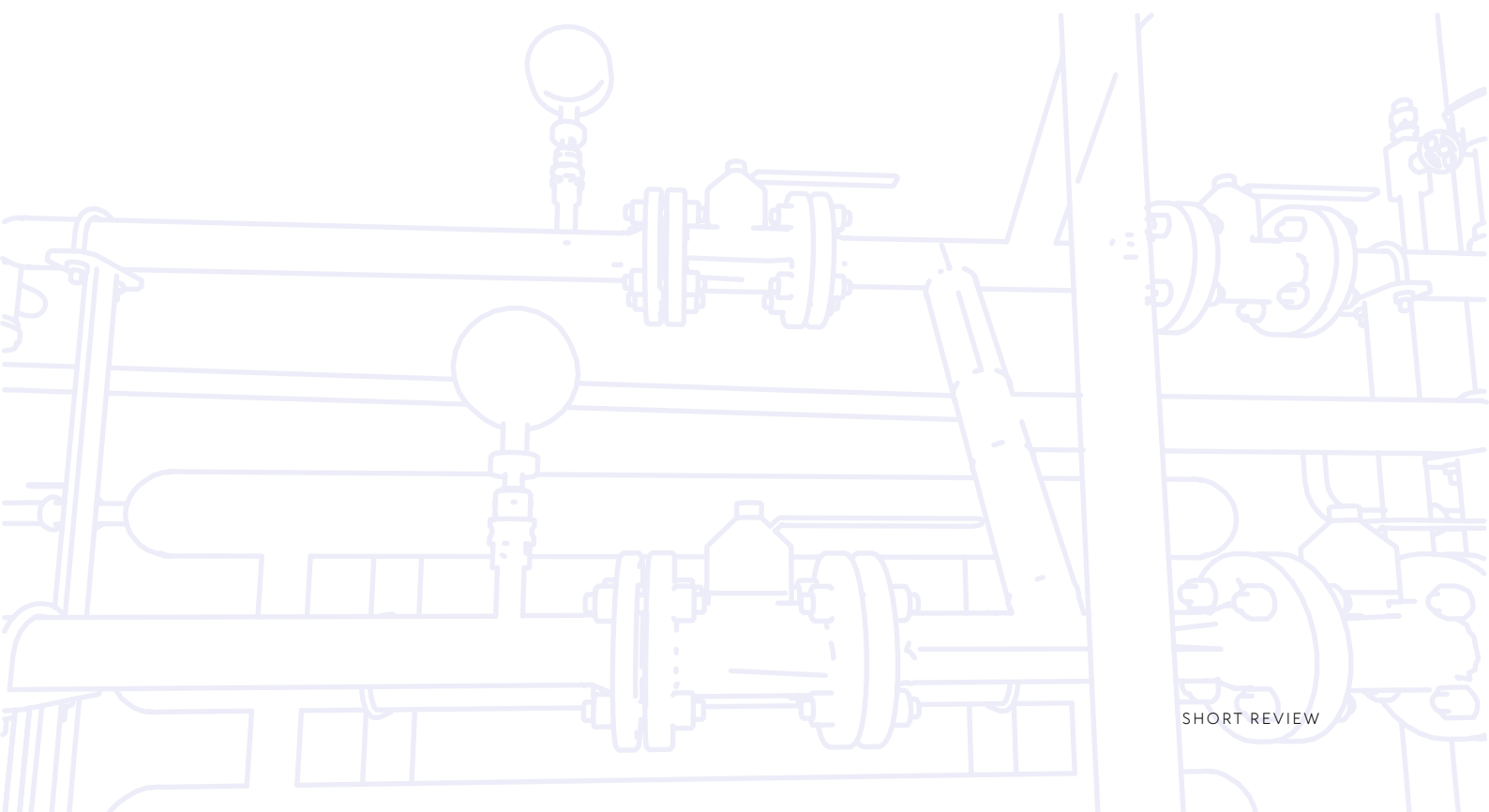
The public utility company Popasnyansky District Vodokanal provides water supply to about 50 thousand residents of Lugansk region at controlled areas and 400 thousand inhabitants from uncontrolled areas. The shelling of the objects of the company began in June — July 2014. The enterprise is in a difficult financial situation because of the debt to the energy

supplying enterprise. This was the reason why there were attempts to disconnect the water supply system from electricity supply, which in turn leads to a stop or decrease in the volume of water supply to the population.

When in October 2014 armed formations of the so-called Lugansk People's Republic ("LPR") took possession of the Luganskvo-da Crimske production site residents of the village of Crimske of Novoaydarsky district (Lugansk region), which is under the control of the Ukrainian government, were left without central water supply.

As a result of armed conflict, the objects of water supply of the Lisichansk specialized public utility company Lisichanskvodokanal were damaged. The sum of direct losses incurred by the military actions of the property of the company amounts to 8.8 million UAH.

The repairing works are almost always associated with the risk to the lives and health of community service workers. On the territory covered by military actions, there are multiple cases when people have to perform repair work in conditions of high danger in order to maintain sustainable water, electricity and gas supply.



National legislation and international humanitarian law

On April 14, 2014, an anti-terrorist operation (hereinafter — ATO) was launched at the territory of eastern regions of Ukraine. The ATO was commissioned by the Decree of the acting President of Ukraine Oleksandr Turchynov (No. 405/2014 of April 14, 2014), which put in force the decision of the National Security and Defense Council of Ukraine “On urgent measures to overcome the terrorist threat and preserve the territorial integrity of Ukraine” (dated 13 April 2014)³.

The Decree of the President of Ukraine “On the decision of the National Security and Defense Council of Ukraine ‘On a large-scale anti-terrorist operation in Donetsk and Lugansk regions’” (No. 116/2018 of April 30, 2018)⁴, changed the format of the antiterrorist operation, which started in 2014. Operation of the United forces on repeal and deterrence of Russia’s armed aggression in Donbass has started⁵.

According to the Article 258 of the Criminal Code of Ukraine⁶ the use of weapons, commissioning of an explosion, arson or other actions that pose threat to human life or health or caused significant damage to property or have other grave consequences if such actions were committed in order to violate public safety, intimidation of the population, provocation of a military conflict, international complication, or in order to influence decision-making or committing or not committing acts by state authorities or local self-government bodies, officials of these bodies, associations of citizens, legal entities, or attracting public attention to certain political, religious or other views of the perpetrator (terrorist), as well as the threat of such actions, are qualified as a terrorist act.

In accordance with the Law of Ukraine “On Combating of Terrorism”⁷, compensation for damage caused to citizens by a terrorist act is carried out at the expense of the State Budget of Ukraine, while in accordance with the procedure established by law the amount of this reimbursement is charged from persons who caused the damage. Compensation for damage caused to an organization, enterprise or institution by a terrorist act is carried out in accordance with the procedure established by law.

The Law of Ukraine “On peculiarities of the state policy of ensuring state sovereignty of Ukraine at temporarily occupied territories in Donetsk and Lugansk regions”⁸ selected areas, cities and settlements of Donetsk and Lugansk regions are recognized as temporarily occupied by the Russian Federation.

Responsibility for material or non-pecuniary damage inflicted to Ukraine as a result of armed aggression of the Russian Federation relies on the Russian Federation in accordance with the principles and norms of international law (Article 2 of the Law). The Russian Federation, as an invading state, is, in accordance with Article 7 of the Law, responsible for violating of the rights of the civilian population.

According to the Hague Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land (1907)⁹ and Protocol Additional to the Geneva Conventions of 12 August 1949¹⁰ It is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations

3 <http://zakon2.rada.gov.ua/laws/show/405/2014>

4 <http://zakon2.rada.gov.ua/laws/show/116/2018>

5 <http://bit.ly/2NzykYe>

6 <http://zakon2.rada.gov.ua/laws/show/2341-14>

7 <http://zakon3.rada.gov.ua/laws/show/638-15>

8 <http://zakon3.rada.gov.ua/laws/show/2268-19>

9 <http://zakon5.rada.gov.ua/laws/show/995-222>

10 <http://zakon5.rada.gov.ua/laws/show/995-199>

and supplies and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive.

The prohibitions in paragraph 2 shall not apply to such of the objects covered by it as are used by an adverse Party:

a) as sustenance solely for the members of its armed forces; or

b) if not as sustenance, then in direct support of military action, provided, however, that in no event shall actions against these objects be taken which may be expected to leave the civilian population with such inadequate food or water as to cause its starvation or force its movement.

These objects shall not be made the object of reprisals. In recognition of the vital requirements of any Party to the conflict in the defence of its national territory against invasion, derogation from the prohibitions contained in paragraph 2 may be made by a Party to the conflict within such territory under its own control where required by imperative military necessity.

According to the Article 56 of Protocol I Works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, shall not be made the object of attack, even where these objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population. Other military objectives located at or in the vicinity of these works or installations shall not be made the object of attack if such attack may cause the release of dangerous forces from the works or installations and consequent severe losses among the civilian population.

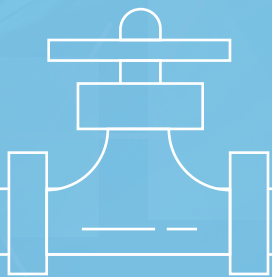
The special protection against attack provided by paragraph 1 shall cease for a dam or a dyke only if it is used for other than its normal function and in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support.

It is prohibited to make any of the works, installations or military objectives that have dangerous forces the object of reprisals.

The Parties to the conflict shall endeavour to avoid locating any military objectives in the vicinity of the works or installations that contain dangerous forces. Nevertheless, installations erected for the sole purpose of defending the protected works or installations from attack are permissible and shall not themselves be made the object of attack, provided that they are not used in hostilities except for defensive actions necessary to respond to attacks against the protected works or installations and that their armament is limited to weapons capable only of repelling hostile action against the protected works or installations.

In order to facilitate the identification of the objects protected by this article, the Parties to the conflict may mark them with a special sign consisting of a group of three bright orange circles placed on the same axis. The absence of such marking in no way relieves any Party to the conflict of its obligations under this Article.

Gas supply



Donetsk region

At the territory of Donetsk region there are 2 gas distributing companies — PJSC Mariupolgaz and PJSC Donetskoblغاز.

According to PJSC Mariupolgaz as of January 2018 throughout the period of war actions 41 gas pipelines of various pressure serviced by the company were damaged (destroyed),

including 5 gas pipelines, which are currently at non-controlled territory of Ukraine. For repair works of damaged gas pipelines it was spent 864.955 thousand UAH.

The list of damaged gas pipelines operated by PJSC Mariupolgaz is given in Table 1.

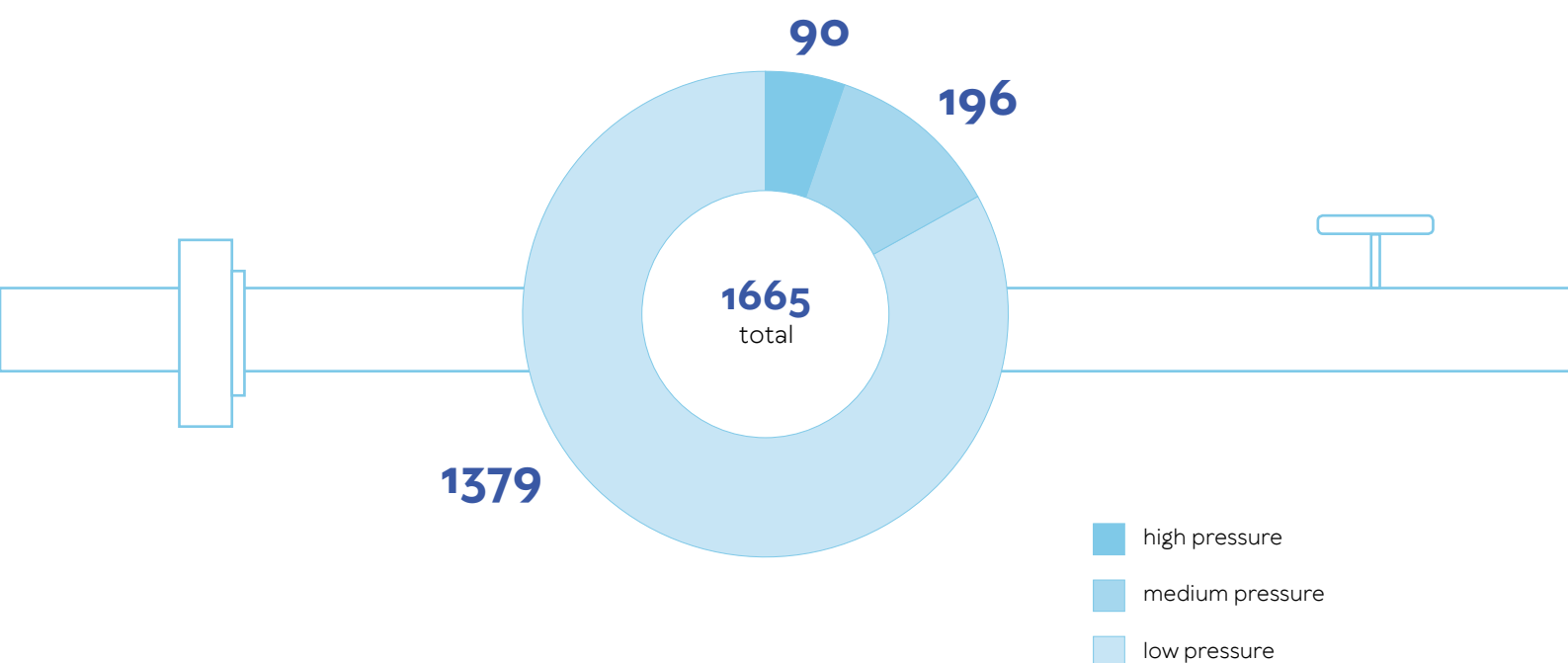
Table 1 — List of damaged gas pipelines operated by PJSC Mariupolgaz as of January 15, 2015

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH
City of Mariupol	13 low pressure gas pipelines, 5 medium pressure gas pipelines, 1 high pressure gas pipeline	state		654.438	654.438
Volnovakha district	11 low pressure gas pipelines, 2 medium pressure gas pipelines	state		118.118	118.118
Nikolsky district	4 low pressure gas pipelines	state		50.166	50.166
Novoazovsky district (not controlled territory)	3 gas pipelines of low pressure, 1 medium pressure gas pipeline	state		38.501	38.501
town of Novoazovsky (not controlled territory)	1 gas pipeline	state		3.732	3.732

According to PJSC Donetskoblغاز as of January 2018 throughout the period of hostilities 1665 gas pipelines of various pressures serviced by

the company were damaged (destroyed), including 986 gas pipelines, which are currently situated at non-controlled territory of Ukraine.

Number of damaged gas pipelines operated by PJSC Mariupolgaz



In addition, 26 gas regulating stations, 12 cabinet-type regulation points, 21 buildings, and 2 garages on the balance of PJSC Donetskoblغاز were damaged. 23384,19 thousand UAH were spent on repair works of damaged objects¹¹.

The list of damaged gas pipelines operated by PJSC Donetskoblغاز is given in Table 2.

¹¹ Repairing works on the gas pipelines currently situated at the occupied territory were carried out in 2014, when the objects were still at a controlled area

Table 2 — List of damaged gas pipelines operated by

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH.
Town of Bakhmut	10 low pressure gas pipelines, 1 medium pressure gas pipelines, 1 cabinet-type regulation point	state	30.3	30.3	—
Bakhmut district	15 gas pipelines of low pressure, 1 medium pressure gas pipelines, cable	state	180.09	180.09	—
Town of Gorlivka (not controlled territory)	496 gas pipelines of low pressure, 44 gas pipelines of medium pressure, 39 gas pipelines of high pressure, 2 GDP, 2 CTRP, 2 garages, 15 buildings, fence	state, private	1707.86	1707.86	—
Bakhmut district	56 low pressure gas pipelines, 6 medium pressure gas pipelines, 7 gas pipelines of high pressure, 1 GDP	state	554.06	554.06	—
Town of Toretsk	79 low pressure gas pipelines, 20 medium pressure gas pipelines, 2 high pressure gas pipelines, 2 GDP	state	422.45	422.45	—
Kostyantynivka district	2 low pressure gas pipelines, 1 high pressure gas pipeline	state	9.05	9.05	—
Volnovakha district (not controlled territory)	5 gas pipelines of low pressure, 1 GDP, 1 CTRP	state	105.04	105.04	—

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH.
Volnovakha district	8 gas pipelines of low pressure, 8 gas pipelines medium pressure, 1 high pressure gas pipeline, 1 GDP, CTRP	state	235.51	25.76	—
Town of Dokuchayevsk (not controlled territory)	42 gas pipelines of low pressure, 3 gas pipelines of medium pressure, 4 gas pipelines of high pressure, 2 GDP, 1 CTRP	state	616.64	616.64	—
Town of Volnovakha	1 low pressure gas line	state	10.4	10.4	—
Town of Yenakieve (not controlled territory)	57 gas pipelines of low pressure, 12 gas pipelines of medium pressure, 8 gas pipelines of high pressure, 6 GDP, 1 CTRP, 2 CTGRP, protectors	state	959.97	959.97	—
Bakhmut district (not controlled territory)	5 low pressure gas pipelines, 42 medium pressure gas pipelines, 3 gas pipelines of high pressure	state		256.37	—
Town of Khrestivka (not controlled territory)	9 gas pipelines of low pressure, 4 medium pressure gas pipelines, 1 high pressure gas pipeline	state		188.07	—
Shakhtarsky district (not controlled territory)	4 low pressure gas pipelines, 1 high pressure gas pipeline	state		47.71	—
Town of Zhdanivka (not controlled territory)	4 low pressure gas lines, 1 medium pressure gas pipeline	state		20.63	—

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH.
Bakhmut district (not controlled territory)	3 medium pressure gas pipelines	state		50.00	—
Town of Kramatorsk	2 gas pipelines of high pressure, 1 GDP	State, private		515.47	—
Town of Mariinka	63 low pressure gas pipelines	state		87.13	—
Mariinka district	84, low pressure gas pipelines, 1 medium pressure gas pipeline, 8 gas pipelines of high pressure, 2 GDP, 1 CTRP	state		10126.43	—
Town of Sloviansk	122 low pressure gas pipelines, 13 medium pressure gas pipelines, and 3 buildings	state, private		903.19	—
Sloviansk district	30 gas pipelines of low pressure, 3 medium pressure gas pipelines	state		301.55	—
Town of Lyman	11 low pressure gas pipelines, 2 medium pressure gas pipelines, 1 high pressure gas pipeline	state		158.01	—
township Starobeshivske (not controlled territory)	5 gas pipelines of low pressure, 1 medium pressure gas pipeline, 5 buildings	state, private		380.04	—

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH.
Starobeshivsky district (not controlled territory)	6 low pressure gas pipelines, 6 medium pressure gas pipelines	state		496.31	—
township Boikivske of Boikivsky district (not controlled territory)	6 low pressure gas pipelines, 1 medium pressure gas pipeline, 1 high pressure gas line	state		275.37	—
Town of Khartsizk (not controlled territory)	39 gas pipelines of low pressure, 9 gas pipelines of medium pressure, 2 high pressure gas pipelines, 3 CTRP, 1 building	state, private		1410.27	—
Town of Shakhtarsk (not controlled territory)	23 gas pipelines of low pressure, 1 GDP, building	state, private		429.77	—
Shakhtarsk district (not controlled territory)	3 gas pipelines of low pressure, 6 medium pressure gas pipelines, 5 high pressure gas pipelines	state		432.33	—
Town of Torez (not controlled territory)	2 gas pipelines of low pressure, 1 medium pressure gas pipeline	state		172.58	—
Town of Snizhne (not controlled territory)	8 gas pipelines of low pressure	state		366.12	—
Yasynuvata district	29 low pressure gas pipelines, 5 medium pressure gas pipelines, 3 high pressure gas pipelines	state		414.23	—

Name of settlement	Name of damaged (destroyed) capacity	Ownership (state, communal, private)	Total cost of destruction (starting from 2014), thousand UAH	including:	
				amount of money disbursed for recovery, thousand UAH	amount of money necessary for recovery, thousand UAH.
Town of Yasynuvata (not controlled territory)	48 low pressure gas pipelines	state		50787	—
Town of Makiivka (not controlled territory)	1 low pressure gas pipeline, 1 medium pressure gas pipeline, 1 high pressure gas line	state		22189	—
Yasynuvata district (not controlled territory)	4 low pressure gas pipelines	state		2332	—
Town of Avdiivka	82 low pressure gas pipelines, 2 medium pressure gas pipelines, 1 CTRP, heating system, building	state, private		67727	—
Amvrosiivka district (not controlled territory)	16 gas pipelines of low pressure, 5 GDP	state		8063	—
Town of Amvrosiivka (not controlled territory)	4 gas pipelines of low pressure, 2 GDP	state		1026	—

GDP — gas-distributing plant
 CTRP — cabinet-type regulation point
 CTGRP — Cabinet-type gas regulation point

Settlements of Svitlodarsk bulge

Throughout January-February 2015, during the fierce battles for Debaltsevo, the settlements of Donetsk region — Svitlodarsk, Mironivsk, and Lugansk — were subjected to constant bombardment. As a result of hostilities, missiles often hit objects of gas supply. Predominantly there were damaged gas pipelines of medium pressure located in settlements. Occasionally there were cases of damage to underground mains, damage to gas meters by shrapnel. In average the repair works have been done during 24 hours, but if the damage to the pipelines was significant repair works could take several weeks. During this period, residents were left without gas supply.

According to the workers of the Svitlodarsk repair section of Artemivsk Department of Gas Supply and Management (hereinafter — DGSM), the first shelling started at the end of January, the bomb exploded near the gas storage station (liquefied gas storage facility) in the village of Myronivske. At that time the site was part of the Debaltsevo DGSM. In early February, the gas distribution station, which feeds the city of Svitlodarsk, the Kodema, Luganske, Myronivske settlements was damaged by the hit of shells. In order to solve the emergency situation the gas supply to the specified settlements was completely ceased for for 2 weeks.

“Apart of this the heating system of Svitlodarsk was also damaged. There was broken an underground main along the road to Debaltsevo, which is laid from Svitlodarsk to Myronivske. An explosion

occurred near the gas pipeline. The force of explosion was enough to break the underground plastic pipe”, — tells the locksmith V¹².

According to local authorities of Svitlodarsk town, at that moment, the staff of Vugleghirska TPP, the Bakhmut DGSM and Vesta Utility Company was dealing with emergency at the supply lines, as the officials of Debaltsevo administration were absent from their workplaces because of combat operations. After the repairs performed during the day, the gas supply to private houses of the city was restored. The task of restoration of gas supply to multistoried buildings was complicated by the fact that many people left the city, their apartments were closed, and it was dangerous to supply gas without verification.

“There are 2 GDPs at the territory of the neighborhood one of which was slowly “passing” gas from high to low pressure and this is how the gas supply was restored in the part of houses. There was no gas in the other part of the district. At the meeting of city council officials and the gas service staff it was decided to start gas supply to the houses without safety check. Thank God, everything went well ...” — the employees of the housing and communal services of Svitlodarsk town recall¹³.

¹² Interview DR-o68

¹³ Interview DR-o64

“At that time, local authorities worked together with Vuglegirska TPP and Bakhmut DGSM to rebuild the gas supply system. The staff of companies performed qualified works on connecting of gas-distributing plants and cabinet-type regulation points. There were held joint meetings on urgent issues of repairing works”, — add representatives of local authorities¹⁴.

During that period, due to the damage of the railways, it was impossible to bring coal to Vuglegirska TPP. Due to this from February 28 to March 8 there was no heating in the city.

“Later under constant bombardment, the railway was restored, coal was delivered, on March 7 we started commissioning works and the next day we began to heat the homes...” — point out the representatives of the city authorities¹⁵.

In December 2016, the gas pipeline in two areas of the private sector and buildings No. 80 and 26 was damaged by shelling. The gas supply was restored within one day.

In the village of NovoLuganske in the district of Bakhmut Agrarian Union LLC. the gas pipeline was damaged by the bombing on April 25, 2018. Locksmiths of Svitlodarsk district identified and repaired 17 holes.

¹⁴ Interview DR-o66

¹⁵ Interview DR-o63

Zaytseve settlement

From 2014 there is no gas supply to the village of Zaytseve of Bakhmut district of Donetsk region. The military actions damaged the gas pipeline coming from the occupied Gorlivka. According to Zaytseve

township military-civilian administration (hereinafter MCA) it is not possible to repair the gas pipeline due to regular shelling. For the same reason, they see such works as not feasible.

“Starting from 2014 to the present day there is no gas supply to all areas of Zaytseve. We have considered the possibility to develop of alternative supply from the controlled area. The only possibility is a tie-in connection to the system of high pressure gas in Bakhmut, and it is more than 20 km away. At present, the work on the development of such project is not conducted”, — respondents note¹⁶.

Mariinka and Krasnogorivka

The issue of gas supply restoring to the towns of Mariinka and Krasnogorivka remains unresolved. Before the ATO, the gas supply of these towns was carried out from the high-pressure gas pipeline: GDS Mariinka — Mariinka town — Krasnogorivka town”. The pipeline was located in the area of hostilities and was significantly damaged by heavy artillery shelling. In July 2014, the GDS of Mariinka town has been shutdown and the connecting gas pipeline was cut off that led to cessation of gas supply to Mariinka and Krasnogorivka towns.

According to PJSC Donetskoblغاز, since September 2015, with the help of the International Committee of the Red Cross in Ukraine the employees of the company performed reconstruction works at the destroyed gas supply facilities of Mariinsky district. And in

June 2016 a new connecting high pressure gas pipeline was constructed so the gas supply to Mariinka and Krasnogorivka was restored.

Experts of PJSC Krasnogirsk Refractory Plant that owns GDS Mariinka compiled a list of necessary works on its restoration. But according to Ukrainian party of JMCC — Joint Monitoring and Coordination Center for ceasefire and stabilization of the line of delineation of the parties (hereinafter — JMCC) “the works are only possible after the provision of the necessary security guarantees by the SDDR. All twenty five inquiries from PJSC Krasnogorsk Refractory Plant that were submitted last year remained unanswered”¹⁷.

According to the Department of Basic Industries Development of Donetsk region MCA, even if the relevant conditions for the GDS are

¹⁶ Interview DR-043

¹⁷ <http://bit.ly/2N5El6M>

fulfilled, it is necessary to ensure permanent safe access of operators to the station, which is impossible today.

Under current circumstances there is an urgent need to develop and implement an alternative option for the gas supply of Mariinka and Krasnogorivka towns, with a tie-in connection to the system at the territory that is under control of Ukrainian authorities, near GDS1 Kurakhove. At present, the

department is working on feasibility study for the project.

Thus, from the summer of 2014, thousands of residents, dozens of social infrastructure objects and a number of enterprises remain without gas and heat. People started to use coal and firewood instead of gas heating installing solid fuel boilers in homes. The charitable organizations, in particular, “Daddy for Ukraine”, provide poor people with fuel briquettes.

Avdiivka

For more than a year there is no gas supply to Avdiivka and 7 adjacent villages of Yasinuvatsky district (the villages of Lastochkine, Krasnogorivka, Orlivka, Vodyane, Tonenke, Pervomayske, Netaylove). In early June 2017 the section of Makiivka — Avdiivka main gas pipeline was damaged due to bombardments; The gas pressure in the system began to fall rapidly, and its supply was stopped. More than 20 thousand people were left without gas. The city declared an industry related emergency of regional level. It should be noted that the production process at the Avdiivka Coke Plant was not related to the absence of gas in the city, as the company does not use natural gas in its technological cycle.

The city of Avdiivka is divided into two parts — a new multi-storey building (Khimik settlement) and the old private sector with couple of two-storey buildings and two schools. The Khimik part is heated by the Avdiivka Coke Plant: steam and hot water are a byproduct of production cycle. The private sector, where almost two thirds of the population live, is almost completely rely on gas heating. As the wood stoves were not needed anymore

people dismantled them. When gas supply to Avdiivka was cut it was not critical for the inhabitants of Khimik — people bought electric stoves and cooked food on them. But for the private sector, this turned into a real catastrophe — thousands of families froze in their homes in the winter¹⁸.

Ukrainian authorities made a decision to build an alternative auxiliary gas pipeline “Okcheretine-Avdiivka” bypassing the occupied territory. The project was developed by PJSC Donetskoblغاز, with the DBID Department of Donetsk Region MCA as the commissioner of the works and Teploenergokomplekt LLC as the general contractor. According to local residents, it was initially promised to start gas supply to the 2017 Independence Day, then before the start of the heating season, and then by the New Year. But the first half of 2018 has already passed, and the gas supply to Avdeevka has not yet been restored. In winter despite the work of electric heaters, the temperature in homes did not rise above 6 C. Due to low voltage in the network, the electrical appliance could not operate at full capacity.

¹⁸ <http://bit.ly/zN86EBA>

“Everyone uses heaters and electric cookers, but as the level of voltage in the network is too low, they just make electricity meters work and do not produce heat at all. The payments should be recalculated. Because 1,68 hryvnia per kilowatt makes us broke”, — the local resident remarks¹⁹.

According to the Head of the military and civil administration of Avdiivka Pavlo Mykhailin, during the absence of gas supply in winter period, a number of measures were taken to reduce the negative consequences for the city’s residents. In particular, electricity tariffs were

reduced for the houses that used natural gas for heating; provision of one-time financial aid to cover the cost of electricity, subsidies for the purchase of solid fuels and liquefied gas, the allocation of firewood to residents eligible for benefits.

But according to the Head of the Public Council of Avdiivka, Vadim Yankovsky, in reality, everything is not as stated. As of February 2018 the electricity tariffs were reduced not for all residents who were forced to use heaters. Free firewood could be only received after paying the delivery cost — 350–400 UAH. But as poplar wood that is predominantly supplied burn quickly in the stoves and produce little heat, people rarely use such an opportunity.

“If the officials in the summer had honestly said that there would be no gas, many people would have made wood stoves or bought solid fuel boilers to heat their homes. One should understand that this is a lot of money, but it still needs to be installed and fuel purchased. But since everyone was waiting for the restoration of gas supply, they decided not to spend money vain ...”, — Mr. Yankovsky adds²⁰.

Finding themselves in dire straights residents of Avdiivka at a general meeting created an initiative group that decided to file an administrative legal action regarding the situation. In January 2018, the chairman of the public organization Combatants (UBD) Anton Voronov filed a lawsuit against the head of Donetsk MAC Pavel Zhebrivsky, who was at that time on this post, and the chairman of the Avdiivka MAC, Pavel Malikhin, with the demand to recognize the head of the region and the head of Avdiivka guilty of that the private sector of the frontline city was unprepared for the heating season, and of their connivance to a humanitarian catastrophe²¹. The case is currently under review.

Due to frequent shelling, adverse weather conditions, the construction of a new high pressure gas pipeline was delayed, but in early 2018, the construction of the gas pipeline was completed.

19 <http://bit.ly/2N86EBA>

20 <http://bit.ly/2N7xNFo>

21 <http://bit.ly/2nWJDaz>



Construction of an auxiliary gas pipeline to the town of Avdiivka²²

²² <http://bit.ly/zN6ePOU>

In February, the former head of Donetsk MAC, Pavel Zhebrowsky, accused the management of PJSC Donetskoblغاز that they sabotage the supply of gas to people through the already build gas pipeline.

“Gas supply to consumers of Avdiivka and 7 villages of Yasinuvatsky district is impossible due to threat to life and health of the citizens”, — claims Donetskoblغاز²⁵.

“I addressed the Prosecutor General, the head of the SSU with a request to give a legal assessment of the actions of the management and owners of the regional gas enterprise. In my opinion (as a lawyer and a former investigator), it is the collaboration with terrorist organizations in the form of sabotage. I hope that the official legal assessment will be given to the actions of the management and owners of PJSC Donetskoblغاز in the nearest future”, — said Pavel Zhebrowsky on his page in the social network Facebook²³.

In response, the management of Donetskoblغاز officially claimed (and later confirmed at the press conference) that no documentation required by current legislation for the commissioning of newly constructed gas pipelines was provided to them. In addition, the contractor did not fixed the flaws at gas-distributing plant, that pose threat to the life and health of both employees of the company and local residents²⁴.

On February 23, the purging, filling and testing of the newly constructed gas pipeline from the GDP of township Ocheretyne to Avdiivka town were performed, but the test was unsuccessful due to pressure drop.

As of June 2018, the inspections of the 14 km long gas pipeline continue, flaws are being identified and recommendations are being fulfilled by the contractor. According to the response of the Department of BID of the Donetsk region MCA, “gas supply to the city of Avdiivka and seven neighboring villages will be restored after all works at the facility are complete and the permit for the commissioning of the facility and gas supply by PJSC Donetskoblغاز is received”.

Thus, misunderstandings between officials and “oblغاز” management and their mutual accusations of sabotage and unprofessionalism lead to suffering of peaceful residents who have been forced to live more than a year without gas and heat not knowing whether they are lucky enough to start a new heating season with blue fuel.

²³ <http://bit.ly/2N37jdP>

²⁴ <http://bit.ly/2N5Gxvf>

²⁵ <http://bit.ly/2N87eiK>

Lugansk region

As a result of hostilities in the Lugansk region (especially in Stanichno-Lugansk, Novoaidar and Popasniy districts), from July 2014 to the present time, 746 gas pipelines of various pressures and adjacent equipment services by subdivisions of PJSC Luganskgaz were damaged. Luganskgaz is controlled by Ukrainian authorities. More than 1754.5 thousand UAH were spent on emergency repairs of damaged gas pipelines to restore reliable and safe gas supply to consumers of natural gas. During the period of the ATO, natural gas leakages due to damages amounted to 38 million cubic meters in the amount of 300 million UAH.

In case the repair works are to be carried out in proximity to the collision line, Luganskgaz closely cooperates with the JMCC in order to ensure free access of specialists to the place of damage and strengthening their safety.

During the ATO (in August 2014), the section of high-pressure gas pipeline from the GDS of Crimske village to the villages of Trekhiizbenka and Kryakivka of Novoaydarsky district of Lugansk region was damaged. As a result gas supply through this pipeline was ceased. According to PJSC Luganskgaz, it is difficult to restore the gas supply to Trekhiizbenka and Kryakivka villages of Novoaydarsky district since the surface high-pressure distribution gas pipeline that supplied gas to these villages was badly damaged; there are a lot of shell craters, besides, there is a probability that sections of the pipeline route could be mined. The pipeline route goes along the demarcation line of territories, controlled and not controlled by Ukraine. This is a dangerous terrain that is constantly bombarded. In order

to provide safe working conditions for workers during emergency repair works, it is necessary to obtain a conclusion of miners and to inspect the wood line and the road by which the workers and vehicles of gas service will be passing. As of March 2018, only 28.8% (1.5 km) of the gas pipeline route were inspected.

In June 2017, a gas pipeline Lugansk-Lisichansk-Rubizhne was damaged by artillery shelling in the area of the 31st checkpoint. This pipeline supplied gas to the following settlements: Crimske village of Novoaydarsky district, Nizhniy township and Toshkivka township of Popasnyansky district through the GDS of Crimske village. Starting from that time the gas supply Crimske village of Novoaydarsky district, township of Nizhniy and Toshkivka of Popasnyansky district had ceased.

In order to restore the supply of gas to the abovementioned settlements, there was started a construction of high pressure gas pipeline from the GDS "Mirna Dolina" (Pidlisne village) to cabinet-type regulation point in Toshkivka town, Popasnyansky district. The project is implemented by Shakhtoburinnia LLC. As of January 30, 2018, 46.2% of gas pipelines of total 10500 running meters are constructed and undergone breaking strength test and leakage test.

On October 29, 2015, in the city of Swatovsk, Lugansk region, at the ordnance field depot of the Ministry of Defense of Ukraine, located in the area of the street Novostarobilska, there was a fire with subsequent detonation and spillage of explosive items fragments. As a result PJSC Luganskgaz suffered losses in the form of destroyed administrative and



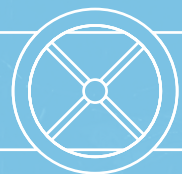
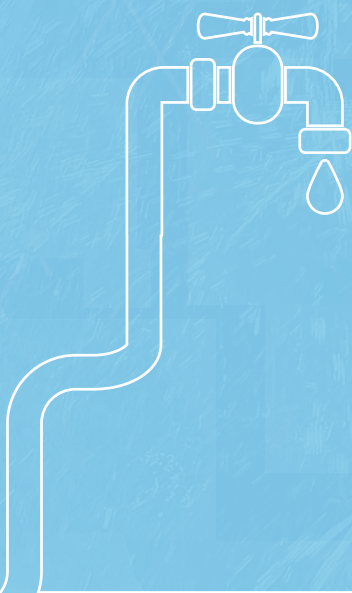
Consequences of the fire at Svatovsky warehouse for PJSC Luganskgaz

household buildings, garages, equipment and machinery, expenses for conducting of expert assessments, natural gas leakage from the damaged gas pipeline, and the cost of renting of premises.

According to PJSC were damaged, the total amount of losses incurred to the enterprise as a result of a fire is 30698940,87 UAH.

The company appealed to the Commercial Court of Kyiv for compensation for losses. Due to the fact that the court was not able to determine the guilty, the issue of damages has not been resolved.

Water supply and water disposal



According to the Department of Housing and Utilities of Donetsk Region MCA, as of January 2018, 42 water supply and sewage facilities situated at the territory of Donetsk region that is controlled by Ukrainian government were damaged as a result of hostilities.

According to the information provided by the Department of Regional Development, Industry, Infrastructure and Energy Saving of Lugansk Region MCA there are 67 water supply and sewerage facilities worth in total of 232.5 million UAH damaged in the controlled area of Lugansk region.

The demarcation line has artificially divided an integrated system of the civil infrastructure of the region, including objects and networks of water supply. This division leads to significant problems in water supply system to the civilian population.

At the beginning of the armed conflict (April 2014) water supply and wastewater treatment services at the territory of Donetsk and Lugansk regions were provided by the Public

Utility Water of Donbass Company²⁶ (the Company continues to operate capacities on territories of Donetsk region controlled by Ukrainian government) and regional public utility Company Luganskvoda (subsequently ceased to operate). The water mains and networks, filtering, water and water treatment plants, water disposal system were operated by both companies as well as utility enterprises subordinated to local councils, which provide water supply and wastewater treatment services at the territory of territorial communities.

In the territory controlled by the so-called DPR in November 2017, there was created the Public Utility Water of Donbass. Buildings and networks providing water supply and sewage water treatment in the SDDR were transferred to this state enterprise. On the territory of the SDLR, controlled by the so-called LPR State unitary enterprise Luganskvoda functions.

Since the beginning of the conflict, the water supply and water treatment facilities of the region are subjected to regular attacks of varying intensity, depending on the situation in the area of fighting.

Donetsk region

Waterworks of the region in particular the channel Siversky Donets — Donbass, the Second Donetsk and Southern Donbass water pipes, Donetsk filtering station are owned by public utility Water of Donbass Company.

Below is a chronology of events related to armed attacks on water supply and sanitation facilities in Donetsk region, as of the time of the study²⁷. This list is not exhaustive, but according to the authors of the report contains information about the most significant events obtained during the study.

2014

Between June 3 to 15 due to damage of the second Donetsk water line near the village Cherevkivka of Sloviansk town the water supply to towns Slavyansk, Kramatorsk, Druzhkivka, Kostiantynivka, settlements of Novodmytrivka, Kleban-Bykl, Novgorodske, villages of Ivanopil-lia, Pleshiyivka, Olexandro-Kalynove, Yablunivka, Katerynivka, Zorya, Romanivka, Komarove, Petrivske, Scherbynivka was ceased completely.

At June 10 as a result of shelling of 1st raising main of Siversky Donets — Donbass channel there were fatally injured two employees of the public utility Company Water of Donbass — electrician and pumpman; the work of the 1st and 2nd raising mains of the channel was stopped, the building of the pumping station was damaged.

On June 11 — the transformer of pumping station of the 1st raising main of Siversky Donets-Donbass channel was damaged. The water supply to Pokrovsky (Krasnoarmiyske) district of Donetsk region was cut until June 27, 2014.

On 2 July — electrician of Siversky Donets-Donbass channel was mortally wounded, the watchwoman of hydraulic facilities was badly wounded. Due to the damage to the pipelines, equipment and power supply networks, the Siversky Donets-Donbass channel functioning was discontinued. The channel's work has been restarted on July 15th.

27

The information was provided by Public Utility Water of Donbass Company



Consequences of the shelling of the Siversky Donets-Donbass Channel²⁸

²⁸ All photos in the Donetsk region subsection of WATER SUPPLY AND WATER DISPOSAL section are provided by the public utility Water of Donbass Company.

On July 3, as a result of hostilities, the work of 1, 2 and 3 pumping stations of the South-Donbas water pipeline was stopped. The work of pumping stations has been restored on July 19, 2014.

On July 10, due to damage to electrical network, the water supply of the city of Siversk was stopped (July 18 renewed).

On July 17, the Krasnoarmiyske filtering station stopped its work as a result of the bombardment, and the staff was evacuated. Towns of Pokrovsk (Krasnoarmiyske), Selidov, Dimytriv, Dobropillya, Bilitske, Novogrodivka and the surrounding settlements and villages were left without water. On August 4, the work of the filtering station was restored.

On July 21, the work of pumping stations of the Siversky Donets-Donbass channel and the South-Donbass Water Pipelines was stopped as a result of hostilities.

On July 23, as a result of artillery fire the water supply of the city of Gorlivka was stopped (July 24 renewed).

On August 17, as a result of hostilities, the Verkhniokalmius filtering station was blackout. Water supply to Donetsk has completely ceased. On August 20, 2014, the station renewed its work.

Krasnoarmiyske and Velykoanadolska filtration stations were stopped that led to cessation of water supply to the towns of Volnovakha, Dokuchaevsk, Vugledar, Pokrovsk (Krasnoarmiyske), Dimytriv, Selidove, Gornyak, Ukrainsk, Novogrodivka, Novodonetsk township and surrounding villages and settlements. As a result of the filtration stations blackout, the water supply of Yenakiyev, Gorlivka, Toretska (Dzerzhinska), Debaltseve, Vuglegirsk and surrounding villages and settlements was stopped. The operation of the filtration stations has been restored on October 21, 2014.

On August 19, the security guard at the waterworks of the Public Utility Water of Donbass Company was killed in the zone of fighting.

On August 24, due to shell hit the work of the Kirov water-conducting node was stopped. The water supply to Khrestivka (Kirovske) and Zhdanivka was reduced. As a result of damage to the water pipeline the water supply of Khartsyzk was stopped.

On August 25, as a result of hostilities, water supply to the Chistyakov (Torez) and Snizhne cities was stopped.

On August 26, as a result of filtering stations blackout the water is not supplied to the towns of Gorlivka and Toretsk (Dzerzhinsk).

On August 27, a car of the Public Utility Water of Donbass Company received fire, as a result of which the driver of the company and attending journalists suffered from numerous shrapnel wounds.

On September 2, as a result of water supply facilities blackout the supply of water to Yenakieve, Vuglegirsk, Debaltseve was stopped.

On September 3, as a result of mortar shelling, the security guard of the pumping station of Boykivske (Telmanov) township was killed. The work of the Verkhniokalmius filtration station was stopped as well as the water supply to Donetsk.

On September 14, after the Makiivka Filtration Station blackout, water supply to Makiivka, Khartsyzsk and surrounding settlements and villages was stopped.

On September 29, the staff of the Novostorozhivsky water-conducting node was evacuated due to gunfire. The city of Chistyakove (Torez) is supplied with 20 % of the required volume of water.

On October 12, the Kirov water-conducting node blackout resulted in supply of 30% of the required volume of water the town of Khrestivka (Kirovske) and Shakhtarsk.

On October 30, Gorlivka reserve storage came under mortar shelling. Two employees of the company were injured. One of the security guards suffered from shrapnel wound in the abdomen, the other — blast injury.

On November 18, Volyntsivska filtering station ceased working due to hostilities. The water

supply to the towns of Khrestivka (Kirovske), Snizhne, Shakhtarsk, Chistyakove (Torez), Zhdanivka, Bunge (Yunokomunaryivsk), township Olkhovatka and the village Maloorlivka was stopped. The Verkhniokalmius filtration station was blackout; the water supply of Donetsk ceased.

December 5, as a result of the fire, the thread of the Siversky Donets-Donbass channel was damaged. One of three threads of the channel is operational.

2015

On January 10, the equipment of the Olenivka pumping station was damaged as a result of the bombardment, which resulted in the disruption of the water supply to the village of Olenivka in the Volnavakha district. Due to the hit of the projectile in the water pipe of the city of Torez, the flow of water to the city dropped to 20% of the required volume.

On January 14, as a result of the fire, the left channel of the Siversky Donets-Donbass Channel was damaged; two shells fell on the territory of the chlorine unit of the Verkhniokalmius filtration station.

On January 15, a bus that carried the employees of the Dokuchaevsk production department of Water Donbass Company came under fire; as a result an operator the pumping station was wounded with shrapnel.

January 17 — direct hit of a projectile in the water conduct of the South-Donbas water pipeline.

On January 18, Dokuchaevsk water treatment facilities stopped working due to hostilities.

On January 21, Kirovsky, Petrovsky and partly Kuibyshevsky districts of Donetsk were left without water as a result of the shell hit to the water pipeline.

On January 24, Pavlopilska Pumping Station was blackout as a result water supply to Ilyich and Azovstal Iron and Steel Works of Mariupol was stopped.





Consequences of the shelling of Verkhniokalmius filtration station

On January 26, units № 1 and № 3 were disconnected due to the explosion near the Majorska pumping station. At the time of explosion station operator stayed in the protective shelter.

January 27, due to hostilities, the blackout of pumping station of 1st rising main of South-Donbas water pipeline left the settlements of the south-western group of cities of Donetsk region with a population of about 650 thousand inhabitants without water.

On February 2, the pumping station of the 3rd raising main of the South-Donbas water pipeline and the Makeevka sewage pumping station № 2 Nyzhnya Krynka were damaged by shelling.

On February 4, the shell hit the territory of the Mayivsk Production Department and damaged 6 vehicles, equipment and garage boxes.

On February 12, the Siversky Donets-Donbass Channel stopped its work due to powerful shelling in Gorlivka area.

On May 13, 6 shells bursted at Gorlivka Filtering Station No. 2.

On May 30, Majorska section of Siversky-Donets Donbass Channel came under fire.

June 3, as a result of combat operations, the Krasnoarmiyske filtration station was in blackout. It provided water supply to Pokrovsk (Krasnoarmeysk), Ukrainske, Selidove, Girk, Dobropillya and surrounding settlements. As a result of the bombardment the South-Donbass water pipeline was damaged in the area of Krasnogorivka.

On June 11, Gorlivka and Toretsk (Dzerzhinsk) were left without water as Gorlivka filtering station № 2 came under fire.

June 22, 9 shells hit the territory the South-Donbas water pipeline pumping station.

On July 18, 10 shells bursted at the territory of the Avdiivka water pumping station.

On August 8, as a result of hostilities, corresponding water supply pumping station was

in blackout, Konstantynivka was left without water supply.

August 12 Dokuchaevsk water treatment facilities were damaged as a result of the bombardment.

On August 16, the 3rd rising main of Siversky Donets-Donbass Channel was stopped.

On December 25, a mortar shelling of the Holmivsky Sewage Treatment Facilities took place.

2016

February 2, Gorlivka filtering station № 2 was de-energized.

On March 31 and April 17, as a result of the bombardment, Holmivsky Sewage Treatment Facilities were cut from electricity supply.

On May 30, 3 shells hit the territory of Velyko-anadolska filtering station.

On June 13, Gorlivka sewage station № 2 was de-energized as a result of fire, and the equipment of the station was damaged. The shell that fell and did not explode on the territory of Dokuchaevsk water pipe unit, was cleared up by de-mining experts.

On July 4, in the area of the town of Gorlivka, the pumping units of the 3rd rising main of the Siversky Donets-Donbass Channel were cut from electricity supply.

On July 12, as a result of hostilities, the Belogorsk Pumping Station is de-energized, water supply to some of Konstatynivka's areas was cut.

On July 24, October 18, November 11, the section of the 1st raising main of South-Donbas water pipeline came under fire.

November 18, Dokuchaevsk sewage treatment facilities came into the zone of fire. For a long time there was no opportunity to evacuate staff personnel.

2017

On January 20, employees of Dokuchaevsk sewage treatment facility were evacuated due to shelling.

On January 29, shells hit the Verkhniokalmius water storage reservoir.

On January 30, the shell hit the South Dnipro water pipeline in the Yasinuvatska post of the State Automobile Inspection.

On February 21, as a result of combat operations, the Dokuchaevsk sewage treatment facilities staff was unable to get to work.

February 27, the firing of the territory of the 1st rising main of the South-Donbas water pipeline.

On the 25th of March, the area of Dokuchaevsk sewage treatment facilities came under fire.

On March 28 and March 31, a pumping station of the 1st raising main of South-Donbas water pipeline came under fire, three shells hit the territory, but did not explode.



On May 17, the Boykivska (Telmanivska) pumping station came under fire. Township Boykivske, village Lukove and Zaporozhets were left without water.

On May 19, the shell hit the territory of the 1st rise of South Donbas water pipeline.

June 8, work of South-Donbass water pipeline pumping station was stopped due to hostilities (10 shells hit the territory of the station).

On June 10 and 18, the territory of the pumping station of the 1st raising main of South-Donbas water pipeline is located in the zone of active military operations.



July 28, October 4, November 14, the pumping station of the 1st raising main of South-Donbas water pipeline came into the zone of fire. There were registered numerous hits of shell at the territory of the station. They caused substantial damage to property. In November, the staff of the station was evacuated to the bomb shelter.

On November 5, the dam of the Verkhniokalmius water storage reservoir came into bombardment zone. Two breaches of 400 mm size were found in the dam.



December 12 as a result of the bombardment Holmivsky Sewage Treatment Facilities were de-energized.

On December 13, the projectile hit the territory of the Gorlivka Filtering Station № 2.

Pumping station of the 1st raising main of the South-Donbas water pipeline

2018

On January 26, a pumping station of the 1st raising main of the South-Donbas water pipeline came under fire.

March 11, as a result of the fire, a transformer at the pumping station of the South-Donbass water pipeline was damaged.

On April 28, a pumping station of the 1st raising main South-Donbas water pipeline came under fire.

May 17, as a result of hostilities, the pumping station Majorska of Siversky Donets-Donbass Channel was de-energized.

As a result of the hit of shells, the Holmivsky Sewage Treatment Facilities were de-energized; the wall of the office and amenity building, stairs and window frames were damaged.

On June 12, an employee of Dokuchaevsky WWS got a shrapnel wound.





Consequences of shelling of objects of public utility Water of Donbass Company

Donetsk filtering station (DFS) is one of the most important infrastructure objects owned by public utility Water of Donbass Company. DFS provides water to settlements on both sides of the demarcation line: Avdiivka, Krasnogorivka, neighboring villages of Vasilivka, Spartak, Opytne, Verhniotoretske, as well as parts of Yasynuvata and Donetsk — in total ca. 400 thousand residents. Some facilities of the station are now situated at the territory under the control of Ukraine, and pumping stations are now at the territory that is currently controlled by armed formations of the so-called DPR²⁹.

The filtering station has two departments — Pokrovsky, at the territory controlled by Ukrainian government, and in uncontrolled Donetsk. There are about 100 employees on the DFS; before the war this number reached 125 people. Most of them live in the town of Yasynuvata that is not controlled by Ukrainian government. There are at least eight people present at the station at any moment³⁰.

From time to time the DFS comes into the area of fire and ceases its work due to damage to buildings and equipment caused by shelling and cut of electricity supply. The shutdown of the DFS leads to cessation of water supply and announcement of a local level emergency situation in the region³¹.

For the first time as a result of the fighting, the DFS was stopped on July 30, 2014 due to damage to the station's facilities and threat to the lives and health of the employees. Significant damage resulting from the bombardment was received by the administrative building, the laboratory equipment and the bacteriological analysis department were destroyed; pumping station filters, pumping units, an electric engine and a transformer were damaged. DFS was de-energized. It took a long time to start the repairing works because of hostilities. On November 23, 2014 the DFS work has been renewed.

29 <https://hromadske.ua/posts/donetska-filtruvalna-stantsiia>

30 <http://bit.ly/2NKJwJT>

31 https://twitter.com/mtot_gov_ua/status/1005392566639054848



The damaged building of the administrative building



The building of the pumping station after the fire



Water Laboratory



Building of the pumping station
(view from the inside)



Building of chemical section



Welding shop

On December 7, 2014 more than 6 shells hit the territory of the DFS.

On January 12, 2015, the station was de-energized.

On January 14, 18, and 24, 2015, the DFS stopped its operations due to shelling. Multiple damages were caused to buildings, equipment and electricity networks, in particular 7 shells

hit the clean water reservoirs, with the body of water of 20 thousand cubic meters. The work of DFS was renewed on April 10, 2015. Avdiivka, Krasnogorivka, settlements of Yasinuvatsky district, partly Donetsk and Yasynuvata were left without water.

On June 28, 2015, a powerful shelling of the DFS territory took place. 20 shells hit the territory of the station.

On July 10, 2015, a regular shelling of the DFS took place, resulting in damage to the water supply system that supplied water to Avdiivka.

On July 14, 2015, the shell exploded near the building — the chlorine storage.

During May–July 2015, due to the aggravation of the military situation around the DFS station, it had to cease work several times and leave residents without water supply.

On August 7, 2015, four mines hit the DFS territory.

In autumn 2015 — in winter 2015–2016, damage to the power supply linea caused by the bombardment led to the shut down of the DFS.

In spring 2016, the DFS bombardments continued, which resulted in stopping the water supply of Avdiivka.

March 2, 2016, the station stopped due to hostilities.

On March 13, 2016, the station employees were evacuated because of shelling.

On March 31, 2016, two shells hit the territory of the DFS near the pumping station of the 2nd raising main.

On June 6, 2016, the DFS was fired during the unloading of the chlorine storage tank.



Consequences of bombardment of DFS

On July 18 and August 8, 2016, the DFS was de-energized, staff evacuated to the bomb shelter.

On September 14, 2016, the DFS got into the area of fire. Four shells hit on the territory of the station, substantial damage to property was caused.

On October 27, 2016, the DFS territory came under fire.

On November 15, 2016, a bullet hit the window of the administrative and household building of the DPS, staff was not injured.

November 19, December 1, 7, 23, 2016, January 11, and January 30, 2017, the DFS was de-energized as a result of hostilities. The water supply to Avdiivka and the village of Verhniotorets was cut.

November 25 and December 19, 2016, the station came in the zone of active military operations. Three shells hit the territory of the station. Despite the threats to life and health, staff continued to perform their functions.

On January 29, 2017, the territory of the DFS came into the area of hostilities.

On February 14, 2017, several shells hit the area next to the chlorine storage tank.

On February 18, 2017 the station was de-energized. The water supply to Avdiivka, partly in Donetsk, Yasynuvata and settlements of Yasynuvata district was stopped. On February 21, the DFS renewed its work.

February 23, 2017 the shell hit the DFS building.

February 24, 2017 the shells hit the chlorine storage tank and other buildings and facilities of the station. Due to the shelling and life threats, the DFS work was suspended from February 24 to March 8, 2017³².

5, 11, 29 March and 2 May 2017, the station was de-energized again.

On May 11, 2017, the RPG shell hit the DFS.

May 17 and 21, 2017 — the shells hit the territory of the DFS. The staff of the station evacuated to bomb shelter.

From June 1 to June 8, 2017 — another stop of the DFS.

On June 18, 2017, the territory of the DFS came into the zone of active military operations (6 shells hit the territory of the station).

July 22, 2017 — the station is de-energized.

From 3–5 November 2017, the DFS came into the zone of active combat operations. Shrapnel from the shells damaged the auxiliary chlorine pipeline.

On December 3, 2017, two shells hit the territory of the DFS.

On December 12, 2017, a 12-millimeter machine gun bullet hit a control room window. The staff of the station was not injured. During the transfer of an operating shift from the station, an explosive item was discovered at the road.

On December 18, 2017, two shells hit the territory of the DFS.

December 21–22, 2017 active military operations occurring in the DFS area.

³² <http://bit.ly/zNgekFb>



Restoration of the station

On January 3, 2018 a bullet hit the window of primary water chlorination facility, the staff personnel was not injured.

On February 4 and 11, 2018, the DFS came into the zone of active combat operations.

On April 18, 2018, the DFS was stopped until the security guarantees were provided to the employees³³. On May 20, June 6 and July 6, 2018 the DFS was de-energized and shut down for several days as a result of combat operations³⁴.

The OSCE Special Monitoring Mission (hereinafter referred to as the SMM) in Ukraine takes all possible steps to ensure the proper functioning of the DFS. In accordance with its mandate the OSCE SMM monitors and reports on the security situation in a wide area around the DFS, as well as facilitates the exchange of security guarantees by the parties to ensure access of the workers to the station and the possibility to carry out the works necessary to restore the operation of the station³⁵.

33 <http://bit.ly/2N6mwVt>

34 <http://bit.ly/2N5rtha>

35 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/383682>

Due to damage to the DFS, there is the possibility of chlorine spill, which is stored at the station in volumes from 4 to 5 tons. In the event of stopping of the station, the staff personnel and all the available chlorine stocks are evacuated. In case of simultaneous damage to all 5 chlorine storage tanks of DFS, the zone of damage from chlorine spill will reach 3–3.5 kilometers in accordance with the assessments of the management of public utility Water of Donbass Company³⁶.

In April 2018, the International Committee of the Red Cross (ICRC) delivered 18,000 liters of potable water to the residents of Avdiivka due to water supply problems caused by cessation of the operation of the DFS³⁷.

Considerable part of water supply and sewage treatment facilities of public utility Water of Donbass company that was damaged as a result of the conflict and are situated at the territories controlled by Ukrainian government has now been restored. Some of the facilities, in particular, the waterway through the river Kazenniy Torets, the water pipeline section through the Slavyansk-Prisheb highway, are in emergency condition. The elaboration of design and budget documentation for their restoration is under way. Some facilities, in particular, water supply of the Verkhnyotoretsky township of Yasinuvatsky district, have been destroyed and can not be restored.

The Zaytseve township of Bakhmut district of the Donetsk region is under the partial control of the Ukrainian authorities and an armed formations of the so-called DPR. The water supply of the township comes from town of Gorlivka controlled by the DPR. The subregional section Waters of

Donbass Company is situated in the town of Gorlivka that is controlled by DPR. Its employees provide water supply, including to the settlements controlled by Ukrainian government, and which are part of the Zaytseve MCA³⁸. Water pipeline from Gorlivka towards Toretska (a town controlled by Ukrainian government) is connected to the Zaytseve waterway.

The water supply to the village was cut due to military actions. In March 2016, after the demining and repair of the water networks, the water supply was restored³⁹.

Maintenance and repair works of water supply systems situated directly at the territory of the settlement controlled by Ukrainian government until January 2017 were not performed as the the service company was situated at the territory controlled by so-called DPR. In order to ensure the maintenance of water supply networks in 2017, the management of networks was transferred to the service company at the government controlled territories. It took a long period of time (January-early September 2017). The service company was reluctant to take the network under its management because the facilities were located along the collision line. The other reason was the problem of collecting payments, remoteness of networks, danger to staff.

In July 2017, an accident occurred at the central water conduit near Zaytseve township; as a result the inhabitants of Zaytseve and the nearest settlements virtually remained without water. According to the MCA of the village, the pressure in the networks has fallen critically, in the high-rise buildings the water was accessible on the

36 <http://bit.ly/2NsjP6r>

37 <http://bit.ly/2N67Ghx>

38 Interview DR-o43

39 <http://bit.ly/2PscCPq>

first floors only. The plumbing system was clogged up with soil and mud. Consumer received the water with soil and roots of plants⁴⁰. The Zaytseve MCA chairman has repeatedly approached the regional MCA so that it take urgent measure to fix water supply problems of the village, but did not receive any response.

In September 2017, after the management of water supply networks was transferred to the company controlled by Ukrainian government, the next step was the transfer the shut-off valves from the line of collision to a relatively safe area. The armed formations of so-called DPR have been breaking the “peace and quiet order” that prevented the service company from works. As a result the water supply to Zaytseve was not sufficient that led to additional suffering of local population.

In December 2017, Gorlivka Regional Section of Waters of Donbass (controlled by the DPR) informed Zaytseve MCA about a temporary cessation of water supply because of repair works. This is how it became known that it is possible water supply of Zaytseve without the use of shut-off valves on the line of collision. Therefore in early January 2018 there was carried out a meeting between Regional Department of Housing and Utilities Infrastructure, public utility Water of Donbass Company, Chasovojarivska regional section (managing company), ICRC, NGO People in Need. It was decided to start the transfer of shut-off valves to a safe area. The works were carried out for two days, the central valve of the shut-off valve was mounted in a safe area. It currently allows to repair and maintain Zaytseve water supply networks.

The transfer of meters and shut-off valves to a safe place for maintenance was not enough to ensure proper water supply. After that the 600 mm diameter water pipe directing from Gorlovka has been hooked-up. As a result, there was set an excessive pressure, which led to numerous leaks from pipes. Due to the mine road block and the lack of a map of minefields, the leakages have not been completely fixed. It is possible to increase the water pressure in the network if the pipes are repaired.

“We can not raise the pressure of water until we fix the breaches in the “six hundred” one. This requires weather conditions, a corridor of mine pickers working there for a couple of days so that technicians and workers could go to work, “peace and quiet order”, — the respondent-employee of the water supply network service company says⁴¹.

Chasovojarivska regional section (RS) of the public utilities Water of Donbass Company provides water supply services to the settlements, located directly next to the demarcation of the parties to the conflict.

In spring of 2015, a 90 mm water supply pipeline, located near the Zaytseve checkpoint controlled by Ukrainian government, was damaged by mortar shelling. The water pipes network was damaged by two 120-millimeter mines⁴², which resulted in about 260 residents of Zhovanka settlement, with about 130 elderly people were

40 Interview DR-042

41 Interview DR-047

42 Interview DR-048

left without water supply for two weeks⁴³. The Chasovoiarivska RS staff together with the employees of the Gorlovka RS (before the conflict served the network and is now currently controlled by the so-called DPR) carried out the repair works. The damaged pipe section was situated in the mined area. Before the start of repairs, the mine pickers have cleared mines for the passage of equipment and people.

In autumn of 2017, the repair team of Chasovoiarivska RS was to fix the breach of Majorsk main water pipeline directly in the line [of combat actions]. The breach was caused by soil shrinkage; it led to cut of water supply of about 1000 inhabitants of Zaytseve and surrounding villages.

In order to carry out repairs, the Chasovoiarivska RS approached the OSCE SMM⁴⁴ with a request for assistance to establish in establishing peace and quiet order for the period of repairs. Before the repairing works were started the mine pickers have cleared mines in the area for two days, in total 22 mines were deactivated. The works were carried out in the presence of the representatives of the OSCE and the ICRC at the expense of the public utility Water of Donbass. The ICRC also provided materials needed for repair.

Due to restricted access of repair teams to the site, water supply problems in this area lasted for 8 months of 2017–2018.

On December 17, 2017, the water supply networks of the village of Novoluganske, Bakhmut district of Donetsk region, controlled by the Armed Forces of Ukraine,

came under fire. The shell has damaged the central pipe, located among residential buildings and providing water supply to the village. The houses were damaged as well, no civilian casualties occurred.

As a result of the fire, a third part of the village, more than 1,000 people, were left without water supply⁴⁵. During the day, the repair teams of Novoluganskaya and Chasovoiarivska sections Water of Donbass repaired the damaged networks and restored the water supply of the settlement at the expense of the company. Due to prompt response of Water of Donbass to an emergency the problem was fixed and had minimal effects on civilian population.

In March 2018, an accident occurred at the central water pipeline in the direction of Toretsk. On March 15, 2018, in the presence of the representatives of the OSCE and the ICRC at the accident site, workers of Chasovoiarivska RS have promptly fixed the pipeline breach.

In April 2018, Chasnoiarivska RS performed routine work on the restoration of damaged main section of the water supply line Zaitseve-Majorsk. Several hundred meters of water pipes were surveyed; numerous holes were detected. Coordination of the work was carried out by the officers of the Ukrainian side of the SCCS together with the representatives of the military-civilian groups and observers of the OSCE's SMM⁴⁶.

During the armed confrontation in Slavyansk, in April — July 2014, the water supply and water supply facilities of the **Communal Enterprise Slavmiskvodokanal** were

43 <http://bit.ly/zNKtocC>

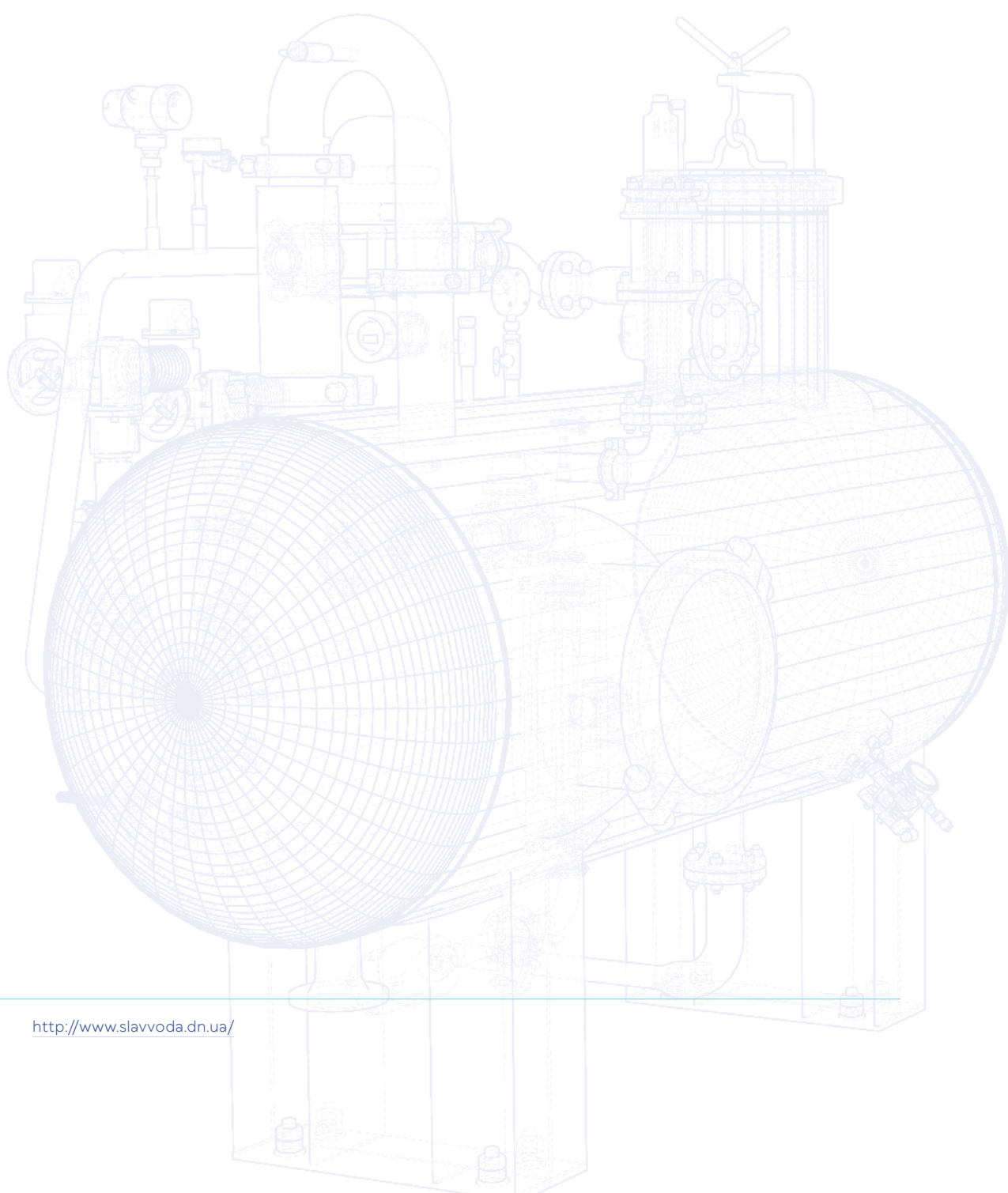
44 <https://www.osce.org/special-monitoring-mission-to-ukraine>

45 Interview DR-057

46 <https://www.pravda.com.ua/news/2018/04/21/7178352/>

damaged⁴⁷. The water supply pumping station No. 4, filtering station, sewage collectors, wastewater treatment plants and water supply networks were damaged. A significant part of the objects was restored

in 2014–2015. Some facilities — sewage pumping station number 1, wastewater treatment facilities sludge pipe, areas of sewage discharge headers, etc., are still in an emergency situation and require recovery.



Lugansk region

As a result of the antiterrorist operation at the territory of Lugansk region, an acute issue of the water supply to the population arose. In order to prevent a humanitarian catastrophe by the decision of the head of the Popasnyansky District Council in December 2014, an **utility company Popasnyansky District Vodokanal** was set up. The company got under its control water intakes and equipment inherited from the regional utility company Luganskvoda Company⁴⁸.

The utility company Popasnyansky District Vodokanal supply water to Popasnyansky and Stanychno-Lugansk districts of Lugansk region that are controlled by the government, as well as settlements of Lugansk region that are not under control of Ukrainian authorities, in particular, Pervomaisk, Stakhaniv, and Alchevsk. In general, the company supplies water to approximately 50,000 residents of Lugansk region under the control of the Ukrainian government and 400,000 inhabitants from uncontrolled districts⁴⁹.

The shelling of the company's territory began in late June — early July 2014, during the escalation of armed conflict in Lugansk region. During 2016–2018, the intensity of shelling decreased somewhat, but it still takes place and causes damage to infrastructure objects.

“All types of shells were coming — Grad shells, mortar shells. They were flying from all sides. Three villages: Rodina and Kirovskaya, Mikhailivka, which are located on a territory beyond Ukraine's control” — says the employee of utility company Popasnyansky District Vodokanal⁵⁰.

Shelling during the period of winter-spring 2015 bombardment destroyed the pumping station, which provided water to about 20 thousand people in the city of Popasna. The building of the pumping station was damaged, but the pumps were not and continued to supply water to the city.

All the windows in all four buildings of the pump were broken, the ceiling in one of the pumping rooms was damaged, the transformer was damaged with fragments; in the other room the metal door was damaged so the staff had to fix it with wood, so that snow and rain didn't get into the room. All concrete fences at the territory of the production site of the enterprise were damaged with fragments, all the paths leading from the pumping station to the pumping station, were broken down after the bombardments, a large number of craters from the shells remained at the territory of the area.

48 <https://popasne-vodokanal.info-gkh.com.ua/>

49 <http://mtot.gov.ua/v-mtot-obgovoryly-problemni-pytannya-v-roboti-kp-popasnyanskyj-rajonnyj-vodokanal/>

50 Interview LR-051

During the bombardment there was a direct hit in the lifting mechanism of the pump (this mechanism was used for lifting and replacing of pumps) that was destroyed completely. The metal workshop where tools for repairing works were kept was damaged as well.

Most of the shelling took place at night. During the night shift, two people are constantly on duty at the site. There were no warnings given about the time and place of fire to the company staff but they have continued to perform their duties, despite the real danger to life and health:

"There were no information about the attacks, nobody warned us, we were listening out when the

projectile flew. We hear shooting, fall down and that's it ... Shelling happened regularly.⁵¹"

For each case of damage the company issued a damage report, on the basis of which the damaged property was repaired. Representatives of the OSCE, who recorded the facts of shelling, also came to the territory of the enterprise.

The buildings of the pumping station could not remain for a long time without roof and windows, because humidity and low temperature in the premises during the winter prevented the proper operation of the equipment.

There were no casualties from the shelling of the company's territory among the employees and the civilian population. There are two residential buildings at the territory of the pumping station (section Carbonite platform), in which windows were damaged due to shelling in 2014–2015.



Damaged transformer⁵²



Consequences of shelling the fence

⁵¹ Interview LR-049

⁵² All photos in the "Lugansk region" subsection of the "WATER SUPPLY AND WATER DISPOSAL" section are provided by the structural units of the utility company Popasyany District Vodokanal

Two central 1200 mm water pipes providing water to Pervomaisk, Alchevsk and Popasnoy were damaged due to the shelling. Despite the damage, the supply of water was continued through the bypass, but in smaller volumes.

According to the information provided by the utility company Popasnyansky District Vodokanal, during September 2014 — December 2016 the following facilities were shelled: Carbonite section water pipelines with internal diameter of 400 mm, “NOD-1 — NOD2”, “NOD-2-Popasna” with the internal diameter of 350 mm, trunk main with the internal diameter of 350 mm Carbonite-VRZ, trunk main with internal pipe diameter of 350 mm Carbonite-NOD, lines of power supply of the sewage pumping station “Michurina” and sewage treatment facilities of the city of Popasna, pumping equipment of the sewage pumping station Cheremushki, water supply pumping station Cheremushki, Sewage pumping station Carbonite, Zanivka-Carbonit water pipe, the water pipe WFS (Western Filtering Station)-2-WFS-3 with internal diameter of 1200 mm, the water pipe WFS-3-WFS-4 with internal diameter of 1200 mm, the western filtering station, the repressuring station, distribution networks and emergency sewage networks (water catches).

The consequences of the bombardment was multiple damage to steel water pipes, hydraulic structures, industrial buildings and equipment, depressurization of faucet joints, breaks in water supply and sewage disposal of villages of Novotashkivske, Vovchoyarivka, Loskutivka, Pidlisna, townships of Girske, Zolote and Popasna, with a total of 35 thousand inhabitants, townships of Toshkivka and Toshkivka-1 with 4400 inhabitants, township of Svitlychne with a total of 2,100 inhabitants. The local authorities organized delivery of water to the population, as the electricity supply was cut as well at that time diesel generators were used instead.

Between September 2014 and February 2015, Petrivska pumping station of the second raising main, buildings and a water-collecting header of Petrivka township, sewage pumping station No. 1 of the Artema settlement and the sewage pumping station № 2 of the village of Nizhnioteple of Petrivska production area of utility company Popasnyansky District Vodokanal went under fire. As a result, equipment of the site, windows' glass, roof, floor, brickwork were damaged; there were breaks in water supply of villages of Nizhnioteple and Artem with a population of about 700 people.

During the same period of time the sewage-pumping station of Stanitsa Luganska township of Stanichno-Lugansk production area was also shelled. The windows and roof were damaged but the station continued to work.

The estimated cost of restoration of the above-mentioned facilities owned by utility company Popasnyansky District Vodokanal, according to the information of Lugansk region MCA, amounts up to UAH 221.5 million.

The restoration of damaged property is carried out by the efforts of the employees of the company, with the assistance of the ICRC and the Norwegian Refugee Council (NRC), which provides the necessary materials — slate, cement, sand, timber and brick.

In order to carry out repair works the JMCC should give a permission. After the coordination of actions of representatives of both sides and the OSCE monitoring mission, which provides “mirror patrols”, a team of repairmen, accompanied by engineers, go to the spot to eliminate the accident.

In order to guarantee the supply of safe water the ICRC in 2015 have provided 200 tons of chlorine, 200 tons of aluminum sulphate and 100 tons of activated carbon. About 1 million Swiss francs were spent on the purchase of



The window bricked up and covered with film after shelling

these consumables by the ICRC. With the financial assistance of the ICRC, the Toshkivska section of Zanivska Pumping Station, the second rising main of the Western Filtering Station were restored, the water metering equipment was purchased in order to keep track of the amounts of water supplied to the territories not controlled by Ukrainian government⁵³.

After the armed bombardment the employees of the company have repaired the water pipelines directing Pervomaysk and Alchevsk, which were not controlled by Ukrainian government, so that these settlements were not left without water.

“After the shelling, we tried to quickly restore the objects. Norwegians brought us construction material in one week. In general, we have quickly repaired everything. They give us materials, and we use them on our own. If not the help of the Red Cross and the Norwegian organization, all these objects

would not have been repaired perhaps even until 2016. We tried to bring here own construction materials from home — everyone brought what they had. We were repairing everything by our own forces: roofs, set the glasses in frames, in one pumping house we have bricked up the window, because the frames were broken”, — the witness states⁵⁴.

For several days in 2014, Ukrainian soldiers stayed near the territory of one of the sites of the enterprise, but have not been located at the territory itself. With the consent of the director used a shower. At night, two soldiers patrolled the territory of the company and entered the premises to warm up.

The overall financial situation of the utility company Popasnyansky District Vodokanal remains difficult. The debt to the electricity supply company — Lugansk energy association — is the reason for attempts to cut the water supply system from electricity, which in

53 <http://www.golos.com.ua/rus/article/268605>

54 Interview DR-050

turn leads to a stop or decrease in the volume of water supply to the population⁵⁵.

As of January 30, 2018, the debt of the utility company amounted to UAH 170 mln⁵⁶. The indebtedness for the consumed electricity arose, including due to the lack of payments from consumers from areas of Lugansk region not controlled by Ukrainian government.

In 2016, due to non-payment, Popasnyansky Vodokanal was cut from electricity supply. ICRC managed to solve this problem and preserve the water supply. In particular, in October 2016, in order to prevent a humanitarian catastrophe in the Lugansk region, the ICRC decided to pay bills for electricity totaling \$700,000⁵⁷.

The issue of proper water supply of water to the SDDR territory and ensuring the stable operation of the utility company Popasnyansky District Vodokanal is discussed in the working group on socio-economic issues of the Trilateral Contact Group on the Peaceful Settlement of the Situation in the East of Ukraine (Minsk)⁵⁸.

In 2016 In order to pay off the SDDR debts for water according to the legislation of Ukraine, in the city of Severodonetsk, Lugansk region an enterprise Source of New Life LLC was created, which makes payments for water supply⁵⁹. Popasnyansky Vodokanal has signed an agreement on supply with this enterprise. The records on volumes supplied are kept at the points of distribution of water. Popasnyansky

Vodokanal receives payments for the water supplied to the territory of the SDDR according to tariffs approved by the national regulator from the legal entity of Source of new life LLC⁶⁰.

The OSCE SMM in Ukraine, from its part, make efforts to provide water to residents of the non-government-controlled Lugansk regions. In particular, in OSCE PMM reports on September 8, 2017⁶¹, October 9, 2017⁶², January 9, 2018⁶³ that observers have monitored and facilitated the transfer of funds from uncontrolled districts of Lugansk region to the the controlled ones. The transfer was realized at the bridge to the south of the town of Schastya controlled by the government (20 kilometers north of Lugansk). The event took place due to the arrears for water supply. The report of June 8, 2018⁶⁴ also reports that the mission team contributed to the transfer of cash as a payment for water supply from uncontrolled regions of Lugansk region to those under control.

At the beginning of the conflict, Popasnyansky Vodokanal was a structural subdivision of the regional utility company Luganskvoda with the head office in the city of Lugansk. Wages to the employees were calculated and paid by the head office of the company. Following the loss of control by the Ukrainian authorities over Lugansk, the salary payments were stopped. It lasted for several months during 2014–2015.

55 <https://www.radiosvoboda.org/a/28840661.html>

56 <http://cxid.info/v-leo-obyasnili-pochemu-v-centre-luganska-v-kranah-net-vody-n140588>

57 https://twitter.com/ICRC_ua/status/783664890099761152

58 <https://www.facebook.com/darka.olifer/posts/1151051078348326>

59 <https://www.facebook.com/darka.olifer/posts/1168614673258633>

60 <https://www.radiosvoboda.org/a/28985565.html>

61 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/338851>

62 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/348916>

63 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/365526>

64 <https://www.osce.org/ru/special-monitoring-mission-to-ukraine/384039>

“At that time we didn’t have money to buy bread, the salaries were not paid, we received nothing. It was only the Red Cross that brought us rations. We were walking under fire, under shells without salaries ... We were told — go to Lugansk, your head office is there. And what Lugansk had to do with it, if we worked in the territory controlled by Ukraine?”, — the employee of the utility company recalls⁶⁵.

After the establishment of the utility company Popasnyansky District Vodokanal, the employees of the structural unit Luganskvoda were employed at the new company. The monthly wage arrears of workers have remained unpaid. Representatives of the Ukrainian authorities, visiting the company, promised to solve this problem, but these promises were not fulfilled.

“Once the head of the Lugansk Regional State Administration Gennady Moskal came and was taking pictures near the craters ... He promised to pay us wages from his salary, but did nothing,” — says the employee of the vodokanal⁶⁶.

Permanent threat of bombardment, difficult financial situation due to unpaid wage arrears negatively affect the general psychological state of the employees of the water company:

“I have just come from the loan (the bank), therefore I’m nervous. They say if you would have paid the

loan then ... I tell them that I did not have anything to pay, I was not paid. If I would have been paid, I would not have problems with loan. People have big debts on communal services ... One of our colleagues had to receive anti-stress therapy. Is it possible to live this way?⁶⁷”

Residents of the village of **Crimske of Novoaydarsky district of Lugansk region** (population as of 01.10.2014—1200 people), which is under control of Ukrainian government and the village of Sokilniki of Novoaydarsky district of Lugansk region (population as of 01.10.2014—270 inhabitants) controlled by so-called LPR were cut from central water supply in October 2014 as Crimske production site of separate division of the regional utility company Luganskvoda was taken by armed formations of the so-called LPR. The operation of production site, where 35 employees was stopped. The infrastructure object that was taken under control also supplied water to settlements non-controlled by government — settlements of Frunze, Vesnyane, Kirovsk and Stakhanov.

In order to provide the population of Crimske with water there were constructed 7 water wells (2 — with an electric pump, 5 — with manual) at the expense of the ICRC.

In order to solve the problem of water supply to the population Crimske MCA approached public utility Popasnyansky District Vodokanal with the request to consider the repairing the water supply network. The utility company has replied that the network has stayed without water for the long time, the cost of eliminating of corrosion caused leaks will be significant,

65 Interview LR-050

66 Interview LR-049

67 Interview LR-051

the water supply networks are currently ownerless, there are no documents regarding them, which does not give a legitimate reason to spend public money on their repair.

As of March 2018 in the village of Crimske there are 298 households and 598 inhabitants in total. There is a need for 44 individual water wells (for each household, which does not have its own well, taking into account 3 two-story buildings).

According to the results of the meeting held on February 12, 2018 in the Department of Housing and Utilities of Lugansk region MCA, it was decided the repair of water supply system of the village of Crimske is not feasible. As a result there was a letter was sent to the head of the region listing the households requiring individual water wells and an appeal to help resolve water supply issues through international technical assistance.

As a result of the conflict other infrastructure objects that provide water supply and sewage disposal in the settlements of Lugansk region have also been damaged.

In particular, as a result of damage the main water supply well in the **village of Varvarivka**,

Kremensky district, required major repairs for a total estimated cost of UAH 230 thousand.

Water supply of Lisichansk, Novodruzhivsk, Privylya towns of Lugansk region is carried out by **Lisichansk Municipal Specialized Enterprise Lisichanskvodokanal**⁶⁸. As a result of the armed conflict, the water supply capacities of the enterprise were damaged, which negatively affected the water supply of the inhabitants of these settlements. In particular, street water conduits and water conduits from wells to main pipelines, buildings and equipment of local wastewater treatment plants No.1 and No.4, 2 transformers of Borivske water intake, 9 submersible pumps of the Bilogrivske, Borivske, Voronivske water intakes, main water supply pipelines of water pumping stations Bilogrivska, Lisichanska, of Berezivske settlement, buildings of water pumping stations Lisova Dacha, Sumishena, Lisichanska, Lisichansk Rubber Products Factory, administrative building and production sites Zhovtneva Street, 16 of Lysychansk town and equipment of wells № 3a, № 6, № 9a of Voronivske intake were damaged.

The amount of direct damage caused to the property of enterprise by military actions is UAH 8.8 million.

68 <http://lisvoda.com.ua/>

Electricity supply



Donetsk region

The main problem of reliable supply of electricity to inhabitants of front-line cities and villages are the ongoing hostilities at the adjacent territories, which leads to regular damage to infrastructure objects, in particular electric networks. Often, due to power outages, the water supply the civilian population ceases due to the close interconnection between systems of accumulation and water supply and power supply systems. Thus, one of the reasons for suspending the operation of the Donetsk filtration station is damage to the electric lines that feed it.

According to the Department of BID of the Donetsk region MCA, starting from July 2014, as of January 2018, 79 overhead lines, 23 substations, 12 cable lines, 8 cable communication lines, 4 metal-clad switchgears etc were damaged as a result of hostilities. The equipment is owned by the State Enterprise Regional Electric Networks, a separate division Northern Electricity System of Ukrenergo and DTEK Donetskoblenenergo PJSC for the total amount of UAH 143148.59 thousand (Table 3).

Table 3. List of damaged Donetsk electricity supply facilities owned by State Enterprise Regional Electric Networks, SE Northern Electricity System of Ukrenergo, DTEK Donetskoblenenergo PJSC

Name of settlement	The name of the damaged/ destroyed object	Ownership (state, communal, private)	Total amount of destruction (starting from 2014), ths. UAH	including:	
				amount of money aimed at recovery, ths. UAH	amount of money necessary for restoration, ths UAH
State Enterprise Regional Electric Networks					
Toretsk town	17 OPL, 2 IS, 8 CPL, 4 MCS, 5 ES	state	212.23354	77.52954	134.704
Shakhtarsky district (territory currently not controlled)	2 OPL	state	1.761	1.761	
Bakhmut district (territory currently not controlled)	18 OPL, 3 CPL, 2 EC	state	54.612	54.612	
Yenakieve town (territory currently not controlled)	1 OPL, 1EC	state	0.772	0.772	
Yasinuvatsky district	1 CPL		0.36	0.36	
SE Northern Electricity System of Ukrenergo					
Bakhmut district	2 OPL	state	1308.59	1308.59	
Bakhmut town	6 OPL, 1 EC, 2 CCL	state	57365.87791	2339.38291	55026.495
Pokrovsk town	1 CCL	state	8.5	8.5	
Sloviansk town	1 CCL, 6 OPL, 1 optical fiber communication cable line	state	1597.47	1597.47	
Toretsk town	1 EC, 4 CCL, 4 OPL	state	1812.85021	1406.65765	406.19256

Name of settlement	The name of the damaged/ destroyed object	Ownership (state, communal, private)	Total amount of destruction (starting from 2014), ths. UAH	including:	
				amount of money aimed at recovery, ths. UAH	amount of money necessary for restoration, ths. UAH
DTEK Donetskoblenergo PJSC					
Adviivka town	6 ES, 1 OPL, 3 buildings	Private	43586,36737		43586,36737
Volnovakha district	2 ES, 2 OPL	Private	33175		33175
Mariinsky district	3 ES, 1 OPL	Private	2113		2113
Bakhmut distric	1 ES, 14 OPL, 1 building	Private	265,72		265,72
Toretsk town	5 OPL	Private	400		400
Sloviansk town	5 TSS, 1 DCT	Private	56,98		56,98
Mariinka town	1 OPL, 1 EC, dispatching office	Private	1188,496		1188,496
OPL overhead power line					
CPL cable power line					
IS indoor switchgear					
MCS metal-clad switchgears					
CCL cable communication line					
ES electric substation					

Slovianska TPP



Photo of damage to the facilities of Slovianska TPP provided by Donbasenergo PJSC

During the period from July 2 to 4, 2014, the equipment and technological facilities of the Slovianska Thermal Power Plant (TPP), which produces electricity for many settlements in the northern region of Donbass, have been severely damaged as a result of military actions. The 880 MW power plant is owned by Donbasenergo PJSC; the object is located on the territory of the Sloviansk district of Donetsk region, 15 km from Slavyansk and 1.5 km from Mykolaivka.

According to Donbasenergo PJSC, as a result of hostilities, more than 342 units of fixed assets were damaged or destroyed. The generator transformer of Unit 7, the reserve auxiliary transformer, the coupling autotransformer were destroyed due to the hit of the shell; the main buildings No. 6 and 7, the building of a grinding plant, engineering laboratory and office buildings, electrical switchgear,

oil tanks with capacity of 2 thousand tons, voltage transformers, pump-filtering station were heavily damaged. The sum of the damage caused, which is confirmed by the results of the independent expert examination, is UAH 202784,688 thousand. On 02.07.2014 at 8:00 a.m., 1024 employees of the enterprise staying in the personnel casualty circle. The next day, there were 56 workers were present at the workplaces.

The damage led to a complete stop of the station's work and the break in heat supply to the inhabitants of Mykolaivka in the autumn-winter period. The shutdown of the Slovianska TPP during the ATO, caused prolonged cut of electricity supply to overhead power lines of Siversky Donetsk-Donbass channel.

Raising main № 1	02.07.2014–12.07.2014	11 days
Raising main № 1a	10.06.2014–17.09.2014	100 days
Raising main № 2	01.07.2014–13.07.2014	13 days
Raising main № 2a	17.05.2014–18.09.2014	124 days

During this time, centralized water supply to certain settlements of the Donetsk region was stopped.

According to the press-service of Donbass-energo, during this period, 5 employees of the station were diseased under destroyed buildings of living houses or were killed when trying to leave the city; 9 people, including station staff and their families, were injured in varying degrees of difficulty; apartments of 55 employees of the station

were damaged, including 23 of them totally destroyed⁶⁹.

During July–August 2014, the SESU of Ukraine carried out work on mine clearance and cleaning of explosive objects of the territory of the Slovianska TPP. Total inspection of 100 % of territories with a total area of 100,422 ha was carried out, 159 explosive items were seized.

Slovianska TPP restarted its work in March 2015 after 279 days of idle time.

Myronyvska TPP

In January 2015, Myronyvska TPP, owned by DTEK Donetskoblenenergo Ltd., was repeatedly subjected to shelling. TPP was connected to the grid of Ukraine and produced from 34 to 96 MW of electricity. In addition to electricity, during the heating season the thermal power plant provided heat to the village of Myronyvske — 8500 inhabitants, schools, kindergarten, and hospital⁷⁰.

Because of the shelling in January the energy equipment of Myronyvska Station, it was seriously damaged. The generator transformer was damaged, 7 power lines by which the TPP was connected to the power grid were cut off,

the number of buildings were damaged: boiler room, turbine hall, loading bay, building of the main control room, fuel oil pumping station, chemical treatment of water, building of the guard desk. Two people were injured during the explosion at the guard desk. Due to high risks for life, only 30 % of the staff of Myronyvska TPP went to work⁷¹.

Continuous shelling of the territory of Myronyvska TPP in the Donetsk region caused the stoppage of the thermal power plant. According to DTEK Director for Electricity Generation, it was an impelled decision:

⁶⁹ <http://bit.ly/zN6QSHe>

⁷⁰ <https://ukr.media/ukrain/223150/>

⁷¹ <https://www.obozrevatel.com/ukr/crime/36079-mironivskoi-tes-zupinyayut-cherez-bojovih-dij.htm>

“This will allow to renew work of the power unit, the boiler and give people light and warmth as soon as fighting actions stop. Myronivska TPP will be able to resume its work only if the personnel is returned, who, have escaped from the bombardment, and left the settlement. And this will become possible only after the shelling of the TPP and adjoining villages stops.”⁷²

Vuglegirska TPP

Vuglegirska thermal power plant is the most powerful power plant of Tsentrenergo PJSC and the first largest power generating facility in Donetsk region. Located in the city of Svitlodarsk, Donetsk region, Vuglegirska TPP provides the most industrialized north-eastern regions of Ukraine with electric energy. The installed capacity of Vuglegirska TPP is 3600 MW.

During the period of military operations, Vuglegirska TPP has repeatedly been subjected to shelling. It first occurred on February 1, 2015. Due to the hit of the projectile into the outdoor switchgear two units — the auxiliary transformer of the unit 1 and the generator transformer of unit 4 — were damaged and ceased its work.

On the night of July 27, 2015, the firing of 1st and 3rd power units of the TPP took place. The units themselves were not damaged, but the substation owned by Tsentrenergo was destroyed. The press service of the Donetsk Regional MCA stressed that the administration considers the shelling of the TPP as a deliberate destruction of infrastructure that provides basic needs of people by assailants⁷³. During the period of repairing works Vuglegirska TPP was out of operation.



Consequences of the shelling of Vuglegirska TPP on July 27, 2015⁷⁴

⁷² <https://ua.112.ua/suspilstvo/mironivska-tes-za-obstrilu-povnistyu-zupinena-dtek-181352.html>

⁷³ <https://www.rbc.ua/ukr/news/uglegorskaya-tes-ostanovlena-obstrela-storony-1437982147.html>

⁷⁴ <http://bit.ly/2PsL9o2>

On August 17, 2016, an intensive shelling the drinking water reservoir has destroyed and the laboratory for control of water purification and water quality control of the thermal power plant was damaged. The Ukrainian JMCC

servicemen in the presence of the OSCE PMM documented 152 mm ammunition ruptures and the consequences of the destruction of infrastructure facilities⁷⁵.



Consequences of the shelling of Vuglegirska TPP on August 17, 2016⁷⁶ ↑ ↓

According to representatives of local authorities of Svitlodarsk town from 2014 to May 2018, the town remained without electricity five times. All cases were the result of shelling damage to intra-city networks.



“At the territory of the town, all high-voltage networks are in underground cables, so there were no major damages. The specifics of Svitlodarsk is that despite Vuglegirska TPP producing electricity is situated at the territory of the town, the town is fed from the general system of electricity supply. In order to supply electricity to the town, it was necessary temporarily to switch to the supply from Vuglegirska TPP before the repairing works were completed” — respondents said⁷⁷.

⁷⁵ <https://ua.censor.net.ua/p402318>

⁷⁶ *ibid*

⁷⁷ Interview DR-o63, DR-o64

According to the Department of BID of Donetsk region MCA, as of January 2018, in the Bakhmut region, where the power plants of Vuglegirska TPP are located, in particular, in town of Svitlodarsk, township Luganske and Myronivske and Semigiria village the following objects were damaged due shelling: cable tunnels and cables to outdoor switchgear, 7 overhead power lines, compressor unit, outdoor switchgear, 3 bus systems, a greenhouse,

a fence, 19 buildings, a transformer, a garage, 3 tractors, car, filtering and potable water complex, 2 onshore pumping stations, bridge, pumping room, fuel oil pumping station, dispatching point, 2 access railroad tracks, hog house, 2 cow kennels, feed processing building, 10 conifer trees, bus station, swimming pool. There were 45137.16 thousand UAH spent for reconstruction works. Currently, Vuglegirska TPP works in scheduled mode.

Power supply situation in Zaytseve township

For more than a year there was no light in the front-line settlement of Zaytseve in Bakhmut district of Donetsk region, that is divided by the front line in half. The villages of Zhovanky, Bakhmutka and Pisky the electricity was supplied from the occupied Gorlivka. In June 2016, shells damaged the electricity grid and two substations on both sides of the collision line. In order to carry out repair work on the electricity grids along the line of fire, a complete “peace and quiet order” was required.

According to the representatives of Zaytseve township MCA, the administration and representatives of DTEK Donetskoblenenergo have approached the JMCC with the request to secure the “peace and quiet order” to restore the damaged networks by the fall of 2016. But representatives of the so-called DPR did not agree with the proposal to stop fighting to carry out repairs. Therefore, at the end of the fall of 2016, DTEK decided to re-connect to the networks to the pumping station of Water of Donbass Company, where there were reserve units. It was planned that the electric main for the project would pass through Majorsk and then through the field (about 1.5 km) to the distribution substation near Zhovanka village. At the beginning of January 2017, DTEK

has shipped transmission line poles for the installation of a new line near the Majorsk EECP. The field through which the line should have been mounted is under constant fire. Due to the fact that the agreement about “peace and quiet order” was not reached again, the work on restoring the power supply has been suspended for 8 months.

Civilian population in the village cut from gas and light supply survived as they could. In winter, they heated homes with firewood and coal, cooked on stoves or bottles of cooking gas, and stoke the fires in summer. In order to preserve cooked food from spoiling without refrigerators they tried to store it in basements, which often served as a shelter during shelling. Not all inhabitants could afford themselves coal, so people, at the risk of own life, went for wood to the nearest wood lines, where there was a danger of mines and trip wires.

According to local residents of Zhovanky, charitable organizations brought them five electric generators, which people used for charging mobile phones and flashlights⁷⁸. Volunteers have also provided them with gasoline and candles.

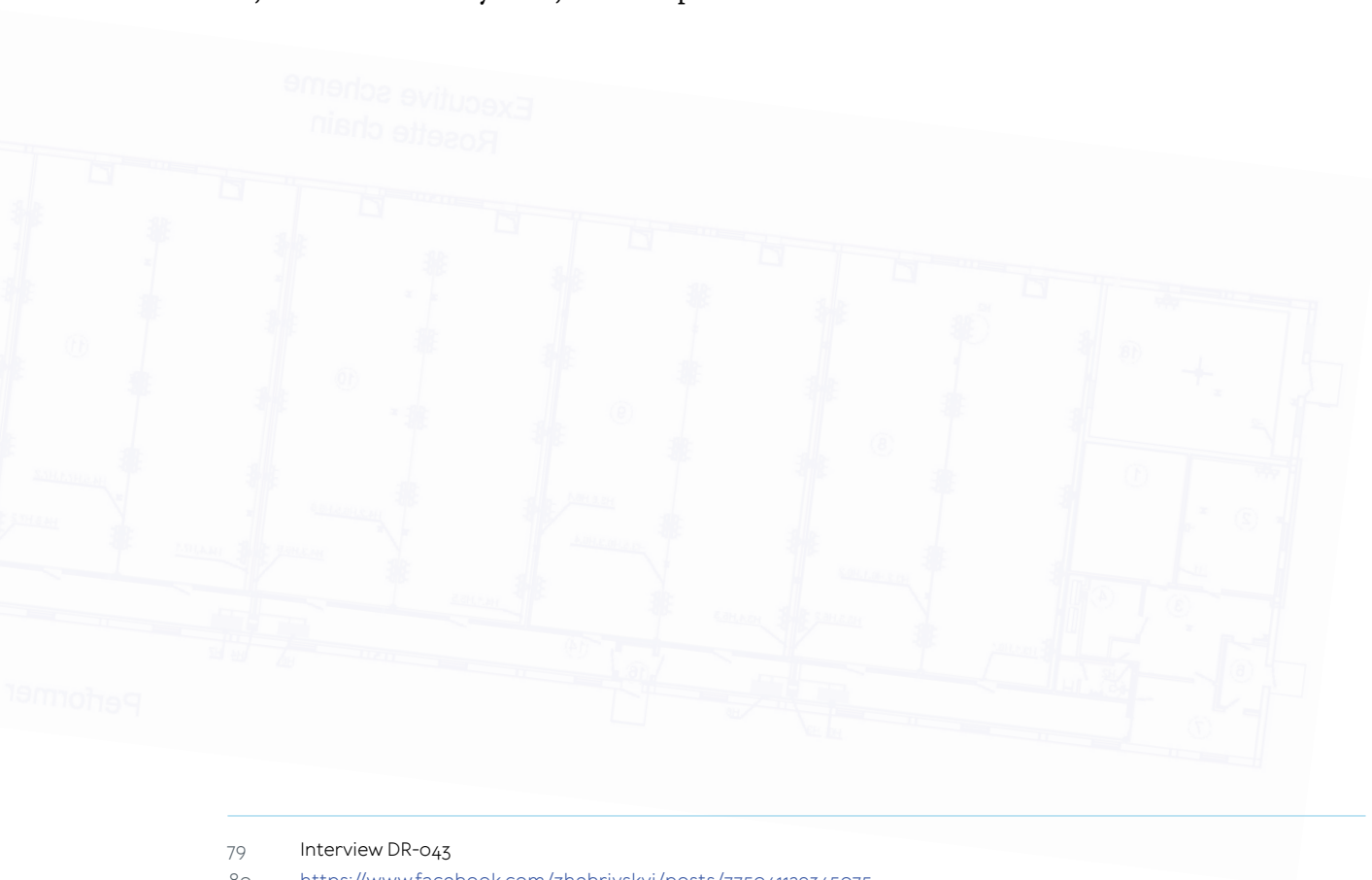
Desperate residents of the village were about to block the Bakhmut-Gorlivka road so that

the local authorities hear them.

“At that time, the head of Zaytseve MCA has inspected the area and came across the existing old electric main in the village of Pisky towards Zhovanka. He has approached the head of the DEN of Toretsk town and the head of Bakhmut regional state administration to go to the place and consider the possibility to change the initial project in order to make a route bypassing the dangerous zone and to connect to the old main near the village of Pisky. The length of the main was increased, but not significantly; the budget remained unchanged. After the proposed change was approved, it became possible to install a distribution substation at a distance of 4 km from the fighting area, which would allow to keep the supply of electricity to Zhovanka, Bakhmutka and Pisky in the event of shelling”, — the respondents recall⁷⁹.

Within one the month, all works on construction of a new autonomous electric main specifically for the controlled part of the of Zaytseve township, which includes Bakhmutka, Zhovanka and Pisky areas, were completed.

On August 1, 2017, after a long blackout the electricity was supplied to the homes of local residents⁸⁰. At present, at times of shelling, breaks in electricity supply occur, but they are solved in routine mode.



79 Interview DR-043

80 <https://www.facebook.com/zhebrivskiy/posts/775041129345075>

Lugansk region

Luganska TPP

1360 MW Luganska TPP is a structural unit of DTEK Skhidenergo LLC, located in the town of Schastya. Since the beginning of ATO, the power station is at the epicenter of combat operations. In summer of 2014, high-voltage transmission lines that connects the region to Ukraine's electric power system were damaged as a result of the bombardment. Because of this, the TPP worked autonomously for almost three years, in the "energy island" mode, providing electricity to settlements in the north of Lugansk region and heat to the town of Schastya. There is no other electricity producer in the region. The enterprise was working at the end of tether, the staff of the station realized that if the Luganska TPP stops, everything remains without light — hospitals, boiler houses, life support systems.

"In fact, we work with zero room for error. In the case of emergency, technological violations at a single TPP, no one can replace the megawatts that the station temporarily does not produce", — claims Stanislav Valantyr, director of DTEK's Luganska TPP⁸¹.

On September 17, 2014, due to hit the projectile into a transformer, a fire began at the plant. TPP automatically switched off — it was totally shut down. Stopping the station has led to de-energizing of settlements in northern Lugansk region. There were about 1 million inhabitants cut from electricity supply, as well as 21 mines that were connected to Luganska TPP⁸².

The press service of DTEK reported that the ongoing shelling and the high temperature of oil fire did not allow the members of the voluntary fire brigade to approach the transformer to extinguish it. Due to shelling the SESU fire departments neither could arrive⁸³.

As of September 18, the work of two units was restored.

"The employees of DTEK's Luganska TPP have restored the operation of two power units in the shortest possible time ... Power engineers have switched the station to a backup transformer. There is a gradual hooking up of consumers; all the mines, water service companies are energized, mobile communications are restored", — Dmitry

81 <http://paralel-media.com.ua/p76250.html>

82 https://dt.ua/UKRAINE/luganska-tes-scho-bula-obstriljana-chastkovo-vidnovila-robotu-151413_.html

83 https://espreso.tv/news/2014/09/17/spivrobotnyky_Luganskoyi_tes_ukryvayutsya_u_bomboskhovyschi___dtek

Sakharuk, head of DTEK Anti-crisis headquarters, informed⁸⁴.

According to the press service of the prosecutor's office of Lugansk region, a criminal case was opened under Part 2 of Art. 258 of the Criminal Code of Ukraine (terrorist act) on the fact of artillery shelling of the territory of Luganska TPP in the city of Schastya, through which were damaged two transformer stations with a total value of more than UAH 2 million⁸⁵.

Since September 2, DTEK Luganska TPP was under the control of servicemen of the 80th carborn brigade of the Armed Forces and the battalion Aidar.

According to the testimony of respondents — employees of Luganska TPP:

*"As soon as the Ukrainian armed forces arrived, the Luganska TPP was immediately encircled. Were there defensive works built, the technique arrived, we literally were secured both from the top and on the sides, so that the power station remain at our Ukrainian territory. The territory was patrolled in order to detect sabotage groups, control all movement. The work of the station — is the continuous process, it was necessary stay at the territory day and night."*⁸⁶

*"The servicemen of Ukrainian army were present at the plant. They were there to defend the TPP, because enemy combatants could have accessed the plant from the water, and this is a strategic object. The station is located right on the river bank. If it would have been located further from the river the servicemen would not enter its territory, but would settle around it..."*⁸⁷

But at that time, the press service of DTEK issued a statement requesting the departure of military personnel from the territory of the TPP.

*"It is necessary to immediately change the way of protecting of the TPP: the station can not serve as a building, it can only be protected from the outside, while the military will remain on the territory of the TPP, the threat of its destruction will be preserved. Lugansk plant can become the second Donetsk airport, apart that consequences will be much more serious", — said Dmitro Sakharuk, head of DTEK Anti-crisis headquarters*⁸⁸.

In early October, during the second shelling of the station, the transformer of unit № 11 was burned, five power engineers who have arrived at the TPP to change the shift and one serviceman were injured.

84 https://zik.ua/news/2014/09/19/pislya_obstrilu_terorystamy_vidnovlyuie_robotu_luganska_tes_524841

85 https://www.gp.gov.ua/ua/reegions_news_detail.html?_m=publications&_c=view&_t=rec&id=144394

86 Interview LR-040

87 Interview LR-034

88 https://lb.ua/economics/2014/10/10/282202_dtek_poprosil_aydar_uyti.html

“Two employees were hospitalized. One of them is the chief engineer of fuel and transport department, the person who manages the work of station. Now Luganska TPP continues to operate consisting of 3 power units and generates 445 MW of electricity for more than 1 million

residents of Lugansk region. Only due to the professionalism of the station employees it became possible to carry out the most difficult switching and not to stop the station yesterday during the shelling”, — the press service of DTEK informes⁸⁹.



Fire at Luganska TPP in October 2014⁹⁰ ↑ ↓

On January 14, during the shelling by enemy forces of the city of Schastya, a deputy chief engineer of DTEK Luganska TPP Serhiy Kotlyarov, was killed. He was a power engineer with 33 years of work experience. He was killed during his sick leave by the hit of a projectile in the courtyard of a private house.

Since the beginning of the combat actions the Luganska TPP has been shelled more than 80 times, it has damaged buildings, structures, expensive TPP equipment, electrical transmission lines⁹¹.

During the study, 7 employees of the Luganska TPP were interviewed. Below are some of their memories:



89 <http://bit.ly/2nTlJMt>

90 Photo from Anton Kovalishin's page in social network — <http://bit.ly/2N6wVAr>

91 <http://rebuild.scm.com.ua/ru/enterprise/luganskaya-tes/#tab-1-2-userb-ot-boevyh-dejstvij>

“... Since October 2014, shelling was regular — once a week, twice a week. In January and February it has intensified. There were only three of us at work, together with the chief. The rest of the staff has left the town with their families. A very limited number of employees were actually working because it was dangerous. In the winter of 2015, we were shelled every day. And in March the intensity decreased and then almost completely ceased”⁹².

“... We were not allowed to take pictures of damages of the station. We were afraid to go directly to the place of the attack, but if to take a photo from afar — it was not clear that there was shelling there. There were strong hits in the transformer of the 11th unit, the power plant was shut off for a day. The instruction building was bombarded as well, in the administrative one the glass in windows was shattered — a mine exploded near the building. A number of shells hit the chemical production unit, the chemical laboratory, the fuel and transport workshop, the roof of the main generator hall of the turbine house. In not a single window of Luganska TPP the glass remained undamaged, everything was shattered by shockwaves”⁹³.

“... Depending on the nature of damage, duration of repair works varied from several hours to several days, but no more than four days. Everything was done to launch the operation of necessary equipment, to make it work. When the station was out of operation in September, there was no light throughout the city of Schastya and throughout the Lugansk region for the whole day, as there was no light at the occupied territory. Every time we were cut from electricity there was no light there either. If there is no electricity, then there is no supply of water, as the operation of the pumps depends on electricity. There were moments when the gas pipes were damaged, so there was no gas; when the heating system was hit, people remained without heat.

Psychologically all the residents of Schastya were badly affected. At that time people returned homes but instead of sleeping in the apartments, had to went down to the basements. As far as I know, my employees have lived in such way for many months. It was very scary, people began to be afraid of everything. The psychological consequences are still felt ...”⁹⁴.

92 Interview LR-034

93 Interview LR-040

94 Interview LR-061

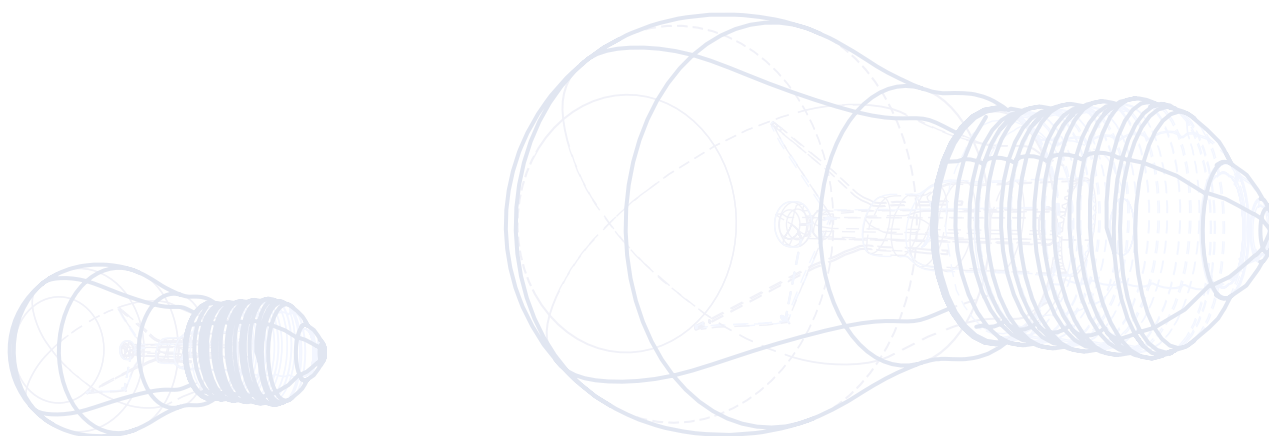
“...The windows of the administrative building looked out upon mountain Vesela (occupied territory — author’s note). Once the TPP came under fire, we were standing just near the window, and we saw how they shot at our side, and then the mines exploded at our territory. We have all seen this. I once had a phone call — people living on that side said that they were shooting with Grad in the direction of Schastya. Afterwards we heard this shelling...”⁹⁵.

After almost three years of operation in the “energy island” mode, the Luganska TPP was finally connected to the national electricity network on April 25, 2017.

Apart of Luganska TPP in Lugansk region, according to the information provided by Lugansk Energy Association LLC, during

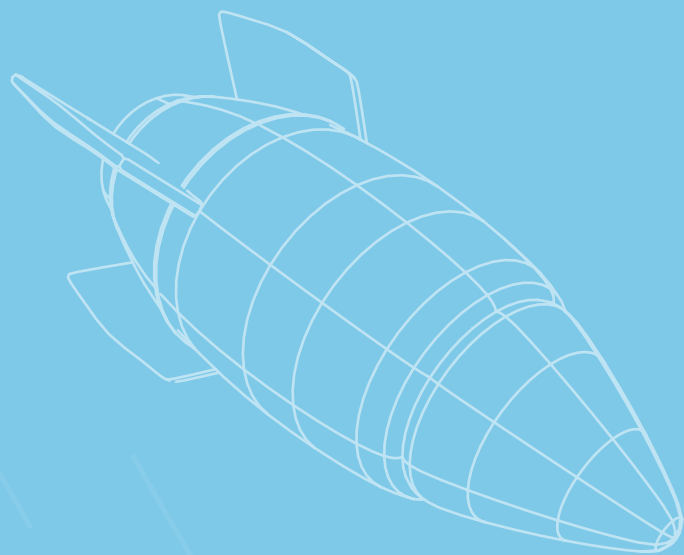
the period of 2014–2015 13 substations (Novoyadarsky, Stanychno-Lugansky, Popasnyansky districts, Rubizhne town and Lisichansk), about 250 overhead power lines, equipment, in particular, auxiliary transformers, supply transformers, disconnecting devices, oil-switches, short-circuiting devices, etc. were damaged. Restoration of damaged objects has taken from several hours to several months. According to the electrician of Popasnyansky i DEN, a citizen of P., in the summer of 2014, during the heavy military actions, due to constant shelling and the impossibility of timely repair for a long time, some populated areas of Popasnyansky district, adjacent to the demarcation line of demarcation, were cut from electricity supply.

“As soon as the bombardments ceased, repairs continued and the electricity supply was restored,” — the respondent said⁹⁶.

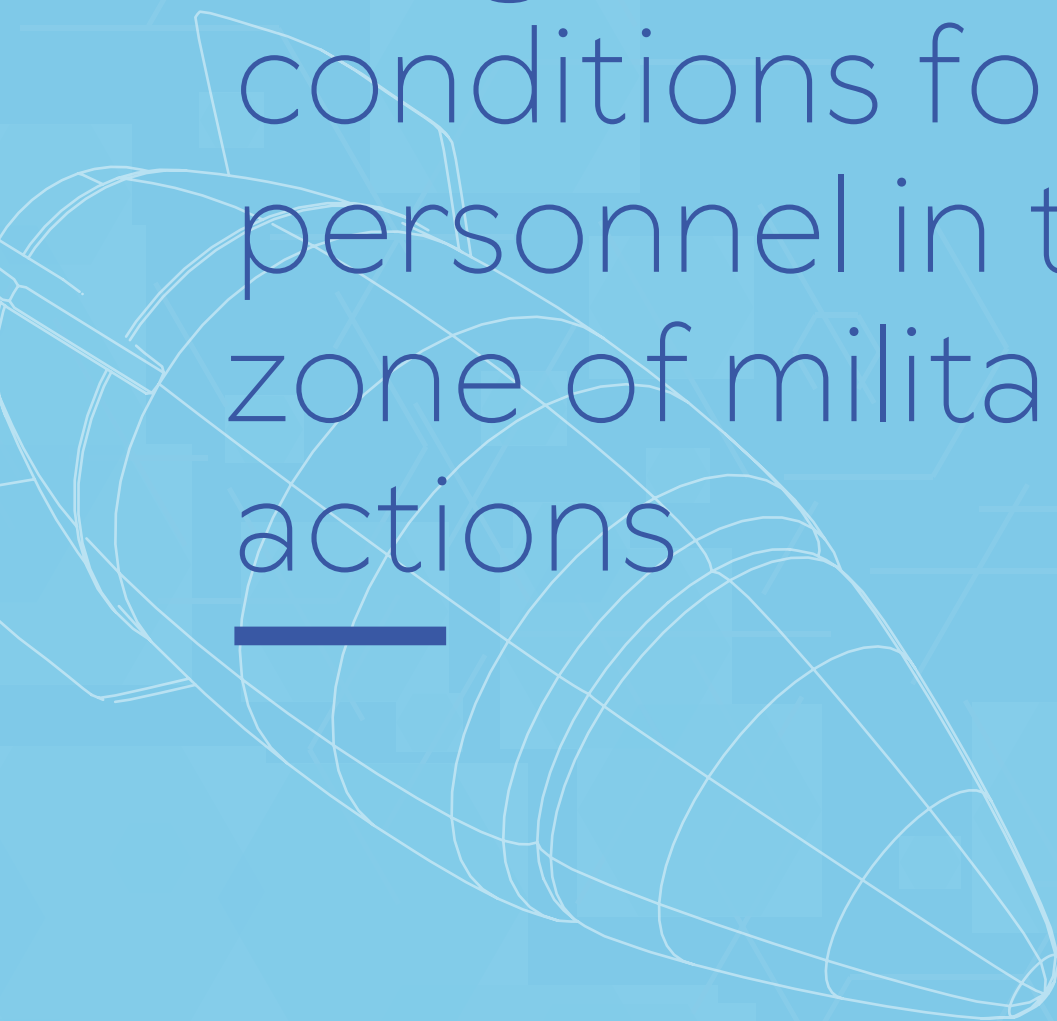


95 Interview LR-045

96 Interview LR-052



Dangerous labor conditions for personnel in the zone of military actions



The timely overcoming of the consequences of the bombardment is almost always associated with the risk to the lives and health of utility service workers. Response speed and courage are often a guarantee of preventing even greater casualties. During the monitoring study, an interview was carried out with the locksmith of the **Starobilsk inter-district control department for the operation of gas appliances**, which maintain the gas equipment in Pobedy village of Novoyadsky district in Lugansk region. The respondent spoke about the situation prevailing in the village during shelling in September 2014.

“On September 1, Ukrainian army servicemen that stationed near the village said that the enemy give 72 hours to Ukrainian combatants to leave. Soldiers warned the locals and advised them to leave the village immediately. Almost everyone left, and those who remained were hiding in the basements. On September 3, at about 19:00, the firing began, and then everyone wrote — from the territory of Russia. There was terrible rumble around. I immediately got on my motorbike and went to the GDP to cut off the gas. And then to Oleksiivka (neighboring village — author’s note), to the hook up to Pobedy. And cut off gas there as well. Afterwards the head of the department has thanked me that I was there timely. If I would not have had cut off the gas — who knows how many houses in the village would have been burned ...”, — the employee notes⁹⁷.

The village remained without gas for a week. Subsequently, gas workers arrived and carried out an inspection, welded about 43 holes at the surface of the surface gas pipelines, caused by massive shelling of the village.

The situation described by the respondent is confirmed by open sources⁹⁸.

On the territory covered by military actions, there are multiple cases when people carried out repairing works to maintain continuous water, electricity and gas supply in conditions of high danger.

Residents of **Pavlopil village of Donetsk region** — one of the suburbs of Mariupol, which for a long time was in the gray zone, have self-organized themselves and managed to renew electricity and gas supply by their own by creating own team of repairers-volunteers. The Internet media texty.org.ua reports on this⁹⁹.

Initially the team was created as a voluntary fire brigade, because at time when the houses were set on fire, the firemen did not arrive to the village. In case of threat to power transmission lines and gas pipes the repair teams were not hurry to fix it. Subsequently, men began to repair themselves the communications damaged by bombardment.

“The shell hits — and the wires fall to ground, the water supply stops immediately. We started to repair. Even at night went out and to check what can be done. For gas, too, we learned how to deal with ruptured pipe — we cut the strips from the tractor tyre and immediately attach it to the damaged

97 Interview LR-056

98 <http://informator.media/archives/31855>

99 http://texty.org.ua/pg/article/editorial/read/83267/Obrazyty_mig_kozhen_a_vratuvaty_nihto_jak

spot with a bandage”, — residents say.

Typically, it is a group of up to 8 people, but in critical situations, when it is necessary to “bush fix the gas”, up to 20 men involved. According to the repairers, they downloaded an online manual on the gas distribution plant maintenance, and use to perform works by themselves:

“There is nothing complicated, by the way. The most difficult thing was in 2015: four times a day, five times going to the line. But our village had light, water and gas at all times! Everyone was surprised.”

People are saying that they have accustomed to the sounds of the shots a long time ago. There was a situation when they were repairing the power transmission lines, the shelling of the occupied territory began.

“At that checkpoint, where I’ve been repairing lines on the tower, there were both servicemen and media representatives. As the shelling began, the soldiers fled to the shelter, the journalists got into their cars and left, and we had nowhere to go. So we laid on the ground, and what will be will be...” — says the electrician.

The brigade often has to work in the field, which may be dangerous due to occurring land mines.

“In such cases, we take the rope and were treading exactly in footsteps. I, as I already have two grandchildren, is ahead, and those who are the breadwinners — going behind,” — the respondent said.

The brigade closely cooperates with representatives of the OSCE monitoring mission. The Red Cross Society provides them with equipment: climbing irons, belts, work wear, cables.

According to the **locksmith of Svitlodarsk repair section of the Artemivsk Gas Supply and Gas Management Department** in 2015, there were no special safety rules implemented at that time — “we got the call — we needed go to the beach, and we went¹⁰⁰.” Although repairs were mostly carried out after shelling, there were cases when gas workers had to work near combat operations in high-risk situations. In order to provide a stable gas supply, temporary shrouds had to be put on pipes in intervals between shelling. Repair work were carried out by all sorts of techniques — they put rubber “patches”, wrapped pipes with an adhesive tape, hammered in wooden plugs. Often, the repair team had been travelling with a car which tires were cut with shrapnel.

Already since 2016, for the purpose of carrying out emergency repair works, mine clearance specialist have been involved in demining of the area, there were started negotiations through the representatives of the OSCE mission about “peace and quiet order” and so on.

Maintenance and support of the functioning of objects owned by **public utility Water of Donbass Company**, in conditions of armed conflict, poses a real danger to the employees of the enterprise.

In July 2015, Siversky Donets-Donbass water channel was hit by a shelling near the village of Shumi. Despite the agreement between the parties of the conflict about the “green” corridor for the repairing workers of Water of Donbass Company, during the repair of the channel, employees of the company came under gun fire near the Shumi village. The firing has damaged 3 units of equipment of the enterprise, no workers were injured.

On April 17, 2018, employees of public utility Water of Donbass Company got under fire while traveling from the Donetsk filtration station towards Yasynuvata town (not controlled by the government, 16 km northeast of Donetsk). At the time of the incident, there were about 30 employees on the bus; the bus was riding in a convoy together with other vehicles. As a result of the fire five people were injured, one person is in a critical condition¹⁰¹).

The bus carrying the workers has already came under fire, while moving in the direction of the DFS in March 2018. A truck (one passenger) and a bus (carrying 20 passengers) were hit by firefighting with small arms. Despite the multiple damage to vehicles, the workers inside were not affected¹⁰². A week before, a fuel truck came under fire on the road from Yasynuvata. Several bullets hit the cockpit, which forced the driver to hide for a while under the vehicle. At the end of the attack, the truck was able to reach the station¹⁰³.

Since the outbreak of hostilities as of April 2018 nine employees of public utility Water of Donbass Company that were performing their service tasks were killed and 19 were wounded.

In the **township of Zaytseve, the Bakhmut district of Donetsk region**, which is partially controlled by Ukrainian and armed formations of the so-called DPR, until January 2018, the main gas shut-off valve for the case of water supply emergency was situated 30 meters away from the military positions of the Armed Forces of Ukraine, in fact on the line of collision of the parties. Since the spring 2017, there have been several emergency situations with the water supply networks of the settlement, when in order to eliminate them it was necessary to shut-off the gas supply. Former chairman of Zayseve MCA Volodymyr Vesiolkyn have twice personally blocked the valve to enable repairing works. In June 2017, a serviceman of the Armed Forces of Ukraine was killed in a combat position near the shut-off valve. After this case, the representatives of the Zaytseve administration were forbidden to risk their lives and block the shut-off valves. Due to frequent ruptures of the water pipes there were significant water losses that could not be eliminated¹⁰⁴.

In winter-spring of 2015, during the repeated attacks of Popasna town, Lugansk region, employees of the **public utility Popasnyansky District Vodokanal** were exposed to a particular danger when performing their service tasks. The enterprise provides water supply to the settlements of Popasnyansky and Stanychno-Lugansky districts of Lugansk region, controlled by Ukrainian government, as well as to not-controlled settlements of Lugansk region, in particular Pervomaisk, Stakhaniv and Alchevsk. During the bombardments, a pumping station where regular personnel were always present was destroyed.

101 <https://hromadske.ua/posts/spivrobotnyky-donetskoi-filtruvalnoi-stantsii-potrapyly-pid-obstrily-5-poranenykh>

102 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/375349>

103 <https://www.osce.org/uk/special-monitoring-mission-to-ukraine/374758>

104 <http://xn-80aug4b.xn> — j1amh/prifrontovoe-zaytsevo-iz-vseh-blag-tsivilizatsii-est-tolko-elektrichestvo/

“Many things are forgotten now, but I still remember how the shells were bursting here... When the pumping station works, and you are running under the bullets, and not to one, but to four pumps, and see with your own eyes how the shoots cut the trees. We could not turn on the light, only the flashlights directed under the feet, covered with one hand, and in the winter, we have inserted the flashlights into the sleeve so that only the road could be seen”, — the participant of the events shares his memories¹⁰⁵.

Employees servicing water supply networks along the collision line have to work in conditions threatening to life and health, both directly as a result of armed attacks, and through contacts with representatives of armed groups.

In particular, respondents cited an example¹⁰⁶ when a team of 4 employees, consisting of 2 locksmiths, a chief engineer and a driver dressed in work wear and accompanied by a policeman, went for repairing works during working hours and was stopped by representatives of Ukrainian armed forces formations. The servicemen have applied the physical force to employees of the water channel and the police officer and took them under arrest; put bags on their heads, took to the city of Bakhmut and accused of sabotage. After a short stay in Bakhmut on the same day the detainees were taken to Lisichansk, where they were released at night. According to this fact, the prosecutor’s office of Popasnyansky district of Lugansk region commissioned a criminal case investigation. At the time of the

study, the results of a criminal case regarding the illegal detention of repair workers and the law enforcement officer and their physical abuse are unknown.

Power engineers of **Popasnyansky DEN LEA LLC** report that in 2014, when the military situation worsened, only workers — engineers, drivers, locksmiths were performing their work, all the management left the danger zone.

“When the line was restored once again, the chief engineer of the water channel came to us and asked: “And who is your boss now?” We say that nobody, we manage by ourselves. The shots were heard, somebody came to the place, saw that there was a damage, called me, called another and another guys, we gathered and went to the place. Ploughing a lonely furrow...” — recalls the respondent V¹⁰⁷..

At that time, it was difficult to supply the necessary materials. According to respondents, there were often situations when for repairing of the line, workers who lived near the scene brought their own building materials or equipment¹⁰⁸. In 2015, the situation improved, the district administration along with humanitarian organizations started to provided assistance.

The workers of the DEN were responding to the cases of power transmission lines damage only after the shelling was over. But according to the testimony of the respondents, there were cases when there was a loud whistle of

¹⁰⁵ Interview DR-050

¹⁰⁶ Interview DR-049

¹⁰⁷ Interview LR-053

¹⁰⁸ Interview LR-052

shells while they were working on the mobile elevating work platform.

“Then we stopped working and listened to where they were flying. They fell far behind — we continued to work, if they fell somewhere nearby, got away from there, because it was risky to repair”, — said the interviewed employee P¹⁰⁹.

Due to the fact that electricity generation is a continuous process, employees of the **Luhanska TPP**, who were repeatedly subjected to shelling, had to perform their professional duties at risk for their lives and health.

In their testimony, the respondents, station employees, often recalled the circumstances in which they had to work to ensure uninterrupted supply of electricity:

“During the shelling of the station in September 2014, when the transformer was set on fire, a lot of cables were damaged, all the cables in trenches were burned down. For two weeks we were just crawling in those cable tunnels, searching for damaged cables, restoring everything, extinguishing the ones that was still on fire. Day and night all the personnel worked to the point of exhaustion, some people stayed at the station for more than 24 hours in a row...”¹¹⁰.

“There was no evacuation as such. Who would restore everything that was destroyed there?! We had to be aware of the events and quickly and promptly restore everything that was damaged. We were always on our job. Residents, of course, were hiding in the basements, and we could not leave the workplace, worked on shifts, working under a rotation system, because the process of electricity generation should continue uninterrupted. As soon as the next shelling stopped, there was a signal immediately given to a repairing team, and all the forces were thrown in order to quickly restore everything...”¹¹¹.

“We did not force anyone, they went to work themselves, understood that people needed electricity that would not be life without light. Therefore, we stayed directly at workplaces, fulfilled our work tasks, instructions and did not go anywhere during the bombardment. Subsequently, when we got more or less adapted to the shelling, we already knew certain places where we would not get harmed by fragments that hit certain objects, so we were hiding there. But they were in the workplace”¹¹².

109 Interview LR-052

110 Interview LR-045

111 Interview LR-061

112 Interview LR-040

The danger to people's lives took place not only when performing direct duties at the territory of the TPP. Employees were subjected to shelling on their way to work from home to work and vice versa.

According to the worker of the TPP, employee D. the 2014–2015 years, when came under fire a lot of times while she was getting home from work.

"My home is three kilometers away from the plant. Just in the middle of the road, a fire began, and I fell down so that I would not be heart by fragments. Then, when he was out of work, 50 meters from that place saw a funnel more than my height.

The other day my friends and I came under fire on the way home. It was dark, we were laying in the snow for a long time, shell fragments were falling on us. The next day we saw that the craters from the shells were very close to the place where we layed. It is a miracle that we didn't get heart. And there were plenty of such cases. At that time, we were not wearing dresses, we put our trousers, so it was easier to lie on the ground and cover our heads with hands. This is scary. Until now, I can not hear any loud sounds. When at peaceful and I hear the humming of the airplane it causes me a sense of fear"¹¹³.

Respondents indicated repeatedly that the firing of the territory of the station has been starting precisely at a time of shift changing and people were either going home or to work. According to the testimony of the former chief engineer of the turbine department N. (a man retired in 2015), during another shelling the projectile barely hit the shift bus, which brought about 40 workers in it. The driver slowed down in time, drew from the path, stopped in a relatively safe place, and when it all abated he continued its way. If not the driver's skulls, his experience and concentration it could become a terrible tragedy.

"They were doing it on purpose to fire during the shift change when people either went to work or left the plant. The Armed Forces of Ukraine were forced to use even a barrage fire, so that people could get to the bus stop and leave safely," — said the man¹¹⁴.

"They have calculated the time then people were leaving the plant and have been deliberately starting fire We were walking because we were afraid to get on the bus and get into a fraternal grave. There was a case when during a high day I had to go on hands and knees near the garage, along the concrete wall because the shells were flying over my head", — recalls lady A., a senior engineer of the electrical shop¹¹⁵.

¹¹³ Interview LR-034

¹¹⁴ Interview LR-040

¹¹⁵ Interview LR-045

According to the respondents, in order to provide security measures the leadership of Luganska TPP, by December 2015, changed the schedule of work from 8-hour to 12-hour shifts. The change was reset from 24.00 to 08.00, because at that time of the night intensity of shelling was the highest and the process of shift change was too dangerous.

Employees of Luganska TPP were repeatedly awarded with state awards for their dedicated work¹¹⁶. As the inhabitants of Schastya say, those who are fighting at war are undoubtedly heroes. But those civilians who under the bombardment saved the lives of the city and the region, carried out truly heroic deeds, at risk of their lives and health, worthy of no less respect and acknowledgement.

In order to provide more or less safe working conditions during emergency repair work, there was established an algorithm to be followed by employees of the enterprise, the network and the facility which were damaged and need repair:

1. To fill and submit an application in the JMCC (the application is accompanied by a map of the area where the work is planned), which is considered within 10 days.
2. To receive an answer (positive or negative) from the Ukrainian and Russian JMCCs, as well as from the representatives of SDDL.R.
3. Upon the receipt of all necessary approvals to consider a possibility for the personnel to visit the spot in conjunction with military mine picker, who will perform the inspection of the territory for the detection of explosive items.
4. Upon completion of the mine pickers work, the personnel may begin working under the close supervision of the representatives of the OSCE and the JMCC Monitoring Mission.
5. In other areas that are not situated in close proximity to the demarcation line, but there were hostilities at that area either there were or are situated combat positions, there should be involved SESU mine clearance specialists that would check the place for safety. This procedure takes place in several stages:
 - To submit an application to the region state administration;
 - The application is passed the ATO headquarters and the bodies of civil-military cooperation;
 - In case of positive consideration of the application, the chief executive officer of the SESU mine clearance department gets in touch with the chief executive of the enterprise that submitted the application;
 - Joint mission of the personnel and mine clearance specialists of the State Emergency Service of Ukraine to the place of repair works.

Briefings on the issues of technogenic safety are conducted for employees, checklists for the actions in the event of military and socio-political emergencies are developed, trainings on how to act if an explosive object is found and practical trainings on evacuation to civil protection facilities are organized during the routine operation of the plant.

Recommendations

To parties of armed conflict in selected districts of Donetsk and Lugansk regions:

- To waive the to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population;
- To waive the attacks on works or installations containing dangerous forces. In order to facilitate the identification of the objects containing dangerous forces, they should be marked with a special sign consisting of a group of three bright orange circles placed on the same axis;
- During military operations to continuously care to protect civilian population and civilian objects, to take all possible measures to make sure that objects of the attack are not civilian population of civilian objects and are not subject to special protection and are military objects;
- To take all necessary precautionary measures when choosing means and methods of attack in order to avoid civilian casualties, injuries of civilians and accidental damage to civilian objects. To waive the use of non-selective attacks and non-selective weaponry against objects not used for military purposes;
- Where circumstances permit, to make an effective early warning of an attack that may affect the civilian population;
- To respect the property of civilian objects and not use it for military purposes. Do not place personnel and military equipment at their territory.

To Ukrainian authorities:

- To implement measures to reduce the risk of injury to civilian infrastructure personnel during their professional duties;
- To introduce a system of social guarantees and benefits for civilian infrastructure personnel performing their professional duties in the area of the Joint Forces Operation;
- To investigate all cases of armed attacks on civilian infrastructure, as well as other violations of international humanitarian law committed against them.

