

Shelling of the city of Donetsk using the Tochka-U Tactical Operational Missile Complex on March 14, 2022

Donetsk 14.03.2023

Authors: Ivan Aleksandrovich Kopyl

CONTENT

| | |
|--|----|
| ABBREVIATIONS | 2 |
| PREAMBLE | 3 |
| INCIDENT LOCATION | 8 |
| WEAPON TYPE..... | 9 |
| Projectile debris..... | 9 |
| 9K79-1 Tochka-U Tactical Missile Complex..... | 10 |
| DETERMINATION OF THE SHELLING SECTOR | 13 |
| MILITARY PRESENCE | 17 |
| The 19th Missile Brigade “Saint Barbara” | 17 |
| CONCLUSIONS..... | 20 |
| LEGAL QUALIFICATIONS | 21 |
| REFERENCES..... | 23 |
| Sources used in the text..... | 23 |
| Additional Sources | 29 |
| ANNEXES | 36 |

ABBREVIATIONS

UAF - Ukrainian Armed Forces

DPR - Donetsk People's Republic

LPR - Luhansk People's Republic

FSM - fragmentation submunition

GMBn - guided missile battalion

GMBr - guided missile brigade

RF - the Russian Federation

TOMC - Tactical Operational Missile Complex

OC - operational capabilities

PREAMBLE

On February 22, 2014, an unconstitutional violent coup d'état and a change in the socio-political course occurred in Ukraine¹. Several regions in the south-east of Ukraine, including the Autonomous Republic of Crimea, Donetsk and Luhansk regions, did not recognize the legitimacy of the new Kyiv authorities. On May 11, 2014, referendums on the status of the regions were held in the Donetsk and Luhansk regions, and on May 12, the Donetsk and Luhansk People's Republics declared themselves sovereign states².

On April 14, 2014, the new government of Ukraine, headed by the acting president of the country Oleksandr Turchynov, launched a military operation in the Donbass against residents of the region who were dissatisfied with the coup d'état that took place in February³. Thus, since the beginning of the conflict and as of February 24, 2022, as a result of armed aggression by Ukraine, 4,374 civilians, including 91 children, have been killed in the territory of the DPR alone. Almost 8,000 civilians got injuries of varying severity, including 323 children⁴.

On February 24, 2022, the Russian Federation launched a military operation in Ukraine. Vladimir Putin called its goal "to protect people who have been subjected to genocide by the Kyiv regime for eight years"⁵. During the first month of the military operation in Ukraine, the armed forces of the Russian Federation, together

¹ Between slavery and independence. February 18-22, 2014 (published on 18.02.2015) Historical truth. URL: <https://www.istpravda.com.ua/articles/2015/02/18/147385/> (accessed on 20.03.2023)

² Referendum results summed up in the Luhansk and Donetsk regions (published on 12.05.2014) RBC URL: <https://www.rbc.ru/politics/12/05/2014/57041c8c9a794761c0ce9c48> accessed on 20.03.2023)

³ On the decision of the National Security and Defense Council of Ukraine dated April 13, 2014 "On urgent measures to overcome the terrorist threat and preserve the territorial integrity of Ukraine" (published on 14.04.2014) Legislation of Ukraine URL: <https://zakon.rada.gov.ua/laws/show/405/2014#Text> (accessed on 20.03.2023)

⁴ Daria Morozova's report for the UN Security Council meeting. March 17, 2023. DPR's human-rights ombudsman website. URL: <https://ombudsman-dnr.ru/doklad-upolnomochennogo-po-pravam-cheloveka-v-donetskoy-narodnoy-respublike/> (accessed on 20.03.2023)

⁵ Message of the President of the Russian Federation (published on 24.02.2022) Official website of the President of the Russian Federation URL: <http://kremlin.ru/events/president/news/67843/videos> (accessed on 20.03.2023)

with the servicemen of the DPR and LPR, carried out tasks aimed at reducing the combat potential of the Ukrainian Armed Forces.

On the entire line of the Donetsk front, the positions of the Ukrainian armed forces were constantly attacked by the DPR people's militia and the armed forces of the Russian Federation. In response to this, the Ukrainian military carried out indiscriminate shelling of densely populated residential areas of cities not controlled by them. Residents of the Donetsk People's Republic, including its capital, Donetsk, were under constant artillery fire.

On March 14, 2022, at approximately 11:30 a.m. local time, the center of Donetsk was shelled for the first time during the special operation using the Tochka-U tactical missile complex⁶.

A rocket with a cluster warhead was fired at the city⁷. The spread of cluster munitions was recorded on the site in the immediate vicinity of the House of Government (34, Pushkina Blvd.) with an area of approximately 7 hectares. The affected zone looks like a circle with a radius of 150 meters, the center of which is located in the area of the south-east corner of the residential building at 30 Pushkina Blvd.

According to the Ministry of Health of the DPR, as a result of this shelling, **21 people died and 37 people were wounded**⁸.

Thus, the head of the Donetsk city administration, Aleksey Kulemzyn, reported the death of Svetlana Semyonovna Gladkoskok, chief officer for the

⁶ Innocent victims: what is known about the strike of Tochka-U on civilians of Donetsk (published on 14.03.2022) Zvezda TV Channel. URL: <https://tvzvezda-ru.turbopages.org/tvzvezda.ru/s/news/20223141824-Zlxg6.html> (accessed on 04.05.2022)

⁷ Footage of the wreckage of the downed Tochka-U missile of the UAF, which fell in the center of Donetsk (published on 14.03.2022) "RT in Russian" Telegram-channel. URL: https://t.me/rt_russian/99461 (accessed on 23.03.2022)

⁸ As of 11:30 a.m. on March 15, 2022, the number of victims during the explosion in the center of Donetsk on March 14, 2022 is 37 people (published on 15.03.2022) DPR Minzdrav Telegram Channel. URL: https://t.me/mzdnr_official/1808 (accessed on: 04.05.2022)

prevention and social protection sector of the Family and Children's Department of the Donetsk city administration, born in 1961⁹.

As a result of the detonation of cluster munitions, an employee of the Ministry of Internal Affairs, Sergei Hrushevsky, was killed. He was supposed to have a day off on March 14, but he was released on duty. Sergei died in the hospital due to blood loss after being wounded in the stomach and back. He has four children left¹⁰.

Pavel Tomashevsky, a resident of Donetsk, lost his father-in-law during shelling. At that moment Pavel was inside the branch of the Central Republican Bank located in 30 Universitetskaya St., and his father-in-law was waiting for him outside. As a result of the detonation of the cluster ammunition, his father-in-law was mortally wounded and died on the spot¹¹.

Donetsk resident Lyubov Grakova told the Izvestia TV channel correspondent that her 60-year-old husband, who was traveling in a bus at the time, was killed as a result of the Tochka-U rocket hitting the city. He was a construction engineer, held the position of director of a concrete plant¹².

Svetlana Vasilieva, a woman from Donetsk, was among the dead. In an interview with the correspondent of the Izvestia TV channel, her husband Vasyliy told about the death of his wife.¹³ At that moment Svetlana was in the exit way of

⁹ Svetlana Semenovna Gladkoskok was killed as a result of the monstrous terrorist attack by Ukrainian raiders, which was undertaken today in the center of Donetsk (published on 14.03.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/3728 (accessed on 20.03.2023)

¹⁰ The multi-child father killed when the Ukrainian Tochka-U hit the center of Donetsk (published on 17.03.2022) Dzen Content Platform URL: <https://dzen.ru/video/watch/62333274deb306384233711a> (accessed on 20.03.2023)

¹¹ "I was in the bank, my father-in-law died, he was in the street" (published on 14.03.2022) "RT in Russian" Telegram-channel. URL: https://t.me/rt_russian/99618 (accessed on 20.03.2023)

¹² A resident of Donetsk told about the death of her husband as a result of an attack by the Ukrainian Tochka-U (published on 14.03.2022) IZVESTIYA URL: <https://iz.ru/1304809/2022-03-14/zhitelnitca-donetcka-rasskazala-o-gibeli-muzhava-rezultate-udara-ukrainskoi-tochki-u> (accessed on 22.03.2023)

¹³ A resident of Donetsk told about the death of his wife after the Tochka-U shelling (published on 18.03.2022) IZVESTIYA URL: <https://iz.ru/1307291/2022-03-18/zhitel-donetcka-rasskazal-o-gibeli-zheny-posle-obstrelya-tochkoi-u> (accessed on 20.03.2023)

the Central Republican Bank branch located in 30, Universitetskaya St., and when one of the cluster munitions detonated, she received a fatal injury¹⁴.

The destructing elements of cluster bombs overtook ten-year-old Kirill, who was waiting for his grandmother on the porch of the bank branch. However, he managed to escape from them, only receiving a leg wound¹⁵. He and another 25 victims of the missile attack were admitted to the Republican Trauma Center (RTC). According to the deputy director of RTC Vadym Onoprienko, 17 of them underwent operations, two more died due to fatal injuries¹⁶.

Head of Department of Neurosurgery No. 1 of the Donetsk Clinical Territorial Medical Association named after Kalinin Sergey Korovka reported that four victims were brought to the department, two of whom required surgical intervention¹⁷.

One of them was Viktor Gaidai, a resident of Donetsk. He and his wife also found themselves in the zone of destruction of cluster munitions not far from the intersection of Universitetskaya Street and Oreshkova Lane. When they were heading to the store, cluster munitions began to explode. Viktor was injured in the head as a result of being hit by fragments of glass knocked out at a public transport stop.

The second victim, who was operated on, was a 24-year-old woman who was admitted to a medical institution in a coma. She was diagnosed with a penetrating wound to the head, an injury to the brain substance and the presence of a mass of

¹⁴ Recording from the surveillance camera of the DPR Central Bank (published on 14.03.2022) "Ukraine.ru" Telegram-channel. URL: https://t.me/ukraina_ru/61456 (accessed on 22.03.2022)

¹⁵ "You shouldn't to look at such bombs. This is what I say to everyone: who will be in such cases - immediately run somewhere (published on 14.03.2022) "RT in Russian" Telegram-channel. URL: https://t.me/rt_russian/99599 (accessed on 22.03.2022)

¹⁶ "Run, don't look at the bombs," said a 10-year-old child who survived the shelling of the center of Donetsk (published on 15.03.2022) "DPR Z Union TV Channel" Telegram Channel. URL: https://t.me/TK_Union/10687 (accessed on 21.03.2023)

¹⁷ The condition of the wounded after the shelling of the center of Donetsk (published on 15.03.2022) VKontakte Social Network. URL: https://vk.com/video-186145030_456256150 (accessed on 20.03.2023)

foreign bodies in the brain. After the operation, the head of the department of neurosurgery No. 1 noted positive dynamics.

As a result of the detonation of cluster munitions, civilian objects were damaged, including more than 15 buildings and 56 passenger cars in Universitetskaya Street, Teatralnyi Ave., and Pushkina Blvd. The destructions were recorded in the library named after Krupskaya, art museum, nursery garden, and bank branch; 12 shops, cafés and residential apartment buildings were damaged in Pushkina Blvd¹⁸.

Noteworthy, the cluster munitions hit the densely populated central district of the city 30 minutes before next to the Government House building located at 34, Pushkina Blvd., the gathering of wives and mothers of mobilized citizens of the Donetsk People's Republic was supposed to begin. On the eve of the shelling, a Telegram channel was created on behalf of the "Union of Mothers of Donbass", in which they called on the wives, girlfriends and mothers of the DNR servicemen to come **to the building of the House of Government at noon on March 14** to learn about the fate of the servicemen¹⁹ (see Fig. 1, Fig. 2). However, after the missile attack, the Telegram channel and all messages with the appeal were deleted.

¹⁸ The library, the bank, the building of DonAUyGS and 12 other buildings damaged in the area where the Tochka-U debris fell (published on 15.03.2022) Donetsk News Agency URL: <https://dan-news.ru/obschestvo/biblioteka-bank-korpus-donnu-i-esche-12-zdanij-povrezhdeny-v-zone-padenija/> (accessed on 23.03.2022)

¹⁹ Valentina Orlova, who suffered as a result of the Tochka-U explosion in Donetsk on March 14: This act of terrorism was directed against the wives and mothers of the DPR soldiers (published on 20.03.2022) Komsomolskaya Pravda in Donetsk. URL: <https://www.donetsk.kp.ru/daily/27378.5/4560813/> (accessed on 05.05.2022)

INCIDENT LOCATION

Having studied the photo and video materials published in the mass media and on the Internet, after conducting an inspection of the area, and interviewing witnesses and victims of the missile attack on Donetsk that occurred on March 14, 2022 at 11:31 a.m., we managed to establish the zone of damage by shrapnel warheads (see Fig. 3).

We found numerous holes on horizontal surfaces in the effective area (on the ground, and solid surfaces), identified as craters from explosions of fragmentation submunitions (hereinafter referred to as FSM) employed in cluster munitions. The craters are round holes, about 5-10 cm deep, and about 10-15 cm in diameter. They have radial grooves up to 50 cm long, diverging to the sides from the crater center.

The damage zone can be inscribed in a circle with a radius of 150 meters. It covers the following territory:

- from north to south - from the House of the Government (34 Pushkina Blvd.) to the intersection of Teatralnyi Ave., with Universitetskaya St. and Pushkina Blvd.

- from east to west - from the western part of the residential building at 84A Artioma St., to the branch of the Central Republican Bank (30, Universitetskaya St.)

We inspected the affected area and recorded 28 craters, in addition, two more shell hits were identified after re-examining the incident location and viewing publicly available video surveillance footage. We summarized 29 of the 30 recorded shell hits in a photo table (see Fig. 4, Fig. 5, Fig. 6, Fig. 7, Fig. 8, Fig. 9, Fig. 10, Fig. 11), shell hit 30 was recorded by a video surveillance camera (see Fig. 12). Also, all data on the coordinates of all 30 places found are summarized in a separate table (see Annex 11

Table 1).

WEAPON TYPE

Projectile debris

At the intersection of Shevchenko Blvd and Artioma St., wreckage of the missile identified as the remains of the instrument and tail compartments, as well as the propulsion system of the of the Tochka-U tactical complex missile was found (see Fig. 13).

On the remains of the propulsion unit, the factory-embossed inscriptions “9M79-1” and “VG900574” below it were found, preceded by the number “50” inside a hexagon and “65” in a square (see Fig. 14). Also, part of the number “900574” remained on the debris of the missile cluster ammunition (see Fig. 15). In addition, factory-embossed inscriptions “9M79-1 01 20.000”, “No. 9055147” and “9M79-1 01 00.000”, “No. 900503” were also found on the end of the engine unit (see Fig. 16).

Note that the presence of multiple simultaneous explosions, which fit into a circle with a radius of approximately 300 m, indicates the use of a cluster warhead (9H123K). Thus, near the remains of the missile instrument compartment and near craters No. 6 (see Fig. 5), 12 (see Fig. 6) and 14 (see Fig. 7) the stabilizers of the 9N24 fragmentation submunition, made in the form of white nylon tapes, were found. Fragments typical of the above-mentioned FSM were also found at the incident location (see Fig. 18).

Thus, we can assert that the **9M79-1 missile with the 9N123K cluster warhead, launched from the 9K79-1 Tochka-U Tactical Missile Complex, was used.**

9K79-1 Tochka-U Tactical Missile Complex

Tochka-U TMC is a rocket with a solid-fuel engine (propulsion unit number 9M79), consisting of a missile part (number on the guided missile part 9M79M or 9M79-1)²⁰ with a cruciform rudder and a main warhead that cannot be separated in flight. In the course of the armed conflict in Donbass, high-explosive fragmentation (GRAU index 9N123F) and cluster (9N123K) warheads were used. 9K79-1 Tactical missile complex with the 9M79-1 type of carrier (see Fig. 19) is intended for defeating manpower and unarmored military equipment in the places of their concentration. Precisely the fragmentation submunition is the main factor in defeating the target. This was done to increase the area of damage.

An optical homing seeker is installed on the missile, which ensures the defeat of point targets. The missile head can be equipped with an AA-60 nuclear warhead, 9N123F high-explosive warhead, 9N123K cassette warhead, etc. The cluster warhead contains a cassette with 50 fragmentation submunitions. The missile head cannot be detached in flight. The control system is autonomous, inertial, with an on-board computer system. In the final section of the trajectory, flight control is carried out by means of the homing seeker. Thus, the flight of the missile is controlled throughout the trajectory, which ensures high accuracy of hitting the target. Upon reaching the target, the missile is additionally rotated and vertically dived on the target. To achieve the greatest efficiency of the warhead, an air blast is carried out over the target. The trussed aerodynamic rudders on the missile tail controlled by steering machines are executive bodies of the control system.

*On the starting section of the trajectory, when the missile speed is insufficient for the operation of aerodynamic rudders, control is implemented by gas-dynamic rudders. The missile is launched from an inclined guide, and after launch, the missile makes an additional turn toward the target. **The direction of the launcher***

²⁰ Dot the Ü. Lostarmour website. Military-analytical portal. URL: <https://lostarmour.info/articles/tochki-nad-u/> (accessed on 14.03.2023)

wheeling on the target is $\pm 15^\circ$, which, when localizing the trajectory, reduces the likelihood of accurately determining the launch point²¹.

The equipment of the 9P129M-1 launcher independently solves all the tasks of tying the launch point, calculating the flight task and aligning the missile. The complex does not require topographic and geodetic and preliminary engineering preparation of the launching position and meteorological support. Sixteen-twenty minutes after arriving at the launching position, the missile can launch toward the target, and after 1.5 minutes it can leave the launch site to prevent the enemy from retaliating. The missile rises to the start 15 seconds before launch, which ensures high stealth. Launcher on the guide beam in a horizontal position can transport one missile²¹.

Military characteristics of missiles with 9M79-1 carrier

| |
|---|
| Firing range, min. 15-20 km. |
| Firing range, max. 120 km. |
| Missile flight path height – 6 - 26 km |
| Flying time at maximum range – 136 s |
| Midlength section diameter – 650 mm |
| Missile length - 6410 mm |
| Guided missile part length - 4085 mm |
| Rudder span – 1440 mm |
| Gross launching mass – 2010 kg |
| Weight of the charged guided missile part – 1528 kg |

The principle of operation of the 9N123K warhead (see Fig. 20): when the missile is at an altitude of 2250 m and at an angle of 25-90° relative to the ground, a radio sensor is triggered in the warhead, which sends an electrical impulse to the 9N123K warhead, where the body is unsealed due to the explosion of the 9X34 central bursting explosive (consisting of 19 TNT blocks and a detonator) and 50 9N24 fragmentation submunitions (FSM) consisting of 18 rings and explosive of

²¹ Shcherbakov B.F. Ground-mounted Tactical Operational Missile Complexes. St. Petersburg: Baltic State Technical University, 2008, 161 p.

grade A-IX-20 are actuated. After the warhead body is unsealed, 15,800 combat fragments begin to fall on the ground, hitting everything within a radius of 150 m²². (The textbook on ground-based operating tactical missile systems, published in 2008 at the Baltic State Technical University (St. Petersburg, Russia) by Boris Shcherbakov, says that 9N123K contains 18 000 combat fragments)²³.

Military characteristics of 9N123K warhead

| |
|---|
| Warhead weight - 482 kg |
| Number of fragments in the warhead – 15,800 |
| Diameter – 650 mm |
| Length – 2325 mm |
| 9H24 Submunition availability, pc. - 50 |
| 9N24 FSM weight – 7.45 kg |
| Explosive weight in 9N24 FSM – 1.45 kg |
| Number of fragments in 9N24 FSM – 316 |
| Fragment weight – 7 g |
| Fragment footprint– 3.5-7 ha |

²² 9N123K warhead schematic. Missilery Information News System. URL: <http://rbase.new-factoria.ru/missile/wobb/tochka/9n123k.shtml> {a 14.03.2023}

²³ Shcherbakov B.F. Ground-mounted Tactical Operational Missile Complexes. St. Petersburg: Baltic State Technical University, 2008, 161 p.

DETERMINATION OF THE SHELLING SECTOR

There are several versions regarding this shelling of a residential area in the city of Donetsk.

The Ministry of Defense of the Russian Federation stated that on March 14, 2022, the shelling from the Tochka-U tactical missile system was carried out from the north-western direction, from the area of Krasnoarmeysk, which is under the control of the armed formations of Ukraine²⁴.

Shortly before the statement of the RF Ministry of Defense, Ukraine gave a response. Thus, Leonid Matyukhin, officer of the Center for Operational Information of the Ministry of Defense of Ukraine, said that the missile fired at Donetsk from the Tochka-U complex was Russian or “some other kind of ammunition.”

The mayor of the settlement of Pokrovsk (Krasnoarmeysk), Ruslan Trebushkin, said in response to a message from the Russian Ministry of Defense that “no missiles were sent from the territory of the city”²⁵.

The Center for Counteracting Disinformation of the National Security and Defense Council of Ukraine even stated that this incident is fake information, the purpose of which is to discredit the Armed Forces of Ukraine²⁶.

However, residents of Pokrovsk (Krasnoarmeysk), and of the neighboring settlements of Novogradovka and Gornyak, wrote in the chats of local Telegram channels about a loud sound resembling an explosion and an unusual trace in the sky.

²⁴ Briefing of the Russian Ministry of Defense (published on 14.03.2022) Ministry of Defense of the Russian Federation. URL: https://function.mil.ru/news_page/country/more.htm?id=12412962@egNews (accessed on 10.03.2023)

²⁵ No missiles were sent from Pokrovsk: official refutation of Russian lies about shelling of Donetsk (published on 14.03.2022) Vchasno Information Agency - News of Donbass URL: <https://vchasnoua.com/news/niiakykh-raket-z-pokrovska-ne-vidpravliasia-ofitsiine-sprostuvannia-rosiiskoi-brekhni-pro-obstril-donetska> (accessed on 10.03.2023)

²⁶ The Center for Countering Disinformation at the National Security and Defense Council of Ukraine reports on another fake of the Russian occupiers (published on 14.03.2022) CENTER FOR COUNTERING DISINFORMATION Telegram-channel. URL: <https://t.me/CenterCounteringDisinformation/714> (accessed on 10.03.2023)

Thus, in the chat of the “KURAKHOVO SELIDOVO POKROVSK” Telegram channel (as of March 10, 2023 the chat is unavailable) on March 14, 2022 at 11:33 Moscow time (at 10:33 Kiev time) they wrote about the “white trace” over the Yuzhny micro-district of Pokrovsk, and over Novogrodovka and Gornyak (see Fig. 21). Additionally, based on the context of the messages of the chat participants, the administration of the Telegram channel published a photo that supposedly had a white streak in the sky, but deleted this photo a few minutes later.

In the chat of the “My Pokrovsk” Telegram channel, residents of Pokrovsk (Krasnoarmeysk) also wrote about a loud explosion, a streak in the sky, and also, they directly observed the flight of a missile (see Fig. 22).

In the comments to the video about the incident in the center of Donetsk on March 14, 2022, on the “Typical Donetsk” TikTok account, three residents of Pokrovsk (Krasnoarmeysk) wrote that this Tochka-U missile had flown over their homes. We are also attaching a screenshot of the account of one of the commentators, on which there is a video with Ukrainian symbols (see Fig. 23).

In personal correspondence with one of the eyewitnesses of the missile flight in the sky over the city of Pokrovsk, information from commentators in chat rooms was confirmed. A resident of the city reported that she heard an “explosion and whistle”, observed a white streak in the sky, which she managed to capture in the photo, and also reported the direction of the object flight. She also provided a screenshot of the correspondence with her interlocutor, to whom she sent the photo, according to her, approximately 10-12 minutes after the passage of the object (see Fig. 24, Fig. 25).

It should be emphasized that the 9M79-1 missile engine runs for about 28 seconds, and within this time the missile travels 20-30 km. And its path is corrected directly throughout the flight: in the active part of the flight – with a gas-dynamic rudder, in the passive part – with an aerodynamic one. At the same time, the distance between the settlements of Pokrovsk and Donetsk is about 60 km in a straight line. Taking into account this fact, and the flight time of the 9M79-1 missile at the

maximum range (136 s), it can be determined that with a high degree of probability the missile flight time was about 70 s, of which the engine was running for 28 s, and eyewitnesses could observe a white streak in the sky. The last time eyewitnesses reported a white streak in the sky near the settlement of Gornyak - there the missile engine stopped working, the white streak in the sky broke off, and the missile was at its peak height.

It should be emphasized that based on the tail number of this missile (VG900574), it can be argued that it belongs to the Armed Forces of Ukraine. All previously recorded types of 9M79-1 carriers with tail numbers starting with VG9 have been used by the Armed Forces of Ukraine in Donbass since 2014:

- in August 2014 during a strike on the airport in Luhansk (VG910830);
- during an attack on the settlement of Ternovoe (Krasnodonsky district, LPR) (VG910827)²⁷;
- on August 21, 2014 during an attack on Rovenki (VG910820)²⁸;
- on September 2, 2014 during an attack on Snezhnoye (VG910840);
- in February 2015 during an attack on Loginovo (VG910833)²⁹.

Moreover, next to the side numbers on the missiles in the settlements of Snezhnoye and Logvinovo, the numbers “65” in a square and “50” in a hexagon were located nearby.

Noteworthy that, according to the information of the Ministry of Defense of the Russian Federation, the Tochka-U missile systems were withdrawn from service

²⁷ Gordeev D.A., Kopyl I.A., Dovgal N.P. Investigation into the facts of the use of Tochka-U tactical missile systems during the armed conflict in the Donbass. Crimes of Ukraine in the Donbass (Collection of analytical materials). Donetsk: 2019. 361 p.

²⁸ Before that, Ukrainian missiles Sh91565, Sh91566 were spotted in the Donbass (published on 09.04.2022) TROYKA Telegram-channel. URL: <https://t.me/rustroyka1945/742> (accessed on 15.03.2023)

²⁹ Regarding the side number of the 9M79-1 OTRK Tochka-U missile “blurred” by the National Police of Ukraine (published on 15.03.2022) Military Informer Telegram Channel. URL: <https://t.me/milinfoolive/80780> (accessed on: 14.03.2023)

in 2020. They were replaced by the cutting-edge operational-tactical missile systems “Iskander-M”^{30 31}.

Thus, it can be argued that **the missile was indeed fired from the area of Pokrovsk (Krasnoarmeysk) at about 11:30 Moscow time.**

According to the available data and observations of eyewitnesses, given the maximum range of the missile of 120 km and the direction of the launcher wheeling at the target $\pm 15^\circ$, we can determine the expected missile flight path – from its launch nearby Pokrovsk (Krasnoarmeysk) to detonation in the Voroshilovsky district of the city of Donetsk (see Fig. 26).

³⁰ “Tochka” to be supplied in 2020 (published on 02.06.2017) IZVESTIYA URL: <https://iz.ru/news/722504> (accessed on 17.03.2023)

³¹ “Iskander” put an end to “Tochka”, “Caliber” is next in line (published on 29.11.2019) “Free Press” Socio-Political Online Publication. URL: <https://svpressa.ru/war21/article/250381/> (accessed on 20.03.2023)

MILITARY PRESENCE

As of 2011, the 19th brigade was the only formation of the missile forces of the UAF, equipped with Tochka-U tactical missile systems³².

Since 2014, the 19th GMBr has been present in the Donbass and has taken an active part in the hostilities. Thus, the first cases of using the complex occurred during the battles for Saur-Mogila in August 2014. From 2014 to 2016 in total, about a hundred missiles of the Tochka-U complex were fired with various warheads to perform various tasks.³³

As of August 2022, the 19th brigade also remained the only formation armed with the Tochka-U TMC³⁴. Let us consider this military unit in more detail.

The 19th Missile Brigade “Saint Barbara”

It is known that at the time of the collapse of the USSR, six missile brigades armed with 9K79 (9K79-1) Tochka-U tactical missile systems were deployed in the territory of Ukraine. In total, they included 90 launchers 9P129, 9P129M and 9P129-1M, 114 9M79 and 9M79M missiles and 336 9M79-1 missiles manufactured in 1978-1991, and 530 9N123F high-explosive fragmentation and 9N123K cluster warheads.

During independence years, the complex was kept in service, since it did not fall under any restrictions of the Intermediate-Range Nuclear Forces (INF) Treaty. However, as a result of physical obsolescence, in the spring of 2014 all the few launchers were consolidated into a single 19th guided missile brigade (base point - Khmelnytsky). **The 19th Missile Brigade “Saint Barbara”** (19 GMBr, A4239

³² 19Th Guided Missile Brigade (published on 15.08.2014) YouTube Video hosting. URL: <https://youtu.be/qSG410FeCJ0> (accessed on 16.03.2023)

³³ When the artillery gods put an end to ... U (published on 10.03.2016) Petr and Mazepa Website. URL: <https://petrimazepa.com/goddot.html> (accessed on 16.03.2023)

³⁴ “Popping” in Novaya Kakhovka and Melitopol and explosions in the Crimea - who is behind this? (published on 16.08.2014) YouTube Video hosting. URL: <https://youtu.be/Tfbb1YkIQEk> (accessed on 16.03.2023)

military unit, field mail B3225) is directly subordinate to the command of the Ground Forces of Ukraine (see Fig. 27).

The 19 GMBR consists of four combat and one training divisions, which have been deployed since 2014. Previously, the brigade was armed with 12 complexes in three divisions³⁵.

Also, Ukrainian experts note that the missilemen of the 19th GMBR took an active part in the hostilities in the Donbass in July-August 2014. This, in turn, confirms the fact that the missiles fired on Logvinovo, Snezhnoye, Luhansk airport belonged precisely to the Ukrainian armed forces, namely the 19th GMBR (see Fig. 28)³⁶.

In addition, some of the Tochka-U missile launches were recorded on video and made available on the Internet, which allows us to talk about the approximate deployment area of the combat crews of the 19th RBR in the Donbass.

Thus, from August 22 to August 27, 2014, several launches were recorded from the side of the village. Pokrovskoye near Artyomovsk (Ukrainian name – Bakhmut)^{37 38}. There is also a known case of an unsuccessful launch of Tochka-U missiles, which occurred on August 24, 2014 in the Logvinovo-Kalinovka area near Debaltseve.³⁹

On March 19, 2022, a message appeared on the Facebook social network on the page of the Andrushevsky Municipal Council about the death of a military officer of the Ukrainian Armed Forces from the Zhytomyr Region, Aleksandra Burgart, who served in the 19th GMBR, and eight more UAF military personnel from the

³⁵ Ukraine mastered the maintenance of the Tochka-U complex (published on 27.12.2019) National Industrial Portal. URL: <https://uprom.info/news/vpk/ukrayina-osvoyila-obslugovuvannya-kompleksu-tochka-u/> (accessed on 17.03.2023)

³⁶ Tochka-U. The most formidable weapon of the Ukrainian Armed Forces (published on 19.02.2022) YouTube Video hosting. URL: <https://youtu.be/nMH4z8CVPHE> (accessed on 17.03.2023)

³⁷ Launch of Tochka-U missiles. Artyomovsk. Launch missiles Scarab B (Tochka-U) (published on 15.08.2014) Odnoklassniki Social Network. URL: <https://ok.ru/video/5774902530> (accessed on 17.03.2023)

³⁸ Tochka U launch (published on 27.08.2014) YouTube Video hosting. URL: <https://youtu.be/hS2Hm-mXixU> (accessed on 17.03.2023)

³⁹ Donbass. An unsuccessful launch of Tochka-U from the UAF (published on 18.04.2015) YouTube Video hosting. URL: <https://youtu.be/VkEgvuwCpMs> (accessed on 17.03.2023)

Khmelnyskyi Region⁴⁰. “Telegraph” wrote that Ukrainian servicemen died in the Donetsk region as a result of shelling⁴¹.

On March 20, 2022, information appeared on the Internet that the Ukrainian 19th GMBR was attacked by the Russian army, as a result of which at least nine servicemen of this brigade were killed⁴², including Alexandra Burgart, who served as the operator of the Tochka-U complex.

Thus, proceeding from the above, it can be argued that the missilemen of the 19th GMBR attacked the center of Donetsk on March 14, 2022.

As for the persons who, at the direction of the higher command, could issue the order to shell civilians, the brigade commander, Colonel Fyodor Yaroshevich, who has been the brigade commander since 2008, is primarily responsible for this (see Fig. 29). In March 2017, the Investigative Committee of the Russian Federation opened a criminal case against Fyodor Yaroshevich under part 1 of article 356 of the Criminal Code of the Russian Federation (use of prohibited means and methods of warfare) on the facts of numerous shelling of residential buildings in the Donbass, which resulted in the death and injury of civilians⁴³.

⁴⁰ The 24th day of the war... (published on 19.03.2022) Facebook Social Network. URL: https://www.facebook.com/permalink.php?story_fbid=354413190079720&id=100065331256150 (accessed on 13.03.2023)

⁴¹ Recently got married and dreamed of children: a 22-year-old military woman died in the battle in Donbass (published on 20.03.2022) Telegraf. URL: <https://telegraf.com.ua/ukraina/2022-03-20/5699966-v-boyu-s-vragom-v-donetskoy-oblasti-pogibla-22-letnyaya-voennaya> (accessed on 17.03.2023)

⁴² A comeback for Donetsk. The Russian army struck a missile brigade of the Armed Forces of Ukraine (published on 20.03.2022) “ANNA-News” Front Information Agency. URL: <https://anna-news.info/otvetka-za-donetsk-rossijskaya-armiya-nanesla-udar-po-raketnoj-brigade-vsui/> (accessed on 17.03.2023)

⁴³ The Russian Investigative Committee identified the commander of the Ukrainian army, who ordered the use of Tochka-U against the civilian population (published on 07.03.2017) The Russian Investigative Committee website. URL: <https://sledcom.ru/news/item/1106185/> (accessed on 17.03.2023)

CONCLUSIONS

As follows from the above, on March 14, 2022, at approximately 11:30 Moscow time, the Voroshilovsky district of Donetsk came under missile fire using the Tochka-U tactical missile system. The missile flew in a direction from the northwest to the southeast - from the area of Pokrovsk (Krasnoarmeysk) in the direction of Donetsk. The shelling was carried out using a 9M79-1 missile equipped with a 9N123K cluster warhead.

The missile launching sector was entirely controlled by the UAF. Moreover, the Tochka-U TMS is in service with the Ukrainian Armed Forces, while this TMS was withdrawn from service with the Russian Armed Forces during the 2010s.

The shelling led to the death and injury of the civilian population, and damage to civilian objects. Thus, the principles of selectivity and proportionality were violated.

In the shelling sector, one of the divisions of the 19th Guided Missile Brigade “Saint Barbara” under the command of Colonel Fyodor Yaroshevich could be located. Responsibility for the illegal actions of the Armed Forces of Ukraine also lies with the highest military-political leadership of Ukraine - President and Supreme Commander Volodymyr Zelensky, Commander-in-Chief of the Armed Forces of Ukraine General Valery Zaluzhny, and Chief of the General Staff of the Armed Forces of Ukraine Lieutenant-General Serhiy Shaptala.

LEGAL QUALIFICATIONS

The missile shelling of the Voroshilovskiy District in the city of Donetsk, in which civilians were killed and injured, is a crime for which responsibility is provided by the norms of national legislation of Ukraine and by the norms of international law.

In compliance with **Art. 438 of the Criminal Code of Ukraine**, for “... use of methods of the warfare prohibited by international instruments, or any other violations of rules of the warfare recognized by international instruments consented to be binding by the Verkhovna Rada (Parliament) of Ukraine, and also giving an order to commit any such actions”, shall be punishable by imprisonment for a term of eight to twelve years., and if he same acts accompanied with an intended murder, shall be punishable by imprisonment for a term of ten to fifteen years, or life imprisonment.

In compliance with **Art. 51 of Additional Protocol II to the Geneva Conventions** of 12 August 1949, concerning the protection of victims of armed conflicts of a non-international character, dated 8 June 1977: “The civilian population as such, as well as individual civilians, shall not be the object of attack. Acts or threats of violence the primary purpose of which is to spread terror among the civilian population are prohibited”.

In compliance with **Rule 71 of Customary International Humanitarian Law** (Volume 1, ICRC, 2006): “States must never make civilians the object of attack and must consequently never use weapons that are incapable of distinguishing between civilian and military targets”

“The use of weapons which are by nature indiscriminate is prohibited”.

In compliance with **Art. 3 common to all Geneva Conventions of August 12, 1949**, extending its effect to non-international armed conflicts, “persons taking no active part in the hostilities, including members of armed forces who have laid

down their arms and those placed 'hors de combat' by sickness, wounds, detention, or any other cause, shall in all circumstances be treated humanely, without any adverse distinction founded on race, color, religion or faith, sex, birth or wealth, or any other similar criteria".

To this end, violence to life and person, in particular murder of all kinds and mutilation, are prohibited inter alia with respect to the above-mentioned persons.

REFERENCES

Sources used in the text

1. Between slavery and independence. February 18-22, 2014 (published on 18.02.2015) Historical truth. URL: <https://www.istpravda.com.ua/articles/2015/02/18/147385/> (accessed on 20.03.2023)
2. Referendum results summed up in the Luhansk and Donetsk regions (published on 12.05.2014) RBC URL: <https://www.rbc.ru/politics/12/05/2014/57041c8c9a794761c0ce9c48> (accessed on 20.03.2023)
3. On the decision of the National Security and Defense Council of Ukraine dated April 13, 2014 “On urgent measures to overcome the terrorist threat and preserve the territorial integrity of Ukraine” (published on 14.04.2014) Legislation of Ukraine. URL: da.gov.ua/laws/show/405/2014#Text (accessed on 20.03.2023)
4. Daria Morozova’s report for the UN Security Council meeting. March 17, 2023 DPR’s human-rights ombudsman website. URL: <https://ombudsman-dnr.ru/doklad-upolnomochennogo-po-pravam-cheloveka-v-donetskoy-narodnoy-respublike/> (accessed on 20.03.2023)
5. Message of the President of the Russian Federation (published on 24.02.2022) Official website of the President of the Russian Federation URL: <http://kremlin.ru/events/president/news/67843/videos> (accessed on 20.03.2023)
6. Innocent victims: what is known about the strike of Tochka-U on civilians of Donetsk (published on 14.03.2022) Zvezda TV Channel. URL: <https://tvzvezda.ru.turbopages.org/tvzvezda.ru/s/news/20223141824-Zlxg6.html> (accessed on 04.05.2022)

7. Footage of the wreckage of the downed Tochka-U missile of the UAF, which fell in the center of Donetsk (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99461 (accessed on 23.03.2022)
8. As of 11:30 a.m. on March 15, 2022, the number of victims during the explosion in the center of Donetsk on March 14, 2022 is 37 people (published on 15.03.2022) DPR Minzdrav Telegram Channel. URL: https://t.me/mzdnr_official/1808 (accessed on: 04.05.2022)
9. Svetlana Semenovna Gladkoskok was killed as a result of the monstrous terrorist attack by Ukrainian raiders, which was undertaken today in the center of Donetsk (published on 14.03.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/3728 (accessed on 20.03.2023)
10. The multi-child father killed when the Ukrainian Tochka-U hit the center of Donetsk (published on 17.03.2022) Dzen Content Platform URL: <https://dzen.ru/video/watch/62333274deb306384233711a> (accessed on 20.03.2023)
11. “I was in the bank, my father-in-law died, he was in the street” (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99618 (accessed on 20.03.2023)
12. A resident of Donetsk told about the death of her husband as a result of an attack by the Ukrainian Tochka-U (published on 14.03.2022) IZVESTIYA URL: <https://iz.ru/1304809/2022-03-14/zhitelnitca-donetcka-rasskazala-o-gibeli-muzhava-rezultate-udara-ukrainskoi-tochki-u> (accessed on 22.03.2023)
13. A resident of Donetsk told about the death of his wife after the Tochka-U shelling (published on 18.03.2022) IZVESTIYA URL: <https://iz.ru/1307291/2022-03-18/zhitel-donetcka-rasskazal-o-gibeli-zheny-posle-obstrela-tochkoi-u> (accessed on 20.03.2023)
14. Recording from the surveillance camera of the DPR Central Bank (published on 14.03.2022) “Ukraine.ru” Telegram-channel. URL: https://t.me/ukraina_ru/61456 (accessed on 22.03.2022)

15. “You shouldn’t look at such bombs. This is what I say to everyone: who will be in such cases – immediately run somewhere (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99599 (accessed on 22.03.2022)
16. “Run, don’t look at the bombs,” said a 10-year-old child who survived the shelling of the center of Donetsk (published on 15.03.2022) “DPR Z Union TV Channel” Telegram Channel. URL: https://t.me/TK_Union/10687 (accessed on 21.03.2023)
17. The condition of the wounded after the shelling of the center of Donetsk (published on 15.03.2022) VKontakte Social Network. URL: https://vk.com/video-186145030_456256150 (accessed on 20.03.2023)
18. The library, the bank, the building of DonAUyGS and 12 other buildings damaged in the area where the Tochka-U debris fell (published on 15.03.2022) Donetsk News Agency URL: <https://dan-news.ru/obschestvo/biblioteka-bank-korpus-donnu-i-esche-12-zdaniy-povrezhdeny-v-zone-padenija/> (accessed on 23.03.2022)
19. Valentina Orlova, who suffered as a result of the Tochka-U explosion in Donetsk on March 14: This act of terrorism was directed against the wives and mothers of the DPR soldiers (published on 20.03.2022) Komsomolskaya Pravda in Donetsk. URL: <https://www.donetsk.kp.ru/daily/27378.5/4560813/> (accessed on 05.05.2022)
20. Dot the Ü. Lostarmour website. URL: <https://lostarmour.info/articles/tochki-nad-u/> (accessed on 14.03.2023)
21. Shcherbakov B.F. Ground-mounted Tactical Operational Missile Complexes. St. Petersburg: Baltic State Technical University, 2008, 161 p.
22. 9N123K combat vehicle schematic. Missilery Information News System. URL: Representation of the Donetsk People’s Republic in the Joint Center for Control and Coordination (accessed on 14.03.2023)
23. Briefing of the Russian Ministry of Defense (published on 14.03.2022) Ministry of Defense of the Russian Federation. URL:

https://function.mil.ru/news_page/country/more.htm?id=12412962@egNews
(accessed on 10.03.2023)

24. No missiles were sent from Pokrovsk: official refutation of Russian lies about shelling of Donetsk (published on 14.03.2022) Vchasno Information Agency – News of Donbass URL: <https://vchasnoua.com/news/niiakykh-raket-z-pokrovskane-vidpravliatosia-ofitsiine-sprostuvannia-rosiiskoi-brekhni-pro-obstril-donetska>
(accessed on 10.03.2023)

25. The Center for Countering Disinformation at the National Security and Defense Council of Ukraine reports on another fake of the Russian occupiers (published on 14.03.2022) CENTER FOR COUNTERING DISINFORMATION Telegram-channel. URL: <https://t.me/CenterCounteringDisinformation/714> (accessed on 10.03.2023)

26. Gordeev D.A., Kopyl I.A., Dovgal N.P. Investigation into the facts of the use of Tochka-U tactical missile systems during the armed conflict in the Donbass. Crimes of Ukraine in the Donbass (Collection of analytical materials). Donetsk: 2019. 361 p.

27. Before that, Ukrainian missiles Sh91565, Sh91566 were spotted in the Donbass (published on 09.04.2022) TROYKA Telegram-channel. URL: <https://t.me/rustroyka1945/742> (accessed on 15.03.2023)

28. Regarding the side number of the 9M79-1 OTRK Tochka-U missile “blurred” by the National Police of Ukraine (published on 15.03.2022) Military Informer Telegram Channel. URL: <https://t.me/milinfolive/80780> (accessed on: 14.03.2023)

29. “Tochka” to be supplied in 2020 (published on 02.06.2017) IZVESTIYA URL: <https://iz.ru/news/722504> (accessed on 17.03.2023)

30. “Iskander” put an end to “Tochka”, “Caliber” is next in line (published on 29.11.2019) “Free Press” Socio-Political Online Publication. URL: <https://svpressa.ru/war21/article/250381/> (accessed on 20.03.2023)

31. 19 Guided Missile Brigade (published on 28.10.2011) YouTube Video hosting. URL: <https://youtu.be/jSGzbHGbayc> (accessed on 16.03.2023)

32. When the artillery gods put an end to ... U (published on 10.03.2016) Petr and Mazepa Website. URL: <https://petrimazepa.com/goddot.html> (accessed on 16.03.2023)
33. “Popping” in Novaya Kakhovka and Melitopol and explosions in the Crimea - who is behind this? (published on 16.08.2014) YouTube Video hosting. URL: <https://youtu.be/Tfbb1YkIQEk> (accessed on 16.03.2023)
34. Ukraine mastered the maintenance of the Tochka-U complex (published on 27.12.2019) National Industrial Portal. URL: <https://uprom.info/news/vpk/ukrayina-osvoyila-obslugovuvannya-kompleksu-tochka-u/> (accessed on 17.03.2023)
35. Tochka U. The most formidable weapon of the Ukrainian Armed Forces (published on 19.02.2022) YouTube Video hosting. URL: <https://youtu.be/nMH4z8CVPHE> (accessed on 17.03.2023)
36. Launch of Tochka-U missiles. Artiomovsk. Launch missiles Scarab B (Tochka-U) (published on 26.08.2014) Odnoklassniki Social Network. URL: <https://ok.ru/video/5774902530> (accessed on 17.03.2023)
37. Tochka U launch (published on 27.08.2014) YouTube Video hosting. URL: <https://youtu.be/hS2Hm-mXixU> (accessed on 17.03.2023)
38. Donbass. An unsuccessful launch of Tochka-U from the UAF (published on 18.04.2015) YouTube Video hosting. URL: <https://youtu.be/VkEgvuwCpMs> (accessed on 17.03.2023)
39. The 24th day of war... (published on 19.03.2022) Odnoklassniki Social Network. URL: https://www.facebook.com/permalink.php?story_fbid=354413190079720&id=100065331256150 (accessed on 13.03.2023)
40. Recently got married and dreamed of children: a 22-year-old military woman died in the battle in Donbass (published on 20.03.2022) Telegraf. URL: <https://telegraf.com.ua/ukraina/2022-03-20/5699966-v-boyu-s-vragom-v-donetskoy-oblasti-pogibla-22-letnyaya-voennaya> (accessed on 17.03.2023)

41. A comeback for Donetsk. The Russian army struck a missile brigade of the Armed Forces of Ukraine (published on 20.03.2022) “ANNA-News” Front Information Agency. URL: <https://anna-news.info/otvetka-za-donetsk-rossijskaya-armiya-nanesla-udar-po-raketnoj-brigade-vsu/> (accessed on 17.03.2023)
42. The Russian Investigative Committee identified the commander of the Ukrainian army, who ordered the use of Tochka-U against the civilian population (published on 07.03.2017) The Russian Investigative Committee website. URL: <https://sledcom.ru//news/item/1106185/> (accessed on 17.03.2023)
43. Instagram account “VLADISLAVA VLADISLAVOVNA” URL: <https://www.instagram.com/berlodyan/> (accessed on 15.03.2022)
44. The first video of a missile hitting the center of Donetsk (published on 14.03.2022) “WarGonzo” Telegram-channel. URL: <https://t.me/wargonzo/6225> (accessed on 22.03.2022)
45. People’s militia of the DPR regards the attempted strike of the Ukrainian Tochka-U missile on Donetsk as a terrorist act (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99456 (accessed on 22.03.2022)
46. Eduard Basurin on air #60minutes showed those cluster submunitions of Tochka-U missile, which was fired at the center of Donetsk (published on 15.03.2022) Skabeeva Telegram-channel. URL: <https://t.me/skabeeva/10075> (accessed on 14.03.2023)
47. Photo report. Shelling effects in Donetsk (Voroshilovskiy District) (published on 14.03.2022) Representative Office of the Donetsk People’s Republic in the Joint Center for Control and Coordination. URL: <https://dnr-sckk.ru/fotoreportazh-posledstviya-obstrela-g-doneck-voroshilovskij-rajon/> (accessed on 14.03.2023)
48. View of the apartment from the inside and outside, after today’s shelling (published on 14.03.2022) VKontakte Social Network URL: https://vk.com/wall-134163098_830760 (accessed on 13.03.2023)

49. Schematic of the 9M79 missile. Missilery. Descriptions and specifications of missiles. URL: <https://missilery.info/missile/tochka/9m79> (accessed on 14.03.2023)
50. 9N123K combat vehicle schematic. Missilery Information News System. URL: Representation of the Donetsk People's Republic in the Joint Center for Control and Coordination (accessed on 14.03.2023)
51. The 19th Guided Missile Brigade "Saint Barbara". Ukrainian version of Wikipedia. URL: https://uk.wikipedia.org/wiki/19-та_ракетна_бригада_«Свята_Варвара» (accessed on 16.03.2023)
52. Tochka U. The most formidable weapon of the Ukrainian Armed Forces (published on 19.02.2022) YouTube Video hosting. URL: <https://youtu.be/nMH4z8CVPhE> (accessed on 17.03.2023)
53. Fyodor Serhiyovych Yaroshevich. Ukrainian version of Wikipedia. URL: https://uk.wikipedia.org/wiki/Ярошевич_Федір_Сергійович (accessed on 17.03.2023)

Additional Sources

54. The moment of the cluster charge rupture of the Ukrainian Tochka-U missile in the center of Donetsk. Wargonzo video (published on 14.08.2014) VKontakte Social Network. URL: https://vk.com/video-50332460_456336131 (accessed on 17.03.2022)
55. The moment of the cluster charge rupture of the Ukrainian Tochka-U missile in the center of Donetsk. Wargonzo video (published on 14.08.2014) VKontakte Social Network. URL: https://vk.com/video-50332460_456336130 (accessed on 17.03.2022)
56. UAF Terrorists launched a Tochka-U missile in Donetsk (published on 14.08.2014) VKontakte Social Network. URL: https://vk.com/video-50332460_456336140 (accessed on 17.03.2022)

57. Footage from the center of Donetsk, where the Tochka-U missile was shot down (published on 14.03.2022) “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32242 (accessed on 22.03.2022)
58. “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32239 (accessed on 22.03.2022)
59. 18+ (published on 14.03.2022) “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32287 (accessed on 22.03.2022)
60. The wreckage of the Ukrainian Tochka-U missile, shot down in the center of Donetsk, collapsed on a car and a bus in Universitetskaya Street (published on 14.03.2022) “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32249 (accessed on 22.03.2022)
61. More photos from Donetsk from friends (published on 14.03.2022) “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32265 (accessed on 22.03.2022)
62. Another terrible footage of the consequences of the Tochka-U attack in the center of Donetsk (published on 14.03.2022) “Colonelcassad” Telegram channel. URL: https://t.me/boris_rozhin/32296 (accessed on 22.03.2022)
63. A Tochka-U tactical missile fired by UAF militants was shot down over the center of Donetsk (published on 14.03.2022) “The DPR People’s Militia” Telegram channel. URL: https://t.me/nm_dnr/6979 (accessed on 22.03.2022)
64. Urgently! Center of Donetsk under fire! (published on 14.03.2022) “WarGonzo” Telegram channel. URL: <https://t.me/wargonzo/6220> (accessed on 22.03.2022)
65. A missile fired by the UAF hit the center of Donetsk! (published on 14.03.2022) “WarGonzo” Telegram channel. URL: <https://t.me/wargonzo/6221> (accessed on 22.03.2022)
66. The tail of a missile that exploded in the center of Donetsk (published on 14.03.2022) “WarGonzo” Telegram channel. URL: <https://t.me/wargonzo/6222> (accessed on 22.03.2022)

67. VIDEO Surveillance cameras of the DPR bank - missile hit (published on 14.03.2022) “WarGonzo” Telegram channel. URL: <https://t.me/wargonzo/6224> (accessed on 22.03.2022)
68. Missile attack against Donetsk (published on 14.03.2022) “WarGonzo” Telegram channel. URL: <https://t.me/wargonzo/6227> (accessed on 22.03.2022)
69. At least 8 civilians were killed in an attack on the center of Donetsk (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61398 (accessed on 22.03.2022)
70. Donetsk. March 14. Universitetskaya St. (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61518 (accessed on 22.03.2022)
71. In Donetsk, 20 people killed, including children, 28 injured as a result of the UAF attack on the city center with a Tochka-U tactical missile (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61459 (accessed on 22.03.2022)
72. Donetsk. Video by the correspondent of “Ukraine.ru” Philip Prokudin (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61446 (accessed on 22.03.2022)
73. Center of Donetsk (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61405 (accessed on 22.03.2022)
74. They write that as a result of the attack on the center of Donetsk, eight civilians were killed (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61399 (accessed on 22.03.2022)
75. Donetsk. Photos by the correspondent of “Ukraine.ru” Philip Prokudin (published on 14.03.2022) “Ukraina.ru” Telegram channel. URL: https://t.me/ukraina_ru/61440 (accessed on 22.03.2022)
76. STRICTLY 18+ IMMEDIATELY AFTER THE ARTILLERY STRIKE (published on 14.03.2022) “Sladkov+” Telegram channel. URL: https://t.me/Sladkov_plus/5073 (accessed on 22.03.2022)

77. Teatralnyi Ave., Donetsk Center (published on 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49687> (accessed on 22.03.2022)
78. A great tragedy in the center of Donetsk... (published on 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49742> (accessed on 22.03.2022)
79. Consequences of an UAF strike in the center of Donetsk (published on 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49698> (accessed on 22.03.2022)
80. 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49700> (accessed on 22.03.2022)
81. “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49701> (accessed on 22.03.2022)
82. “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49702> (accessed on 22.03.2022)
83. “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49703> (accessed on 22.03.2022)
84. Donetsk Mayor Kulemzin spoke about the consequences of the Tochka-U strike in the city center (published on 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49735> (accessed on 22.03.2022)
85. The artillery strike in the center of Donetsk (published on 14.03.2022) “WarDonbass” Telegram-channel. URL: <https://t.me/WarDonbass/49680> (accessed on 22.03.2022)
86. Tochka U striking the center of Donetsk (published on 14.03.2022) “Reporter Rudenko” Telegram-channel. URL: <https://t.me/RtrDonetsk/3403> (accessed on 22.03.2022)
87. These deaths are on Kyiv’s conscience (published on 14.03.2022) “Reporter Rudenko” Telegram-channel. URL: <https://t.me/RtrDonetsk/3401> (accessed on 22.03.2022)

88. Footage strictly for 18+ (published on 14.03.2022) “Reporter Rudenko” Telegram-channel. URL: <https://t.me/RtrDonetsk/3404> (accessed on 22.03.2022)
89. Yesterday’s shelling of the center of Donetsk took civilians by surprise (published on 15.03.2022) “Reporter Rudenko” Telegram-channel. URL: <https://t.me/RtrDonetsk/3428> (accessed on 20.03.2023)
90. In short, Donetsk, Tochka U was shot down, fell nearby the Library named after Krupskaya (published on 14.03.2022) Yuri Tkachiov Telegram Channel. URL: <https://t.me/dadzibao/6846> (accessed on 22.03.2022)
91. Broken cars, shop windows, fragments everywhere, blood and bodies of the dead (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99534 (accessed on 22.03.2022)
92. “Let us, peaceful people, be left alone. How long can you, huh?” (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99604 (accessed on 22.03.2022)
93. Consequences of falling debris of the downed Ukrainian Tochka-U missile in Donetsk (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99449 (accessed on 22.03.2022)
94. Another video from the scene of the tragedy in the center of Donetsk (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99468 (accessed on 22.03.2022)
95. Spread of ammunition and submunitions after the shelling of Donetsk by Tochka-U missile recorded within a radius of 500 m from the House of Government (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99463 (accessed on 22.03.2022)
96. RT Exclusive: The moment of the fall of fragments of the Ukrainian Tochka-U in the center of Donetsk (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99564 (accessed on 22.03.2022)

97. An eyewitness to the fall of the UAF missile in Donetsk told how it all happened (published on 14.03.2022) “Zvezdanews” Telegram-channel. URL: <https://t.me/zvezdanews/72593> (accessed on 22.03.2022)
98. “Large-Caliber Turmoil” Telegram-channel. URL: <https://t.me/bolshiepushki/306> (accessed on 22.03.2022)
99. CCTV cameras of the Central Republican Bank of the DPR recorded the moment of the Tochka-U fall (published on 14.03.2022) “DPR Online Telegram Channel. URL: <https://t.me/dnronline/60663> (accessed on 22.03.2022)
100. Rescuers working at the site of the fall of the Tochka-U missile fragments in Donetsk, and all the necessary medical care provided to the survivors (published on 14.03.2022) “TerO DPR Headquarters” Telegram-channel. URL: https://t.me/TRO_DPR/557 (accessed on 22.03.2022)
101. According to preliminary data, 20 dead and 9 wounded in the center of Donetsk, at the site of the fall of the Tochka-U missile fragments (published on 14.03.2022) “TerO DPR Headquarters” Telegram-channel. URL: https://t.me/TRO_DPR/549 (accessed on 22.03.2022)
102. 18+. The first shots of the consequences of the shelling of Donetsk center (published on 14.03.2022) “LOOK” Telegram-channel. URL: https://t.me/smotri_media/9746 (accessed on 22.03.2022)
103. According to preliminary information, about 20 civilians killed as a result of the UAF strike in the center of Donetsk (published on 14.03.2022) Akim Apachev Telegram Channel. URL: <https://t.me/akimapachev/1595> (accessed on 22.03.2022)
104. The center of Donetsk these minutes (published on 14.03.2022) “Barbie at war by Kristina Melnikova” Telegram Channel. URL: https://t.me/barbie_at_war/1428 (accessed on 22.03.2022)
105. Photo of the downed Tochka U (published on 14.03.2022) VKontakte Social Network. URL: https://vk.com/wall-5158073_2484121 (accessed on 13.03.2023)
106. According to preliminary information, as a result of the Tochka-U missile fired by Ukrainian raiders, 20 civilians were killed in Universitetskaya St. (published

on 14.03.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/3717 (accessed on 22.03.2022)

107. #18+ Consequences of the shelling of Donetsk center (published on 14.03.2022) “Unofficial Bezsonov “Z” Telegram Channel. URL: <https://t.me/NeoficialniyBeZsonoV/8748> (accessed on 22.03.2022)

108. In Universitetskaya Street, even concrete curbs and steps damaged by hitting ammunition (published on 14.03.2022) “Unofficial Bezsonov “Z” Telegram Channel. URL: <https://t.me/NeoficialniyBeZsonoV/8745> (accessed on 22.03.2022)

109. Explosion over Donetsk (published on 14.03.2022) Donbass Analytical Service Information Agency. URL: <https://asd.news/articles/genocide/vzryv-nad-donetskom/> (accessed on 13.03.2023)

110. War crime: Tochka-U missile attack on Donetsk (published on 14.03.2022) RIA News website. URL: <https://ria.ru/20220314/donetsk-1778051454.html> (accessed on 13.03.2023)

111. Photo from the Tochka-U crash site (published on 14.03.2022) Donetsk Time Telegram Channel. URL: <https://t.me/donvremya/3040> (accessed on 22.03.2022)

112. According to operational information, the armed formations of Ukraine used a cluster-type Tochka U missile launcher, aiming to defeat the administrative center of the capital of the DPR (published on 14.03.2022) the DNR in JCCC: facts of Ukraine’s war crimes. URL: https://t.me/DNR_SCKK/6810 (accessed on 22.03.2022)

113. Written by our documentary writer, Slava Guz, who is now in Donetsk (published on 14.03.2022) Margarita Simonyan Telegram Channel. URL: <https://t.me/margaritasimonyan/10467> (accessed on 22.03.2022)

ANNEXES

Annex 1

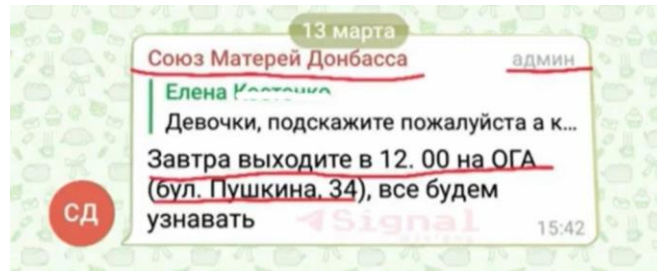


Fig. 1 – Screenshot from the created Telegram channel “Union of Mothers of Donbass”.

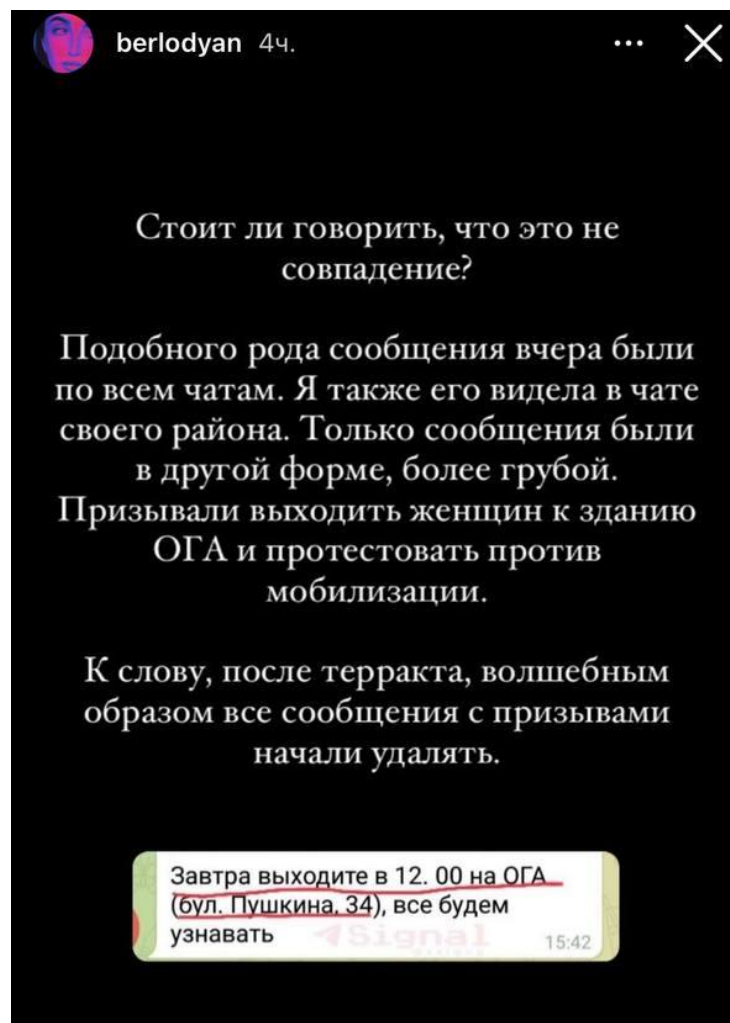


Fig. 2 – Screenshot from the Instagram Social Network from a resident of Donetsk⁴⁴.

⁴⁴ Instagram account “VLADISLAVA VLADISLAVOVNA” URL: <https://www.instagram.com/berlodyan/> (accessed on 15.03.2022)



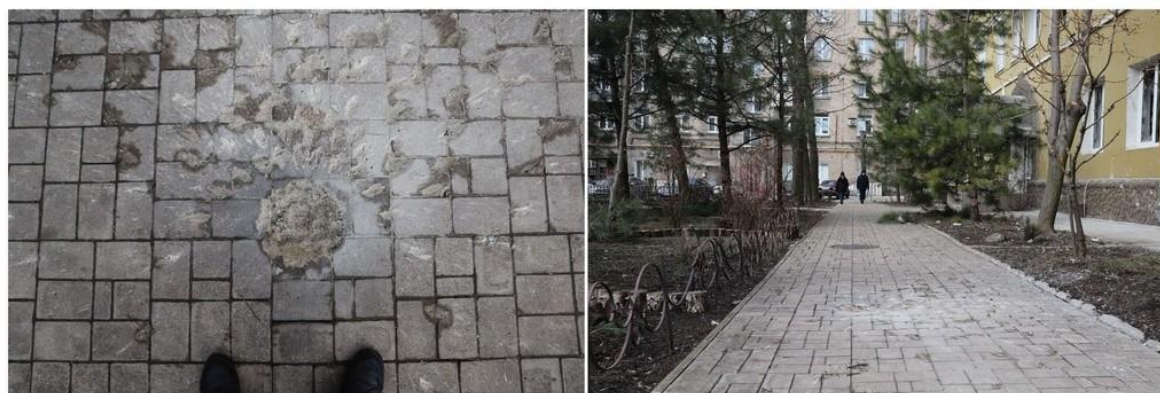
Fig. 3 – Scheme of Donetsk shelling with cluster munitions on March 14, 2022.



Воронка № 1



Воронка № 2



Воронка № 3



Воронка № 4

Fig. 4 – Photo table for recording FSM explosion craters (sheet 1).



Воронка № 5



Воронка № 6



Воронка № 7



Воронка № 8

Fig. 5 – Photo table for recording FSM explosion craters (sheet 2).



Воронка № 9



Воронка № 10

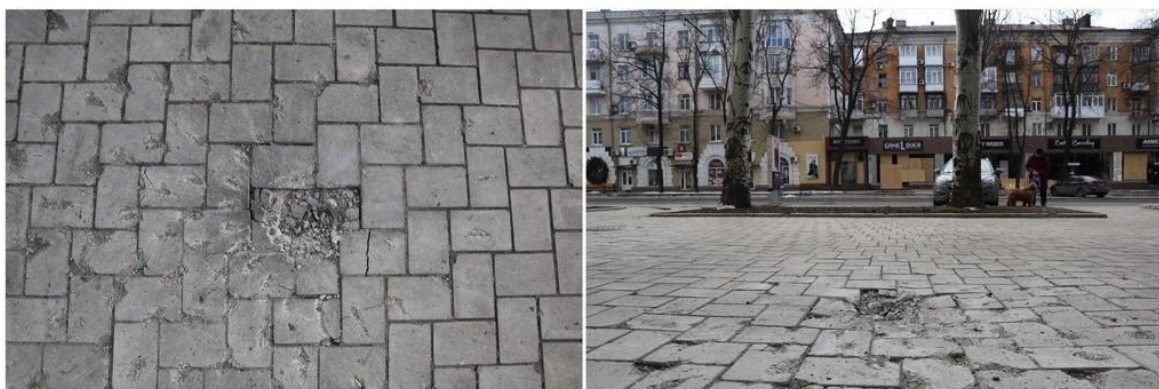


Воронка № 11



Воронка № 12

Fig. 6 – Photo table for recording FSM explosion craters (sheet 3).



Воронка № 13



Воронка № 14



Воронка № 15

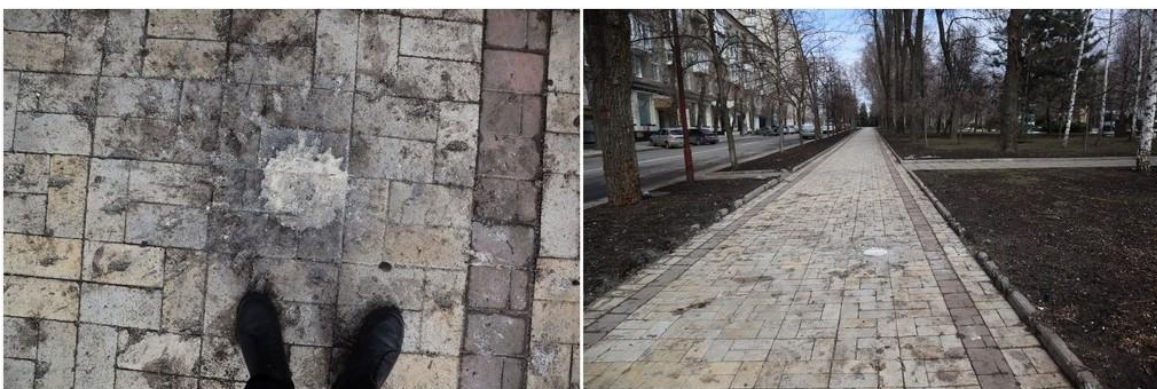


Воронка № 16

Fig. 7 – Photo table for recording FSM explosion craters (sheet 4).



Воронка № 17



Воронка № 18



Воронка № 19



Воронка № 20

Fig. 8 – Photo table for recording FSM explosion craters (sheet 5).



Воронка № 21



Воронка № 22



Воронка № 23



Воронка № 24

Fig. 9 – Photo table for recording FSM explosion craters (sheet 6).



Воронка № 25



Воронка № 26



Воронка № 27



Воронка № 28

Fig. 10 – Photo table for recording FSM explosion craters (sheet 7).



Воронка № 29

Fig. 11 – Photo table for recording FSM explosion craters (sheet 8).



Fig. 12 – The moment of the explosion at the site of shell hit 30, recorded on a video surveillance camera⁴⁵.

⁴⁵ The first video of a missile hitting the center of Donetsk (published on 14.03.2022) “WarGonzo” Telegram-channel. URL: <https://t.me/wargonzo/6225> (accessed on 22.03.2022)

Table 1 – Coordinates of photos of FSM traces

| Number of the shell hit in the scheme | Coordinates: |
|--|----------------------|
| 1 | 48.006324, 37.799075 |
| 2 | 48.007202, 37.800378 |
| 3 | 48.007577, 37.799895 |
| 4 | 48.007865, 37.799825 |
| 5 | 48.008032, 37.799645 |
| 6 | 48.007880, 37.799471 |
| 7 | 48.007609, 37.799079 |
| 8 | 48.007189, 37.798889 |
| 9 | 48.007075, 37.798830 |
| 10 | 48.006988, 37.799059 |
| 11 | 48.006760, 37.798854 |
| 12 | 48.006302, 37.800028 |
| 13 | 48.006190, 37.800123 |
| 14 | 48.006725, 37.800385 |
| 15 | 48.006851, 37.800671 |
| 16 | 48.006933, 37.800815 |
| 17 | 48.006802, 37.800823 |
| 18 | 48.006914, 37.800968 |
| 19 | 48.007073, 37.801099 |
| 20 | 48.007753, 37.801083 |
| 21 | 48.007611, 37.801472 |
| 22 | 48.007130, 37.801790 |
| 23 | 48.007117, 37.801819 |
| 24 | 48.007029, 37.801179 |
| 25 | 48.006365, 37.801817 |
| 26 | 48.006785, 37.802375 |
| 27 | 48.007595, 37.802337 |
| 28 | 48.006573, 37.798951 |
| 29 | 48.007181, 37.800175 |
| 30 | 48.008407, 37.800047 |



Fig. 13 – The wreckage of the Tochka-U missile that fell at the intersection of Shevchenko Blvd and Artioma Str.



Fig. 14 –Marking on the propulsion system of the Tochka-U complex missile, which fell at the intersection of Shevchenko Blvd and Artioma Str.⁴⁶

⁴⁶ People’s militia of the DPR regards the attempted strike of the Ukrainian Tochka-U missile on Donetsk as a terrorist act (published on 14.03.2022) “RT in Russian” Telegram-channel. URL: https://t.me/rt_russian/99456 (accessed on 22.03.2022)

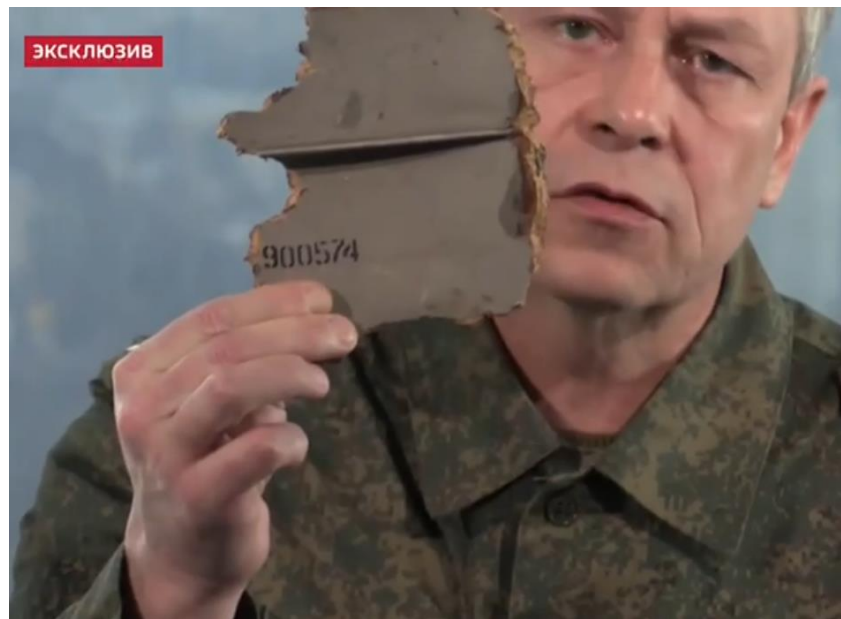


Fig. 15 – Part of the marking of a missile fired at Donetsk, on a fragment of a cluster munition⁴⁷.



Fig. 16 – Marking on the end of the propulsion system of the Tochka-U missile, which fell at the intersection of Shevchenko Blvd and Artioma Str⁴⁸.

⁴⁷ Eduard Basurin on air #60minutes showed those cluster submunitions of Tochka-U missile, which was fired at the center of Donetsk (published on 15.03.2022) Skabeeva Telegram-channel. URL: <https://t.me/skabeeva/10075> (accessed on 14.03.2023)

⁴⁸ Photo report. Shelling effects in Donetsk (Voroshilovskiy District) (published on 14.03.2022) Representative Office of the Donetsk People's Republic in the Joint Center for Control and Coordination. URL: <https://dnr-sckk.ru/fotoreportazh-posledstviya-obstrela-g-doneck-voroshilovskij-rajon/> (accessed on 14.03.2023)

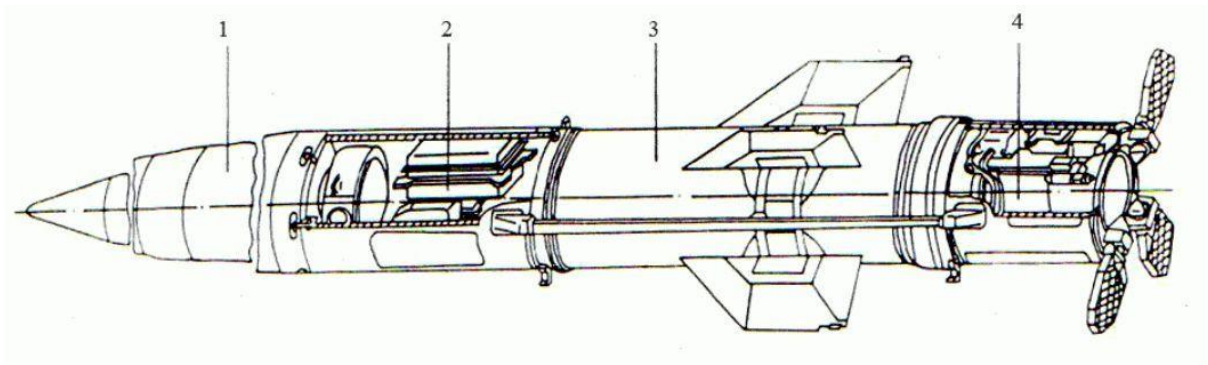


Fig. 17 – A white ribbon found near the instrument compartment of the Tochka-U missile that fell at the intersection of Shevchenko Blvd and Artioma Str⁴⁸.



Fig. 18 – Fragments of 9H24 cluster elements found at the incident location⁴⁹.

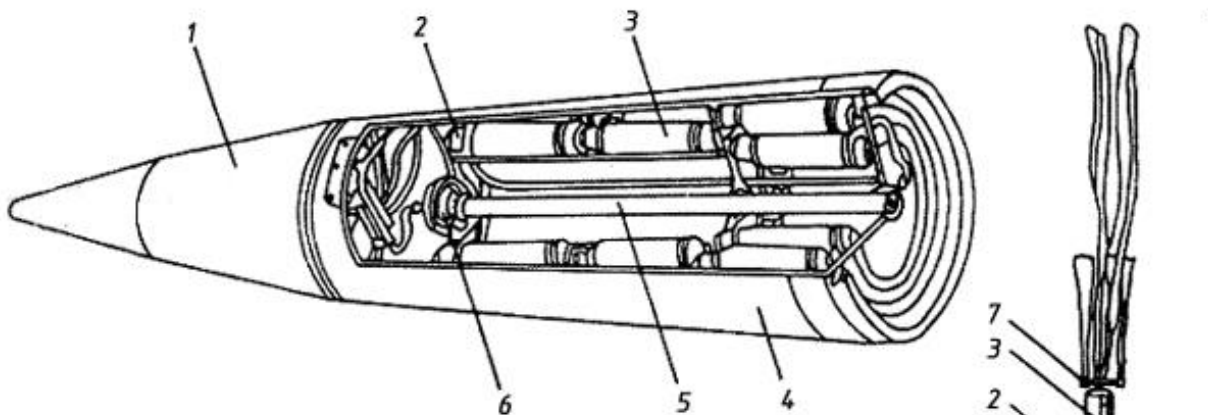
⁴⁹ View of the apartment from the inside and outside, after today's shelling (published on 14.03.2022) VKontakte Social Network URL: https://vk.com/wall-134163098_830760 (accessed on 13.03.2023)



1 – боевая часть, 2 – приборный отсек,
3 – двигательная установка, 4 – хвостовой отсек

Fig. 19 – Scheme of the 9M79 (9M79-1) missile of the 9K79-1 Tochka-U tactical missile system⁵⁰.

Боевая часть 9Н123К



1 – радиодатчик 93326, 2 – контактный взрыватель 93237 осколочного элемента, 3 – осколочный боевой элемент 9Н24, 4 – корпус БЧ 9Н311, 5 – центральный заряд 9Х34, 6 – предохранительно-исполнительный механизм 9Э117, 7 – средство стабилизации боевого элемента

Fig. 20 – Scheme of the 9N123K cluster warhead⁵¹.

⁵⁰ Schematic of the 9M79 missile. Missilery. Descriptions and specifications of missiles. URL: <https://missilery.info/missile/tochka/9m79> (accessed on 14.03.2023)

⁵¹ 9N123K combat vehicle schematic. Missilery Information News System. URL: Representation of the Donetsk People's Republic in the Joint Center for Control and Coordination (accessed on 14.03.2023)

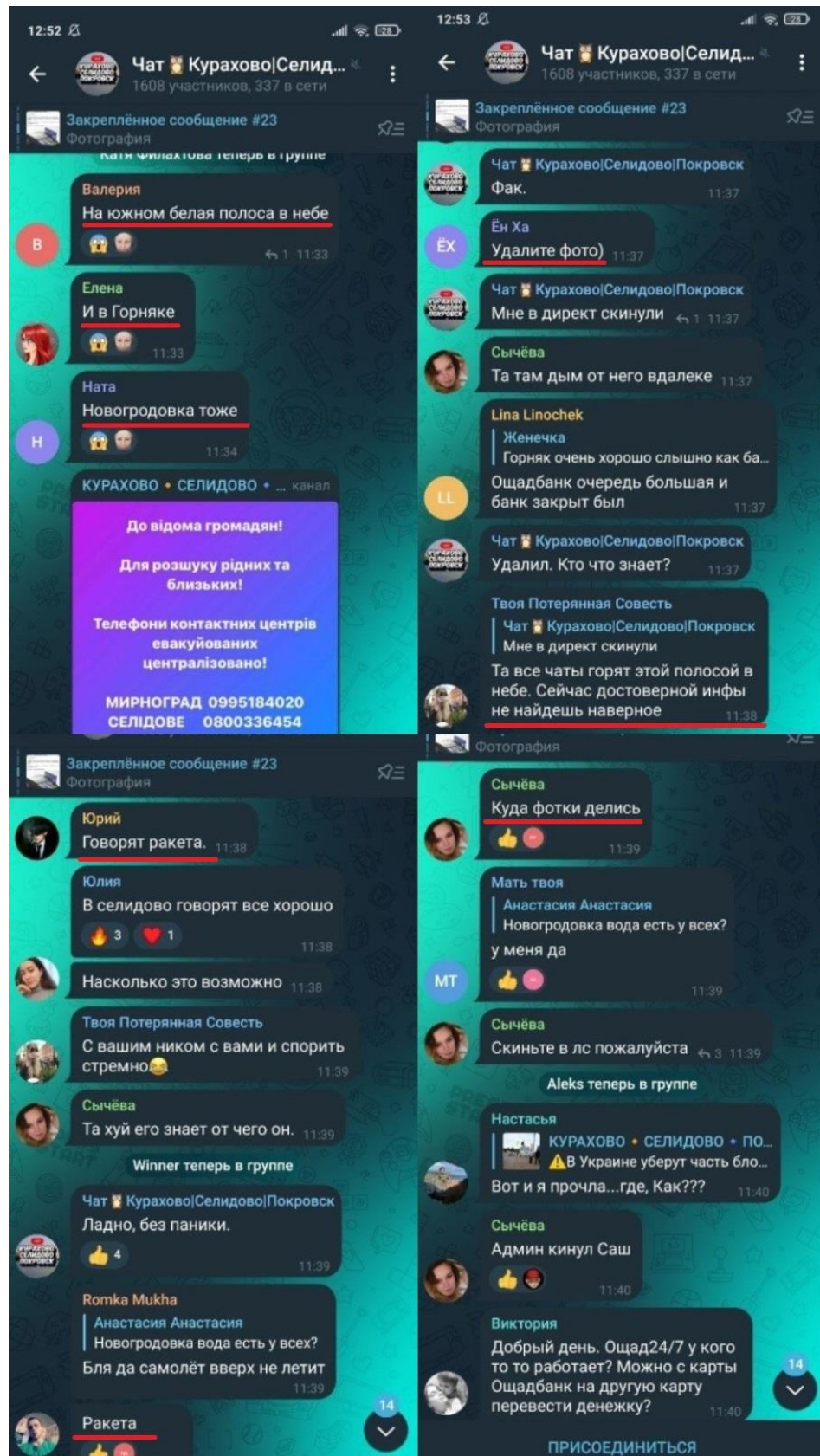


Fig. 21 – Screenshot of the “KURAKHOVO SELIDOVO POKROVSK” Telegram Channel chat.

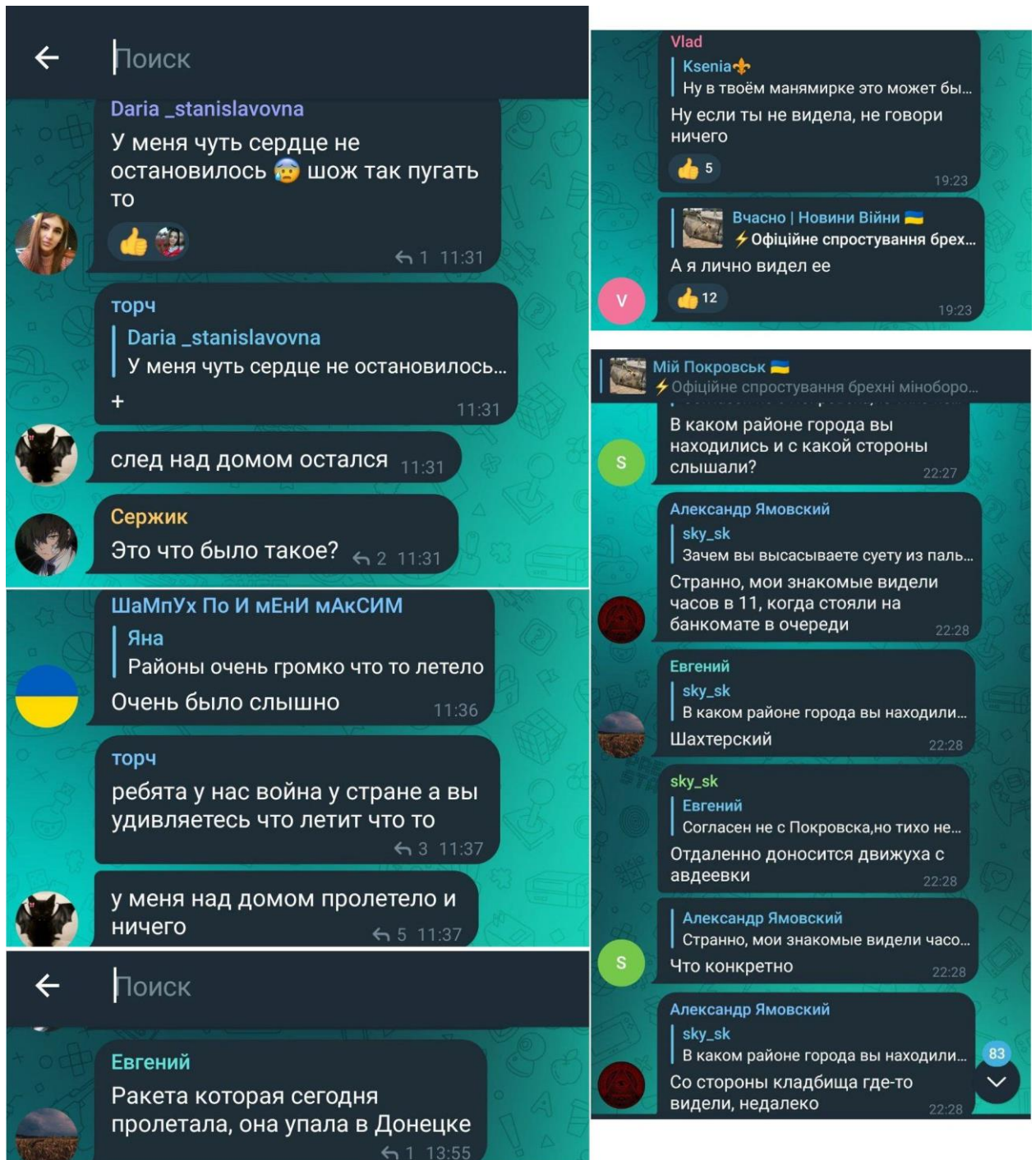


Fig. 22 – Screenshot of the “My Pokrovsk” Telegram Channel chat.

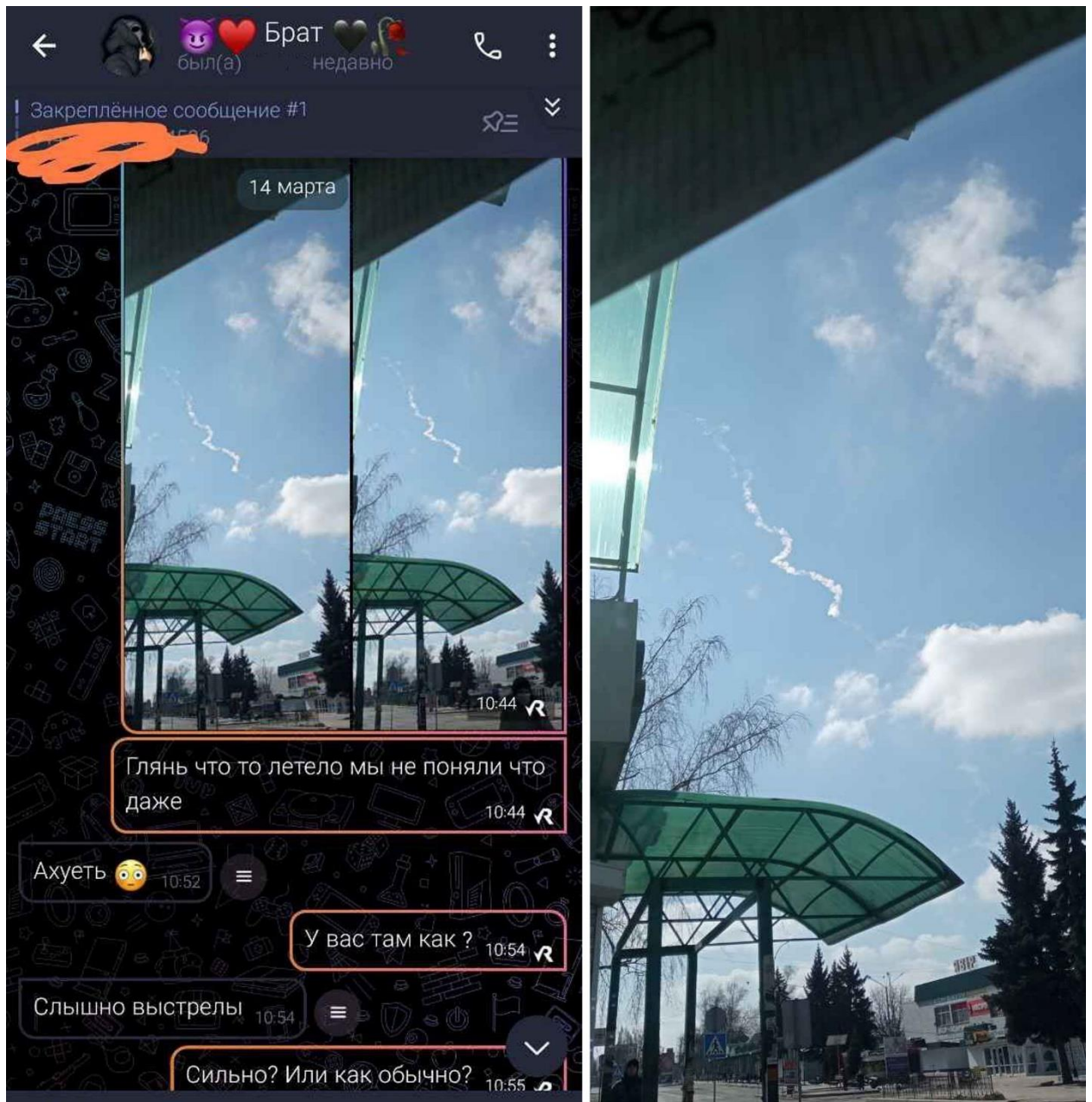


Fig. 25 – Left: a screenshot of the correspondence of an eyewitness of the rocket flight with an interlocutor with the date and Kyiv time; right: white streak in the sky after the object has passed.

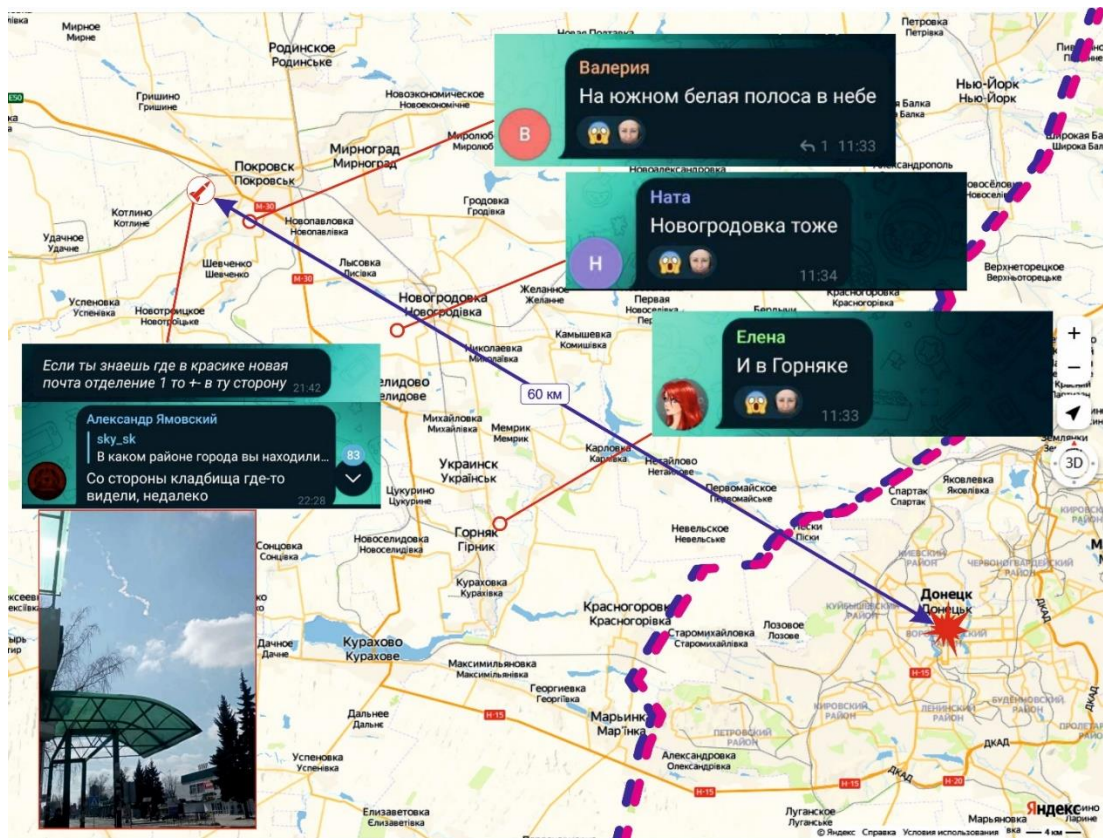


Fig. 26 – Estimated flight path of the missile.

| 19-та ракетна бригада | |
|--------------------------------|---|
| | <p>На службі 1999—дотепер</p> <p>Країна Україна</p> <p>Вид Сухопутні війська</p> <p>Тип Ракетні війська та артилерія</p> <p>Базування м. Хмельницький</p> <p>Річниця 9 листопада</p> <p>Оснащення комплекс 9К79-1 «Точка-У»</p> <p>Війни/битви Російсько-українська війна</p> <ul style="list-style-type: none"> • Бої за Савур-Могилу • Бої за Іловайськ • Бої за Новосвітлівку • Бої за Луганський аеропорт <p>Російське вторгнення в Україну (2022)</p> <p>Почесні найменування Свята Варвара</p> |
| Нарукавний знак бригади | |
| Командування | |
| Поточний командувач | полковник Федір Ярошевич |

Fig. 27 – The 19th Missile Brigade “Saint Barbara”⁵².

⁵² The 19th Guided Missile Brigade “Saint Barbara”. Ukrainian version of Wikipedia. URL: https://uk.wikipedia.org/wiki/19-та_ракетна_бригада_«Свята_Варвара» (accessed on 16.03.2023)

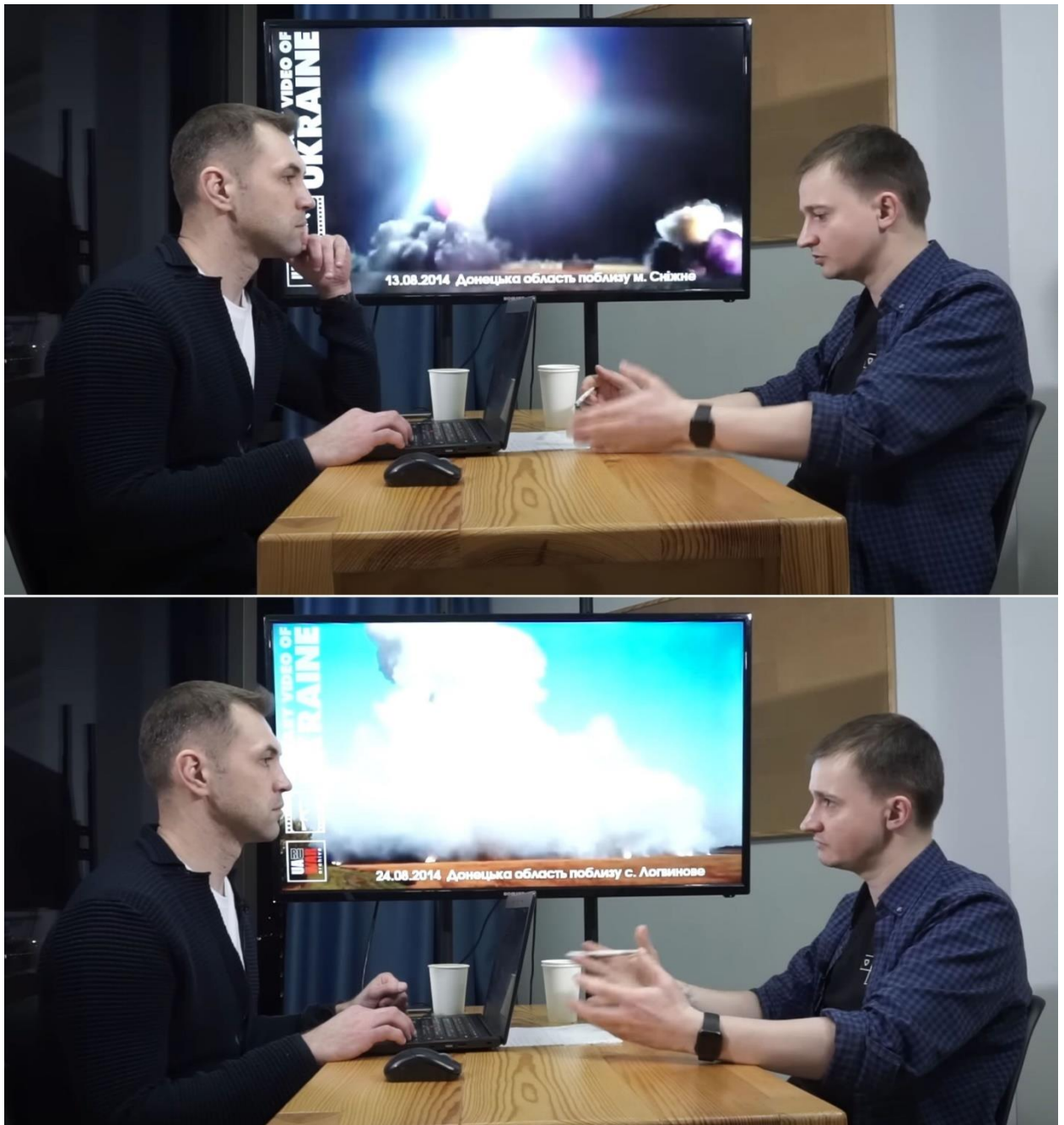


Fig. 28 – Fragments of the issue “Tochka U. The most formidable weapon of the UAF at the Militarniy YouTube Channel⁵³”.

⁵³ Tochka-U. The most formidable weapon of the Ukrainian Armed Forces (published on 19.02.2022) YouTube Video hosting. URL: <https://youtu.be/nMH4z8CVPhE> (accessed on 17.03.2023)



Fig. 29 – UAF Colonel, Commander of the 19th Missile Brigade “Saint Barbara”⁵⁴.

⁵⁴ Fyodor Serhiyovych Yaroshevich. Ukrainian version of Wikipedia. URL: https://uk.wikipedia.org/wiki/Ярошевич_Федір_Сергійович (accessed on 17.03.2023)