

SHELLING OF VOROSHILOVSKIY DISTRICT, DONETSK, USING 152 MM RIFLED ARTILLERY

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ABBREVIATIONS

UAF - Ukrainian Armed Forces

DPR - Donetsk People's Republic

LPR - Luhansk People's Republic

MSK - Moscow time

IMBr - Independent Mechanized Brigade

RF - the Russian Federation

SMO - Special Military Operation

UAF - Ukrainian Armed Formations

PREAMBLE

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”¹.

As of June 2022, the last clashes in Mariupol had already ended², and the liberation of the last major city in the LPR³, which was the primary task of the SVO, was nearing completion.

However, a considerable part of the DPR territory was still under the control of the Ukrainian security forces. In the area of the Donetsk front, offensive operations were constantly carried out on the positions of the Ukrainian armed formations. In response to them, the UAF began to apply the tactics of intimidating the civilian population, striking at crowded places, transport and trade hubs.

Thus, on June 18, 2022 alone, ten settlements of the DPR were subjected to artillery shelling: Donetsk (Voroshilovskiy, Kievskiy, Kuibyshevskiy, Kalininskiy, Kirovskiy, Budyonnovskiy and Petrovskiy districts), Makeyevka (Kirovskiy and Chervonogvardeyskiy districts), Horlivka (Nikitovskiy district), Golmovsky, Panteleimonovka, Mikhailovka, Zaitsevo, Yasinovataya, Mineralnoye, and Yakovlevka.

At 7:45 (MSK), explosions of Ukrainian shells were heard in the Kyivskiy and Kuibyshevskiy districts of Donetsk⁴. Within two hours, artillery shelling also

¹ 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)

² Ukraine's military says Russian forces are trying to storm Azovstal plant (published on 24.04.2022) Reuters News Agency URL: <https://www.reuters.com/world/europe/ukrainian-presidential-adviser-says-russian-forces-trying-storm-azovstal-plant-2022-04-24/>(accessed on 06.07.2024)

³ Russia claims key city in punishing conquest of eastern Ukraine (published on 03.07.2022) The Washington Post URL: <https://www.washingtonpost.com/world/2022/07/03/lysychnansk-luhansk-russia-ukraine-war/> (accessed on 06.06.2024)

⁴ Shelling was recorded from the UAF side in the directions (published on 18.06.2022) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13201 (accessed on 06.07.2024)

began in the Petrovskiy (08:36 MSK)⁵ and Kirovskiy (09:15 MSK)⁶ districts of the city, and the first shelling of the day in the central (Voroshilovskiy) district of the city began at 10:40 MSK⁷. The shelling of the city continued until the evening.

Among other events, at 15:50 (MSK) another artillery shelling of the day began. The Voroshilovskiy district of Donetsk was attacked using 155 mm rifled artillery⁸.

As a result of the incident, residential buildings at Artioma Street, Universitetskaya Street, and Vatutina Avenue, a cinema, a hotel and a university building were damaged; a man born in 1956 was killed, men born in 1962, 1990, 1952 and a woman born in 1956 were injured.⁹

This investigation will examine in detail a series of attacks on the area nearby the Zvezdochka cinema in the Voroshilovskiy district of Donetsk. Ukrainian military used 155 mm rifled artillery shells. The explosions were heard at 15:50¹⁰, 16:45¹¹ and 17:40¹² MSK.

⁵ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13204 (accessed on 06.07.2024)

⁶ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13206 (accessed on 06.07.2024)

⁷ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13210 (accessed on 06.07.2024)

⁸ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13227 (accessed on 06.07.2024)

⁹ The operational lines of the DPR JCCC received additional information about civilian casualties as a result of Donetsk shelling by UAF (published on 18.06.2024) The DNR in JCCC Telegram Channel: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/9037 (accessed on 06.07.2024)

¹⁰ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR Representative Office in JCCC Telegram Channel. URL: https://t.me/online_dnr_sckk/13227 (accessed on 06.07.2024)

¹¹ Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR in JCCC Online Telegram Channel. URL: https://t.me/online_dnr_sckk/13234 (accessed on 06.07.2024)

¹² Shelling was recorded from the UAF side in the direction (published on 18.06.2024) The DNR in JCCC Telegram Channel Online. URL: https://t.me/online_dnr_sckk/13236 (accessed on 06.07.2024)



Fig. 1 - The body of a man who was killed in front of a store at 92, Artioma St.

INCIDENT LOCATION

Having examined the incident location, studied photo and video materials from open sources, and also talked with eyewitnesses of the incident, we recorded sixteen 155-mm shell hits. All of them were mapped using the Yandex Maps service.



Fig. 2 - Incident location scheme.¹³

¹³Yandex
Maps.
URL:
<https://yandex.ru/maps/?um=constructor%3Ab1161071a614252b8241262ce4ac24e5da91215933227551d9c4a75119564727&source=constructorLink> (accessed on 13.05.2024)

Shell hit 1 The shell detonated on a curbstone near the intersection of the sidewalk along Mira Avenue and the eastern entrance to the Donetsk city administration. As a result of the shell explosion, a round depression remained on the sidewalk surface at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface.

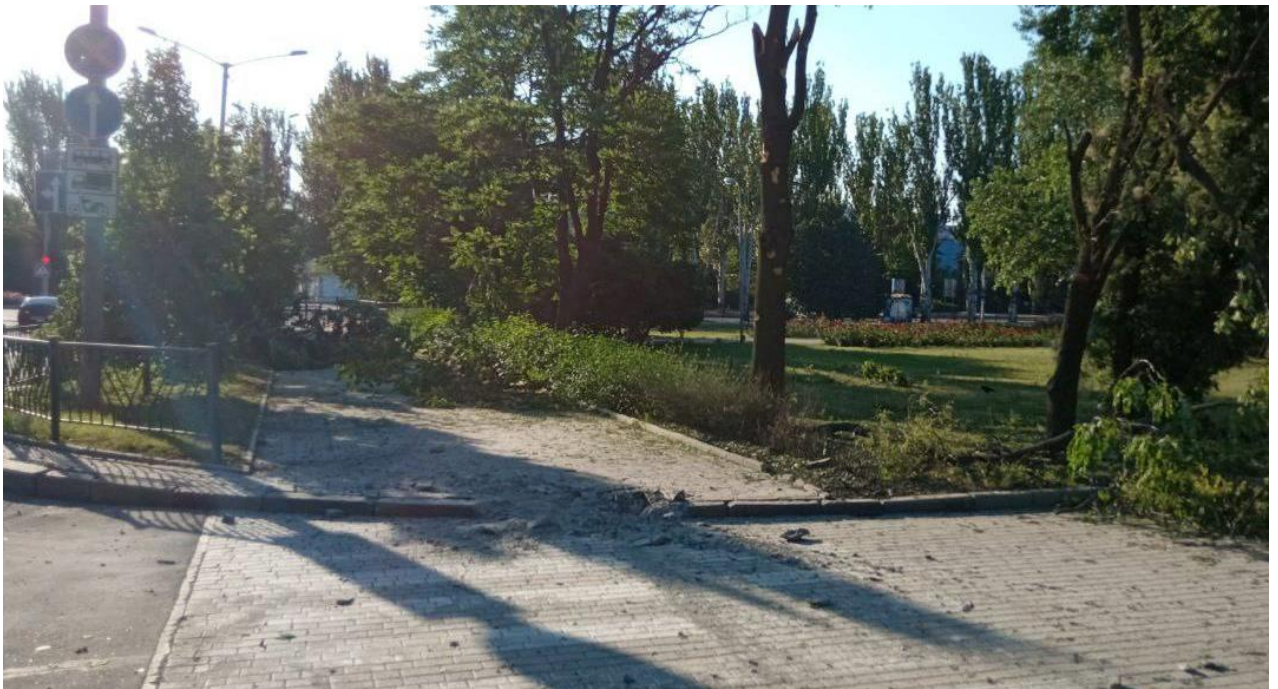


Fig. 3 - Consequences of the shell detonation in Mira Avenue. ¹⁴

Shell hit 2 The shell detonated on the lawn between the southern wing of the Donetsk city administration building and Artema Street. The detonation resulted in a round crater. A cylindrical depression left by the detonator is visible, it is located at an angle. In the north-western part of the crater, fragmentation grooves from the main scatter of fragments are visible. In the south-eastern part of the crater, soil raised by the explosion is visible. In addition, fragmentation damaged the façade and glazing of the Donetsk city administration building, located at 98 Artema Street, and

¹⁴Consequences of yesterday's barbaric shelling of Voroshilovskiy district by Ukrainian militants (published on 19.05.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/5363?single (accessed on 27.08.2024)

the façade and glazing of the third academic building of the Donetsk National Technical University, located at 96, Artioma St.



Fig. 4 - Consequences of the shell detonation in front of the Donetsk city administration building.^{15 16}

¹⁵ Records of the shelling effects in the Voroshilovskiy district of Donetsk on 18.06.2022 (published on 20.06.2022) The DPR in JCCC Telegram Channel: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/9071 (accessed on 27.08.2024)

¹⁶ Consequences of the yesterday's shelling of Donetsk. (published on 19.06.2022) "Reporter Rudenko V" Telegram-channel. URL: <https://t.me/RtrDonetsk/6884> (accessed on 27.08.2024)

Shell hit 3 The shelling effects in Vatutina Avenue were captured on camera by media representatives. The video shows the north-eastern corner of the third building of the Donetsk National Technical University, located at 96 Artema St., cut by fragmentation, a tree broken in half and the asphalt pavement of the roadway in Vatutina Avenue damaged by fragmentation. Based on this, it can be stated that in this case the shell detonated when it hit a tree trunk.



Fig. 5 - Consequences of the shell detonation in Vatutina Avenue.¹⁷

Shell hit 4 The shell detonated on a curbstone west of the parking lot of a pet store located at 22, Vatutina Ave. As a result of the shell explosion, a round depression remained on the sidewalk surface at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface. Fragmentation damage was also inflicted on the façades of buildings at 21 and 22, Vatutina St., a car parked to the east of the crater received multiple

¹⁷ “Thank God, we got away with it” - Donetsk residents tell how they managed to escape the shelling (published on 18.06.2022) “Readovka” Telegram Channel. URL: <https://t.me/readovkanews/37072> (accessed on 27.08.2024)

fragmentation damage, and the blast wave destroyed the glazing of surrounding buildings.



Fig. 6 - Consequences of a shell detonation in front of a building at 22, Vatutina St.¹⁸

Shell hit 5 The shell detonated on the asphalt pavement of the entrance to the courtyard between residential buildings 22 and 20 in Vatutina Avenue. As a result of the shell explosion, a round depression remained on the sidewalk surface at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface. The detonation also resulted in fragmentation damage to residential buildings at 20, 21 and 22, Vatutina Ave.

¹⁸ Incoming strike at a pet store, not all animals survived (published on 19.06.2022). Telegram channel “Large-caliber Turmoil”. URL: <https://t.me/bolshiepushki/1705> (accessed on 27.08.2024)



Fig. 7 - Consequences of a shell detonation at the entrance to the courtyard at 20 and 22, Vatutina Ave.¹⁹

Shell hit 6 The shell detonated on the cobblestone sidewalk at the south-west corner of the multi-apartment residential building at 59, Universitetskaya St. As a result of the shell explosion, a round depression remained on the sidewalk surface at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface. The base of the triangle is approximately 270 cm long, the triangle height is 150 cm. In addition, fragmentation damage was inflicted to residential buildings at 59 and 50, Universitetskaya St.

¹⁹ Effects of Shelling of Universitetskaya Street in Donetsk (published on 19.06.2022) Typical Donetsk Telegram Channel. URL: <https://t.me/itsdonetsk/18171> (accessed on 27.08.2024)



Fig. 8 – A crater in the cobblestone sidewalk next to the residential building at 59, Universitetskaya St.

Shell hit 7 The shell detonated near the entrance pavilion in front of the entrance to the southern wing of the residential building at 96B, Universitetskaya Str. As a result of the shell explosion, the wall of the entrance pavilion and the metal door of the entrance were significantly damaged. Multiple damages from the main scatter of fragments were well visible on the wall of the building. A round depression remained on the sidewalk surface at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface.



Fig. 9 - Consequences of the shell detonation in 96B Artioma St.²⁰

Shell hit 8 The shell detonated on the asphalt roadway at the driveway between the Zvezdochka cinema located at 57, Universitetskaya St. and the residential building at 59, Universitetskaya St. As a result of the shell explosion, a round depression remained on the sidewalk surface at the point of contact between

²⁰ Donetsk continues to remain clean, beautiful and well-groomed, despite all the scars of war. (published on 19.06.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/5391 (accessed on 27.08.2024)

the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface. The detonation also resulted in fragmentation damage to residential building at 59, Universitetskaya St. and Zvezdochka cinema at 57, Universitetskaya St.



Fig. 10- A crater in the asphalt at the driveway between the Zvezdochka cinema and the residential building at 59, Universitetskaya St. ²¹

Shell hit 9. The shell detonated in the north-west corner of the north-east loggia on the 13th floor of the Druzhba Hotel, located at 48, Universitetskaya St. As a result of the shell detonation, a round hole was formed in the wall, and the part of the loggia adjacent to the explosion site on the north was destroyed. In addition, the façade surrounding the detonation site and the glazing of the window groups were damaged by fragmentation and the blast wave.

²¹ Izvestia correspondent Danil Yemelyanov showed the consequences of yesterday's shelling of Donetsk by Ukrainian nationalists (published on 19.06.2022) "IZ.RU" Telegram Channel. URL: <https://t.me/izvestia/93771> (accessed on 27.08.2024)



Fig. 11 - Consequences of a shell hitting the Druzhba Hotel.²²

Shell hit 10 The shell detonated on the surface of the lawn between the residential building at 59, Universitetskaya St. and Zvezdochka cinema located at 57, Universitetskaya St. The detonation resulted in a round crater. A cylindrical depression left by the detonator is visible, it is located at an angle. In the north-western part of the crater, fragmentation grooves from the main scatter of fragments are visible. In the south-eastern part of the crater, soil raised by the explosion is visible. The detonation also resulted in fragmentation damage to the residential building at 59, Universitetskaya St. and Zvezdochka cinema at 57, Universitetskaya St.

²² According to the JCCC DPR, on June 18, 2022, the total number of civilian casualties from the UAF attacks in the Republic amounted to 25 people (5 killed and 20 wounded). (published on 19.06.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/5375 (accessed on 27.08.2024)



Fig. 12 - Consequences of a shell detonation on the lawn between the residential building at 59, Universitetskaya St. and Zvezdochka cinema.²³

Shell hit 11 The shell hit the summer extension of the Khanzhonkov Cinema Cafe, which is located in the same building as the Zvezdochka cinema at 57, Universitetskaya St. As a result of the shell hit, a hole of about 16 cm in diameter was formed in the wooden roof of the summer extension, and a hole of about 30 cm in diameter appeared in the wooden floor. At the same time, neither we nor the military correspondents²⁴ who quickly arrived at the scene found any fragmentation damage inside the summer extension or on the asphalt surface under the wooden floor. The latter gives us reason to assume that the shell did not detonate.

²³ Fragments (published on 19.08.2022) “Large-Calibre Turmoil” Telegram channel. URL: <https://t.me/bolshiepushki/1703> (accessed on 27.08.2024)

²⁴ Zvezdochka cinema after the shelling (published on 19.06.2022) “Large-Calibre Turmoil” Telegram channel. URL: <https://t.me/bolshiepushki/1704> (accessed on 27.08.2024)



Fig. 13 - Consequences of a shell hitting the summer terrace of the Khanzhonkov Cinema Café.

Shell hit 12 The shell detonated on the asphalt roadway of the parking lot to the north of the Zvezdochka cinema located at 57, Universitetskaya St. As a result of the shell explosion, a round depression remained on the asphalt surface of the parking lot at the point of contact between the shell and the surface, and fragmentation grooves from the main scatter of fragments to the north-west of the depression. All damage to the surface is in a triangular-shaped sector with the apex in the vicinity of the point of contact between the shell and the surface. The detonation also resulted in fragmentation damage to the Zvezdochka cinema at 57, Universitetskaya St. and motor vehicles parked nearby.



*Fig. 14 - A crater from shell detonation at the parking lot of the Khanzhonkov Cinema Caf .*²⁵

Shell hit 13 The shell detonated on the western brick wall of the northern wing of the residential building at 55, Universitetskaya St., at the level of the fifth floor. As a result of the detonation, a hole was formed in the wall; there were grooves from the main scatter of fragments below the hole to the north (on the left) and above the hole to the south (on the right). Also, fragmentation damage was caused to the

²⁵ Fragments (published on 19.08.2022) "Large-Calibre Turmoil" Telegram channel. URL: <https://t.me/bolshiepushki/1703> (accessed on 27.08.2024)

opposite building at 46, Universitetskaya St., and the blast wave knocked out the glazing in the surrounding buildings.



Fig. 15 – Consequences of a shell hitting the wall of the residential building at 55, Universitetskaya St.²⁶

Shell hit 14 The shell detonated in the ground to the west of the fence of the St. Andrew’s Church. The detonation created a crater at least two meters in diameter and at least a meter deep; the St. Andrew’s Church, located at 96A, Artema Street, and the third academic building of the Donetsk National Technical University, located at 96, Artioma St.

²⁶ Records of the shelling effects in the Voroshilovskiy district of Donetsk on 18.06.2022 (published on 20.06.2022) The DPR in JCCC Telegram Channel: facts of Ukraine’s war crimes. URL: https://t.me/DNR_SCKK/9071 (accessed on 27.08.2024)

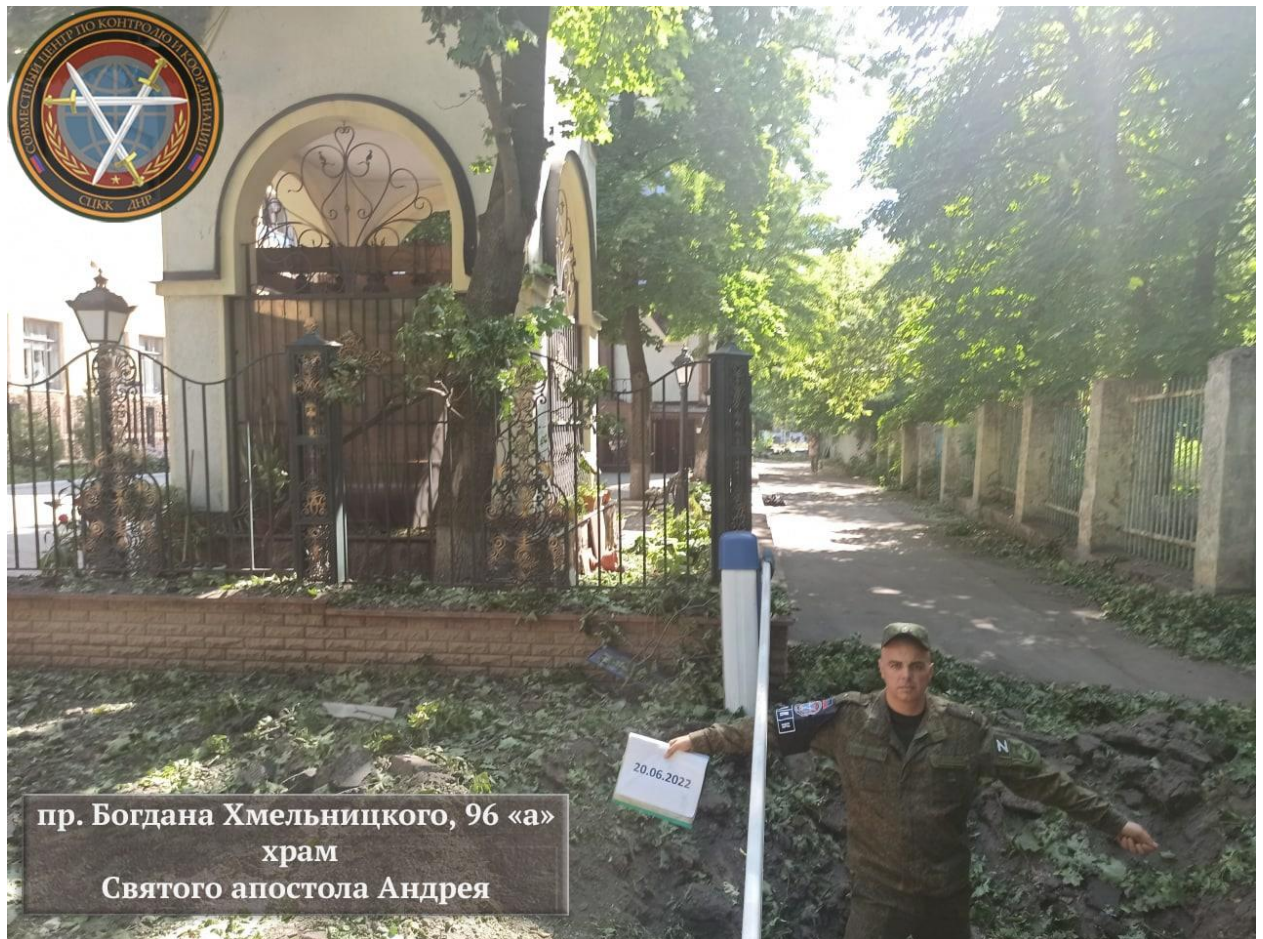


Fig. 16 - The result of a shell detonation near the St. Andrew's Church.²⁷

Shell hit 15 The shell detonated in the northern wall of the southern wing of the building located at 92, Artioma St., in the upper western corner of the balcony doorway on the third floor of the second entrance. As a result of the detonation, a hole was formed in the wall at the level of the upper western (right) corner of the balcony group door, and grooves from the main scatter of fragments appeared below to the west (right) and above to the east (left) of the hole. The glazing of the building was also damaged.

²⁷ Records of the shelling effects in the Voroshilovskiy district of Donetsk on 18.06.2022 (published on 20.06.2022) The DPR in JCCC Telegram Channel: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/9071 (accessed on 27.08.2024)



Fig. 17 – The result of a shell detonation in the wall of the residential building at 92, Artioma St.²⁸

²⁸ According to the JCCC DPR, on June 18, 2022, the total number of civilian casualties from the UAF attacks in the Republic amounted to 25 people (5 killed and 20 wounded). (published on 19.06.2022) Aleksey KulemZin Telegram Channel. URL: https://t.me/kulemzin_donetsk/5375 (accessed on 27.08.2024)

Shell hit 16. The shelling effects at the intersection of Artioma Street and Bohdana Khmelnytskogo Avenue were captured on eyewitness cameras²⁹ and were recorded by us on September 10, 2024. Our video shows part of the traces of the main fragmentation scatter on the asphalt surface, and the replaced curbstone and part of the paving. The video shot by eyewitnesses shows fallen leaves as a result of the detonation, which hid the place of the shell hit from the cameras. As a result of the detonation, a car was also damaged by shell fragments, which was crossing the intersection in the direction from Universitetskaya Street towards the Kryty Rynok bus dispatch office, and a man was wounded³⁰, which confirms the presence of a shell detonation point in this place.

²⁹ Consequences of the shelling of Donetsk by the UAF - an exclusive report by Readovka from the streets of the city (published on 18.06.2022) "Readovka" Telegram Channel. URL: <https://t.me/readovkanews/37063> (accessed on 27.08.2024)

³⁰ 18+ Center of Donetsk now (published on 18.06.2022) Typical Donetsk Telegram Channel. URL:<https://t.me/itsdonetsk/18164> (accessed on 27.08.2024)



Fig. 18 - Consequences of the shell detonation at the intersection of Artioma Street and Bohdana Khmelnytskogo Avenue taken by eyewitnesses on the day of the shelling (top)³¹ and by us on 10.09.2024 (bottom).

³¹ Incoming strike at the intersection of Artioma Street and Bohdana Khmelnytskogo Avenue (published on 18.06.2022) It's Donetsk Telegram Channel. URL: <https://t.me/itsdonetsk/18155> (accessed on 27.08.2024)

DETERMINATION OF THE WEAPON TYPE

At shell hit 4, JCCC employees discovered a light-alloy metal object resembling a truncated cone with a notch in the truncated part and a cylindrical hole along the entire height, with a diameter of approximately 8 cm at the base and 4 cm in the truncated part, with a height of approximately 8 cm. This object can be identified as a PD.M739 fuse used in artillery shells with a caliber of 105 mm to 175 mm, NATO model³².



Fig. 19 - Remains of the ammunition found near shell hit 4.³³

³² Ordnance And Energetics Fuzes, S&As, Initiators, Detonators, Leads. Action Manufacturing Co. URL: <https://www.action-mfg.com/Library/products/products-m739.htm> (date of access: 27.08.2024)

³³ Records of the shelling effects in the Voroshilovskiy district of Donetsk on 18.06.2022 (published on 18.06.2022) The DNR in JCCC Telegram Channel: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/9071 (accessed on 27.08.2024)

Based on this, we can assert that **NATO-type artillery was used during the shelling.**

At the site of shell hit 11, the projectile created a hole, having pierced the roof of the summer terrace of the Khanzhenkov Cinema Café. Having measured this hole with a tape measure, we determined that its diameter is about 16 cm.



Fig. 20 -Measurements of the diameter of the hole in the roof at the site of shell hit 11.

Of all the NATO artillery calibers, only a 155-mm shell could have left a hole of this diameter. All the craters left on the asphalt and soil are similar in size and parameters. Thus, it can be argued that **the shelling was conducted using 155-mm rifled artillery.**

Also, shell fragments were caught by the war correspondents' cameras at the site of shell hit 12. They are oblong objects with sharp edges made of highly fragmented metal.



Fig. 21 - Fragments found at the site of shell hit 11.³⁴

To date, during the armed conflict in Ukraine, the Ukrainian side uses four types of 155-mm shells, and their analogues that have similar performance characteristics, namely: **M795**, **M549**, **M982 Excalibur** and **ERFB**.

³⁴ Fragments (published on 19.06.2022) “Large-Calibre Turmoil” Telegram channel. URL: <https://t.me/bolshiepushki/1703> (accessed on 13.09.2024)

The found fuse allows us to assert that precision guidance systems were not used, which means that **M982 Excalibur** shells can be excluded.

As our previous investigations show, in the case of the use of **M549** shells, characteristic fragments from the missile part of the active-reactive projectile remain in large quantities^{35 36}. They are large rectangular metal objects slightly curved in plane, approximately 17 cm high, of different widths, about 1 cm thick on one side and about 2 cm thick on the other. The thickness changes sharply approximately at 4 cm from the thin edge, and there is a copper belt 4 cm wide with traces of rifling on the side of the thick edge.



Fig. 22 -Fragments of the missile part of the M549 active-reactive projectile, found after the shelling on September 15, 2022 in the Voroshilovskiy district of Donetsk.

³⁵ Shelling of Lenin Square in the Voroshilovskiy district of Donetsk using 155 mm rifled artillery on September 17, 2022. Verum Public Project. URL: <https://proekt-verum.org/17-09-2022/> (accessed on 13.09.2024)

³⁶ Shelling of the Voroshilovskiy district of Donetsk using 155 mm rifled artillery on August 23, 2022. Verum Public Project. URL: <https://proekt-verum.org/23-08-2022/> (accessed on 13.09.2024)

Since fragments of this type were NOT found near the sites of the shell hits that occurred during the shelling in question, it can be asserted that the **M549** shell was NOT used.

The above allows us to conclude that **one of two types of 155 mm shells (or their equivalents) could have been used in the shelling under consideration: M795 or ERFB.**

M795 Projectile

The M795 is a 155-mm projectile that has a longer firing range and is more effective than the M107. It is used for conventional fire support in baiting and fire interdiction, fragmentation, mining, and explosive effects. The M795 is made of high fragmentation steel (HF1) and uses a welded, rather than crimped, rotating belt that encircles the hull close to the base. An energy-absorbing lifting plug is threaded into the nose cavity for storage and transportation.

- Length fused 83.9 cm;
- Body diameter: 154.89 mm
- **firing range is 22.5 km when firing from a gun with a barrel length of 39 calibers**
- **firing range is 28 km when firing from a gun with a barrel length of 59 calibers;**³⁷
- circular error probable at maximum range - 139 meters;
- weight - 46.7 kg;
- explosive weight - 10.8 kg.

³⁷ Field Artillery Manual Cannon Gunnery / MARK A. MILLEY (13 April 2016) // General, United States Army Chief of Staff URL: http://walter.bislins.ch/blog/media/2020-10-23%20Field%20Artillery%20Manual%20Cannon%20Gunnery%20tc3_09x81.pdf (date of access: 27.08.2024)



Fig.23 – On the left - drawing of the M795 projectile;³⁸ on the right - a Ukrainian soldier next to an analogue of the M795 projectile³⁹.

ERFB Projectile

The **ERFB** 155-mm Long-Range Artillery Projectile family represents a new generation of long-range artillery projectiles designed for use with advanced towed and self-propelled 155mm guns with barrel lengths of 39, 45 and 52 calibers. The unique design of the projectile allows the simultaneous use of rocket propellant (using specially designed nozzles) and base trigger charges.⁴⁰

Basic characteristics of the projectile

- **Maximum firing range ~ 56 km**
- Initial velocity ~ 925 m/s
- Total impulse of a rocket engine: >6500 Ns
- Weight of rocket engine propellant charge: ~ 3 kg
- Specific thrust of a rocket engine: > 2170 Ns/kg
- Total projectile weight: 48 kg
- Warhead weight 30 kg⁴¹

³⁸ Page Title: Figure 1. Projectile, 155MM, M795, HE Charge Segments. TPub. URL: <https://mil-spec.tpub.com/MIL-P/MIL-P-63252A/MIL-P-63252A00005.htm> (date of access: 27.08.2024)

³⁹ The US intends to solve the problem of “shell hunger”: to increase production sixfold (published on 25.01.2023) UA Telegraph Media. URL: <https://telegraf.com.ua/novosti-ssha/2023-01-25/5776672-ssha-mayut-namir-virishiti-problemu-snaryadnogo-golodu-zbilshat-virobnitstvo-u-shist-raziv> (accessed on 13.09.2024)

⁴⁰ Extended Range Full Bore Base Bleed (ERFB-BB) projectile. Thai Military and Asian Region URL: <https://thaimilitaryandasianregion.wordpress.com/2017/05/05/> (date of access: 27.08.2024)

⁴¹ 155 mm HE ERFB RA/BB very long-range artillery projectile (VLAP-Rocket Assistance/Base Bleed). “Yugoimport”. URL <http://www.yugoimport.com/en/proizvodi/155-mm-he-erfb-rabb-very-long-range-artillery-projectile-vlap-rocket-assistancebase-bleed> (date of access: 27.08.2024)



Fig. 24 – ERFB Projectile. (left)⁴², a Ukrainian soldier next to the Indian-made ERFB projectiles (right).⁴³

⁴² 155 mm HE ERFB RA/BB very long-range artillery projectile (VLAP-Rocket Assistance/Base Bleed). “Yugoimport”. URL: <http://www.yugoimport.com/en/proizvodi/155-mm-he-erfb-rabb-very-long-range-artillery-projectile-vlap-rocket-assistancebase-bleed> (date of access: 27.08.2024)

⁴³ India “betrayed” Russia by supplying 155-mm shells and is changing its focus to the West (published on 09.04.2022) Cont Social Journalistic Platform. URL: <https://cont.ws/@ardjyna/2777719> (accessed on 03.09.2024)

SHELLING DIRECTION

In cases of shell hits 4 and 5, a clearly visible trace of the main scatter of fragments remained on the surface of nearby buildings. We stretched a string between the contact points of the line of the main scatter of fragments with the surface, thereby obtaining a line perpendicular to the azimuth along which the projectile flew. In addition, the line of the main scatter of fragments is inclined in the direction of the projectile movement (opposite to the location of the gun). Considering the above, in these cases we were able to measure the azimuth of the shelling direction. In case of shell hit 4, the azimuth was 298 degrees, and in case of shell hit 5 it was 304 degrees.

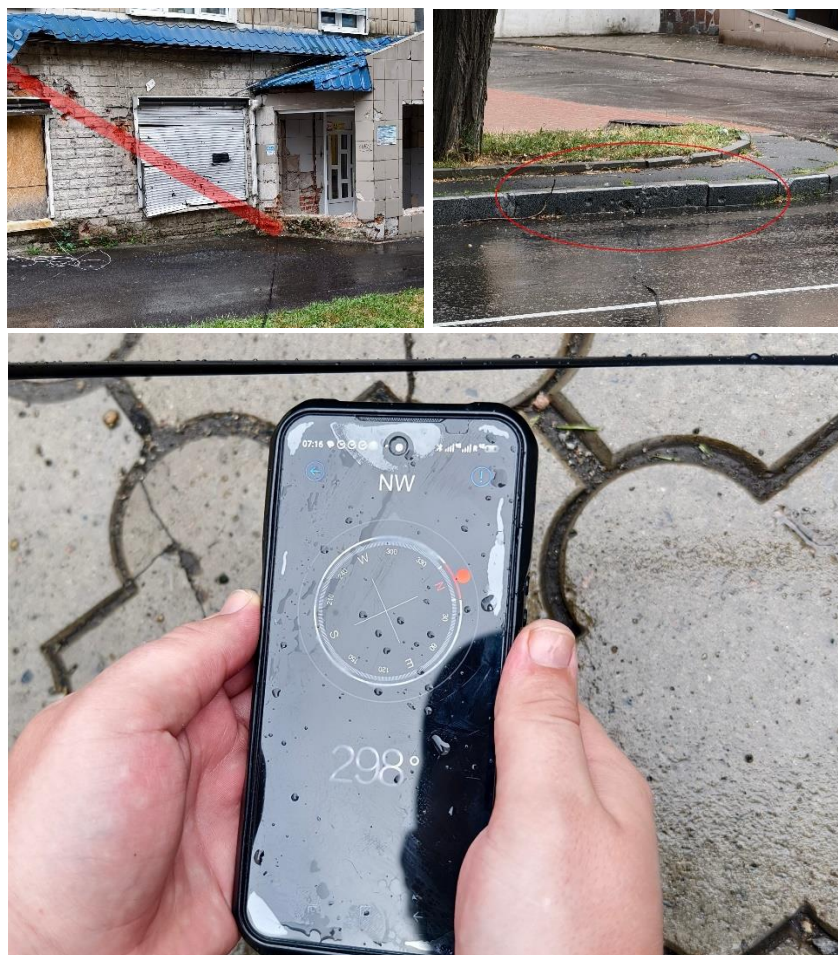


Fig. 25 – Investigation of shell hit 4 to determine the shelling direction.

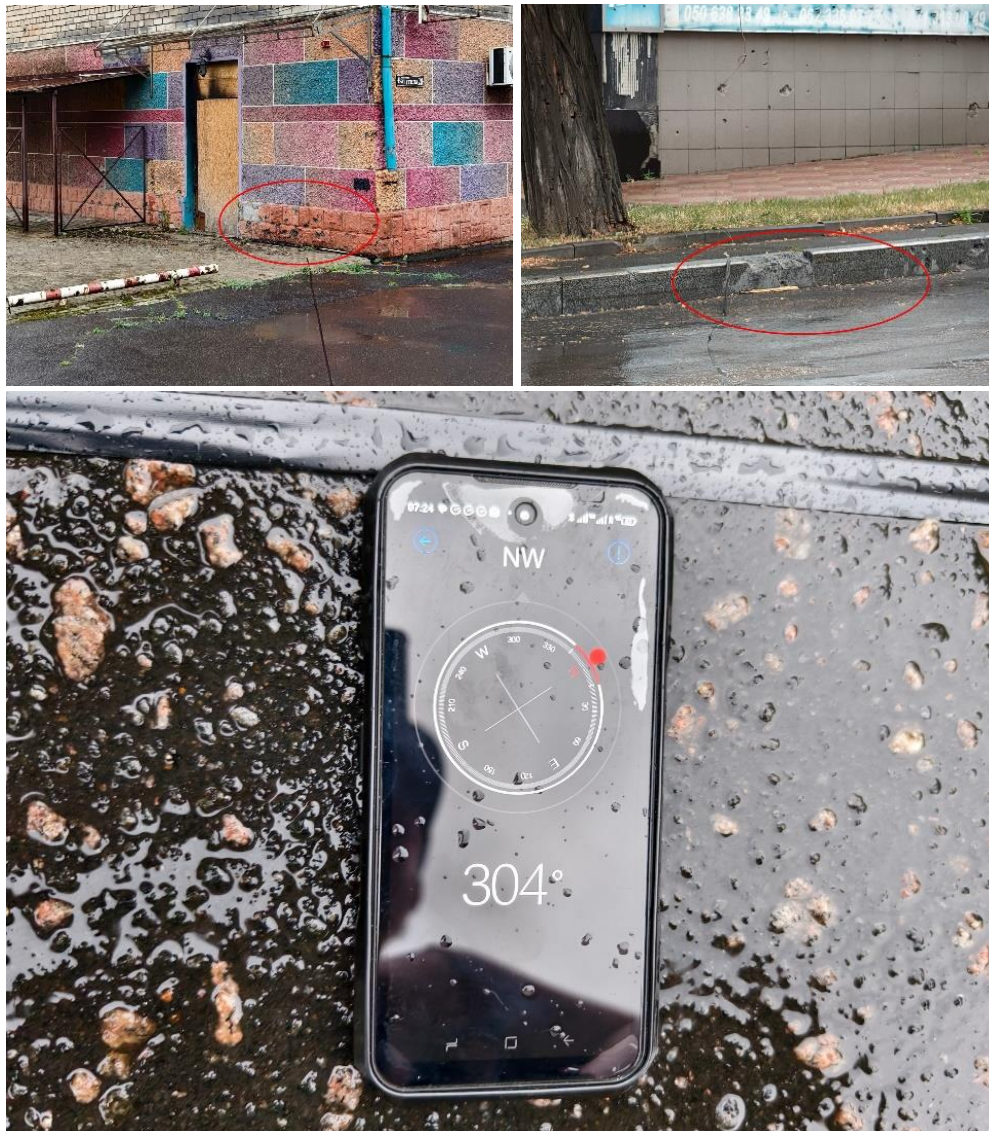


Fig.26 – Investigation of shell hit 5 to determine the shelling direction.

In case of shell hit 6, clear traces from the shell detonation remained on the stacked cover surface, they are identified as craters from shelling at a high incidence angle. This enabled us to determine the shelling direction using the fragmentation grooves method.

Grooves of lateral scattering of fragments were located around the crater. If we set conditional points at the ends of the lines of lateral scatter of fragments, then join them with a line segment, determine its midpoint, and plot a straight line between the crater center and the midpoint of the fragment scatter that we have determined, the straight line obtained will indicate the shelling direction. Thus, in the case of shell hit 6, the azimuth was 294 degrees.

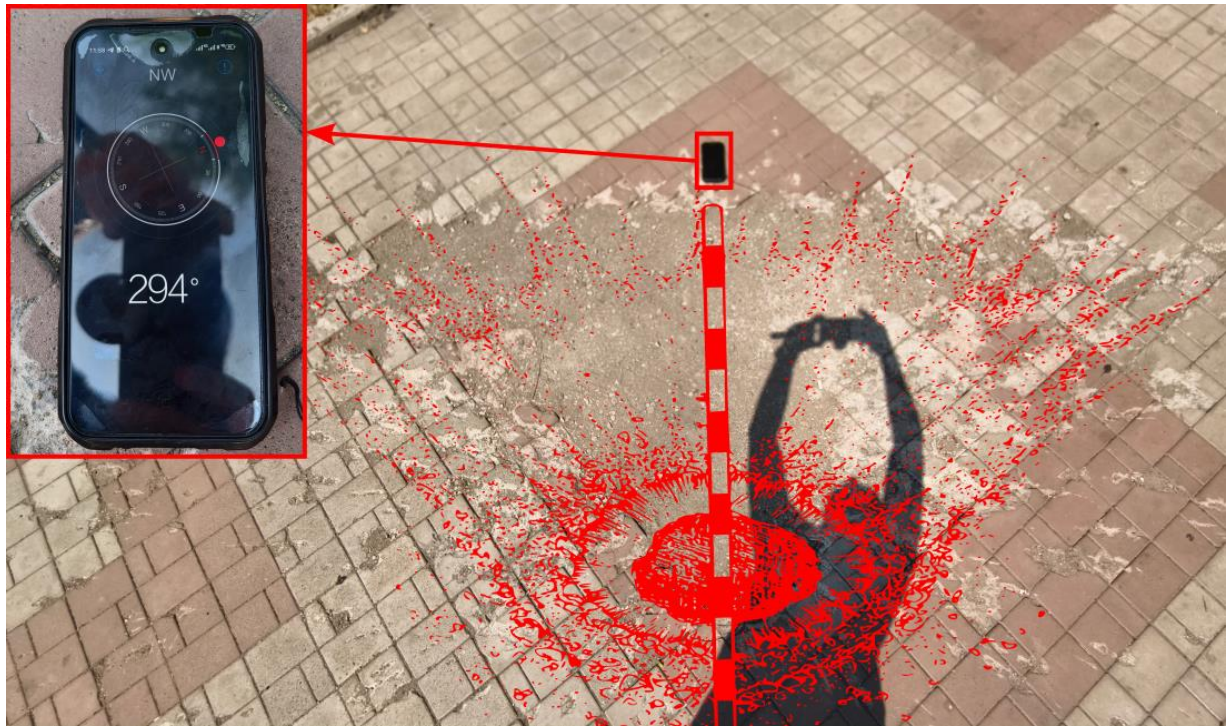


Fig. 27 - Investigation of crater 6 to determine the shelling direction.

In the case of shell hit 11, the projectile left a depression in the concrete under the plank floor, which is clearly aimed at the hole in the roof, which also helped determine the shelling direction and the angle of projectile contact with the horizontal surface. The shelling azimuth was 311 degrees in the case of shell hit 11.



Fig. 28 - Shelling direction determination at the site of shell hit 11.

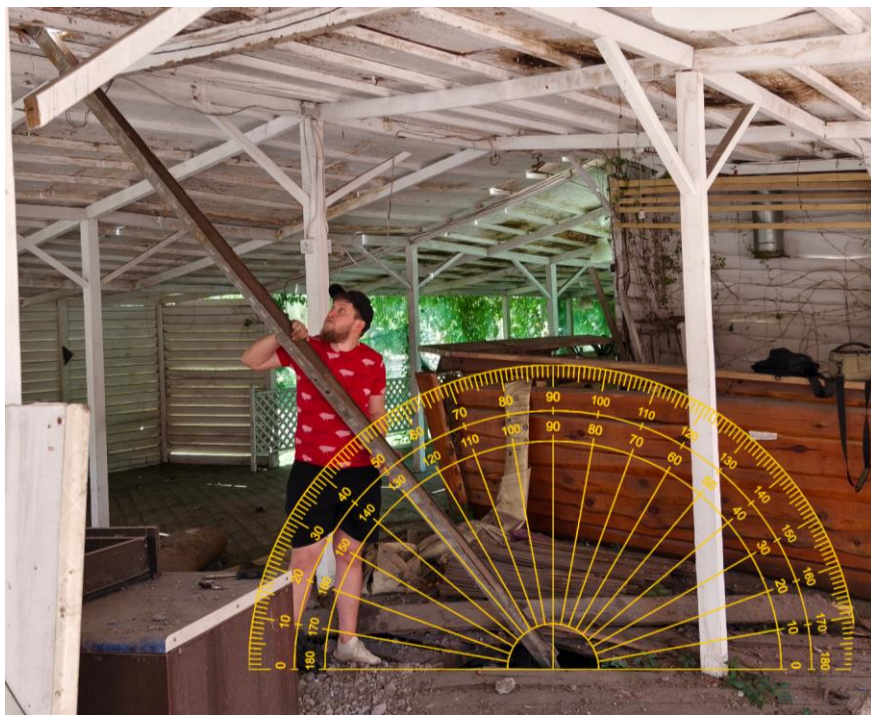


Fig. 29 – Determining the angle of impact with a horizontal surface at the site of shell hit 11.

Since the episode under consideration consists of three salvos, carried out with a difference of approximately 1 hour, it can be assumed that the gun could change its position, or there were several guns. However, a small difference in time did not allow the gun to move too far, and a small difference between the measured azimuths indicates that the salvos were carried out from one sector. This allows us to calculate the average of four measurements and accept this average indicator as the shelling azimuth. Thus, it can be argued that the **artillery shelling in question was conducted in a direction from north-west to south-east along an averaged azimuth of 302 degrees.**

The shapes of the craters, typical for shelling with projectiles along a lofted trajectory, and the angle of the projectile contact with the surface (50 degrees) that we measured, make it possible to state that the shelling was carried out along a trajectory that allowed a shot to be fired at the maximum distance for a given propellant charge.

Considering the facts described above and the maximum firing ranges for M745 shells (28 km) and EFRB (56 km) and the information about the line of combat contact^{44 45} as of June 18, 2022, we created a map of the probable shelling sector. This sector has a form of a truncated triangle with vertices in Novotroitskoye, Novoekonomicheskoye, Pervomayskoye and Nevelskoye.

The above-mentioned sector was completely under the control of the UAF, which was armed with 155-mm caliber artillery guns.

⁴⁴ War in Ukraine — situation on the fronts (13.06.22 — 19.06.22): The UAF front is bursting at the seams (published on 19.06.2022) The World Today with Yury Podolyaka Telegram Channel. URL: <https://t.me/yurasumy/3941> (accessed on 13.09.2024)

⁴⁵ Offensive in Donbass: Situation in Eastern Ukraine by the End of June 18, 2022 (published on 19.06.2022) Rybar Telegram Channel. URL: <https://t.me/rybar/34121> (accessed on 13.09.2024)

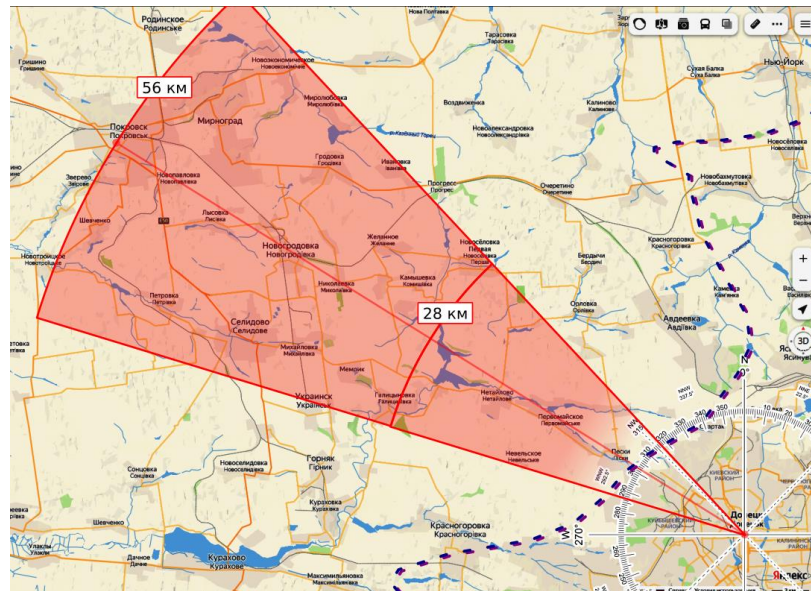


Fig.30 - The sector from which the shelling of the area around the Zvezdochka cinema was carried out on June 18, 2022.

PRESENCE OF THE UKRAINIAN ARMED FORMATIONS

The settlements in the vicinity of Peski village were in the area of responsibility of the 56th Mechanized Infantry Brigade of Ukrainian Ground Forces.⁴⁶ The UAF spent years strengthening their position in this area.⁴⁷

At a briefing by the Russian Ministry of Defense on June 18, 2022, it was announced that four platoons of 155-mm M777 howitzers were defeated in the areas of Lastochkino, Ocheretino, **Vodyanoye, and Zhelannoye** of the Donetsk People's Republic.⁴⁸

At the next briefing on June 19, 2022, it was announced that the manpower and military equipment of the 56th UAF SMBR had been damaged.⁴⁹

In addition, on November 5, 2022, it became known about the destruction in the village of Vodyanoye (coordinates: 48.103491, 37.620812) self-propelled gun Gvozdika hidden in a forest plantation.⁵⁰ This allows us to state that UAF artillery positions were located in the area of the village of Vodyanoye.

It is also known that the 56th SMBR is armed with the 155-mm self-propelled guns^{51 52}. Such weapons were transferred to Ukraine and have been used in the eastern theater of military operations since May 2022.⁵³

⁴⁶ The Russians Want Pisky. The Ukrainians Want Pisky. Neither Army Has Enough Troops for a Quick Victory. (published on 16.08.2022) Forbes - financial and economic publication URL: <https://www.forbes.com/sites/davidaxe/2022/08/16/the-russians-want-pisky-the-ukrainians-want-pisky-neither-army-has-enough-troops-for-a-quick-victory/?sh=4849ead61a3e> (accessed on 04.07.2024)

⁴⁷ Ukraine war: "I can't lose my country now", says platoon commander fighting in the east since 2014 (published on 19.04.2022) "Sky-news" website. URL: <https://news.sky.com/story/ukraine-war-i-cant-lose-my-country-now-says-platoon-commander-fighting-in-the-east-since-2014-12594054> (accessed on 04.07.2024)

⁴⁸ Briefing of the Russian Ministry of Defense (published on 18.06.2022) "Russia's Ministry of Defense" Rutube Channel. URL: <https://rutube.ru/video/568fa14e318c5b3a20d038f7273f60b7/> (accessed on 04.07.2024)

⁴⁹ Briefing by Igor Konashenkov on June 19, 2022 (published on 19.06.2022) Izvestiya Media. URL: <https://iz.ru/1352161/video/brifing-igoria-konashenkova-19062022> (accessed on 04.07.2024)

⁵⁰ Destruction of artillery and infantry of the UAF in Pervomaiskoye (published on 28.11.2023) Rybar Telegram Channel. URL: <https://t.me/rybar/40898> (accessed on 04.07.2024)

⁵¹ For those who follow news from the front, artillery is always a sea of fire, smiling lads, defeated enemy targets. (published on 30.09.2023) URL: https://t.me/brigade56_official/157 (accessed on 04.07.2024)

⁵² Our brigade belongs to the Ground Forces - the largest part of the Ukrainian Army. (published on 12.12.2023) "Mariupol 56th separate motorized infantry brigade Telegram channel. Official website. URL: https://t.me/brigade56_official/452 (accessed on 04.07.2024)

⁵³ M777 howitzer in eastern Ukraine (published on 11.05.2022) Butusov Plus "Russia's Telegram Channel. URL: <https://t.me/ButusovPlus/370> (accessed on 04.07.2024)

Thus, it can be argued that **in the sector under consideration there were artillery positions of the 56th SMBr of the UGF, which is armed with American-made M777 155-mm rifled artillery guns.**

The 56th Motorized Brigade of the Ukrainian Ground Forces

The 56th motorized brigade is a formation of the Ukrainian Ground Forces. The brigade was created on February 23, 2015 in the city of Dnepr in the Dnipropetrovsk region and took command of three volunteer territorial defense battalions: 21st, 23rd and 37th ones that were formed in 2014 as territorial defense battalions *Sarmat*, *Khortitsa* and *Zaporozhye*. The Caucasian Legion joined the brigade in September 2023.⁵⁴

In November 2016, the brigade received a permanent deployment point in Mariupol.

Since 2018, the settlements of Vodyanoye, Opytnoye, Peski, Nevelskoye, Netailovoye, Pervomaiskoye, and Krasnogorovka have been the area of responsibility of the brigade battalions.⁵⁵

⁵⁴ 56th Motorized Brigade (Ukraine) Wikipedia URL: [https://en.wikipedia.org/wiki/56th_Motorized_Brigade_\(Ukraine\)](https://en.wikipedia.org/wiki/56th_Motorized_Brigade_(Ukraine)) (accessed on 04.07.2024)

⁵⁵ 56th Motorized Brigade (Ukraine) Wikipedia free encyclopaedia. URL: [https://uk.wikipedia.org/wiki/56-та_окрема_мотопіхотна_бригада_\(Україна\)](https://uk.wikipedia.org/wiki/56-та_окрема_мотопіхотна_бригада_(Україна)) (accessed on 04.07.2024)

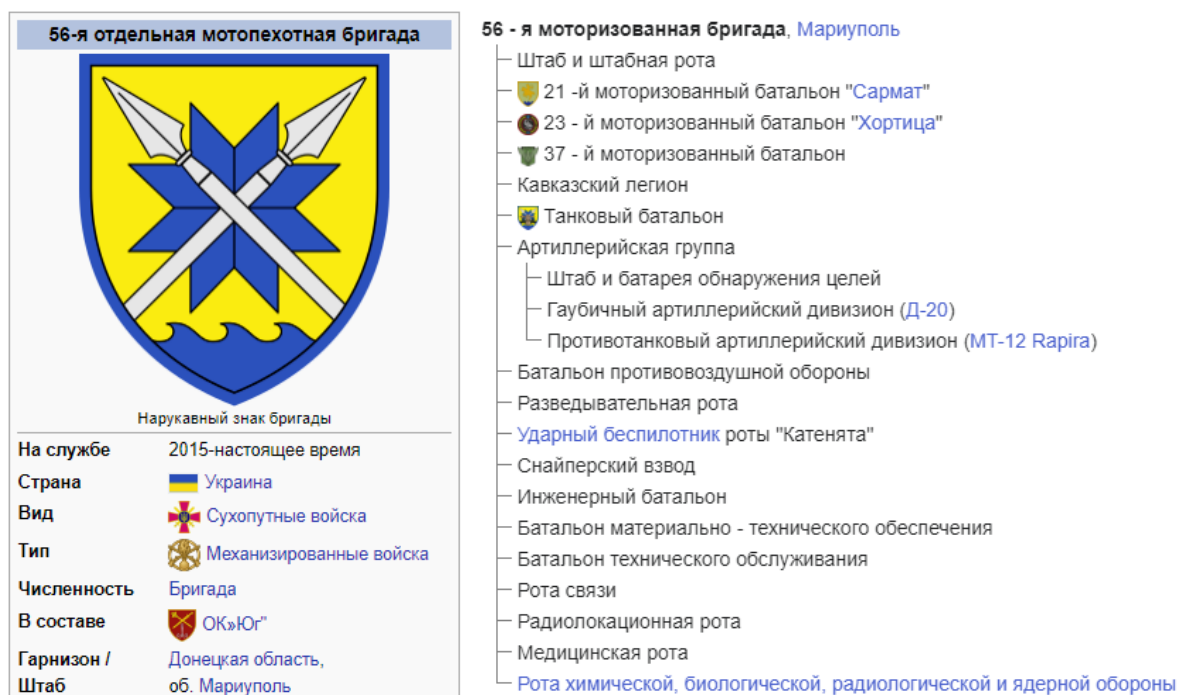


Fig. 31 – Brief information about the UAF 56th SMBr.

Commanders of the 56th SMBr could have given a criminal order to shell a densely populated residential area of Donetsk. And even if this is not the case, they are anyway responsible for the actions of their subordinates.

In 2022, Sergey Anatolievich Sirchenko was in command of the **UAF 56th SMBr**^{56 57 58}. This man spent most of his service in the ranks of the 128th Mountain Assault Brigade in Transcarpathia, and from 2014 to 2018 he fought in the Donbass. At the end of 2021, he was appointed brigade commander of the 56th SMBr, bypassing Colonel **Dmitry Dmitrievich Gerasimenko**, who was applying for this position.⁵⁹ The latter is also one of the key officers in the unit and is responsible for crimes committed by combatants from the ranks of the 56th SMBr.

⁵⁶ Serhiy Anatoliyovych Sirchenko. Wikipedia Free Encyclopedia. URL: https://uk.wikipedia.org/wiki/Сірченко_Сергій_Анатолійович (accessed on 04.07.2024)

⁵⁷ Today, President Volodymyr Zelenskyy conferred the highest title of Hero of Ukraine with the award of the “Golden Star” order to our compatriot, the commander of the 56th Separate Mechanized Brigade, Colonel Serhiy Sirchenko. (published on 05.05.2023) URL: https://t.me/zoda_inform/7650 (accessed on 04.07.2024)

⁵⁸ At a time when there is a threat of a full-scale Russian invasion, combat officers are eased out from brigades in the Ukrainian army (published on 07.02.2022) Andriy Biletsky Telegram Channel. URL: <https://t.me/BiletskyAndriy/2791> (accessed on 04.07.2024)

⁵⁹ Dmitro Dmitrovych Gerasimenko. Wikipedia Free Encyclopedia. URL: https://uk.wikipedia.org/wiki/Герасименко_Дмитро_Дмитрович (accessed on 04.07.2024)



Fig. 32 – UAF Colonel Dmitriy Dmitrievych Gerasimenko.⁶⁰

⁶⁰ How has our army changed during the years of war? What should be done for the Ukrainian army to make it even more effective? (published on 14.10.2016) Ukrinform Official website URL: <https://www.ukrinform.ua/rubric-society/2101006-nasa-armia-sogodni-j-zavtra-rozdumi-geroiv.html> (accessed on 04.07.2024)

CONCLUSIONS

As follows from the above, on June 18, 2018, at 15:50, 16:45 and 17:40 Moscow time, the area around the Zvezdochka cinema in the Voroshilovsky district of Donetsk sustained artillery shelling with 155-mm rifled artillery. The attack involved at least 16 Western-made missiles, which exploded in a densely populated residential area, killing and injuring civilians.

The shells flew in a direction from north-west to south-east (averaged azimuth 302 degrees). That part of the shelling sector, in which artillery guns could be located, was completely controlled by the UAF.

In the sector there were artillery positions of the 56th SMIBr of the UAF, which is armed with guns capable of firing 155-mm rocket projectiles of Western style.

The commander of the UAF 56th SMBr, colonel **Sergey Anatolievych Sirchenko**, is primarily responsible for the illegal actions of his subordinates. Colonel **Dmitry Dmitrievich Gerasimenko** may also be involved. Moreover, the highest military-political leadership of Ukraine is responsible for crimes committed during this armed conflict. Namely: President and Supreme Commander-in-Chief **Volodymyr Zelensky** and Commander-in-Chief of the Armed Forces of Ukraine **Valery Zaluzhnyy**.

LEGAL QUALIFICATIONS

Indiscriminate shelling of a densely populated residential area 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.

The acts described above first of all violate the principle of **proportionality**, which declares as prohibited “*attacks which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated*”.

This principle is enshrined in **Article 51(5)(b)** and is repeated in **Article 57 of Additional Protocol I** to the 1949 Geneva Conventions. It is also recognized as **rule 14 of customary international humanitarian law** and applies to both international and internal armed conflicts.

Moreover, the acts in question can be qualified as **indiscriminate attacks**.

Article 51(4) of Additional Protocol I to the 1949 Geneva Conventions expressly prohibits indiscriminate attacks and reckons the following among them: “*(a) those which are not directed at a specific military objective; (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol*”.

In compliance with **Rule 71 of Customary International Humanitarian Law**: “*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*”

In compliance with **Art. 3 common to all Geneva Conventions of August 12, 1949**, extending its effect to all types of 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, colour, 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.

In addition to the above, it should be noted that **the practice of the International Criminal Tribunal for the former Yugoslavia** allows us to assert that deliberate terror of civilians includes deliberate and indiscriminate firing at civilian targets.

This makes it possible to state about the violation of **Article 51(2) of Additional Protocol I to the 1949 Geneva Conventions**, which prohibits “*acts or threats of violence the primary purpose of which is to spread terror among the civilian population*”.

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 the same acts accompanied with an intended murder, shall be punishable by imprisonment for **a term of ten to fifteen years, or life imprisonment.**

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