

**Shelling of the Bakinskikh Komissarov Square in the
Kuibyshevskiy District of Donetsk Using NATO-
standard Weapons
September 19, 2022**

PUBLIC INVESTIGATION

Donetsk 15.01.2023

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ABBREVIATIONS

UAF - Ukrainian Armed Forces

DPR - Donetsk People's Republic

LPR - Luhansk People's Republic

IABr - Independent Artillery Brigade

IMBr - Independent Mechanized Brigade

IMIBr - Independent Motorized Infantry Brigade

RF - the Russian Federation

SPM - self-propelled mortar

SMO - Special Military Operation

JCCC - Joint Centre for Control and Coordination

OC - operational capabilities

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. According to the Minister of Defense of the Russian Federation, as of July 03, through the efforts of the Armed Forces of the Russian Federation, the LPR and the DPR, the entire territory of the LPR was liberated, which was one of the primary tasks of the SMO.² However, 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 September 17, 2022, the area around Lenin Square in the Voroshilovskiy district of Donetsk was shelled.³ Already on September 19, at about 11:30⁴ Moscow time, the *Sokol* market in the Kirovskiy district of Donetsk underwent shelling, as a result of which three sellers were killed.⁵

On the same day, at 12:23 Moscow time, the Bakinskikh Komissarov Square in the Kuibyshevskiy district of Donetsk came under fire⁶. According to official data, **nine civilians were killed** on the spot: a woman born in 1973, and men born in 1959, 1978, 1965, 1956, 1981. It was impossible to establish the personal data of three more killed persons due to the severe deformation of their bodies. **Nine civilians**

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 06.07.2022)

² 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/lysyhansk-uhansk-russia-ukraine-war/> (accessed on 06.07.2022)

³ The enemy does not stop attacking the center of Donetsk (published on 17.09.2022) the DNR in JCCC. URL: https://t.me/DNR_SCKK/10560 (accessed on 07.10.2022)

⁴ Shelling was recorded from the UAF side in the directions (published on 19.09.2022) online the DNR JCCC. https://t.me/online_dnr_sckk/16836 (accessed on 07.10.2022)

⁵ Mass Media: three people killed in the shelling of the market in Donetsk (published on 19.09.2022) TASS. URL: https://tass.ru/mezhhdunarodnaya-panorama/15796411?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com (accessed on 07.10.2022)

⁶ Shelling was recorded from the UAF side in the directions (published on 19.09.2022) online the DNR JCCC. https://t.me/online_dnr_sckk/16836 (accessed on 07.10.2022)

suffered wounds of varying severity: women born in 1986, 1951, 1965, 1966, 1990, 1989 and 1976, and men born in 1960 and 1987.

Damage was also recorded at nine addresses:

5, Alexandr Matrosov Ave., - Nursery-kindergarten of the combined type No. 51

1, Bohdan Khmelnytsky Ave., *Wonderful City* trading mall;

2, Bohdan Khmelnytsky Ave., *Jam* store, a car was damaged;

112V, Panfilov Ave., *Cinderella*, and *Grill* stores;

72, Ofitserskiy Ave., *Fresh Meat* butcher's store

1, Alexandr Matrosov Ave., - a direct shell hit in an apartment building, a gas pipeline was damaged;

8, 10, 12, Tsimlyanskaya St., - apartment buildings were damaged.⁷

This investigation will examine in detail the shelling of the Bakinskikh Komissarov Square in the Kuibyshevskiy district of Donetsk, carried out on September 19, 2022.

⁷ Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 17.09.2022) the DNR in JCCC. URL: https://t.me/DNR_SCKK/10638 (accessed on 07.10.2022)

INCIDENT LOCATION

After examining the incident location, we recorded three places of artillery shell hits. All of them have been explored and mapped using the Yandex Maps service (see Fig. 1).

Shell hit 1 The first shell detonated on the asphalt pavement between the *Jam* store located at the address 2, Bohdan Khmelnytsky Ave., and the residential building at 112, Panfilov Ave. In this case, a crater remained on the pavement, which is a round depression in the asphalt down to 5 cm deep and up to 50 cm in diameter. There are grooves from the main flow of fragments scattering to the northwest of the depression on the asphalt (see Fig. 2).

Shell hit 2 The second projectile hit the base of the window opening at the level of the ground floor of the residential building located at 1, Alexandr Matrosov Ave. The shell hit site is located about five meters southwest of the northern corner of the residential building (see Fig. 3).

Shell hit 3 According to information from open sources, the shelling also damaged apartment buildings at the intersection of Tsimlyanskaya St. and Vasnetsov Ave. Thus, the Donetsk News Agency reported about the explosion of a shell in the area of Vasnetsov Ave⁸. In addition, according to the JCCC, fragments of ammunition damaged residential buildings No. 8, 10, and 12 in Tsimlyanskaya St⁹.

The above apartment buildings are located exactly at the intersection of Vasnetsov Ave. and Tsimlyanskaya St. Despite the absence of timely photo and video recordings of this shell hit in open sources, we nevertheless indicated the approximate location of the projectile detonation site on the scheme to analyze the full picture of the incident.

⁸ In addition to a bus stop in Donetsk, an explosion also covered a nearby store - updated data (published on 19.09.2022) Donetsk News Agency URL: <https://dan-news.info/pravoporyadok/pomimo-ostanovki-v-donecke-vzryvom-nakrylo-i-magazin-rjadam--utochnennye-dannye/> (accessed on 12.01.2023)

⁹ Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 19.09.2022) the DNR in JCCC: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 12.01.2023)

WEAPON TYPE

Projectile debris

At the site of shell hit 2, a metal object was found with a copper belt having traces of rifling about 4 cm wide (see Fig. 4). We identified this object as a fragment of a rifled artillery shell, which is indicated by the characteristic rifling in the copper part of the object. It is worth noting that such a width of the copper belt indicates the use of 155-mm M549 shells (see Fig. 5).

To confirm this judgment, consider the scheme of the 155-mm M549 projectile (see Fig. 6), which uses a measurement system in calibers (in this case, 155-mm caliber), owing to which we can determine the width of the projectile copper belt.

The width of the projectile back part, including the copper belt, obturator and igniter, is 0.926 caliber. In this case, the width of the back without a copper belt is 0.686 caliber. Thus, the difference is 0.24 caliber, which is equivalent to about 4 cm. Namely, this is the width of the copper belt of the M549 projectile found at the site of shell hit 2.

Also, the Information Center of the Investigative Committee of the Russian Federation released a video where, during an inspection of one of the affected apartments in Alexander Matrosov Ave., a round object was found that had a characteristic narrowing at one of the ends. We identified this object as the nozzle of a NATO-standard M549 active-rocket projectile (see Fig. 7).

At the above address, the JCCC officers also found a projectile fuze (see Fig. 8), which is very similar in size and shape to the NATO PD.M739A1 fuze (see Fig. 9).

M549 Ammunition

155-mm M549/M549A1 (see Fig. 10) is a separate loading ammunition with a two-piece forged body. The forward shell body is constructed from high-fragmentation steel (HF1) and is of a low-drag aerodynamic profile. The rocket-motor body makes up the rear of the shell, it is constructed from 4340 steel. The motor body weighs 13.5 kg (approximately 3.175 kg of which is propellant), is 266.7 mm long and is encircled by a welded overlay copper driving band and obturator band, both protected during storage and transportation by a polycarbonate composition grommet. At the front of the projectile, the fuze cavity is protected during transportation by an energy-absorbing lifting plug, which protects the fuze area from damage during storage, transit and handling.

The PD.M739A1 fuze is multi-purpose and fits for 76-mm to 155-mm ammunition. This is a mechanical fuze with two operating modes, Super Quick PD function and PD delay function set using a switch on the fuze side (see Fig. 11). Unlike the PDM739, the PD.M739A1 fuze has a very short delay of a few milliseconds due to a different start delay node. The fuze is equipped with a weather protection system to reduce the sensitivity of the shock sensor to water and leaves¹⁰.

Before loading the projectile, the lifting plug is replaced by a fuze, and the protector cap over the rocket-motor nozzle is removed; the 155 mm M549/M549A1 HERA is not intended to be fired in the 'rocket-off' mode. On-target effects are enhanced by the HF-1 steel body of the shell. The 155 mm M549 forward shell body is filled with a nominal 7.26 kg of Composition B. The M549A1 filler is 6.8 kg of cast TNT. At the instant of firing, the propellant gases ignite a pyrotechnic delay train in the rocket motor. The delay burns for approximately seven seconds. By the end of these seven seconds, the end of the delay train reaches the primary igniter of the rocket and subsequently lights two propellant grains in the motor via an igniter

¹⁰ Fuze PD M739A1. ARMSCOM – ART OF DEFENSE INFORMATION. URL: https://www.armscom.net/products/fuze_pd_m739a1 (accessed on 13.01.2023).

pellet. When using an energy supply, the fuze detonates an additional charge, after which the warhead filler can detonate either on impact or at a set time¹¹.

When using the M549/M549A1, a six-kilometer safe zone is required due to the possibility of non-igniting the rocket engine¹².

Specifications:

Weight without fuze 43.6 kg (96 lbs)

Body material: forged steel

Primer: M82

Explosive content:

M549: 7.26 kg (16 lbs) Composition B

M549A1: 6.8 kg (15 lbs) TNT

Length 87.35 cm (34.39 inches)

Body diameter: 154.89 mm

Driving band diameter:

Fuzes (with supplemental charge)

Fuzes (without supplemental charge)¹³

The firing range of the M549A1 projectile varies **from 8 to 30.4 km** (see Fig. 12).

Deliveries of 155-mm rifled artillery to Ukraine

The first deliveries of 155-mm shells to Ukraine took place from **Canada** on April 22, 2022, since then they have gained some distribution in the UAF arsenal¹⁴.

¹¹ PROJECTILES, 155-MILLIMETER: HERA, M549 AND M549A1 (published on 15.12.2020) ARMY Ammo Data Sheet URL: <https://www.bevfitchett.us/army-ammo-data-sheet/> (accessed on 13.01.2023)

¹² ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, ANDARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

¹³ ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, ANDARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

¹⁴ Canada sends four pieces of field artillery to Ukraine as country braces for renewed Russian attack (published on 22.04.2022) CBC URL <https://www.cbc.ca/news/politics/ukraine-m777-howitzer-russia-heavy-artillery-1.6427762> (accessed on 05.09.2022)

Deliveries from **Australia**: On April 27, 2022, the Australian government announced the delivery of six M777 howitzers and their ammunition to Ukraine.¹⁵

Deliveries from the **USA**:

1. On April 13, 2022, the Pentagon announced that they would transfer 18 M777 howitzers to Ukraine¹⁶.
2. On April 21, 2022, US President Biden declared that the United States would supply Ukraine with 72 155-mm M777 howitzers and 144,000 ammunition for them¹⁷.
3. On May 15, 2022, the mass media reported on the delivery of several tens of thousands of 155-mm M549A1 active rocket projectiles to Ukraine along with American M777 howitzers¹⁸.
4. On May 19, 2022, the United States approved a package of assistance to Ukraine, which included eighteen 155-mm M777 howitzers¹⁹
5. On June 1, 2022, US President Biden declared the allocation of additional military assistance, which included ammunition for 155-mm howitzers²⁰
6. On June 15, 2022, US President Biden announced the provision of military assistance to Ukraine, which includes 18 M777 howitzers and ammunition for them.²¹

¹⁵ Australia to Deliver Six M777 Howitzers to Ukraine (published on 27.04.2022) The Defense Post URL: <https://www.thedefensepost.com/2022/04/27/australia-m777-howitzers-ukraine/> (accessed on 30.10.2022)

¹⁶ Pentagon holds briefing as Biden announces additional \$800M in security assistance to Ukraine (published on 13.04.2022) CBS News URL: <https://www.youtube.com/watch?v=7tOuhNKsiy4> (accessed on 30.10.2022)

¹⁷ Biden: The United States to supply Ukraine with heavy artillery and drones (published on 21.04.2022) BBC News URL: <https://web.archive.org/web/20220422102858/https://www.bbc.com/russian/news-61181352>.amp (accessed on 30.10.2022)

¹⁸ American long-range shells M549A1 arrived in Ukraine (published on 12.05.2022) AVIA PRO URL: <https://avia-pro.net/news/na-ukrainu-pribyli-amerikanskie-dalnoboynye-snaryady-m549a1> (accessed on 30.10.2022)

¹⁹ US approves \$40bn Ukraine aid package (published on 20.05.2022) DW URL: <https://web.archive.org/web/20220520101418/https://amp.dw.com/ru/ssha-utverdili-paket-pomoshhi-ukraine-na-40-mlrd-dollarov/a-61871367> (accessed on 30.10.2022)

²⁰ The Ukrainian party to decide for itself at what distances to use American HIMARS multiple launch rocket systems (published on 02.06.2022) Eastern Variant URL: <https://web.archive.org/web/20220602165223/https://v-variant.com.ua/ukrayna-sama-budet-reshat-kak-daleko-streliat-yz-amerykanskykh-himars-posol-ssha/> (accessed on 30.10.2022)

²¹ The United States will allocate an additional \$450 million military aid package to Ukraine: what will be included (published on 23.06.2022) UNIAN Information Agency URL: <https://web.archive.org/web/20220623221128/https://www.unian.net/world/voennaya-pomoshch-ukraine-ssha-vydelyat-eshche-450-millionov-novosti-mira-11877204.html> (accessed on 30.10.2022)

Deliveries from the **UK**: On July 21, 2022, British Secretary of Defense Ben Wallace announced an aid package to Ukraine, which included 20 units of M109 155-mm self-propelled guns²².

Deliveries from **France**: On July 21, 2022, French President Emmanuel Macron informed about the provision of 155-mm self-propelled guns to Ukraine «CAESAR»²³.

Deliveries from **Italy**: On May 13, 2022, the Italian newspaper *La Repubblica* announced the supply of 155-mm FH 70 howitzers to Ukraine²⁴

Deliveries from **the Netherlands**: On April 19, 2022, Dutch Prime Minister Mark Rutte announced the transfer of German 155-mm PzH 2000 self-propelled guns to Ukraine²⁵, and the delivery of three additional PzH 2000 in June²⁶.

Deliveries from **Norway**: On April 28, 2022, Norway withdrew twenty 155-mm «M109A3GN» howitzers from its warehouses intending to transfer them to Ukraine²⁷.

²² M109 self-propelled guns, L119 howitzers, UAVs and ammunition: what's in the new UK aid package (published on 21.07.2022) The Page URL: <https://thepage.ua/news/voennaya-pomosh-ukraine-chto-nam-daet-velikobritaniya> (accessed on 30.10.2022)

²³ France sends heavy weapons to Ukraine for the first time (published on 22.04.2022) Vedomosti URL: <https://web.archive.org/web/20220422124911/https://www.vedomosti.ru/politics/news/2022/04/22/919351-frantsiya-vpervie-otpravit-tyazhelie> (accessed on 30.10.2022)

²⁴ Il governo italiano pronto a fornire artiglieria pesante all'Ucraina (published on 16.05.2022) La Repubblica URL: https://web.archive.org/web/20220516060657/https://www.repubblica.it/politica/2022/05/13/news/armi_italiane_dotazioni_ucraina_guerra-349242188/ (accessed on 30.10.2022)

²⁵ Netherlands Prime Minister Mark Rutte Pledges More Military Aid, Heavy Weapons to Ukraine (published on 19.04.2022) Republic world URL: <https://www.republicworld.com/world-news/russia-ukraine-crisis/netherlands-prime-minister-mark-rutte-pledges-more-military-aid-heavy-weapons-to-ukraine-articleshow.html> (accessed on 30.10.2022)

²⁶ Going Dutch Revisited: Dutch Military Aid To Ukraine (published on 09.09.2022) // ORYX URL: <https://www.oryxspioenkop.com/2022/09/going-dutch-revisited-dutch-military.html> (accessed on 30.10.2022)

²⁷ Norway to provide Ukraine with M109A3GN 155mm tracked self-propelled howitzers (published on 01.05.2022) Army Recognition URL: https://www.armyrecognition.com/defense_news_may_2022_global_security_army_industry/norway_to_provide_ukraine_with_m109a3gn_155mm_tracked_self-propelled_howitzers.html (accessed on 30.10.2022)

DETERMINATION OF THE SHELLING SECTOR

Direction

In case of shell hit 1, clear traces from the detonation of shells remained on the surface, they are identified as craters from shelling at a high incidence angle (see Fig. 13). This enabled us to determine the direction from which the shelling was carried out using the fragmentation grooves method. Having examined in detail the physical trace left by hitting the road along Bogdan Khmelnytsky Avenue, we determined the azimuth, which was 317 degrees (see Fig. 14).

It should be noted that when firing from rifled artillery, the impact sites of projectiles fired from one gun can usually be inscribed in an ellipse stretched along the direction of flying projectiles. This is an additional sign that allows for determining the shelling direction. In our case, all three shell hits can be inscribed in an ellipse stretched along the 317 degrees azimuth that we have determined (see Fig. 15).

In addition, in case of shell hit 2, precisely the northwestern side of the building was damaged.

Thus, it can be concluded that the **shells were fired from the northwest to the southeast along an azimuth of 317 degrees.**

Firing range

Considering the minimum and maximum firing ranges of 8 and 30.4 km, respectively, in accordance with the performance characteristics of the M549 projectile, and also based on the projectile flight direction along the azimuth of 317 degrees determined by us and a measurement error of ± 15 degrees, we can map the shelling sector. Also, based on the maps of the armed confrontation in Ukraine²⁸, we can map the demarcation line as of September 19, 2022.

²⁸ The Map of the War in Ukraine. <https://maphub.net/meduza/map-a-temp-1> (accessed on 13.01.2023)

Proceeding from the scheme drawn up (see Fig. 16), it can be argued that the shelling was carried out from the territory controlled by the Ukrainian armed formations. In addition, it is worth focusing on the fact that only the UAF can use shells of this type, since they are armed with the corresponding artillery pieces and ammunition supplied by the NATO member states.

Also, if we consider only the minimum firing range of the projectile, the artillery gun should have to be based directly near the front line, which is impractical and dangerous in combat conditions, since artillery points become an easy target for the opposite side. Therefore, it can be argued that the artillery piece, from which the Bakinskikh Komissarov Square was shelled, could only be located in the territory controlled by the UAF.

MILITARY PRESENCE

The representative office of the DPR in the JCCC blamed the 56th Independent Motorized Infantry Brigade of the Armed Forces of Ukraine for the shelling under consideration. Thus, communication dated September 19, 2022 says: “Responsibility area of the 56th Independent Motorized Infantry Brigade refers to commander - Colonel Sergei Anatolyevich Sirchenko, and head of artillery of the 56th IMIBr - Colonel Artyom Yuryevich Puchkov”²⁹.

It is also known to us that as far back as at the beginning of 2015, positions of artillerymen of the 55th IMBr of the Armed Forces of Ukraine were equipped near Avdeyevka. This unit was armed with 152-mm long-range 2A65 Msta-B howitzers. We had already written about this in the investigation “Shelling of Kiyevskiy District, Donetsk using rifled artillery on September 20, 2015”³⁰.

Thus, for example, traces of artillery work near Avdeyevka are clearly visible in a satellite image dated February 21, 2015. In addition, in the release of the Ukrainian TV show Brave Hearts dated October 14, 2015, the battery commander of the **55th IMBr** with the San Sanych code name was featured (see Fig. 17). In the course of the plot, he demonstrated the position just above Avdeyevka on the map, from where his unit was firing towards Donetsk³¹ (see Fig. 18 Fig. 18).

It is noteworthy that the 2A65 Msta-B howitzer is similar in its characteristics to NATO 155-mm guns. For this reason, it seems likely that the decision was made to re-equip this particular unit.

Moreover, UAF artillery positions were equipped between Grodovka and Ocheretino settlements. It was from these positions that in January 2015 the Ukrainian artillerymen from the **43rd OABr** carried out regular shelling of Donetsk suburbs (Donetsk airport, Spartak state farm, Yasinovataya) (see Fig. 19), which we

²⁹ Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022. The DNR in JCCC: facts of Ukraine’s war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 07.10.2022)

³⁰ Shelling of Kiyevskiy District, Donetsk using rifled artillery on January 20, 2015 (published on 29.06.2021) LOSTARMOUR. URL: <https://lostarmour.info/articles/obstrel-goroda-kievskogo-rayona-goroda-donecka-s-primeneniem-nareznoy-artillerii-20-yanvary-2015-goda/> (accessed on 14.01.2023)

³¹ Brave hearts. Gunners. YouTube Video hosting. URL: <https://youtu.be/DFwCG19BArs?t=2295> (accessed on 13.01.2023).

reported in the investigation “Shelling of a bus stop in Kuprin St. (Bosse area), Donetsk, January 22, 2015”³².

It is also worth noting that on September 10, 2022, the Ministry of Defense of the Russian Federation reported that Russian artillerymen had destroyed 155-mm M777 howitzer in the area of Novoselovka-I settlement; these howitzers had arrived from the United States as part of military assistance to Ukraine³³.

Considering the above data, it can be argued that in this shelling sector, since 2015, the UAF has equipped fortified artillery positions with arranged communications, and organized supply of weapons, ammunition, fuel, and food. Also, units armed with American M777 howitzers were undoubtedly present in this sector.

However, open sources contain very little information about Ukrainian units located today in the area west of Avdeyevka. In our understanding, we will be able to obtain more detailed information in the future.

At the same time, the fact remains undoubted that the highest military-political leadership of Ukraine is responsible for the illegal actions of the UAF, namely: President and Supreme Commander-in-Chief **Volodymyr Zelensky** and Commander-in-Chief of the Armed Forces of Ukraine **Valery Zaluzhnyy**.

³² The use of 2S7 Pion self-propelled cannons of the Armed Forces of Ukraine in the zone of the so-called. “ATO” and shelling of a bus stop in Kuprin St. (Bosse area), Donetsk, January 22, 2015. “Fair Defense” Non-Government Organization. URL: <https://oosz.su/node/45> (accessed on 14.01.2023)

³³ RF Ministry of Defense: An American M-777 howitzer destroyed near Novoselovka I in the DPR (published on 10.09.2022) Rossiyskaya Gazeta. URL: <https://rg.ru/2022/09/10/mo-rf-pod-novoselovkoj-pervoj-v-dnr-unichtozhena-amerikanskaia-gaubica-m-777.html> (accessed on 14.01.2023)

CONCLUSIONS

As follows from the above, on September 19, 2022, at 12:23 (Moscow time), the Bakinskikh Komissarov Square in the Kuibyshevskiy district of Donetsk came under artillery fire using NATO-standard 155-mm rifled artillery ammunition. The shells flew in a direction from north-west to south-east (azimuth 317 degrees, error making ± 15 degrees). The shelling was carried out using M549 or M549A1 155-mm semi-self propelled ammunition.

The shelling sector was entirely controlled by the UAF. 155-mm artillery guns are in service with only one of the parties to the conflict, namely Ukraine.

All shell hits fell on densely populated residential areas of the city and led to damage to civilian objects, death and injury to civilians. Thus, the principles of selectivity and proportionality were violated.

The highest military and political leaders of Ukraine are responsible for the illegal actions of the UAF, 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 town of Makeyevka, 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. 13 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. 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 06.07.2022)
2. 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/lysyhansk-luhansk-russia-ukraine-war/> (accessed on 06.07.2022)
3. The enemy does not stop attacking the center of Donetsk (published on 17.09.2022). The DNR in JCCC. URL: https://t.me/DNR_SCKK/10560 (accessed on 07.10.2022)
4. Shelling was recorded from the UAF side in the directions (published on 19.09.2022) online the DNR JCCC. https://t.me/online_dnr_sckk/16836 (accessed on 07.10.2022)
5. Mass Media: three people killed in the shelling of the market in Donetsk (published on 19.09.2022) TASS. URL: https://tass.ru/mezhdunarodnaya-panorama/15796411?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com (accessed on 07.10.2022)
6. Shelling was recorded from the UAF side in the directions (published on 19.09.2022) online the DPR JCCC. https://t.me/online_dnr_sckk/16836 (accessed on 07.10.2022)
7. Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 17.09.2022) the DNR in JCCC. URL: https://t.me/DNR_SCKK/10638 (accessed on 07.10.2022)
8. In addition to a bus stop in Donetsk, an explosion also covered a nearby store - updated data (published on 19.09.2022) Donetsk News Agency URL: <https://dan->

news.info/pravoporyadok/pomimo-ostanovki-v-donecke-vzryvom-nakrylo-i-magazin-rjedom--utochnennye-dannye/ (accessed on 12.01.2023)

9. Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 19.09.2022) the DNR in JCCC: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 12.01.2023)

10. Fuze PD M739A1. ARMSCOM – ART OF DEFENSE INFORMATION. URL: https://www.armscom.net/products/fuze_pd_m739a1 ((accessed on 13.01.2023).

11. PROJECTILES, 155-MILLIMETER: HERA, M549 AND M549A1 (published on 15.12.2020) ARMY Ammo Data Sheet URL: <https://www.bevfitchett.us/army-ammo-data-sheet/> (accessed on 13.01.2023)

12. ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, AND ARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

13. ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, AND ARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

14. Canada sends four pieces of field artillery to Ukraine as country braces for renewed Russian attack (published on 22.04.2022) CBC URL: <https://www.cbc.ca/news/politics/ukraine-m777-howitzer-russia-heavy-artillery-1.6427762> (accessed on 05.09.2022)

15. Australia to Deliver Six M777 Howitzers to Ukraine (published on 27.04.2022) The Defense Post URL:

<https://www.thedefensepost.com/2022/04/27/australia-m777-howitzers-ukraine/>
(accessed on 30.10.2022)

16. Pentagon holds briefing as Biden announces additional \$800M in security assistance to Ukraine (published on 13.04.2022) CBS News. URL: <https://www.youtube.com/watch?v=7tOuhNKsiy4> (accessed on 30.10.2022)

17. Biden: The United States to supply Ukraine with heavy artillery and drones (published on 21.04.2022) BBC News URL: <https://web.archive.org/web/20220422102858/https://www.bbc.com/russian/news-61181352.amp> (accessed on 30.10.2022)

18. American long-range shells M549A1 arrived in Ukraine (published on 12.05.2022) AVIA PRO URL: <https://avia-pro.net/news/na-ukrainu-pribyli-amerikanskije-dalnoboynye-snaryady-m549a1> (accessed on 30.10.2022)

19. US approves \$40bn Ukraine aid package (published on 20.05.2022) DW URL: <https://web.archive.org/web/20220520101418/https://amp.dw.com/ru/ssha-utverdili-paket-pomoshhi-ukraine-na-40-mlrd-dollarov/a-61871367> (accessed on 30.10.2022)

20. The Ukrainian party to decide for itself at what distances to use American HIMARS multiple launch rocket systems (published on 02.06.2022) Eastern Variant. URL: <https://web.archive.org/web/20220602165223/https://v-variant.com.ua/ukrayna-sama-budet-reshat-kak-daleko-streliat-yz-amerykanskykh-himars-posol-ssha/> (accessed on 30.10.2022)

21. The United States will allocate an additional \$450 million military aid package to Ukraine: what will be included (published on 23.06.2022) UNIAN Information Agency URL: <https://web.archive.org/web/20220623221128/https://www.unian.net/world/voenna-ya-pomoshch-ukraine-ssha-vydelyat-eshche-450-millionov-novosti-mira-11877204.html> (accessed on 30.10.2022)

22. M109 self-propelled guns, L119 howitzers, UAVs and ammunition: what's in the new UK aid package (published on 21.07.2022) The Page. URL:

<https://thepage.ua/news/voennaya-pomosh-ukraine-chto-nam-daet-velikobritaniya>
(accessed on 30.10.2022)

23. France sends heavy weapons to Ukraine for the first time (published on 22.04.2022) Vedomosti URL: <https://web.archive.org/web/20220422124911/https://www.vedomosti.ru/politics/news/2022/04/22/919351-frantsiya-vpervie-otpraviv-tyazhelie> (accessed on 30.10.2022)

24. Il governo italiano pronto a fornire artiglieria pesante all'Ucraina (published on 16.05.2022) La Repubblica URL: https://web.archive.org/web/20220516060657/https://www.repubblica.it/politica/2022/05/13/news/armi_italiane_dotazioni_ucraina_guerra-349242188/ (accessed on 30.10.2022)

25. Netherlands Prime Minister Mark Rutte Pledges More Military Aid, Heavy Weapons to Ukraine (published on 19.04.2022) Republic world URL: <https://www.republicworld.com/world-news/russia-ukraine-crisis/netherlands-prime-minister-mark-rutte-pledges-more-military-aid-heavy-weapons-to-ukraine-articleshow.html> (accessed on 30.10.2022)

26. Going Dutch Revisited: Dutch Military Aid To Ukraine (published on 09.09.2022) ORYX URL: <https://www.oryxspioenkop.com/2022/09/going-dutch-revisited-dutch-military.html> (accessed on 30.10.2022)

27. Norway to provide Ukraine with M109A3GN 155mm tracked self-propelled howitzers (published on 01.05.2022) Army Recognition URL: https://www.armyrecognition.com/defense_news_may_2022_global_security_army_industry/norway_to_provide_ukraine_with_m109a3gn_155mm_tracked_self-propelled_howitzers.html (accessed on 30.10.2022)

28. The Map of the War in Ukraine. <https://maphub.net/meduza/map-a-temp-1> (accessed on 13.01.2023)

29. Shelling of Kiyevskiy District, Donetsk using rifled artillery on January 20, 2015 (published on 29.06.2021) LOSTARMOUR URL: <https://lostarmour.info/articles/obstrel-goroda-kievskogo-rayona-goroda-donecka->

s-primeneniem-nareznoy-artillerii-20-yanvary-a-2015-goda/ (accessed on 14.01.2023)

30. Brave hearts. Gunners. YouTube Video hosting. URL: <https://youtu.be/DFwCG19BArs?t=2295> (accessed on 13.01.2023).

31. The use of 2S7 Pion self-propelled cannons of the Armed Forces of Ukraine in the zone of the so-called. “ATO” and shelling of a bus stop in Kuprin St. (Bosse area), Donetsk, January 22, 2015. “Fair Defense” Non-Government Organization. URL: <https://oosz.su/node/45> (accessed on 14.01.2023)

32. RF Ministry of Defense: An American M-777 howitzer destroyed near Novoselovka I in the DPR (published on 10.09.2022) Rossiyskaya Gazeta. URL: <https://rg.ru/2022/09/10/mo-rf-pod-novoselovkoj-pervoj-v-dnr-unichtozhena-amerikanskaia-gaubica-m-777.html> (accessed on 14.01.2023)

33. Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022. The DNR in JCCC: facts of Ukraine’s war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 07.10.2022)

34. Shelling effects in the Kuibyshevskiy district (published on 19.09.2022) Aleksey KulemZin URL: https://t.me/kulemzin_donetsk/8475 (accessed on 07.10.2022)

35. “Mc Drag” – A Computer Program for Estimating the Drag Coefficients of Projectiles. Website of Geoffrey Kolbe. URL: <http://geoffrey-kolbe.com/articles/McDrag.pdf> (accessed on 13.01.2023)

36. Investigators of the Russian Investigative Committee continue to record the consequences of the shelling of the Kuibyshevskiy district of Donetsk (published on 21.09.2022) “Information Center of the Investigative Committee of Russia” Yandex-Zen channel. URL: <https://dzen.ru/video/watch/633c300449c2e560688e9d42> (accessed on 28.10.2022)

37. Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 19.09.2022) the DNR in JCCC: facts of Ukraine’s war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 13.01.2023).

38. PD M739A1 Fuze. ARMSCOM – ART OF DEFENSE INFORMATION. URL: https://www.armscom.net/products/fuze_pd_m739a1 ((accessed on 13.01.2023).

39. ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, AND ARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

40. M739A1 Pd/Delay artillery fuze. usgovcloudapi net URL: <https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2017/fuze/Amadio19340.pdf> (accessed on 13.01.2023)

41. A comparative analysis of contemporary 155 mm artillery projectiles. Emerald Insight URL: <https://www.emerald.com/insight/content/doi/10.1108/JDAL-05-2019-0011/full/pdf?title=a-comparative-analysis-of-contemporary-155-mm-artillery-projectiles> (accessed on 13.01.2023)

42. ANALYSIS OF CRATERS FROM HIGH-EXPLOSIVE SHELL HITS. “Fair Defense” Non-Government Organization URL: <https://oosz.su/node/157> (published on 24.11.2022)

Additional Sources

43. Ukrainian projectile hit the *Jam* store (published on 19.09.2022) The DPR SHORTS. URL: <https://t.me/c/1410361541/35069>

44. settlement Netailovo - settlement Donetsk (Kuibyshevskiy District) (published on 19.09.2022) Military □ Donetsk. URL: <https://t.me/militarydonetsk/42590>

45. 18+ the Bakinskikh Komissarov Square, *Jam* store (published on 19.09.2022) Military ☐ Donetsk. URL: <https://t.me/militarydonetsk/42595>
46. 18+ Pile of broken bodies, the Bakinskikh Komissarov Square, shelling by the Armed Forces of Ukraine (published on 19.09.2022) Military ☐ Donetsk. URL: <https://t.me/militarydonetsk/42612>
47. In Donetsk, on the Bakinskikh Komissarov Square, the well-known doner kebab seller Khattab was killed as a result of the UAF shelling (published on 19.09.2022) Komsomolskaya Pravda in Donetsk. URL: <https://www.donetsk.kp.ru/online/news/4927496/>
48. UAF shelled the Bakinskikh Komissarov Square in Donetsk, according to preliminary data, 13 civilians were killed (published on 19.09.2022) Komsomolskaya Pravda in Donetsk. URL: <https://www.donetsk.kp.ru/online/news/4926785/>
49. 18+ Pile of broken bodies, the Bakinskikh Komissarov Square, UAF shelling (13 persons killed) (published on 19.09.2022) Large-caliber Trouble. URL: <https://t.me/bolshiepushki/2410>
50. 18+ Another video of the shelling effects on the Bakinskikh Komissarov Square in the Kuibyshevskiy district of Donetsk (published on 19.09.2022) Typical Donetsk. URL: <https://t.me/itsdonetsk/31157>
51. Another video of the shelling effects on the Bakinskikh Komissarov Square in the Kuibyshevskiy district of Donetsk (published on 19.09.2022) Typical Donetsk. URL: <https://t.me/itsdonetsk/31185>
52. The consequences of incoming strikes at PSB Bank in 1, Matrosov St., nearby the Bakinskikh Komissarov Square (published on 19.09.2022) Typical Donetsk. URL: <https://t.me/itsdonetsk/31199>
53. Thirteen people killed in the shelling of the Bakinskikh Komissarov Square in Donetsk (published on 19.09.2022) Ukraina.ru website. URL: <https://ukraina.ru/20220919/1038858515.html>
54. Peaceful people - just to shreds (published on 19.09.2022) Anatoliy Shariy. URL: <https://t.me/ASupersharij/11371>
55. Attack on the Bakinskikh Komissarov Square in Donetsk (published on 19.09.2022) Anatoliy Shariy. URL: <https://t.me/ASupersharij/11368>

ANNEXES

Annex 1

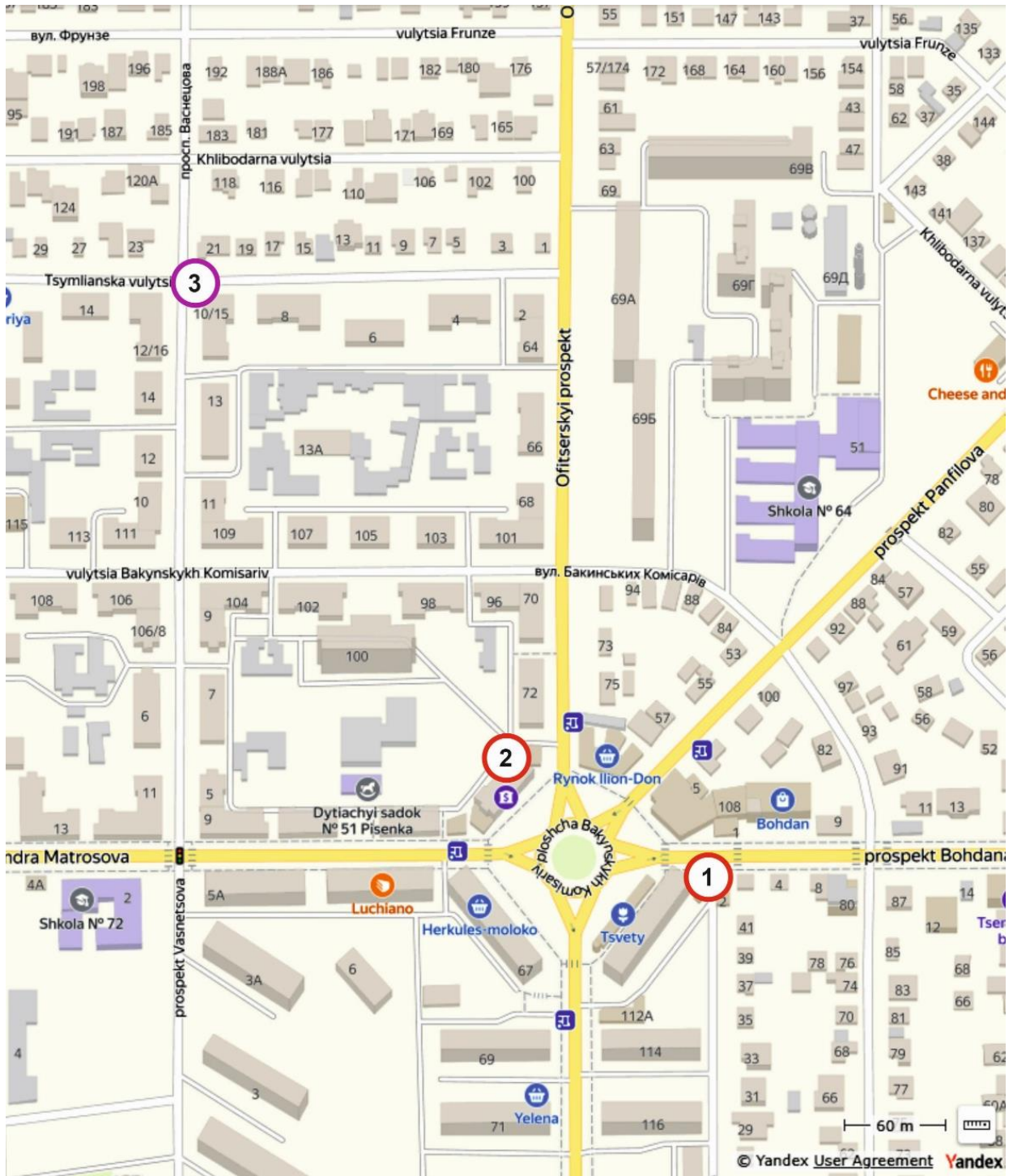


Fig. 1 – Incident location scheme



Fig. 2 – A crater from the shell detonation next to the Jam store.



Fig. 3 – Detonation trace at the level of the ground floor window of the residential building at the address 1, Alexandr Matrosov Ave., Donetsk³⁴.

³⁴ Shelling effects in the Kuibyshevskiy district (published on 19.09.2022) Aleksey KulemZin URL: https://t.me/kulemzin_donetsk/8475 (accessed on 07.10.2022)



Fig. 4 – Projectile fragment found nearby the residential building at 1, Alexandr Matrosova Ave.

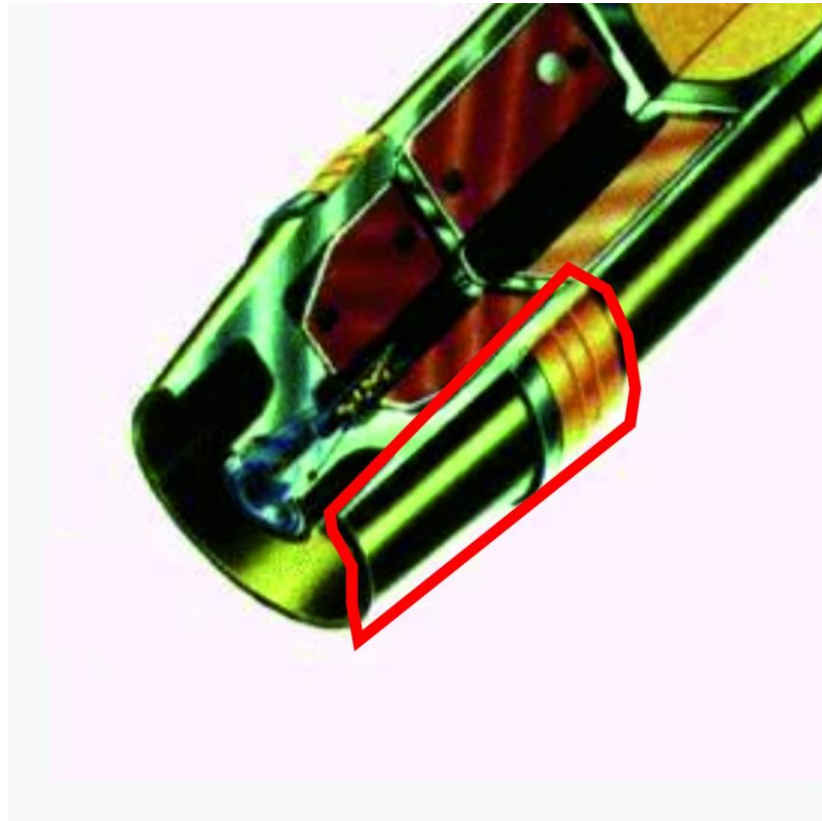


Fig. 5 – The bottom part of the M549/M549A1 active-rocket projectile (the highlighted in red part is usually found in the form of large fragments at the site of the explosion).

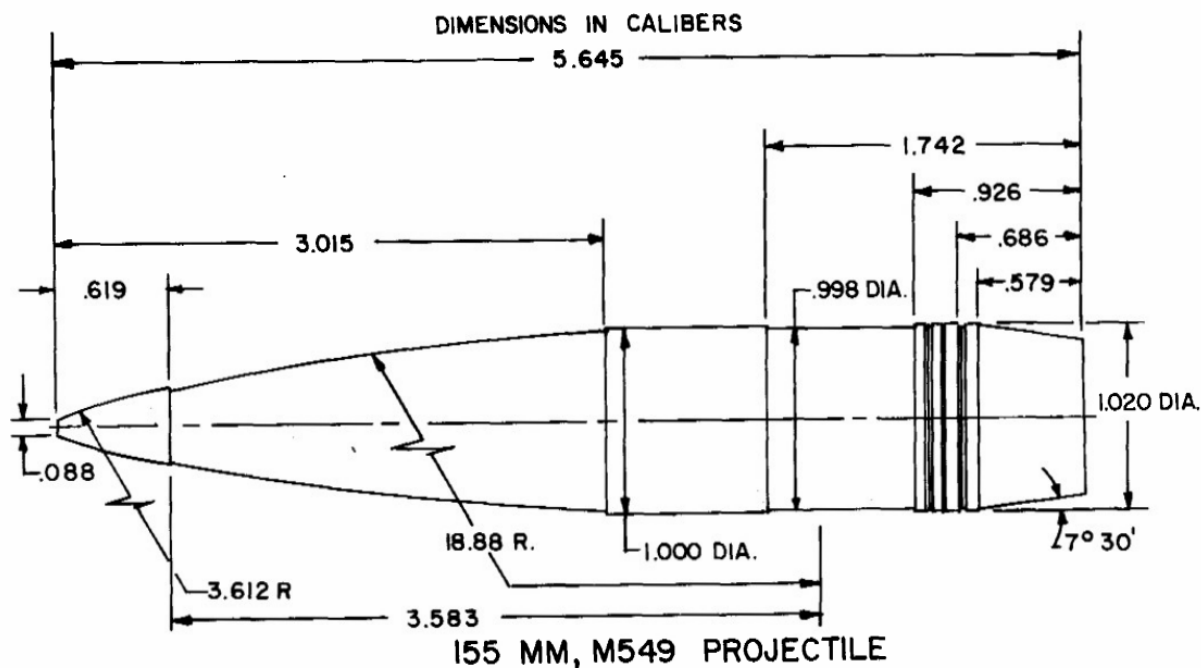


Fig. 6 - Drawing of the 155-mm M549 projectile³⁵.



Fig. 7 – The nozzle of an active-rocket projectile in the hands of an employee of the RF IC³⁶.

³⁵ "Mc Drag" - A Computer Program for Estimating the Drag Coefficients of Projectiles. Website of Geoffrey Kolbe. URL: <http://geoffrey-kolbe.com/articles/McDrag.pdf> (accessed on 13.01.2023)

³⁶ Investigators of the Russian Investigative Committee continue to record the consequences of the shelling of the Kuibyshevskiy district of Donetsk (published on 21.09.2022) "Information Center of the Investigative Committee of Russia" Yandex-Zen channel. URL: <https://dzen.ru/video/watch/633c300449c2e560688e9d42> (accessed on 28.10.2022)



Fig. 8 – Elements of an exploded shell in the hands of the JCCC employee³⁷.



Fig. 9 – PD.M739A1 fuze configuration³⁸.

³⁷ Records of the shelling effects in the Kuibyshevskiy district of Donetsk on September 19, 2022 (published on 19.09.2022) the DNR in JCCC: facts of Ukraine's war crimes. URL: https://t.me/DNR_SCKK/10638 (accessed on 13.01.2023).

³⁸ PD M739A1 Fuze. ARMSCOM – ART OF DEFENSE INFORMATION. URL: https://www.armscom.net/products/fuze_pd_m739a1 (accessed on 13.01.2023).

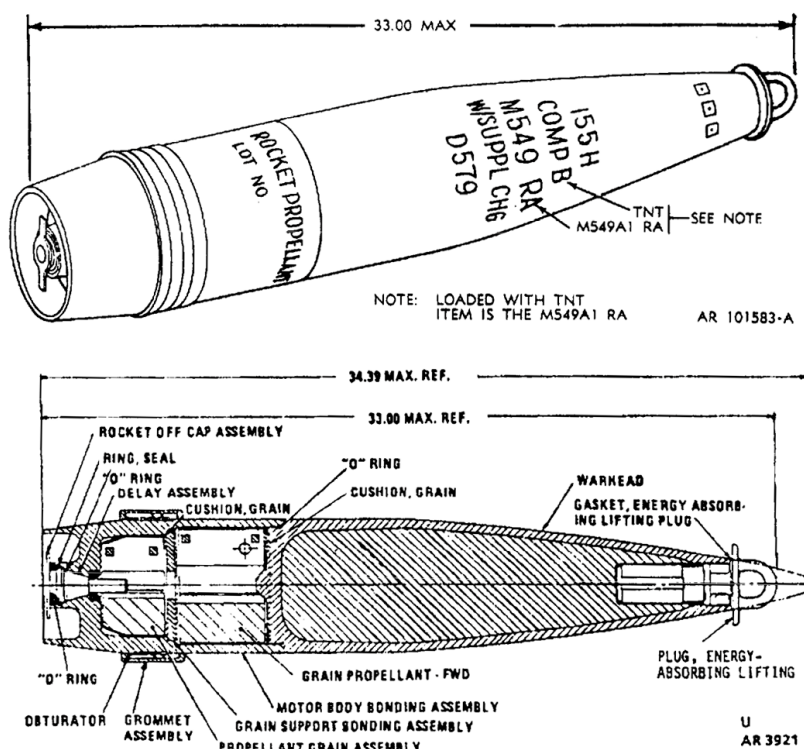


Fig. 10 – M549/M549A1 155 mm ammunition³⁹.

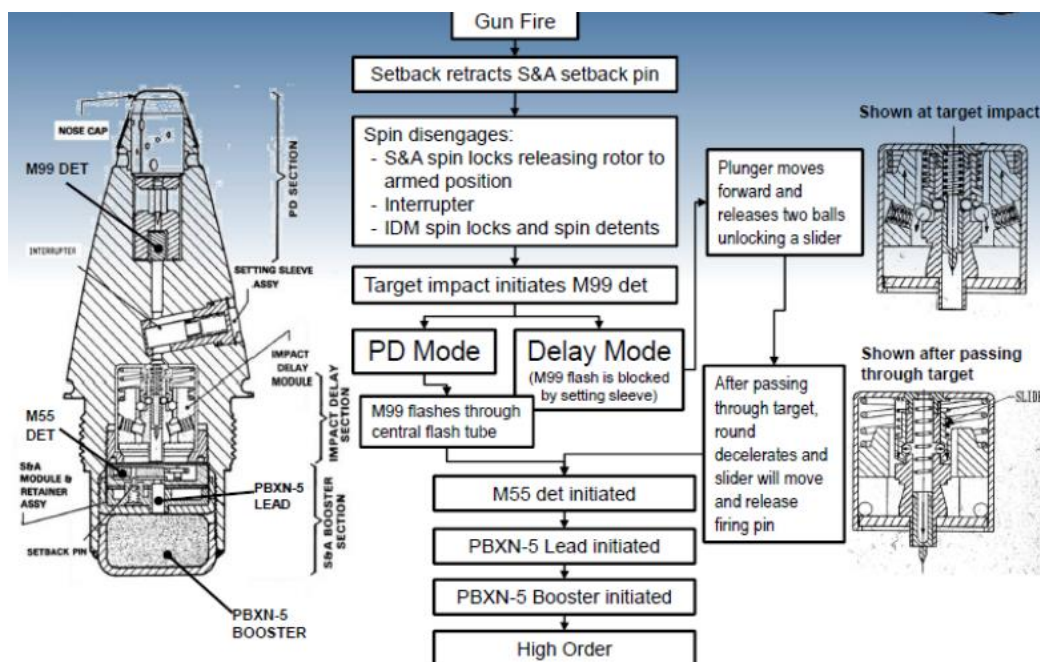


Fig. 11 – PD.M739A1 fuze scheme⁴⁰.

³⁹ ARMY AMMUNITION DATA SHEETS ARTILLERY AMMUNITION GUNS, HOWITZERS, MORTARS, RECOILLESS RIFLES, GRENADE LAUNCHERS, AND ARTILLERY FUZES (published on 04.1994) TECHNICAL MANUAL URL: <https://ru.scribd.com/doc/18119197/TM-43-0001-28-Army-Ammunition> (accessed on 30.10.2022)

⁴⁰ M739A1 Pd/Delay artillery fuze. usgovcloudapi.net URL: <https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2017/fuze/Amadio19340.pdf> (accessed on 13.01.2023)

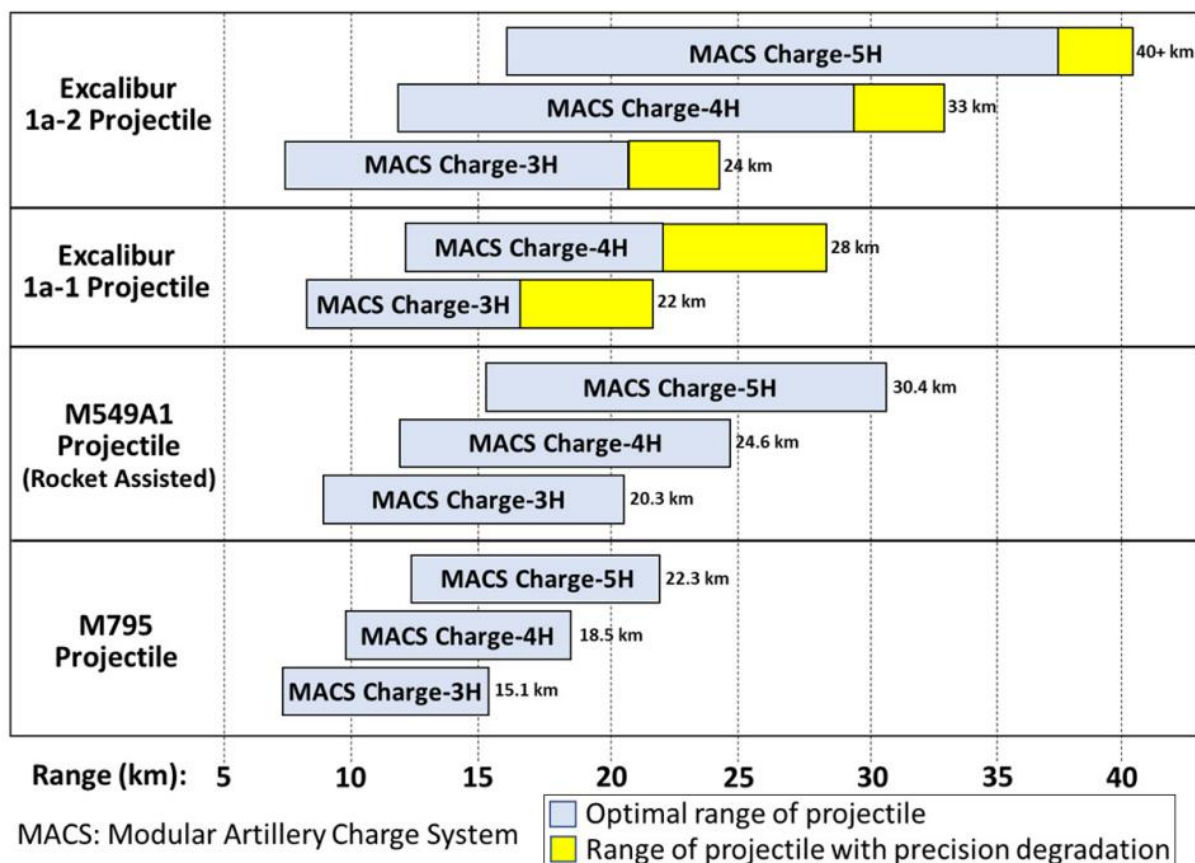


Fig. 12 – Firing range of 155-mm projectiles⁴¹.



Fig. 13 – A crater at shell hit 1 and its identification by the crater type⁴².

⁴¹ A comparative analysis of contemporary 155 mm artillery projectiles. Emerald Insight URL: <https://www.emerald.com/insight/content/doi/10.1108/JDAL-05-2019-0011/full/pdf?title=a-comparative-analysis-of-contemporary-155-mm-artillery-projectiles> (accessed on 13.01.2023)

⁴² ANALYSIS OF CRATERS FROM HIGH-EXPLOSIVE SHELL HITS. "Fair Defense" Non-Government Organization URL: <https://oosz.su/node/157> (published on 24.11.2022)



Fig. 14 – Azimuth determination at the site of shell hit 1.



Fig. 15 – Fire direction determination for three shell hits.

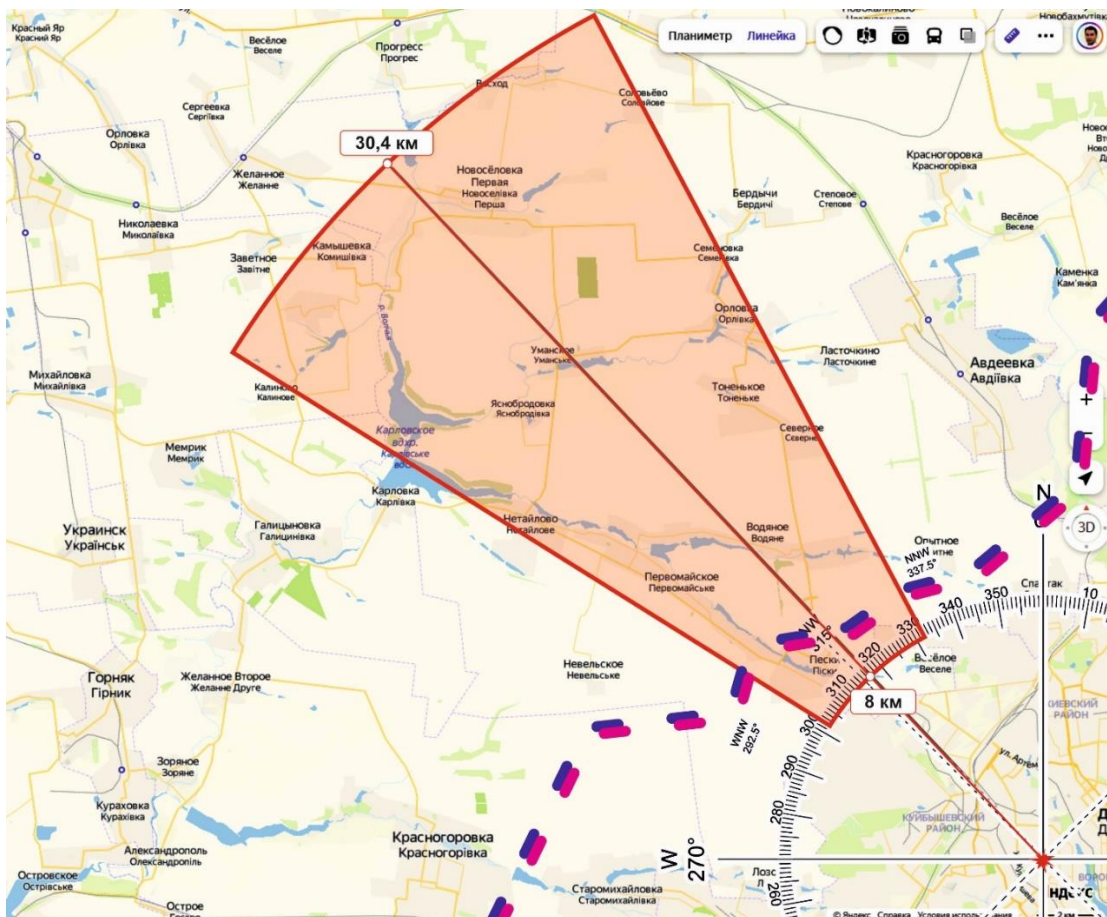


Fig. 16 – A scheme of the shelling sector.



Fig. 17 - Battery commander of the 55th SMBR with a code name San Sanych

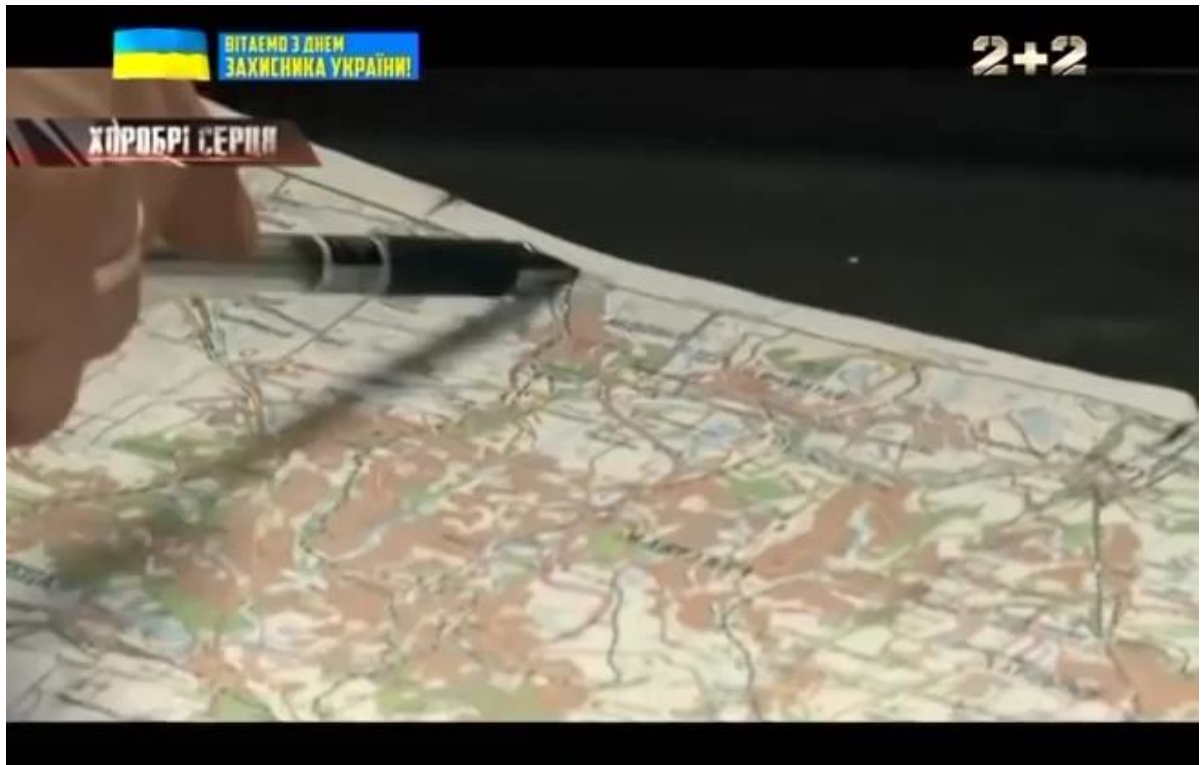


Fig. 18 – ‘San Sanych’ shows the position of the Ukrainian artillery behind Avdeyevka.

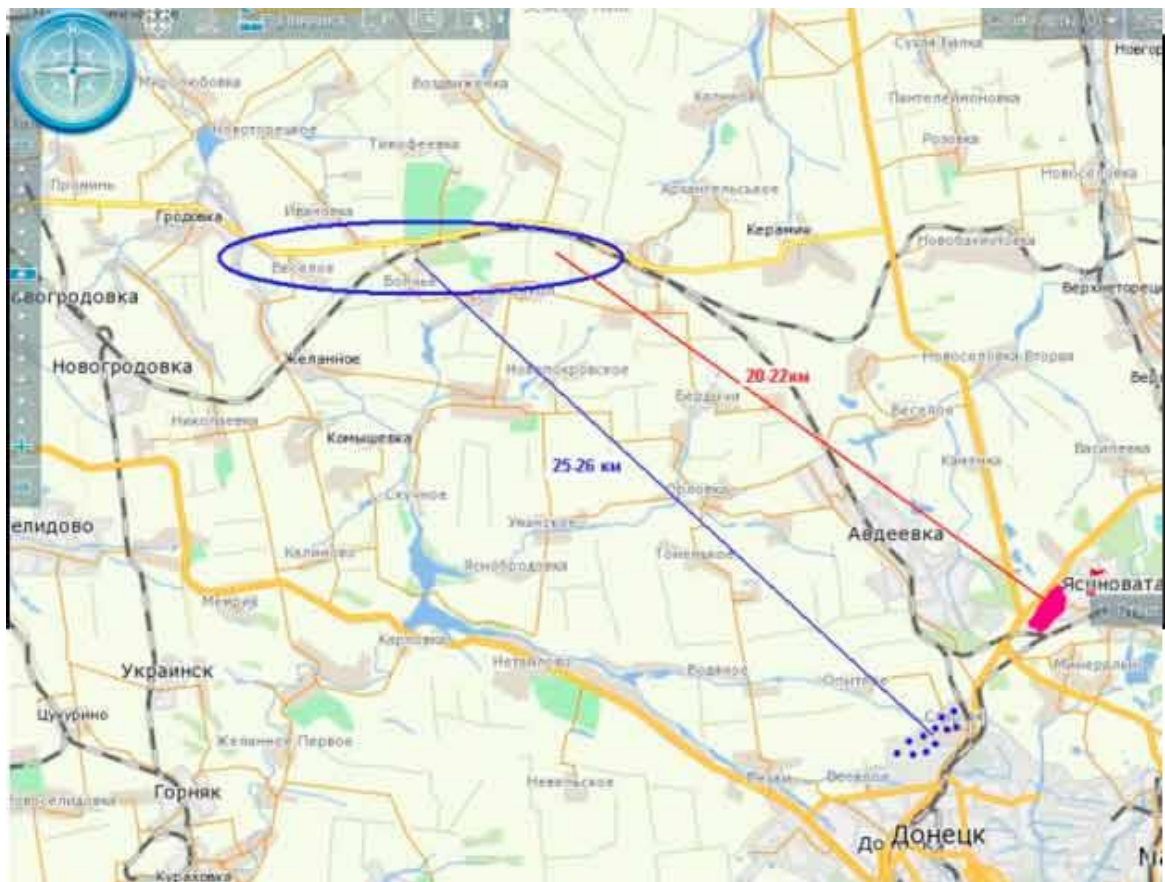


Fig. 19 – Image published on the mil.in.ua portal, showing that the alleged area of Peonies’ operations was located exactly between the southeastern outskirts of Grodovka and Ocheretino