

# Shelling of Kiyevskiy District, Donetsk, using “Hurricane” MLRS on October 1, 2014

*PUBLIC INVESTIGATION*

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**ABBREVIATIONS**

MLRS - Multiple Launch Rocket System

MP - missile part of the projectile

EE - explosive

OC - operational capabilities

UAF - Ukrainian Armed Forces

OSCE - Organization for Security and Cooperation in Europe

RAR - Rocket Artillery Regiment

## PREAMBLE

On October 1, 2014, the academic school year started in the Donetsk People's Republic, it was postponed from September 1 in connection with the hostilities. Lots of children gathered at the celebratory assembly in the courtyards of their schools.

At about 10:00 a.m., the Kievsky District of Donetsk came under fire<sup>1</sup>. The first shell of the “Hurricane” MLRS exploded next to the “Poligraficheskaya Street” public transport stop in Kievsky Avenue, where a fixed-route taxi number 17 stopped at that moment<sup>2</sup>. As a result, six persons died; seven passengers on the bus and eighteen people in the street were injured<sup>3</sup>.

A few minutes later, another round of ammunition exploded in the courtyard of the Donetsk School No. 57, where the celebratory assembly was taking place at that moment. There were 238 people, including 70 children and 28 teachers. The explosion of the second shell killed three persons – a biology teacher, a relative of one of the school students and a militia man.

The OSCE Special Monitoring Mission also recorded this event. “When at the scene, the SMM saw a large crater, one metre in diameter, some 50 metres from the school, which it assessed to have been the impact of a shell of an unspecified nature. The SMM was guided inside the building by “DPR” representatives, who showed the SMM two bodies on the floor. There were no casualties among the school children, according to the “DPR” representatives. The SMM moved to a street a few hundred meters from the school, where “DPR” representatives said that shelling had caused other victims. On arrival, the SMM approached the bus station where it saw a bus almost entirely burnt out, and could observe six bodies at the scene. Around fifty metres

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<sup>1</sup> A call for the angels of Donbass ... Black days of Donbass ... continued ... DNR-PRAVDA.RU URL: <https://dnr-pravda.ru/zvonok-dlya-angelov-donbassa-chernye-dni-donbassa-prodolzhenie/> (accessed on 27.11.2021).

<sup>2</sup> October 1. Kievsky District, Donetsk [published on 01.10.2014] VKontakte Social Network. URL: [https://vk.com/video212613362\\_170848578](https://vk.com/video212613362_170848578) (accessed on 27.11.2021).

<sup>3</sup> In Donetsk, nine people died in a day. Interfax. URL: <https://www.interfax.ru/world/399760> (accessed on 27.11.2021).

north of the bus, the SMM saw a metallic object stuck in the asphalt which appeared to be a large rocket canister, the Mission report reads<sup>4</sup>.

In this investigation, the explosion of the first shell (at the public transport stop) will be thoroughly studied; when investigating the second shell explosion, we will rely on the measurements made by the war correspondents of the Novorosiya TV channel on October 4, 2014.

In addition, it should be noted that in October 2014 Donetsk came under fire from the “Hurricane” MLRS many times. In the future, all these cases will also be analyzed and added to this investigation.

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<sup>4</sup> Latest from OSCE Special Monitoring Mission (SMM) to Ukraine based on information received as of 18:00 (Kyiv time), 1 October 2014 [published on 02.10.2014] OSCE website. URL: <https://www.osce.org/ukraine-smm/124979> (accessed on 27.11.2021).

## INCIDENT LOCATION

Careful examination of photo and video evidence of the shelling in question, published in the mass media and on social networks, enables us to analyze the MLRS shell impact and detonation point near the “Poligraficheskaya Street” public transport stop in Kievsky Avenue.

At a distance of about 9-10 meters to the east of the north-eastern corner of the “Poligraficheskaya Street” transport stop pavilion in Kievsky Avenue (downtown direction), a MLRS munition detonated (see Fig. 1). A vivid fragment scattering trace is clearly visible on the asphalt pavement. The furrows left by the shell fragments on the asphalt are directed away from the center of the explosion. Moreover, most of the furrows from the shell fragments terminate in such a way that it is possible to draw a straight line across their end points. Also, at the point of the projectile contact with the surface (the center of the explosion), two large-diameter metal tubes stick out of the asphalt (one inside the other). They are identified as the missile part (MP) of the MLRS projectile.

The most vivid part of the fragmentation marks on the asphalt can be inscribed in an isosceles triangle. The point of the projectile contact with the surface will be the apex of this triangle, and the line drawn along the ends of the furrows left by the shell fragments will be the base of the triangle.

A stream of fragments ricocheting off the asphalt hit a bus located at a distance of about 5-7 m from the explosion epicenter and people at the bus stop.

## **WEAPON TYPE**

### **Testimonies and physical evidence**

Metal tubes, located one inside the other, sticking out of the asphalt at the place of the projectile detonation are the main evidence that make it possible to determine the caliber and type of weapons used (see Fig. 2). With regard to their location at the explosion epicenter, the presence of threads and some other characteristic features, these tubes are unambiguously identified as the body of the projectile missile part.

It is important to note that the MPs of the “Hurricane” MLRS 9K57 projectiles consist of two chambers (head and tail), which are connected by a thread (see Fig. 5). They are designed to accommodate a 9X164 powder charge consisting of semi-charges. And the head chamber is screwed onto the tail chamber<sup>5</sup>. Thus, upon collision with a solid surface, the tail chamber can enter the head chamber, which will result in the picture we are observing.

In one of the photos, MP is captured next to a tin sheet that fell from a billboard located opposite the bus stop pavilion. In the city of Donetsk, billboards have a standard size of 3 by 6 m<sup>6</sup>. In this case, in the photo of the billboard taken the day after the explosion (see Fig. 3) we can observe two tin sheets remaining on it. Considering that the billboard itself is divided by a frame of metal profiles into 18 equal squares (3 vertically and 6 horizontally), and the tin sheets are covered by 2 such squares, it can be argued that the size of the billboard tin sheet is 1m x2 m.

By placing a scale bar on the photo, it is possible to determine the approximate diameter of the MP, which is 220 cm (see Fig. 4).

Thus, it can be argued that the missile strike in question was carried out from a “Hurricane” 9K57 MLRS. Regarding that there was one big explosion, most likely a projectile with a 9M27F unitary high-explosive fragmentation part was used.

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<sup>5</sup> Abyasov N.G. 9K57 multiple launch rocket systems: technical description and operating instructions. Moscow: Order of the Red Banner of Labor Military Publishing House of the USSR Ministry of Defense, 1981. 56 p.

<sup>6</sup> Advertising on billboards. ProDvizhenie. URL: <https://advdnr.ru/razmeshchenie-reklamy-na-bilbordakh> (accessed on 27.11.2021).

## “Hurricane” 9K57 MLRS

The BM-27 Hurricane (GRAU index 9K57) is a 220mm self-propelled multiple rocket launcher system designed in the USSR. The system has a combat vehicle and transport-charging machine based on a modified and improved ZIL-135LM chassis. The system carries 16 rockets weighing 280 kg each, which can be fired as a full salvo in 20 seconds.

According to the *Jane Reference Book*, in 2001, “Hurricane” combat vehicles were in service with the armies of the former republics of the USSR. Ukraine received 139 combat vehicles.

*Table 1 – Characteristics of the “Hurricane” 9K57 MLRS rockets*

	9M27F with high-explosive warhead	9M27K with cassette warhead
Rocket length, mm	4832	5178
Rocket weight, kg	280.4	271
Warhead weight, kg	99	89.5
The number of high-explosive fragmentation elements in a cassette projectile		30

The 220-mm shells of the “Hurricane” MLRS are similar in design to the “Grad” MLRS shells. The 9M27 missile part and the 9X164 powder charge are the same for all shells. Same as in the “Grad” system, a small or large brake ring is put on the projectile head for firing at reduced ranges.

For shooting from the “Grad” MLRS only one type of unitary (monobloc) ammunition is used (9M27F). This projectile is designed to engage the living force, light armored and armored vehicles, destroy command posts, communications centers and military-industrial infrastructure facilities. Firing range is 10-35.8 km. Projectiles

are 4832 mm long with the take-off weight of 280 kg. Warhead weighing 99 kg contains 51.9 kg of powerful explosives. The 9M27 rocket projectile is equipped with a mechanical fuse 9E244<sup>7</sup>.

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<sup>7</sup> Shirokorad A.B. USSR wonder-weapons: Secrets of Soviet weapons. Moscow: Veche, 2005 352 p.



## PROBABLE SECTOR OF SHELLING

### Direction

As for the fragment scattering trace left by the explosion on the surface of the asphalt pavement, it is very clearly visible and corresponds to the trail left by the explosion of a projectile that hit the surface at a high striking angle (see Fig. 6).

According to the method for determining the fire direction, “The fragmentation furrows terminate in such a way that it is possible to draw a straight line across them, through the end points of the craters”<sup>8</sup> and this line is perpendicular to the direction from which the shelling was carried out.

In addition, the hole (channel) left by the fuse also usually indicates the direction from which the shelling was carried out. In this case, the MP remainders are located in such a hole. The tilt of the MP remainders also enables to determine the fire direction (see Fig. 7).

One of the photos taken by journalists that day<sup>9</sup>, shows us the incident location from a good angle, making it possible to visually determine the direction from which the shelling was carried out (see Fig. 9). The photo shows the silhouettes of two buildings. We went to the place and determined that these are buildings located at the addresses: 46, Kievsky Ave., and 1, Politboitsov St. The projection of the MP remainder tilt axis and the perpendicular to the line left by the fragments on the asphalt pavement surface coincide and indicate that the projectile flew over the northern end of the building in 1, Politboitsov St.

The satellite image dated October 7, 2014 shows the silhouette of a burnt-out bus and the trail of the shell hit. A line drawn on the satellite image between the place of impact and the northern end of the building in 1, Politboitsov St., results in an approximate shelling direction. The azimuth of this direction is 220 degrees.

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<sup>8</sup> High-explosive fragmentation shell crater analysis. “Fair Defense” Public Organization. URL: <https://oosz.su/node/42> (accessed on 27.11.2021).

<sup>9</sup> A shell hit a school in Donetsk on the first day of the school year [published on 01.10.2014] Komsomolskaya Pravda. URL: <https://www.kp.ru/daily/26288/3167053/> (accessed on 27.11.2021).

It is noteworthy that on October 4, military correspondents of the Novorossiya TV channel measured the azimuth of the direction from which the shelling of Donetsk School No. 57 was carried out<sup>10</sup>. The azimuth was 220 degrees, the same as in our measurement. As noted above, the “Poligraficheskaya Street” public transport stop and School No. 57 came under fire from the same type of guns simultaneously.

### **The shelling sector**

As we have mentioned above, the firing range with the use of the 9M27F high-explosive fragmentation projectile varies from 10 to 35.8 kilometers.

Considering all the information above and assuming the error in measuring the fire direction azimuth as making plus or minus 15 degrees, it is possible to determine the probable shelling sector.

Using the map of hostilities created by public activists as of October 1, 2014 (see Fig. 12), we can draw a demarcation line on the map, and then the probable shelling sector (see Fig. 13).

The resulting sector covers the truncated triangle, including Konstantinovka – Berezovoe – Lozovoe – Kirovsky District of Donetsk. The demarcation line runs approximately in the middle of this sector.

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<sup>10</sup> “Hurricane” from the south-west, Donetsk [published on 04.10.2014] Odnoklassniki Social Network. URL: <https://ok.ru/video/17903061657> (accessed on 27.11.2021).

## MILITARY PRESENCE

### Units in the sector

There is very little information on the presence of the “Hurricane” MLRS units in this sector. And there is no such information at all regarding the part of the DPR-controlled areas; given that this territory is densely populated and its residents have good access to the Internet.

However, as for the part of the sector that was controlled by the Ukrainian side, there are reports about the accumulation of manpower and equipment nearby the settlement of Novomikhaylovka<sup>11</sup>. Moreover, even on September 18, it was reported that “according to eyewitnesses, in the village of Novomikhaylovka, Maryinsky District, UAF soldiers were burying tanks in the kitchen gardens, threatening the residents with physical violence if information comes out of the village.”<sup>12</sup>

On October 3, 2014, from the words of the locals, information was published about the presence of a “Hurricane” MLRS near Novomikhaylovka<sup>13</sup>.

At the beginning of 2014, the “Hurricanes” were in operational service with only one unit – the Sumy 27th Rocket Artillery Regiment (27-th RAR)<sup>14</sup>. The regiment consisted of 3 rocket-launcher battalions; each being authorized with 12 combat vehicles<sup>15</sup>.

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<sup>11</sup> Summary reports from the Novorossiia militia as of October 1, 2014. Top War Military Review website. URL: <https://topwar.ru/59428-svodki-ot-opolcheniya-novorossii-za-1-oktyabrya-2014-goda.html> (accessed on 27.11.2021).

THE TRUCE KEEPING BUT GETTING HOTTER. LiveJournal Online Journal Service. URL: <https://skeptimist.livejournal.com/273330.html> (accessed on 27.11.2021).

<sup>12</sup> NO TITLE. Military maps website. URL: <https://www.militarymaps.info/mark/id99248> (accessed on 27.11.2021).

<sup>13</sup> Novomikhaylovka, shelling of the suburbs of Donetsk [published on 03.10.2014] True! URL: <https://nimi.su/produktsiya/vystrely-polevoy-artillerii/152-mm-vystrely-s-oskolochno-fugasnym-snaryadom-3of64/> (accessed on 27.11.2021).

<sup>14</sup> News from Donetsk and the Region as of January 21, 2016 Places of Interest. URL: <https://donbass-info.com/content/view/26369/26380> (accessed on 27.11.2021).

<sup>15</sup> Application of UAF artillery during the war in Donbass. Cont website. URL: <https://cont.ws/@colonel-cassad/1186753> (accessed on 27.11.2021).

It is important to understand that on March 13, 2015, the 27th RAR was transformed into a brigade<sup>16</sup>, while the number of divisions was increased to 4<sup>17</sup>. For this reason, in open sources, it can also be referred to as the 27th Rocket Artillery Brigade (27th RABr).

According to the 27th RAR commander Valery Ismailov, its units were located along the entire line of contact and operated in all directions: Mariupol, Debaltsevo, Donetsk, Luhansk<sup>18</sup>.

It should be noted that the “Fair Defense” Non-Government Organization (“FD” NGO) investigated the shelling of the city of Donetsk on February 4, 2014 with the use of the “Hurricane” MLRS<sup>19</sup>, which established that the Ukrainian MLRSs were located in the area “to the north of Volnovakha, in the triangle of Olginka-Novotroitskoe-Pol’noe settlements”. This area is located 14 kilometers south of Novomikhaylovka. At the same time, the investigation of the “FD” NGO resulted in the collected evidence of the presence of the “UAF “Hurricane” MLRS in the vicinity of Volnovakha from November 2014 to February 2015”. The battery based near Novomikhaylovka was apparently redeployed to the area north of Volnovakha in November 2014.

This gives grounds to assert that there were units of the 27th RAR of the UAF in the sector from which the shelling of the Kievsky District of Donetsk was carried out on October 1, 2014.

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<sup>16</sup> May 14 – Birthday of the Sumy Artillery Regiment [published on 15.05.2015] YouTube Video hosting. URL: <https://youtu.be/cKvltiSFPNs> (accessed on 17.11.2021).

<sup>17</sup> 27th Rocket Artillery Brigade [published on 30.11.2015] Ukrainian Military Pages. URL: <https://www.ukrmilitary.com/2015/11/27th-rocket-artil> (accessed on 17.11.2021).

<sup>18</sup> Commander of the Sumy artillery regiment: “Normal combat work is going on”. Dancor online website. URL: <http://dancor.sumy.ua/articles/community/146479> (accessed on 27.11.2021).

<sup>19</sup> Donetsk shelling on February 04, 2015. “Fair Defense” Public Organization. URL: [https://oosz.su/node/43#\\_ftn11](https://oosz.su/node/43#_ftn11) (accessed on 27.11.2021).

## Persons in charge

Colonel **Valery Ismailov** was the commander of the 27th RAR from 2008 to 2019<sup>20</sup> (see Fig. 14). It is this officer who is responsible for the actions of his subordinates who fired at civilian objects in the territory of Donbass.

As a side note, the Investigative Committee of the Russian Federation accuses Ismailov of murder, attempted murder and encroachment on the life of law enforcement officers.

“Along with the investigation of criminal cases related to the use of prohibited means and methods of warfare by representatives of the armed forces and the National Guard of Ukraine, the Investigative Committee is documenting crimes against citizens of the Russian Federation,” said Svetlana Petrenko, an official representative of the Investigative Committee of Russia.

Investigators conducted a series of forensic examinations and interviewed over 1,000 witnesses. The results of these actions, together with the data of the operational-search activities of the Russian Federal Security Service and the Ministry of Internal Affairs, allowed the investigation to establish that Ukrainian colonels Grishchenko and Ismailov were involved in organizing the shelling.

“In some cases, the actions of the Ukrainian military resembled rather the tactics of terrorists who surreptitiously inflicted repeated strikes in crowded places. For example, when a group of investigators from the Investigative Committee of Russia went to inspect the shelling site in the Rostov Region, they came under the mortar fire. Moreover, the accuracy of the shell hits gradually increased, which indicated the work of the fire spotter. The victims were disposed in an area located one and a half kilometers inward the Russian territory”, added Petrenko.

Lieutenant Colonel (still a Major at the end of 2014) Dmitry Vasilyevych Gorb was the second person in the 27th RAR who could participate in preparing and bringing orders to execution. Judging by his regular appearances in the mass media and media handling, **Dmitry Gorb** also plays the role of a public relations specialist in the regiment (see Fig. 15).

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<sup>20</sup> Valery Ismailov, commander of the 27th Sumy Artillery Brigade, resigned. YouTube Video hosting. URL: <https://youtu.be/drtvBAo00tQ> (accessed on 27.11.2021).

## CONCLUSIONS

As it follows from the above, on October 1, 2014 at about 10:00 am, the Kievsky District of Donetsk came under the fire of the “Hurricane” MLRS. The first shell exploded nearby the “Poligraficheskaya Street” public transport stop in Kievsky Avenue, where a fixed-route taxi number 17 stopped at that moment. A few minutes later, another round of ammunition exploded in the courtyard of the Donetsk School No. 57, where the celebratory assembly was taking place at that moment. The 220mm jet projectiles flew in the direction from south-west to north-east (azimuth 220 degrees).

As a result of the analysis of news videos and information from the Internet, it was found that the units of the 27th Rocket Artillery Regiment of the Armed Forces of Ukraine could be located in the sector from which the shelling was carried out. The commander of the 27th RAR, Colonel Valery Shapazovych Ismailov undertook the general command of this unit. Major Dmitry Vasilievich Gorb also could be involved in the preparation and bringing orders to the execution.

## 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 part 2 (c), (e) of **Art. 8 of the Rome Statute**, war crimes also include acts committed in the event of an armed conflict not of an international character and which constitute a serious violation of Art. 3, which is common to the four Geneva Conventions of August 12, 1949, namely, any of the following acts committed against 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:

**Part 2 (c) i)** violence to life and person, in particular murder of all kinds, mutilation, cruel treatment and torture;

**Part 2 (e) i)** intentionally directing attacks against the civilian population as such or against individual civilians not taking direct part in hostilities;

**Part 2 (e) iv)** intentionally directing attacks against buildings dedicated to religion, education, art, science or charitable purposes, historic monuments, hospitals and places where the sick and wounded are collected, provided they are not military objectives;



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## ANNEXES

*Annex 1*

*Fig. 1 – “Poligraficheskaya Street” public transport stop after shelling with MLRS: above - a view from the west side of the street<sup>21</sup>; below - a view from the east side of the street<sup>22</sup>.*

<sup>21</sup> Russia not interested in creating ‘new Transnistria’ in Ukraine — Putin [published on 17.10.2014] TASS URL: <https://tass.com/world/754989> (accessed on 27.11.2021).

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*Fig. 2 – The remainder of the MLRS projectile missile part at the detonation site near the “Poligraficheskaya Street” public transport stop, Donetsk<sup>23</sup>.*



*Fig. 3 – A photo of a billboard located near the projectile detonation site<sup>24</sup>.*

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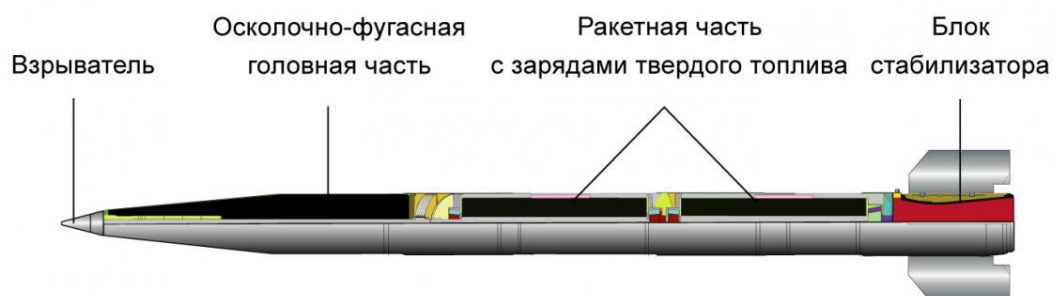
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<sup>24</sup> Shelling of Kievsky District, Donetsk, on October 1, 2014. [published on 02.10.2014] VKontakte Social Network. URL: [https://vk.com/album6043801\\_275469370](https://vk.com/album6043801_275469370) (accessed on 27.11.2021).





*Fig. 4 – Measuring the projectile caliber using a scale ruler.*



(Рисунок: С.В. Гуров)

*Fig. 5 – 9M27F unguided rocket projectile configuration<sup>25</sup>.*

<sup>25</sup> 9M27F unguided rocket projectile. Missilery website. URL: <https://missilery.info/missile/uraga/9m27f> (accessed on 27.11.2021).

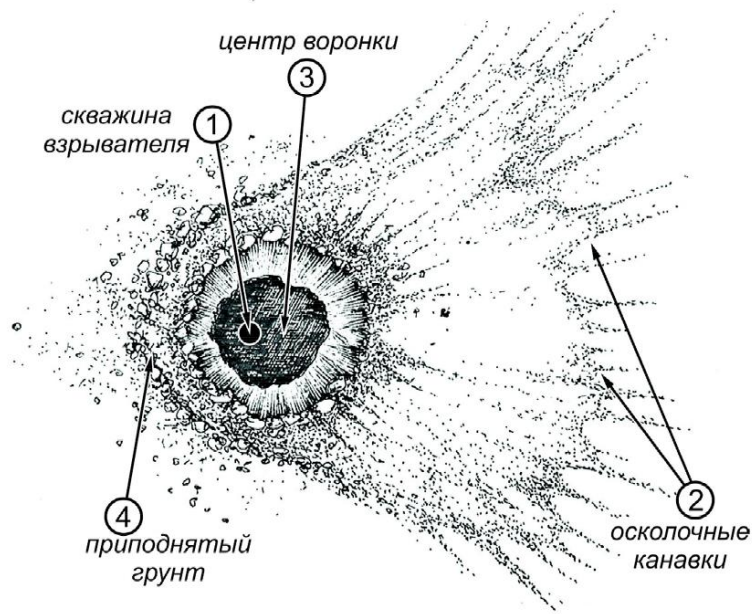


Fig. 6 – A crater from a projectile that hit the surface at a high striking angle.

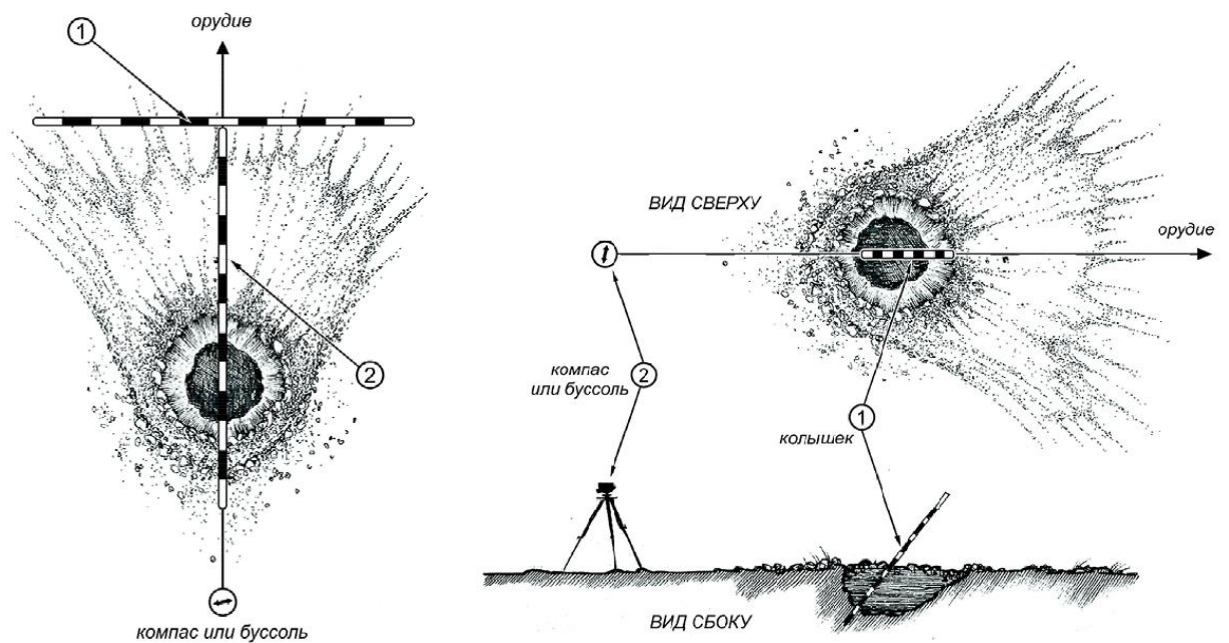


Fig. 7 – Methods for determining the fire direction on the left - the method of fragmentation grooves; on the right - the fuse hole method.



*Fig. 8 – View from the “Poligraficheskaya Street” public transport stop in the south-west direction (photo taken on 19.10.2021).*



*Fig. 9 – Determination of the fire direction by physical traces on the ground.*

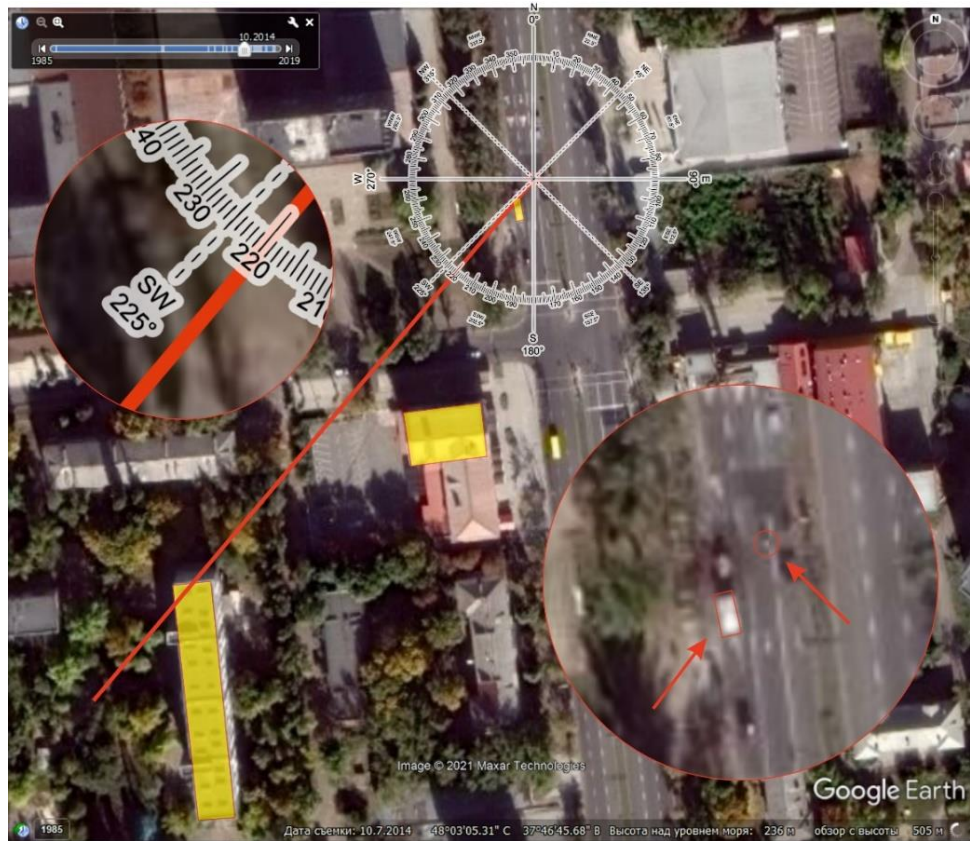


Fig. 10 - Fire direction azimuth determination using satellite imagery.



Fig. 11 – Journalists of “Novorossiia” TV channel determine the fire direction azimuth of shelling School No. 57<sup>26</sup>.

<sup>26</sup> “Hurricane” from the south-west [published on 04.10.2014] YouTube Video hosting. URL: <https://youtu.be/mku8RZk2vG4> (accessed on 27.11.2021).

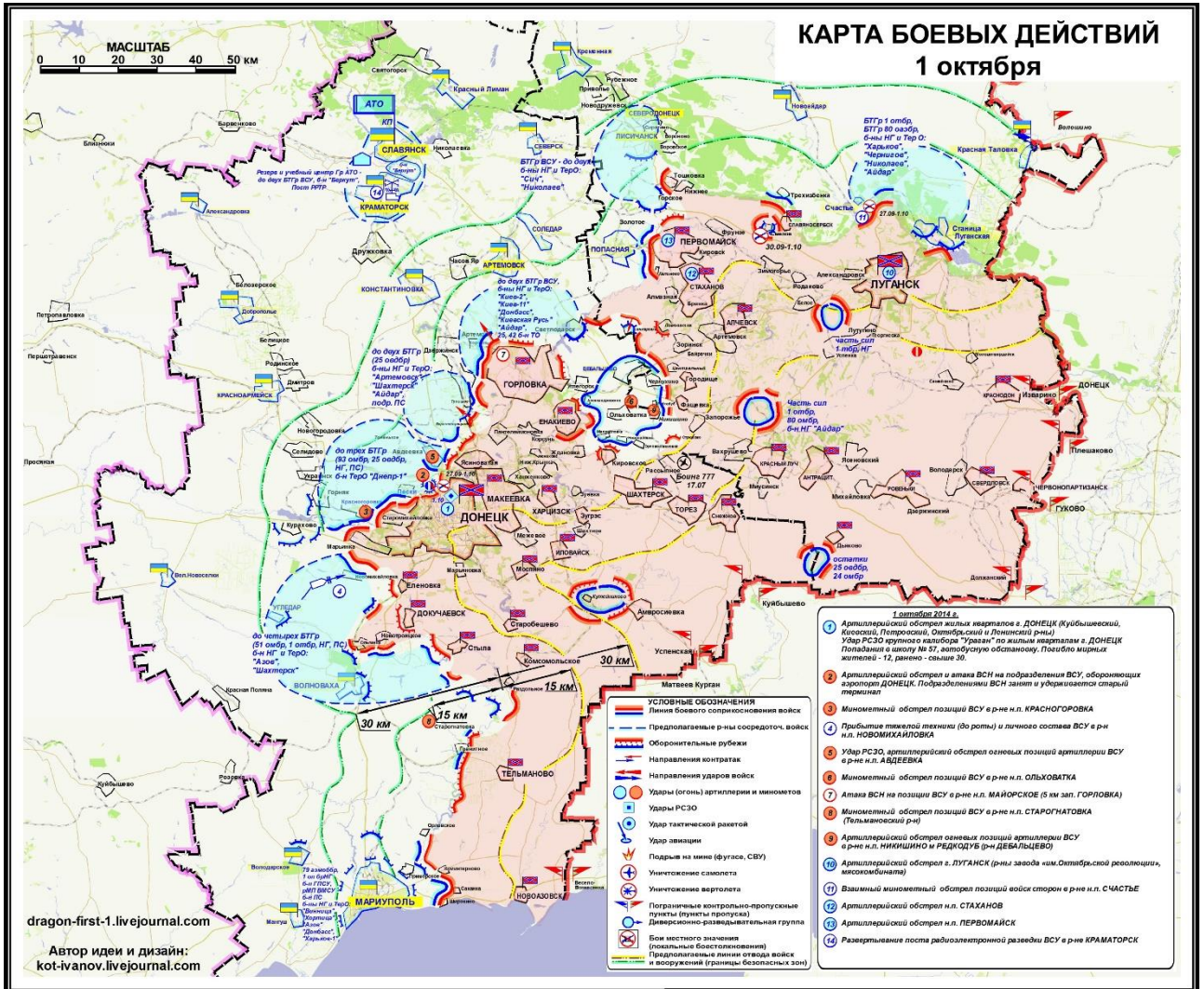


Fig. 12 – Map of military operations in Donbass as of October 1, 2014<sup>27</sup>.

<sup>27</sup> MAP as of October 1, 2014. LiveJournal Online Journal Service. URL: <https://dragon-first-1.livejournal.com/5957.html> (accessed on 27.11.2021).

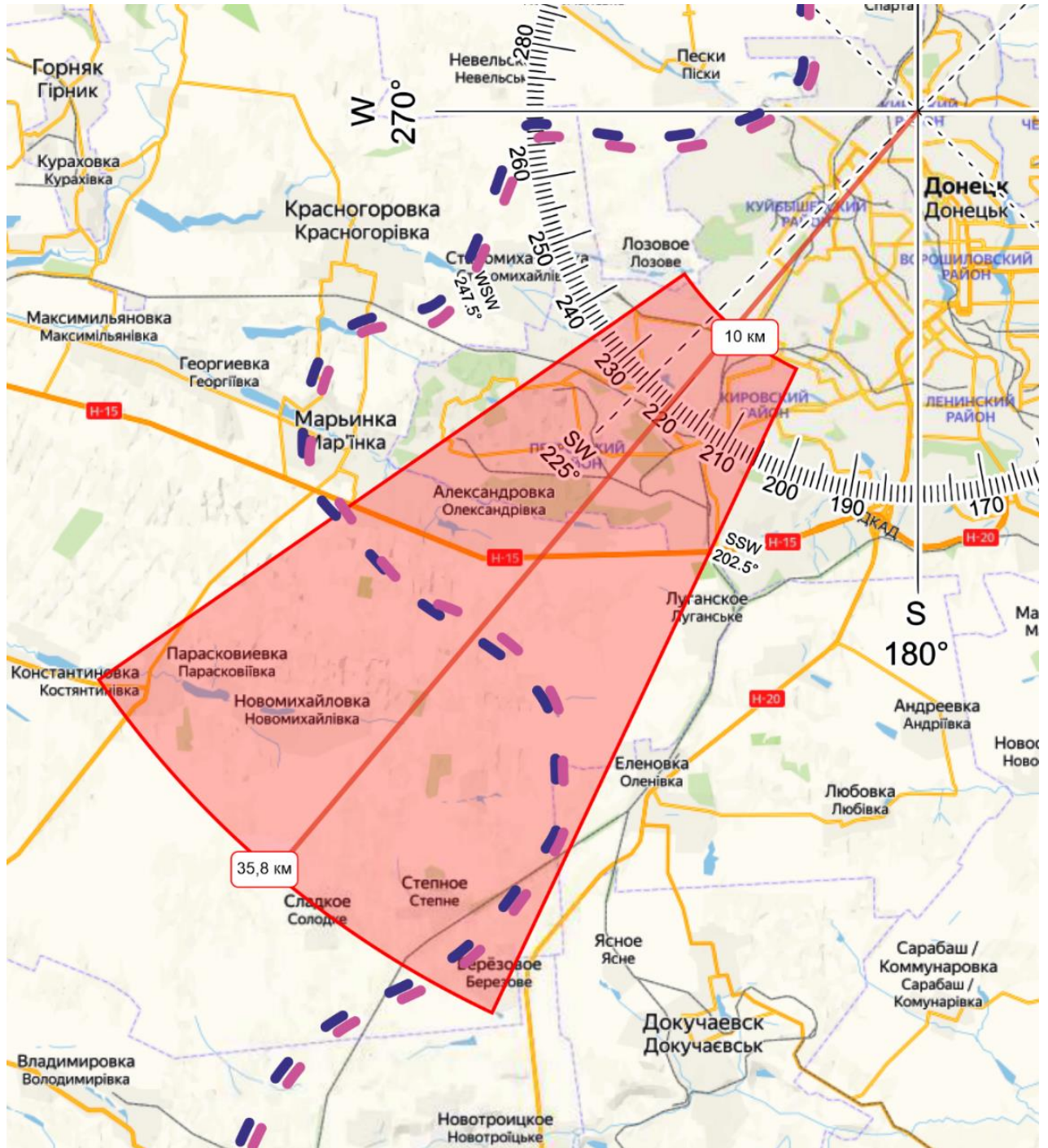


Fig. 13 – A scheme of the shelling sector



*Fig. 14 – Colonel Valery Ismailov, commander of the 27th RAR from 2008 to 2019.*



*Fig. 15 – Deputy commander of the 27th RAR Dmitry Gorb<sup>28</sup>.*

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<sup>28</sup> ROAD TO THE EAST. 27th Sumy Rocket Artillery Regiment in the ATO. YouTube Video hosting. URL: <https://youtu.be/KRjNel5u6cU> (accessed on 27.11.2021).