

# Shelling of the eastern residential Quarters of Luhansk with the use of Grad MLRS

## February 12, 2015.

*PUBLIC INVESTIGATION*

*Donetsk 31.01.2022*

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**ABBREVIATIONS**

IFV - infantry fighting vehicle

MB - mechanized battalion

OSCE - Organization for Security and Cooperation in Europe

SMB - Severia Tank Brigade

RAB - Rocket Artillery Battalion

MLRS - Multiple Launch Rocket System

MP - missile part of the projectile

SPM - self-propelled mortar

SMM - Special Monitoring Mission

JCCC - Joint Centre for Control and Coordination

UAF - Ukrainian Armed Formations

## PREAMBLE

In February 2015, active hostilities took place in the Donbass. Since February 10, 2015, the situation has been particularly tense. Ukrainian armed formations (hereinafter referred to as UAF), using multiple launch rocket systems (hereinafter referred to as MLRS), artillery, tanks and mortars, continued an active offensive in all directions, inflicted fire strikes on the positions of the LPR and DPR armed formations, and on densely populated residential areas and infrastructure facilities. There was heavy fighting in the vicinity of Debaltseve settlement<sup>1</sup>, where a significant UAF group was surrounded. To pull the forces of the armed formations of the LPR and DPR from the Debaltseve Cauldron, the UAF launched an attack in the Luhansk direction<sup>2</sup>.

In the evening on February 12, 2015, the eastern Quarters of Lugansk sustained massive artillery shelling: Volkov, Gagarin, 60th anniversary of the formation of the USSR, Dzerzhinsky and Vostochny residential Quarters.

As a result, infrastructure facilities were damaged: a gas pipeline, power lines, a building of the municipal boiler station and a heating main, a fire station, and a kindergarten. Significant damage was done to the housing stock<sup>3</sup>. **As a result of this shelling, three people were killed and at least five people were injured<sup>4</sup>.**

In the daily report based on information received as of February 13, 2015 at 18:00 (Kyiv time), Special Monitoring Mission (hereinafter SMM) of the Organization for Security and Cooperation in Europe (hereinafter OSCE)<sup>5</sup> confirmed that three civilians (two men and a woman) had died as a result of the previous night's shelling. In addition, SMM estimated that Grad rockets were fired from north north-east.

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<sup>1</sup> Novorossia Military Event chronicle for 10.02.2015 [published on 10.02.2015] Voice of Sevastopol website. URL: <http://voicesevas.ru/news/yugo-vostok/9703-hronika-voennyh-sobytyiy-v-novorossii-za-10022015.html> (accessed on 01.02.2022).

<sup>2</sup> Summary reports from the Novorossiia militia as of February 11, 2015. [published on 11.02.2015] Pravda-TV website. URL: <https://www.pravda-tv.ru/2015/02/11/122253/svodki-ot-opolcheniya-novorossii-na-11-fevralya-2015> (accessed on 01.02.2022).

<sup>3</sup> Details of the night shelling of Lugansk (list of destruction) [published on 13.02.2015] SHID INFO website. URL: [https://cxid.info/120220\\_podrobnosti-nochnogo-obstrela-luganska-spisok-razrushenii.html](https://cxid.info/120220_podrobnosti-nochnogo-obstrela-luganska-spisok-razrushenii.html) (accessed on 01.02.2022).

<sup>4</sup> Artillery shelling kills 3 civilians in Luhansk [published on 13.02.2015] SHID INFO website. URL: [https://cxid.info/120214\\_v-luganske-ot-artilleriiskogo-obstrela-pogibli-mirnyx-zhitelya.html](https://cxid.info/120214_v-luganske-ot-artilleriiskogo-obstrela-pogibli-mirnyx-zhitelya.html) (accessed on 01.02.2022).

<sup>5</sup> Latest from OSCE Special Monitoring Mission (SMM) to Ukraine based on information received as of 18:00 (Kyiv time), February 13, 2015 [published on 14.02.2015] OSCE website. URL: <https://www.osce.org/ru/ukraine-smm/141391> (accessed on: 30.01.2022).

This investigation will consider the shelling of the eastern residential Quarters of Luhansk with the use of Grad MLRS on February 12, 2015. The shelling began at approximately 20:20 (local time)<sup>6</sup>.

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<sup>6</sup> LIGHTNING! Luhansk. Shelling of the eastern residential Quarters. 12.02.2015 [published on 13.02.2015] News website. URL: <https://e-news.su/news/46459-molniya-lugansk-obstrel-vostochnyh-kvartalov-12022015.html> (accessed on 01.02.2022).

## INCIDENT LOCATION

After analyzing the eyewitnesses' testimony, the photo and video materials, we were able to identify **fourteen places** of artillery shell hits (see Fig. 1).

**Shell hit 1** (see Fig. 2, Fig. 3). The shell hit the southern corner of the roof of the kindergarten No. 129 (at 9A, Dzerzhinsky Quarter). As a result of the projectile detonation, part of the roof near the southern corner of the building was destroyed.

**Shell hit 2** (see Fig. 4, Fig. 5). The shell hit the asphalt surface about 30 meters to the north of the western corner of residential building No. 81 in Klubnaya Str. The projectile detonation resulted in a shell crater with metal fragments in the crater center, identified as the remains of the MLRS projectile missile part (hereinafter referred to as MP).

**Shell hit 3** (see Fig. 6). The shell hit occurred in the territory of the municipal boiler house (building No. 23A in Klubnaya Str). The projectile detonation resulted in the damage of the reinforced concrete fence.

**Shell hit 4** (see Fig. 7). The shell hit the roof in the western side of the residential building at 5, Dzerzhinsky Quarter. As a result of the projectile detonation, part of the roof near the western side of the building was destroyed.

**Shell hit 5** (see Fig. 8). The shell hit the eastern corner of residential building at 29, The 50th Anniversary of October Quarter. As a result of the projectile detonation, part of the roof was destroyed. Brickwork near the eastern corner was damaged.

**Shell hit 6** (see Fig. 9, Fig. 10). The shell hit paved surface about 15 meters south of the rear of the Pivnoy Bar kiosk (29G, The 50th Anniversary of October Quarter.) The projectile detonation resulted in a shell crater in the traffic lane with a metal tube in the crater center, identified as the remains of the MLRS projectile MP. A man died from shrapnel wounds at the site of the projectile detonation<sup>7</sup>.

**Shell hit 7** (see Fig. 11). The shell hit the north-western wall of the residential building at 7, Gagarin Quarter. As a result of the projectile detonation, the balcony near

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<sup>7</sup> State TV and Radio Company of the LPR. People killed during the shelling of the eastern districts of Luhansk on February 12, 2015 [published 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/VUXtjod81fk> (accessed on 01.02.2022).

the northern corner of the building was destroyed at the level of the 10th floor. There were multiple damages from shell fragments on the wall of the entrance ledge at the level of 8 to 10 floors.

**Shell hit 8** (see Fig. 12). The shell hit the ground surface a few meters north-west of the fourth entrance of the multi-storey residential building 6 in Gagarin Quarter. The projectile detonation resulted in a shell crater in the ground.

**Shell hit 9** (see Fig. 13). The shell hit the ground surface a few meters from the northern side of the residential building 10 in Gagarin Quarter. The projectile detonation resulted in a shell crater in the ground.

**Shell hit 10** (see Fig. 14, Fig. 15). The shell hit the ground surface a few meters north-west of the fourth entrance of the multi-storey residential building 13 in Gagarin Quarter. The projectile detonation resulted in a shell crater in the ground with metal fragments in the crater center, identified as the remains of the MLRS projectile MP. Multiple damages were formed on the wall of the building from the main scatter of fragments.

**Shell hit 11** (see Fig. 16). The shell hit the ground surface at about ten meters south-west from the western corner of the fire station (at 51, 30 years of Victory Street). The projectile detonation resulted in a shell crater in the ground. The upper part of the wall of the building was damaged by fragmentation.

**Shell hit 12** (see Fig. 17, Fig. 18). The shell hit the asphalt pavement about 28 meters west of the main entrance to the Absolut supermarket (at 81G, Smolenskaya Street). The projectile detonation resulted in a shell crater in the asphalt pavement with a clearly defined trace from the main scatter of fragments. There were metal fragments identified as an MLRS projectile MP in the center of the crater.

**Shell hit 13** (see Fig. 19, Fig. 20). The shell hit the roof of an extension located on the south side of the Absolut supermarket building (at 81G, Smolenskaya Street). The projectile detonation resulted in a hole in the roof of the extension, the equipment that was in the premises was damaged by fragments.

**Shell hit 14** (see Fig. 21, Fig. 22, Fig. 23, Fig. 24). The shell hit occurred in the park area between residential buildings 33 and 35 in Volkov Quarter. The exact place

of the shell hit is unknown, most likely, the detonation occurred in the treetop. The main scatter of fragments damaged glazing in three houses and a commuter bus. The body of a man who died from shrapnel wounds was found between residential buildings 33 and 35<sup>8</sup>.

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<sup>8</sup> Details of the night shelling of Luhansk (list of destruction) [published on 13.02.2015] SHID INFO website. URL: [https://cxid.info/120220\\_podrobnosti-nochnogo-obstrelya-luganska-spisok-razrushenii.html](https://cxid.info/120220_podrobnosti-nochnogo-obstrelya-luganska-spisok-razrushenii.html) (accessed on 01.02.2022).

## **WEAPON TYPE**

### **Projectile debris**

Remains of rocket MP were found at shell hits 2, 6, 10, and 12 (see Fig. 5, Fig. 9, Fig. 14, Fig. 17).

At the beginning of the war in Donbass, only three types of MLRS were used: Grad, Uragan and Smerch. In the case of shell hit 6, the holes for attaching the tail to the shell body have a curly shape characteristic of Grad MLRS projectiles (see Fig. 25, Fig. 26).

The rectangular shape of the holes for attaching the tail to the shell body is typical for the shells of the Uragan and Smerch MLRS<sup>9</sup>.

In addition, in several videos, representatives of the Ministry of Emergency Situations claimed that these were the remains of a Grad MLRS rocket<sup>10</sup>.

Also, the OSCE SMM report stated based on the information received as of February 13, 2015, 18:00 (Kyiv time): In 30 years of Victory Street, the SMM observed a severely damaged bakery, which sustained a direct MLRS Grad rocket hit on its roof. The SMM observed also the body of another Grad rocket in the ground, which it estimated to have been fired from the north-east. In Vostochnyi Quarter a five-storey residential building sustained a direct hit, which destroyed two apartments on the top floor. Based on fragments and the impact crater on the site, the SMM estimated that the building was hit by a Grad, fired from north – north-east. In the Joint Centre for Control and Coordination (hereinafter the JCCC), the “emergency services department of the LPR” and the local hospital told the SMM that a woman was wounded as a result. In Dzerzhinskiy Street, the SMM observed that a kindergarten

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<sup>9</sup> Shelling of the town of Makeyevka with the use of BM-21 Grad multiple launch rocket systems on August 19, 2014. Lostarmour website. URL: <https://lostarmour.info/articles/obstrel-goroda-makeevka-s-primeneniem-sistem-zalпового-ognya-bm-21-grad-19-avgusta-2014-goda/> (accessed on 01.02.2022).

<sup>10</sup> Night shelling of Luhansk on February 13. Consequences [published on 14.02.2015] YouTube Video hosting. URL: [https://youtu.be/5SoxDxl\\_vqg](https://youtu.be/5SoxDxl_vqg) (accessed on 01.02.2022).

THE HEAVIEST SHELLING OF LUHANSK IN THE LAST HALF-YEAR OF 2015 NEWS FROM UKRAINE TODAY [published 12.02.2015] YouTube Video hosting. URL: <https://youtu.be/WcverPafPCI> (accessed on 01.02.2022).



had suffered a direct hit to the roof by what the SMM estimated to have been a Grad rocket. The SMM observed that the impact had destroyed part of the roof, at least one room of the facility and shattered windows. In Klubnaya Street, the SMM observed remnants of a Grad rocket on the tarmac, which the SMM assessed had caused damages to the walls and roofs of nearby houses and shattered windows.<sup>11</sup>

All the above facts give us grounds to assert that **the artillery shelling of the eastern Quarters of the city of Luhansk considered in this investigation was carried out using the Grad MLRS.**

### **BM-21 Grad MLRS**

The projectile for firing from 9K51 Grad MLRS consists of a fuze, head and rocket parts. As a result of contact with an obstacle, the detonator initiates an explosion of the shell head, which scatters into fragments. The rocket often remains more or less intact, though deformed. It is usually found either inside the shell crater, or in the immediate vicinity of it. For clarity, we present the design and technical characteristics of the most common projectile used for firing from the 9K51 Grad MLRS (see Fig. 27, Fig. 28).

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<sup>11</sup> Latest from OSCE Special Monitoring Mission (SMM) to Ukraine based on information received as of 18:00 (Kyiv time), February 13, 2015 [published on 14.02.2015] OSCE website. URL: <https://www.osce.org/ru/ukraine-smm/141391> (accessed on: 30.01.2022).

## PROBABLE SECTOR OF SHELLING

### Direction

As noted above, the OSCE SMM determined that in the case under consideration in this investigation, Grad MLRS rockets were fired from the north - north-east.

The video titled “How Ukraine shelled Luhansk and “mocked” it (about the shelling on February 12, 2015)” makes it possible to determine the direction more accurately<sup>12</sup>. It features a video recording of the shelling of Luhansk considered in this investigation, which shows a MLRS salvo, explosions of shells in the territory of residential areas of the city, and the sounds of the salvo and shell explosions are clearly heard.

Another video of the same author<sup>13</sup> helps determine that the shooting point is located next to the market in the 50 years of October Quarter, which is located to the left of the cameraman. In addition, there are two high-rise buildings located side by side in the frame, and six pipes (see Fig. 29). The shooting point is also apparently located on one of the upper floors of a high-rise building.

Considering the above facts, the only place where such a shot can be made is the upper floors of the residential building at 1, Gagarin Quarter.

We selected two frames from the above plot: in the first one, the place of the MLRS salvo can be clearly seen, in the second, the city silhouette is clearly visible against the background of flashes from explosions. Moreover, the camera does not move during video shooting, which gives us the opportunity to superimpose one frame on another and see the place of the salvo against the background of the city silhouette (see Fig. 30).

The resulting image clearly shows the silhouette of high-rise buildings No. 3 and 3A in Gagarin Quarter, the pipes of the boiler station and the site of the MLRS salvo.

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<sup>12</sup> How Ukraine shelled Luhansk and “mocked” it (about the shelling on February 12, 2015) [published on 15.02.2015] YouTube Video hosting. URL: <https://youtu.be/xAwTjtsL1Kc> (accessed on 01.02.2022).

<sup>13</sup> 2014.10.01 Rynok. YouTube Video hosting. URL: [https://youtu.be/\\_h060h97eYQ](https://youtu.be/_h060h97eYQ) (accessed on 01.02.2022).

Knowing the shooting location, we can determine the angle between the azimuths in the direction of the boiler station pipes and the western corner of the high-rise building, which is 13 degrees (see Fig. 31), and in turn allows us to calculate the angle between the azimuths to the boiler station pipes and to the place of the MLRS salvo using the proportional method; thus, this angle makes 9 degrees. This, in turn, gives us the opportunity to determine the direction from which the shelling in question was carried out (see Fig. 32).

**The azimuth of the direction from which the shelling was carried out is 30 degrees**, which confirms and refines the OSCE SMM data.

### **Firing range**

The firing range of the BM-21 Grad MLRS using the most common types of unguided high-explosive fragmentation projectiles is from 5 to 20.4 km<sup>14</sup>.

It is noteworthy that the video titled “How Ukraine shelled Luhansk and “mocked” it (about the shelling on February 12, 2015)”<sup>15</sup> contains reasonable arguments that allow us to determine that the shelling was carried out from a distance of about 15 km. These arguments are given below.

It is possible to sequentially identify in the video: the time of the start of flashes from the MLRS salvo; the time of the start of the salvo sound audibility; the time of the start of explosion bursts; the time when the sound of explosions began to be heard. Thus, it takes 46 seconds between the flashes and the salvo sound. Knowing the air temperature and the speed of sound, we can determine the distance covered by sound in a specified time. The air temperature that night was about -10 degrees Celsius. The

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<sup>14</sup> “Grad” MLRS: history and performance characteristics. Gunsfriend URL: <https://gunsfriend.ru/rszo-grad-bm-21-tehnicheskie-harakteristiki-tth-opisanie-i-istoria-sozdania-reaktivnoj-sistemy-zalpovogo-ogna-dalnost-ustanvki/> (accessed on 29.11.2021).

<sup>15</sup> How Ukraine shelled Luhansk and “mocked” it (about the shelling on February 12, 2015) [published on 15.02.2015] YouTube Video hosting. URL: <https://youtu.be/xAwTjtsL1Kc> (accessed on 01.02.2022).

speed of sound at this temperature is about 325 m/s<sup>16</sup>. Accordingly, the distance covered by sound in 46 seconds will be about 15 km.

Thus, taking into account the azimuth of 30 degrees and an error of plus or minus 10 degrees, and also regarding the firing range of 15 km with an error of plus or minus 3 km, we can map the shelling sector. Most of its territory is occupied by a forest area located to the north of Stanytsia Luhanska (see Fig. 33).

In addition, there is a Stalingrad checkpoint within the boundaries of the sector (at the exit from Makarovo settlement) Coordinates: 48°41'26.9"N 39°31'16.8"E<sup>17</sup>.

In those days, the demarcation line ran approximately along the Seversky Donets River. Considering this, it can be argued that the sector from which the shelling was carried out was in the territory controlled by the UAF.

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<sup>16</sup> The speed of sound in air at different temperatures. From -150 to 1000 °C. Tehtab website. URL: <https://tehtab.ru/Guide/GuidePhysics/Sound/SoundSpeedAirTemperature/> (accessed on 01.02.2022).

<sup>17</sup> The "Lvivsky Grove" will be planted in Stanytsia Luhanska. There will be three hectares of forest nearby the Stalingrad checkpoint. Svoi.city website. URL: <https://svoi.city/articles/159856/v-stanice-luganskoj-vysadyat-3-ga-lesa-ozelenyat-budut-les-v-rajone-blokposta-stalingrad> (accessed on 01.02.2022).

## MILITARY PRESENCE

The 2nd mechanized battalion (hereinafter referred to as the 2nd MB) of the 17th Separate Tank Brigade (hereinafter referred to as the 17th STBr) was deployed in the above sector. This is confirmed by the video “Stalingrad”. Stanytsia Luhanska” of the “Hromadske TV” project published on February 10, 2015. This video shows fighters of the 2nd MB of the 17th STBr, who talk about how they are fighting at a checkpoint called “Stalingrad” that is located in Stanytsia Luhanska<sup>18</sup>.

The presence of the 17th STBr in the vicinity of Stanytsia Luhanska is also confirmed by the Ukrainian Internet resource “The Book of Memory of the Fallen for Ukraine”, which contains information that in the period from January 16 to May 15, 2015 **five** people from among the military personnel of the 17th STBr were killed nearby Stanytsia Luhanska (see Fig. 34 )<sup>19</sup>.

In addition, photographs of the servicemen of the second mechanized battalion of the 17-th STBr, who arrived in Donbass on November 19, 2014, were found on the Internet; the photos show them standing near the sign “Stanytsia Luhanska” (see Fig. 35)<sup>20</sup>.

An article by Ukrainian historian Mikhail Zhirokhov cites the memoirs of one of the officers of the 17th STBr: *“The second battalion could only be completed until October, when the equipment arrived. Because there was not even equipment in the brigade, this unit was formed from scratch. The second battalion encamped in the vicinity of Stanytsia Luhanska. It was our battalion, but it is too late to call it ours, because really there was no one from the 17th tank brigade, from the old enlisted men. These were people who were suddenly caught somewhere, changed into the uniform*

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<sup>18</sup> “Stalingrad”. Stanytsia Luhanska. [published on 10.02.2015] YouTube Video hosting. URL: <https://youtu.be/9Gh9GbjGUTU> (accessed on 01.02.2022).

<sup>19</sup> The 17th Separate Tank Brigade. Book of memory of the fallen for Ukraine. URL: <https://memorybook.org.ua/units/17tbr.htm> (accessed on 01.02.2022).

<sup>20</sup> The 17th Separate Tank Brigade in 2014. BMP VSU website. URL: <https://www.bmpvsu.ru/018.php> (accessed on 01.02.2022).

*and said that ok, you are now a menace and the pride of the nation, something like that”*.<sup>21</sup>.

The 2nd MB of the 17th STBr stayed in Stanytsia Luhanska until May 2015. Moreover, the end of their stay was associated with a scandal. The serviceman got a signed order to transfer to another military unit. But it so happened that the soldiers were not enrolled in another brigade and they became “no one’s”<sup>22</sup>.

A military ID was shown in the video report of the “TSN” TV channel titled “Defenders of Stanytsia Luhanska were housed in a barn” dated June 1, 2015. It contains the information that a serviceman of the 2nd MB of the 17th STBr took part in the hostilities in Stanytsia Luhanska from November 19, 2014 until May 22, 2015 (see Fig. 36).

These facts indicate that units of the 17th STBr were present in the area of Stanytsia Luhanska from November 19, 2014 until May 22, 2015.

**As for the presence of the Grad MLRS in service with this unit**, it is worth noting that the Ukrainian command formed battalion-tactical groups, which included motorized rifle units reinforced with tanks and artillery to solve combat missions. Thus, for example, the battalion-tactical group of the 1st STBr, which had a base camp in the summer and autumn of 2014 near the settlement. Vesela Gora fought using tanks and IFVs supported by the Grad MLRS<sup>23</sup>.

Historian Mikhail Zhirokhov wrote about the creation of such groups from units of the 17th STBr in his article “Steel Warriors of Ukraine: The 17th Separate Tank Brigade in Donbass”<sup>24</sup>.

Before the start of the war in Donbass, there was no rocket artillery battalion (hereinafter referred to as RAB) as part of the 17th STBr; however, with the outbreak

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<sup>21</sup> Steel warriors of Ukraine: The 17th Separate Tank Brigade in Donbass. Frazza website. URL: <https://frazza.com/analytics/256488-stalnye-voiny-ukrainy-17-ja-tankovaja-brigada-na-donbasse-> (accessed on 01.02.2022).

<sup>22</sup> A riot is brewing in the 17th Tank Brigade (2nd Battalion)! [published on 15.07.2015] Odnoklassniki Social Network. URL: <https://ok.ru/video/9513013688> (accessed on 01.02.2022).

Defenders of Stanytsia Luhanska were housed in a barn [published on 01.06.2015] YouTube Video hosting. URL: <https://youtu.be/YcCZF-fuI6k> (accessed on 01.02.2022).

<sup>23</sup> Luhansk under siege. Vesela Gora [published on 01.10.2014] YouTube Video hosting. URL: <https://youtu.be/uuVS4gkq5tE> (accessed on 29.11.2021).

<sup>24</sup> Steel warriors of Ukraine: The 17th Separate Tank Brigade in Donbass. Frazza website. URL: <https://frazza.com/analytics/256488-stalnye-voiny-ukrainy-17-ja-tankovaja-brigada-na-donbasse-> (accessed on 01.02.2022).

of war, a combined group was formed on the basis of the second mechanized battalion, which, in addition to tanks, included two artillery batteries (one of them was a rocket battery), a reconnaissance platoon, a repair platoon, a material support platoon and a first-aid post.

The loading process in Kryvyi Rih to send the aforementioned battalion to Donbass can be seen in the video titled “August 29, 2014. The 17th STBr. Kryvyi Rih”. The footage clearly shows how people and equipment are loaded<sup>25</sup>. The latter includes infantry fighting vehicles (hereinafter referred to as IFVs), tanks, self-propelled artillery mortars (hereinafter referred to as SPMs) and the Grad MLRS (see Fig. 37).

In addition, a video “Military equipment of Dnipropetrovsk” was found on the Internet, which shows a military convoy moving already in Dnipropetrovsk on August 30, 2014. The convoy included, among other vehicles, the Grad MLRS and T-64B/BV tanks with hull side numbers 232 and 13<sup>26</sup>. The Lost Armour website, which analyzes the movement of military equipment, contains evidence that tanks with these hull side numbers belonged to the 17th STBr (see Fig. 38)<sup>27</sup>.

It becomes clear that this military convoy was from the 17th STBr. This fact confirms that this consolidated battalion was armed with the Grad MLRS.

Thus, all the above facts confirm that on February 12, 2015, the 2-nd MB of the 17th STBr was present in the sector from which the shelling of Luhansk was carried out. Moreover, this unit operated as part of the consolidated group that included two artillery batteries (one of them was a rocket battery).

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<sup>25</sup> August 29, 2014. The 17th STBr. Kryvyi Rih”. YouTube Video hosting. URL: <https://youtu.be/rDy7xMooLJI> (accessed on 01.02.2022).

<sup>26</sup> Military equipment of Dnipropetrovsk [published on 30.08.2014] YouTube Video hosting. URL: <https://youtu.be/t5MNtwfUWx8> (accessed on 01.02.2022).

<sup>27</sup> The main tank T-64B/BV in the Armed Forces of Ukraine. Lostarmour website. URL: <https://lostarmour.info/vsu/t-64bv/> (accessed on 01.02.2022).

## Persons in charge

In 2015, the general command of the 17th STBr was carried out by Colonel Sergiy Litvinov<sup>28</sup> (see Fig. 39). Precisely he is responsible for the actions of his subordinates.

In addition, deputy brigade commander Volodymyr Dribnokhod (see Fig. 40),<sup>29</sup> who, a propos, was appointed commander of the 17th STBr in 2017, could have been related to what happened.

The direct command of the 2nd MB of the 17th STBr was carried out by battalion commander Sergiy Sukhina (see Fig. 41)<sup>30</sup>.

Also, Yuri Bass, deputy commander of the 2nd MB for work with personnel, may have information about the shelling considered in this investigation (see Fig. 42)<sup>31</sup>.

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<sup>28</sup> The memorial complex “To the Soldiers of the 17th Tank Brigade” was opened in Kryvyi Rih [archive version] Virtual reception of the People’s Deputy of the Verkhovna Rada of Ukraine of the VIII convocation. URL: <https://web.archive.org/web/20190213212840/http://www.galchenko-office.com/single-post/2016/09/17/В-Кривом-Розе-состоялось-открытие-мемориального-комплекса-Воинам-17-й-танковой-бригады> (accessed on 01.02.2022).

<sup>29</sup> The brigade commander of the 17th Kryvyi Rih STBr accused of drunkenness and urged not to forget that there is a war. 0564 website of the city of Kryvyi Rih. URL: <https://www.0564.ua/news/2199477/kombriga-17-j-krivorozskoj-otb-obvinili-v-panstve-i-prizvali-ne-zabyvat-cto-idet-vojna> (accessed on 01.02.2022).

<sup>30</sup> SECOND ANNIVERSARY OF THE CREATION OF THE 2ND MECHANICAL BATTALION OF THE 17TH TANK BRIGADE. YouTube Video hosting. URL: <https://youtu.be/oG98EExu74s> (accessed on 01.02.2022).

<sup>31</sup> Battalion. History of one unit. YouTube Video hosting. URL: <https://youtu.be/CwbZTS42Eys> (accessed on 01.02.2022).



## CONCLUSIONS

It follows from the above that on February 12, 2015 at around 20:20 local time, the eastern residential Quarters of the city of Luhansk sustained shelling with the use of Grad MLRS, resulting in the civilians' deaths and injuries.

As a result of the analysis of news videos and information from the Internet, it was found that the 2nd MB of the 17th STBr, operating under cover of rocket-launching artillery from the brigade artillery group, could be located in the sector from which the shelling was carried out.

In 2015, the general command of the 17th STBr was carried out by Colonel Sergiy Litvinov, precisely he is responsible for the actions of his subordinates. In addition, his deputy Volodymyr Dribnokhod could have been related to the incident.

The direct command of the 2nd MB of the 17th STBr was carried out by battalion commander Sergiy Sukhina. Also, Yuri Bass, deputy commander of the 2nd MB for work with personnel, may have information about the shelling considered in this investigation.

## 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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92. The first shots from the place of the shelling [published on 12.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-61706629?day=12022015&w=wall-61706629\\_617554&z=photo-61706629\\_354418018%2Falbum-61706629\\_00%2Frev](https://vk.com/wall-61706629?day=12022015&w=wall-61706629_617554&z=photo-61706629_354418018%2Falbum-61706629_00%2Frev) (accessed on 01.02.2022).

93. Consequences of the shelling of Luhansk (photo, updated) [published on 13.02.2015] Luhansk website. URL: <http://lugansk.co.ua/articles/1438/posledstviya-obstrela-luganska-foto-obnovlyaetsya> (accessed on 01.02.2022).
94. Consequences of the shelling of Luhansk on 13 02 15, destruction in Luhansk. News of Ukraine Today [published on 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/XCwNFL-cSIY> (accessed on 01.02.2022).
95. Operation of boiler and water stations [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-61706629\\_622877](https://vk.com/wall-61706629_622877) (accessed on 01.02.2022).
96. Effects of the shelling [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2013759](https://vk.com/wall-23048082_2013759) (accessed on 01.02.2022).
97. THE HEAVIEST SHELLING OF LUHANSK IN THE LAST HALF-YEAR OF 2015 NEWS FROM UKRAINE TODAY [published 12.02.2015] YouTube Video hosting. URL: <https://youtu.be/WcverPafPCI> (accessed on 01.02.2022).
98. Media: Luhansk was shelled from Grads [published on 13.02.2015] Gordon website. URL: <https://gordonua.com/news/war/smi-lugansk-obstreljali-iz-gradov-66267.html> (accessed on 01.02.2022).
99. Three civilians killed in shelling in Luhansk [published 13.02.2015] Zvezda website. URL: <https://tvzvezda.ru/news/201502130308-56di.htm> (accessed on 01.02.2022).
100. The blow of security forces deprived Luhansk of communication and electricity [published on 12.02.2015] Vesti website. URL: <https://www.vesti.ru/article/1740262> (accessed on 01.02.2022).

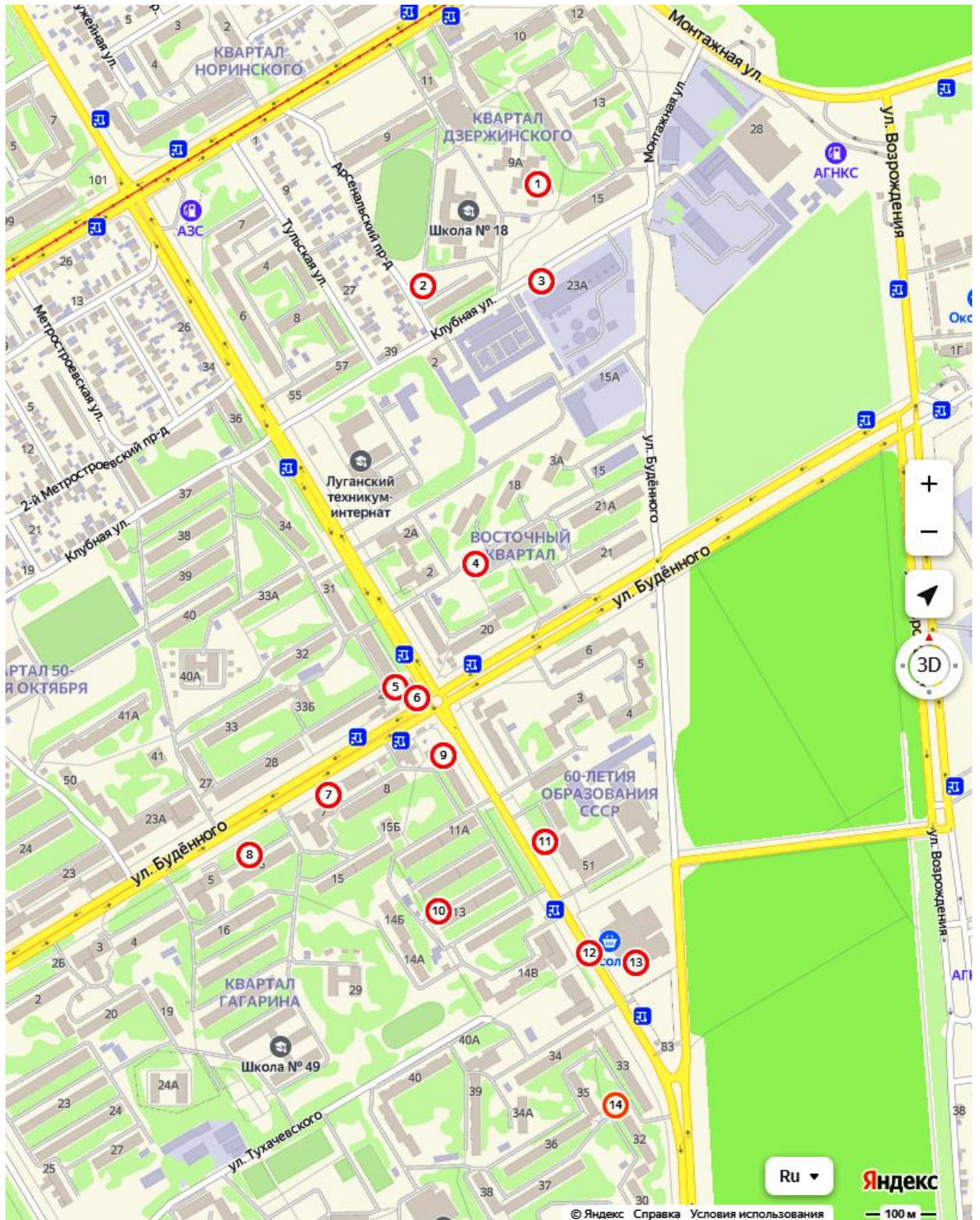


Fig. 1 - The scheme of shelling of Luhansk eastern quarters that occurred on February 12, 2015 at 20:20 (local time).



*Fig. 2 - The roof of the kindergarten No. 129, destroyed by shell hit 1<sup>32</sup>.*

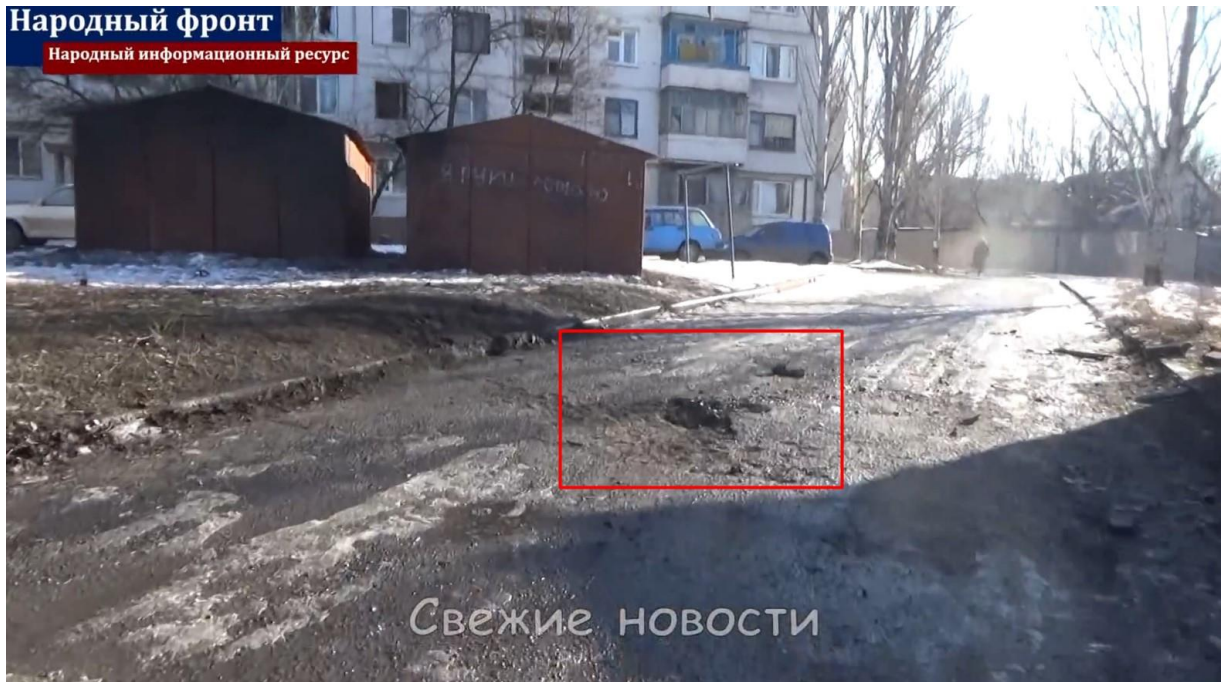


*Fig. 3 – The trail of a shell hit 1 on the roof of Nursery School No. 129 on the satellite image dated 23.02.2015*

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<sup>32</sup> 14, Dzerzhinskiy Quarter and the kindergarten [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2013476](https://vk.com/wall-23048082_2013476) (accessed on 01.02.2022).





*Fig. 4 – A crater from shell hit 2 on an asphalt surface 30 meters north of the western corner of the residential building at 81, Klubnaya street, Lugansk<sup>33</sup>.*



*Fig. 5 - Metal fragments, identified as the remains of a MLRS projectile MP, in the crater from shell hit 2<sup>34</sup>.*

<sup>33</sup> Night shelling of Luhansk on February 13. Consequences [published on 14.02.2015] YouTube Video hosting. URL: [https://youtu.be/5SoxDxl\\_vqg](https://youtu.be/5SoxDxl_vqg) (accessed on 01.02.2022).

<sup>34</sup> Night shelling of Luhansk on February 13. Consequences [published on 14.02.2015] YouTube Video hosting. URL: [https://youtu.be/5SoxDxl\\_vqg](https://youtu.be/5SoxDxl_vqg) (accessed on 01.02.2022).



*Fig. 6 – The building of the municipal boiler station damaged by shell hit 3<sup>35</sup>.*



*Fig. 7 – The roof of the building damaged by shell hit 5<sup>36</sup>.*

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<sup>35</sup> Luhansk, shelling of the Eastern residential Quarters on 12.02.2015 [published on 14.02.2015] YouTube Video hosting. URL: <https://youtu.be/I2rIJSrXkkl> (accessed on 01.02.2022).

<sup>36</sup> Luhansk, shelling of the Eastern residential Quarters on 12.02.2015 [published on 14.02.2015] YouTube Video hosting. URL: <https://youtu.be/I2rIJSrXkkl> (accessed on 01.02.2022).



*Fig. 8 –The eastern corner of the residential building destroyed as a result of shell hit 5<sup>37</sup>.*



*Fig. 9 - Metal tube, identified as the remains of a MLRS projectile MP, in the asphalt pavement at the site of shell hit 6<sup>38</sup>.*

<sup>37</sup> The shelling on February 12, 2015 in Vostochny Quarter (50 years of October ring) [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010232](https://vk.com/wall-23048082_2010232) (accessed on 01.02.2022).

<sup>38</sup> Luhansk today. Effects of shelling on 13.02.2015 [published on 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/n4lrrAjFf3w> (accessed on 01.02.2022).



*Fig. 10 – The body of a man who died of shrapnel wounds a few meters from shell hit 6<sup>39</sup>.*



*Fig. 11 – Destroyed balcony and traces from the main scatter of fragments at the impact site of shell hit 7<sup>40</sup>.*

<sup>39</sup> Package for a fifty-kopeck piece. Armistice Holiday [published on 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/fH22XMogBzI> (accessed on 01.02.2022).

<sup>40</sup> Luhansk, shelling of the eastern residential quarters on 12.02.2015. Odnoklassniki Social Network. URL: <https://ok.ru/video/1095746392443> (accessed on 01.02.2022).



*Fig. 12 – The shell crater found at the site of shell hit 8<sup>41</sup>.*

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<sup>41</sup>The effects of shelling on February 12, 2015 in 6, 10, 13, Gagarin Quarter. 50 years of October, Kolos. [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010170](https://vk.com/wall-23048082_2010170) (accessed on 01.02.2022).



*Fig. 13 – The shell crater found at the site of shell hit 9<sup>42</sup>.*

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<sup>42</sup>The effects of shelling on February 12, 2015 in 6, 10, 13, Gagarin Quarter. 50 years of October, Kolos. [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010170](https://vk.com/wall-23048082_2010170) (accessed on 01.02.2022).



*Fig. 14 - Remains of a MLRS projectile RF in a crater at the impact site of shell hit10<sup>43</sup>.*



*Fig. 15 – Consequences of a projectile detonation a few meters from shell hit 10<sup>44</sup>.*

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<sup>43</sup>The effects of shelling on February 12, 2015 in 6, 10, 13, Gagarin Quarter. 50 years of October, Kolos. [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010170](https://vk.com/wall-23048082_2010170) (accessed on 01.02.2022).

<sup>44</sup>The effects of shelling on February 12, 2015 in 6, 10, 13, Gagarin Quarter. 50 years of October, Kolos. [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010170](https://vk.com/wall-23048082_2010170) (accessed on 01.02.2022).



*Fig. 16 – A crater from shell hit 11<sup>45</sup>.*



*Fig. 17 - Remains of a MLRS projectile RF in a crater at the impact site of shell hit 12<sup>46</sup>.*

<sup>45</sup> 13/02/2015 Shelling of Kievskiy Avenue [published on 01.10.13] YouTube Video hosting. URL: <https://youtu.be/V0zLRyxcNng> (accessed on 01.02.2022).

<sup>46</sup> The city of Luhansk sustained massive shelling from Grad MLRS [published 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/6xDa9rPEWhk> (accessed on 01.02.2022).





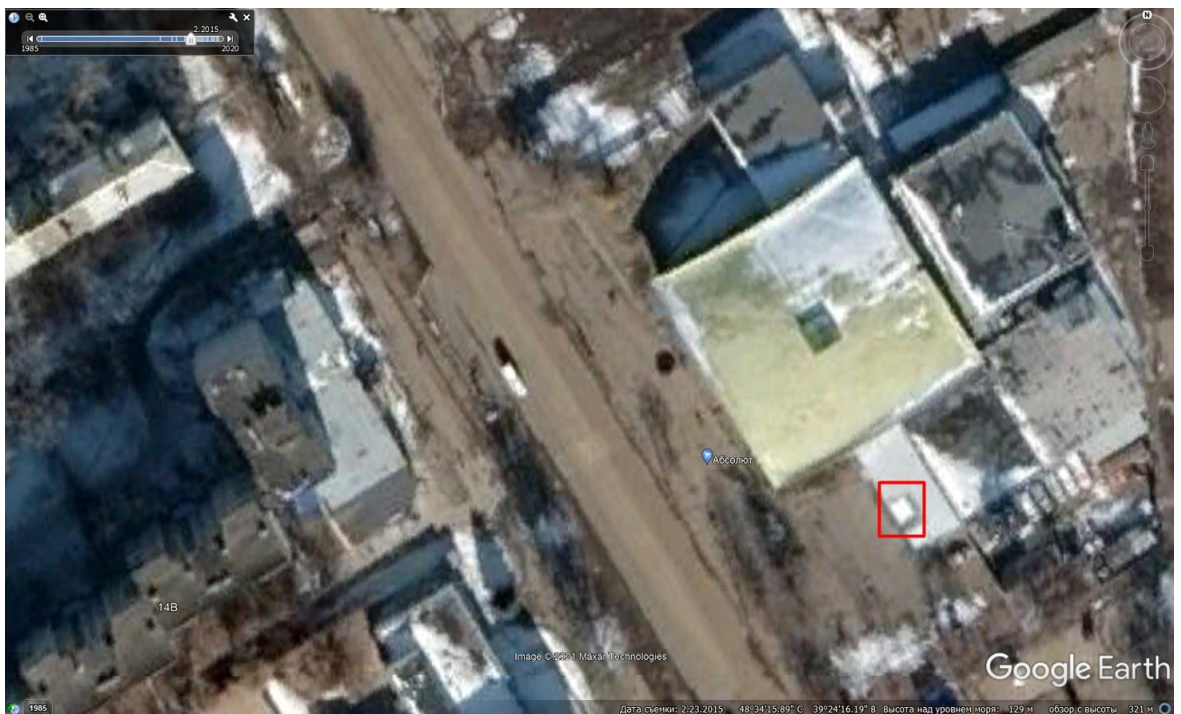
*Fig. 18 – The crater from shell hit 12, located under the torn off sign of the ATB supermarket<sup>47</sup>.*

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<sup>47</sup>The effects of shelling on February 12, 2015 in 6, 10, 13, Gagarin Quarter. 50 years of October Str, Kolos. [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082\\_2010170](https://vk.com/wall-23048082_2010170) (accessed on 01.02.2022).



*Fig. 19 – Part of the roof damaged by shell hit 13<sup>48</sup>.*



*Fig. 20 – The trail of a shell hit 13 in the roof of the Absolut supermarket on the satellite image dated 23.02.2015.*

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<sup>48</sup> Kolos, Volkov Quarter [published on 13.02.2015] VKontakte Social Network. URL: [https://vk.com/wall-23048082?day=13022015&w=wall-23048082\\_2014481](https://vk.com/wall-23048082?day=13022015&w=wall-23048082_2014481) (accessed on 01.02.2022).



*Fig. 21 – The treetop in which the projectile detonated during shell hit 14<sup>49</sup>.*



*Fig. 22 – The commuter bus damaged by the main scatter of fragments a few meters from shell hit 14<sup>50</sup>*

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<sup>49</sup> Shelling of 32, Volkov Quarter, Luhansk 12.02.2015 [published on 15.02.2015] YouTube Video hosting. URL: <https://youtu.be/rr-ctkRcyx4> (accessed on 01.02.2022).

<sup>50</sup> 13/02/2015 Shelling of Kievskiy Avenue [published on 01.10.13] YouTube Video hosting. URL: <https://youtu.be/V0zLRyxcNng> (accessed on 01.02.2022).



*Fig. 23 – The blood traces and personal belongings of a man who died of shrapnel wounds a few meters from shell hit 14<sup>51</sup>.*



*Fig. 24 – The body of a man who died of shrapnel wounds a few meters from shell hit 14<sup>52</sup>.*

<sup>51</sup> The city of Luhansk sustained massive shelling from Grad MLRS [published 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/6xDa9rPEWhk> (accessed on 01.02.2022).

<sup>52</sup> Package for a fifty-kopeck piece. Armistice Holiday [published on 13.02.2015] YouTube Video hosting. URL: <https://youtu.be/fH22XMogBzl> (accessed on 01.02.2022).



Fig. 25 – The remains of the 9K51 Grad MLRS projectile found near Krasnohorovka town on 28.08.2016.<sup>53</sup>

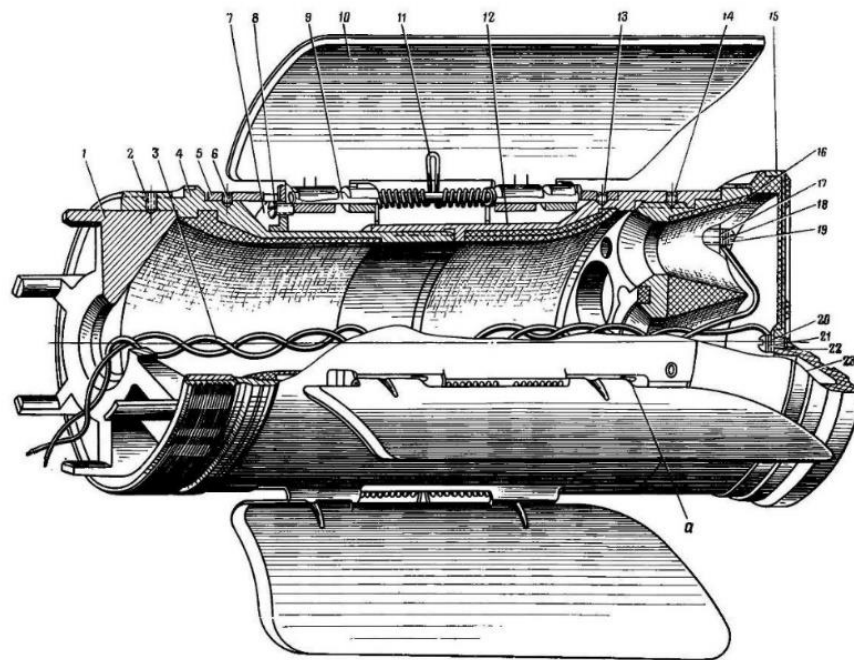


Рис. 101. Блок стабилизатора:  
 1 – хвостовая диафрагма; 2 – установочный винт; 3 – провод; 4 – передний конус; 5 – обтекатель; 6 – установочный винт; 7 – кольцо; 8 – винт; 9 – ось; 10 – довасть стабилизатора; 11 – пружина; 12 – задний конус; 13 – установочный винт; 14 – установочный винт; 15 – контактный сектор; 16 – крышка солено; 17 – шайба; 18 – пружинная шайба; 19 – контактный винт; 20 – шайба; 21 – пружинная шайба; 22 – контактный винт; 23 – контактная крышка; а – паз

Fig. 26 – The drawing of the 9K51 Grad MLRS projectile stabilizer unit from the book *BM-21 GRAD*<sup>54</sup>.

<sup>53</sup> Militants fired Krasnogorivka with Grad MLRSs in the Donetsk Region – Joint Centre for Control and Coordination. Public TV. URL: <https://hromadske.ua/posts/boiovyky-obstrilialy-z-hradiv-krasnohorivku-na-donechchyni-stskk> (published on 28.08.2016).

<sup>54</sup> Gun in Russia – BM-21 GRAD. Russian motor books 2002. 37 p.

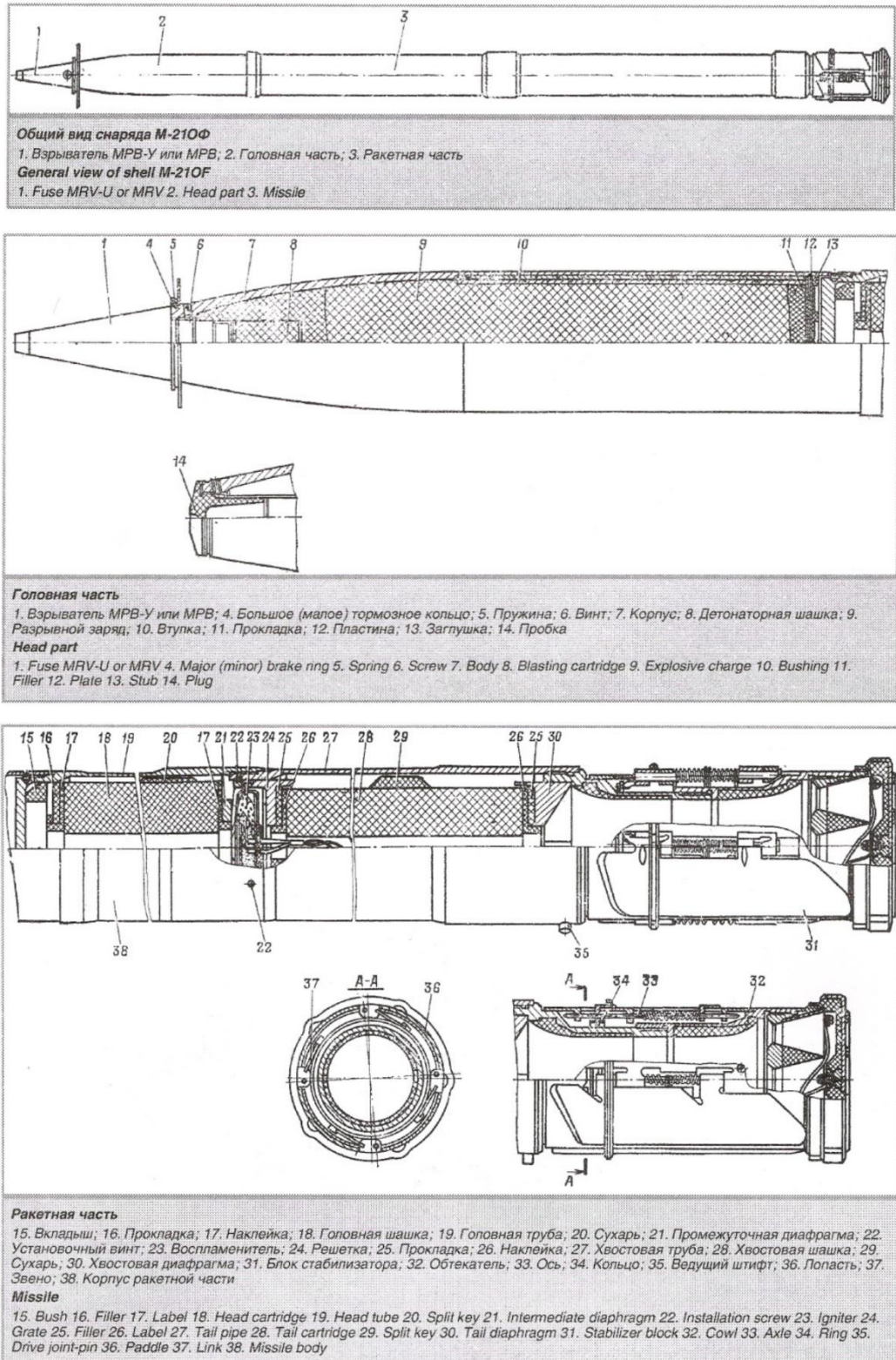


Fig. 27 - M-210F projectile design (a high explosive fragmentation projectile, used for firing from 9K51 Grad MLRS)<sup>55</sup>.

<sup>55</sup> Gun in Russia – BM-21 GRAD. Russian motor books 2002. 37.

Калибр, мм	122
Длина снаряда со взрывателем, мм	2870
Тип головной части	осколочно-фугасная
Вес, кг:	
- окончательно снаряженного снаряда	66
- снаряда в укупорке	100
- головной части	18.4
- взрывчатого вещества в головной части	6.4
- порохового заряда	20.45
Наибольшая скорость снаряда при нормальных условиях, м/с	690
Дальность стрельбы, м :	
- максимальная	20400
- с большим тормозным кольцом	до 12000
- с малым тормозным кольцом	от 12000 до 16000
Температурный диапазон применения снаряда, °С	-40 – +50
Габаритные размеры укупорки, мм	2810x290x254

*Fig. 28 – Technical characteristics of the unguided M-21OF rocket projectile M-21OФ<sup>56</sup>.*

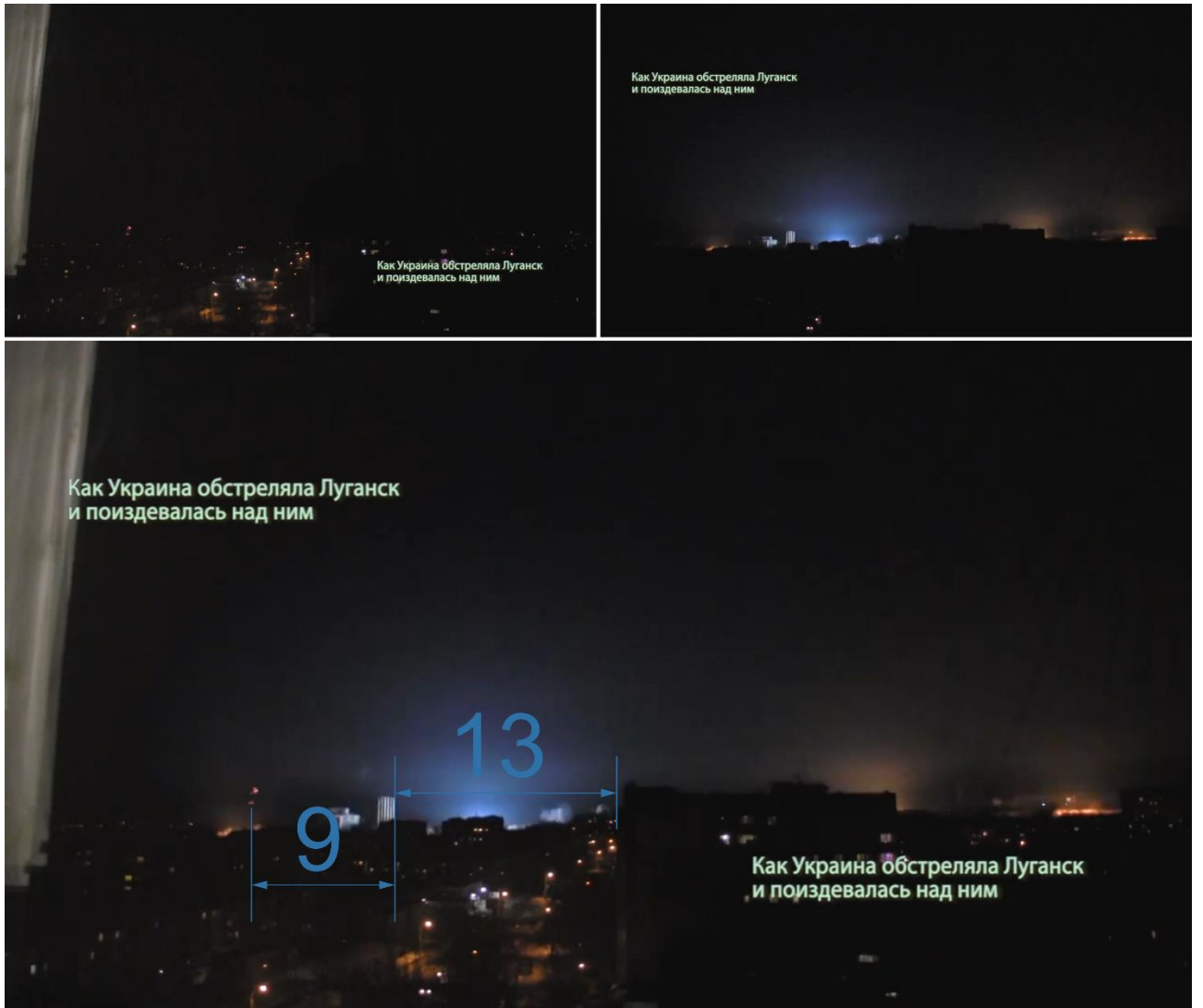
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<sup>56</sup> Mechanized combat vehicle BM-21. Technical description. Book 1. Moscow: Voenizdat, 1971. Pp. 7, 8, 91; Mechanized combat vehicle BM-21. Technical description and operating instructions manual. 3rd edn., stereotyped. Moscow: Armament. Politics. Conversion, 2002. Pp. 5-6.



Fig. 29 – Determination of the place where the shooting was carried out.

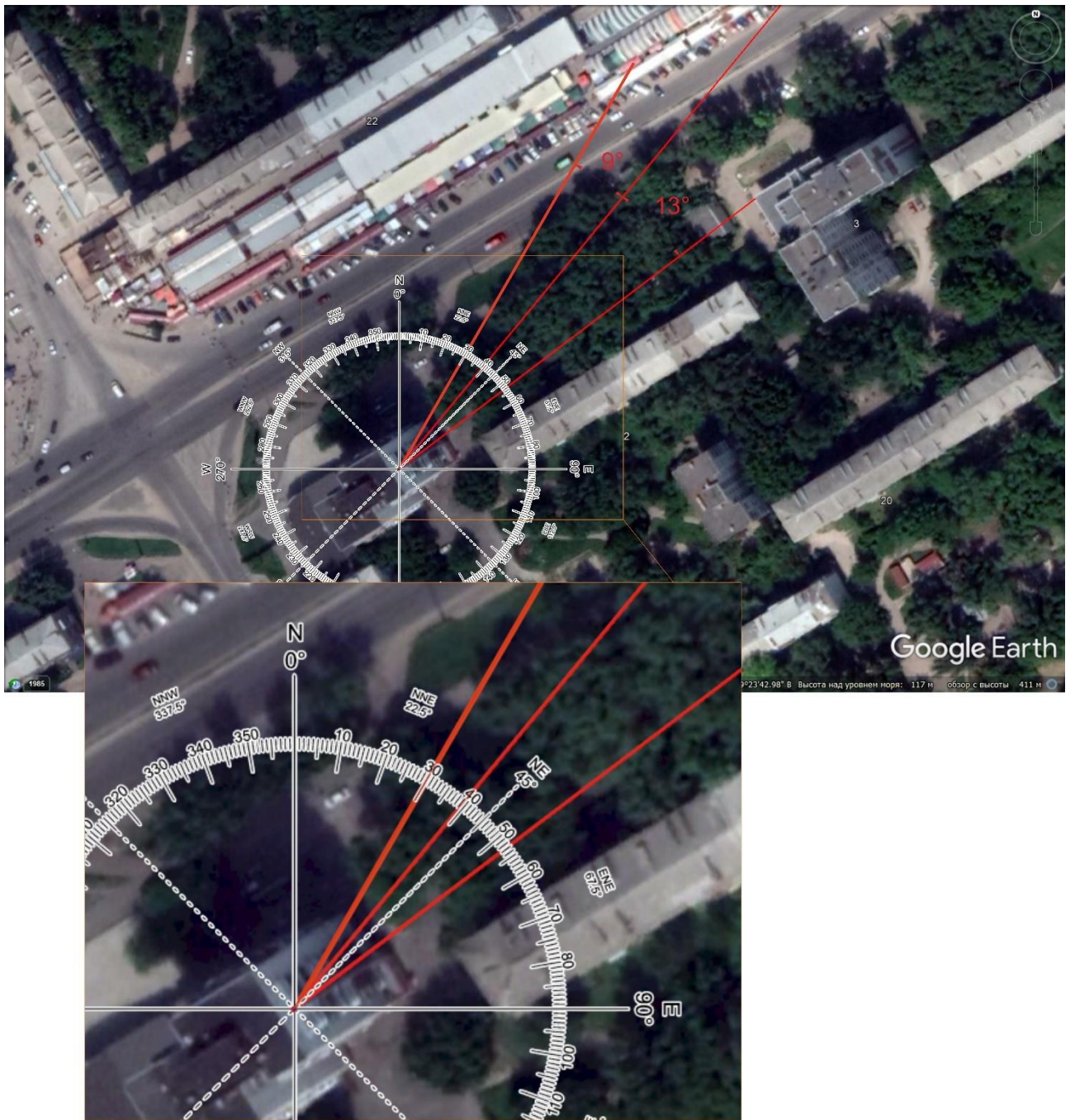




*Fig. 30 – Overlaying of frames to determine the location of the salvo relative to the silhouette of the city.*



*Fig. 31 – Determination of the angle between the silhouette of high-rise buildings and the pipes of the boiler facility.*



*Fig. 32 – Determination of the shelling direction.*

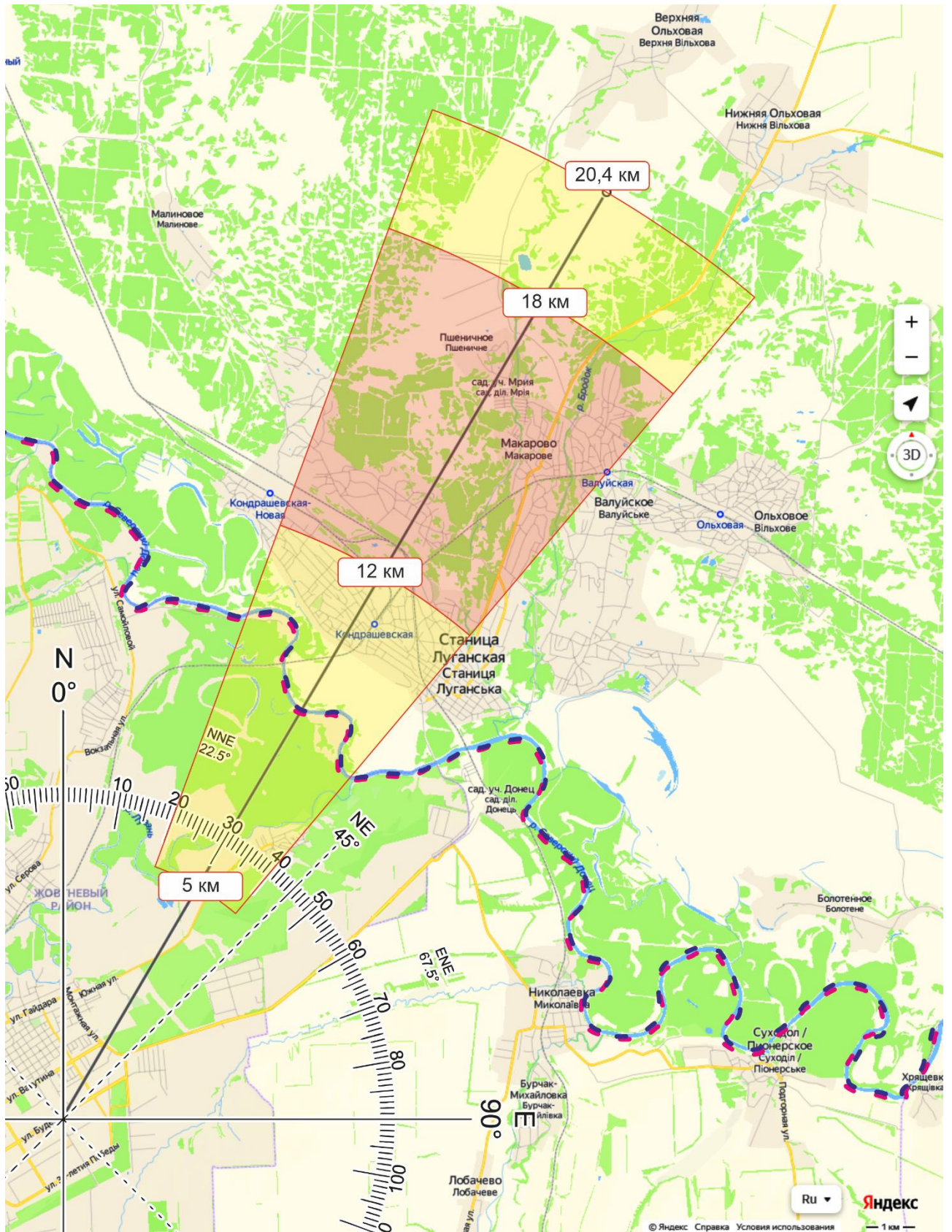


Fig. 33 – A scheme of the shelling sector.



### Прапорщик Голубев Денис Григорович

Он погиб 7 февраля 2015 года во время минометного обстрела опорного пункта взвода возле Станицы Луганской Луганской области.

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### Сержант Виндяскин Евгений Валерьевич

Он погиб 7 февраля 2015 года во время минометного обстрела опорного пункта взвода возле Станицы Луганской Луганской области.

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### Александр Суслопаров

В 14:00 16 января 2015 года на блокпосте «Станица Луганская» возле реки Северский Донец мужчина в возрасте 65-70 лет назвал себя местным жителем, подарил военным 3-литровую банку меда, поблагодарил за службу и ушел. Когда солдаты открыли банку, взорвалось заложенное в него взрывное устройство. В результате диверсионного акта Александр погиб.

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### Александр Данюк

18 января 2015 года в результате обстрела опорного пункта взвода он был ранен с левой стороны туловища, а впоследствии доставлен в городскую больницу г. Счастье Луганской области в тяжелом состоянии, где 19 января 2015 года в 16.00 скончался от полученных ранений.

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### Старший солдат Дуриба Ярослав Васильевич

Погиб 15 мая 2015 года в бою на прифронтовом блокпосте возле Станицы Луганской.

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*Fig. 34 – Dead military personnel of the 17th STBr<sup>57</sup>.*

<sup>57</sup> The 17th Separate Tank Brigade. Book of Memory of the Fallen for Ukraine. URL: <https://memorybook.org.ua/units/17tbr.htm> (accessed on 01.02.2022).

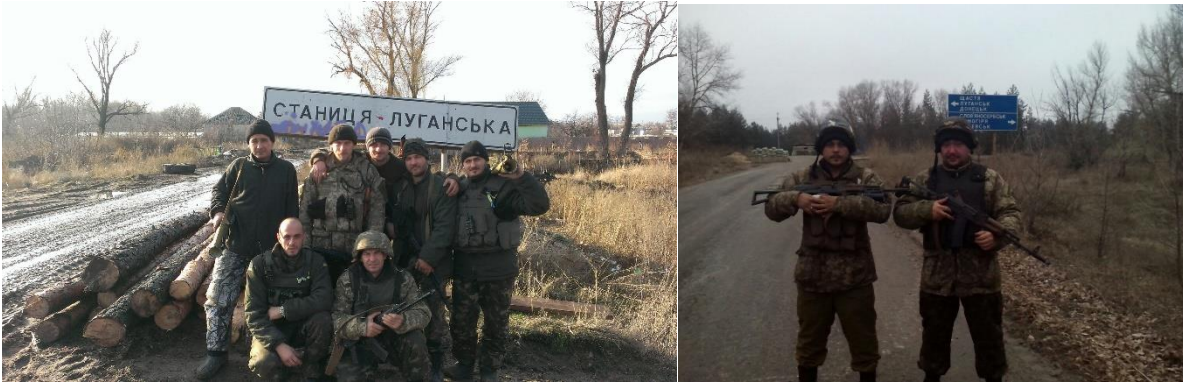


Fig. 35 - The servicemen of the second battalion of the 17<sup>th</sup> STBr who arrived in Donbass on November 19, 2014<sup>58</sup>.

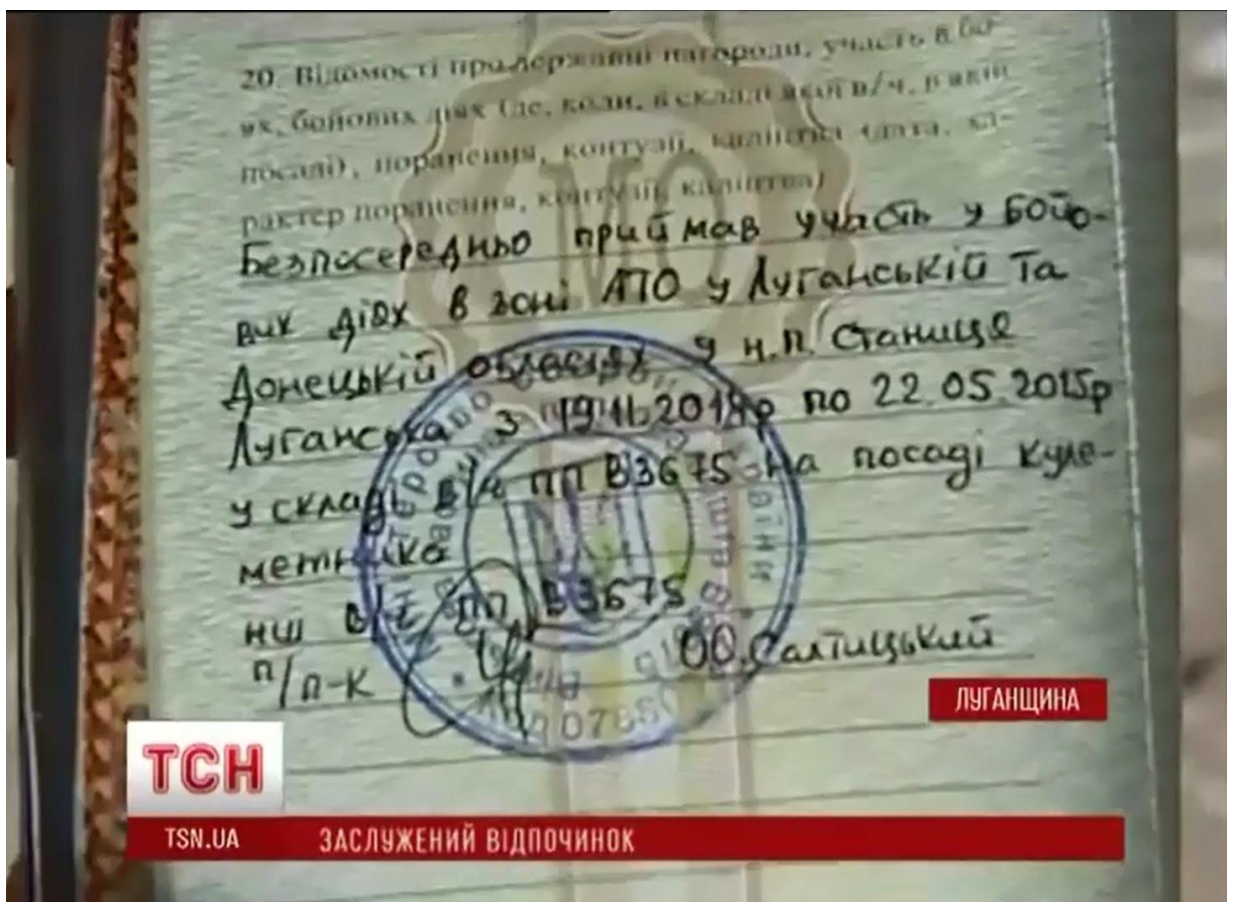















Fig. 36 – A photo of a s military ID of the 17th STBr soldier<sup>59</sup>.

<sup>58</sup> The 17th Separate Tank Brigade in 2014. BMP VSU website. URL: <https://www.bmpvsu.ru/018.php> (accessed on 01.02.2022).

<sup>59</sup> Defenders of Stanytsia Luhanska were housed in a barn [published on 01.06.2015] YouTube Video hosting. URL: <https://youtu.be/YcCZF-fuI6k> (accessed on 01.02.2022).



*Fig. 37 - Grad MLRS in Kryvyi Rih during the equipment loading<sup>60</sup>.*

T-64BV	232			17 ОТБр					
T-64B	13			17 ОТБр					

*Fig. 38 - T-64B/BV Tanks with hull side numbers 232 and 13, owned by the 17th STBr, on the Lost Armour website<sup>61</sup>.*

<sup>60</sup> August 29, 2014. The 17th STBr. Kryvyi Rih". YouTube Video hosting. URL: <https://youtu.be/rDy7xMooLJI> (accessed on 01.02.2022).

<sup>61</sup> The main tank T-64B/BV in the Armed Forces of Ukraine. Lostarmour website. URL: <https://lostarmour.info/vsu/t-64bv/> (accessed on 01.02.2022).



*Fig. 39 – Commander of the 17th STBr Colonel Sergiy Litvinov<sup>62</sup>.*



*Fig. 40 -Deputy commander of the 17th STBr Volodymyr Dribnokhod, who was later appointed brigade commander<sup>63</sup>.*

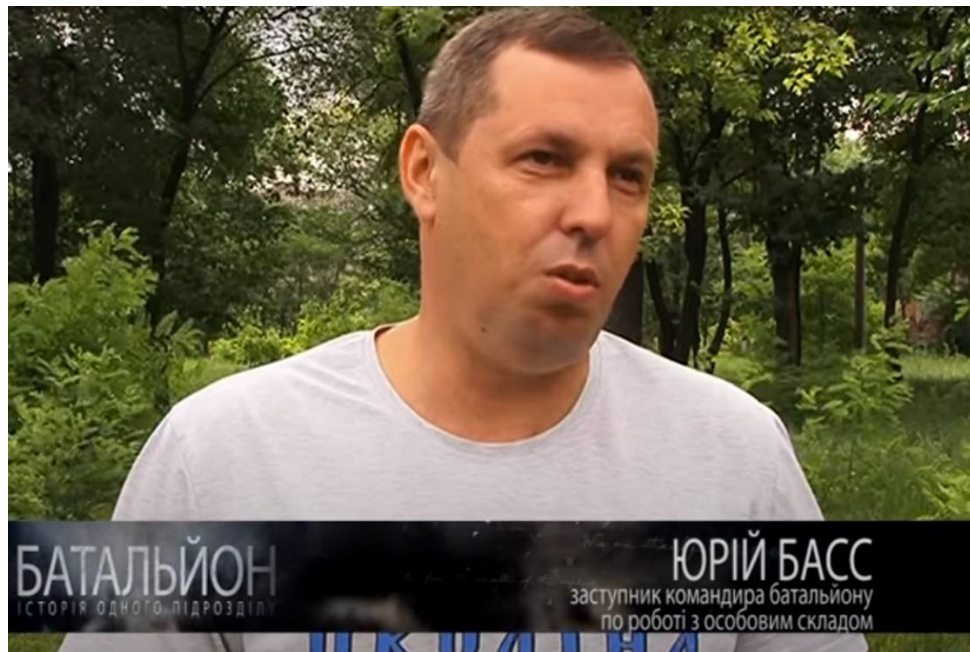
<sup>62</sup> Sergiy Litvinov. Wikipedia Free Encyclopedia. URL: [https://uk.wikipedia.org/wiki/Літвінов\\_Сергій\\_Петрович](https://uk.wikipedia.org/wiki/Літвінов_Сергій_Петрович) (accessed on 01.02.2022).

<sup>63</sup> The 17th Tank Brigade returned from the front to Kryvyi Rih (VIDEO). Dnepro News website. URL: <https://dnepr.news/news/bol-she-tysyachi-boycov-17-y-tankovoy-brigady-vernulis-v-krivoy-rog-video> (accessed on 01.02.2022).





*Fig. 41 - Commander of the second mechanized brigade of the 17th STBbr Sergiy Sukhina<sup>64</sup>.*



*Fig. 42 - Deputy commander for work with personnel of the second mechanized brigade of the 17th STBr Yuri Bass<sup>65</sup>.*

<sup>64</sup> SECOND ANNIVERSARY OF THE CREATION OF THE 2ND MECHANICAL BATTALION OF THE 17TH TANK BRIGADE. YouTube Video hosting. URL: <https://youtu.be/oG98EExu74s> (accessed on 01.02.2022).

<sup>65</sup> Battalion. History of one unit. YouTube Video hosting. URL: <https://youtu.be/CwbZTS42Eys> (accessed on 01.02.2022).