

Incident Assessment

Incident ID	CIV0093
Location	Saltivskiy District, Kharkiv, Kharkiv Oblast
Coordinates	50.0037, 36.3306 ¹
Date	28/02/2022
Time	Morning, likely around noon

Description of the Events

Starting on the morning of 28/02/2022, the city of Kharkiv experienced a cluster munition barrage. Cluster munitions fired into the city impacted several districts in the northern and eastern part of the city. A survey of the social media evidence indicates that the barrage resulted in explosions in the Saltivka, Shevchenkivs'kyi, and Industrialnyi districts.

Given that the barrage targeted a large area of the city, and the nature of cluster munitions, explosive detonations and munition remnant impacts occurred at several sites in Kharkiv. This is because cluster munitions like a 9M55K rocket are designed to separate while in flight, with the explosive payload, the cargo section, the rocket motor, and the rocket motor coming apart in flight and landing in different locations.

During the barrage, the rocket motor of an 9M55K rocket embedded itself in the sidewalk along a road in a residential area of the Saltivskiy District, in the northern part of the city.

The fact that this incident pertains to the impact of a rocket motor of an 9M55K rocket means that the explosive payload, the cargo section, and the rocket motor corresponding to this specific rocket motor also impacted somewhere in Kharkiv.

Key Findings

- The rocket motor of a 9M55K rocket embedded itself in the pavement on a street in a residential neighborhood in the Saltivskiy district of Kharkiv on 28/02/2022.
- The direction of the rocket motor's impact suggests that the rocket was fired from a position northeast of the city of Kharkiv.
- 9M55K rockets are capable of containing fragmentation cluster munitions, like the 9N235.
- Kharkiv was the site of a cluster munition barrage on the morning of 22/02/2022, which impacted several areas of the city.

¹ <https://maps.app.goo.gl/WS5EhpgfMkaxKRrz8>

- The mayor of Kharkiv announced that nine civilians were killed throughout the city as a result of the barrage.
- It was assessed that the direction of origin was 64.7 degrees from the north.

Description of Searches

The investigator began the research process for this incident by referring to the Civilian Harm database. There, the investigator found that a peer researcher had previously archived and geolocated an image related to this incident. The investigator was subsequently directed by a peer to a video shared in a Telegram channel showing the same munition remnant embedded in the pavement.

The investigator then looked for more references to this incident by conducting reverse image searches on Google, Yandex, and Bing. The purpose of this search was to find other online references to this incident, with the hope that these references may contain additional information about this event.

Having confirmed the geolocation of the incident, the investigator proceeded to conduct the following searches on Google:

- saltivskyi rocket before:2022-03-01;
- saltivskyi rocket before:2022-03-01;
- Kharkiv rocket before:2022-03-01;
- Kharkiv bomb before:2022-03-01.

The investigator conducted these searches in English and Ukrainian, and conducted similar searches on Yandex.

Searches including “Kharkiv rocket” and “Kharkiv bomb” limited to mentions prior to 01/03/2022 yielded multiple media reports of the 28/02/2022 barrage on Kharkiv.

Background Summary of Significant Descriptive Content

Media Reports

- BBC News: [“Anatomy of an attack: Is Russia using cluster bombs in Ukraine?”](https://www.bbc.com/news/60591017)²;
- BBC News: [“‘Terror against Ukraine’: Residents flee as rockets rain down on Kharkiv”](https://www.bbc.com/news/world-europe-60579439)³;
- CNN: [“Kharkiv mayor says 9 civilians killed in Russian rocket attacks on Monday”](https://edition.cnn.com/europe/live-news/ukraine-russia-news-02-28-22/h_80e3bc41bb560fe9c4f24c61d10d91cd)⁴;

² <https://www.bbc.com/news/60591017>

³ <https://www.bbc.com/news/world-europe-60579439>

⁴

https://edition.cnn.com/europe/live-news/ukraine-russia-news-02-28-22/h_80e3bc41bb560fe9c4f24c61d10d91cd

- CNN: [“Russia bombs residential area of Kharkiv and intensifies Kyiv assault as talks with Ukraine end”](https://www.cnn.com/2022/02/28/europe/ukraine-russia-invasion-monday-intl-hnk/index.html)⁵;
- Reuters: [“Ukraine’s Kharkiv struck by cluster bombs, experts say”](https://www.reuters.com/world/ukraines-kharkiv-struck-by-cluster-bombs-experts-say-2022-03-01/)⁶;
- The Guardian: [“‘Horrendous’ rocket attack kills civilians in Kharkiv as Moscow ‘adapts its tactics’”](https://www.theguardian.com/world/2022/feb/28/ukraine-several-killed-by-russian-rocket-strikes-in-civilian-areas-of-kharkiv)⁷;
- The Guardian: [“Russia launches multiple rocket attacks in Kharkiv and renews Kyiv assault”](https://www.theguardian.com/world/2022/feb/28/russian-rocket-strikes-kill-dozens-in-kharkiv-as-ukraine-russia-talks-begin)⁸;
- Al Jazeera: [“Several killed as Russian rockets pound Ukraine’s Kharkiv”](https://www.aljazeera.com/news/2022/2/28/ukraine-reports-dozens-killed-in-kharkiv-rocket-strikes)⁹;
- The Washington Post: [“Dozens wounded in shelling of Kharkiv as Russia strikes buildings with suspected cluster munitions”](https://www.washingtonpost.com/world/2022/02/28/kharkiv-rockets-shelling-russia-ukraine-war/)¹⁰;
- DW: [“Deadly rocket attacks on Ukraine’s Kharkiv”](https://www.dw.com/en/deadly-rocket-attacks-on-ukraines-kharkiv/av-60973130)¹¹;
- NBC News: [“Heavy shelling hits civilian areas in Ukraine’s second-largest city as Russia steps up assault”](https://www.nbcnews.com/news/world/russia-kharkiv-rocket-attacks-ukraine-talks-putin-civilians-rcna17926)¹²;
- Financial Times: [“Russia launches fierce rocket attack on Ukrainian city of Kharkiv”](https://www.ft.com/content/ob1a1f5d-147d-4300-8f56-41e16e3dfa2e)¹³;
- The Independent: [“Ukraine war: ‘Dozens killed and hundreds wounded’ in ‘massive’ Russian rocket attacks on Kharkiv”](https://www.independent.co.uk/news/world/europe/ukraine-war-kharkiv-russia-rocket-strikes-b2024871.html)¹⁴;
- The Economist: [“Rocket attacks on civilians in Kharkiv take the war into a new phase”](https://www.economist.com/europe/2022/02/28/-rocket-attacks-on-civilians-in-kharkiv-take-the-war-into-a-new-phase)¹⁵;
- The New York Times: [“Russian Rocket Barrage Kills Civilians as First Talks Show No Progress”](https://www.nytimes.com/2022/02/28/world/europe/russia-ukraine-war-kharkiv.html)¹⁶;
- The Kyiv Independent: [“Kharkiv barraged with rockets, 11 killed”](https://kyivindependent.com/national/kharkiv-barraged-with-multiple-rocket-launchers-killing-a-dozen-of-people)¹⁷.

⁵ <https://www.cnn.com/2022/02/28/europe/ukraine-russia-invasion-monday-intl-hnk/index.html>

⁶ <https://www.reuters.com/world/ukraines-kharkiv-struck-by-cluster-bombs-experts-say-2022-03-01/>

⁷ <https://www.theguardian.com/world/2022/feb/28/ukraine-several-killed-by-russian-rocket-strikes-in-civilian-areas-of-kharkiv>

⁸ <https://www.theguardian.com/world/2022/feb/28/russian-rocket-strikes-kill-dozens-in-kharkiv-as-ukraine-russia-talks-begin>

⁹ <https://www.aljazeera.com/news/2022/2/28/ukraine-reports-dozens-killed-in-kharkiv-rocket-strikes>

¹⁰ <https://www.washingtonpost.com/world/2022/02/28/kharkiv-rockets-shelling-russia-ukraine-war/>

¹¹ <https://www.dw.com/en/deadly-rocket-attacks-on-ukraines-kharkiv/av-60973130>

¹² <https://www.nbcnews.com/news/world/russia-kharkiv-rocket-attacks-ukraine-talks-putin-civilians-rcna17926>

¹³ <https://www.ft.com/content/ob1a1f5d-147d-4300-8f56-41e16e3dfa2e>

¹⁴ <https://www.independent.co.uk/news/world/europe/ukraine-war-kharkiv-russia-rocket-strikes-b2024871.html>

¹⁵ <https://www.economist.com/europe/2022/02/28/-rocket-attacks-on-civilians-in-kharkiv-take-the-war-into-a-new-phase>

¹⁶ <https://www.nytimes.com/2022/02/28/world/europe/russia-ukraine-war-kharkiv.html>

¹⁷ <https://kyivindependent.com/national/kharkiv-barraged-with-multiple-rocket-launchers-killing-a-dozen-of-people>

NGO Reports

- Human Rights Watch [“Ukraine: Cluster Munitions Launched Into Kharkiv Neighborhoods”](#)¹⁸;
- United Nations Office of the High Commissioner for Human Rights [“Civilian Casualty Report”](#)¹⁹;

Other

- None identified.

Analysis of Examinable Content

- [Source 1](#)²⁰: A Telegram image (S1I1) showing the munition remnant embedded in the pavement, shared on 28/02/2022 at 15:10 EET on the Channel “Харьков LIVE”. The background image shows what appear to be residential buildings, streets, as well as civilians in the background.



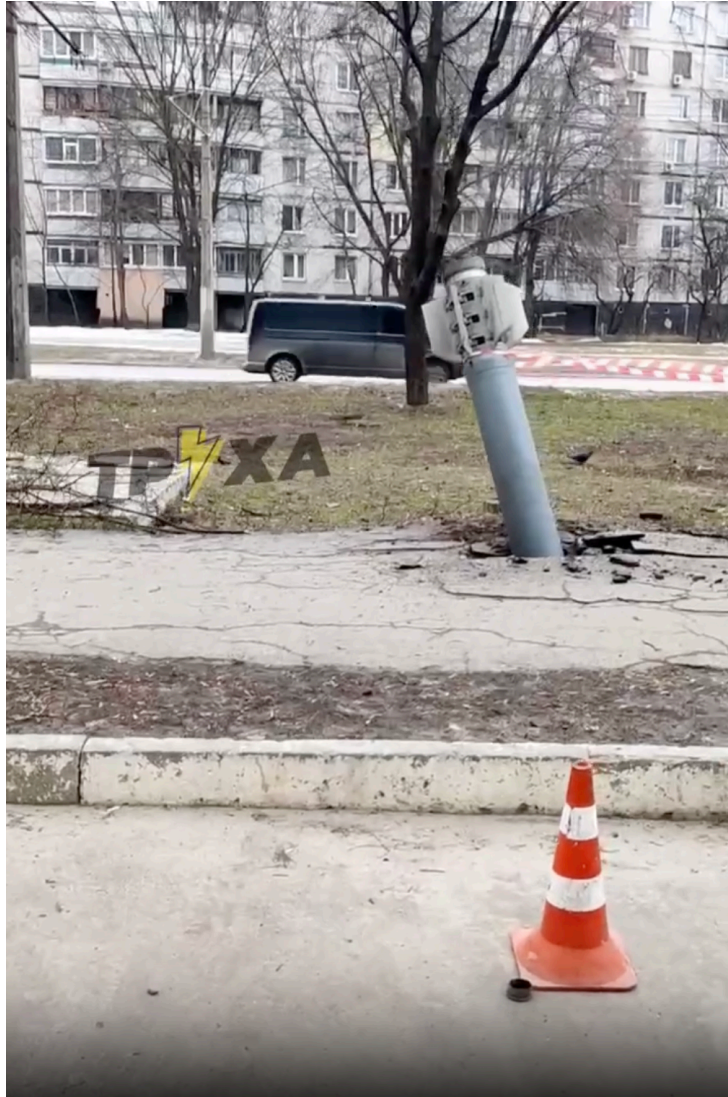
¹⁸ <https://www.hrw.org/news/2022/03/04/ukraine-cluster-munitions-launched-kharkiv-neighborhoods>

¹⁹ https://reliefweb.int/sites/reliefweb.int/files/resources/EN_32.pdf

²⁰ <https://t.me/livekharkov/28020>

[Source 1](#)²¹ containing S1I1 depicting the munition remnants embedded in the pavement.

- [Source 2](#)²²: A Telegram video (S2V1) showing the same munition remnant embedded in the pavement from different angles, shared on 28/02/2022 at 13:18 EET.



A still from S2V1 taken at 0:22.

The investigator checked the Bellingcat Civilian Harm Sheet and found that a peer researcher had [geolocated](#)²³ [S1I1](#)²⁴ to a sidewalk in the Saltivskyi District of Kharkiv, in Kharkiv Oblast. The munition remnant landed on a sidewalk on the west side of Hvardiitsiv-Shyronintsiv Street, approximately 50 meters south of the intersection with Vasyli Stusa Street.

²¹ <https://t.me/livekharkov/28020>

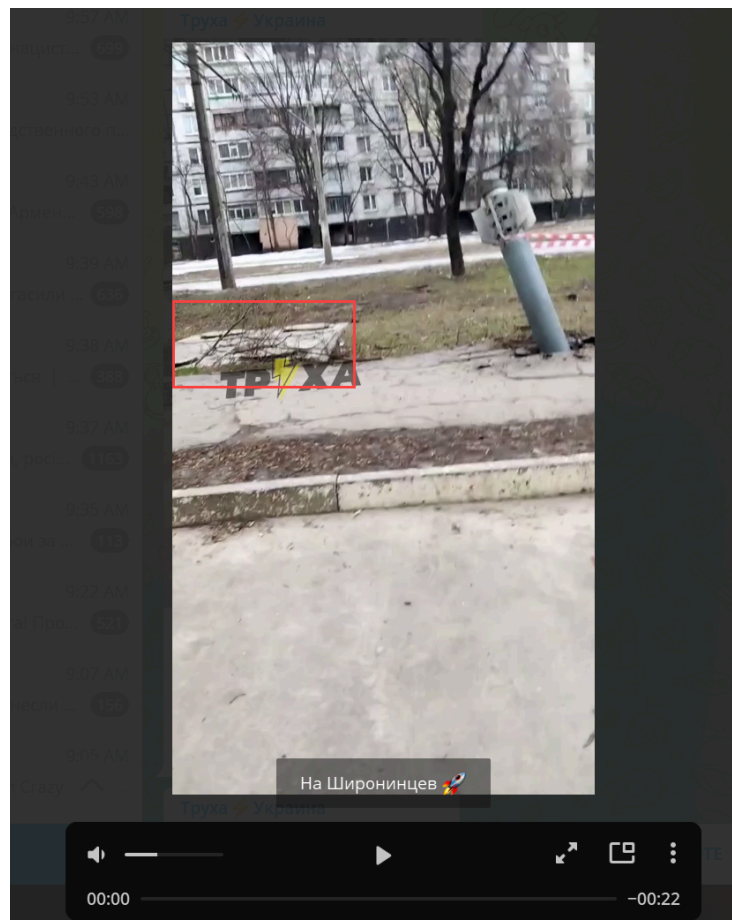
²² <https://t.me/truexanewsua/25972>

²³ <https://maps.app.goo.gl/eUWNLzrP1m16zb9H7>

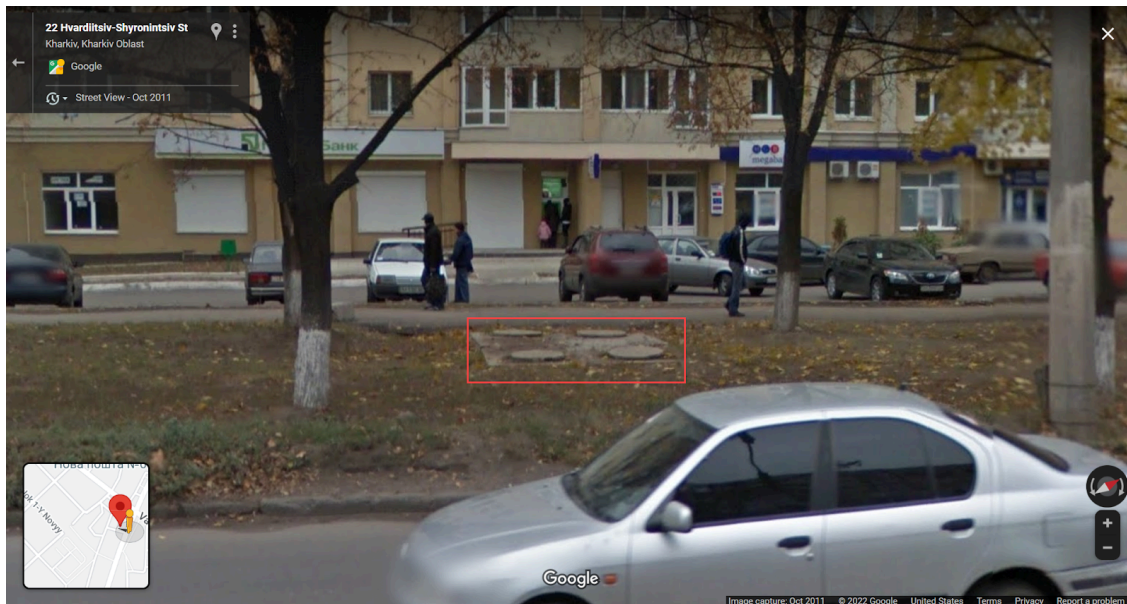
²⁴ <https://t.me/livekharkov/28020>

The investigator also found that S2V1 was recorded at the same location on that same day showing the same munition remnant. This video was shared almost two hours earlier, at 13:18 EET on 28/02/2022, and contained more visual information that allowed for the confirmation of the geolocation.

The investigator confirmed that the geolocation of the image conducted by the peer researcher was accurate by establishing that the details visible in the image matched those visible on Google Street View imagery from the site. In particular, the investigator noted the presence of what appears to be a set of four manhole covers (in red boxes in the images below) adjacent to the munition remnant. This same feature is visible in Google Street View images from the site:



A still from S2V1 showing the munition remnant embedded in the pavement and four manholes next to it.

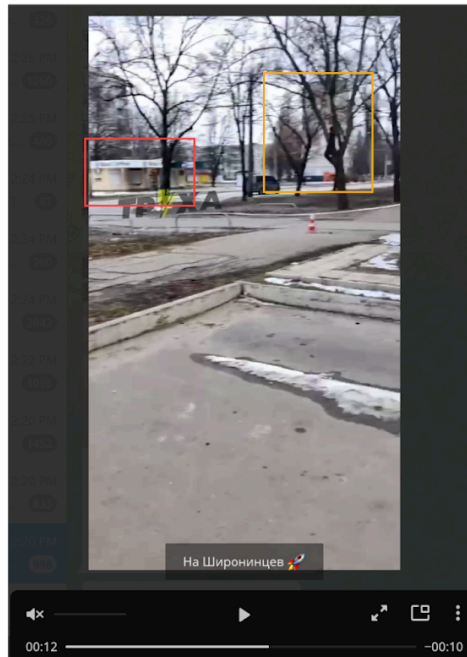
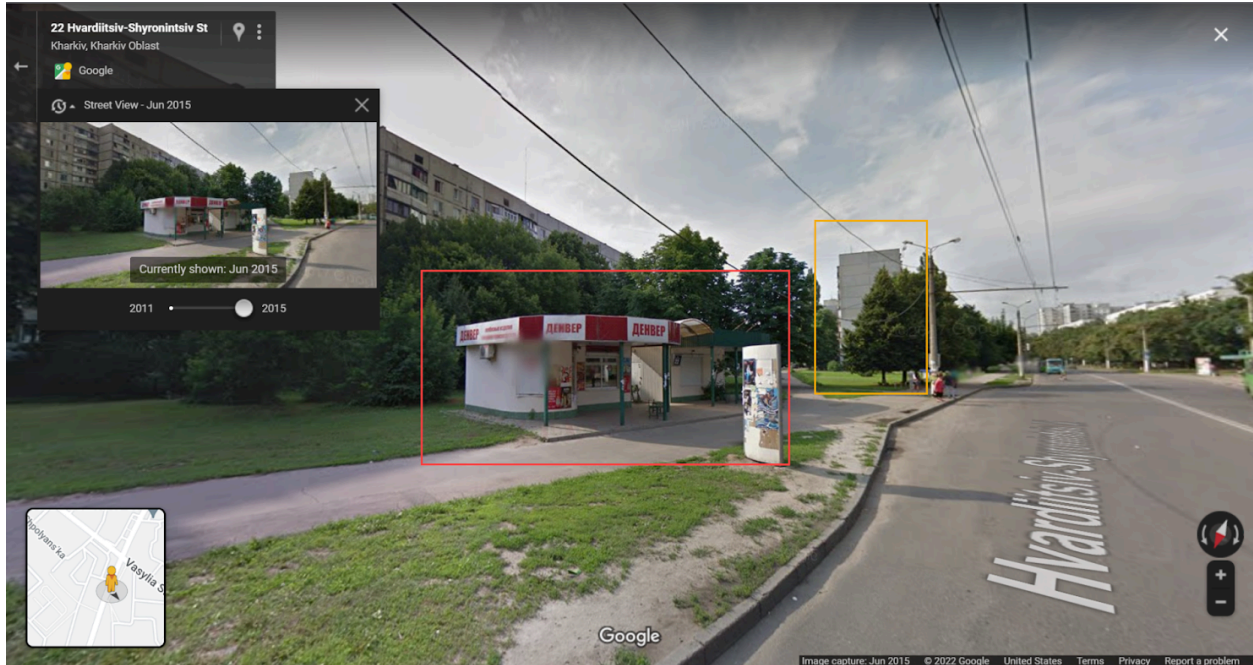


A screenshot from Google Street View showing the same four manhole covers as those that appear in the video and the image of the munition remnant (Credit: [Google](#)²⁵)

Moreover, [S2V1](#)²⁶ shows a kiosk and the facade of a large building, both of which are also visible at the location as seen on Google Street View:

²⁵ <https://maps.app.goo.gl/fcnZNYgigMvvp5JP9>

²⁶ <https://t.me/truexanewsua/25972>

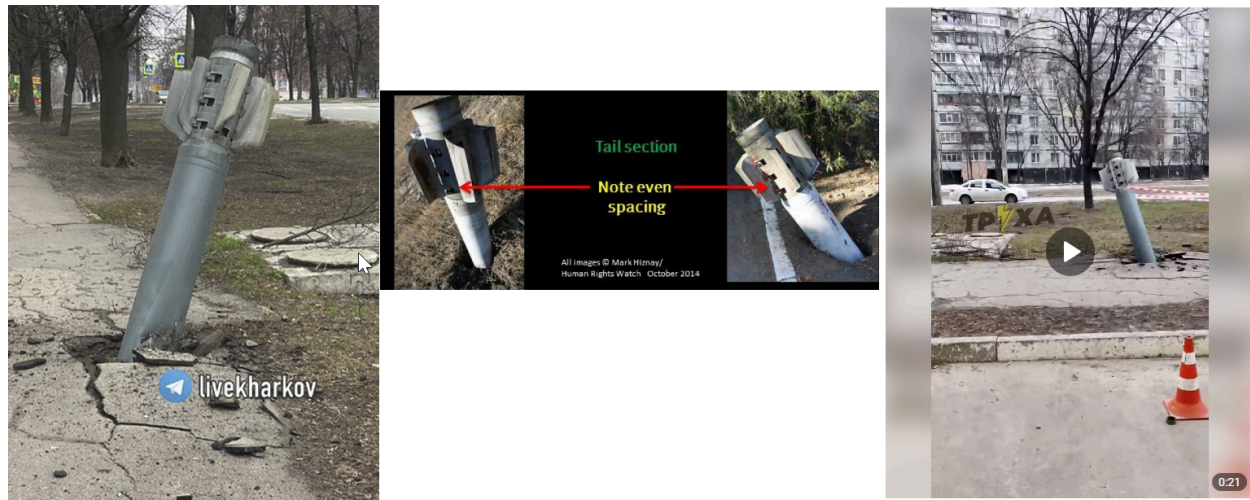


Top: Google Street View [image](https://maps.app.goo.gl/7zaXESsA1MYKJM6g6)²⁷ showing a kiosk (red) and the facade of a building (yellow) (Credit: Google Street View). Bottom: the same kiosk and facade as seen in [S2V1](https://t.me/truexanewsua/25972)²⁸ of the munition remnant. Note that the Google Street View image was captured seven years prior to the recording of the Telegram video, which accounts for the differences in the colouring of the kiosk's signage.

²⁷ <https://maps.app.goo.gl/7zaXESsA1MYKJM6g6>

²⁸ <https://t.me/truexanewsua/25972>

The investigator referred to a weapon-identification [guide](#)²⁹ that was made available to the public by a researcher with the Human Rights Watch. This guide contains images and descriptions of cluster munition rocket sections. Upon consulting this guide, the investigator determined that the munition remnants found embedded in the pavement in S1i1 and S2V1 correspond to a 300mm 9M55k Smerch rocket. More specifically, the remnants seen in the visual material is the rocket motor of the rocket.



Left: The munition remnant as seen in [S1i1](#)³⁰. Right: The munition remnant as seen in [S2V1](#)³¹. Centre: The [reference image](#)³² showing the 9M55K rocket motor (centre). Note the presence of the three holes at the rear of the rocket motor, as well as their even spacing.

The investigator found [research](#)³³ indicating that a 9M55K rocket is capable of carrying up to 72 9N235 fragmentation submunitions. This fact is consistent with media reports and social media evidence of the cluster munition attack that occurred on Kharkiv on 28/02/2022.

Questions to Investigate

Where Was the Munition Fired from?

The direction of origin of the rocket can be estimated by drawing a line dissecting the rocket motor lengthwise, with the rear of the tail pointing to the point of origin, as outlined in this [article](#)³⁴ from Bellingcat. Based on the image and the video of the munition remnant referenced

²⁹ https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=AACY__sgU9nrSi1xp5r2gA

³⁰ <https://t.me/livekharkov/28020>

³¹ <https://t.me/truexanewsua/25972>

³² https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=AACY__sgU9nrSi1xp5r2gA

³³ <https://armamentresearch.com/9m55k-cargo-rockets-and-9n235-submunitions-in-ukraine/>

³⁴

<https://www.bellingcat.com/news/2022/02/27/ukraine-conflict-tracking-use-of-cluster-munitions-in-civilian-areas/>

above, the investigator made an assessment of the direction from which the rocket motor could have originated from. It was assessed that the direction of origin was 64.7 degrees from the north.



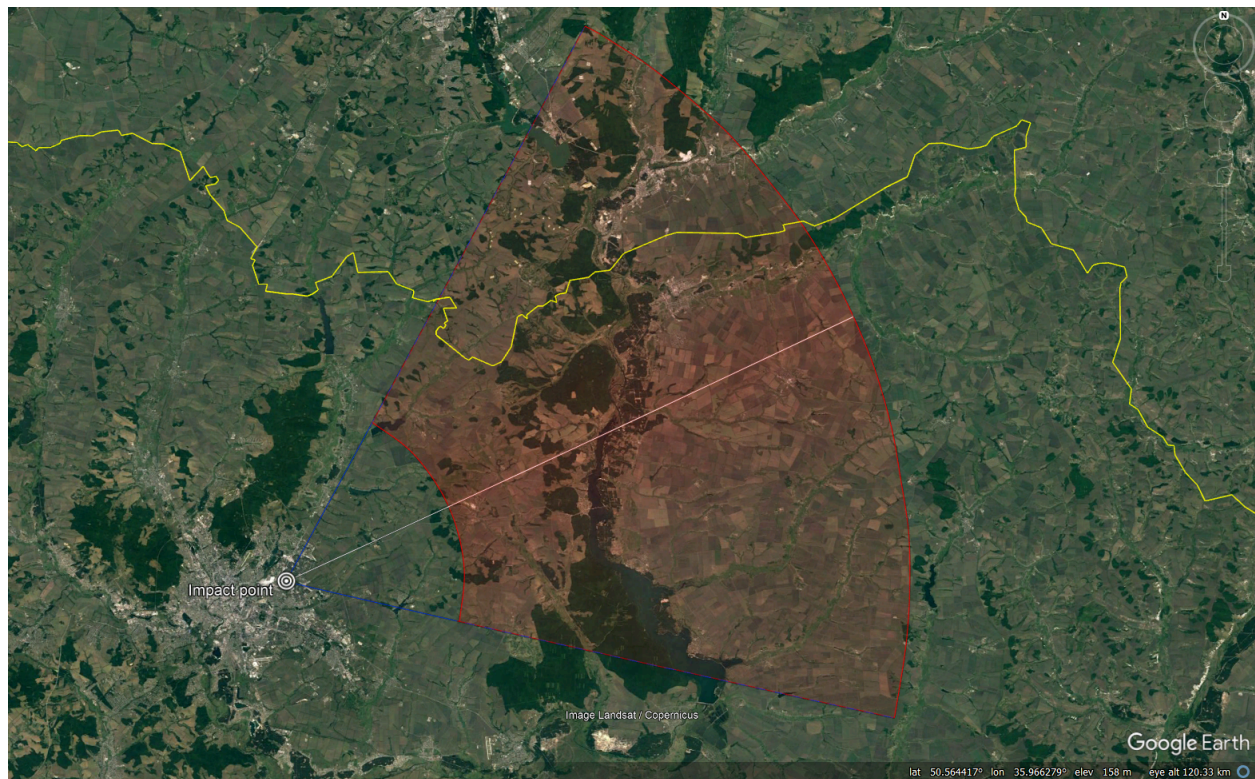
Top from left: [S1I1](https://t.me/livekharkov/28020)³⁵, [S2V1](https://t.me/truexanewsua/25972)³⁶ at 00:01 and [S2V1](https://t.me/truexanewsua/25972)³⁷ at 00:11 showing estimated direction of origin. Bottom: Google Earth Pro satellite imagery from 22/03/2022 depicting the estimated furthest left and right of the arc (Credit: Google/Maxar Technologies).

³⁵ <https://t.me/livekharkov/28020>

³⁶ <https://t.me/truexanewsua/25972>

³⁷ <https://t.me/truexanewsua/25972>

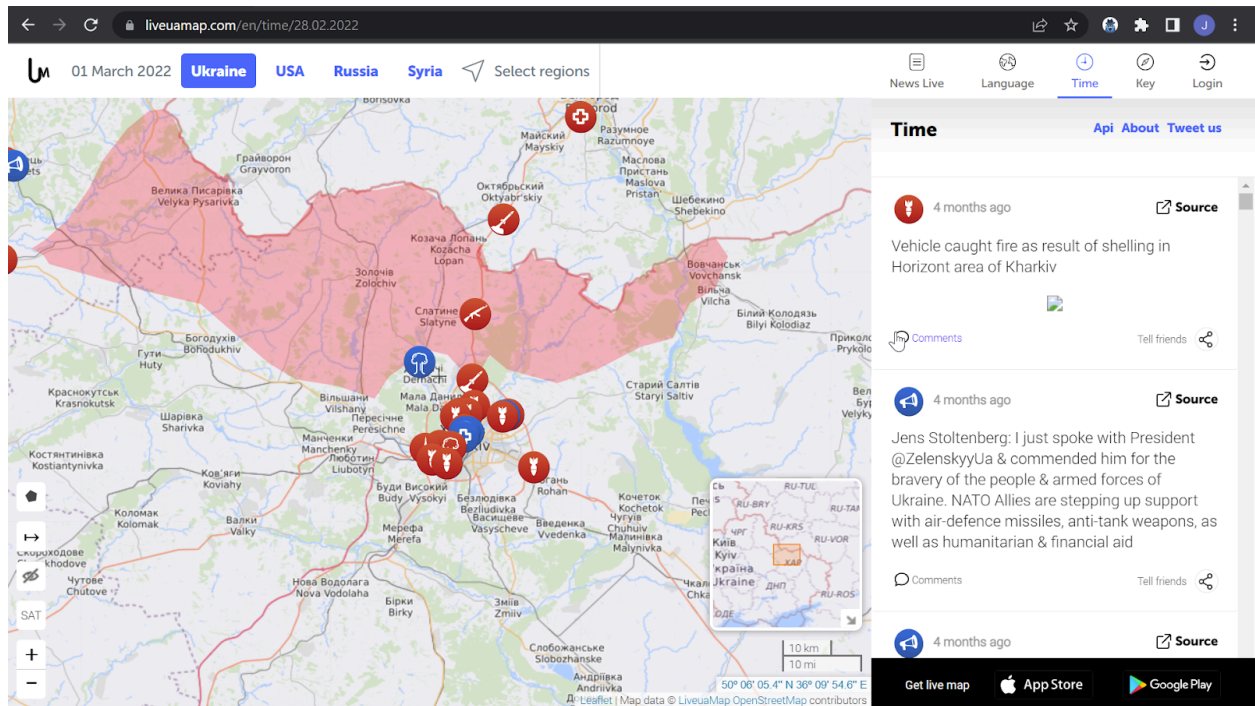
The image below shows the point of impact of the rocket motor. The white line indicates the estimated trajectory of the rocket, with red lines indicating a margin of error for the rocket's trajectory from its point of origin.



The image above shows the likely area of origin of the 9M55K rocket section examined in this report. The white line extends from the rocket motor as it lay embedded in the sidewalk on 28/02/2022 to a point 70 kilometers away. The solid red lines mark a 9M55K rocket's minimum range (20 kilometers) and maximum range (70 kilometers) (Credit: Google Earth Pro/Landsat/Copernicus).

The investigator then checked [Liveuamap.com](https://liveuamap.com)³⁸, a mapping website that has been updated continuously since the invasion of Ukraine with the approximate locations of the front lines in the conflict. A search of the website showed that on 01/03/2022, the Russian Armed Forces were positioned to the north and northeast of the Kharkiv city, and that their front lines were located inside Ukrainian territory, some 20 kilometers from Kharkiv's northern neighborhoods.

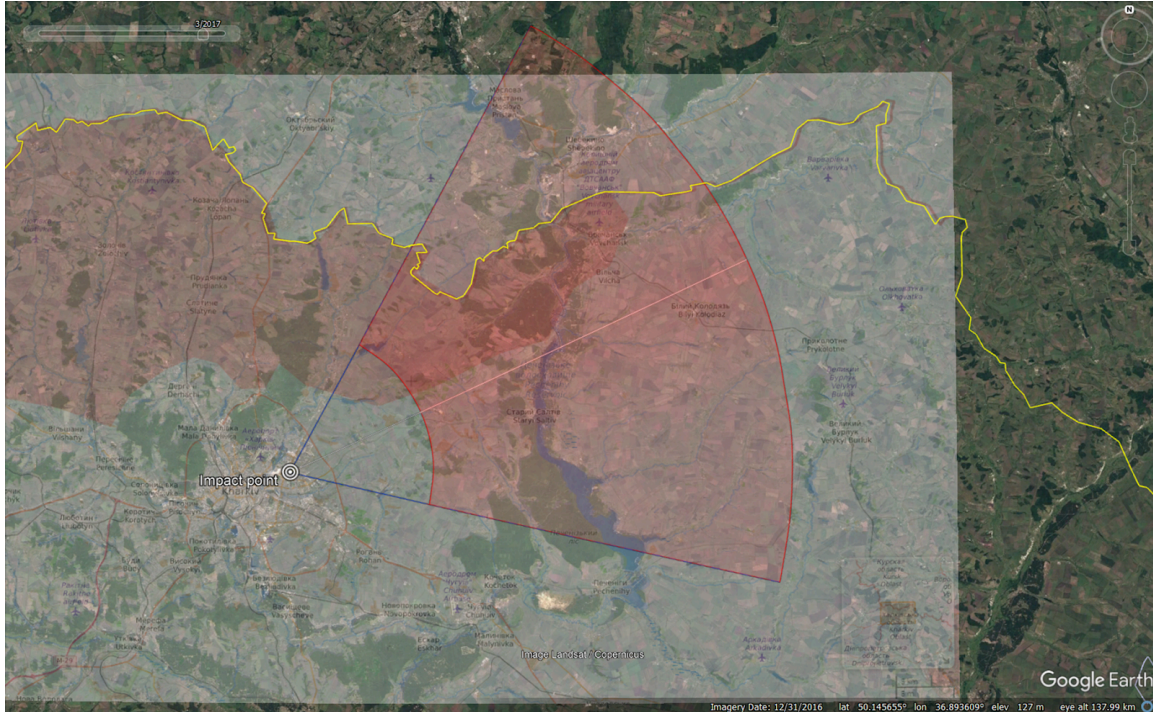
³⁸ <https://liveuamap.com/en/time/28.02.2022>



A screenshot from [liveuamap.com](https://liveuamap.com/en/time/28.02.2022) showing the approximate location of the Russian Armed Forces (red area) on 01/03/2022 (Credit: [Liveuamap.com](https://liveuamap.com)³⁹).

Liveuamap's assessment of the position of the front lines of the Russian Armed Forces on 01/03/2022 overlaps with the northern part of this investigator's estimated area of origin of the rocket motor examined in this report. The image below shows where these two areas overlap:

³⁹ <https://liveuamap.com/en/time/28.02.2022>



The image above is an overlay of the investigator's approximated area of origin for the rocket outlined in this report, and [Liveuamap's](https://liveuamap.com/en/time/28.02.2022)⁴⁰ assessed location of the front lines of the Russian Armed Forces on 28/02/2022. Note that the northern section of the estimated area of origin for the rocket overlaps with parts of the Russian-controlled territory. Also note that the Liveuamap image was scaled appropriately to match that of the Google Earth Pro image used to visualize the approximate area of origin of the rocket (Credit: Google Earth Pro/Liveuamap).

Where Did the Explosives Land and Detonate?

The investigator did not find evidence indicating exactly where the submunitions of this rocket landed. However, the media reports cited on pages 2-3 of this document indicate that several areas of Kharkiv—including the Saltivskiy District—were targeted by a cluster munition barrage on the morning of 28/02/2022. This barrage caused damage to civilian infrastructure in this area, including residential buildings.

According to an artillery expert contacted by Bellingcat, the rocket motor of a 9M55K rocket can usually be expected to land up to 1 km from the area impacted by the submunitions that it carried, towards the point of origin of the rocket. In other words, the area of effect of the submunitions carried by the 9M55K rocket is located between the rocket's point of origin, and the point where the rocket motor impacts the ground.

With this in mind, the investigator checked the area of the rocket's approximate point of origin that overlapped with the city of Kharkiv:

⁴⁰ <https://liveuamap.com/en/time/28.02.2022>



The image above shows the estimated area of impact (yellow) of the munitions carried by the 9M55K rocket whose rocket motor is the focus of this report. The white line represents the approximate direction of travel of the rocket from its point of origin (Source: Google Earth Pro/Maxar Technologies).

The investigator conducted a visual survey of the area of the city shown in red in the image above, and observed that it contains residential apartment blocks, detached residential homes, schools, gas stations, and other commercial establishments. Any damage caused by the submunitions carried by this rocket would possibly impacted any of these types of buildings.

Are There Any Indications of What the Location was Being Used for?

The investigator found that the rocket motor landed in a residential area that contained commercial establishments, residential apartment blocks, schools, and detached homes. The investigator also found municipal administrative buildings within three kilometers of the impact site. These include a [district court](https://maps.app.goo.gl/d2VGic5vDnQTeVcH8)⁴¹ approximately 1.2 kilometers away, as well as an [administrative services regional centre](https://maps.app.goo.gl/piW47C9d29QxsvTT8)⁴² approximately 2.5 kilometers away.

Were There Military Structures, Installations or Other Assets in the Area?

The investigator found no evidence of military installations or other assets within one kilometer of the location where the rocket motor embedded itself in the pavement.

⁴¹ <https://maps.app.goo.gl/d2VGic5vDnQTeVcH8>

⁴² <https://maps.app.goo.gl/piW47C9d29QxsvTT8>

Timeline of the Incident

A Human Rights Watch [report](#)⁴³, as well as a [report](#)⁴⁴ from the United Nations Office of the High Commissioner for Human Rights, both claimed that Kharkiv was subjected to a cluster munition barrage starting the morning of 28/02/2022. This barrage was also documented extensively in media reports, including by the [BBC](#)⁴⁵, [CNN](#)⁴⁶, [Al Jazeera](#)⁴⁷, and [The New York Times](#)⁴⁸.

The earliest visual evidence of the munition remnant found by the investigator was a [S2V1](#)⁴⁹ shared at 13:18 EET on 28/02/2022.

The investigator found several contemporaneous references to this cluster munition barrage on Telegram and Twitter. The earliest reference to the barrage that the investigator found was a Telegram [video](#)⁵⁰ showing multiple explosions consistent with a cluster munition strike impacting an area in the Saltivka neighborhood of Kharkiv. This video was shared on Telegram at 11:10 EET on 28/02/2022. The barrage seen in this video impacted an area of the city approximately 2.24 kilometers away from where the rocket motor impacted the sidewalk. However, the possible direction of origin for the rocket was inconsistent with this strike.

The investigator also found other visual evidence of a barrage taking place in Kharkiv that morning, including a Telegram [image](#)⁵¹ showing showing a munition remnant that impacted a home, as well as a Telegram post reporting [“powerful explosions”](#)⁵² in Saltivka and Kholodnaya Gora areas of Kharkiv shared at 12:46 EET.

Additionally, the investigator found a BBC News [report](#)⁵³ dated 03/03/2022 describing at length the cluster munition barrage on Kharkiv on 28/02/2022. The article focused on an explosion that occurred in the Shevchenkiv'skyi district of Kharkiv, approximately 7.6 kilometers east of the site where the munition remnant embedded itself in the pavement. The distance from this incident to the point of impact of the rocket motor do not appear to be consistent with any connection.

⁴³ <https://www.hrw.org/news/2022/03/04/ukraine-cluster-munitions-launched-kharkiv-neighborhoods>

⁴⁴ https://reliefweb.int/sites/reliefweb.int/files/resources/EN_32.pdf

⁴⁵ <https://www.bbc.com/news/world-europe-60579439>

⁴⁶ <https://www.cnn.com/2022/02/28/europe/ukraine-russia-invasion-monday-intl-hnk/index.html>

⁴⁷ <https://www.aljazeera.com/news/2022/2/28/ukraine-reports-dozens-killed-in-kharkiv-rocket-strikes>

⁴⁸ <https://www.nytimes.com/2022/02/28/world/europe/russia-ukraine-war-kharkiv.html>

⁴⁹ <https://t.me/truexanewsua/25972>

⁵⁰ <https://t.me/truexanewsua/25857>

⁵¹ <https://t.me/truexanewsua/25866>

⁵² <https://t.me/truexanewsua/25951>

⁵³ <https://www.bbc.com/news/60591017>

Statements from Parties of the Conflict

Ukraine

The mayor of Kharkiv, Igor Terekhov, is reported to have said that nine people were killed as a result of the barrage. This statement was cited by [CNN](#)⁵⁴ and by a United Nations civilian casualty [report](#)⁵⁵.

Oleg Sinegubov, the head of the Kharkiv Regional State Administration, said on 28/02/2022 that the Russian bombing of the city that day was a “war crime”, and that:

“The Russian enemy is shelling entire residential areas of Kharkiv, where there is no critical infrastructure, where there are no positions of the [Ukrainian] Armed Forces that the Russians could target.”

Sinegubov also said that the “Oleksiivka, Saltivka, and Pavlopol districts” were being bombed, and that “dozens of civilians [died].”

On 28/02/2022, Ukrainian President Vladimir Zelensky issued a [video](#)⁵⁶ statement in which he spoke about the Russian attack on Kharkiv. He called the bombing of Kharkiv “a military crime”, and that the areas of the city that had been bombed did not contain any military targets.

Russia

On 01/03/2022, Reuters [reported](#)⁵⁷ that Kharkiv had been hit by Russian cluster munitions on 28/02/2022. According to Reuters,

“When asked about allegations that Russia was using cluster munitions and vacuum bombs, Kremlin spokesperson Dmitry Peskov said: ‘It’s undoubtedly fake news.’ Russian operations are focused on military targets, not civilian ones, he said.”

Conclusion

On the morning of 28/02/2022, it was reported by a wide variety of sources that the Russian Armed Forces launched an artillery barrage against the city of Kharkiv. This barrage included the use of cluster munition rockets, including 9M55K. The barrage impacted the Saltivskiy, Shevchenkivskiy and Industrialnyi districts, all of which are located in the north and northeast sections of the city. The barrage took place throughout the morning of that day.

⁵⁴

https://edition.cnn.com/europe/live-news/ukraine-russia-news-02-28-22/h_80e3bc41bb560fe9c4f24c61d10d91cd

⁵⁵ https://reliefweb.int/sites/reliefweb.int/files/resources/EN_32.pdf

⁵⁶ <https://www.facebook.com/watch/?v=902417957122147>

⁵⁷ <https://www.reuters.com/world/ukraines-kharkiv-struck-by-cluster-bombs-experts-say-2022-03-01/>

The rocket motor of a 9M55K rocket embedded itself onto a sidewalk in a residential area in the Saltivskyi District after separating from the cargo sections of the rocket, as per its design.

[According](#)⁵⁸ to the mayor of Kharkiv, at least nine civilians were killed in this barrage. A United Nations [document](#)⁵⁹ reported that 37 other individuals were injured.

Further Action

Further action on this incident could include cross-referencing the 9M55K rocket motor detailed in this report with other 9M55K remnants found throughout Kharkiv corresponding to the barrage of 28/02/2022. The rocket motor and cargo sections of the same rocket must have impacted somewhere in the vicinity of the rocket motor. These may have caused structural damage to buildings, or injuries.

For example, the investigator found that the rocket section of a 9M55K rocket section, seen in this Twitter [image](#)⁶⁰, landed approximately 200 meters away from the rocket motor examined in this report. This image corresponds to CIV0464. Given the proximity of this site, it is possible that this rocket section and the rocket motor featured in this report correspond to the same rocket. Were this to be conclusively determined, overlaying the estimated points of origin for these two munition remnants may also provide a closer approximation of the rockets' trajectory and origin.

Along this same line, further action could also include determining where the munitions from this specific rocket impacted, and determining what damage or injuries those munitions may have caused.

⁵⁸ <https://www.bbc.com/news/60591017>

⁵⁹ https://reliefweb.int/sites/reliefweb.int/files/resources/EN_32.pdf

⁶⁰ <https://twitter.com/2022Kharkiv/status/1498321124345716739?s=20&t=msDldxTbhAxlqvhSCA68ng>