Incident Assessment

Incident ID	CIV0075
Location	Kharkiv, Saltiviskyi District, Kharkiv Oblast
Coordinates	Incident A: 50.0050, 36.3321[1] Incident B: 50.0032, 36.3333[2] Incident C: 50.0023, 36.3339[3]
Date	28/02/2022
Time	Between 06:20 - 13:11 EET

Description of the Events

In the morning of 28/02/2022, what appears to have been a cluster munition attack took place in Saltivskyi District, Kharkiv. The CIVHARM sheet lists one source of the incident. It is a post on a Telegram channel named @vorposte (further - "Source 1"[4]). The post contains three videos of three different munition remnants: one video of a munition remnant embedded in a sidewalk; another video of a munition remnant embedded in the road and the third video of a munition remnant embedded in the ground in what appears to be a courtyard.

All three remnants impacted approximately 100-200 meters away from each other, presumably at around the same time. Considering the timing and proximity of the three rocket motors indicated in Source 1, CIV1654 has been integrated in CIV0075.

Key Findings

- On 28/02/2022, several videos and images were posted of rocket remnants embedded in the ground in Saltivsky district of Kharkiv.
- One of the munition remnants was embedded in a sidewalk next to what appears to be a residential building (further - "**Incident A**").
- Another remnant was embedded in the ground on what appears to be a road within 200 meters distance of Incident A (further - "**Incident B**").
- Another remnant was embedded in the ground in what appears to be a courtyard of an apartment building within 100 meters of Incident B (further - "**Incident C**").
- Incident A was geolocated to 50.0050, 36.3321[5].
- Incident B was geolocated to 50.0032, 36.3333[6].
- Incident C was geolocated to 50.0023, 36.3339[7].
- One cargo section was geolocated to 50.0112, 36.3366[8].

[1] https://maps.app.goo.gl/3KATxooRojHokSZf6
[2] https://maps.app.goo.gl/XAFXxtmMkBZv4kDR7
[3] https://maps.app.goo.gl/xUTiojSpKYcCp1dS6
[4] https://t.me/vorposte/14405
[5] https://maps.app.goo.gl/3KATxooRojHokSZf6
[6] https://maps.app.goo.gl/XAFXxtmMkBZv4kDR7
[7] https://maps.app.goo.gl/xUTiojSpKYcCp1dS6
[8] https://maps.app.goo.gl/973YpWaxakUYn8u6A

- No military objects were identifiable in the area of impact from the available open sources.
- No casualties were apparent from the available open sources.
- It is possible this incident is connected to CIV1655 and CIV0077.

Description of Searches

The Civilian Harm sheet lists one relevant source for this incident. Source 1[9] is a Telegram post showing a video of the incidents A; B and C. Searches for more information on these incidents, including more pictures, videos, etc., of the possible strike were conducted for 28/02/2022 in the Saltivka area in Kharkiv. The searches were conducted in three languages: English, Ukrainian and Russian. These searches led to dozens of media reports from all over the world, as well as other sources from Telegram, descriptions of which are listed below.

Background Summary of Significant Descriptive Content

Media Reports

- Al Jazeera[10] - a general report on attacks in Kharkiv on 28/02/2022;
- France 24[11] - a general report on attack on 28/02/2022 containing images and videos related to this Incident;
- The Guardian[12] - a general report on attacks in Kharkiv on 28/02/2022;
- My Kharkiv[13] - a general report on attacks in Kharkiv on 28/02/2022, mentions the incidents in question;
- Hromadske[14] - mentions the aftermath of the attack on Kharkiv on 28/02/2022.

NGO Reports

- HRW[15] - report on cluster munition attacks in Kharkiv on 28/02/2022;
- Atlantic Council[16] - mapped attack on 28/02/2022 in Kharkiv, including an incident on Klochkivska Street.

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[9] https://t.me/vorposte/144058

[10] https://www.aljazeera.com/news/2022/2/28/ukraine-reports-dozens-killed-in-kharkiv-rocket-strikes#:~:text=At%20least%2011%20people%20have,Kharkiv%2C%20according%20to%20Ukrainian%20officials

[11] https://observers.france24.com/en/europe/20220306-ukraine-russia-kharkiv-rockets-cluster-munitions-bombs-war-crimes-icc

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

[13] https://myharkov.net/kharkov-news/v-xarkove-pokazali-posledstviya-obstrela-goroda-foto-video/

[14] https://hromadske.ua/posts/unaslidok-obstriliv-u-harkovi-zaginulo-9-lyudej-she-desyatki-poraneni

[15] https://www.hrw.org/news/2022/03/04/ukraine-cluster-munitions-launched-kharkiv-neighborhoods

[16] https://www.atlanticcouncil.org/blogs/new-atlanticist/mapped-russias-shelling-of-civilians-in-kharkiv/

Other

- Wikipedia page[17] - overview of Kharkiv shelling with cluster munition on 28/02/2022.

Analysis of Examinable Content

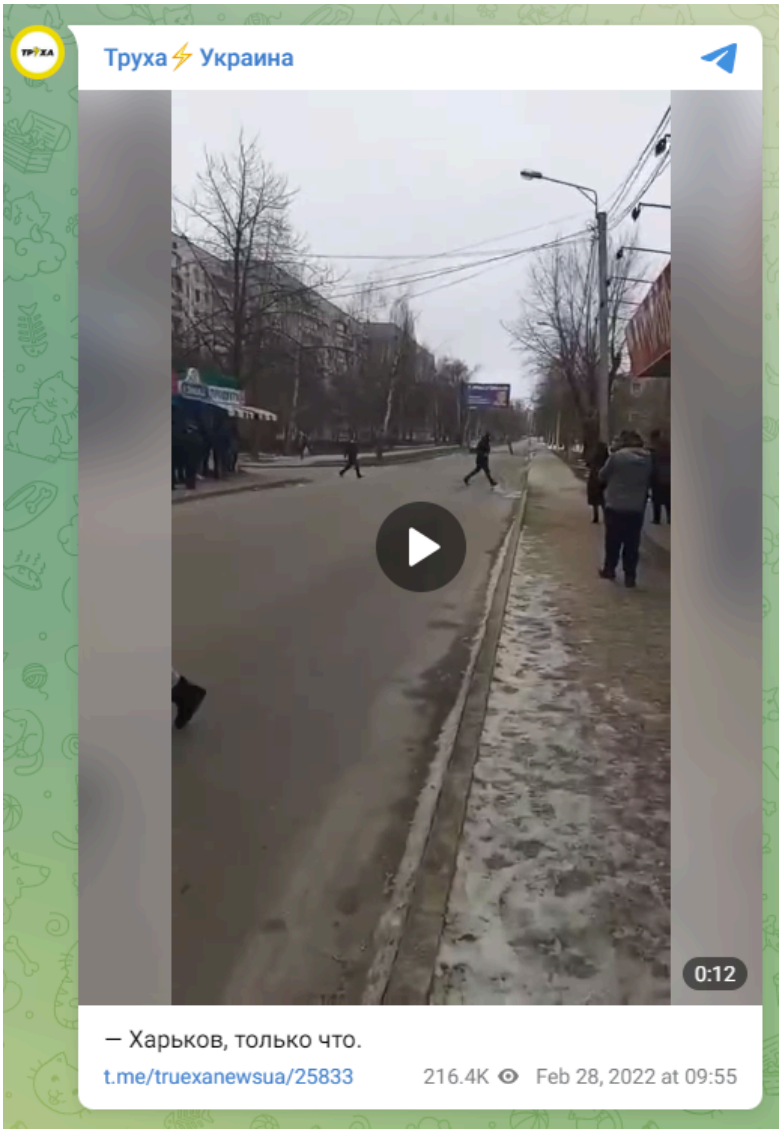
- Source 1[18]: A Telegram a post made on 28/02/2022 at 13:11 EET, which contains three videos depicting three different munition remnants embedded in the ground at different locations. The first video depicts what appears to be a rocket motor embedded into a pedestrian sidewalk (S1V1); the second video depicts what appears to be a rocket motor embedded into a road (S1V2); the third video depicts what appears to be a rocket motor embedded in the ground in what seems to be a courtyard (S1V3). Text accompanying these videos could be translated into English as follows: "Tail parts of MLRS rockets on Saltivka north-east of Kharkiv".

Source 1 containing three videos (S1V1, S1V2 and S1V3) of embedded munition remnants. Note: The Telegram timestamp shown is in CET.

[17] https://uk.wikipedia.org/wiki/%D0%9E%D0%B1%D1%81%D1%82%D1%80%D1%96%D0%BB_%D0%A5%D0%B0%D1%80%D0%BA%D0%BE%D0%B2%D0%B0_%D0%BA%D0%B0%D1%81%D0%B5%D1%82%D0%BD%D0%B8%D0%BC%D0%B8_%D0%B1%D0%BE%D1%94%D0%BF%D1%80%D0%B8%D0%BF%D0%B0%D1%81%D0%B0%D0%BC%D0%B8_(28_%D0%BB%D1%8E%D1%82%D0%BE%D0%B3%D0%BE_2022)

[18] https://t.me/vorposte/14405

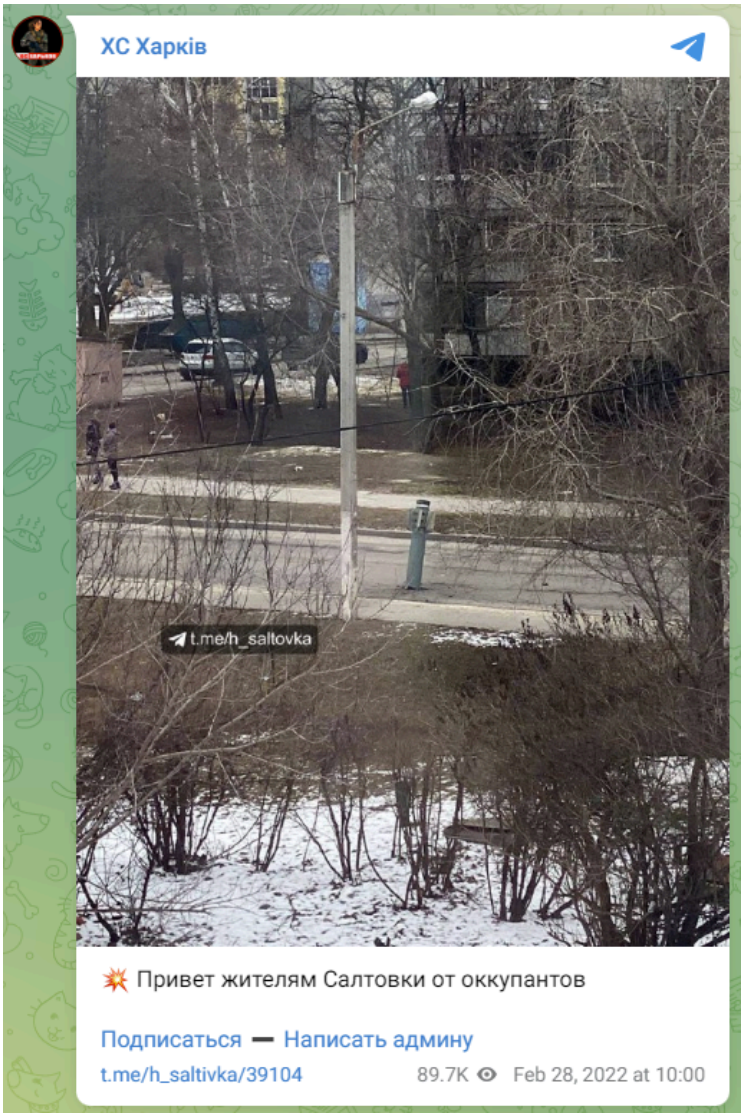
- Source 2[19]: A Telegram post made on 28/02/2022 at 10:55 EET. The post contains a video (S2V1) of a munition remnant embedded in a road, similar to the munition remnant depicted in S1V2.



Source 2, containing a video (S2V1) of a munition remnant, similar to that depicted in S1V2. Note: The Telegram timestamp is shown in CET.

- Source 3[20]: A Telegram post made on 28/02/2022 at 11:00 EET. The post contains an image (S3I1) of a munition remnant embedded in a road similar to the munition remnant depicted in S1V2.

[19] https://t.me/truexanewsua/25833
[20] https://t.me/h_saltivka/39104



Source 3, containing an image (S3I1) of a munition remnant, similar to that depicted in S1V2. Note: The Telegram timestamp is shown in CET.

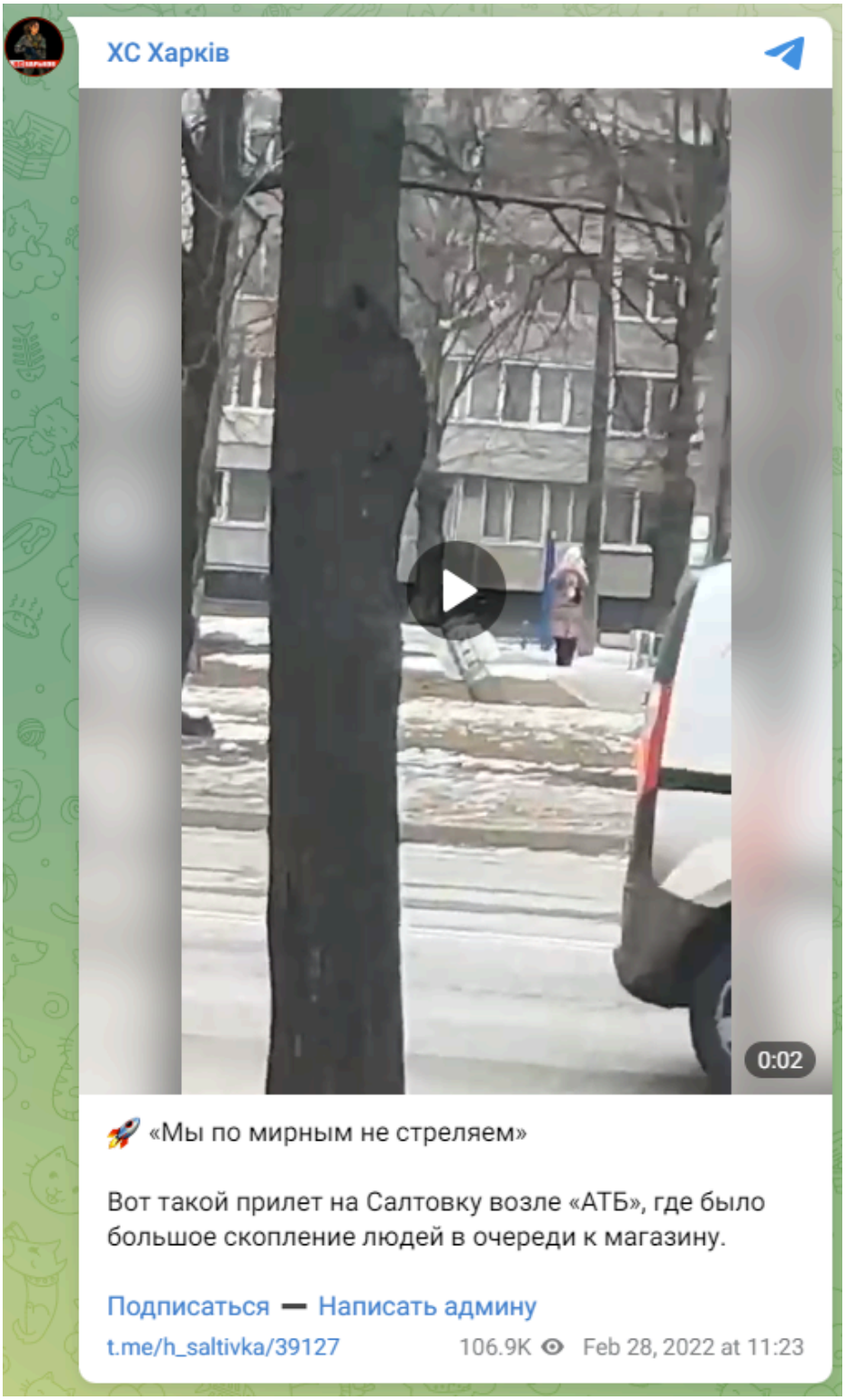
- Source 4[21]: A Telegram post made on 28/02/2022 at 10:49 EET. The post contains an image (S4I1) of what appears to be a munition remnant embedded in a field. This source is the earliest identified source reporting an attack on 28/02/2022 in the area of Saltivka District in Kharkiv.

[21] https://t.me/vekha/30292

Source 4, containing an image (S4I1) of a munition remnant. Note: The Telegram timestamp is shown in CET.

- Source 5[22]: A Telegram post made on 28/02/2022 at 12:23 EET. The post contains a video (S5V1) of two munition remnants embedded in what appears to be sidewalks. The first remnant seen is described in CIV0093. This source is the earliest identified source reporting Incident A.

[22] https://t.me/h_saltivka/39127



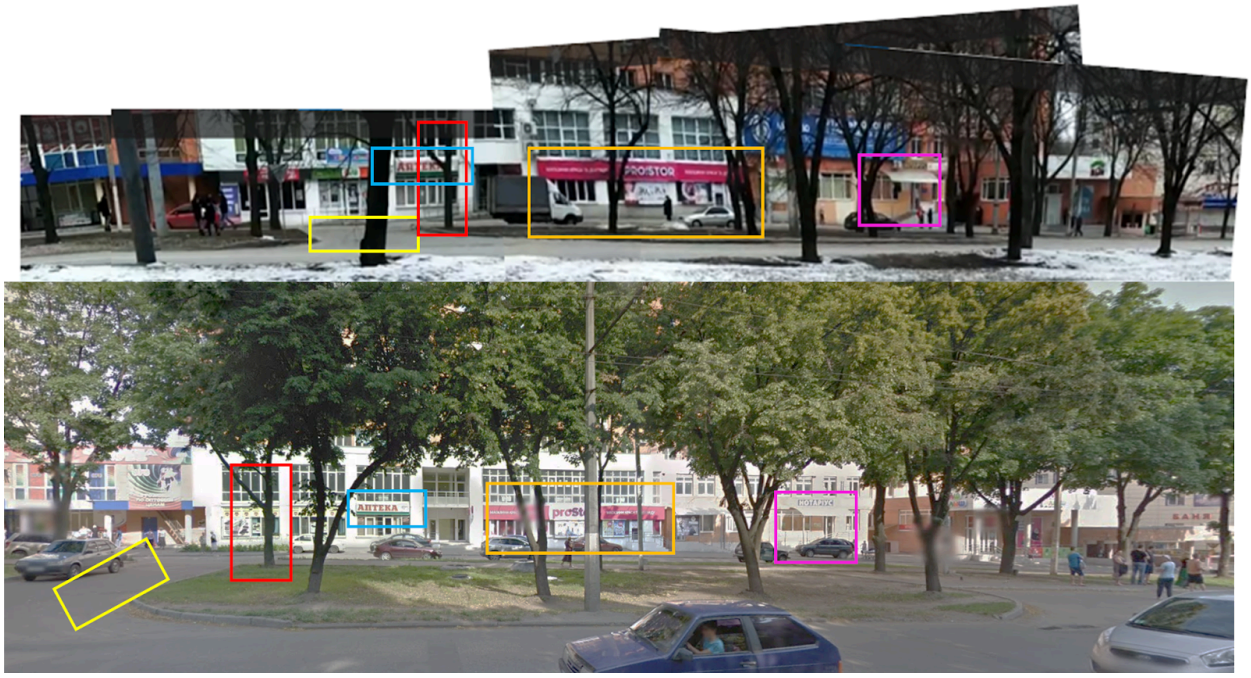
Source 5, containing a video (S5V1) depicting two munition remnants. Note: The Telegram timestamp is shown in CET.

Questions to investigate:

Incident A

Where Was the Incident?

The location of the Incident A was geolocated by a peer researcher to the following coordinates: 50.0050, 36.3321[23]. These coordinates correspond to the address: 28 Hvardiitsiv-Shyronintsiv Street, Kharkiv, 61000.



Top: 1) Panorama made from a series of stills from the S1V1 depicting driveway leading to what appears to be a parking lot in front of a building (yellow rectangle); 2) a fork shaped tree located on the right side of the driveway (red rectangle); 3) a pharmacy (blue rectangle); 4) a Prostor shop (orange rectangle); 5) an entrance covered with a light-colored visor (pink rectangle). Bottom: A screenshot from Google Maps Street View[24] from the identified location depicting matching objects in a matching configuration (Credit: Google Maps).

When Was the Incident?

The earliest identified mention of Incident A on social media is Source 5[25], which was uploaded on 28/02/2022 at 12:23 EET. In S5V1 it appears that smoke is emerging from the rocket motor in question, which is the second rocket motor seen. This indicates this video was filmed shortly after the impact of the munition.

According to Timeanddate.com[26], in this location the sun rose at 06:20 and set at 17:15 - a range in which the incident falls within. Other techniques to determine the exact time, such as shadow

[23] https://maps.app.goo.gl/DbDjRkgTwQKaQzUH8
[24] https://maps.app.goo.gl/aASkRgU2vdCCKYkJA
[25] https://t.me/h_saltivka/39127
[26] https://www.timeanddate.com/sun/ukraine/kharkiv?month=2&year=2022

analysis, were not possible due to the cloudy conditions. As such, this incident must have taken place between 06:20 and 12:23 EET.

What Kind of Munition Was Used?

S1V1 shows a munition remnant embedded in a sidewalk. This munition remnant appears to match the distinct tail of a 9M55K rocket with three equally spaced hinges on the tail fins. This matches the reference cards[27] produced by the Associate Arms Director of Human Rights Watch.

Left: A still from S1V1. Right: A reference card from official Twitter page[28] of Human Rights Watch Associate Arms Director.

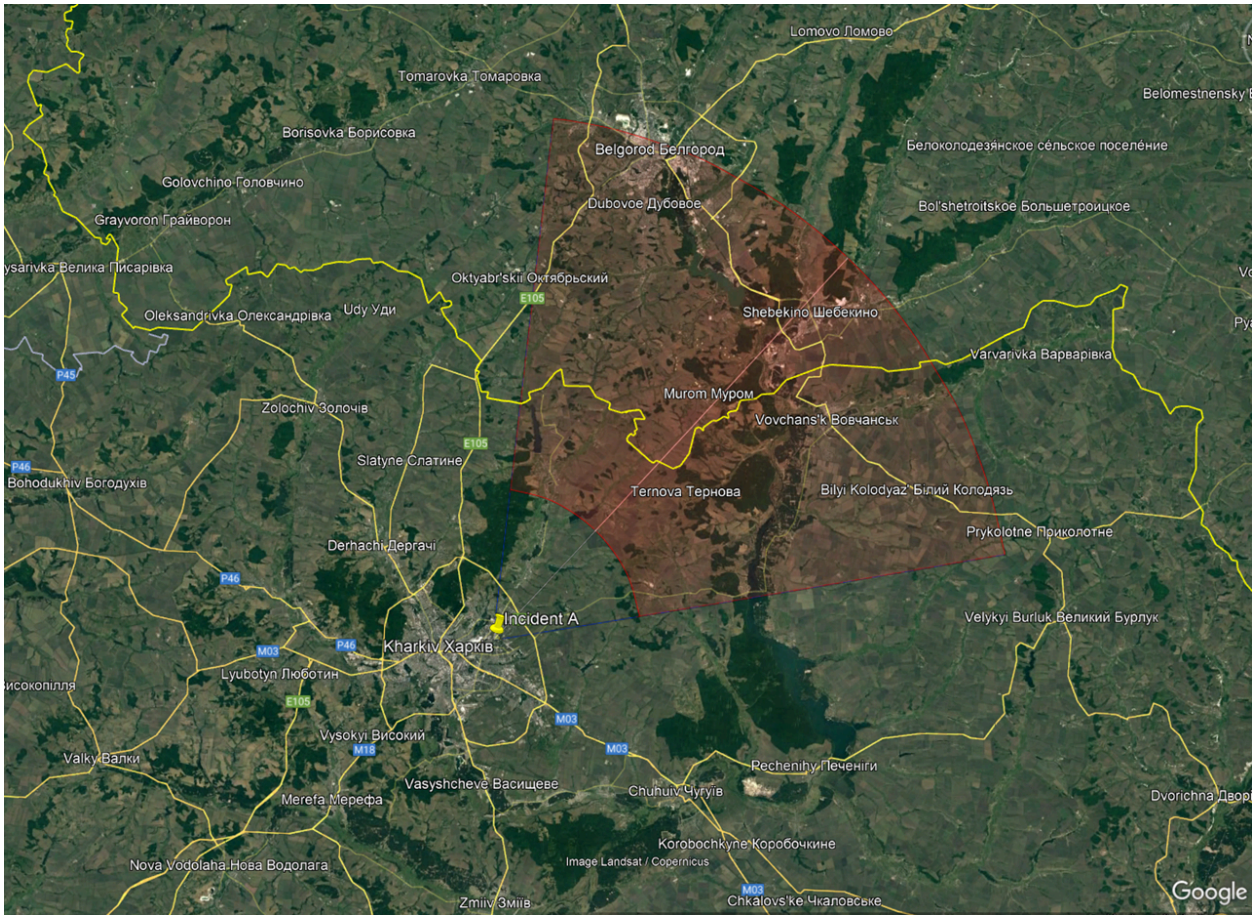
Is There Any Evidence of the Direction the Munition Came from?

Based on the angle of the rocket motor as observed in Source 1,[29] the investigator made an assessment of the likely direction of origin. This was assessed as being on a bearing of 40 degrees from north from the point of impact.

[27] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw
[28] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw
[29] https://t.me/vorposte/144058

When fired from a BM-30, a 9M55k rocket, according to the Army Recognition[30] website, has a range of 20 to 70 km. When combined with the standardised direction of origin template, this gives us an area of origin within which this 9M55K was likely fired.

Once the direction of origin was identified, the investigator applied a standardized 9M55K direction of origin template to the assessed direction of origin in order to establish the likely area of origin.



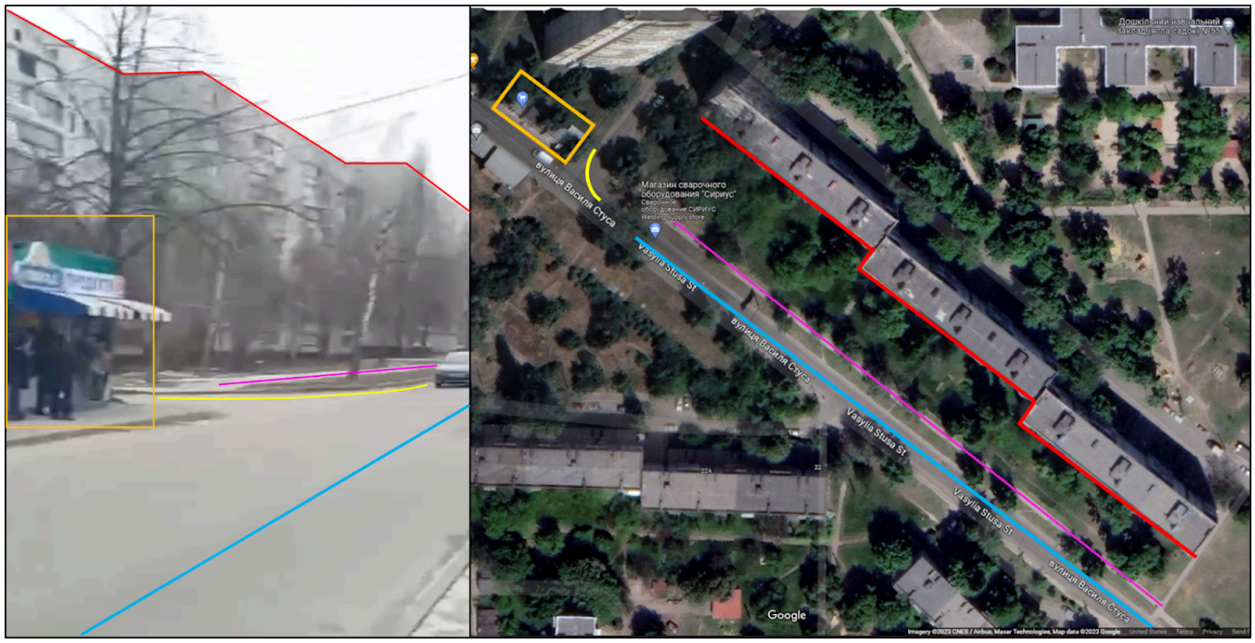
A screenshot of Google Earth Pro of the area from which the attack related to Incident A was likely to have originated from, with the BM-30 template applied (Credit: Google/Landsat/Copernicus).

Incident B

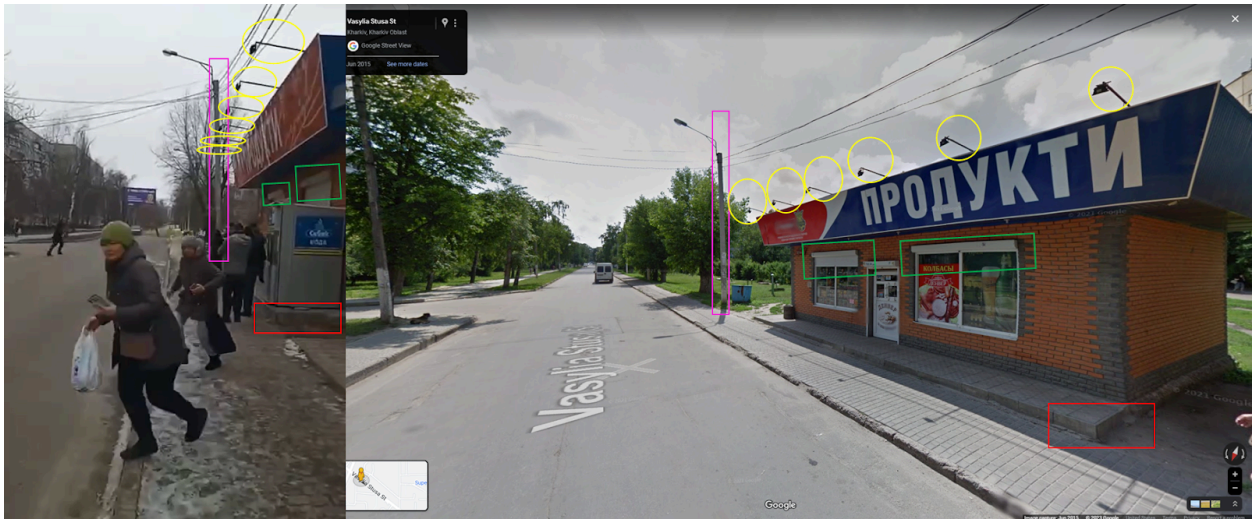
Where Was the Incident?

The location of the Incident B was geolocated by a peer researcher to the following coordinates: 50.0037, 36.3323[31]. These coordinates were slightly adjusted to 50.0032, 36.3333[32] and correspond to the address: 26 Hvardiitsiv-Shyronintsiv Street, Kharkiv, 61000.

[30] https://www.armyrecognition.com/russia_russian_army_vehicles_system_artillery_uk/bm-30_smerch_9k58_300mm_multiple_rocket_launcher_system_technical_data_sheet_information_description.html
[31] https://maps.google.com/maps?q=50.0037032,36.332387
[32] https://maps.app.goo.gl/ncvuojhq2rgUzbGC9

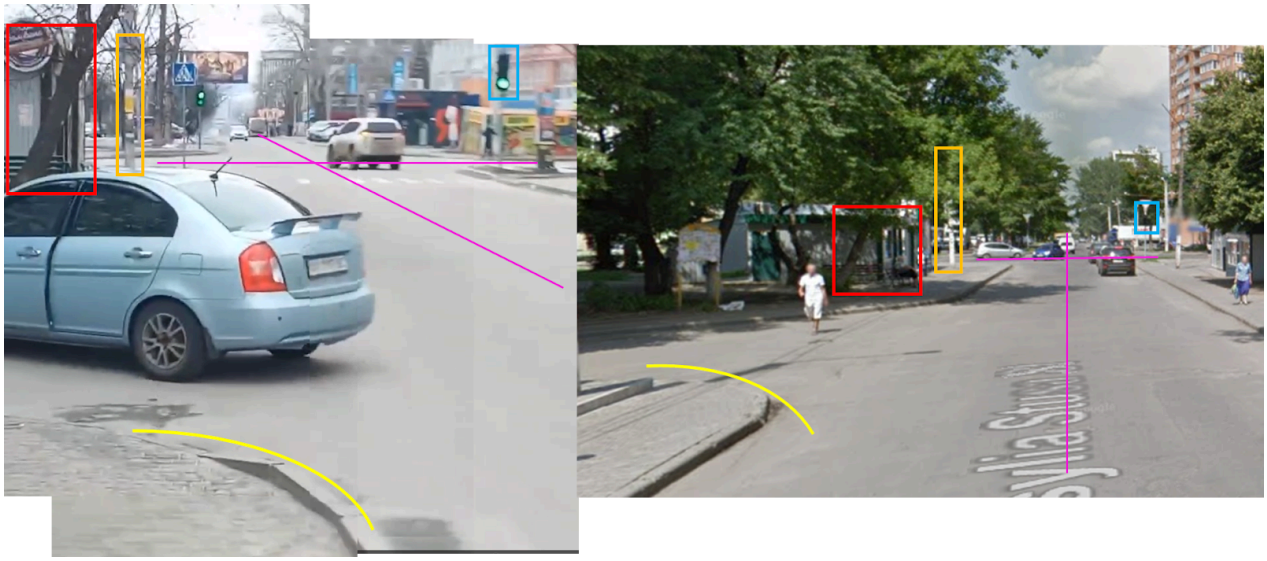


Left: A still from the S2V1[33] taken at 00:12, depicting: 1) a road (blue line); 2) a sidewalk separated from the road by what appears to be a strip of grass (pink line); 3) a small road leading to the residential buildings seen in the background, neighboring what appears to be a shop (yellow arc); 4) a small shop near the driveway (orange rectangle); 5) a high-rise apartment building consisting of at least three subsequent sections (red lines). Right: A screenshot from Google Maps Street View[34] containing the same objects as the still (Credit: Google Maps).



Left: A still from the S2V1[35] taken at 00:01, depicting the building of what appears to be a grocery shop with: 1) distinctive lights on its roof (yellow circles); 2) white shutters on both of the windows (green rectangles); 3) a step along the front of the building (red rectangle); 4) an electricity pole next to the building (pink rectangle). Right: A screenshot from Google Maps Street View[36] from the identified location containing matching features (Credit: Google Maps).

[33] https://t.me/truexanewsua/25833
[34] https://maps.app.goo.gl/QkBS4WnkE73hpw3d9
[35] https://t.me/truexanewsua/25833
[36] https://maps.app.goo.gl/C4j9sJYK4AN4Bind8



Left: A composite panorama made from stills from S2V1[37] taken at 00:09, depicting: 1) a driveway (yellow arc); 2) a small shop with a bench (red rectangle); 3) an electricity pole (orange rectangle); 4) a four way street intersection (pink lines); 5) traffic lights (blue rectangle). Right: A screenshot from Google Maps Street View[38] from the identified location containing matching features (Credit: Google Maps).

S3I1[39] depicts the same rocket motor at the same location from a different perspective.

Left: S3I1 depicting: 1) a road (blue line); 2) a sidewalk separated from the road by grass (pink line); 3) a road passing the house seen in the background (orange rectangle); 4) a small kiosk near the driveway (yellow rectangle); 5) a blue colored object (red rectangle). Right: A screenshot from Google Maps Street View[40] at the identified location showing matching features (Credit: Google Maps).

[37] https://t.me/truexanewsua/25833
[38] https://maps.app.goo.gl/7TWp2bdJgZoZLmQn8
[39] https://t.me/h_saltivka/39104
[40] https://maps.app.goo.gl/7TWp2bdJgZoZLmQn8

When Was the Incident?

The earliest identified mention of Incident B on social media is Source 2[41], which contains a video that was uploaded on 28/02/2022 at 10:55 EET.

In the video, people are seen acting in an abnormal way, glancing around and running in various directions. It also appears that the rocket motor is still smoking. Hence, it appears likely that this video was taken shortly after impact.

A still from S2V1. Note what appears to be smoke emerging from the rocket motor.

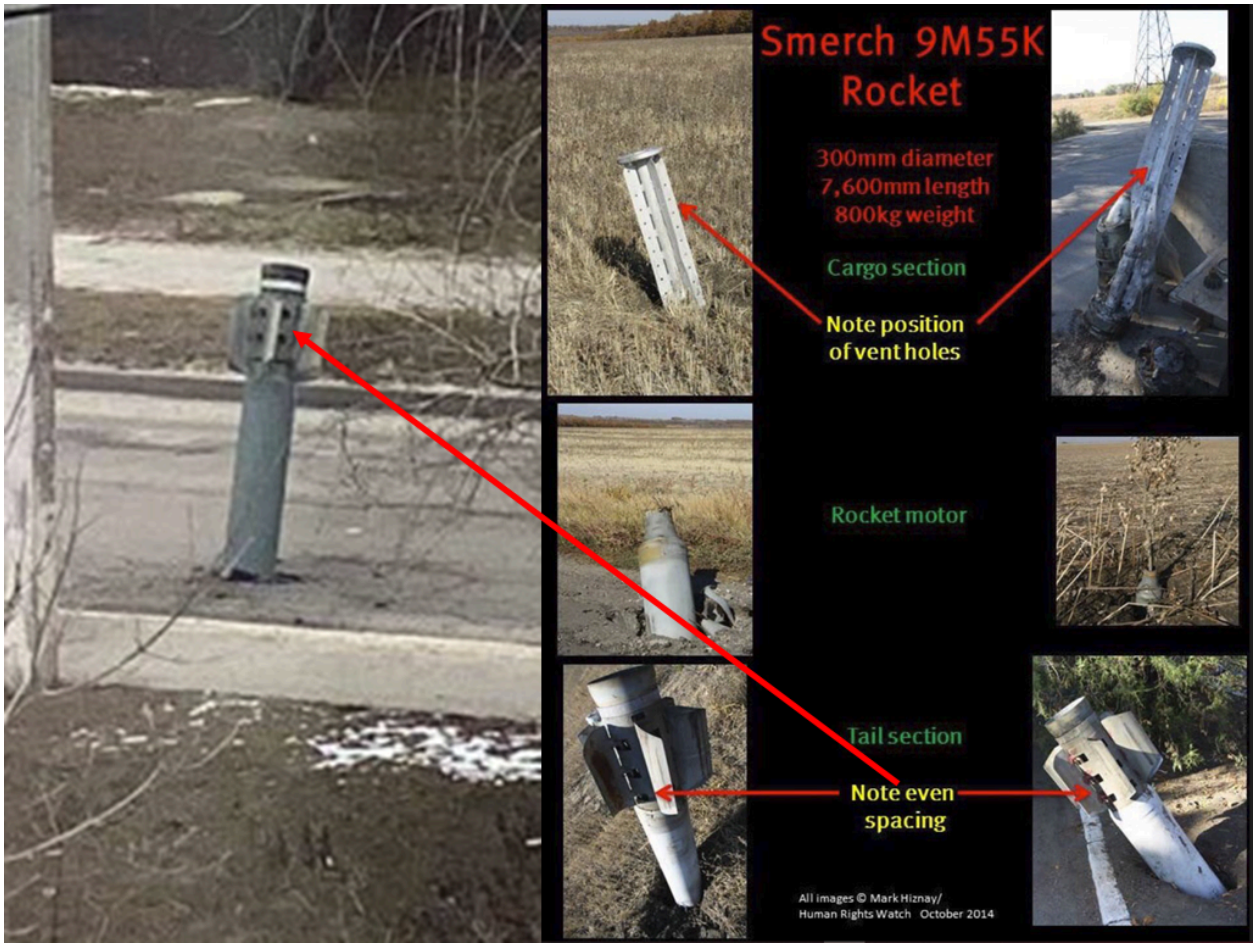
According to Timeanddate.com[42], in this location the sun rose at 06:20 and set at 17:15 - a range in which the incident falls within. Other techniques to determine the exact time, such as shadow analysis, were not possible due to the cloudy conditions. Considering that this video was likely

[41] https://t.me/truexanewsua/25833
[42] https://www.timeanddate.com/sun/ukraine/kharkiv?month=2&year=2022

filmed a short time after the incident occurred, the incident must have taken place between 06:20 and 10:55 EET.

What Kind of Munition Was Used?

S3I1 shows the munition remnant embedded in the road. This munition remnant appears to match the distinct tail of a 9M55K rocket with three equally spaced hinges on the tail. This matches the reference cards[43] produced by the Associate Arms Director of Human Rights Watch.



Left: A close-up from S3I1. Right: A reference card from official Twitter page[44] of Human Rights Watch Associate Arms Director.

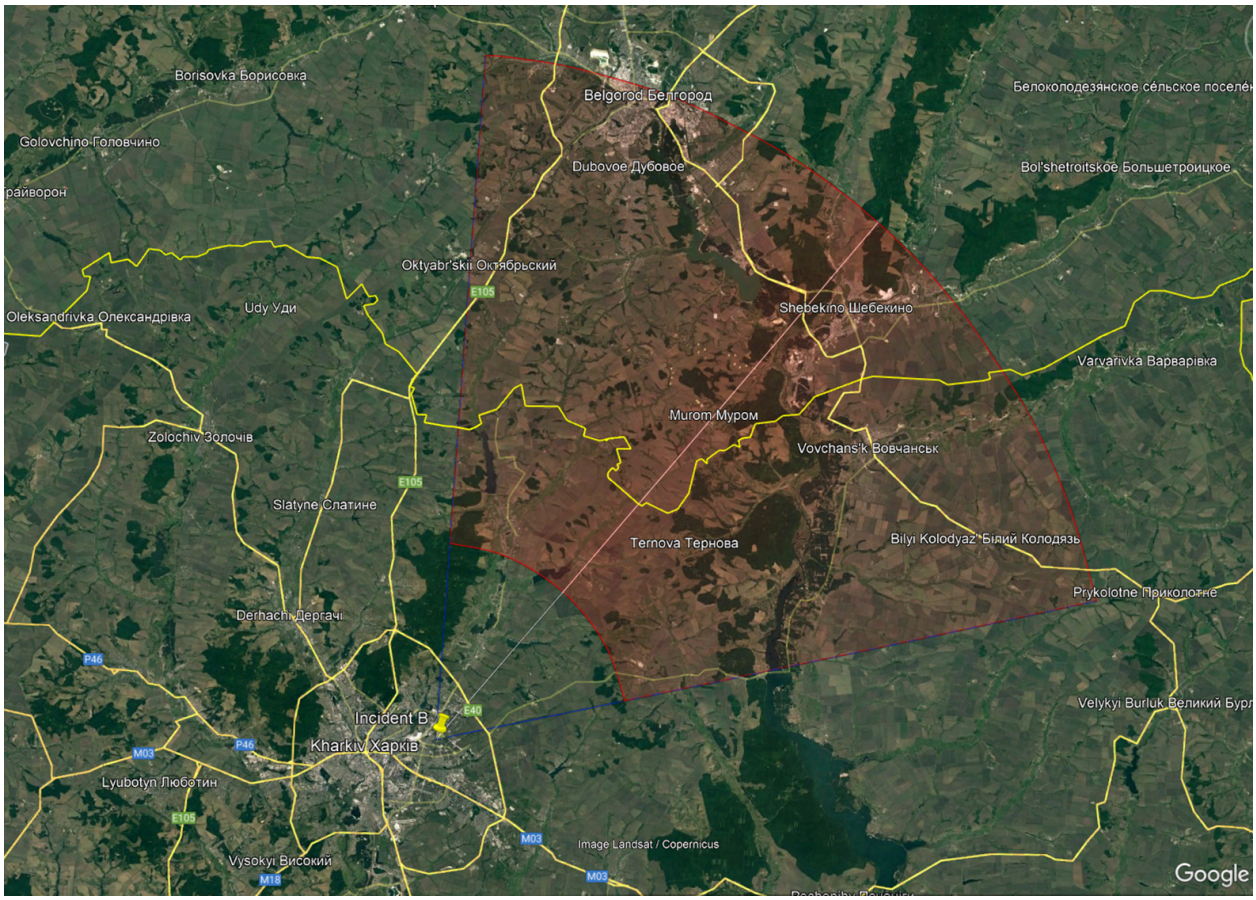
Is There Any Evidence of the Direction the Munition Came from?

Based on the angle of the rocket motor as observed in Sources 2 and 3, the investigator made an assessment of the likely direction of origin. This was assessed as being on a bearing of 38 degrees from north.

[43] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw
[44] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw

When fired from a BM-30, a 9M55k rocket, according to the Army Recognition[45] website, has a range of 20 to 70 km. When combined with the standardised direction of origin template, this provides an area of origin within which this 9M55K was likely fired.

The investigator applied the standardized 9M55K direction of origin template to the assessed direction of origin in order to establish the likely area of origin.



A screenshot of Google Earth Pro of the area from which the attack related to Incident B likely originated from, with the BM-30 template applied (Credit: Google/Landsat/Copernicus).

Incident C

Where Was the Incident?

The location of Incident C was mentioned and geolocated by a peer researcher in an Atlantic Council article[46] "Mapped: Russia's shelling of civilians in Kharkiv", dated 02/03/2022, which identified the following coordinates: 50.0023, 36.3339[47]. These coordinates correspond to the address: 18D Hvardiitsiv-Shyronintsiv, Street, Kharkiv, 61000.

[45]https://www.armyrecognition.com/russia_russian_army_vehicles_system_artillery_uk/bm-30_smerch_9k58_300mm_multiple_rocket_launcher_system_technical_data_sheet_information_description.html

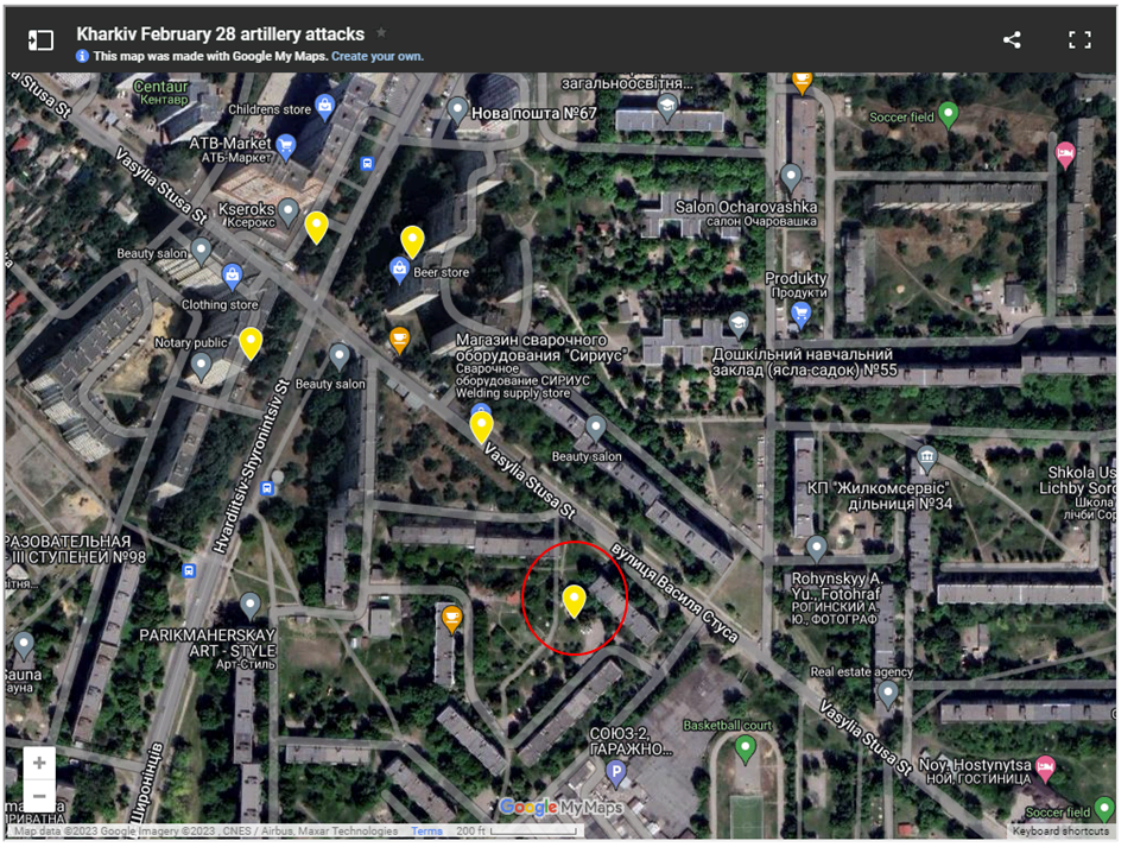
[46] https://www.atlanticcouncil.org/blogs/new-atlanticist/mapped-russias-shelling-of-civilians-in-kharkiv/

[47] https://maps.app.goo.gl/EBoqxSorMmR3FabY7

New Atlanticist | March 2, 2022

Mapped: Russia's shelling of civilians in Kharkiv

By Michael J. Sheldon



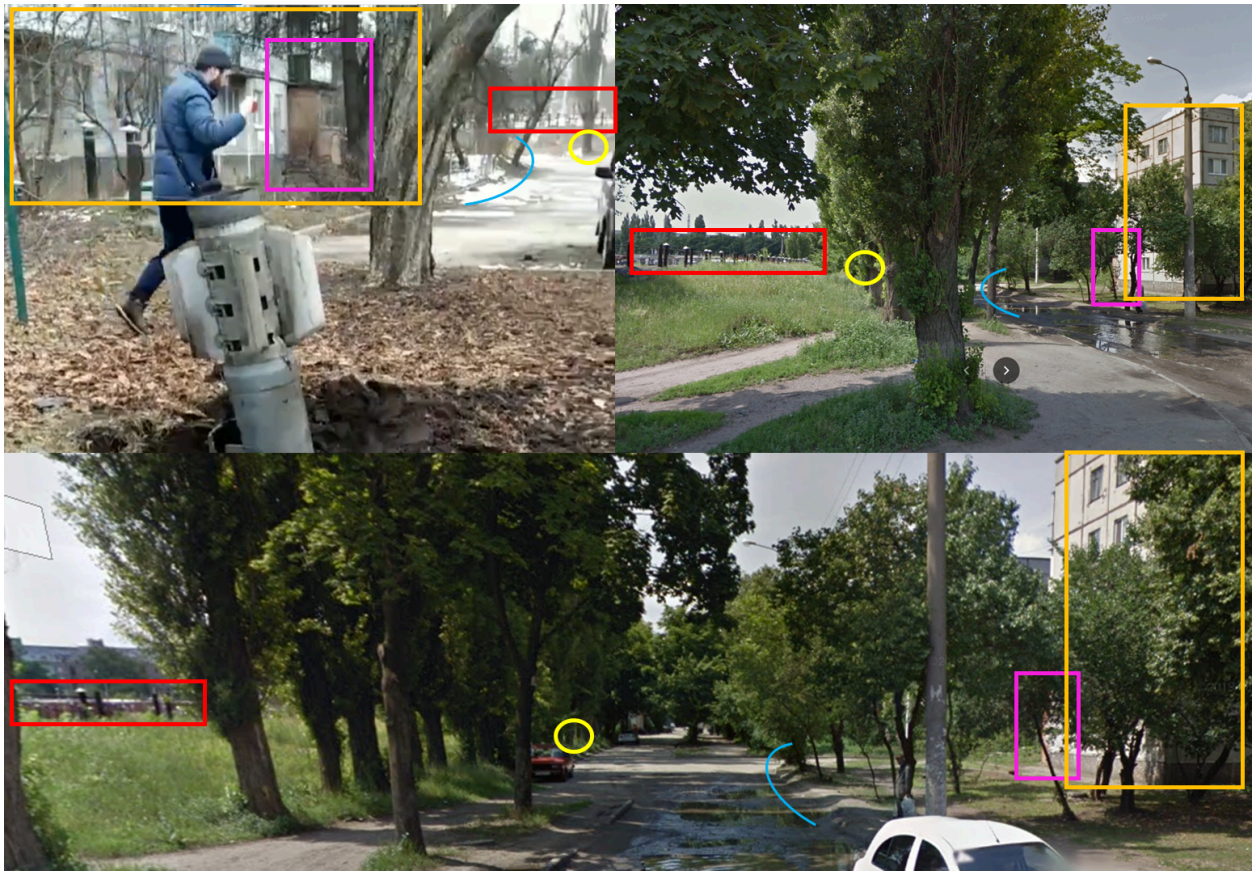
A Screenshot from the Atlantic Council article[48]: "Mapped: Russia's shelling of civilians in Kharkiv", dated 02/03/2022, depicting geolocated sites of impact of attack on 28/02/2022 in Kharkiv. Incident C is marked with a red circle.

48 https://www.atlanticcouncil.org/blogs/new-atlanticist/mapped-russias-shelling-of-civilians-in-kharkiv/

Top: A composite panorama of stills from S1V3 depicting: 1) an L-shaped parking lot, merging into a driveway between two apartment buildings (red lines); 2) an apartment building on the left side of the parking lot (orange rectangle); 3) a driveway to the right from the parking lot along the apartment building (yellow line); 4) an apartment building in the background on the right side of the parking lot (pink rectangle); 5) a driveway with a car parked on the right side across what appears to be a square (purple rectangle); 6) another apartment building (blue rectangle). Bottom: A screenshot from Google Maps[49] showing matching features (Credit: Google Maps).

Although there is no street view available from Google Maps depicting the courtyard between the apartment buildings, certain sites can be verified from the perspective of Street View outside the mentioned apartment buildings.

[49] https://maps.app.goo.gl/19jxGoQjVoi8Ls5CA



Top left: A still from S1V3 depicting: 1) a driveway from L-shaped parking lot identified in the graphic above (blue arc); 2) the same apartment building along the driveway as identified above (orange rectangle); 3) a brick colored extension on the apartment building (pink rectangle); 4) a tree (yellow circle); 5) followed by a row of what appears to be a fence or chimneys (red rectangle). Top Right: A screenshot from Google Maps Street View[50] showing matching features. Bottom: A slightly different perspective (further down the street) of the same Street View[51] showing matching features in a matching configuration as depicted by the still and the other screenshot (Credit: Google Maps).

When Was the Incident?

The earliest identified mention of the incident on social media is Source 1[52], which was uploaded on 28/02/2022 at 13:11 EET.

According to Timeanddate.com[53], in this location the sun rose at 06:22 and set at 17:13 - a range in which the incident falls within. Other techniques to determine the exact time, such as shadow analysis, were not possible due to the cloudy conditions.

As such, this incident must have taken place between 06:22 am and 13:11 EET.

[50] https://maps.app.goo.gl/T5HkzuzzCftbQVAY9
[51] https://maps.app.goo.gl/T5HkzuzzCftbQVAY9
[52] https://t.me/vorposte/14405
[53] https://www.timeanddate.com/sun/ukraine/kharkiv?month=2&year=2022

What Kind of Munition Was Used?

S1V3 shows the munition remnant embedded in a sidewalk. This munition remnant appears to clearly match the distinct tail of a 9M55K rocket with three equally spaced hinges on the tail. This matches the reference cards[54] produced by the Associate Arms Director of Human Rights Watch.

Left: A still from S1V3. Right: A reference card from official Twitter page[55] of Human Rights Watch Associate Arms Director.

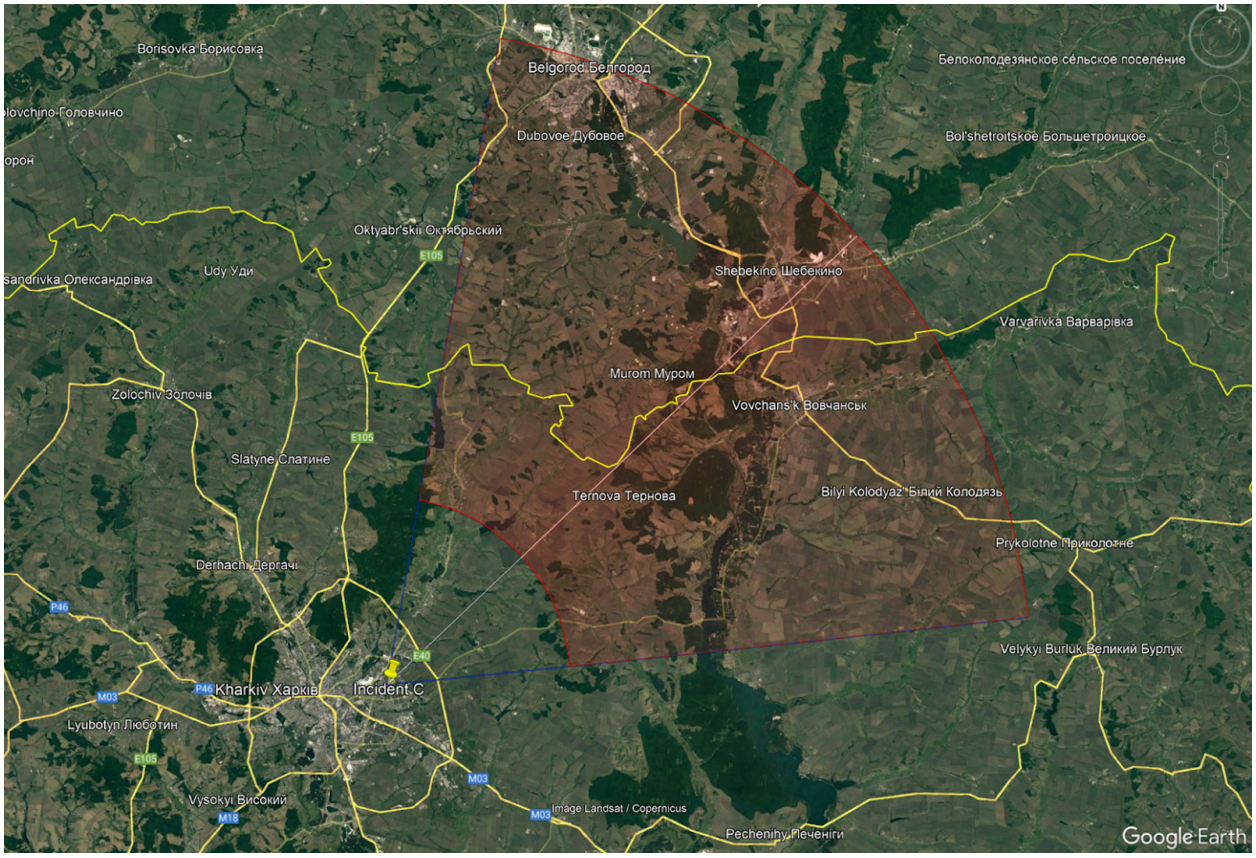
Is There Any Evidence of the Direction the Munition Came from?

Based on the angle of the rocket motor as observed in S1V3, the investigator made an assessment of the likely direction of origin. This was assessed as being on a bearing of 44 degrees from the north.

When fired from a BM-30, a 9M55k rocket, according to the Army Recognition[56] website, has a range of 20 to 70 km. When combined with the standardised direction of origin template, this provides an area of origin within which this 9M55K was likely fired.

[54] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw
[55] https://twitter.com/MarkHiznay/status/1496719886009126912?s=20&t=YjisQbzlIfzMFdp_0zO0Kw
[56] https://www.armyrecognition.com/russia_russian_army_vehicles_system_artillery_uk/bm-30_smerch_9k58_300mm_multiple_rocket_launcher_system_technical_data_sheet_information_description.html

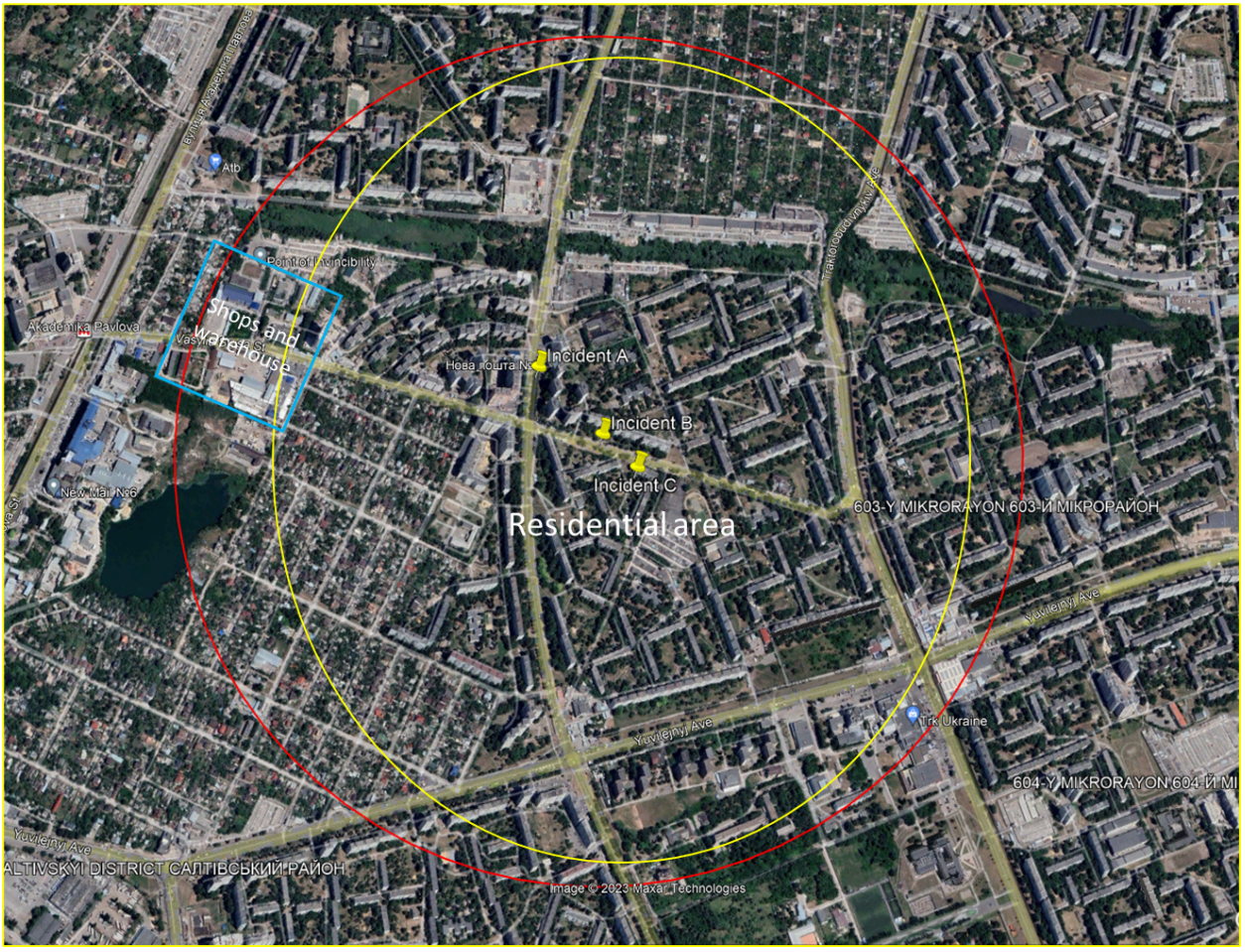
The investigator then applied the standardized BM-30 direction of origin template to the assessed direction of origin, in order to establish the likely area of origin.



A screenshot from Google Earth Pro of the area from which the attack related to Incident C likely originated from, with the BM-30 template applied (Credit: Google/Landsat/Copernicus).

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

No military objects were identified through open sources within the area of 1 km radius around the incidents.



Screenshot from Google Earth Pro indicating: a 1 km radius area (red circle) around the location of the munition remnants; residential buildings and areas within this radius (yellow circle); a shopping area with this radius (blue rectangle) (Credit: Google/Maxar Technologies).

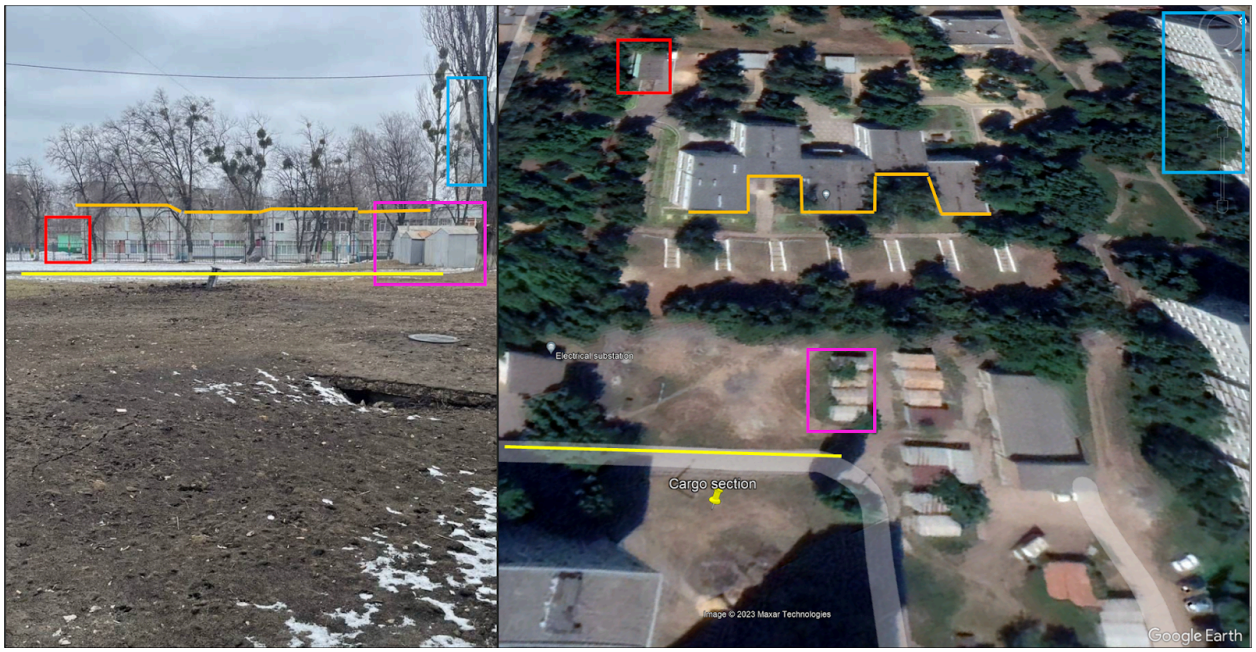
Were There Any Casualties?

Report[57] by the Governor of the Kharkiv Region, as well as a report by Washington Post[58] on the events in Kharkiv on 28/02/2022 mention that 11 people were killed in suspected cluster munition attacks. According to media reports by Izvestia[59] and Hromadske[60], on 28/02/2022, at least nine persons were killed as a result of attacks in Kharkiv. The media reports do not specify how many people were killed in which area of Kharkiv.

[57] https://t.me/synegubov/2475
[58] https://www.washingtonpost.com/world/2022/02/28/kharkiv-rockets-shelling-russia-ukraine-war/
[59] https://izvestia.kharkov.ua/proisshestvija/harkiv-zaznav-masovanogo-udaru-gradami-ie-zagibli-video-18/
[60] https://hromadske.ua/posts/unaslidok-obstriliv-u-harkovi-zaginulo-9-lyudej-she-desyatki-poraneni

Any Other Relevant Information?

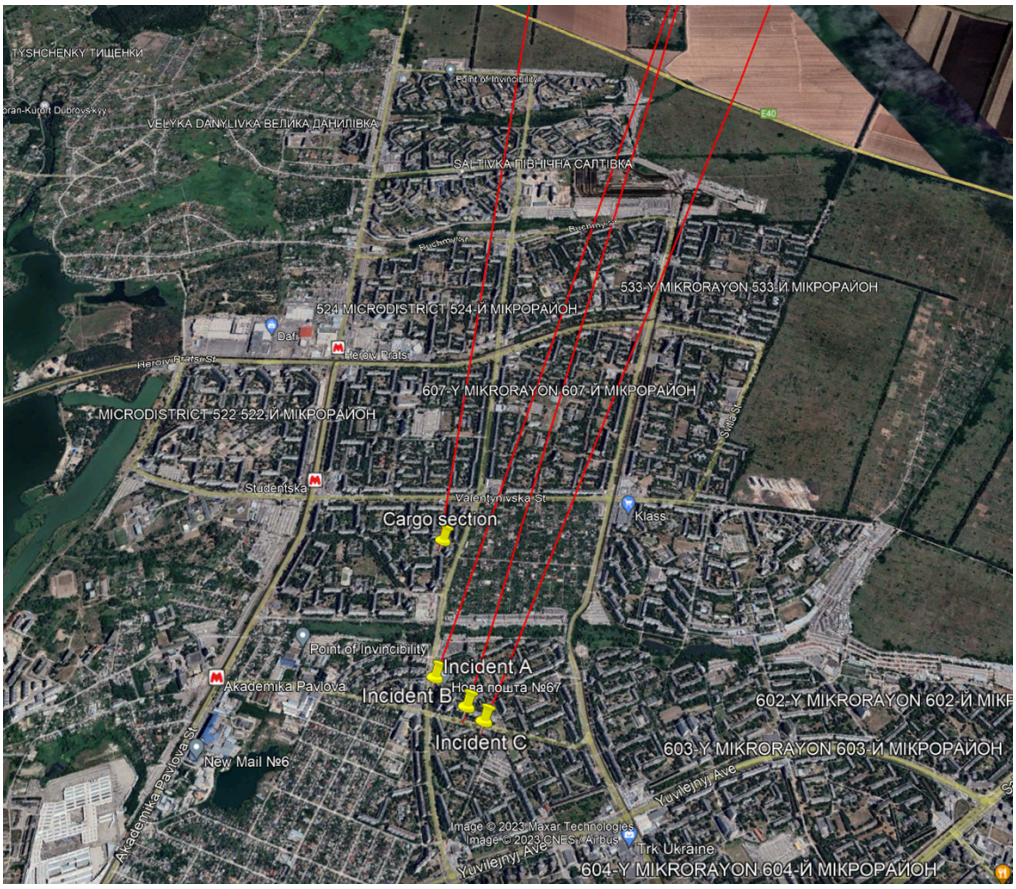
While establishing the earliest identified source of the event, the investigator found an image of the cargo section embedded on the ground near the fence of what appears to be a school or a kindergarten (Source 4[61]). This cargo section was geolocated at 50.0112, 36.3366[62].



Left: S4I1, depicting: 1) a small green building (red rectangle); 2) a building consisting of at least four subsequent sections (orange lines); 3) garages (pink rectangle); 4) a driveway (yellow line); 5) a high-rise building (blue rectangle). Right: A screenshot from Google Maps Street View[63] showing matching features (Credit: Google Maps).

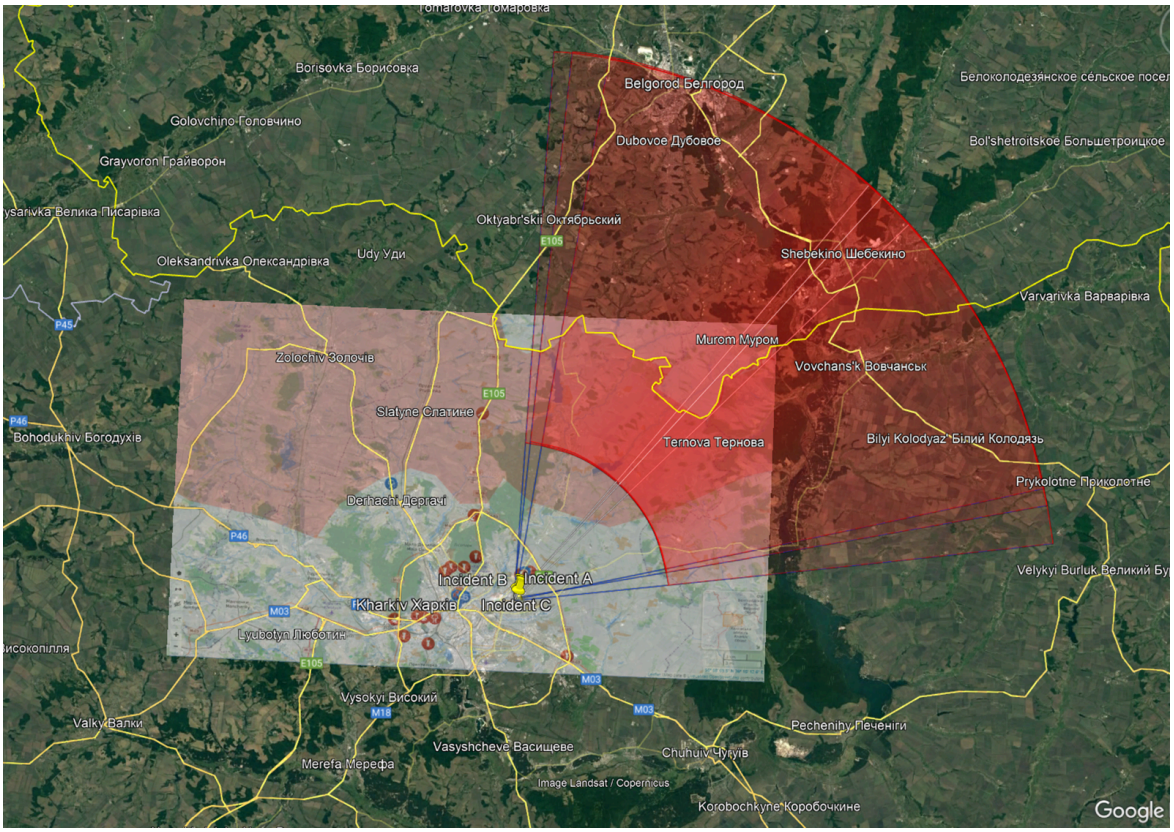
The time of the report of this cargo section, as well as its direction of origin appear to align with the timing and directions of origin of Incidents A; B and C. This potentially means that these munition remnants were from the same cluster.

[61] https://t.me/vekha/30292
[62] https://maps.app.goo.gl/yiUWh5hRuQedaz3V7
[63] https://maps.app.goo.gl/eqHp9Rf7aiqSwR5e7



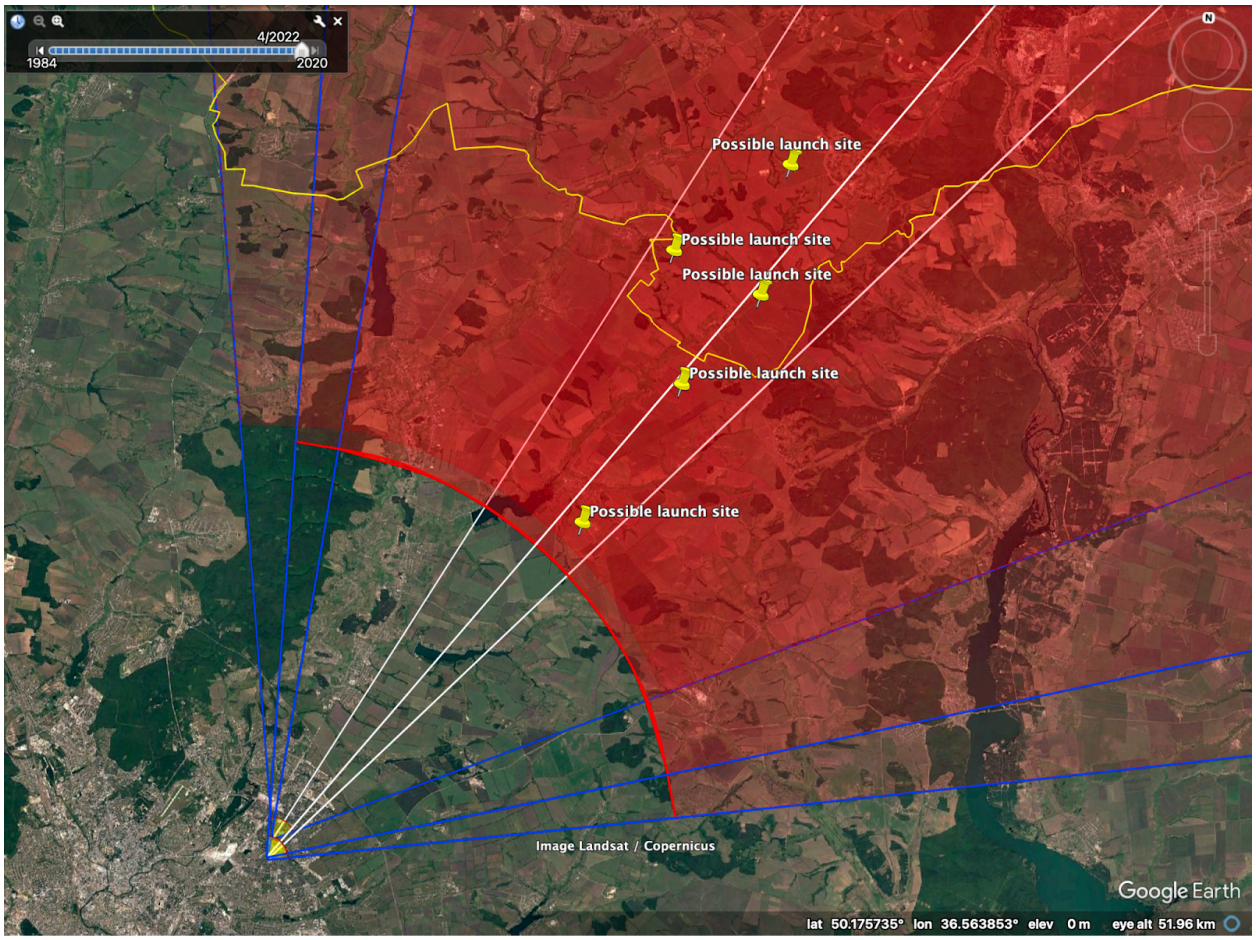
A Screenshot from Google Earth Pro depicting the locations of rocket motors (yellow pins for Incidents A;B;C and the cargo section) and the assessed direction of origin (red lines) respectively (Credit: Google/Maxar Technologies).

During the search for possible launch areas within a distance of 20 to 40 km from the location of the munition remnants, the investigator found several locations, which might have been Multiple Launch Rocket System (MLRS) launch sites. The satellite view of the potential launch site is dated as of 06/2022. Additional investigation would be needed to establish if any of these locations was in use on 28/02/2022.



A screenshot from Google Earth Pro with overlaid data from [Liveuamap](https://liveuamap.com/)[64] as of 28/02/2022 (showing the area under control by the Russian army (red areas on the semi transparent white rectangle)), as well as the templates of likely direction of origin relating to Incidents A; B and C (Credit: Google/Maxar Technologies).

[64] https://liveuamap.com/



A screenshot from Google Earth Pro with combined templates relating to Incidents A; B and C showing where they likely originated from, as well as the identified potential launch sites (marked with yellow pins) (Credit: Google/Maxar Technologies).

A screenshot from Google Earth Pro zoomed in to the location of one of the potential launch sites, depicting tire marks of what could be heavy duty vehicles, and marks which appear to be consistent with large burn marks (Credit: Google/Maxar Technologies).

A Screenshot from a video[65] of a Smerch MLRS battery from a bird's eye view and typical tire marks on the ground.

[65] https://ok.ru/video/4144247671302

Timeline of the Incidents

27/02/2022: Fighting occurred inside the city limits of Kharkiv, but, according to the Kharkiv Regional Governor, the Russian forces were repelled by 12:00 EET that day:

- Governor of Kharkiv post on Facebook[66];
- The Guardian[67];
- CNN[68].

28/02/2022: According to various sources mentioned below, shellings of Kharkiv started in the early hours of the morning and were carried out periodically during the day causing damages, injuries and deaths:

- CNN[69];
- NYTimes[70];
- Reuters[71].

Statements from Parties of the Conflict

Ukraine

- President of Ukraine in his daily address on the war[72], mentions attacks on Kharkiv but not specifically this incident.

Russia

- Kremlin's spokesperson Dmitry Peskov denies[73] cluster munitions' use in Ukraine.

Conclusion

An attack resulting in what appear to be three rocket motors impacting a residential area of Kharkiv took place sometime between 06:20 and 13:11 EET (possibly before 10:49 EET) on 28/02/2002. It appears that the rocket motors are consistent with 9M55K rockets, indicating that these fragments were from a cluster munition strike. No military structures, installations or other assets were identified within 1 km radius of the location of the incident.

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66 https://www.facebook.com/synegubov.oleg/posts/pfbid0NwGd5Bxe4UkM7cKja8jdd1F8TPKcwovhAMF9Hsmx5byJLPaynrZuniEVqTWjW84Gl

67 https://www.theguardian.com/world/2022/feb/27/kharkiv-fighting-russia-ukraine-invasion

68 https://www.cnn.com/europe/live-news/ukraine-russia-news-02-27-22/h_b78f64afe6aabdcea47f11a27f22906e

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

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

71 https://www.reuters.com/world/dozens-killed-rocket-strikes-ukrainian-city-kharkiv-says-ukrainian-official-2022-02-28

72 https://www.president.gov.ua/news/zlo-ozbroyene-raketami-bombami-j-artileriyeyu-treba-zupiniti-73257
https://youtu.be/kTavdD6ob6I

73 https://www.gazeta.ru/politics/2022/03/01/14589073.shtml

Further Action

Further analysis on the potential launch sites and whether they were active as of 28/02/2022, is merited. A possible connection of the Incidents A; B and C to the CIV1655; CIV0093 and CIV0077 could be further explored.