

Incident Assessment

Incident ID	CIV0450
Location	162G (162Г) Akademika Pavlova Street, 524th Microdistrict, Kharkiv
Coordinates	50.0258, 36.3428 ¹
Date	Likely 27/02/2022
Time	Unknown

Description of the Events

Between 24/02/2022 and 27/02/2022 and likely on the 27/02/2022 a rocket motor for a 9M55K rocket impacted into a residential area in the city of Kharkiv. As far as can be ascertained at the time of writing, nobody was wounded or killed by the impact. Although this type of rocket deploys 72 submunitions, there did not appear to be any available information about where they impacted.

Key Findings

- On or before 27/02/2022 a munition impacted into a path in the 524th Microdistrict in Kharkiv City, Ukraine.
- This munition was assessed to be a 9M55K rocket motor.
- The direction of origin was assessed to be towards the north-west.
- The area likely affected by the submunitions contained garages, a shopping area, a bus station and a church. No military objects were identified in this area.
- Searches of satellite imagery were inconclusive due to coverage and cloud cover.
- No social media posts could be identified depicting damage from this incident, other than the rocket motor itself.
- Although close in proximity and date, due to the different angle of origin this incident appears to be separate from Incident CIV0242.

Description of Searches

Searches were carried out on Google, Yandex, Twitter and Facebook in English, Ukrainian and Russian for content pertinent to this event. Keywords primarily consisted of names of locations associated with the event time limited to several days before and after the event itself. Examples include:

¹ <https://maps.app.goo.gl/pgDsD15ox3FiRCvN7>

524-й микрорайон - time limited to 26/02/2022-28/02/2022;
Героїв Праці - time limited to 26/02/2022-28/02/2022;
"Костел святого Вінсента де Поля" - time limited to 20/02/2022-16/03/2022;
Дaфi ТРiЦ Дaфi (Харкiв) - time limited to 26/02/2022-28/02/2022.

Background Summary of Significant Descriptive Content

No Significant Descriptive content directly pertinent to this incident could be identified.

Analysis of Examinable Content

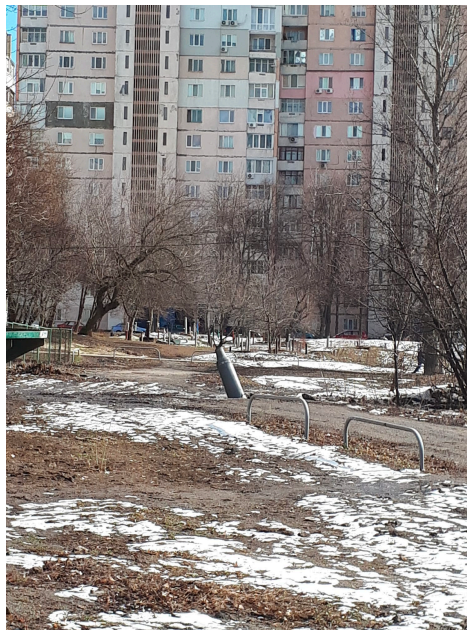
Two relevant pieces of examinable content were identified which depict this incident:

Source 1 (S1I1)

<https://twitter.com/2022Kharkiv/status/1497907864723247106>²

Posted by user "Conflict in Kharkiv" (@2022Kharkiv) to Twitter on 27/02/2022 at 15:13 EET.

S1V1 is a single still image which depicts what appears to be a munition of some kind in front of residential apartment blocks. This source was identified in the Civilian Harm TimeMap and formed the basis for the original incident. The post states that this image is from the Saltivka district in Kharkiv, however, as seen below, this incident actually took place in the 524th Microdistrict, to the south-east of Saltivka.



Source 1, Image 1 (S1I1).

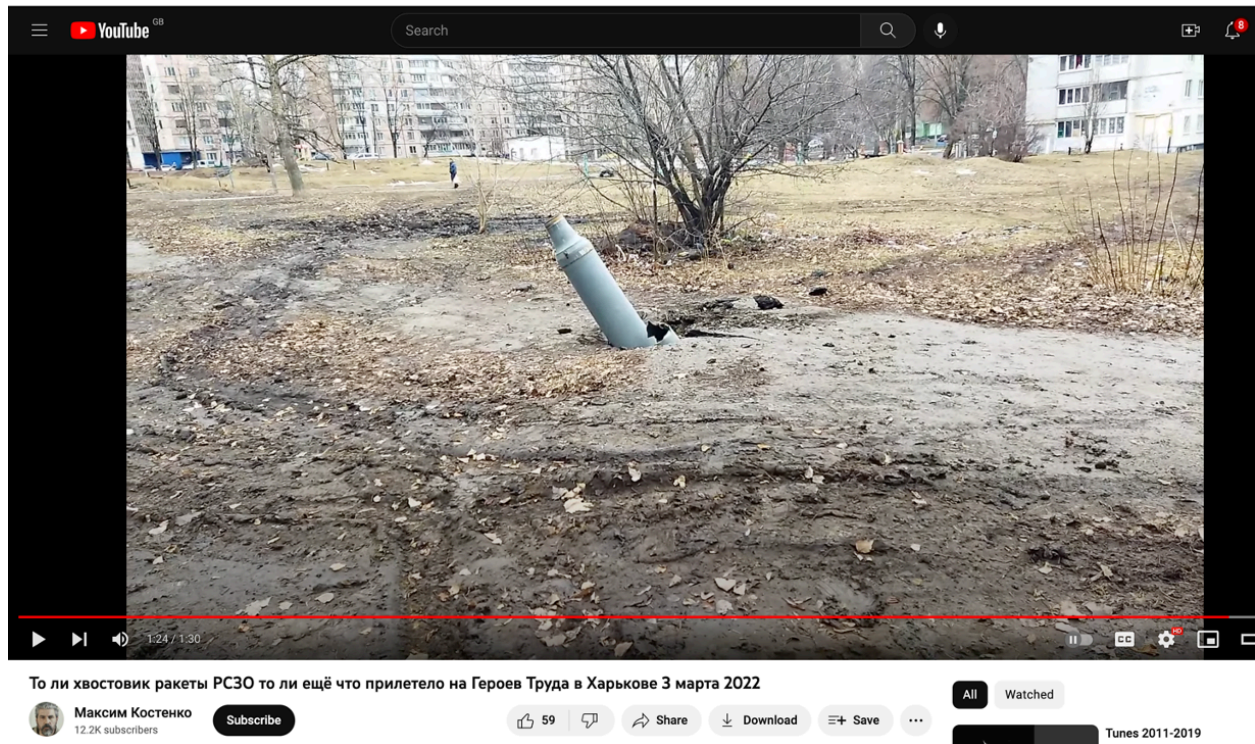
² <https://twitter.com/2022Kharkiv/status/1497907864723247106>

Source 2 (S2V1)

<https://www.youtube.com/watch?v=TPA2jdlyCKk>³

Posted by Максим Костенко to Youtube on 03/03/2022.

S2V1 is a video of the same munition remnant showing significantly more of the area in which the event occurred, as well as a close-up of the impact site itself. This video was identified during a search for content using the terms Heroes of Labour/ heroes of labor/ Героев труда / Героїв праці, which is an intersection near the incident. Although the title notes the date as 03/03/2022, the description clarifies that this event may have occurred earlier.



Source 2, Video 1 (S2V1).

Source 3 (S3I1, S3I2, S2I3)

<https://t.me/truexanewsua/25031>⁴

Posted by Truexanewsua to Telegram on 27/02/2022.

³ <https://www.youtube.com/watch?v=TPA2jdlyCKk>

⁴ <https://t.me/truexanewsua/25031>



— Ещё прилеты на Героев труда.

t.me/truexanewsua/25031

215.3K Feb 27, 2022 at 13:25

Source 3, Images 1,2,3 (S3I1, S3I2, S2I3).

S3 depicts Incident CIV0242, which is relevant to this case, both in terms of proximity, and identifying the type of rocket motor used. However, after examination it is believed to be part of a different strike.

It is possible to identify that both S1 and S2 depict the same location by examining details within the imagery. These pieces of content were both geolocated independently (see: Geolocation section below) however it is worth noting the features which are consistent between both Sources.

The general surroundings are consistent with each other. Both Sources depict a rocket motor of some form embedded into a dirt path surrounded by apartment blocks. Behind both of these motors there is a path bordered by inverted metal U-shapes and behind that is a slightly raised area with multiple small posts, which may be tree guards. In both Sources the motor appears to have impacted leaning roughly in line with the path and with a large shrub to the right of the viewer.



General surroundings. Left: S1I1, Right: Still from S2V1.

Behind both rocket motors it is possible to see a tree which appears to be virtually identical. The major visible branches of this tree are consistent between both S1I1 and S2V1.



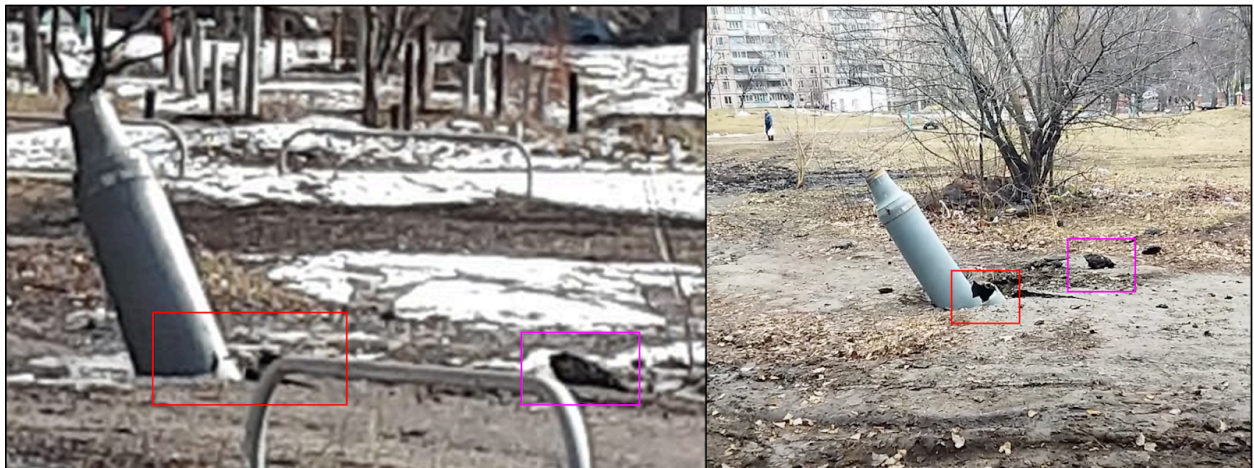
Note the tree highlighted by the pink arrow. Left: S1I1, Right: Still from S2V1.

The rocket motors themselves appear to have suffered damage and weathering consistent with one another. At the join of the main rocket body and the funnel both S1I1 and S2V1 depict lighter marks on the paint which appear to match.



Left: Still from S2V1, Right: S1I1.

Additionally the rocket motor appears to have deformed in a similar way, and a piece of debris with a very similar shape and position lies alongside the motors in both S1I1 and S2V1.



Note the apparently similar deformation of the motor highlighted in the red box, as well as the shape of the debris highlighted in the pink box. Left: S1I1, Right: Still from S2V2.

These details, as well as the independent geolocations of both S1I1 and S2V1 strongly indicate that these are in fact the same motor at the same location.

Possibly Relevant Examinable Content

[Source 4](#) (S4V1)⁵ shows a column of immobilized Tigr vehicles as well as soldiers wearing Ukrainian recognition measures consisting of yellow bands around the arms, engaging in a

⁵ <https://twitter.com/Osinttechnical/status/1497843560581902338>

firefight near a school which was later [noted](#)⁶ as being damaged in the vicinity of [50.0099, 36.2843](#)⁷.

[Source 5](#) (S5V1)⁸ shows a column of Tigr vehicles immediately to the east of an airfield, in Shyshkivka at [50.0304, 36.2940](#)⁹.

[Source 6](#) (S6V1)¹⁰ shows a column of Tigr vehicles moving in a northerly direction up Kovpaka Street at [50.0304, 36.3034](#)¹¹

Questions to Investigate

Where Was the Incident?

This motor landed in the 524th Microdistrict, Kharkiv, at [50.0258, 36.3428](#)¹².

The geolocation of S1I1 was conducted by the Global Authentication Project (GAP) and later confirmed by Bellingcat, placing it at [50.0253, 36.3439](#)¹³. As part of the investigation this geolocation was examined and the exact location was identified to be approximately 85 meters to the north-west of this location.

After examining the coloring and construction of the apartment buildings seen behind the motor in S1I1 and comparing it to the buildings seen at [50.0252, 36.3449](#)¹⁴ on Google Earth Pro it was possible to identify them as consistent with each other.

⁶ <https://t.me/truexanewsua/25194>

⁷ <https://maps.app.goo.gl/ZY5YsAMSDDzKrtz7>

⁸ <https://twitter.com/RALee85/status/1497830368803753984>

⁹ <https://maps.app.goo.gl/NjJ5aXcViyREXYrJA>

¹⁰ <https://twitter.com/block1377/status/1497848200362815490>

¹¹ <https://maps.app.goo.gl/UXZc5amyuDGasS7F8>

¹² <https://maps.app.goo.gl/geigUjmFHxfEFsDr9>

¹³ <https://maps.app.goo.gl/mp3UJsDz5GPhZE8TA>

¹⁴ <https://maps.app.goo.gl/Gb8HwcdePj34dKEK6>

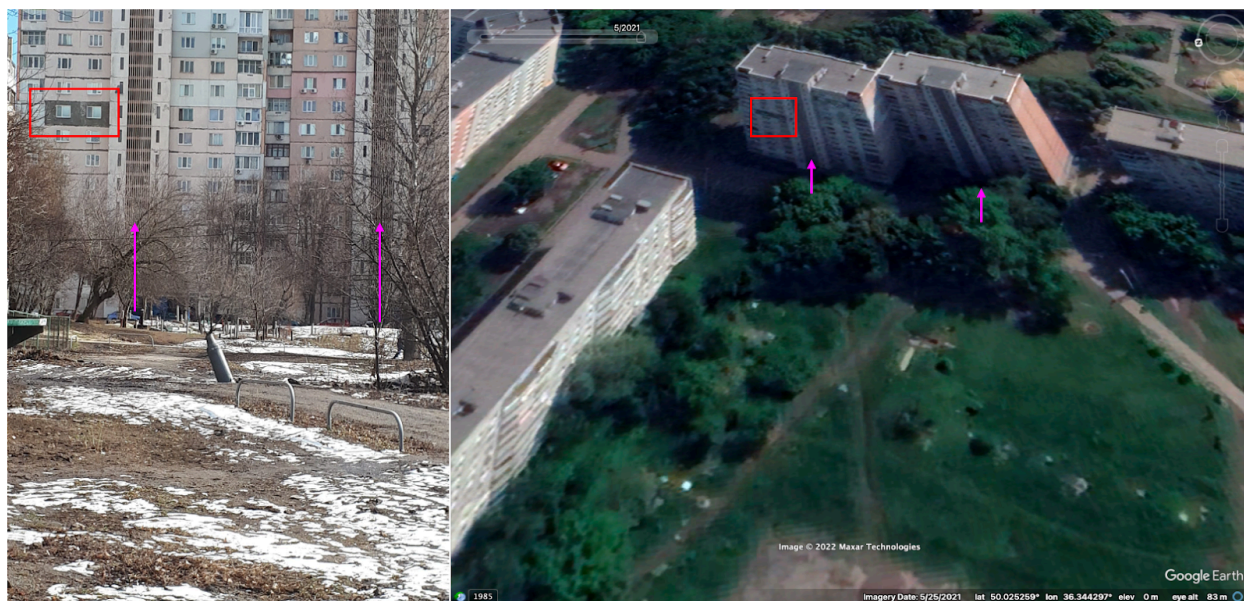
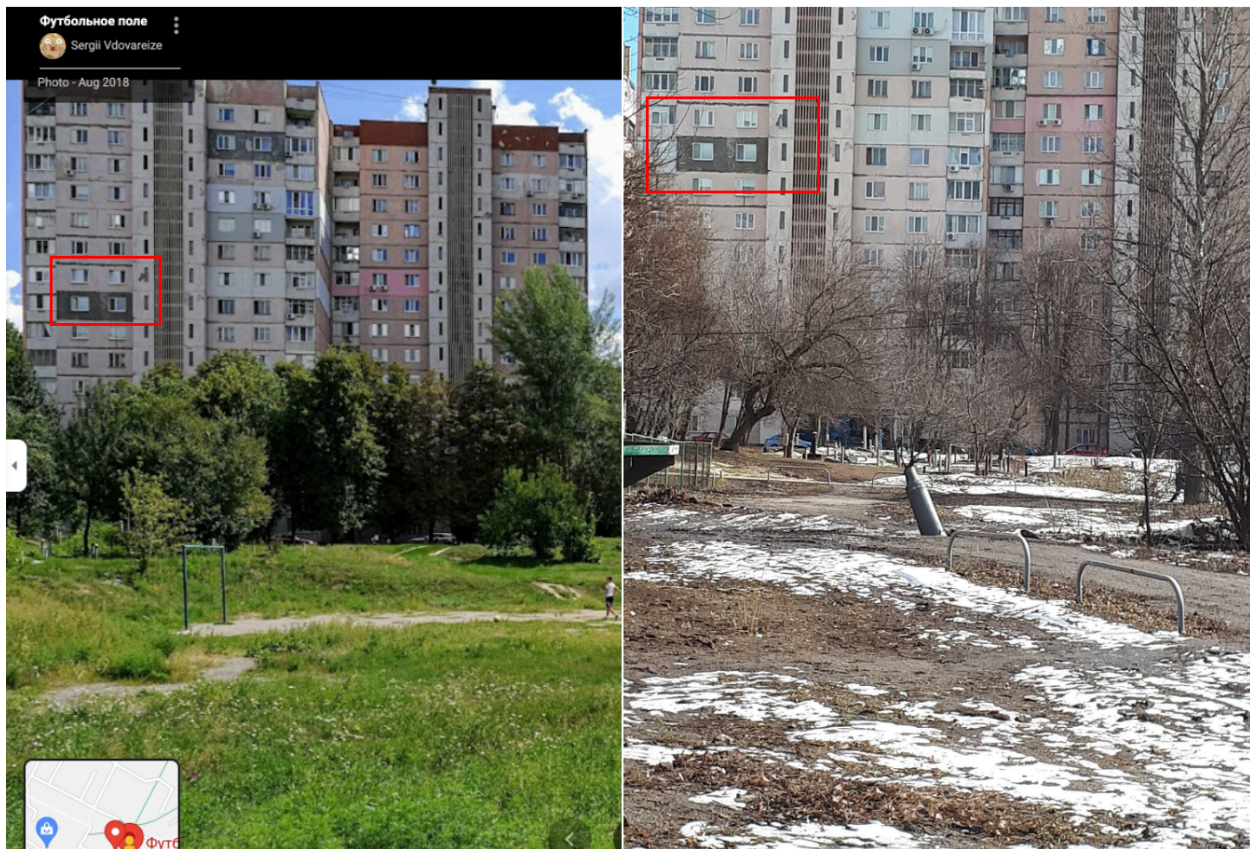


Image comparison highlighting the matches between the buildings at 50.025175, 36.344858 and those seen in S1I1 Left: S1I1, Right: Satellite image from 25/05/2021 (Credit: Google/Maxar Technologies).

These matching features can be more clearly seen in an embedded [image](https://maps.app.goo.gl/Gb8HwcdePj34dKEK6)¹⁵ from Google Maps which depicts these apartment blocks.

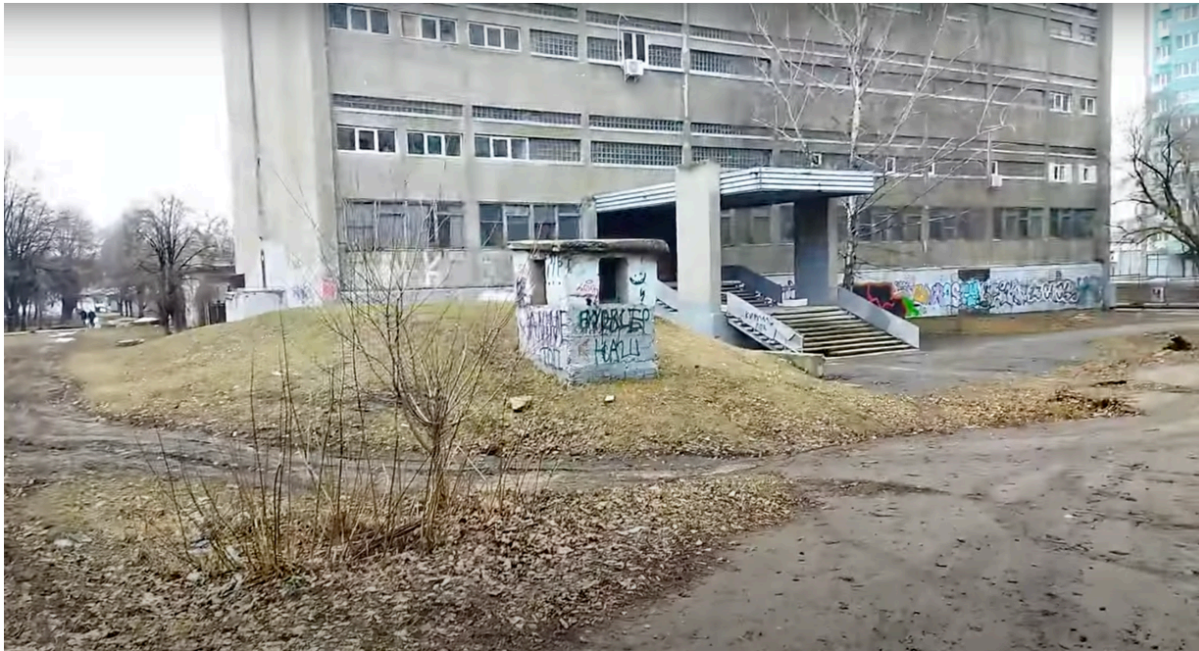
¹⁵ <https://maps.app.goo.gl/Gb8HwcdePj34dKEK6>



Note the coloring and pattern of damage between the embedded image on the left and S1I1 on the right. These features, as well as others seen in these images, match to each other.

S2V1 provides a different perspective, with a clear view to the south-west of the point of impact. This view clearly shows a building with a covered entrance way, a small block structure and a fork in a dirt path within which is a shrub. This matches the features seen to the south-west of [50.0258, 36.3428](https://maps.app.goo.gl/Lk7H3Za4JMopPzmM7)¹⁶.

¹⁶ <https://maps.app.goo.gl/Lk7H3Za4JMopPzmM7>



Top: still from S2V1 Video 1. Bottom: Satellite imagery from 09/06/2020 (credit: Google/Maxar Technologies).

In order to more accurately assess the exact impact point for the motor, a composite image was created using stills from S2V1. Although this results in a distortion of the image, it allows us to clearly place the impact point of the motor with a high degree of accuracy.



Composite image built using multiple still from S2V1.

When Was the Incident?

The earliest report of this incident is S1I1, which was posted at 15:13 EET on 27/02/2022. S2V1 states that it was filmed and uploaded on 03/03/2022, although its description notes that the fragment “arrived earlier”. No other sources could be identified which indicated an earlier date. The invasion of Ukraine began on 24/02/2022 and as such this motor almost certainly impacted between 24-27/02/2022 and likely on 27/02/2022 when the first image of it was posted online.

What Kind of Munition Was Used?

The fragment appears to be a rocket motor for a rocket of some kind. The body matches the visual signature of either 9M55K rockets fired by the BM-30 or 9M27 rockets fired by the BM-27. The tail fin section, which is usually a reliable indicator of differentiation between these two rockets, is not present. The general size appears to be more consistent with a 300 mm rocket rather than a 220 mm rocket.

However, as part of Incident CIVO242 which occurred nearby, images from [Source 3](#)¹⁷ show an identical rocket motor next to a tail fin section for a 9M55k rocket, which appears to fit exactly onto the motor.



Left: Source 3 Image 1, Right: Source 3 Image 2. Both images show the same rocket motor. Bottom: recognition card for 9M55K rocket motor created by Mark Hiznay, Associate Arms Director at Human Rights Watch. Note the separated fin section for a 9M55K rocket which appears to match the embedded rocket motor.

¹⁷ <https://t.me/truexanewsua/25031>

The rocket motor seen in CIVo450 appears to match exactly with the rocket motor seen in Incident CIVo242.



Left: Source 3 Image 1, Right: Source 3 Image 2. Both images show the same rocket motor. Bottom: Still from S2V1.

As such it appears likely that this rocket motor is indeed a 300 mm 9M55K rocket motor.

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

This rocket motor impacted into an asphalt covered path and appears to give an indication of the direction of origin. While on first inspection it appears that the motor originated from the east, a closer inspection of the motor, the damage which it has experienced and the damage to the asphalt indicate this motor in fact originated from the north-west of the point of impact.

The impact in the asphalt path has caused a short linear trench rather than a circular hole, indicating that lateral force has been applied to its surface. The rocket motor itself has also sheared off approximately one meter from the nozzle. This sheared-off section of the motor has come to rest on the eastern side of the trench. This indicates that the rocket motor appears to have experienced lateral force as it impacted.



Still from S2V1. Note the linear nature of the damage caused to the asphalt indicated by the red line, as well as the shearing of the rocket motor.

On inspection it is evident from damage caused to the rocket motor that it has been crushed against the eastern side of the short linear trench, caving in the body of the motor. This indicates that the motor was moving roughly from west to east when it impacted.



Still from S2V1. Note the damage caused to the eastern side of the rocket motor highlighted by the red circle.

The damage seen in this incident appears to be consistent with the rocket motor impacting roughly from west to east, followed by the upper section of the rocket motor continuing to move in an easterly direction after impact due to its momentum, resulting in the shearing of the motor.

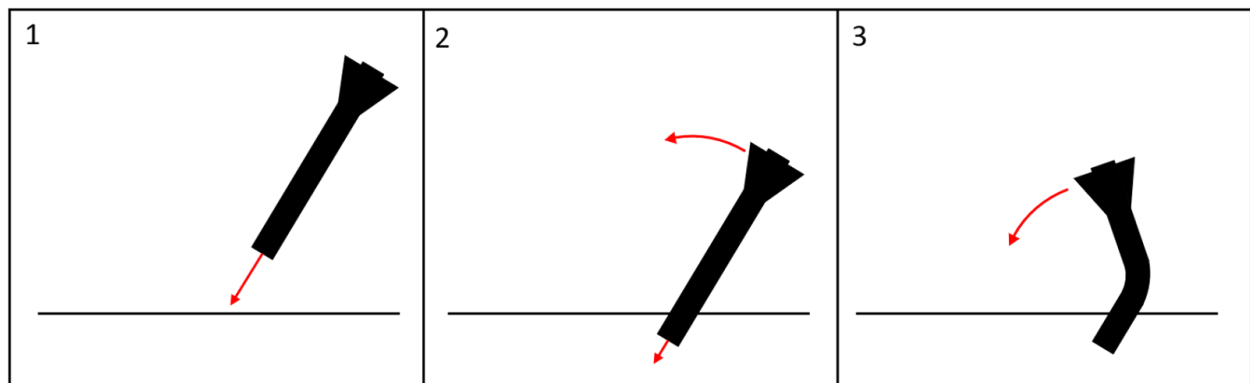


Diagram showing simplified example of a rocket motor experiencing lateral force on impact.

The direction of origin was determined on these factors, including the shape of the trench caused by the impact of the rocket motor.

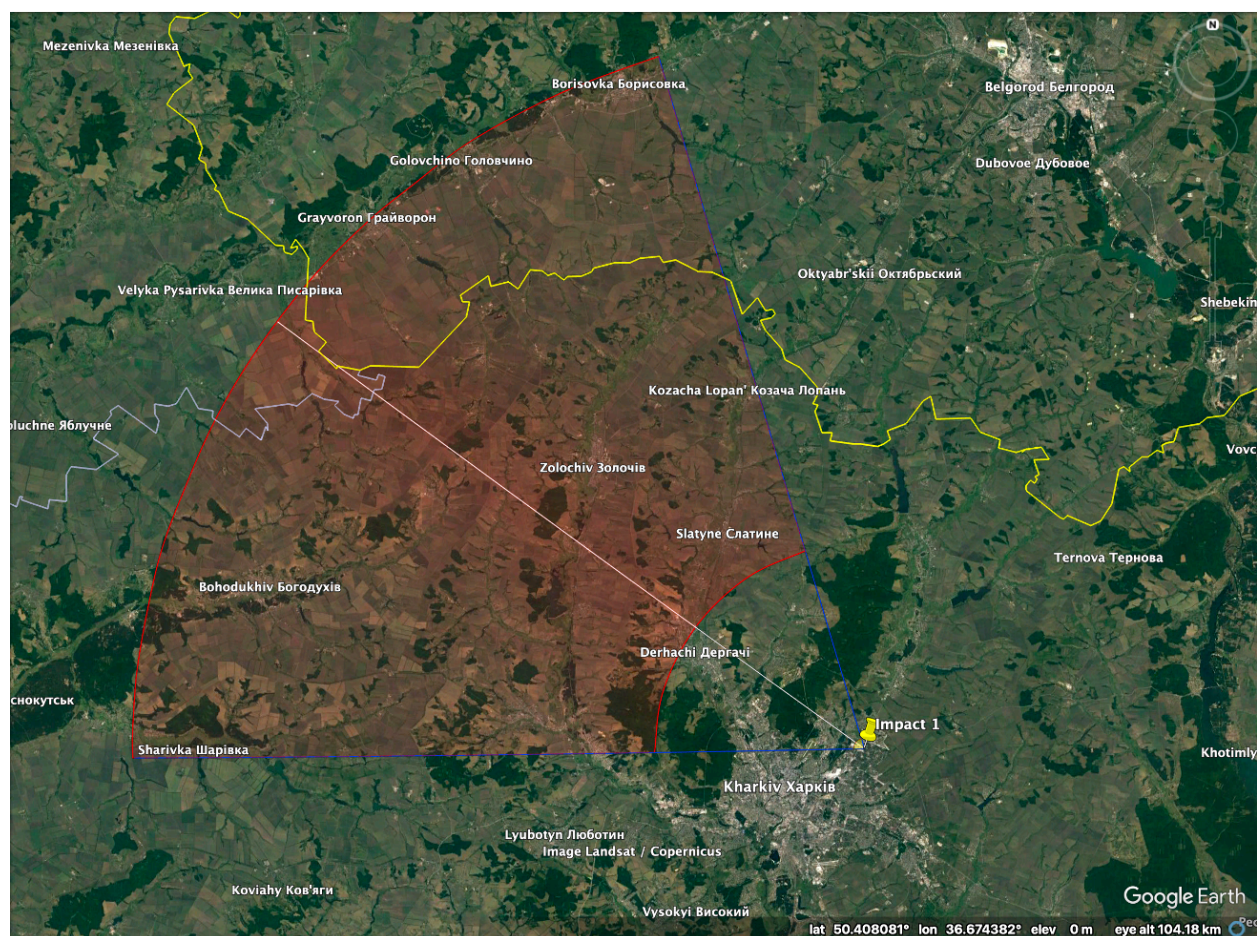


Determination of assessed direction of origin, taking into account the factors listed above.

The investigator assessed that the motor likely impacted on an angle of 306 degrees from north. The BM-30 has an effective [range](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)¹⁸ of 20-70 km. As such a standardized 70 km BM-30 template was applied to the assessed direction of origin, giving a possible area of origin.

¹⁸

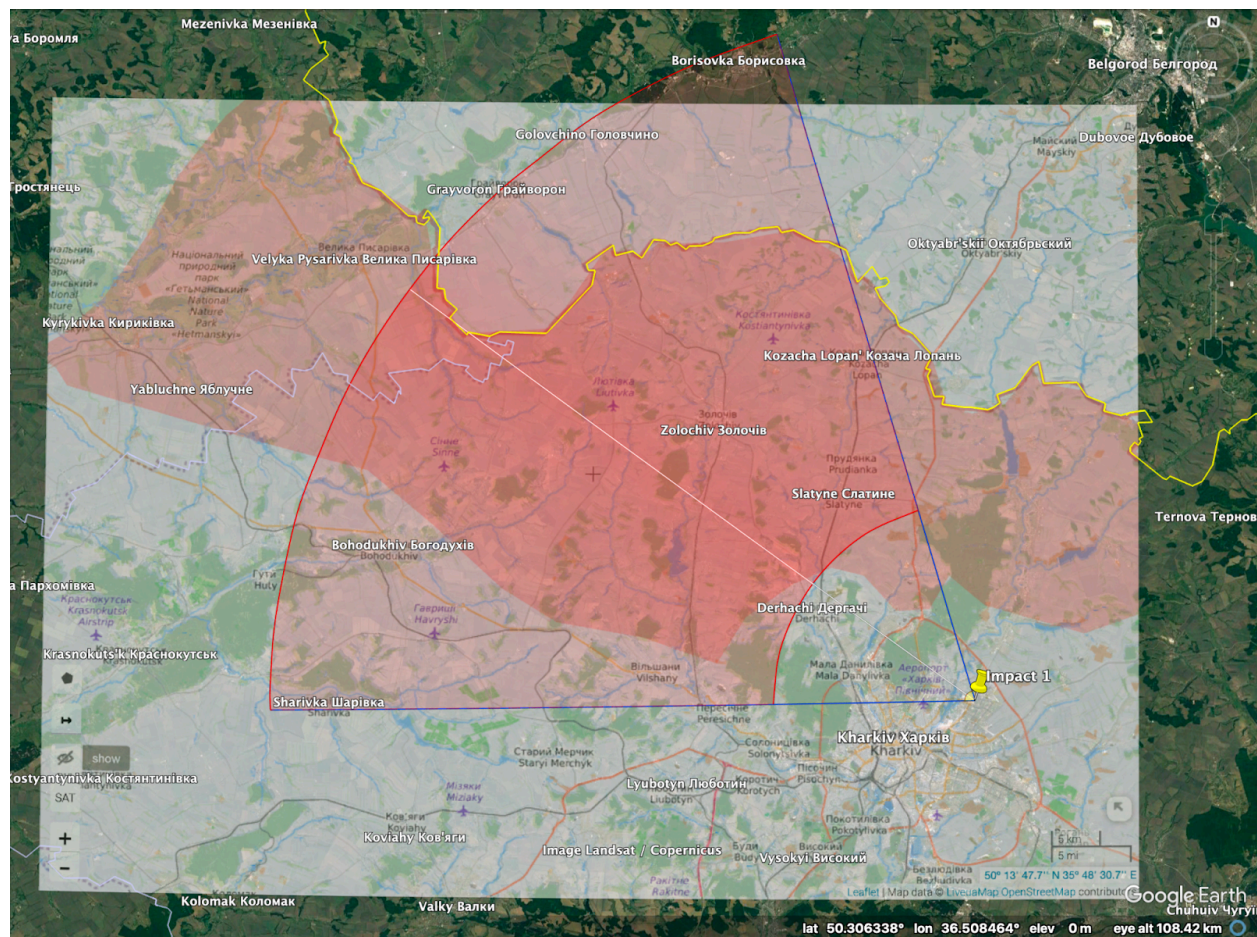
https://www.armyrecognition.com/russia_russian_army_vehicles_system_artillery_uk/bm-30_smerch_9k58_300mm_multiple_rocket_launcher_system_technical_data_sheet_information_description.html



The likely area of origin marked in red, using a standardized template applied using the assessed direction of origin (Credit: Google/Landsat/Copernicus).

The assessed likely area of origin overlaps with territory likely controlled by both Ukraine and Russia during this time period. [LiveUAMaps](https://liveuamap.com/en/time/27.02.2022)¹⁹, which uses open source information to track conflicts, was used to identify areas within which there was Russian military presence. It should be noted that information during this period was not highly reliable and as such may not represent the exact presence of Russian forces within Ukraine.

¹⁹ <https://liveuamap.com/en/time/27.02.2022>

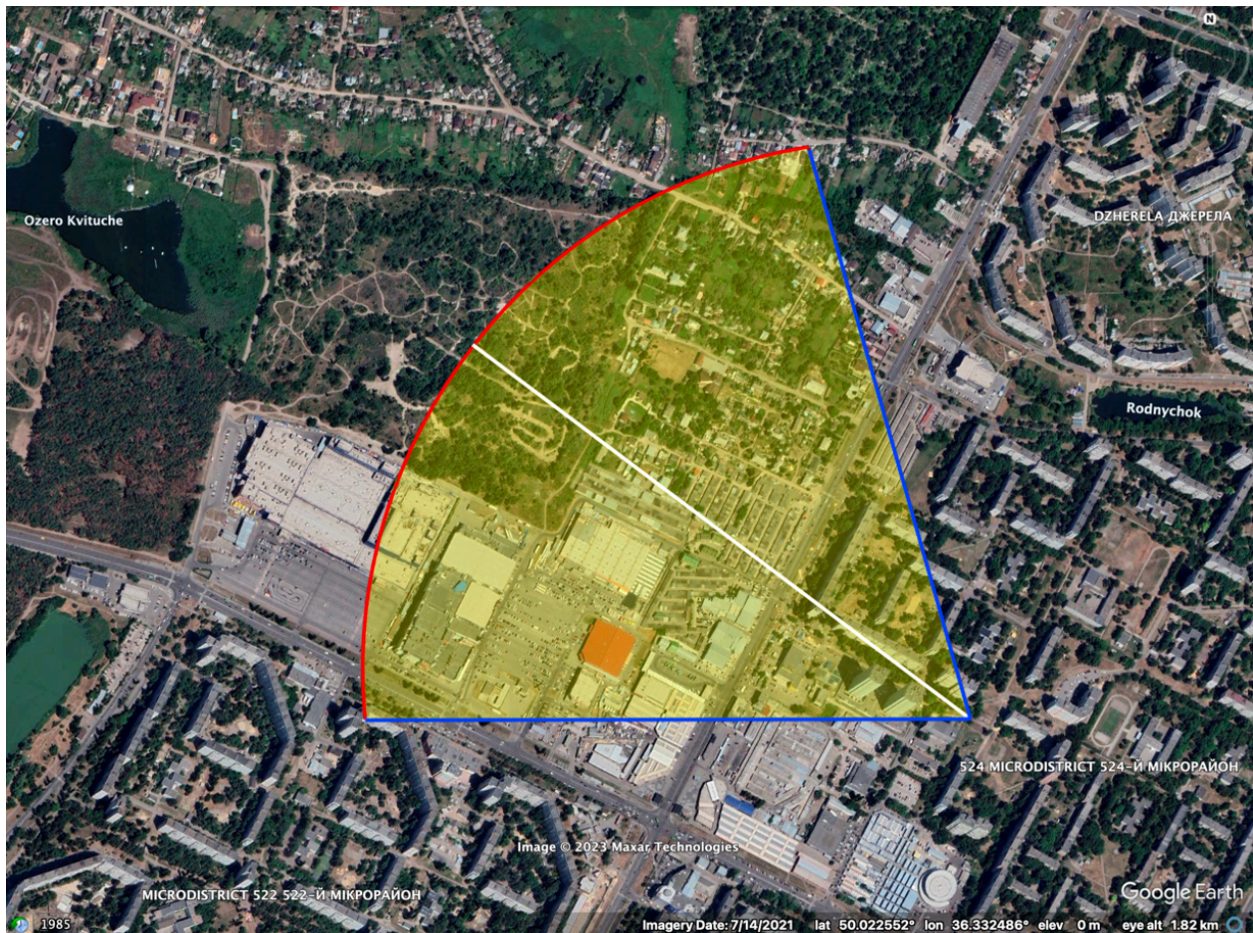


Overlay of likely area of origin over likely presence of Russian forces within Ukraine.

Who and What Was Present?

The area in which the rocket motor impacted comprises of residential high-rise blocks, with similar residential blocks to the north and east. To the west and south there is a large commercial area centered on the Heroes of Labor junction.

The possible area of impact of the submunitions was identified using a 1 km arc from the point of impact along the likely angle of origin.



Assessed possible area of impact of submunitions (Credit: Google/Maxar Technologies).

Relevant points included:

- A shopping area;
- A [motocross](#)²⁰ area;
- [Preschool educational institution](#)²¹ (nursery-kindergarten) No. 270 (Kharkiv);
- [Bus Station](#)²²;
- The Akademika Pavlova St, a main road in Kharkiv;

²⁰

<https://wikimapia.org/#lang=en&lat=50.031329&lon=36.333783&z=16&m=w&show=/20190809/ru/%D0%A0%D0%B0%D0%BB%D0%BB%D0%B8%D0%B9%D0%BD%D1%8B%D0%B9-%D1%82%D1%80%D0%B5%D0%BA&search=50.0252994%2C%2036.3438857>

²¹

<https://wikimapia.org/#lang=en&lat=50.027386&lon=36.341336&z=16&m=w&show=/13515161/vulytsi-a-Kostelna-6a&search=50.0252994%2C%2036.3438857>

²²

<https://wikimapia.org/#lang=en&lat=50.027166&lon=36.338332&z=16&m=w&show=/17820188/ru/%D0%A1%D0%BA%D0%BB%D0%B0%D0%B4&search=50.0252994%2C%2036.3438857>

- [The Church of St. Thomas Aquinas](#)²³.

With no information indicating the time of impact, it's difficult to know precisely who or what was present at this location at the time of impact.

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

A search was conducted using commercial satellite imagery and mapping services such as Google Maps, Wikimapia and Yandex maps for this location and the possible area of impact of the submunitions.

No military infrastructure could be identified within 1 km of the location impacted by the rocket motor.

High and medium resolution satellite imagery from Planet Labs from this area was examined - there is a medium resolution image of this location on 27/02/2022, however there is significant cloud which obscures the area.

The days immediately before and after have 100% cloud cover of this location. Full-coverage high resolution satellite imagery of this location exists on 21st March, however no damage or military positions could be clearly identified. There is also high resolution imagery approximately 1 km to the west of the point of impact on the 10th March, but no damage or military positions could be identified.

This does not exclude the possibility that military units were stationed around, or passing through this vicinity at the time.

Searches of the names of neighborhoods to the west of the Kharkiv river and examination of the Center For Information Resilience (CIR) [map](#)²⁴ show that on the 27/02/2022 there were multiple reports of column(s) of [Tigr vehicles](#)²⁵, which are operated by Russia but not by Ukraine, observed moving on the west bank of the Kharkiv river.

[S4V1](#)²⁶ shows a column of immobilized Tigr vehicles as well as soldiers wearing Ukrainian recognition measures consisting of yellow bands around the arms, engaging in a firefight near a school which was later [noted](#)²⁷ as being damaged in the vicinity of [50.0099, 36.2843](#)²⁸.

²³ <https://maps.app.goo.gl/Y7obZDoz44LnUgt08>

²⁴

<https://eyesonrussia.org/?chosenOption=&categories=§orAffected=&dateRange=1645653600000%2C1645995600000&onlyEventsMapFrame=false>

²⁵ <https://www.army-technology.com/projects/gaz-2330-tigr-light-armoured-vehicle/>

²⁶ <https://twitter.com/Osinttechnical/status/1497843560581902338>

²⁷ <https://t.me/truexanewsua/25194>

²⁸ <https://maps.app.goo.gl/jf15Cfj4gRRdMidb8>

[S5V1](#)²⁹ shows a column of Tigr vehicles immediately to the east of an airfield, in Shyshkivka at [50.0304, 36.2940](#)³⁰.

[S6V1](#)³¹ shows a column of what appears to be Tigr vehicles moving in a northerly direction up Kovpaka Street at [50.0304, 36.3034](#)³².



Left: Source 6. Right: Street view of Kovpaka street at [50.0304, 36.3034](#).

The vehicles in this column are recognisable as Tigr light vehicles and so therefore almost certainly are a Russian column.



Comparison of vehicle seen in Source 6 (left) and [Tigr vehicle](#)³³ (right).

²⁹ <https://twitter.com/RALee85/status/1497830368803753984>

³⁰ <https://maps.app.goo.gl/KXQffq6VEHwgc3hg7>

³¹ <https://twitter.com/block1377/status/1497848200362815490>

³² <https://maps.app.goo.gl/MaNV3Q8TYi4jwqYy7>

³³ <https://www.favcars.com/pictures-sts-gaz-233114-tigr-m-2011-153268.htm>

Considering the location of these columns, which may be the same column in different positions or multiple columns from the same formation, it is possible that the rocket motor may have been a result of artillery support. It's equally possible that the two events are entirely unconnected.



Map showing sightings of the Tigr column(s) compared with the point of impact of the rocket motor seen in CIVO450. (Credit:Google/Maxar Technologies)

What Was Damaged?

The rocket motor impacted on a path in a residential area, causing limited damage. This type of rocket usually carries [72 submunitions](#)³⁴, which are scattered over an area. This area of impact could not be identified with the currently available information.

Has the Area Been Targeted More than Once? When?

Although two rocket motors impacted within 200 meters of this location and were reported on the same day as part of Incident CIVO242. The direction of origin of rocket motors is notably different and hence appears to be a different event.

³⁴

<https://armamentresearch.com/9m55k-cargo-rockets-and-9n235-submunitions-in-ukraine/#::~text=9M55K%20cargo%20rockets%20carry%2072,see%20Technical%20Details%2C%20below>

Timeline of the Incident

Russia's full-scale invasion in Ukraine started on 24/02/2022. On 27/02/2022 an image was posted to Twitter showing a rocket motor which had embedded itself in the ground. Therefore this event almost certainly took place between 24-27/02/2022 and likely on the 27/02/2022. The exact time could not be confirmed.

Statements from Parties of the Conflict

Ukraine

No statements specific to this event could be identified.

Russia

No statements specific to this event could be identified.

Conclusion

Between 24-27/02/2022 and likely on the 27/02/2022 a rocket motor for a 9M55K rocket impacted into a residential area in the city of Kharkiv. Two separate sources showed this rocket motor embedded into the ground.

No-one appears to have been killed as a result of this impact and no damage caused by submunitions could be identified.

What appear to be Russian mobile forces in Tigr light vehicles were observed on the west bank of the Kharkiv river on 27/02/2022. It is unknown if this is related to the rocket motor.

Further Action

Use satellite imagery to identify possible launch sites, as well as conduct further searches to identify impact area.