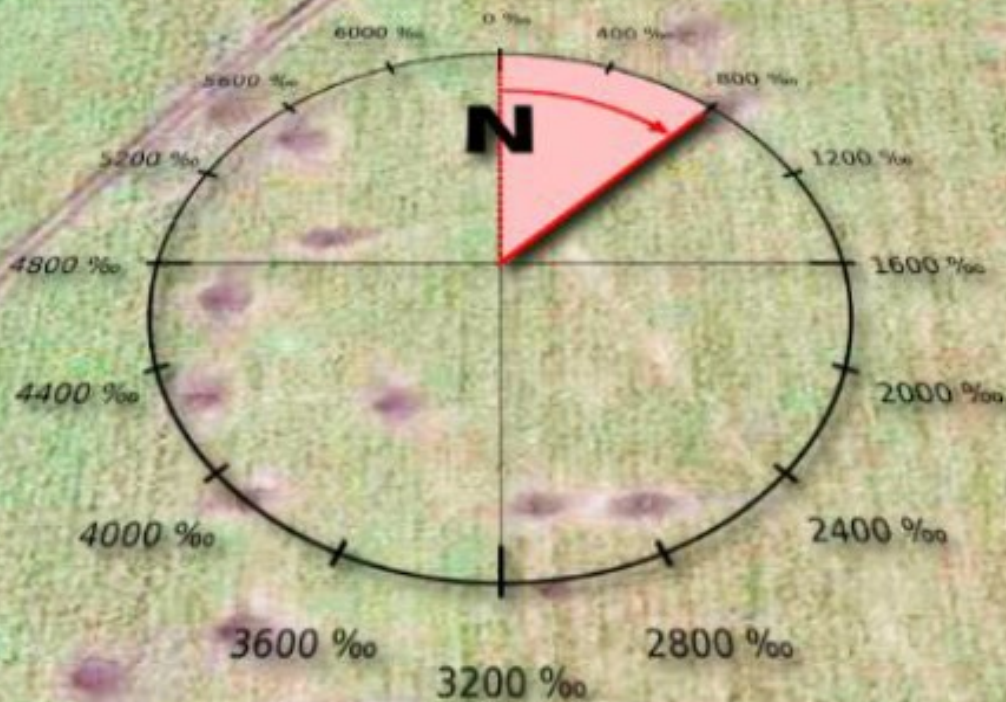# THREE BELL¿NGCAT INVESTIGATIONS

Origin of Artillery Attacks on Ukrainian Military Positions in Eastern Ukraine; MH17 Joint Investigation Team's New Video Brings New Facts to Light; How EchoSec Found Evidence of a Russian Fighting in Ukraine

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THREE BELL¿NGCAT INVESTIGATIONS

The following is a series of three reports produced by Bell¿ngcat, an open forum for and by investigative journalists from throughout the world. The report is from Ukrainian Embassy in Ottawa and was given to me by Chargé d'Affaires Shevchenko Marko. The reports conclusively contend that Russia's military is actively engaged in Ukraine and is acting as an aggressor from within its own borders.

The first document looks at artillery bombardment patterns in Ukraine near the Russia-Ukraine border, showing the origins of these bombardments as being from within Russia. The second document examines Russia's involvement in the downing of Malaysian Airlines flight MH-17. The third document presents evidence of Russia's active military personnel fighting in Ukraine.

The compilation includes:
1. Origin of Artillery Attacks on Ukrainian Military Positions in Eastern Ukraine between 14 July 2014 and 8 August 2014
   a. Page 3-36
2. MH17 Joint Investigation Team's New Video Brings New Facts to Light
   a. Page 37-45
3. How EchoSec Found Evidence of a Russian Fighting in Ukraine
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Peter Goldring
Member of Parliament
Edmonton East

Origin of Artillery Attacks on Ukrainian Military Positions in Eastern Ukraine between 14 July 2014 and 8 August 2014

This report examines Russia's army's artillery attacks from 'inside' Russia, bombarding Ukrainian military positions. It uses local and international news sources, satellite mapping, and an analysis of military technology and topographical patterns to draw its conclusions.

Summary

Ukrainian armed forces positioned near the Russian-Ukrainian border were attacked by artillery fire in the summer of 2014. Between 9 July and 5 September 2014, the Ukrainian Border Service and the National Security and Defense Council reported more than 120 artillery attacks from Russia. Russian officials, however, have denied the existence of any artillery attacks on Ukraine originating from its territory.

The pressure of sustained artillery attacks through early August led Ukrainian armed forces to lose control of hundreds of kilometers of border territory[1]. Google Earth satellite images of eastern Ukraine from July, August, and September 2014 have enabled the Bellingcat investigation team to find evidence of these artillery attacks, determine their origin, and compare them with local sources.

After reviewing and analyzing these satellite images as well as videos from social media, local media reports, and the shifting maps of the ongoing conflict, the Bellingcat investigation team has determined that there is compelling evidence that artillery attacks on Ukrainian territory and against Ukrainian armed forces originated from the territory of Russia.

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[1] http://russian.rt.com/article/43677#ixzz39JNVe6AU; http://web.archive.org/web/20150210142502/http://russian.rt.com/article/43677

Introduction

In July 2014, Ukrainian armed forces launched an "anti-terrorist operation" against pro-Russian separatists and made significant territorial gains in eastern Ukraine, regaining control over a large portion of the Russian-Ukrainian border.

The situation in the eastern regions of Ukraine on 11 July 2014. Image courtesy of the National Security and Defense Council of Ukraine[2].

However, on the morning of 11 July 2014, the situation suddenly changed. A massive and unexpected artillery attack on units in the Zelenopillya region killed 30 and wounded over 100 soldiers[3]. In the days and weeks that followed, the units at the border were subjected to

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[2] http://www.rnbo.gov.ua/files/2014/RNBO_map_11_07_eng.jpg;
http://web.archive.org/web/20150210142635/http://www.rnbo.gov.ua/files/2014/RNBO_map_11_07_eng.jpg
[3] http://www.interpretermag.com/ukraine-liveblog-day-144-30-ukrainian-soldiers-killed-near-russias-border/:

dozens of additional artillery attacks. By late July 2014, the massive bombardment reversed Ukrainian gains and contributed to the encirclement of portions of the Ukrainian armed forces. A separatist offensive across eastern Ukraine began simultaneously with the artillery attacks, leading to the separatists capturing much of the Russian-Ukrainian border along with vast areas of the Donetsk and Lugansk oblasts.

Artillery attacks on Ukrainian forces near the border proved to be an important factor in turning the conflict in favor of the separatists. Using in-depth analysis of satellite imagery and social media sources, this Bellingcat investigation brings new evidence to help clarify to the origins of these artillery attacks against Ukrainian armed forces.

Research methods and sources

The starting point for this Bellingcat investigation was the distribution of updated satellite imagery from Google (DigitalGlobe satellite imagery) with a panchromatic resolution of 0.5m from the territory of eastern Ukraine and its border regions with Russia (17 July to 31 August 2014 satellite images). Additionally, the Bellingcat investigation team analyzed videos shared on social media (YouTube and VKontakte) and geolocated the events captured in these videos to key sites involved in the artillery attacks on Ukraine.

From the satellite imagery, the Bellingcat investigation team located artillery impact crater fields from artillery fire and conducted extensive analysis on a crater-by-crater basis. In the examination of each area, our team created a novel analysis method based on internationally-recognized 'on-the-ground' procedures to determine the trajectory of the artillery fire.
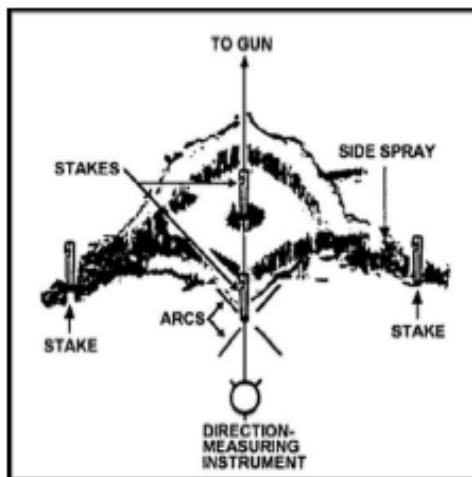

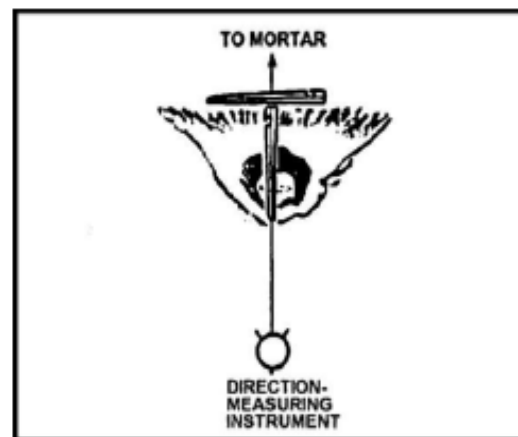
Figure J-3 side-spray method[4]

Figure J-6 splinter groove method[5]

http://web.archive.org/web/20140711204743/http://www.interpretermag.com/ukraine-liveblog-day-144-30-ukrainian-soldiers-killed-near-russias-border/
[4] http://www.globalsecurity.org/military/library/policy/army/fm/6-50/Appj.htm#figj_3;
http://web.archive.org/web/20020215215239/http://www.globalsecurity.org/military/library/policy/army/fm/6-50/Appj.htm

The satellite images from eastern Ukraine show two main types of craters, low-angle fuze quick craters (with distinctive 'side spray' areas projecting diagonally from a central crater) and high-angle shell craters (triangular-shaped craters that spread outwards towards the origin of fire):
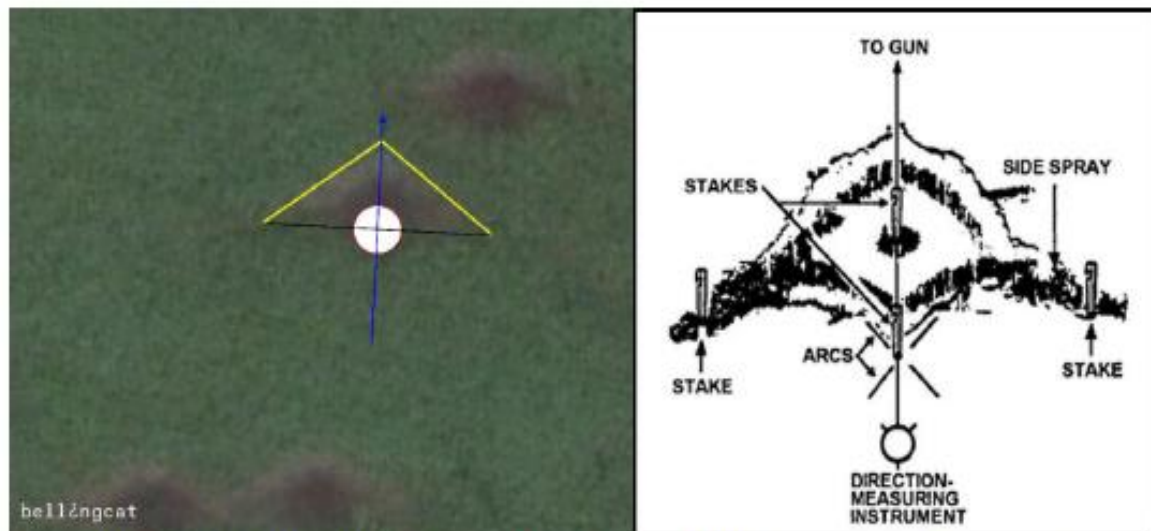
Low-angle fuze quick craters (e.g. low-angle artillery or Multiple Launcher Rocket Systems fire)

High-angle shell craters (e.g. mortars, high-angle Multiple Launcher Rocket Systems fire)

Both types of craters are suitable for determining the trajectory of artillery fire. In reality, the trajectory of the projectile is determined by a variety of factors, such as the type and hardness of the ground struck, wind direction and speed, and the type of projectile. Our team adopted a simple linear trajectory in our analysis, but the actual trajectory may vary somewhat due to these factors.

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[5] http://www.globalsecurity.org/military/library/policy/army/fm/6-50/Appj.htm#figj_6;
http://web.archive.org/web/20020215215239/http://www.globalsecurity.org/military/library/polic
y/army/fm/6-50/Appj.htm

The Amvrosiivka attack 14 July 2014

In a 14 July 2014 summary of the "anti-terrorist operation," Ukrainian media reported that an attack took place on positions of the Ukrainian armed forces in the vicinity of Amvrosiivka[6]. It was suspected that the origin of this attack was from the territory of Russia[7].

On the satellite image below, taken on 16 July 2014, an extensive crater field south of Amvrosiivka is visible, located at the coordinates 47°45'52.38"N 38°30'47.65"E.

The crater field near Amvrosiivka from the 14 July 2014 attack, positioned at 47°46'1.07" N 38°30'43.16" E. Google Earth satellite image date 16 July 2014.

The Bellingcat investigation team counted a total of 330 craters in this crater field and determined the observable direction of each impact crater based on the analysis methods previously described. From these 330 craters, the average trajectory was calculated and was determined to be 193.97°, i.e. from the south-south west (180 ° being due south). When screening for possible firing positions from this trajectory, the Bellingcat investigation team found a firing position 14.6km from the crater field. Burn marks are visible at this location, which is on Russian territory and approximately 750m from the border near the Russian village of Seleznev at the coordinates 47°38'13.52"N 38°28'9.69"E.

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[6] https://en.informnapalm.org/anti-terrorist-operation-summary-for-july-14-2014/; http://web.archive.org/web/20150210142924/https://en.informnapalm.org/anti-terrorist-operation-summary-for-july-14-2014/
[7] https://www.facebook.com/v.parasyuk/posts/675221185878989

Crater field and firing position, viewing north-north-east

Based on our crater analysis, we judge that these were very likely the five firing sites that caused the craters near Amvrosiivka. There are several pieces of evidence that lead us to believe that these strikes were carried out by five 122mm BM-21 Grad or 9K51M Tornado-G Multiple Rocket Launcher Systems (MLRS) as opposed to the BM-27 Uragan, BM-30 Smerch, or other types of field artillery.

It is well known that BM MLRS create large areas of smoke behind them during and after firing. Many examples of this are available online[8]. This area of intense smoke and heat results in burned/singed ground behind the MLRS and are visible from Google satellite images. Such burned areas are visible at the firing position considered for the Amvrosiivka attack, and so we judge that these were very likely MLRSs.

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[8] https://www.youtube.com/watch?v=ly6_2ojur0Q

Firing position near Seleznev. Position: 47°38'14.38"N, 38°28'9.77"E.
Google Earth satellite image date 16 July 2014.

Analyzing the satellite imagery of the firing position also gave us evidence for determining the type of MLRS most likely used to conduct the artillery attack.


The visible tracks that lead to the site come from farther inside Russian territory.

The tracks of the vehicles that entered and exited the field to reach their firing positions are visible from the satellite imagery. This leads us to believe that there was no cross-border (Ukraine to Russia) movement of military equipment for this particular location.

11

Three MLRS systems are primarily used by the Russian military (see Russian MLRS systems figure below).

BM 21 Grad or Tornado

7,30m

BM 27 Uragan

9,34m

BM 30 Smerch

11,46m

bellingcat

Russian MLRS systems
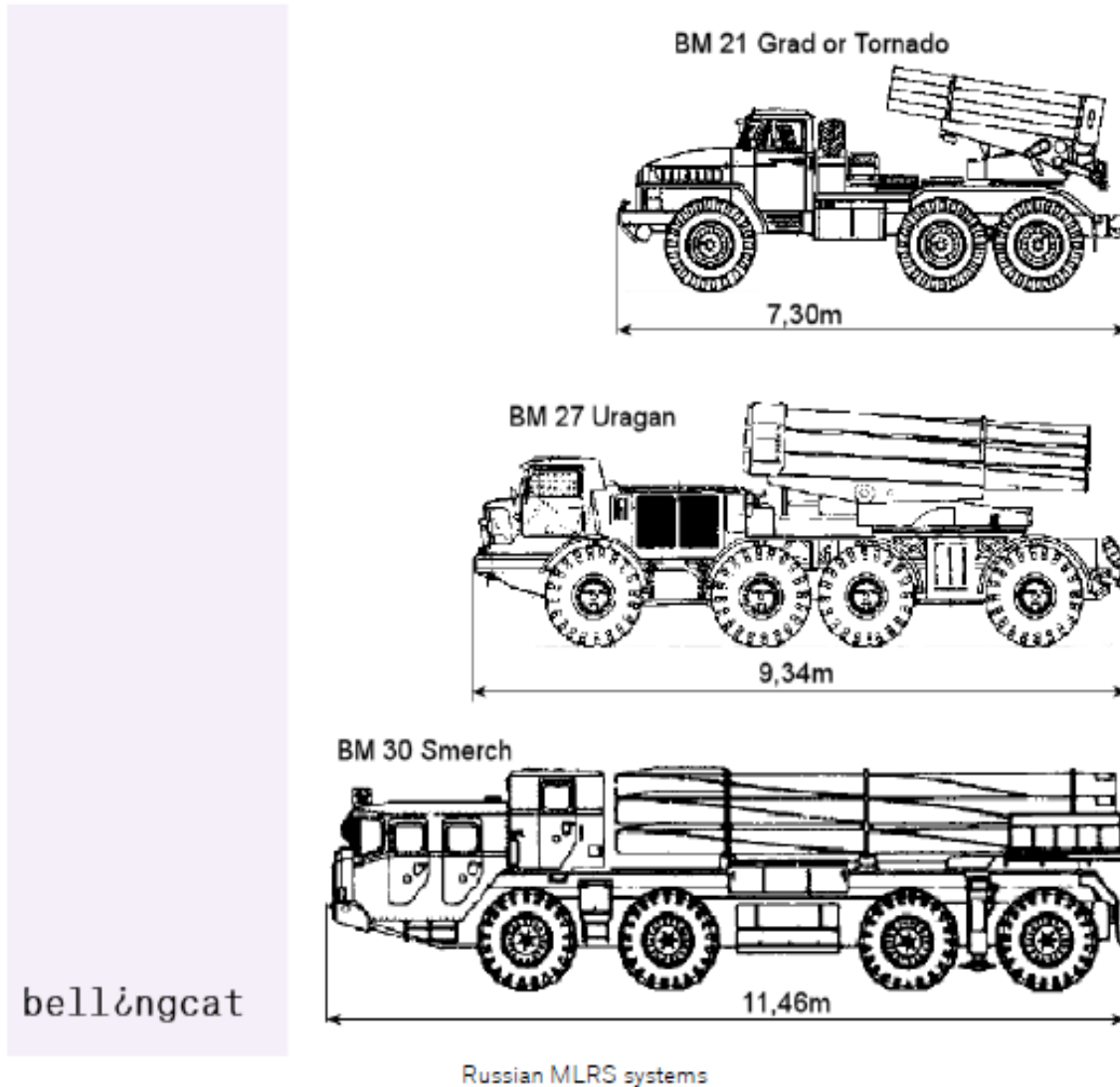
The measurement of the average track width from the satellite images yielded an average value of 2.40m. As the resolution of the satellite images is 0.5m, the tolerance for this measurement is 1.9 to 2.9m. In comparison, the widths of the BM-21/Tornado-G, BM-27, and BM-30 are 2.4, 2.8, and 3.1m, respectively. The track width determined from satellite imagery is suggestive of a smaller vehicle, but because of the potential error due to imagery resolution, this is not conclusive.

Using the satellite images, we were able to determine the turning radii of the vehicles. The smallest turning radius was measured as 14m. The BM-27 and BM-30 MLRSs have two steered front axles, so if they were used in this instance, we would expect to see evidence of two overlapping sets of wheel tracks in the turns leading to or from the firing position. However, the satellite image shows only the traces of one clear, single track. Based on this

evidence, we conclude with high probability that a BM-21 Grad or 9K51M Tornado-G was used for this attack.
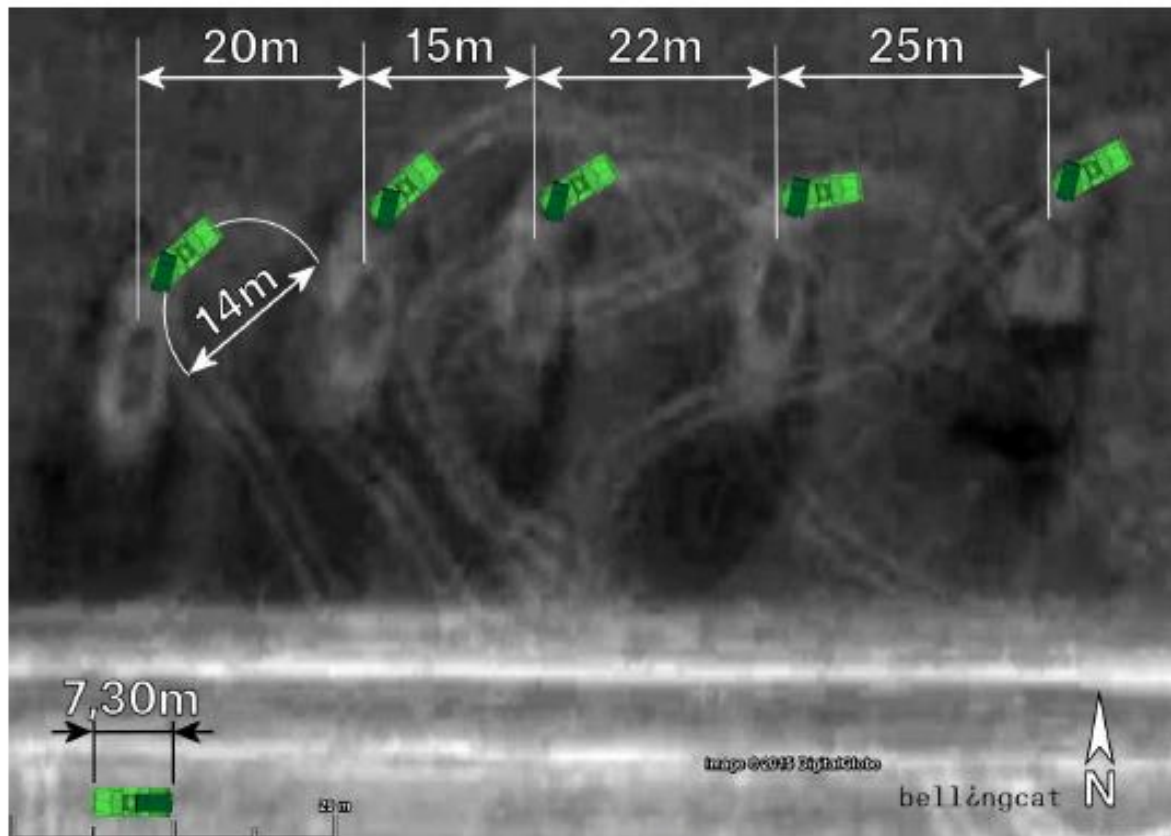
The spacing between, and the sizes of the types of MLRS units judged to be at the firing position

The visible traces of the vehicles also fit well for the typical spacing of BM-21/Tornado-G systems in battle formation (see the image above for the spacing of the units visible from the satellite image). According to Army Field Manual No. 100-2-3,[9]

> The BM-21 launcher can be traversed through 180° and the bank of 40 launcher tubes elevated from 0 to +55° electrically or manually. The rockets can be launched singly at any desired time interval by manual means or in partial or complete salvo at a fixed 0.5-second time interval from within the cab or up to 60 m away from the cab with the aid of a remote-control unit connected to the vehicle by a cable. The rockets must be fired with the launcher parked obliquely to the target to prevent blast damage to the unshielded cab.

Our investigation of this attack shows that the average trajectory of the craters pointed toward the direction of the suspected firing positions with a high degree of accuracy; the maximum-to-minimum deviation of the analyzed crater angles is only 0.2%. Additionally, a measurement in the other direction, extrapolating the trajectories of the visible burn marks at the firing position, revealed that the trajectories led directly to the center of the artillery crater field.

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[9] https://www.fas.org/irp/doddir/army/fm100-2-3.pdf

Artillery attacks in the Chervonopartyzansk region 14 July to 8 August 2014

In early July 2014, units from the 72nd Motorized Brigade, the 79th Airmobile Brigade, the 24th and 51st Mechanized Brigades, and elements of the 3rd Separate Special Forces Regiment were tasked with securing the Russian-Ukrainian border south of the separatist-held towns from Marynivka to the Izvaryne checkpoint. This area, covering over 150km of border, was known as "Sector D"[10].

From the end of the ceasefire on 1 July until 11 July, Ukrainian units advanced quickly and found relatively little resistance until they reached the Chervonopartyzansk/Gukovo checkpoint. Then, the situation changed dramatically. The Zelenopillya artillery attack against Ukrainian forces on 11 July was followed by artillery attacks against large conglomerations of Ukrainian units in the area close to the Dolzhanskaya-Capital mine and Panchenkove, Chervonopartyzansk, Khmelnytskyi, Biryukove, Dolzhanskyi border control point and the Dyakove region. As the world diverted their attention on the horror of the Malaysian Airlines Flight 17 (MH17) shoot down on 17 July, the situation sharply deteriorated for the Ukrainian units on the eastern border.

On 22 July, Dmytrivka, a town on the supply road to Sector D, came under attack from separatists[11]. For the next two weeks, transport along the roads east of these towns greatly limited resupply and reinforcement for the trapped units[12,13,14]. From interviews and media reports, it was evident that conditions were dire[15,16]. Despite this, the units on the border continued to hold their positions.

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[10] http://www.thedailybeast.com/articles/2014/08/12/ukrainian-troops-retreat-from-russian-border-leaving-100-kilometers-defenseless-against-invasion.html;
http://web.archive.org/articles/2014/08/12/ukrainian-troops-retreat-from-russian-border-leaving-100-kilometers-defenseless-against-invasion.html

[11] http://uacrisis.org/lysenko2-22-07-2014/;
http://web.archive.org/web/20141129002451/http://uacrisis.org/lysenko2-22-07-2014/

[12] http://maidantranslations.com/2014/07/24/dmitry-tymchuks-military-blog-summary-july-23-2014/;
http://web.archive.org/web/20141206131810/http://maidantranslations.com/2014/07/24/dmitry-tymchuks-military-blog-summary-july-23-2014/

[13] http://maidantranslations.com/2014/07/27/towns-in-donbas-have-been-liberated-thanks-to-the-72nd-and-79th-brigades/ ;
http://web.archive.org/web/20141206184958/http://maidantranslations.com/2014/07/27/towns-in-donbas-have-been-liberated-thanks-to-the-72nd-and-79th-brigades/

[14] http://mignews.com.ua/sobitiya/inukraine/3342474.html;
http://web.archive.org/web/20150210143339/http://mignews.com.ua/sobitiya/inukraine/3342474.html

[15] http://mignews.com.ua/sobitiya/inukraine/3363561.html;
http://web.archive.org/web/20150210143455/http://mignews.com.ua/sobitiya/inukraine/3363561.html

[16] https://www.youtube.com/watch?v=lX6e3wr34BM

On 3 August, a breakthrough by Ukrainian units in the west unblocked a potential resupply route (between Dyakove and Dmytrivka) to the beleaguered units on the border[17]. That same day, pro-Russian forces sharply increased the number of attacks against the trapped units on the border[18]. Out of ammunition, on 4 August, over 400 Ukrainian soldiers from the 72nd Mechanized Brigade fled across the border to escape the constant bombardment[19]. By 8 August, the remainder of the 72nd and 79th brigades had broken out of the encirclement, and around 1,000 survivors were able to regroup with other units near Savur-Mohyla[20].

Significant artillery attacks upon Ukrainian units in the border region east of Dmytrivka were undoubtedly a key factor in the retreat of Ukrainian units from Sector D. However, until now, the trajectories and firing positions of the artillery attacks that led to this defeat have not been analyzed. In the following section, we analyze two of the largest visible artillery attacks close to Chervonopartyzansk and Sverdlovsk, where Ukrainian units were hit by hundreds of visible artillery shells during July and August 2014.

The Dolzhanskaya-Capital mine/Panchenkove attacks 14 July 2014 to 8 August 2014

On 14 July 2014, consistent accounts emerged in both Ukrainian and pro-Russian media outlets that clashes took place in the vicinity of a mine called 'Dolzhanskaya-Capital,' close to the Ukrainian town of Panchenkove[21,22].

[17] https://en.informnapalm.org/anti-terrorist-operation-ukraine-summary-august-4-2014/;
http://web.archive.org/web/20150210143548/https://en.informnapalm.org/anti-terrorist-operation-ukraine-summary-august-4-2014/
[18] http://euromaidanpress.com/2014/08/05/dmitry-tymchuks-military-blog-summary-august-4-2014/;
http://web.archive.org/web/20141208115423/http://euromaidanpress.com/2014/08/05/dmitry-tymchuks-military-blog-summary-august-4-2014/
[19] http://www.bbc.com/news/world-europe-28652096;
http://web.archive.org/web/20141229035005/http://www.bbc.com/news/world-europe-28652096
[20] http://www.thedailybeast.com/articles/2014/08/12/ukrainian-troops-retreat-from-russian-border-leaving-100-kilometers-defenseless-against-invasion.html;
http://web.archive.org/articles/2014/08/12/ukrainian-troops-retreat-from-russian-border-leaving-100-kilometers-defenseless-against-invasion.html
[21] http://www.dtek.com/ru/media-centre/press-releases/details/v-dtek-sverdlovantratsit-v-rezuljtate-boevikh-dejstvij-obestocheni-dve-shakhtoplosshadki;
http://web.archive.org/web/20150210143935/http://www.dtek.com/ru/media-centre/press-releases/details/v-dtek-sverdlovantratsit-v-rezuljtate-boevikh-dejstvij-obestocheni-dve-shakhtoplosshadki#.VNoYQixcpjA
[22] http://www.gazeta.ru/social/news/2014/07/16/n_6315585.shtml;
http://web.archive.org/web/20141025100221/http://www.gazeta.ru/social/news/2014/07/16/n_6315585.shtml

Crater fields near Dolzhanskaya-Capital mine

Considerable disruptions to the mine's power system affected pumps and the ventilation system, leading to the evacuation of 278 miners.

The satellite image from 8 August shows the cause of the power outage: large amounts of artillery fire that destroyed several electricity poles in the vicinity of the mine. Analysis of the damaged electricity poles and their connections suggested that only lines leading directly to the mine were affected. Therefore, there was no evidence to suggest that power to nearby towns was disrupted due to this attack.

The Bellingcat investigation team researched media reports from mid-July to confirm attacks from this time period. Official Ukrainian government sources reported artillery attacks on 23 July and 1 August[23], and Ukrainian media sources also reported attacks in this area on 16 and 24 July, and from 1 to 4 August[24]. The following comparison of maps provided by separatist sources shows the course of the battles in July and August throughout the region and also suggests several specific dates for attacks on Ukrainian forces[25].

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[23] http://mediarnbo.org/?lang=en;
http://web.archive.org/web/20150209075216/http://mediarnbo.org/?lang=en
[24] http://maidantranslations.com/category/opinions/dmitry-tymchuk/;
http://web.archive.org/web/20141201222146/http://maidantranslations.com/category/opinions/dmitry-tymchuk/
[25] http://warday.su/map/53-karta-boevyh-deystviy-18-22-iyulya.html;
http://web.archive.org/web/20150210144240/http://warday.su/map/53-karta-boevyh-deystviy-18-22-iyulya.html

Battles southeast of Sverdlovsk from 11 to 24 July (map from pro-Russian websites)

Battles southeast of Sverdlovsk from mid-July to early August (map from pro-Russian sites)

The Bellingcat investigation team analyzed a number of videos shared on YouTube and VKontakte (VK), Russia's most popular social networking site. From these sources, it was established that at least two attacks occurred on 16 July.

Next, our team analyzed the crater field near the Dolzhanskaya-Capital mine outside of the Panchenkove village by using satellite imagery from 8 August 2014. A total of 813 craters were measured.
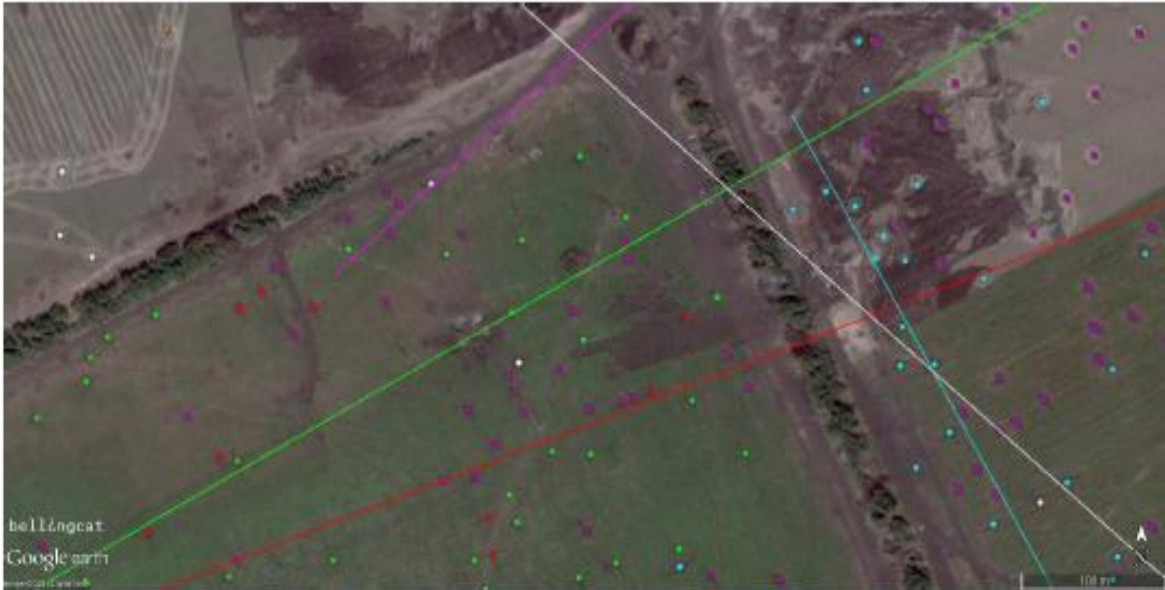
Crater fields near the Dolzhanskaya-Capital mine

Analysis of the calculated trajectories in the crater field reveals that there were six separate attacks from five different directions.
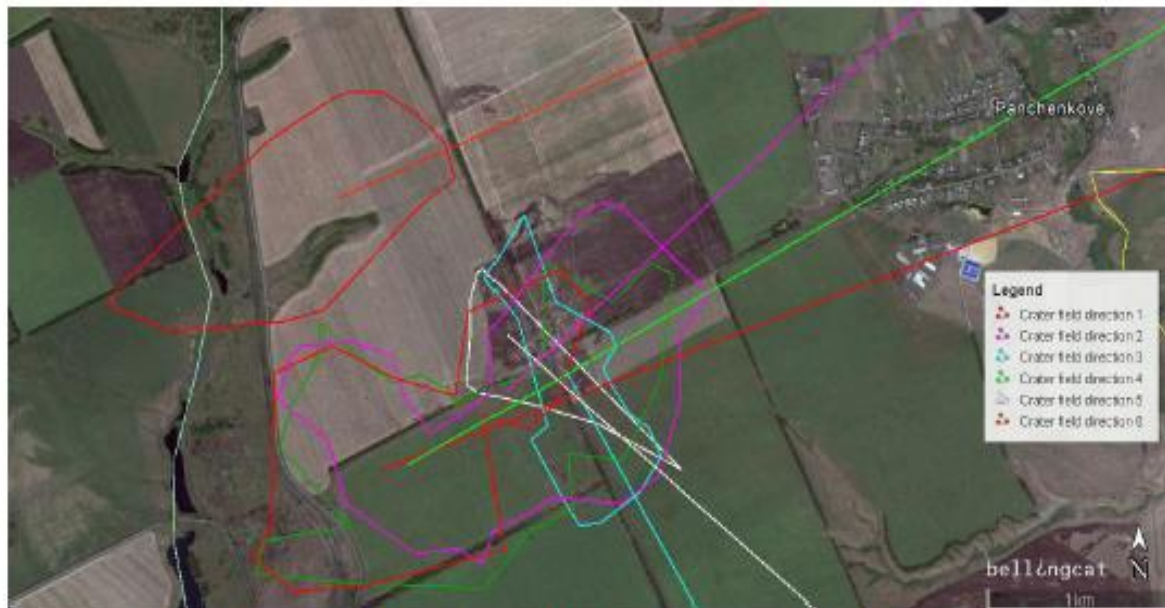

Crater fields near the Dolzhanskaya-Capital mine showing six separate firing trajectories

With maximum differences of 300m at a shelling distance of 15km, all of the calculated trajectories can be traced to five separate firing positions. Every one of these – with the exception of the position near Chervonopartyzansk, Ukraine, which is close to the border – is clearly within the territory of Russia.
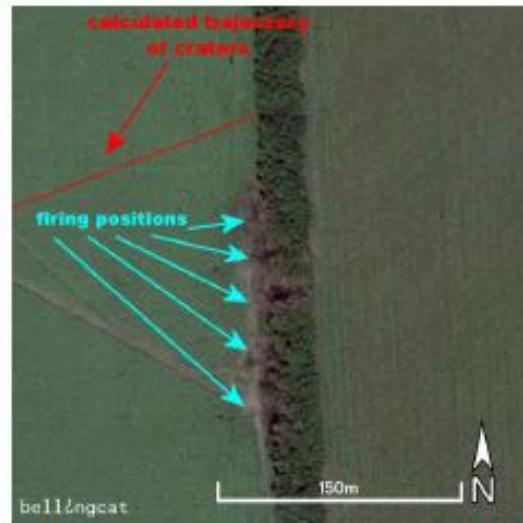
The firing positions, from north to south, were located in the following positions:

1. Near Nizhnyaya Kovalevka, Russia at 48°07'51.4"N, 39°54'02.4"E
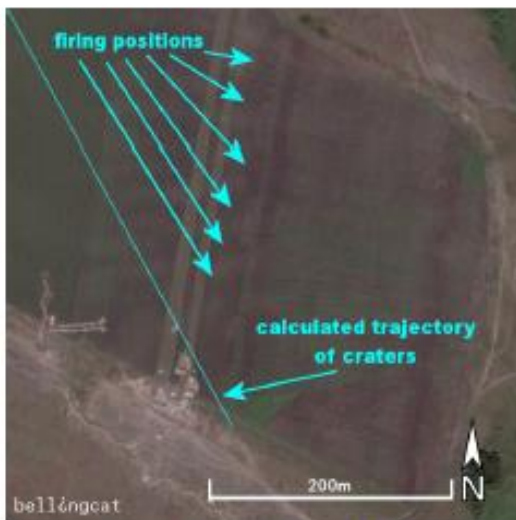2. Near Chervonopartyzansk, Ukraine at 48°03'03.2"N, 39°49'52.2"E
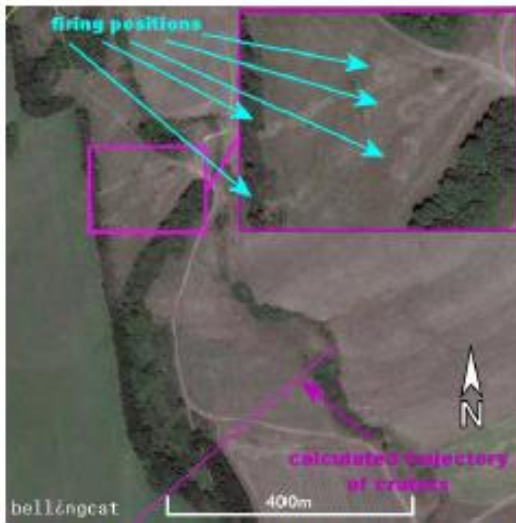
Firing position near Nizhnyaya Kovalevka, Russia

Firing position near Chervonopartyzansk, Ukraine

3. Near Pavlovka, Russia at 47°56'28.1"N, 39°49'12.0"E
4. Near Ukrainskiy, Russia at 47°58'23.0"N, 39°51'01.5"E


Firing position near Pavlovka, Russia

Firing position near Ukrainskiy, Russia

The one exception was a firing position located near Chervonopartyzansk, within the territory of Ukraine.

5. Near Gukovo, Russia at 48°05'25.0"N 39°54'45.3"E

The firing position near Gukovo is particularly noteworthy, because numerous videos have been shared on social media showing artillery fire. The firing position shown in these videos will be examined separately in the following section.
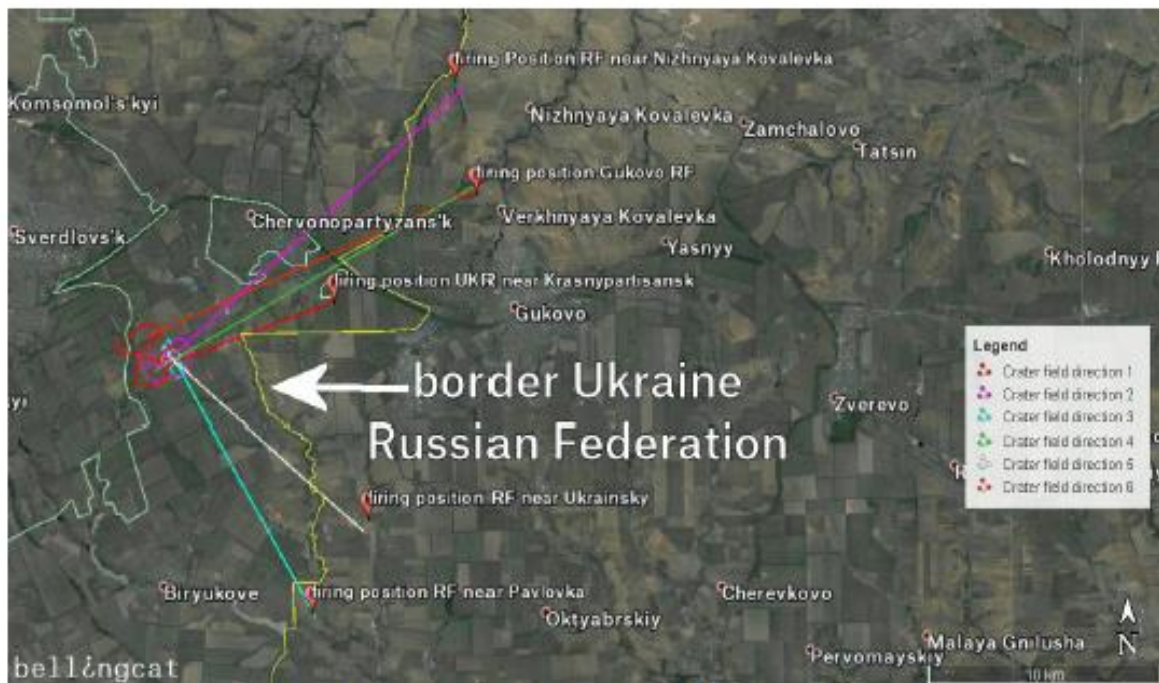
Crater fields near the Dolzhanskaya-Capital mine – located firing positions

The Bellingcat investigation team has also found that at all of the firing positions except one (Chervonopartyzansk), vehicle tracks show both an arrival from and departure to areas within Russia. In other words, in four out of five cases, there were no observable tracks linking the firing positions to Ukrainian territory, and all the observable tracks near the firing sites were exclusively within the territory of Russia.

The firing position near Gukovo

On 17 July 2014, a series of videos were shared on YouTube and VK showing an attack with MLRSs. The attack occurred on 16 July in the vicinity of Gukovo, Russia. This attack has already been geolocated by a number of blogs and articles, for example by The Interpreter[26].

The Bellingcat investigation team has found six videos on social networks that show the events of 16 July near Gukovo. Two of these videos were captured from the edge of the Kovalevsky pond on the afternoon of 16 July.

Video001
г. Гуково (РФ), град бьет по Украине
"City of Gukovo (RF), a Grad strikes at Ukraine"
added 16 July 2014
Camera location: 48°4'30.76"N 39°55'36.94"E
https://www.youtube.com/watch?v=nuar9RkYCR A
Alternative link:
https://www.youtube.com/watch?v=6SIDxVxdIjw

Video001 shows several MLRS salvos west of the pond. This video has been successfully geolocated a number of times by various journalists, bloggers, and open source investigators[27].

Video002
Обстрел ГРАДами территории Украины. г. Гуково, Ростовская область.
"Bombardment of the territory of Ukraine with Grads, city of Gukovo, Rostov oblast"
16.07.2014, 17.05 (MSK)
added 16 July 2014
Camera location: 48° 4'15.08"N 39°55'24.16"E
https://www.youtube.com/watch?v=GC_pCuqmOm0
Alternative link:
https://www.youtube.com/watch?v=zRCjUPa7qHU

Video002 shows burning fields northwest of the same pond that appears in Video001. It was suspected at the time that this fire came from MLRS launchers[28].

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[26] http://www.interpretermag.com/ukraine-liveblog-day-149-russian-tanks-and-artillery-reach-donetsk/;
http://web.archive.org/web/20150108053731/http://www.interpretermag.com/ukraine-liveblog-day-149-russian-tanks-and-artillery-reach-donetsk/
[27] http://ukraineatwar.blogspot.dk/2014/07/russian-Grad-firing-from-russian-soil.html;
http://web.archive.org/web/20150115124112/http://ukraineatwar.blogspot.nl/2014/07/russian-grad-firing-from-russian-soil.html

Other Grad rocket volleys were documented in four other videos on the same day in the evening. Each of these videos was captured exactly at sunset, leading to our determination that the videos were captured at approximately 19:15 (MSK, local time)[29].

An important feature of this collection of videos is that each was captured from different angles facing the firing position. The Bellingcat investigation team was able to precisely determine the location of the firing position from the exact locations of the cameras and the angle and positions of the Grad launchers in each video.

Video003
Град в Гуково
"Grad in Gukovo"
added 16 July 2014
Camera location: 48°03'59.0"N 39°55'36.2"E
https://www.youtube.com/watch?v=XUUzNnGGbSk
Alternative Link:
https://www.youtube.com/watch?v=edE_FshuF2U

Video003 was captured from a cherry tree on a residential plot on Bazarnaya Street 84 in Gukovo. The identifying features of this video include buildings in the center of the video, the cherry tree as camera location, and the angle and distance from the firing position.

Camera location Video003 – yellow-green lines in the middle point toward the firing position

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[28] http://www.interpretermag.com/ukraine-liveblog-day-149-russian-tanks-and-artillery-reach-donetsk/;
http://web.archive.org/web/20150108053731/http://www.interpretermag.com/ukraine-liveblog-day-149-russian-tanks-and-artillery-reach-donetsk/
[29] http://suncalc.net/#/48.05,39.9333,13/2014.07.16/19:15

Video004
Залп российских ГРАДов из Гуково в сторону
Украины
"Salvo of Russian Grads from Gukovo in the
direction of Ukraine"
added 16 July 2014
Camera location: 48° 4'29.80"N 39°55'36.07"E
https://www.youtube.com/watch?v=8pu0h2O7Rn
I
Alternative link:
https://www.youtube.com/watch?v=8F9WFkA9C
08

Video004 shows the firing position on the southwest side of Kovalevsky pond. The
identifying landscape features in this video are the solitary tree on the right side of the
camera's perspective, the big bush in roughly the middle of the perspective, and the utility
poles on the far left side of the perspective.

Camera location of Video004 – light green lines in the middle point toward the firing position

Video005
Град Гуково,Ростовской обл.,Россия по Украине
Russian attacked Ukraine from Gukovo, Rostov Oblast
added 16 July 2014
Camera location: 48° 4'24.30"N 39°55'37.12"E
https://www.youtube.com/watch?v=kXpCTUjWGkE
Alternative link:
https://www.youtube.com/watch?v=6ufW8UxbkpM

The firing position in Video005 is visible from the southwest side of Kovalevsky pond. The identifying landscape features in this video are the same as Video004: a big bush and utility poles.
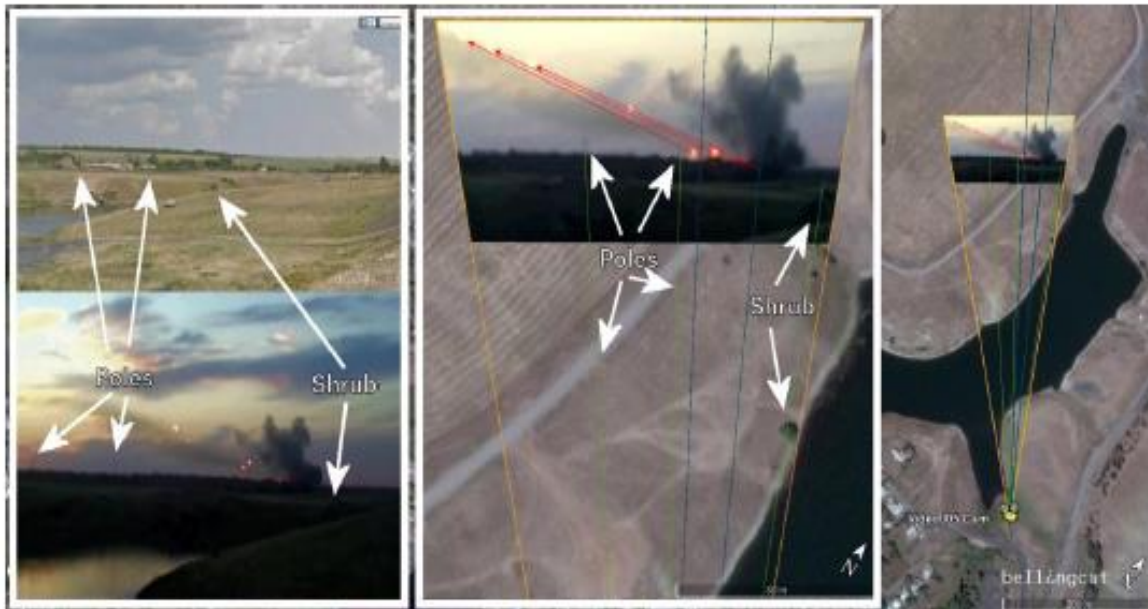
Camera location of Video005 – blue lines in the middle point toward the firing position

Video006
Обстрел территории Украины из Гуково, россия
"Shelling of the territory of Ukraine from Gukovo, Russia"
Added 16 July 2014
Camera location: 48° 3'33.15"N 39°57'22.60"E
http://vk.com/video-38854900_169727129
Alternative link:
https://www.youtube.com/watch?v=TsmcdunS0LA

Video006 was captured from a residential building on Botanicheskaya Street 7a in Gukovo. The identifying features of this video include a building on the right side of the video, another building on the left side, the road below, and the angle and distance from the firing position.

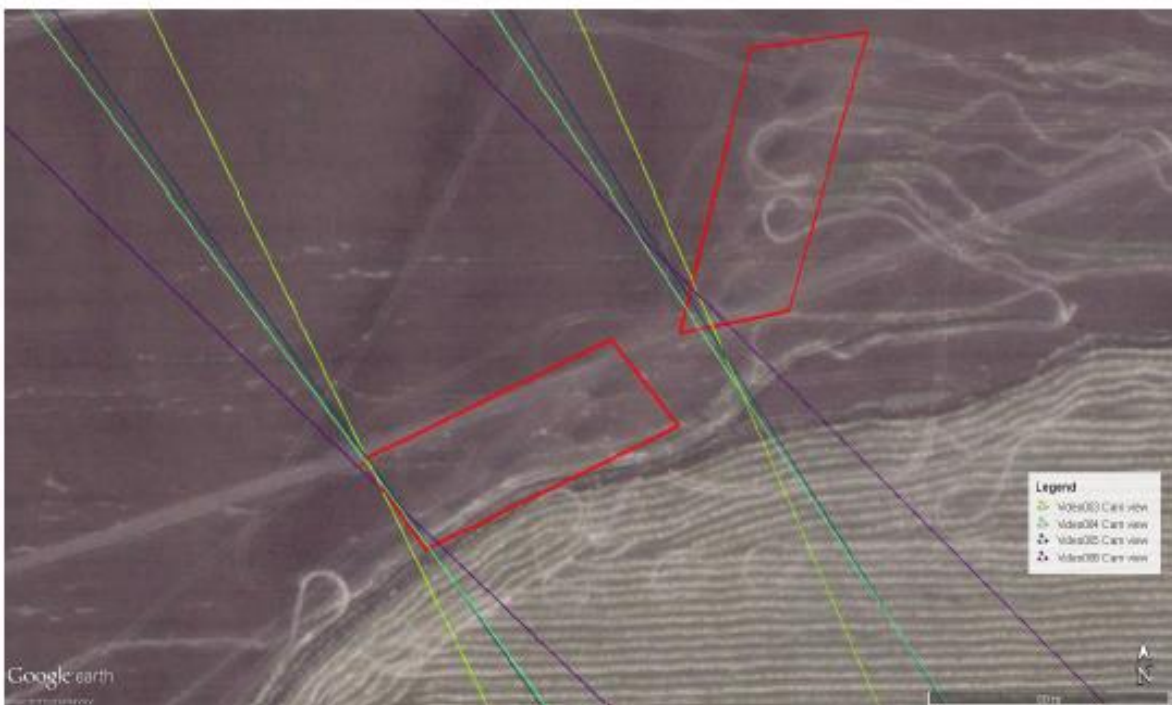Camera location of Video006 – dark purple lines show the direction of the firing position
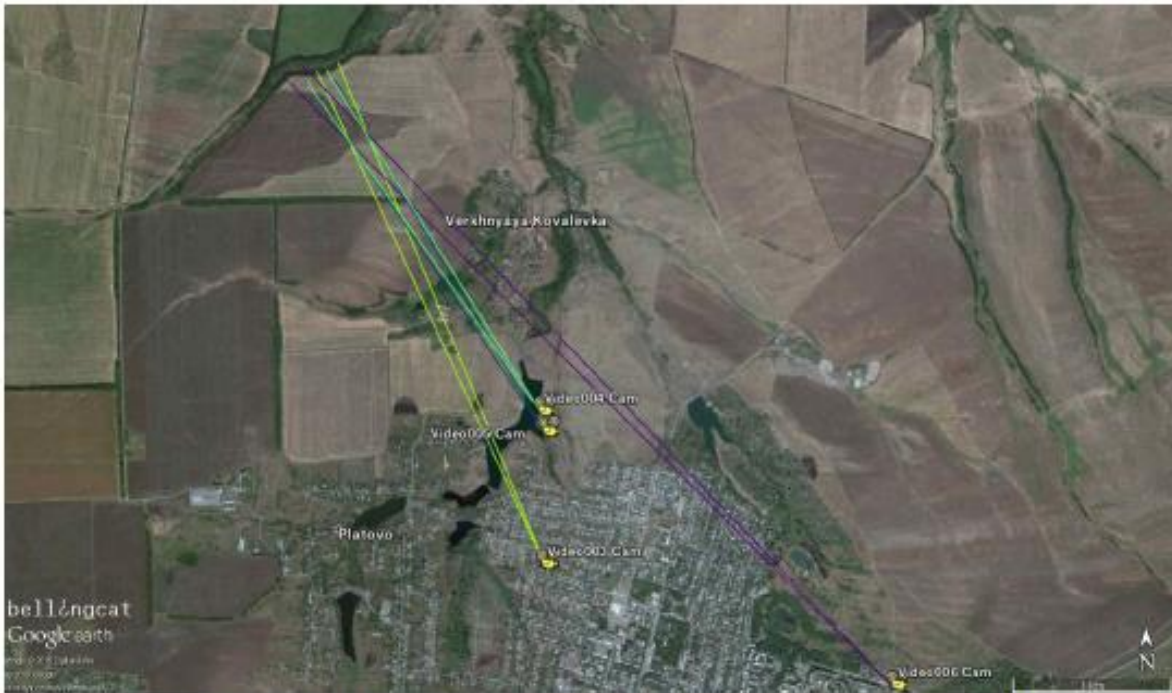
The intersections of the viewing directions to the firing position give the exact location

On the satellite image below, taken 8 August 2014, the intersection of the lines clearly shows two visible burns, marking the firing position.

The intersection of viewing directions and the location of Grad firing positions

The positions of the cameras in the previous videos clearly point to a firing position north of Platovo. These firing positions are visible from satellite imagery of the burned fields (image above).

As evident from the satellite imagery, there are two visible firing positions for four Grad MLRSs at 48°05'25.0"N 39°54'45.3"E. The Bellingcat investigation team has measured the direction of the traces of fire and calculated the trajectory for each firing position.

Trajectories analyzed from the direction of the burn marks

The calculated trajectories of the burn marks point toward two different crater fields on Ukrainian territory (image below). After analyzing the individual craters in the artillery strike site, we found that the calculated trajectories of the firing positions fit almost exactly the two trajectories determined from the artillery crater analysis of the crater field near the Dolzhanskaya-Capital mine.
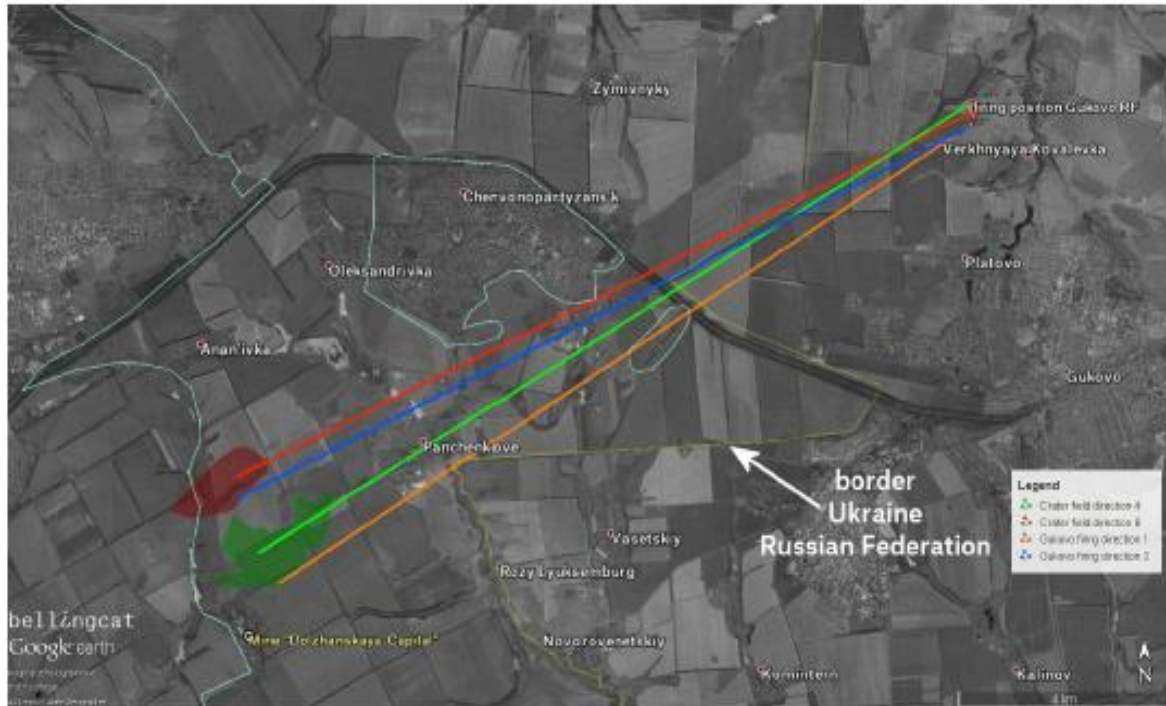
Trajectories from the firing position north of Platovo to the target area around the Dolzhanskaya-Capital mine

Thus, from the evidence of crater field analysis, social media geolocation, and local media reports, the Bellingcat investigation team has determined that the artillery attacks on the Ukrainian armed forces positions near the Dolzhanskaya-Capital mine were conducted on 16 July 2014 from firing positions near Gukovo, within the territory of Russia.

Video footage of the aftermath of the attacks

On 12 August 2014, the separatists, via their so-called "Information and Analysis Agency South East" posted two videos entitled "Destroyed position of the 'heroic' 72nd Brigade APU near Sverdlovsk, Lugansk region"[30].

The Bellingcat investigation team has located the camera position of these videos as being in the crater field in the vicinity of the Dolzhanskaya-Capital mine[31].

A shot from the video
"Уничтоженная военная техника под Свердловском 72 бригады ВСУ" [32]

The same destroyed military vehicles are clearly visible in the 8 August 2014 satellite image from Google Earth, taken just after the Ukrainian forces pulled out of this border area[33].

[30] http://real-info.info/novorossiya/razbitye-pozitsii-gerojskoj-72-brigady-vsu-pod-sverdlovskom-luganskaya-oblast;
http://web.archive.org/web/20140819175725/http://real-info.info/novorossiya/razbitye-pozitsii-gerojskoj-72-brigady-vsu-pod-sverdlovskom-luganskaya-oblast
[31] https://www.google.de/maps/place/48%C2%B001%2753.3%22N+39%C2%B044%2715.5%22E/@48.0314833,39.7376444,732m/data=!3m2!1e3!4b1!4m2!3m1!1s0x0:0x0
[32] https://www.youtube.com/watch?v=X_bpZMKlnN4
[33] https://pressimus.com/Interpreter_Mag/press/3701;
http://web.archive.org/web/20150210144851/https://pressimus.com/Interpreter_Mag/press/3701
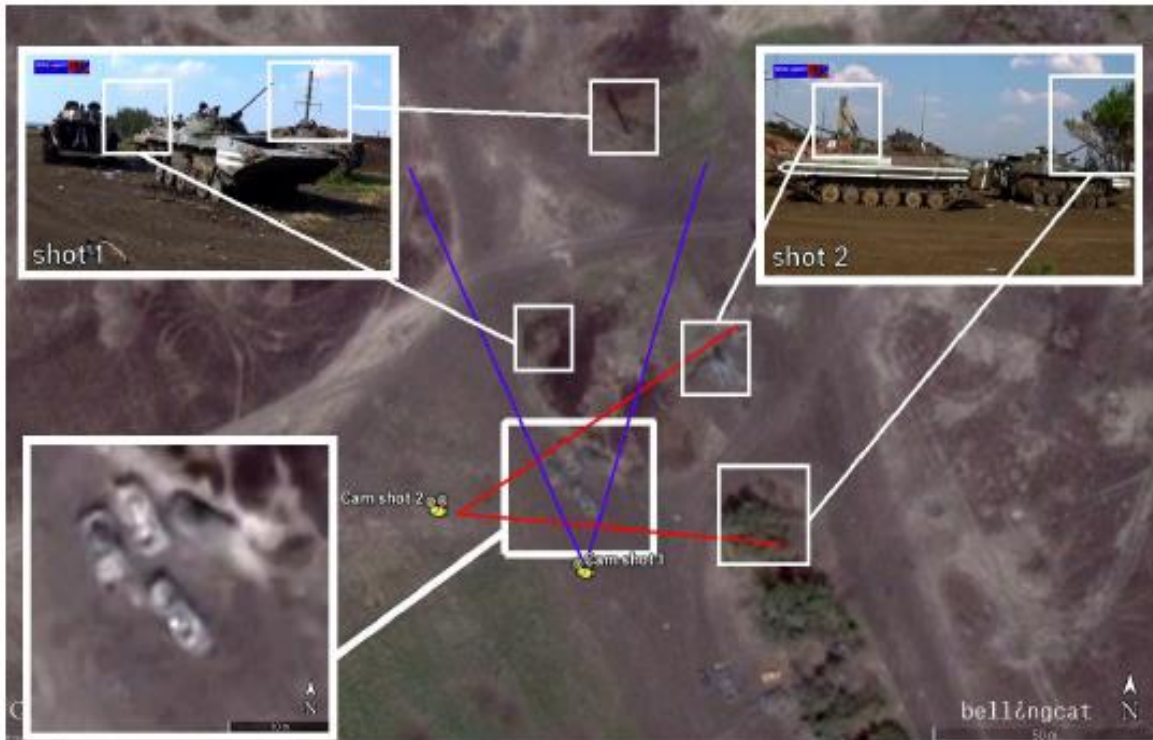
Camera location for the scene from the video at 1:05

A shot of four damaged Ukrainian vehicles from the video
"Уничтоженная военная техника под Свердловском 72 бригады ВСУ"[34]

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[34] https://www.youtube.com/watch?v=X_bpZMKlnN4

Other shots from the videos

These videos show the extent of the destruction of the Ukrainian forces' equipment based close to the Dolzhanskaya-Capital mine. Many heavily damaged trucks and armored vehicles are visible in the video, including a truck, several BMP-2 units, a self-propelled artillery unit, BM-21 Grad launchers, and tanks.

The Khmelnytskyi attack 25 July 2014

On 28 July 2014, the Russian news agency Ruptly published a video on YouTube entitled "Ukraine: Battle aftermath litters after Sverdlovsk militia pummels 72nd Motorized Brigade"[35].

Shot from the Ruptly Video

Several abandoned and damaged armored vehicles are visible in this video. The video description also gives us a date for the attack:

> Ukrainian Army BMP-2, MT-LB and rocket launchers were left abandoned near Sverdlovsk on Saturday, after the 72nd Motorized Brigade suffered heavy losses during mortar shelling from the Lugansk People's Militia on Friday.
> Lugansk People's Militia has said that heavy losses were suffered by the Ukrainian army in both hardware and personnel after the Kiev troops were hit by the 12mm [sic] mortar shells.

The video was released on 28 July 2014, which means that the day of the attack (the previous Friday, as mentioned in the description) was 25 July 2014.

Using the video footage, the Bellingcat investigation team has located the camera location of the Ruptly video as being a crater field close to the village of Khmelnytskyi, south of Sverdlovsk.

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[35] https://www.youtube.com/watch?v=kj7sE6dsuWQ

Result of the crater analysis at the village Khmelnytskyi, south of Sverdlovsk

The trajectories of nine craters point directly east (green line). Two other trajectories (red and cyan lines) originate from a southeasterly direction. All three trajectories clearly point to firing positions within Russian territory.

Firing position 1 and military camp
Google Earth satellite image date 08 August 2014

Firing position 2 and military camp
Google Earth satellite image date 08 August 2014

These firing positions are directly connected to the military camp of the Russian army near Pavlovka and a smaller firing position close to Malyy.

Conclusion

The Bellingcat investigation team used internationally recognized methods and satellite imagery to analyze a total of 1,353 artillery craters in eastern Ukraine and determine their trajectories. We located firing positions that closely matched these trajectories, all of which were inside Russian territory with one exception, which was less than 2km from the Russian border.

Three artillery attack case studies were investigated in this report: Amvrosiivka (14 July 2014), between Dolzhanskaya-Capital mine and the village of Panchenkove (16 July to 8 August 2014), and Khmelnytskyi (25 July 2014). Our artillery crater analysis concluded that there were a total of ten primary attack trajectories across all the case studies. We identified firing positions from each of these attack trajectories. Nine of these firing positions were – without any doubt – within the territory of Russia, with three being within 400 to 800m of a military camp. The one position in Ukraine was near Chervonopartyzansk, within the territory of Ukraine, 1.2km south and 1.5km north of the border with Russia.

The target trajectory of three firing positions was determined through analysis of scorch marks created by MLRS fire. All three of these trajectories led precisely to the target area of the crater field, allowing our team to calculate the trajectories in both directions (i.e., from crater field to firing position and from firing position to crater field). Vehicle tracks are also visible and clearly showed that they originated from, and led back to, Russian territory near seven firing positions.

The firing position for an attack on 16 July 2014 in a field north of Gukovo, Russia was documented in a series of videos found on social media. Four of these videos show the same instance of 122mm MLRS fire from different perspectives. By comparing the video locations and views, the Bellingcat investigation team was able to geolocate the exact firing position. With a small deviation (300m at a shelling distance of 15km), the firing position geolocated through video analysis was the same as that derived from the crater analysis.

This study has provided compelling evidence that a series of artillery attacks on Ukrainian territory were conducted between 14 July and 8 August 2014 from firing positions within Russia. The first attack on 14 July originated from Russian territory near the Russian village of Seleznev and was directed towards positions of the Ukrainian armed forces south of the Ukrainian village of Amvrosiivka. Four attacks were conducted near Gukovo, Russia on Ukrainian armed forces close to the Dolzhanskaya-Capital mine and the village of Panchenkove between 16 July and 8 August. Two additional attacks were conducted on this area from Russian territory north of Gukovo. On 25 July, an artillery attack was conducted on the positions of the Ukrainian 72nd Mechanized Brigade near Khmelnytskyi village, south of Sverdlovsk. These attacks also came from locations within Russia, specifically from a military base in Pavlovka and a position east of the village of Malyy.

Acknowledgments

MH17 Joint Investigation Team's New Video Brings New Facts to Light

This report analyses a new video with disturbing transcribed audio recordings determining the cause and culpability of the MH17 tragedy, implicating Russia and pro-Russia rebels.

MH17 JOINT INVESTIGATION TEAM'S NEW VIDEO BRINGS NEW FACTS TO LIGHT

March 30, 2015

By Aric Toler

On March 30, the Joint Investigation Team investigating the cause of the downing of MH17 released a video calling for witnesses in eastern Ukraine to come forward with information regarding the transport of a Buk anti-aircraft system through eastern Ukraine on July 17th (the day of the MH17 crash) and 18th, 2014. In the video, the Joint Investigation Team summarize the path of the Buk from Donetsk, through Zuhres and Torez to Snizhne, to Luhansk, and back to Russia with photographs and videos of the Buk along with intercepted phone calls between separatists. The majority of this information has been long known, as can be found in Bellingcat's November report on the Buk system that likely shot down MH17. However, this video also provides us with new information that further implicates Russia and the separatists with whom it collaborated in the form of intercepted phone calls placed after the downing of MH17. In these three previously unpublished phone calls, separatists discuss a Volvo low-loader truck hauling a Buk from Snizhne to Russian territory shortly after the MH17 shootdown.

Along with the newly published phone conversations, the Joint Investigation Team video confirms previous facts vital in determining the cause and culpability of the MH17 tragedy. The video, along with a description on the JIT website, confirm the following facts that were also recapped in the November Bellingcat report:

- A Buk anti-aircraft system was transported in a Volvo low-loader with a telephone number on a distinct yellow background from Donetsk on the morning of July 17 and through Luhansk in the early morning of July 18

- The same Buk was seen in the morning and early afternoon of July 17 in the towns of Zuhres, Torez, and Snizhne.

- The Buk drove south of Snizhne in the afternoon of July 17 without the assistance of the Volvo low-loader.

The new information, which has largely been speculated upon before this video, concerns the location of the Buk before being photographed in Donetsk and after the shootdown of MH17.

The Joint Investigation Team has determined that the Buk was likely transported from Sjevernyi, Ukraine in the Luhansk oblast, through Luhansk, and into Donetsk. This transit took place overnight between July 16 and 17, though the exact route is not clear, as the video highlights a few possible alternate routes near Luhansk. The Joint Investigation Team does not speculate where the Buk was located before reaching Sjevernyi; however, the town is located less than a kilometer from the Russian border, raising obvious questions.

During the night of July 17th, the truck transporting the BUK drove via an unknown route in the direction of Donetsk.

There are three additional calls that the Joint Investigation Team referred to, all of which occurred after the downing of MH17. The first took place at 9:32pm, approximately 5

Around midnight on July 17th, the truck probably was in the area of Sjeverne. The JIT is looking for more witnesses who have seen...

hours after the MH17 crash, between two separatists. This call concerns how one of the crew members accompanying the Buk was left behind at a checkpoint east of Snizhne. The Joint Investigation Team is requesting any additional information available regarding the location of this checkpoint and petrol station, along with the identity of this crew member. There are a few errors in the English and small parts of the phone calls that are not included in the transcript, which are also not included in the below transcript. Additionally, the Joint Investigation Team redacted the names in the phone

call, instead marking them as **(…)**, and the transcript selectively marked expletives used in the phone calls. None of the expletives, excluded parts of conversations, or minor errors change the essential content of the phone calls from the original Russian.

A: Yes, **(…)**!

B: Hello, commander. Have you already left, yes?

A: Me? Yes. I have left for my task, you – for yours.

B: I got it. Within that very region or not?

A: No. I'm not within that region. I'm [going to] to the other direction.

B: …[inaudible] a fighter has got lost there from this one… [inaudible] launcher. He has (expletive) lost his crew (expletive)!

A: What a (*sic*) launcher?
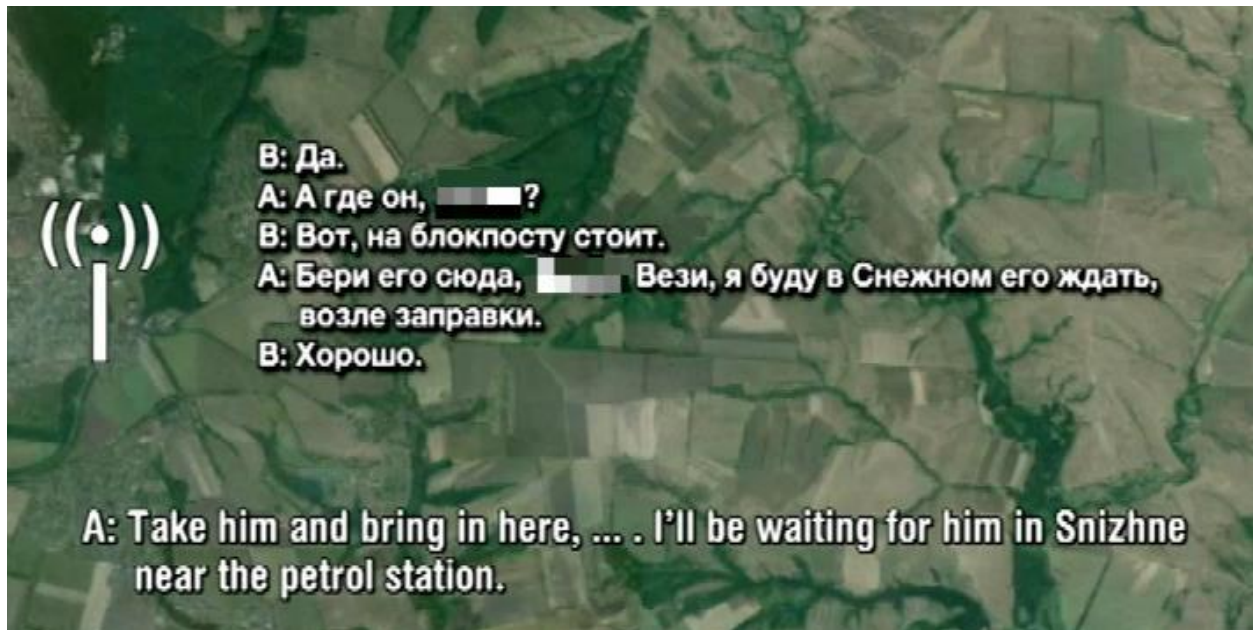
B: From a Buk.

A: From a Buk?

B: Yes.

A: And where is he, (expletive)?

B: Here he is standing at the checkpoint.

A: Take him and bring in here, (expletive). I'll be waiting for him in Snizhne near the petrol station.

B: Okay.

B: Да.
A: А где он, ████?
B: Вот, на блокпосту стоит.
A: Бери его сюда, ████ Вези, я буду в Снежном его ждать,
возле заправки.
B: Хорошо.

A: Take him and bring in here, ... I'll be waiting for him in Snizhne near the petrol station.

The other two intercepted calls took place at approximately 8:00am and 8:20am on July 18, the morning after the downing of MH17 and a few hours after the Buk and Volvo low-loader truck were filmed in Luhansk headed east.

First call, placed at approximately 8am on July 18, 2014:

B: Good morning **(…)**!

A: Good morning, **(…)** Yesterday was a (expletive) mess, I have nothing to say.

B: What's up?

A: Where, is, whatsit (expletive) err…Why did your comrade **(…)** return. Incomprehensible such movements. I don't know what was going on yesterday, tell me!

B: They brought the car [*note: Every time car or vehicle is referred to in these transcript, the original word used is машина / mashina, which can refer to any vehicle, truck, or a machine. This word is likely referring to either the Volvo truck or the Buk*] till crossroad, left it there, the lads went on themselves.

A: Well.

B: So, the car was going in the correct direction and arrived successfully.

B: There were strange incoming calls which began suddenly, from 10 persons.
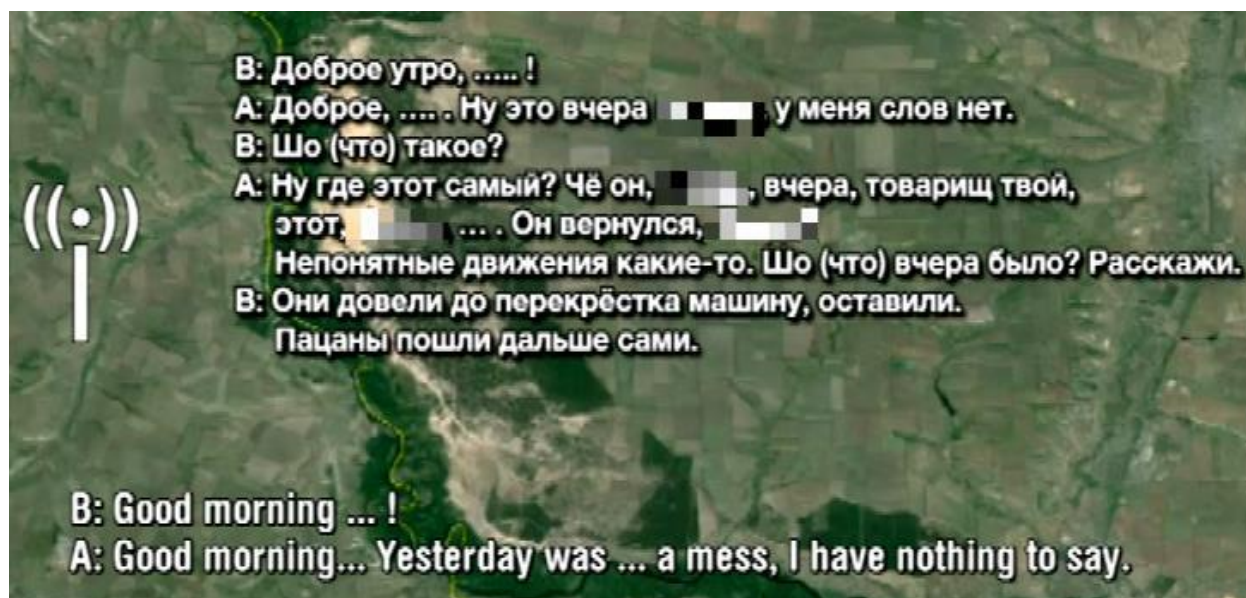
A: Who are that (*sic*) 10 persons?

B: Err. There were different incoming calls got him on the phone from people who begun (*sic*) to introduce themselves…err…One and then the second, then the third, then the fourth…he told me that he had pissed off…later, **(…)** begun to phone up.

A: And he turned of (*sic*) his telephone. (Expletive) of a mess.. err… and we don't know at all where is the car.

B: The car is in Russia.

A: (Expletive) shit… err…yesterday I [said] (expletive) that we didn't know.

B: Доброе утро, …… !
A: Доброе, ….. . Ну это вчера ▮▮▮ у меня слов нет.
B: Шо (что) такое?
A: Ну где этот самый? Чё он, ▮▮, вчера, товарищ твой, этот, ▮▮ … . Он вернулся, ▮▮ Непонятные движения какие-то. Шо (что) вчера было? Расскажи.
B: Они довели до перекрёстка машину, оставили. Пацаны пошли дальше сами.

B: Good morning … !
A: Good morning… Yesterday was … a mess, I have nothing to say.

Twenty minutes later, a second call is placed between the same two people in the previous call (A and B).

B: Yes, **(…)**!

A: **(…)**, you should take **(…)**, and come to my place, there is no …car, no one saw it (expletive). That one, which had gone to meet it… returned back without the car, you know what I mean. Where? Whom? Which way did he bring it? (Expletive) disaster, you know…

B: And what about Bibliotekar [*note: "The Librarian"*]? This is that group of people transported it.
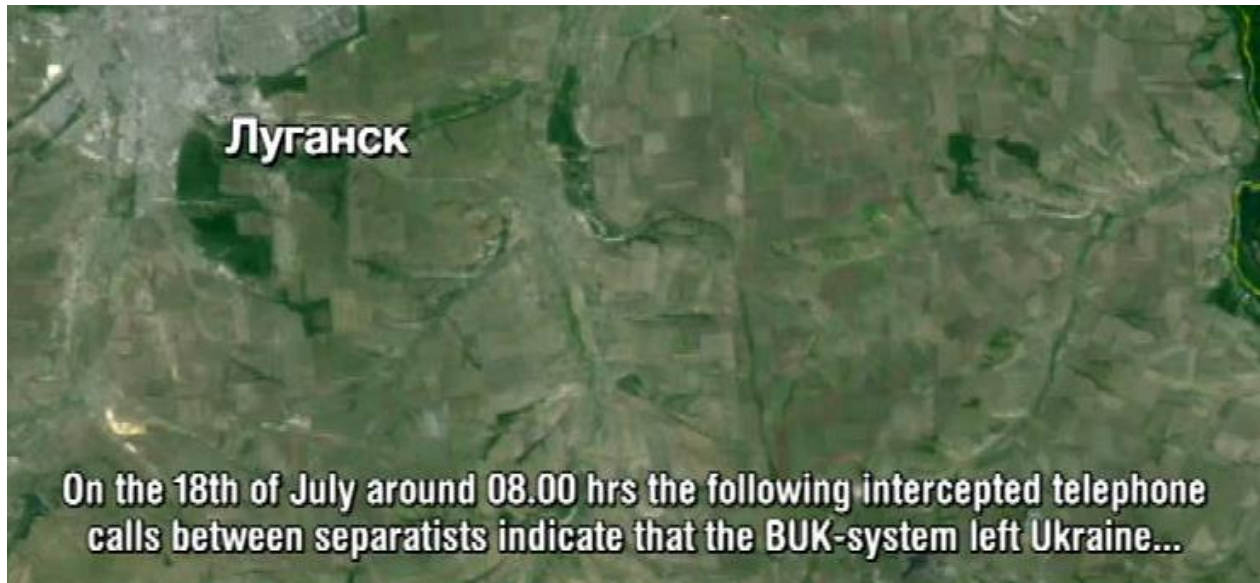
A: Well.

B: On the lowboy [*note: The Volvo low-loader truck*]. I have just made a (*sic*) contact with them, they are all in Russia, they will bring a new vehicle [*note: Same word – машина – used as in the previous translation to "car"]* from Russia.

A: Aha. But that…err…did he give it to Bibliotekar?

B: For sure!

A: Well, I got it.

On the 18th of July around 08.00 hrs the following intercepted telephone calls between separatists indicate that the BUK-system left Ukraine...

There are several facts to be extracted from these calls, including the following, which were not included in the November Bellingcat report and only partially speculated upon from other open source investigations:

- The first known origin point of the Buk on July 17 was not in Donetsk, but instead in a town less than a kilometer from the Russian border. Previously, many have claimed that this Buk was seized from an abandoned Ukrainian base in Donetsk. This new information indicates that either the Buk simply came from Russia, or separatists transported a captured (Ukrainian) Buk from Donetsk to a town at the Russian border (or further into Russia), and then returned to Donetsk.

- The Buk was located at the checkpoint east of Snizhne in the evening of July 17, before traveling to Luhansk. For a map showing the checkpoints active on July 17 just east of Snizhne, click here for a KMZ file created by Bellingcat contributor Timmi Allen (use Google Earth to open file).

- The Buk had a crew with it, though it is not explicitly said where the crew originated from (Russia or Ukraine).

- The Volvo truck and Buk were transported into Russia after passing through Luhansk early on the morning of July 18.

- Numerous people organized the transport of the Buk and many others knew about the situation, including: the separatists who picked up the person at the checkpoint on July 17, the crew transporting the Buk on July 17-18, the ten

people who called the person who transported it on July 18, and the people who took the Buk in Russia from the other crew on July 18.

- The "Bibliotekar" crew transported the Buk to Russia.

    - The participation of Bibliotekar was previously known from an earlier call intercepted and released by the SBU (Ukrainian Security Services), as seen on this English transcript of the call.

    - From the July 17 call, placed on the morning of July 17, a man named Khmuryi tells a separatist (named "Buryatik") to call Bibliotekar for more information on the Buk, which was located near a motel in Donetsk.

    - Khmuryi is supposedly the name used by Sergei Petrovsky, a separatist officer who was in Donetsk at the time.

    - The identity of "Bibliotekar" is unknown.

- The Volvo truck was taken to Russia on July 18, but was later used by separatists on August 6 and August 23 (second source). Thus, we can conclude that unless an identical Volvo truck was picked up as well, the машина (translated as both "car" and "vehicle" by the Joint Investigation Team) the Buk hauled by the Volvo.

This new video is the strongest indication yet from the Joint Investigation Team that the Buk photographed and filmed in eastern Ukraine on July 17 and 18 is the culprit of the tragedy. While the Joint Investigation Team has not explicitly ruled out other scenarios, it is telling that they have called upon witnesses in eastern Ukraine for more information while disclosing specific photographs, videos, and intercepted phone calls that all point to the same culprits.

How EchoSec Found Evidence of a Russian Fighting in Ukraine

This report shows senior soldiers from well within Russia who are now fighting in Ukraine.

How EchoSec Found Evidence of a Russian Fighting in Ukraine

February 19, 2015

By Jason Jubinville and Bellingcat

Originally posted on the EchoSec Blog, reproduced with permission.

Recently, the media has been paying close attention to the Donetsk region in northeast Ukraine. We decided to look for ourselves to see if we could identify military personnel of Russian origin in the area.

In a military, or global security context, the data pouring from this region can play a pivotal role in command, control, communications and coordination of operations.

Quick, informed decisions are the best decisions.

We used a systematic, 3-phase approach to find, filter, and investigate the social media coming out of Ukraine and Russia.

We started by using a systematic grid search to identify clusters and outliers, then reviewed each cluster and outliers for interesting information. Finally, we reviewed each piece of flagged information across multiple social media sources to correlate information and draw conclusions.

This investigation took us less than 6 hours, and the results were astounding.

Here is how we did it:

Initially, our analyst drew a box over the Donetsk region in Northeast Ukraine. The purpose of this large initial search is not to find posts immediately, but to determine where a large number of the posts are clustering. These clusters are going to be prioritized, then analyzed later for anything that stands out.

Upon further inspection of the clusters in the Donetsk region on January 23rd, our analysts found an individual of interest. Due to the nature of the data, no firm conclusions can be draw about the pictured soldier; however, he appears to have crossed the Russian boarder into Ukraine to join the fighting, only recently.

This particular soldier identified himself as Amigo Desperado, probably an alias. Our analyst then tracked him to using a different social media source, VK. VK is Facebook-like application popular in Russia. As can be seen in the picture below, we can find his date of birth, current city, and the location of several recent posts.
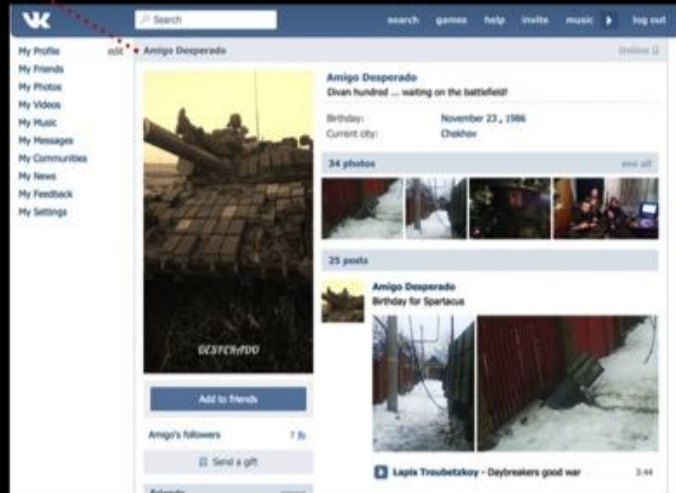
In the following picture, we can see that he was located in Russian territory in early December. He is clearly pictured with the Russian flag, a tank, and a group of men.
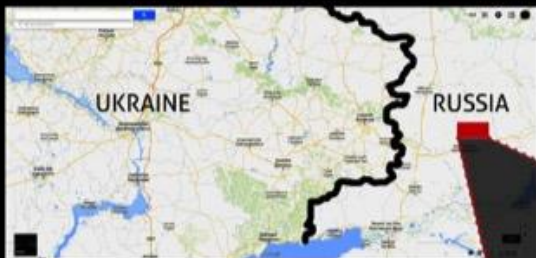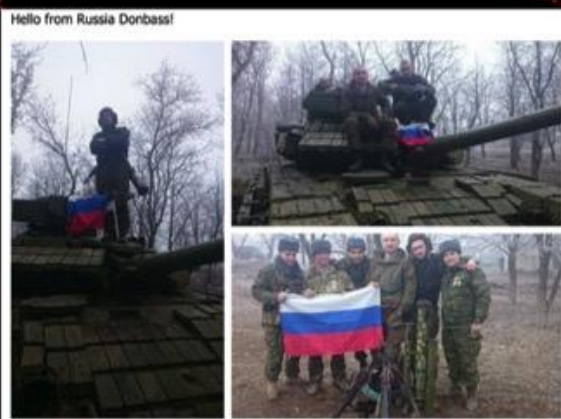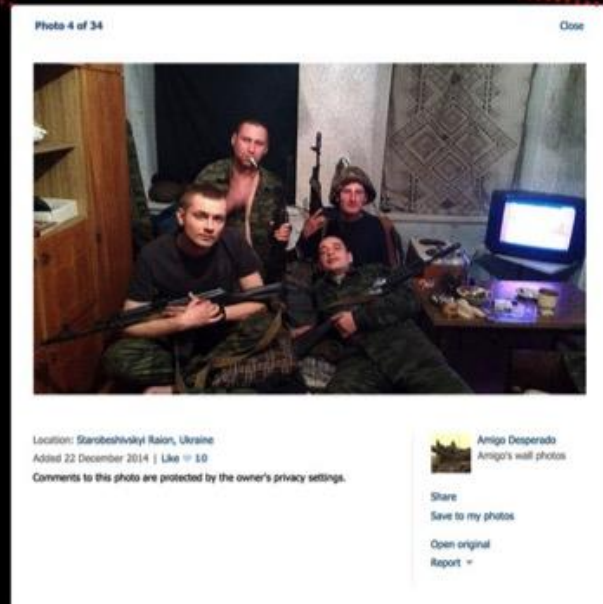
We then found a photograph of him 8 days later on December 22nd. The location associated with this post was from **within** the Ukrainian boarder.

Finally, we find a photograph that he has posted, where the location tag was directly from the Donetsk region. Using Echosec we tracked this individual from his Russian home to the center of the conflict within Ukraine. Further information about his identity, his motivations, and his associations can be derived from other social media accounts similar to VK.
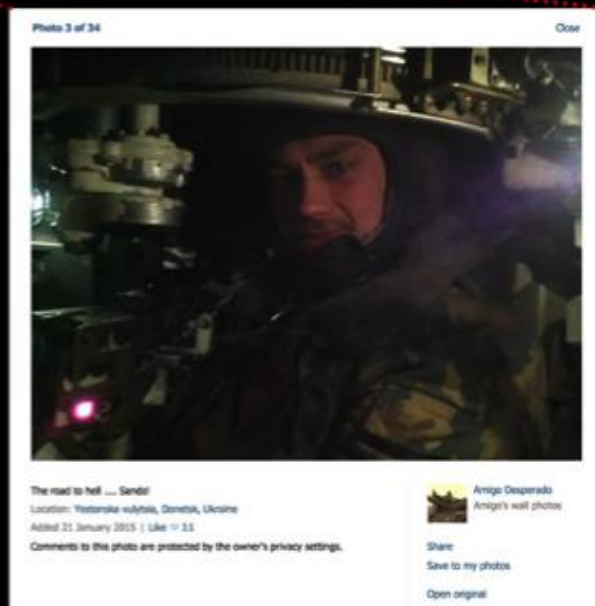
Amigo Desperado's photo from this Wednesday

The photo was also automatically geotagged by location services. He is inside a tank in Donetsk, Ukraine.

Jan 21, 2015

While our analyst was looking at the Donetsk region, he saw a number of graphic social media posts that captured the severity of the conflict in the region. These posts included several graphic images of bodies, ordnance and other evidence of the conflict. We elected not to display these graphic images on our blog, however, a social media search near the Donetsk airport, or near Mariupol may yield similar results.

Ultimately, the Echosec social media search tool was an effective tool for finding interesting information that is publicly available online. An effective user can sort through large amounts of information quickly to find what he needs. This can include tracking a person of interest, finding out new information in a crisis situation or gathering actionable intelligence.

All information contained in this post is open source and implications or inferences made by this publication are solely views of the writer.

Written by: Jason Jubinville @jpjubinville.