

# The trail that wasn't a launch plume: a reconstruction

September 2015  
Hector Reban with the help of many others

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## Introduction

Actually there is not much hard evidence pinpointing the rebels from eastern Ukraine as being the perpetrators of shooting down Malaysian Airways flight MH17 on the 17th of July, 2014, causing 298 casualties. Of course there have been popping up some images of a truck moving a BUK anti aircraft installation through rebel controlled area on that fateful day, but the many inconsistencies that came up have tarnished the faith in this alleged evidence (i.e. see <https://hectorreban.wordpress.com> and sources used).

Also one disputable picture of an alleged launch of one of these BUK missiles entered the scene of the infowar that started immediately after the crash to influence the outcome of the whodunnit question. Within hours this picture, first issued by tweeter @WowihaY, alias of Vladimir Djukov, reached world news. This so-called "plume pic" could be the main evidence in a case against the Donbass separatists having fired the missile. At least, this way it is brought by those who believe in its authenticity. Now rumours have come up a "hybrid" international trial will be instated [1], this launch plume photo possibly will be at the forefront of the indictment.

However, as with other evidence constructing the narrative a Russian crew shot the plane down by mistake with a Russian weapon from a launchsite south of Snizhne, the plume shows questionable features. Hence it is advisable, possibly at the evening of a trial, to reconstruct the situation surrounding the surfacing of this important photo.

For that purpose one could start with studying five important statements, given by or in the name of the maker of the plume pic, Pavel Aleynikov, formerly citizen of Torez and ex-military of the Ukrainian army. These are listed as follows, according to their appearance in time:

Statements made by Aleynikov in an interview with Business Insider on the evening of the day of the disaster;

Statements made by Aleynikov made in an interview with reporter Olaf Koens for Dutch commercial TV channel RTL4, December 2014;

Statements made by Aleynikov in chatsessions on Facebook and in an interview with Sergei Parkhomenko from the Meduza Project, March 2015;

Statements made by Aleynikov passed on by Bellingcat's Daniel Romein, May 2015;

Statements made by Aleynikov passed on by @WowihaY (alias of Vladimir Djukov), the person who first issued the launch plume picture on twitter, in an interview with Fakty.ua, translated by Bellingcat's Aric Toler, July 2015.

Because reactions both pro and contra were provoked by these statements, they will play an important role in this reconstruction as well. Furthermore investigation of both pictures and plume itself shape the heart of this report.

Conclusions reached: the photographer gave a lot of contradicting statements and the trail is probably not a BUK launch plume.



*Photo 1 (DSC\_9265) and Photo 2 (DSC\_9266), the famous plume pictures made by Pavel Aleynikov (unenhanced contrast/brightness).*

## The Business Insider interview, July 17th

On 17 July, 16:40 EEST, some 17 minutes after the crash of the plane, pro-Kiev infowarrior @WowihaY tweeted a picture showing dark smoke coming from the burning wreckage of the plane near Grabovo (<https://twitter.com/Djukov/status/489766482059198464/photo/1>). Later on it appeared to be "Photo 3" (DSC\_9267), made by photographer Pavel Aleynikov.

 DSC_9264.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 11:32 Размер: 15,5 МБ	
 DSC_9265.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:25 Размер: 15,1 МБ	1
 DSC_9266.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:25 Размер: 15,2 МБ	2
 DSC_9267.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,2 МБ	3
 DSC_9268.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,3 МБ	4
 DSC_9269.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,1 МБ	5
 DSC_9270.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,1 МБ	6
 DSC_9271.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,4 МБ	7
 DSC_9272.NEF	Тип: Файл "NEF" Размеры: 4928 x 3264	Дата съемки: 17.07.2014 16:30 Размер: 15,2 МБ	8

Aleynikov took at least 10 photos on July 17th, 2014, the nine shown above plus DSC\_9273. Here those can be watched in full: <http://www.whathappenedtoflightmh17.com/three-issues-with-the-fake-photo-claim-of-max-van-der-werff/#prettyPhoto>

Remarkable feature of the first tweeted picture was, it showed a Moiré pattern, i.e. a pattern caused by taking a picture from a computerscreen ([https://en.wikipedia.org/wiki/Moir%C3%A9\\_pattern](https://en.wikipedia.org/wiki/Moir%C3%A9_pattern)). Another issue that surfaced later on when questions were being asked, was, of course, why this division of labour was there and why Aleynikov hadn't posted the plume picture himself.

Apparently @WowihaY was a very close friend (in the Ukrainian story) or a coordinating pro-Kiev infowarrior (in the dissident story), since Djukov received the pictures within some 10 minutes after they were taken. His task seemed to be to disseminate them through social media.

Exactly three hours after the crash the famous photo of the launch plume showed up, again posted by Djukov. It appeared to be "Photo 2" (DSC\_9266) of the Aleynikov series, with enhanced contrast to make the plume more evident and also with a Moiré pattern visible.

<https://twitter.com/Djukov/status/489807649509478400/photo/1>

In the meantime at 16:46 EEST Aleynikov himself had tweeted (deleted but restored, see here <http://labas.livejournal.com/1087164.html?style=mime> )

*"In Torez was shot down a plane! He fell in the area of the quarter!"*

Aaron Gell, an editor working for Business Insider, asked on twitter to get into contact with him (<https://twitter.com/search?q=aarongell+rescuero>). Aleynikov did and an interview was decided, which was posted on the net at 22:18 local time.

In the interview Aleynikov was put on stage to play the character of witness of the crash. First the reporter made clear, by referring to a Facebook posting made by advisor of the Ministry of the Interior, Anton Gerashchenko, it were the "terrorists" (anti-Kiev rebels) who were involved in this terrible incident.

<http://www.businessinsider.com/donetsk-resident-speaks-about-malaysia-airlines-crash-2014-7?IR=T>

Aleynikov followed this propaganda line obediently:

*"And later, he "learned that the terrorists shot down a civilian plane," he said. The man added: "I'm in shock! The terrorists must answer for their actions!" (...)"*

Most important quote from the interview is the eyewitness account, containing useful information regarding a reconstruction of the events:

*"Although he did not see the plane crash, he said he ran to his window after hearing the sound of an explosion after the plane fell to the ground. He could not see the situation from his balcony, so he climbed to the roof of his house and "saw the smoke on the horizon."*

The details Aleynikov stated in his first interview to create a possible timeline, were:

He hadn't seen the plane crash;

He talked about one explosion, obviously from the crash of the main fuselage and the tanks of the plane;

He went to his balcony;

He saw nothing;

Then he ran to the roof and saw the smoke, obviously from the plane.

Mysteriously enough he didn't say anything about seeing something like the launch plume or that he took pictures of it. But at that moment Djukov (19:23) and Anton Gerashchenko (20:45) already made the plume picture Aleynikov had made world news by issuing it on the net.

<https://www.facebook.com/photo.php?fbid=694844643935719&set=p.694844643935719&type=1>

Business Insider posted with the article another picture probably made by Aleynikov, namely one with a view to Saur Mogila, a well known historical site in the area. One could see some smoke on that pic, which had nothing to do with the crash, but no launch plume and no smoke from the plane wreckage.



*The Saur Mogila picture in the Business Insider article, probably made by Aleynikov.*

So the impression remained Aleynikov wasn't allowed to disperse his photos of that day himself at that moment in time and that there was some kind of interplay between Djukov, Aleynikov, Gerashchenko and Business Insider to beef up an infowar blaming the separatists. Let's say in this scenario it was imaginable Gerashchenko, Djukov's contact as came out later on, had suggested Business Insider to interview this loyal patriot.

## The RTL4 interview, December 2014

In december, 4 months after the crash, Dutch commercial TV channel RTL4 proudly presented a scoop, pivoting around their obtaining of an important "series of high-resolution photo's" of the launch plume, in fact the first three pictures made by Aleynikov (DSC\_9265-7):

<http://www.rtlnieuws.nl/nieuws/binnenland/hoe-onderzocht-rtl-nieuws-de-nieuwe-mh17-fotos>

With this scoop RTL4 published an interview made by Dutch journalist Olaf Koens. The story Aleynikov told Koens was changed a bit compared to the Business Insider one. For example he said the heard *two* explosions, a tiny detail with big consequences:

*"And at 16:20 pm we heard an explosion. The first explosion was not very heavy. 15 seconds later, something like that, there was a second explosion, which was harder and shook the windows."*

<http://www.rtlnieuws.nl/nieuws/binnenland/fotos-en-ooggetuige-raket-uit-separatistengebied-haalde-mh17-neer>

When tracing the origins of the two explosions, logically one could come up with three possibilities. Aleynikov heard [A: the firing and impact of the missile] or [B: impact and crash] or [C: the firing and crash]. But then again, the 15 seconds Aleynikov said the explosions would be apart, could only be a reasonable estimate for option A. The time lapsed between firing and impact would be in fact about 30 seconds or so, whereas the time passed by between impact and explosion of the tanks of the plane near Grabovo would be more or less 2 to 3 minutes.

The plane lost contact at 16:20:03 EEST, which will be regarded as the time of impact. For the sound to reach Aleynikov an educated estimate of 45 seconds could be added. Then Aleynikov stated it took him approximately 30-60 seconds to react, so the time for taking the first two pictures could be calculated as withing the range of 16:21:18 – 16:21:48 EEST. In fact the plane crashed at about 16:23.

The statement above fits a story he reacted when he heard the second explosion, just in time to make a picture of the early stage of the launch plume before it faded away in the sky. But, remarkably enough, in this case he would have photographed his first two pictures *before* the plane crashed!

Even so Aleynikov continued with this statement:

*"Immediately I wanted to find where the sound came from. What had exploded? Where? How? Then I ran to the covered balcony [located at the south side of his apartment, the side of the alleged launch; HR]. I looked around and saw nothing. - Pause [2] - I photographed that trail in the air. (...)"*

Apparently he thought the last big sound he heard didn't fit the sound of the impact nor of the firing, so in fact he *did* hear the explosion of the tanks before he took any pictures, which would be a reasonable assumption to make.

Then it seems safe to say 15 seconds is a completely different time interval when comparing this to the 2-3 minutes it took the plane to reach the surface after it was hit at a height of 10 km. So probably the first sound and the 15 seconds time lapse between firing (or impact) and the crash were inventions, made up to give more leverage to the impression a fresh launch plume was being captured.



In that case it seems this testimony was tailored to sustain the narrative he took pictures of the trail of a BUK, freshly launched from a site south of Snizhne. But the Business Insider story about running to the balcony after hearing a big bang (and later on to the roof, which isn't mentioned in the RTL interview at all) to see the smoke coming from the wreckage, doesn't seem to fit the timescale of this early stage plume tail.

Another interesting quotation followed when he stated he saw the plume...

*"(...) going up from the horizon to the clouds, where it dissolved into the sky. Only later it became clear what it had been."*

So Aleynikov said the plume reached the clouds. At that time the cloudbase above Torez/Snizhne was located at about 2500 m or higher (red area in image issued by the Dutch Safety Board below). [3]

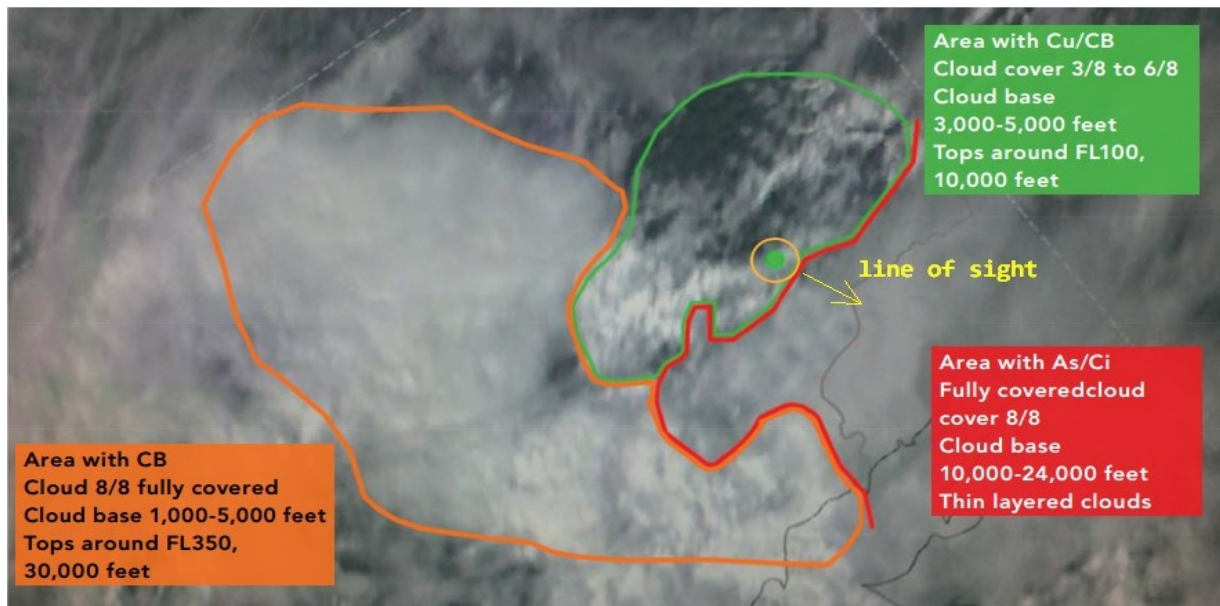


Figure 3: Cloud coverage for 17 July at 12.00 hrs.<sup>10</sup> The circled green dot indicates the last position of aircraft. The orange area south-west of the accident location contains mostly Cumulonimbus clouds with possible thundershowers. (Source: KNMI)

According to two German engineers with forensic affinity, "Ole" and Michael Kobs, the plume reached only a height of approximately 900-1000 meters on the photo, calculated by the method of similar triangles and relative distances grabbed from Google Earth images. [4]



Estimating the height of the plume with calculated distances from Google Earth and the similar triangle method. From 4100 m. the cloud seems to have a height of about 2 squares high (=300 m). From 12.3 km that will be actually  $12.3/4.1 * 300 = 900$  m.

Height wasn't the only issue. Width was too. Initially the missile trail could only have had a diameter of approximately the length of the BUK installation, which is 9.3 meters. Aleynikov's apartment in Microrayon 3, Torez, was located at distance of 12300m from the field south of Snizhne renowned blogger Ukraine-at-war had geolocated (<http://ukraineatwar.blogspot.com.tr/2014/07/launch-location-detected-of-missile.html>). Taking this distance into account and estimating the width of the plume as is seen on Aleynikovs first picture, the missile trail would have had a diameter of 80-100m. [5]

If the diameter of the plume grows by a factor of ten from ~10m to ~100m then the trail would be diluted by a factor of hundred and become invisible. So was this an early stage capture of a BUK launch? Not really. Moreover, with a diameter of 100 meter this seems to be quite a plume. Not on a photo taken from 12.3 km perhaps, but in reality that is.

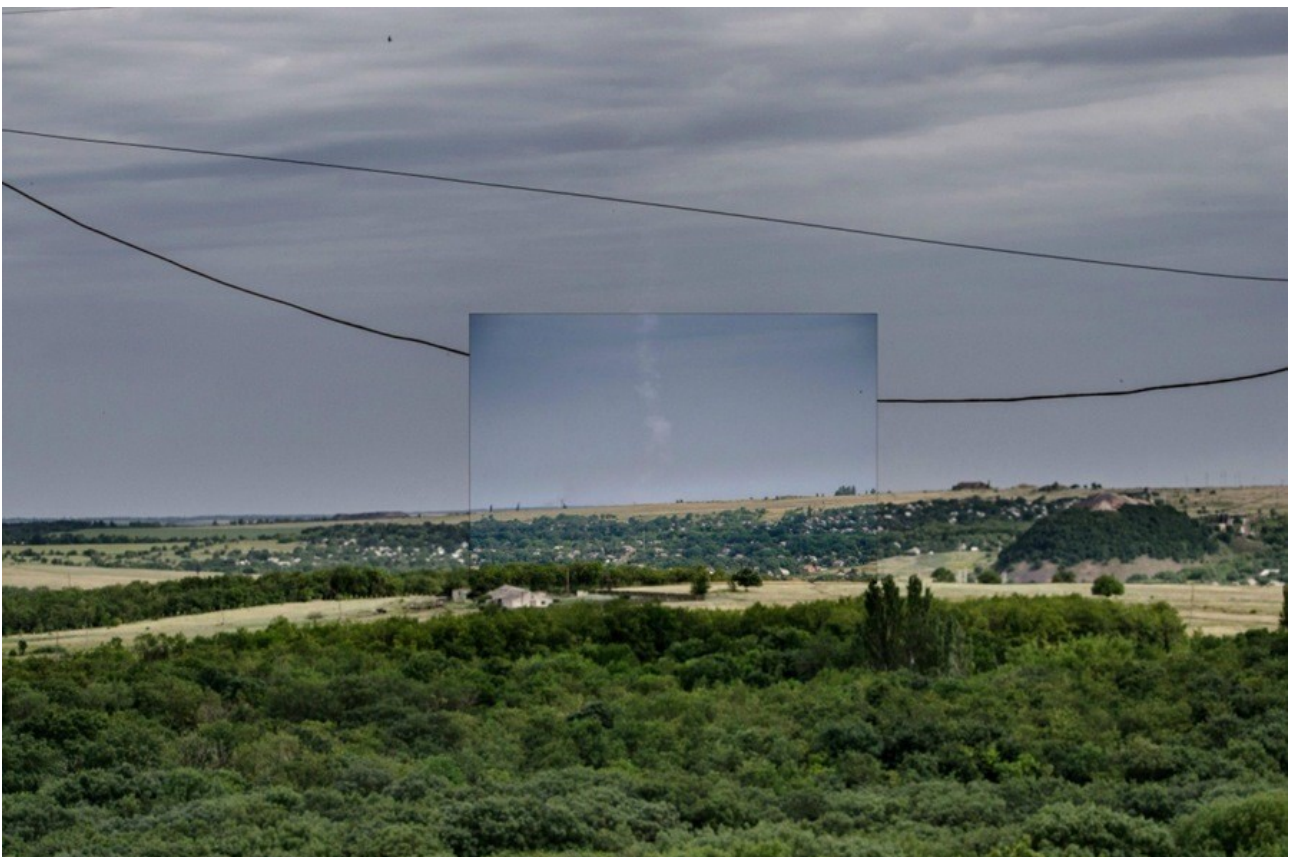
Because of all this irregularities people started asking if the photographer or RTL would hand over the original pictures (the so-called NEF formats, with metadata attached) for intense scrutiny. They refused. Nevertheless not long after the RTL scoop the pictures appeared in a report performed by pro-Kiev pro-NATO research team Bellingcat, obviously corroborating the south of Snizhne launch plume narrative.

## Intermezzo 1: Bellingcat launch plume article, January 2015

Bellingcat published a full account geolocating the launch site once again by using the Aleynikov plume pic. They also issued a photo showing the plume with cables in front of it, allegedly an unzoomed picture Aleynikov had taken 7 seconds before he grabbed the famous picture disseminated by @WowihaY/Djukov and Gerashchenko a few hours after the crash.

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/>

Obviously this was done to tackle the criticism the weather on the picture that was issued first (rather sunny), didn't seem to match the realtime weather conditions (cloudy). The cable picture with its panoramic view did show clouds. Bellingcat displayed an overlay of both pictures, to "show that the first published picture is not just an edited version of the second one."



*The Bellingcat overlay: rather sunny zoomed cableless picture upon cloudy unzoomed cable picture.*

The first picture showed the cables, because Aleynikov's camera had autofocused on them. Therefore in the famous zoomed pic, made 7 seconds later, the cables could not be seen any more: "Because the cables were close to the camera position, the zoomed image no longer shows the cables.", as editor Daniel Romein explained.

But questions remained if the second picture was photographed by zooming in between the cables or from under them. To many it seemed zooming in between the cables would be impossible using the kind of camera focus and features on the photos [6], which would question the 7 seconds

interval. Because of these doubts the cable issue would get its follow up later on, when a real plume war broke out (see paragraphs below).

At this point in time there already was some fierce criticism. Forensic analyst Charles Wood made some devastating comments on the Bellingcat website, which initially were removed (later on reinstated). Hence citizen investigator Max van der Werff published Wood's analysis of the report on his own website (<http://7mei.nl/2015/02/02/mh17-bellingcat-photo-proof-spoof/>).

Contrary to the people who had doubts about the official narrative and asked for them, after RTL also Bellingcat received (copies of) the originals. They claimed:

*"Based on the metadata of the RAW files we received, we can be completely certain that these files are the original files and that the pictures were taken on 17 July 2014 at 16:25:41 EEST and 16:25:48 EEST."*

Wood replied:

*"This is completely untrue. All he can be certain of is the image metadata gives those dates, not that they are true. (...) Romein does not know what the time and date was set in the camera; he has no idea what camera actually recorded the images; and he has no idea whether the images were written to the card by a camera or were copied there from a computer. These are the sorts of things that a professional forensic examination looks at with a view to finding inconsistencies."*

Wood also consulted Dr. Neal Krawetz, developer of Photophorensics, a tool to investigate digital alterations in images resulting from saving and compression. According to him the Bellingcat dropbox picture of the plume 2.BMP – the "original" Bellingcat received from Aleynikov, as they claimed - was "digitally altered", "with noise added before saving to BMP", possibly "to deter analysis".

<https://twitter.com/hackerfactor/status/605974196200431616>  
<https://twitter.com/hackerfactor/status/605965967579963392>

By the way, Krawetz tweeted later on, this wasn't the original picture. In fact this shook the entire metadata basis Bellingcat relied on to make this picture a genuinely realtime captured early stage missile trail with an established timestamp.

<https://twitter.com/hackerfactor/status/630761857800769536>

Apparently Bellingcat didn't consult Krawetz nor read his remarks, when replying with some ill-informed statements about this matter – in fact "lying through their teeth", to use a much heard soundbite when discussing the MH17 case with their believers (<https://www.bellingcat.com/resources/case-studies/2015/08/07/shadow-of-a-doubt/comment-page-1/#comment-25716>):

*"These are uncompressed and unedit BMPs of the original RAW files [in fact, the originals of Aleynikov's Nikon camera were NEF files; HR] if you want to take a look at them yourself <https://www.dropbox.com/sh/zld18bbq0w3lrq9/AABpj4pUW7NaR5TohyA2R1xva?dl=0> Dr Krawetz was working a copy of the image shared on Twitter that had been resized and had various levels changed to make the smoke clearer than in the original image."*

In fact Krawetz did his performance with 2.BMP from the dropbox. Confronted with this, Bellingcat replied with an appeal to authority: *"In that case it'll be interesting to see if the experts the police consult agree."*

Furthermore there was an issue with the timeframe that could be deduced from this report, because it mentioned:

*"Because we know that flight MH17 was hit around 16:20 EEST, the camera's time stamp was approximately 4 minutes to 4 minutes and 30 seconds ahead of the real time".*

So when according to the metadata the timestamp for the first picture was set on 16:25:41 and 4 to 4:30 minutes should be deducted, the real time of capture would be 16:21:11-41 EEST. This quick calculation showed the Bellingcat timeline more or less equalled the RTL4 time of capture, which actually brought with it the same problems.

Aleynikov would have captured the so-called "early stage missile trail", as Bellingcat corroborated in its report. But it had been established in that case he would have taken the first two pictures before the crash. So this timeline was just as unlikely as the one deduced from the RTL interview.

Solving of this mystery got jammed more when Bellingcat's Daniel Romein changed the story and Aleynikov apparently had too:

*"(...) the 17 July photographs were taken 30 seconds to two minutes **after the crash** [so not after the launch nor after the impact; HR], not hours of course (the photographer first mentioned 30 seconds, but later said it was about 1 or 2 minutes)."*

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/comment-page-1/#comment-8696>

If the pictures were taken 2 minutes after the crash at about 16:23, a time of 16:25 would be more or less accurate. But what then about the 4 to 4:30 minutes the camera allegedly was ahead of realtime? That story didn't change, until it was adapted to new evidence much later, as we shall see. So the Bellingcat report made a lot more mess than there already was.

Not only the statements and timeline showed inconsistencies, the content of the plume photo's raised doubts as well. The pictures showed a grey/black smoke at the bottom of the trail and a white plume swirling almost vertical into the sky.

Daniel Romein made a case claiming the dark grey smoke resulted from the initial stage of the firing and the white trail from the missile propulsion along the way. The strange curve the trail made would have been due to the specific features of the wind and weather at the launch site.



*In fact the Bellingcat report showed an image with 4 BUK launches, but supported with it the claim there are back blasts of dust to be seen.*

*"We assess, based on the direction of the wind only a few hours earlier, that varying wind speeds at different altitudes caused this sharp turn."*

According to Charles Wood's own investigation the Bellingcat analysis reported the wrong wind gradients, impossible meteorological effects and the faulty conclusion the white smoke never could be related to a GRAD missile, heavy used in that area the day before.

The conclusions drawn by Wood were very interesting, to put it mildly. He claimed, based on this investigation, that in fact: *"[t]he only conclusion is that the dark plume is unrelated to the white plume."* The black smoke could not have been "from the rocket 1st stage exhaust", as claimed by Romein, because a BUK launch only shows dust from the backblast.



*Enhanced version of photo 2 showing the dark smoke curling up into the white plume. According to Bellingcat this feature showed the first stage exhaust of a BUK launch. When the plume from the second photo was moved back to fit the plume of the first photo, it could be seen the white plume doesn't change in shape and therefore seems to be immune for wind shear effects. See overlay in the introduction to this report on the blogsite. Image credit: Ole.*

Another researcher, Michael Kobs, reached the same conclusions in his elaborate report "The Bellingcat Launch site" (<http://www.scribd.com/doc/267001590/Bellingcat-the-Launch-Site>) (see p. 80). Like Wood he concluded the black smoke and the white trail could not be related and like Wood he detected from the two plume pictures a "lack of lateral dispersion", as he wrote to me:

*"When we compare the two pictures taken 7 seconds apart, the contrail seems to move without shear deformation. That means the photos display the same wind speed up to 1000m elevation, which is not likely. Furthermore there can be detected a change in shape of the black smoke in the*

*7 seconds between the two photos, whereas the white smoke remains unchanged and is just shifting to the right.”*

Kobs’ well documented assault based on plume characteristics, the features of the photo itself [7] and the implicit timeline sustained the doubts many critical readers had, but never reached the official western news outlets. Meanwhile pro-Kiev/pro-NATO media tried once more to corroborate the standing claim Aleynikov actually had collected key evidence when he photographed his first stage missile plume pictures.



*Plume affected by windshear as windspeed differs at various heights.*

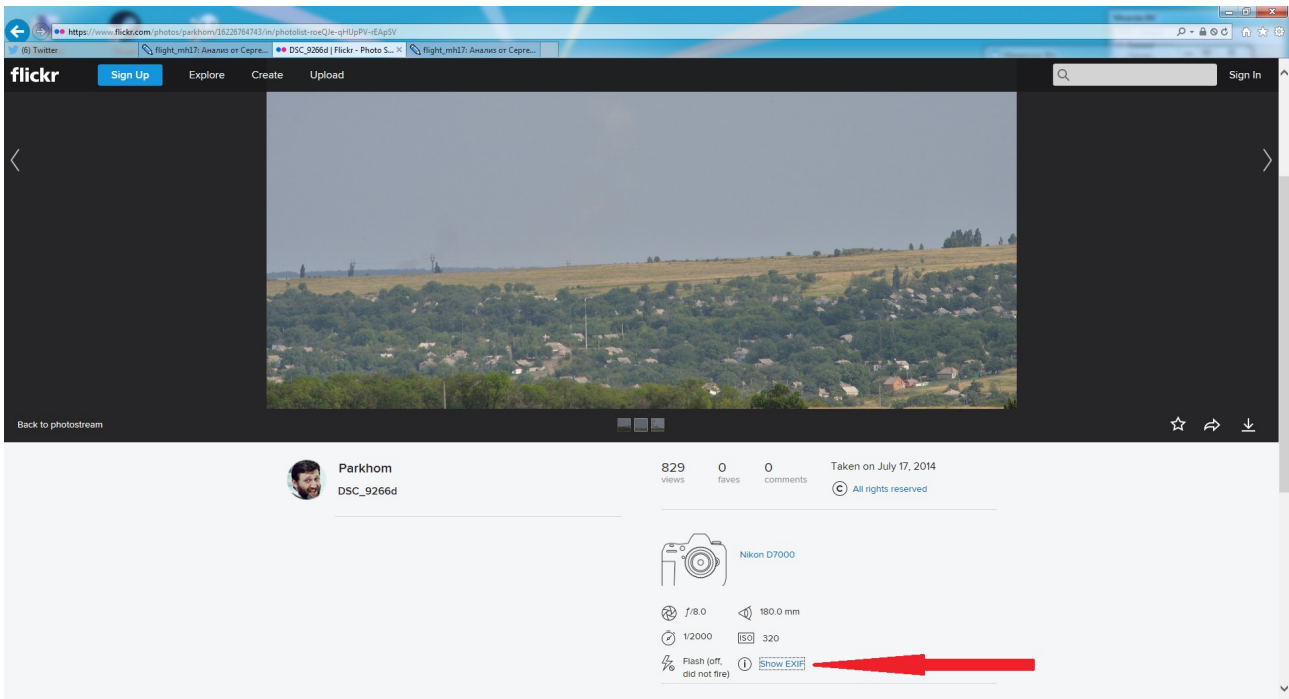
## The Meduza/ Parkhomenko blog, March 2015

Meduza (<https://en.wikipedia.org/wiki/Meduza>) is a Latvian based online newspaper lead by people from the Russian "non-system opposition", allegedly backed by Putin foe Khodorkovsky. In February an English version was launched, so it could not do any harm when Meduza blogger Sergei Parkhomenko showed with an extensive blog on the Aleynikov plume pictures what kind of affinity could be expected of this new medium.

<https://meduza.io/feature/2015/03/17/sled-nad-torezom>

Again, critical people couldn't get hold of the originals, but parties that clearly could be trusted to disseminate the right story, never encountered a real problem with this:

*"This person confirmed that last summer he lived in Torez and really made from the roof of his house a few pictures, which he believes shows the launch of "Buk" on July 17. "Photographer" (for simplicity, let's call it so on) immediately sent me three huge NEF files [originals with metadata from Nikon cameras; HR] from the original shooting."*



*Sergei Parkhomenko shows he got the original Nikon NEF file.*

The part of the blog which contained Aleynikov's testimony, according to Parkhomenko, mentioned these statements:

*"During the day, while I was in my own apartment in a building on the outskirts of Torez, I heard thunder, much stronger than the customary sounds of artillery firing, mortar explosions or the volleys of a Grad. I ran to the window and saw that the wind was slowly erasing a smoke trail over the horizon. My camera lay on the windowsill. I grabbed it and raced up the stairs to the roof in order to take the picture from there. I clicked the first time. I saw that directly across the scene electrical wires were visible."*



*I twisted the zoom to the maximum and took a second photo. Then, I turned and saw that from the other direction, in the north (that is, right in the direction of Grabovo) there was a column of thick black-blue smoke. I decided that a missile had landed on some gas station or oil tank. I crawled to the other side of the roof in order to take a picture from there, where the wires and antennas didn't get in the way.*

*I crawled over for about three minutes – then made the third shot. I didn't know that in the third shot there was smoke from the plane that had just crashed: I didn't see any plane. Therefore I didn't start shooting further: if I had known what event had been captured in the frame, I would have taken some more photos, of course, but I only learned a few hours later exactly what had happened. Then I sent the pictures to a friend, and he uploaded them to Twitter."*

Full copy of this part could be justified on the basis it contained many insights in the method of ongoing modifications of the official story to keep up with the criticism the plume pictures provoked. Nevertheless these moves only seemed to make things much worse and actually rather more confusing than they already were to begin with.

For starters contrary to the RTL4 interview Aleynikov mentioned he had heard one big explosion instead of two, a minor and a big one. It should be clear from this testimony that the loud bang was from the crash of the fuselage at Grabovo, which spurred him to take action. Of course with this change also the implicit timeline deduced from the Business Insider/RTL/Bellingcat articles changed:

*"We are talking about photography made by a resident of the city of Torez, near Donetsk, about 3-4 minutes after launch".*

So the ludicrous 15 seconds between the "two sounds" plus 30 seconds response time now became 3 to 4 minutes after the launch. That would mean Aleynikov took the pictures at about minute 16:23, the time of the crash, which would make sense, but didn't sustain earlier statements made in the Business Insider and RTL interviews. And so it seemed the story was changed and refined once more, fairly by-passing the strange mixed-up hyper inconsistent timeline Bellingcat had left behind. The bad thing was with this new timeline it could not be held up any more the first two pictures were made of an "early stage" launch plume, as 3 to 4 minutes already had gone by.

Furthermore it was explicitly claimed he ran to the roof to make his pictures, after he saw the trail from his window. From the RTL interview one could be under the impression Aleynikov had photographed the white "stripe" from his balcony with a view on the plume, when one would disregard the interview showed a strange continuation in his statements at this point (see note 2). But this testimony implied something different. On the roof the wires, which were captured in Photo 1, were there - as a matter of fact, as was claimed, "directly across the scene". So he zoomed "to the maximum", to make them disappear and, apparently, to capture only 900 meters of the plume.

It would seem that a large dark smoke plume coming from the wreckage would have triggered someone to take pictures from first, but Aleynikov must have been intrigued by the almost invisible white smoke from the alleged launch some 12.3 km away. So it took at least three minutes to crawl to the other side of the roof to have a clear view on the smoke from the wreckage without impeding cables. Then he took only 1 picture, allegedly because he didn't know something important happened like a crash of a plane. Strangely enough the hardly visible white plume received his attention first and twice as much.

The Parkhomenko blog left people behind with the feeling a well constructed story was given to explain the metadata showed that minutes went by between photographing the launch plume and the smoke from the plane. Second, the timeline had clearly needed revision, which was executed

at the expense of the "early stage" story. And finally, the exact spot from which Aleynikov had made his pictures, was established, after Bellingcat had introduced more problems by issuing the cable photo. It had been the roof.

This third issue would launch a real cable war. And it propelled more revisions as well.

## Intermezzo 2: "BUK launch photos are cheats", May 2015

The Meduza interview spurred Dutch citizen investigator Max van der Werff to conduct his own investigation at the site Aleynikov had taken his pictures from. Ukrainian official of the Interior Gerashchenko had blown Aleynikov's cover at an early stage, when he mentioned in his 7/17 Facebook posting the plume picture was taken from Microrayon 3 in Torez, probably to help people like @WowihaY and Ukraine-at-war to perform their geolocation skills. Hence it wasn't difficult to find the building block from where the pictures originated.

<http://7mei.nl/2015/05/18/mh17-buk-launch-photos-are-cheats/>

Van der Werff visited the building in April 2015. With a video, giving a clear perspective of the situation on the roof, he showed Aleynikov could not have had any problems with cables hanging in front of his camera as it was easy to bypass them.



There were many cables on the roof all right, but their presence wasn't obstructing, if one would just take some steps towards the edge of the roof. Neither should there have been any reason to crawl minutes over the roof to get a clean shot of the Grabovo area. It probably took a little time, but that could not explain the more than 4 minutes that passed by between the second (zoomed plume) and the third photo (smoke from the plane).

His trip helped Van der Werff to conclude the first two pictures were fakes, an idea supported by other circumstances:

*"Except Pavel Aleynikov nobody until today claims to have photographed the contrail visible on this picture. After ten months not a single video has appeared showing the contrail. Although mostly cloudy that day, lateral visibility was excellent. More than 40,000 people live in the area in which people could have seen both the crash plume and a very unusual missile contrail. Many pictures and videos were taken of the crash plume in Grabovo. Pictures and videos uploaded shortly after the crash with different angles and many different positions, but none of them showing any trace of a missile's contrail."*

Besides, not even a single military of the Ukrainian army, trained spotters, had captured the trail, which was a mysterious omission that kept sticking to the plume pic.

## The Bellingcat response, May 2015

Reaction from assigned pro-Kiev sources could not fail to appear, after Van der Werff showed the cables were not obstructing and in his view probably were inserted in the picture to deter clean scrutiny of other tampering with this evidence. Bellingcat took responsibility. Because they had conveyed the cable photo to smooth over the weather issue, they had to deal with the blowback too.

So the story was revised again. Bellingcat had been under the impression, maybe from the ambiguous RTL interview, the pictures could have been taken from the balcony. On February the 8th, 2015, Daniel Romein replied to a question from Van der Werff:

*"The photographer did not tell us from which exact position the pictures were taken. On the second published photograph black cables can be seen hanging, which indicates the photographs were taken from the apartment or balcony."*

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/comment-page-2/#comment-9314>

When the cable war broke out in May he responded in a much more confident way:

*"We indeed did not ask it before, because to us the picture was made from the apartment/balcony and not from the roof because of the visible black cables. The photographer has confirmed this, so I don't see a reason to continue this discussion."*

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/comment-page-3/#comment-16707>

A couple of things were interesting. First, Romein concluded at the time he wrote the launch plume report that, because of the cables, the pictures would have been taken from the balcony, whereas Van der Werff's video showed on the roof there were cables in abundance (though not impeding per se).

In fact, it seems the crash smoke photos are from the roof, because they are at the same level as the top of the GSM antenna the photos show. The plume photos are probably from the balcony, as is claimed now based on perspective analysis.

(<https://twitter.com/MichaKobs/status/641951028821250048>)

Second, Aleynikov had changed his statements again, this time to designate the balcony as the place from which he had taken the plume pictures. Obviously this was in full contrast with his "racing to the roof" statements described in the Parkhomenko blog.

Apparently this line of defense wasn't enough. The cable war continued when a few days later on the website [whathappenedtoflightmh17.com](http://whathappenedtoflightmh17.com) an article appeared to attack Van der Werff's investigation. But with it new doubts came up too.

## Intermezzo 3: Eight issues, May 2015

The article, written by the administrator of the website, Marcel van den Berg, tried to list eight issues of criticism to Van der Werff's research, foremost claiming there had been cables in front of the photographer when he took the pictures of the plume. That seemed to be feasible, but only after Bellingcat issued the revised story Aleynikov had taken them from his balcony and hadn't from the roof, as he had stated clearly in the Parkhomenko interview.

<http://www.whathappenedtoflightmh17.com/three-issues-with-the-fake-photo-claim-of-max-van-der-werff/>

Another issue put forward was that Van der Werff was wrong about his hunch the photographer would have taken a fourth picture, so at least one more than the three that came up earlier in the RTL interview and the Bellingcat report. Also in the Parkhomenko blog had been mentioned that, because Aleynikov hadn't realized the importance of the black smoke from the plane, he had refrained from taking more pictures than one. That this was a lie, according to Van der Werff, could be shown by a picture issued within 1 hour after the crash on the Euromaidan Facebook website. They showed a picture from the dark smoke that deviated from "Photo 3", issued by @WowihaY 17 minutes after the crash.

<https://www.facebook.com/EuroMaydan/photos/a.523254484437560.1073741828.523004674462541/652614801501527/?type=1&theater>

Van der Werff was right, in fact ironically proven by Van den Berg himself. With this article he issued more photos taken by Aleynikov, handed over by an unknown source but without metadata. The plume picture photographer hadn't taken one photo of the dark smoke from the plane wreckage, as he had stated, but (at least) 7. The Euromaidan one appeared to be "Photo 4" (DSC\_9268) in the sequence, so Van der Werff had seen this correctly.

Van den Berg even provided back-up for the new and final Aleynikov statement the plume pictures were not taken from the roof:

*"The photographer exchanged some information using Facebook with a Russian journalist Sergei Parkhomenko who wrote a blog. According the photographer he never wrote to Parkhomenko that he took all photos on the roof. There is no prove what actually has been discussed using Facebook."*

It was clear Parkhomenko, a pretty famous Russian opposition journalist, had been used. In fact he was implicitly accused of manipulating the truth. Therefore I sent him some questions by mail, asking him what his thoughts were now, pointing him to the inconsistencies (or lies) in the story Aleynikov had told him (see Addendum III for the questions). The deputy editor in chief responded:

*"Hello Hector,*

*I have send your letter to Sergei Parkhomenko and we had a small talk about it. He doesn't know who is mr. Aleynikov and he can't give you any comments about it.*

*Иван Колпаков / Ivan Kolpakov  
заместитель главного редактора / deputy editor-in-chief*

When your are licking your wounds it is probably best to play dumb. "For simplicity", obviously.

Interestingly also another photo made by Aleynikov appeared in the batch Van den Berg provided, a picture taken at 11:32 local time on the day of the crash. "Photo zero" (DSC\_9644) could be important because it could have been used as raw material to cook up fake plume trails or contain other useful information. Unfortunately it wasn't released in full.

It was claimed that this photo would be the picture Business Insider had published with their Aleynikov interview at the evening of the crash. It would show the smoke after a GRAD volley near Saur Mogila, an event Aleynikov had tweeted about too at about the same time (<https://mobile.twitter.com/rescuero/status/489687941405749248>).

In fact, when comparing the thumbnail of photo zero from the article on [whathappenedtoflightmh17.com](http://whathappenedtoflightmh17.com) and the picture issued by Business Insider one could conclude at first sight they weren't the same. First, the horizon in the thumbnail was tilted whereas the one in the Saur Mogila picture was more or less horizontal. Second, the photo seemed to have been made after 17:00. So photo zero probably wasn't the Aleynikov/Business Insider pic. Then what is it? And what could it mean?

In each case photo zero showed another inconsistency in the Aleynikov statements. The photographer said to Olaf Koens in the RTL4 interview:

*"The day predicted nothing special. In the morning I woke up and I went to my work. At four o'clock in the afternoon I got home."*

So Aleynikov was at work the whole day, but still managed to take photo zero from the southern balcony of his home at half past eleven in the morning.

## The @WowihaY interview, July 2015

In July 2015, one year after the crash, Vladimir Djukov could still taste his moments of fame from the year before. It was rewarded with an interview in Fakty.ua (<http://fakty.ua/203378-mne-prislali-foto-s-mesta-tragedii-ot-kotorogo-volosy-vstali-dybom-na-pole-lezhit-trup-mladenca>), translated by Bellingcat's Aric Toler (<https://www.bellingcat.com/resources/interviews/2015/07/27/interview-with-wowihay/>). In the interview Djukov also gives an account of the events concerning the plume picture (**bold** added by me):

*"Within ten minutes, a friend of mine sent a message: something had exploded to the north of Torez, in the vicinity of the "Progress" mine. At first there was a **weak boom**, and **then it crashed** with such force that windows shook in houses located a few kilometers away. He, having heard the sound, immediately **jumped up to the balcony and then onto the roof** of the high-rise building **and took a few shots** – gigantic clouds of black smoke dissolving into the sky. He sent me this photo.*

*At 7:18pm I was in contact with my friend – the same one who took the **photo from his balcony**. Having looked at the image more closely, he noticed an important detail: on the opposite side from the Boeing crash site, there was a strange vertical column of grey-whitish smoke visible, very similar to the trails of a launched missile. The smoke was barely visible, so my friend didn't even pay attention to it. But he saved the photo in the "RAW" file format, i.e. without any distortions caused by software or hardware compression of an image file, and then, as he said, after a little bit of editing of the brightness, **he could "bring the trail to light"**. (...)"*

The initial multi-interpretable vagueness in the first quotation about the exact spot from which Aleynikov took his plume pictures, was tied up with the final balcony story in the first sentence of the second quotation. So in this way all ambiguous accounts stated before were covered. The two sounds from the RTL interview turned back again, but this time without the impossible 15 seconds interval. That one was covered too. Also the new story there were taken more pictures than one from the smoke of the wreckage, was finalized in this interview. That is, when "a few shots" is read as a few shots from the roof of the black smoke. Damage controlled, so far so good.

Nevertheless this interview also raised some new issues. New information was that Djukov mentioned it had been Aleynikov who "brought the trial alive", by enhancing it with software. The photographer himself had stated in the RTL interview he gave up his originals to Djukov, who had a special interest in digital imaging according to one of his social media profiles (<https://www.blogger.com/profile/07736407892439436675>). Hence, as could be assumed, the division of labour between them:

*"I got into contact with a friend of mine and gave him the pictures, including the originals. That friend contacted the SBU [Ukrainian secret service; HR]"*

From this Aleynikov quotation could also be read Djukov was in direct contact with the SBU. But in his own story a middleman [8] was introduced :

*"Close to midnight on July 17, when a more or less clear picture had emerged, we passed all the information to the Donetsk regional councilman Vitaly Kropachev, known for his pro-Ukrainian views. He passed it to Anton Gerashchenko, the advisor to the Interior Minister. Further than that, I don't know. But the speed of transmission of the information was instantaneous."*

Suspicion about direct contact between Djukov (and maybe Aleynikov) and the SBU/Gerashchenko already had come up after the Business Insider interview. Furthermore Djukov



had played a prominent role in disseminating lots of other evidence on the day of the disaster, stuff that probably could be traced back to the SBU (see blogs and used sources on [hectorreban.wordpress.com](http://hectorreban.wordpress.com) , i.e. "Alternative Track Trail" and "The 17 July Sightings").

Moreover, if Gerashchenko only had known what was photographed about midnight, how could he have posted the plume picture already at 20:45 EEST – 82 minutes after @WowihaY's tweet? Also because Gerashchenko gave with this posting inside information about the location from where the plume picture was taken, he must have been informed much earlier. In fact, right away.

@WowihaY himself pointed to another remarkable event. It took them until 2:30 in the morning to geolocate the smoke trail (<https://twitter.com/WowihaY/status/489914266439671808>):

In the interview he says:

*"Having compared the direction of the shot, the location of the photographer on Google Maps, together we figured out where the volley was fired from – from the area of Saur Mogila"*

So Aleynikov, having lived there for years leaving a trace of hundreds of photos and videos from his southern balcony on the internet, now needed to sit down for hours to figure out on Google Maps where his apartment was and to realize that what he saw from his balcony is Saur Mogila.

According to Djukov they also managed to get a "second line", a witness of the plume with pro-Kiev affinity somewhere else in the neighbourhood. Of course from this witness was never heard of again and this time there was no trace of their contact on social media:

*"We put all the effort to ringing up our acquaintances, looking for witnesses...It's not like they fired from a Kalashnikov! We found a person whom we have unfortunately lost contact with. Back then, he specifically described where and how he noticed a white trail. Everything matched up."*

Everything matched up. And it all had a connection with this spider in the web of social media evidence, Vladimir Djukov alias @WowihaY. He spotted the BUK around noon from Torez to Snizhne, he re-uploaded the video of the lone BUK driving out of Snizhne from the south, he tweeted the plume picture and he found the second witness to establish the location of the launch.

## Temporary endgame 1: "Buk plume burns witness", July 2015

Daniel Romein, editor of the Bellingcat launch plume article, said that:

*"Even the cloud of grey smoke characteristic of the first stage of a Buk missile launch can be seen in the 17 July 2014 pictures."*

Furthermore he added in a reply on the Bellingcat website:

*"(...) The claim that the grey smoke and white smoke trail are not connected does not make much sense, since we obviously can see on the image that where the grey smoke ends, the white smoke trail starts"*

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/comment-page-4/#comment-9243>

In fact it was this exactly fitting mix of dark and white smoke which triggered critics to question the Bellingcat story, for as the shape of this trail could in fact never be found on other images of a BUK launch nor be established with physics. One could see clouds of dust blown up, yes. But black smoke fitting a white missile trail?

As Michael Kobs wrote to me:

*"The black smoke overlies the contrail to an altitude of about 100 meters. While a missile reaches that altitude in some seconds, the black smoke would just have begun to rise slowly from the ground after being ignited by the same missile. Therefore it is impossible for the black smoke to rise at that altitude within seconds, especially as the lower end of the contrail is still located at ground level."*

*Smoke rises due to heat! That initial black smoke would be much hotter than the contrail. The ignition itself due to a hot flame wouldn't generate "cold" sooty black smoke from plants. Only an oxygen lacking, almost smothered fire would generate black smoke. Even if a missile would ignite a large area of a dry field, we would observe a gap between the floating contrail and the later rising black smoke."*

So it was hardly imaginable the white and the black smoke were related, as Wood had remarked before. This conclusion got support when Van der Werff issued a new report in July 2015, containing photos and a video of a dark smoke plume at exactly the same spot as could be seen on the Aleynikov plume pictures. Only this time the origin of the dark smoke was not a BUK launch.

<http://7mei.nl/2015/07/26/mh17-buk-plume-burns-witness-part-i/>

When geolocating the plume Bellingcat had stumbled on the Lutugina mine, but never got the idea this mine with its chimneys and steaming locomotives could be the origin of the black smoke. Also the Voskresenskaya mine fitted the geolocation efforts made by Bellingcat, as it was located at about 5.5 km south from the point of view the photographer had.

<https://www.google.it/maps/place/48%C2%B000'48.0%22N+38%C2%B041'36.0%22E/@48.0133333,38.6933333,657m/data=!3m1!1e3!4m2!3m1!1s0x0:0x0>

When looking for photos of this Voskresenskaya coal mine one could find this page with some interesting photos: <http://rescuero.com/2012/10/poslednie-dni-ushedshego-leta-ili-vdol-byvshej-kanatnoj-dorogi/> These were real Aleynikov originals.

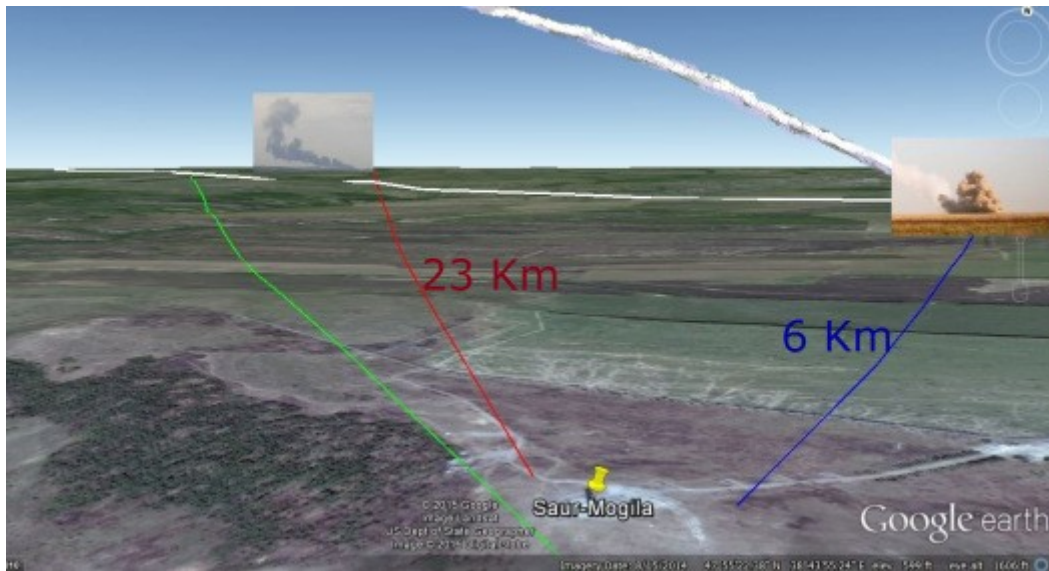


*Dark smoke at exactly the same location as could be seen on the Aleynikov plume pictures.*



*The picture made by a separatist from Saur Mogila on July 17th, 2014, at 16:28 EEST.*

Second informative piece of key information was the photo Van der Werff displayed to argue there hadn't been a white plume at all. This picture of the smoke coming from the wreckage of the plane had been made by a separatist at 16:28 EEST near the Saur Mogila hill and was not issued before. Van der Werff showed that if the plume was real, it had to be seen on this photo, assuming the trail could have been visible at least 10 minutes. It wasn't.



According to Max van der Werff the picture made by the separatist had to show the BUK launch plume. Image credit: Max vd Werff.

But even now Bellingcat would not surrender. On August the 7th, 2015, they issued an article (<https://www.bellingcat.com/resources/case-studies/2015/08/07/shadow-of-a-doubt/>) cheering for an initiative of a Russian discussion forum to pinpoint the exact time of the plume pictures. According to Bellingcat this helped their case, because:

*"(...) this exercise in tandem with the self-reported EXIF data demonstrates that the launch photograph was indeed taken soon after 4:20pm, the time of the MH17 downing."*

They cheered too soon.

## Temporary endgame 2: The webtalk.ru timeline, August 2015

Indeed the administrator of the Russian site webtalk.ru, @bootblack, invented an ingenious way to establish the time the plume picture was taken with shadow casting analysis, sunny pictures of the same spot at various times and a forum of experts (see here: <http://mh17.webtalk.ru/viewtopic.php?id=328> )

The time of the first Aleynikov picture was set at a time of about 16:22:40 EEST, so at about 2.5 minutes after the plane lost contact. Obviously it was a bit questionable if a rather raw method like shadowcasting analysis could set a time by the second. Nevertheless, this time of capturing the plume seemed to fit a newly updated and highly sophisticated timeline, which was established by several educated estimations:

16:19:30 - launch of missile (flight time assumed as 33 seconds)  
16:20:03 - warhead detonation  
16:20:48 - Aleynikov hears sound of warhead detonation (45s estimate due to speed of sound)  
16:22:03 - impact of air frame at Grabovo (2 minutes descent estimate)  
16:22:33 - Aleynikov hears sound of impact plane Grabovo (30s estimate)

Estimates for Photo 1-3 (DSC\_9265-7) according to the @bootblack investigation at webtalk.ru, taking into account the Bellingcat endorsement of the 3 minutes the internal clock of the camera was ahead of time:

16:22:41 - cable photo (metadata 16:25:41)  
16:22:48 - zoom photo (metadata 16:25:48)  
16:27:06 - photo of smoke from plane wreckage from Aleynikov's roof (metadata 16:30:06)

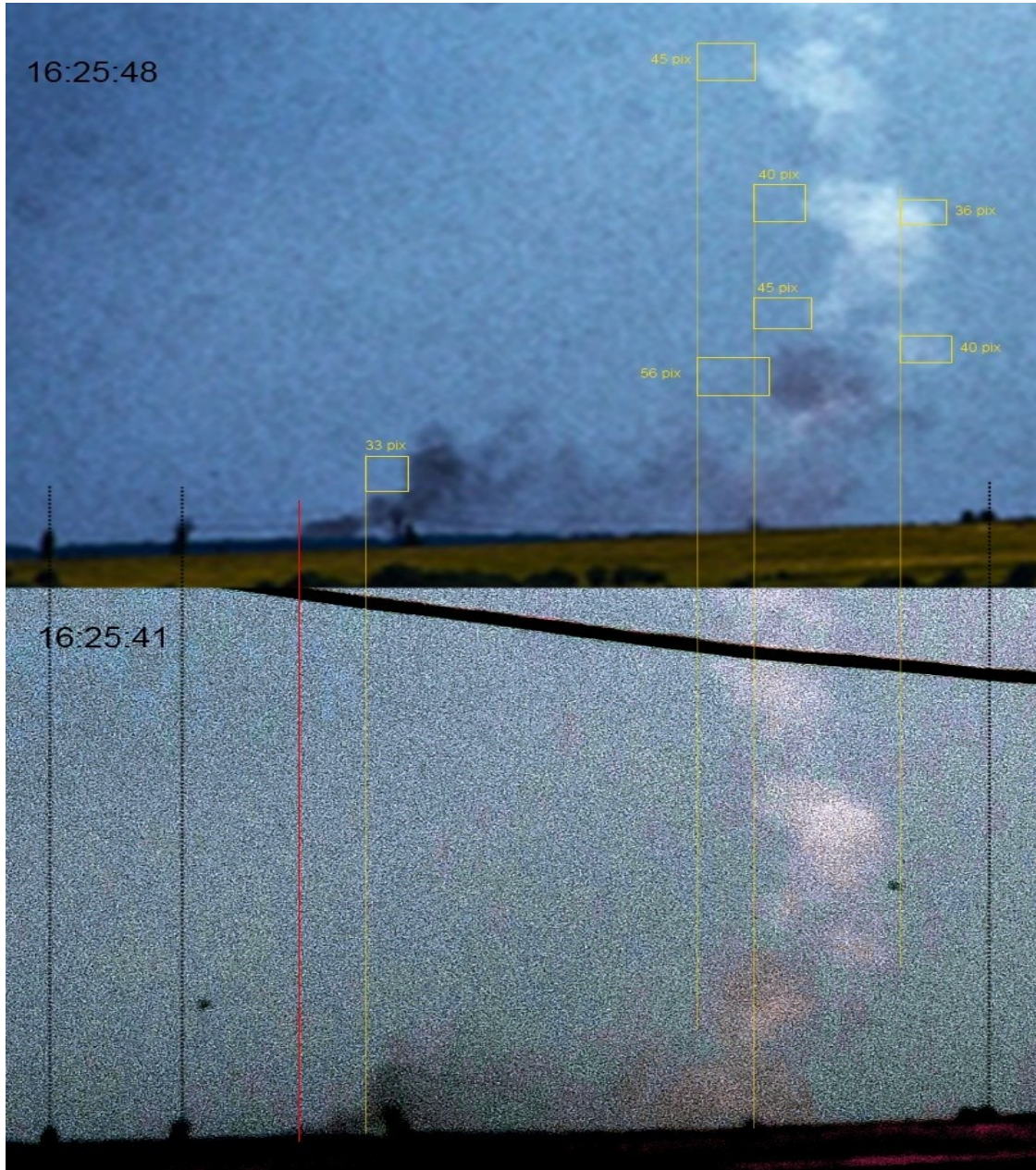
The 4 to 4.5 minutes the camera was ahead of time to make a photo of an early stage trail, according to Bellingcat at 16:21:11-41, now was set straight by claiming the internal clock was only 3 minutes ahead of realtime. Just as easy as that. Its really convenient if one has some room for adjustment of a timestamp, by definition a *fixed* point in time.

However, the mystery that wasn't solved was how Aleynikov could have captured an early stage missile trail more than 3 minutes after the launch. Besides, with the relatively high wind speed that existed at the time, one would expect the trail to be much more disrupted after 3 minutes. It was an issue Bellingcat buried into oblivion.

In fact the time set by @bootblack offered opportunities for debunking the plume or at least the assigned south from Snizhne launch site. Michael Kobs tried to open the debate by writing a short comment, pointing to a calculation he made, but it never appeared on the Bellingcat site.

## Intermezzo 4: Calculating the plume to its real origin

Because Bellingcat issued the second plume pic, the one with the cables, there could be established how fast the plume had travelled in the 7 seconds the pictures were taken apart from each other. Both Ole and Michael Kobs, two German engineers with forensic affinity, estimated the speed of the trail would be more or less 40-42 pixels per 7 seconds.



*Estimation of the distance the plume moved in the time between capturing the two pictures of the plume. On the average the white plume travelled about 40-42 pixels between its position on photo 1 and photo 2, taken 7 seconds apart. These calculation are independent of the windspeed. [9] (Image credit: Ole)*

Now this was established it would be easy to calculate the origin of the white plume taking this speed into account. The question is in fact how many times the missile trail has to be shifted 40 pixels to the left (against the wind direction) to get in line with the source of the black smoke. That is the same question as: How many 7 second intervals needed the missile trail to drift from the source of the black smoke - which is allegedly its origin - to the place where it is on the Aleynikov photos.

It can be estimated these were about 11 intervals, meaning the white smoke had moved about 11 \* 40 pixels from its alleged origin (that is to the red line in the image above). So, in other words, the plume had travelled from the firing at about 11 intervals of 7 seconds because of wind drift, which amounted to about, say, 80 seconds.

Then, according to this calculation, the first plume picture could not have been taken after about 16:20:50 local time, for as the time of missile impact was 16:20:03 (when the Flight Data Recorder stopped writing) and the launch of the missile from the alleged site consumed about 33 seconds. If the missile was launched at 16:19:30 and 80 seconds are added, then the above absolute maximum time of capture has been established.

This was a miraculous result. Because the main fuselage of the plane and the tanks fell on the ground near Grabovo at about minute 16:22 assuming 2-3 minutes descent time, and the crash had alarmed the photographer to take action, these pictures must have been taken well *before* the crash. Obviously, at its best this was not very likely as it went against the law of causality.

Though Bellingcat had stumbled time and time again over the implicit timeline emanating from their assumptions, finally they reached a conclusion, as followed from the previous paragraph. The time of the first Aleynikov picture should be set at about 16:22:40.

In fact they dug the grave of the plume much deeper with this. First a new comparison could be made. Aleynikov should have photographed the plume – according to the time lapsed between his two pictures and their metadata – before 16:20:50. So the plume would have been 1:50 minutes delayed if now a time of 16:22:40 should be reconsidered.

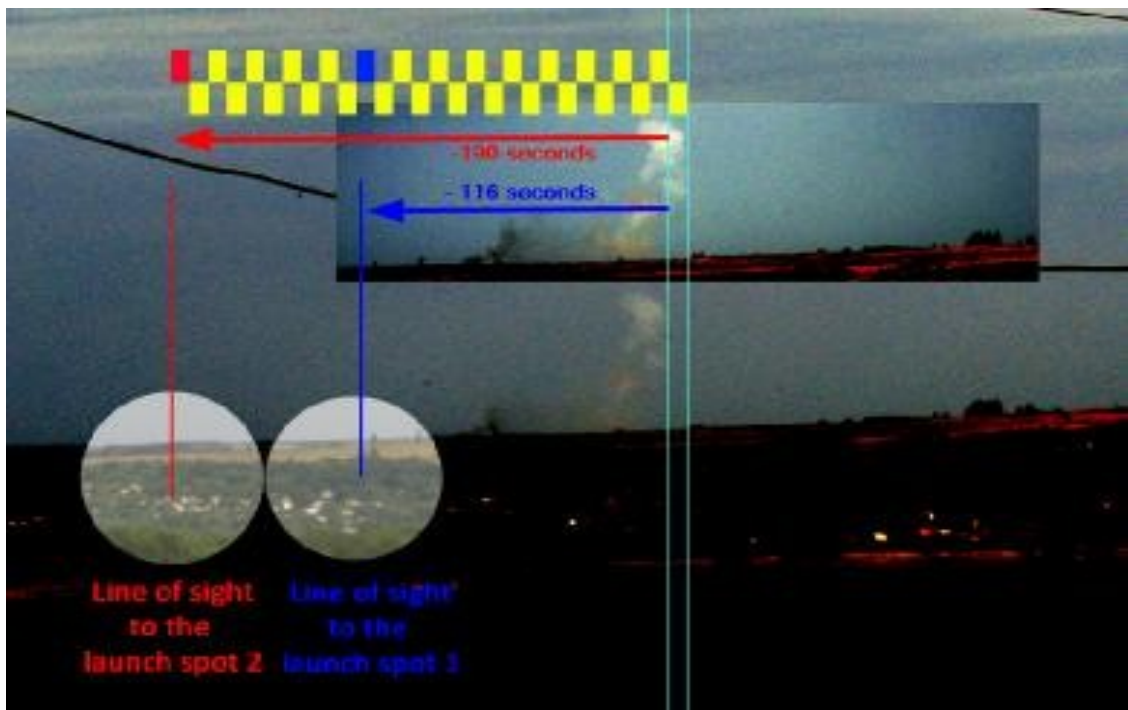
That is, the plume must have hold itself steady against the wind drift. It had drifted, of course. This could be seen on the two photos. But apparently with much resistance against mother nature. Maybe it has to be reiterated once more, but of course there is no question about the fact this is a really strange irregularity.

According to Ole Bellingcat had made a mistake. Obviously...

*“Bellingcat has a strange understanding of how the smoke trail is moving together with the atmosphere it is embedded in. Actually the smoke trail will be embedded into the atmosphere in a very small time interval i.e. almost instantaneously. Once it is embedded then the smoke trail moves as a whole together with the atmosphere.”*

Second, now the real period of time the wind had drifted could be established. Maybe Bellingcat already felt they made a huge mistake by endorsing the new timestamp, because the comment Michael Kobs made never reached their website. So he made the [comment](#) on my blogsite, with a short calculation added:

*“The funny part of it: Bellingcat debunked their own launch spot without noticing and, of course, my comment wasn’t allowed by the administrators. However, the time 4:22:40pm means the image was taken about 160 seconds after the last written FDR data. Let’s add 30 seconds for the flight of the missile. Hence, the image was taken about 190 seconds after the launch.”*



According to the calculations performed by Michael Kobs, the origin of the white trail would be in the left circle, taken into account a time of 16:22:40 the photographer took his first plume photo. Obviously this site is far more to the left (= to the east) than the alleged origin of the launch, the spot where the black smoke touches ground level.



*"We know that the Aleynikov contrail moved 41 pixels in 7 seconds to the right in the cable-shot. Therefore we just need to go  $190/7 = 27$  times 41 pixels - that's 1107 pixels - to the left of the contrail in the cable shot. Anyone - even Bellingcat - can check it. The rising black smoke is completely out of range."*

So, recapitulating, 190 seconds is the time between launch and capture of the first plume pic. In 7 seconds the plume travelled 40-42 pixels, as the previous paragraph showed. Those 190 seconds contain 27 intervals of 7 seconds each (or, say, 41 pixels), which amounts to a distance of 1107 pixels. When calculating backwards, so to speak, the plume must have had its origin 1107 pixels to the left from the white trail on the first plume picture.

Later Kobs provided visual back-up to make his statements more clear (see both images above). The white plume originated from a spot of about half a mile to the east of the spot where the dark smoke touched the ground/horizon. So the missile trail really had two faces with each their own origin: a white one and a grey one.

So the calculated, but in fact fictitious launch site would seriously challenge the Bellingcat and Ukraine-at-war fields as their geolocations never paid attention to this "wind shift" of the white part of the plume.

But more rebuttal was on the way. As Ole remarked:

*"Wind speed comes into play if the distance of the missile trail from Aleynikov's flat is to be determined. The closer to the flat the missile trail was, the more pixels per second (or "angular drift") it would have drifted at a given wind speed. For the angular drift to be 40 pix / 7 second the wind speed would need to be 8 m/s, if the smoke trail is located at the distance of the officially designated field."*

So for the distance from the photographer to the plume to be 12.3 km, the average wind speed - at that time blowing from the east, at 270 degrees - had to be about 8 m/s. Michael Kobs calculated the relation between necessary wind speed as a function of this distance for three alleged intervals of time that went by between launch and Photo 1.

<http://www.docdroid.net/Olszg0K/launch-spot-by-numbers.pdf.html>

This way he reached remarkable results. For these three intervals a distance of 12.3 km corresponded to an average wind speed between 8 and 9 m/s. Then Kobs calculated the time that went by between the crash and Aleynikov taking the pictures of the smoke coming from the wreckage, by measuring the distance this smoke had travelled on this pictures. But when calculating back to the time of the crash using this distance and the earlier calculated necessary wind speed, it showed the crash should have taken place *before or just after* the launch of the missile. Again, these findings were contrary to the law of causality.

According to Kobs this could mean three things:

- The launch spot was wrong;
- The contrail was unrelated to the downing of MH17;
- The EXIF data - the timestamps fixated in the internal clock of the camera - were altered.

It could be concluded these calculations contributed to the observation there was so much wrong with the trail of the plume pictures, in every aspect of its existence, this piece of evidence could not be taken serious any more.

## With the trail preparing for the trial

If the countries that want to instate a hybrid trial are preparing their case based on a BUK fired from the south of Snizhne, supported by the launch plume pictures, they will have to solve many issues, answer a lot of questions and harmonize quite a few inconsistencies.

Though maybe the photographer would have to shed some light too about his ever changing and inconsistent statements, the @WowihaY interview could be seen by the court as a valid interpretation of the events. In each case it is clear the "early stage" timeline has to be dropped.

If the plume pictures are genuine, they will show up in a trial and be released to the defense. To this moment only parties who offered to convey the right propaganda line were trusted to get custody of the pictures: the SBU, RTL 4, Meduza and Bellingcat. All of them corroborated the originals were there.

But as it is rather unlikely, if not debunked, the white trail and black smoke are related, the main question that remains is: What could that white trail really be? Then the big issue is whether or not the plume pictures have been doctored in the time that went by between their alleged capture (when?) and the first posting in a @WowihaY tweet.

The digital trick of inserting a white plume must have been supported by software that could change the timestamp fixed in the metadata of the Nikon NEF file. In theory it is possible to digitally alter the original NEF and put it back on the chipcard of the camera, still in NEF format and with adjusted timestamps. However, in-depth analysis i.e. of colour features would show this happened.

Even so the fact that experts "a charge" couldn't find any tampering yet, doesn't mean it wasn't there [10]. To sum up, the plume pictures display various problems regarding:

### A) Physical features of the plume:

- its width, of about 80-100 meters, 10 times BUK-TELAR length, 100 times diluted
- its height, of only about 900-1000 meters, not entering cloudbase;
- no lateral dispersion/wind shear; white plume doesn't change in shape over time;
- the unexplained relation between the black and white smoke.

### B) Features of the photos and camera themselves:

- the metadata and internal clock issue;
- the cable issue regarding the 7 second time interval between the 2 plume photos;
- the odd vignetting, added noise and image density discontinuity detected on the Bellingcat "originals".

### C) Counter evidence:

- the pictures of black smoke originating from a mine in the photographer's line of sight;
- the picture made 6 minutes after the crash from Saur Mogila not showing the trail;
- the calculations showing inconsistent timeline, wrong launchsite and/or altered metadata.

Conclusions reached: the photographer gave a lot of contradicting statements and the trail is probably not a BUK launch plume. It is hardly imaginable the pictures are genuine and still manage to comprise so much irregularities. Hence its very doubtful they will ever reach court benches.

## Notes

[1] For a definition of a hybrid trial, read: <http://www.oxfordbibliographies.com/view/document/obo-9780199796953/obo-9780199796953-0069.xml>

*"While there is no definition, such tribunals tend to apply a mix of national and international law (both procedural and substantive) and feature a blend of international and national elements, in particular international and national judges and personnel."*

In fact one could say this is a trial performed by an internationalized tribunal without full back-up of international law.

[2]: The interview shows a strange continuation here, despite the edited pause, because the quote can be read as if he saw nothing from his balcony but photographed the plume anyway.

[3] Concerning the altitude of the cloudbase: The altitude of the Cumulus clouds in the Torez region can be estimated from Aleynikovs roof photos and from the Saur Mogila rebel photo [see paragraph "Temporary endgame 1"].

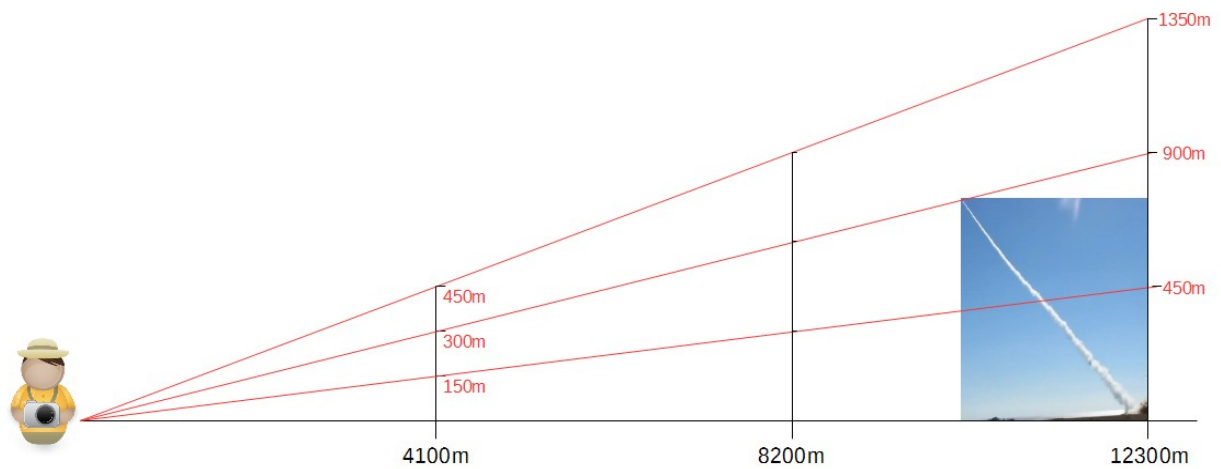
In both photos the smoke trail of the burning kerosin has almost the same height as length. On the Aleynikov photos it's length is ~2500 m, on the rebels photo it's length is ~3000m. In neither picture the top of the kerosin smoke reaches up to the cloudbase.

So the cloudbase of the Cu above Torez was at least 2500m. The preliminary report of the Dutch Safety Board states the Altostratus clouds (As) layer to the south (which is the one visible on the Aleynikov missile trail photos) was higher than the Cu, and its not likely an As layer floats lower than an adjacent Cu layer.

[4]: The idea of the method of similar triangles is to measure the width of that yellow square on the ground in google earth (here 150m at a distance of 4100m, see image below).



Being a square the height of the square is the same as its width. Then with the concept of "similar triangles" (= height and distance of triangles with the same angle opposite to their 90 degree angle are commensurately related) you can easily conclude the absolute height of more distant objects that are visible at the same *angular* height as the square.



To measure the height of the alleged missile trail the angular scale of the cable photo has to be established. This can be done by measuring the distance from the left side of the tree row to the spoil pile to its right in google earth, see: <http://s15.postimg.org/daphj9cgv/distances.jpg>.

So the distance between those two features is 150m, the distance of the observer to those features is 4100m. Having established the edge length and distance to the yellow square the absolute height of objects which are visible at the same angular height, can be concluded using the principle of similar triangles.

The red lines in the photo mark the absolute height of objects at 1 to 3 times the distance to the tree row which are visible at the same - or double or triple - angular height as the yellow square.

(This drawing depicts the line of sight as seen from the side, for the purpose of legibility the vertical scale is stretched by a factor of 3.4 but that doesn't change anything for the numbers derived).

The conclusion is, if the distance to the smoke trail was 12300m (that is to the Oliphant/Ukraine-at-war field) the smoke trail ends or disappears at an altitude of ~900m. ( $12300/4100 * 2$  squares of 150m each)

It was suggested the smoke trail ended because it entered the clouds. That is impossible because the clouds visible on the cable photo are at an altitude of at least 10000ft or 3000m.

This picture from the Dutch Safety Board preliminary report (see below) depicts the weather situation; the yellow arrow points into the direction the cable photo was shot:

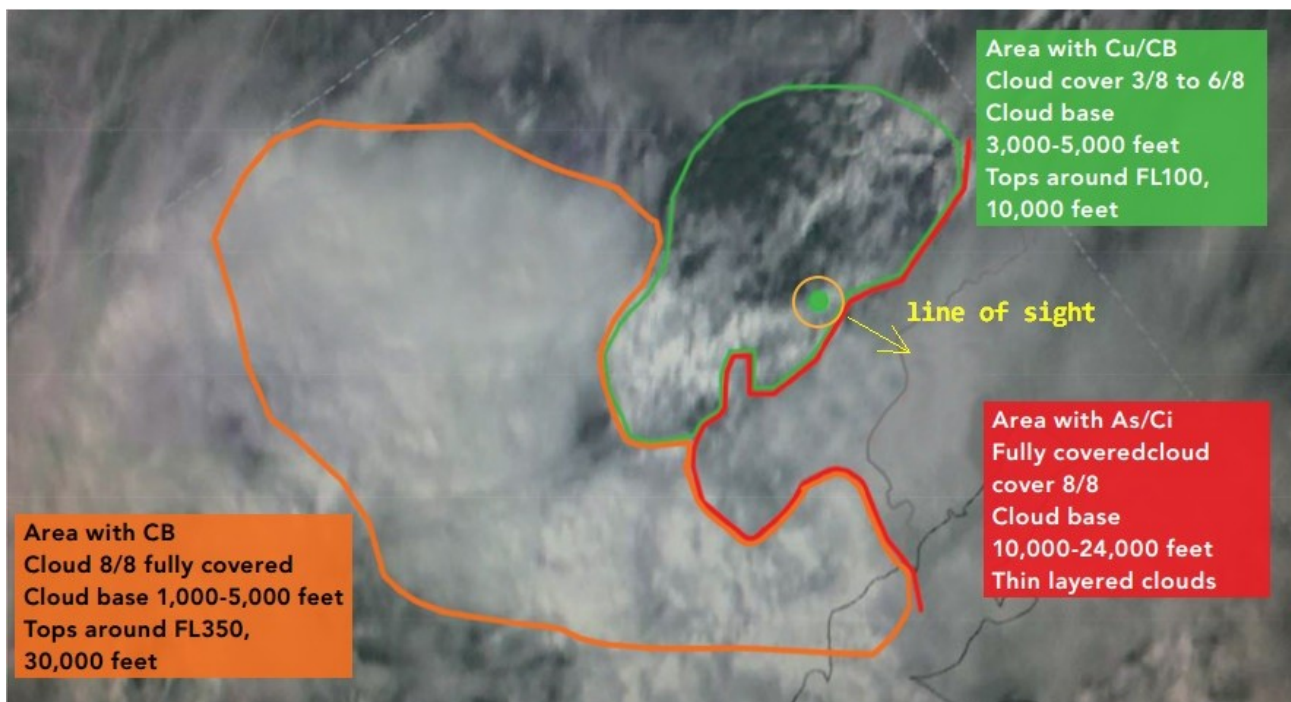


Figure 3: Cloud coverage for 17 July at 12.00 hrs.<sup>10</sup> The circled green dot indicates the last position of aircraft. The orange area south-west of the accident location contains mostly Cumulonimbus clouds with possible thundershowers. (Source: KNMI)

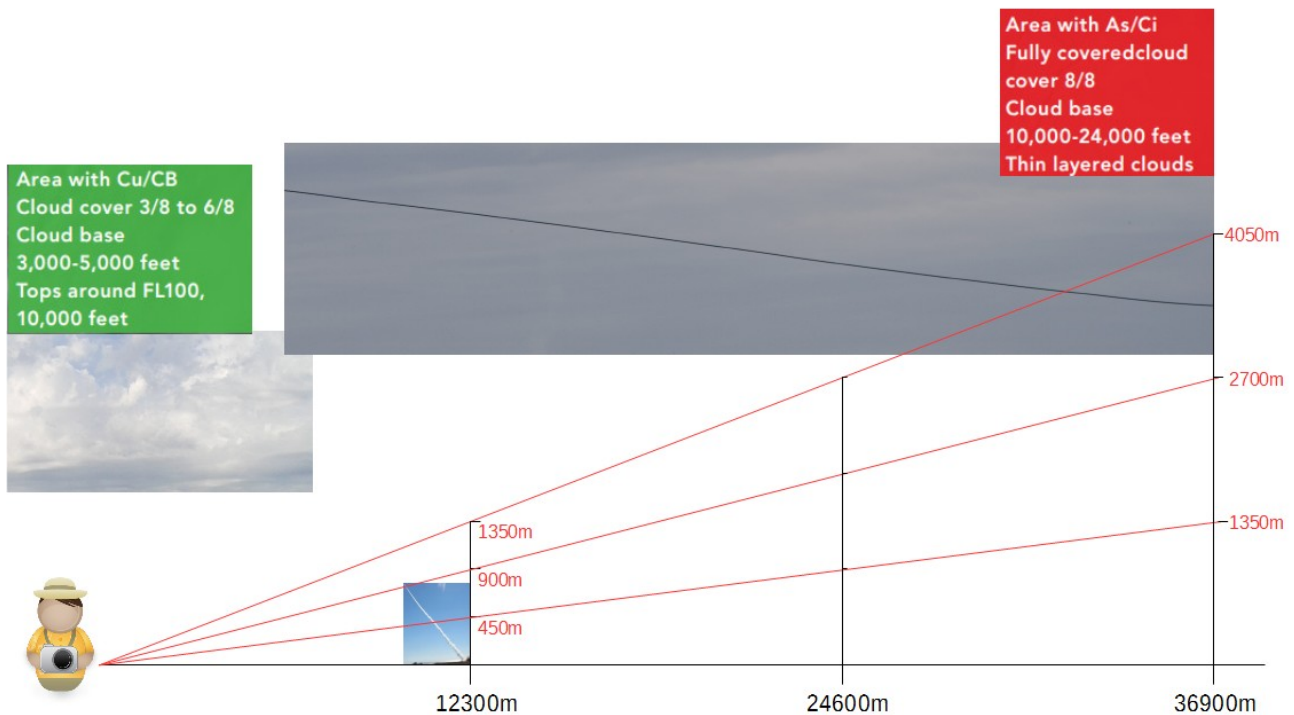
The clouds visible on the cable photo clearly are Altostratus clouds (As). There is a nice picture on Wikipedia showing this type of cloud:

[https://en.wikipedia.org/wiki/Altostratus\\_cloud#/media/File:Altostratus\\_undulatus.jpg](https://en.wikipedia.org/wiki/Altostratus_cloud#/media/File:Altostratus_undulatus.jpg)

So the clouds visible in the cable photo are definitely those in the area marked red in the preliminary report which are at an altitude of at least 10000ft/3000m.

As many other photos too, the separatist photo of the smoke plume from the crash shot from Saur Mogila [see paragraph "Temporary endgame 1"] shows that Torez was located beneath an area of Cu/CB that is marked green in the weather image from the Dutch Safety Board preliminary report. Cu/CB means Cumulus or Cumulonimbus clouds, which are "cauliflower" type of clouds with brightly illuminated lateral limits. This type of cloud is not visible on the cable photo (unless yet another edition of that photo will be published with yet another set of clouds). So on the cable photo there are definitely no clouds into which the missile trail could have entered after 900m.

This drawing depicts the cloud situation on the cable photo as seen from the side. The lower Cu clouds above Torez are not within the field of view of the photo. It also shows that this alleged smoke trail of 900m length can't origin from a missile climbing to an altitude of 10000m.



*The 900 meter trail never reached the clouds.*

[5] In the first image used in note [4] the roughly estimated width of the plume at 4100 m. is about 30 meters. With the similar triangle method we need to multiply this width by a factor 12.3/4.1 to get the real width, as seen from 12.3 km, the distance to Aleynikovs residence. This amounts to about 90 meters.

[6] Aleynikov used a Nikon 55-300 lens. This can be found at his site: <http://rescuero.com>.

As for the capabilities of this lense, see e.g.:

[http://www.photographyblog.com/reviews/nikon\\_afs\\_dx\\_nikkor\\_55\\_300mm\\_f\\_45\\_56\\_g\\_ed\\_vr\\_review/](http://www.photographyblog.com/reviews/nikon_afs_dx_nikkor_55_300mm_f_45_56_g_ed_vr_review/) The first picture was made with AF, with 55 mm position.

When the switch on the lens is set to autofocus, one cannot manually zoom in.

Retired German Head Prosecutor Gabriele Gordon-Wolff wrote to me:

*"I knew it was a fraud since Romein told in his article that the cables were near and that the second shot within 7 seconds made them disappear. (That means: Aleynikov zoomed in between them). This was not possible because the cables were too far away on this picture which was presented as an unzoomed foto. The only solution was that Aleynikov must have changed his position and shot his cable-free zoom foto from a position under the cables. 7 seconds don't allow such a dramatic change of position."*

*"(...) the "unzoomed" cable foto was a zoomed 55 mm foto, what he [Bellingcat editor Daniel Romein; HR] knew when writing the article. A 55 mm lens shortens the distance to an object at least up to 20 meters. The cables in reality, therefore, were even further away than shown on the picture - and therefore was zooming in between them while showing the horizon just impossible."*

Also a visitor of Bellingcat's website reached this conclusion in a reply to the report:

*"(...) if the camera was in a lower position for the picture without the cables, the vertical angular distance between a near and a far object decreases, while the horizontal angular distance between two objects on the horizon line stays the same. So the ratio between vertical and horizontal angular distance should decrease – a small distortion is introduced. And that's exactly what I found. It seems that the picture without the cables has been taken from a slightly lower position, just enough to get them off the picture."*

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/comment-page-4/#comment-24718>

Others confirmed the cable below should remain visible when zoomed in:

<http://mh17.webtalk.ru/viewtopic.php?id=259&p=31>

[7] i.e. Kobs detected a feature called vignetting (<https://en.wikipedia.org/wiki/Vignetting>), but only in both upper corners. So the question raised why there wasn't any vignetting in the lower corners, as this feature is the result of capturing an image through a circular "hole".

[8] This story fits a 2014/7/19 article that appeared on censor.net.ua, an ultranationalist online newssite:

[http://en.censor.net.ua/photo\\_news/344472/torez\\_residents\\_who\\_photographed\\_russian\\_buk\\_after\\_missile\\_launch\\_at\\_mh17\\_deserve\\_an\\_award\\_butusov\\_photos](http://en.censor.net.ua/photo_news/344472/torez_residents_who_photographed_russian_buk_after_missile_launch_at_mh17_deserve_an_award_butusov_photos)

[9] According to Ole other calculations corroborated this result:

*"Analyzing a video of the impact smoke shot in Snizhne I measured the drift speed and direction of the smoke plume resulting from the impact. I came to ~8 m/s from 80° as an average during 54 sec. I described the method here: <http://mh17.webtalk.ru/viewtopic.php?id=304&p=2#p28831>*

*Recorded surface wind at Donetsk airport was 7-12 m/s 70°, recorded surface wind at Rostov was 5-7m/s 70°. Taking into account that wind speed rises with altitude and wind direction turns to the right a value of 8 m/s 80° for the altitude of drifting smoke seems realistic.*

*The wind component perpendicular to Aleynikov's line of sight would then be ~6 m/s.*

*For the distance the alleged missile trail traveled between the two photos I came to 40 pixels:*

*<http://s14.postimg.org/ydcccj6m2p/two.jpg>*

*<http://s24.postimg.org/j5gp6r6vp/smoke.gif>*

*The animated gif gave the best match at 40 pixels.*

*At that distance (12300m) one pixels equates to one meter. 6 m/s drift during 7sec would amount to 42m or 42 pixels total drift."*

Both Ole and Kobs agree 1 pixel should be more or less equal 1 meter when taking the distance of the plume to Aleynikovs residence (12.3 km) into account. Petri Krohn's calculation corroborates this (<https://hectorreban.wordpress.com/2015/08/29/mh17-putin-did-it-defenders-playing-dumb/comment-page-1/#comment-62>):

*"The wide angle plume photo (DSC\_9265.NEF, photo 1) was taken with the Nikon 55-300mm f/4.5-5.6 lens set to 55mm. The DX size sensor on the Nikon D7000 camera is 23.6 mm wide. The photo is 4928 pixels wide. 1107 pixels is 5.30138 mm on the sensor. Projected to 12.3 km the plume movement is 1.18558 km or 6.24 m/s."*

So the plume would have originated from about 1.2 km east of the position Aleynikov captured it. Because we can see the origin of the black smoke (the position from Aleynikovs apartment is high enough to see over the rift in front of him), the white plume would originate from nearly 600-900 meters further to the east than this black smoke.

[10] Bottom line is that in-depth analysis should detect possible re-uploading of digitally altered NEFs on the chipcard of the camera. At this moment it is (publically) unknown if this is done, though several experts have performed tests and stated they couldn't find any tampering.

As Michael Kobs remarks:

*"There is free software around that can open the NEF-files and even show it in almost the right color. Even Photoshop has a plugin to open and edit the NEF-files. See <http://ufraw.sourceforge.net/>*

*The problem is not to open the NEFs, the problem is to write an altered image back into the NEF format, because the Nikon-Software has not the possibilities of editing software like Photoshop. The problem is that the real NEFs are protected by Nikon owned intellectual property rights. Therefore professionals have to use the Nikon-Software or have to live with reduced dynamics and so on, if they would opt for Photoshop. (That's because Photoshop converts the NEF with their own algorithms based on experience).*

*The idea is: if someone edited the original NEFs in non-Nikon-Software [like Photoshop; HR] and wrote the file back into a NEF on the chipcard, then an in-depth-analysis should/would show the missing dynamics, and what else more. This might be the reason why the Bellingcat-"Original"-Raw is just an usual Bitmap with added noise."*

Charles Wood did some research on this subject:

*"Modifying the EXIF data in an a NEF image without altering the actual image is very easy using a range of low level tools. It's a single byte change to move an image time from say 11:23 to 16:23.*



*It is possible reading NEF with third party software, in reduced clarity, as Michael says. The Nikon software takes an effective 12 or 14 Bits Per Pixel colour and converts it to an 8/24 BPP in BMP format, so losing some colour range.*

*We only have access to the BMP [from the Bellingcat dropbox; HR] so the colour range is 24 bit. I would expect that it would be possible to look at the NEF image - if and when available - and see whether it was quantized to 8/8/8, indicating potential editing, or was quantized to 12 or 14 bits each pixel colour, which is consistent with an original camera image."*

Regarding the experts who have performed tests on the Aleynikov pictures, both remark it is not clear how and what they tested.

Michael Kobs:

*"I don't believe this [i.e. a test to detect the Bits-Per-Pixel colour feature Charles Wood mentions above; HR] is some kind of standard test. But all I can say about it would be speculation. We don't know what they have tested. I guess now it's a bit like they issued some "Bio" label on food products."*

Charles Wood:

*"I very seriously doubt ordinary criminal experts would look at quantization levels of images to check for forgery. Unless and until I see a formal report with details of what they checked and what their relevant expertise is I'll discount any 'certificate of authenticity'*

*You should at least ask for:*

- a) What checks for authenticity did the experts perform?*
- b) Can you publish their report?*
- c) Does their report cover whether the NEF image quantization is consistent with the native color resolution of the camera model?*
- d) What checks did they make of the image EXIF and other metadata in comparison to metadata from identical camera model and firmware?*
- e) Does their report cover the allegation by Dr Neal Krawetz that noise had been added to the images?*
- f) Does their report cover the allegation by Dr Neal Krawetz regarding the image density discontinuity?*

*In items e) and f) Dr Krawetz made the comments after their report was announced but it would be interesting to see if those checks were made by the original experts."*

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## Addendum I: A timeline of the events

16:19:30 - launch of missile (flight time assumed as 33 seconds, zie appendix in the Kobs report <http://www.docdroid.net/Olszg0K/launch-spot-by-numbers.pdf.html>)

16:20:03 - warhead detonation

16:20:48 - Aleynikov hears sound of warhead detonation (45s due speed of sound)

16:22:03 - impact of air frame (2 min descent estimate)

16:22:33 - Aleynikov hears sound of impact (30 estimate)

16:22:41 - cable photo (in fact photographer says 30s to 2 minutes went by before he reacted, instead of 8 seconds), according to @bootblack investigation and Bellingcat endorsement

16:22:47 - zoom photo

16:27:06 - photo of smoke caused by impact of the plane near Grabovo, from Aleynikov's roof

16:25:41 EEST: foto 1 Aleynikov [metadata, not realtime]

16:25:48 EEST: foto 2 Aleynikov [metadata, not realtime]

16:30:06 EEST: foto 3 Aleynikov [metadata, not realtime]

16:28 EEST Photo separatist from Saur Mogila without BUK trail

<http://7mei.nl/2015/07/26/mh17-buk-plume-burns-witness-part-i/>

16:40 EEST Djukov tweets "Photo 3" made by Aleynikov

<https://twitter.com/Djukov/status/489766482059198464/photo/1>

17:11 EEST: posting Euromaidan of Aleynikov "Photo 4", DSC\_9268, probably handed over by Djukov:

Местные жители пишут, что самолет был сбит из передвижного ракетного комплекса про который мы писали ранее:

<https://www.facebook.com/EuroMaydan/photos/a.523254484437560.1073741828.523004674462541/652614801501527/?type=1&theater>

18:14 EEST Black smoke picture posted at Facebook page Djukov by sharing Euromaidan 17:11 posting

<https://www.facebook.com/Djukov/posts/4425500693742>

19:23 EEST: Djukov posts "Photo 2", zoomed with enhanced contrast;

<https://twitter.com/Djukov/status/489807649509478400/photo/1>

20:45 EEST: Gerashchenko posts "Photo 2", info for geolocation included

<https://www.facebook.com/photo.php?fbid=694844643935719&set=p.694844643935719&type=1>

*"Putin! You and your cronies can not get away from the international tribunal!*

*This photo contrail left as you launch missiles SAM "Buk".*

*It made a few minutes after the rocket launch of **Microrayon 3 Torez city from west to east.***

*Thousands of people saw the launch and flight of the missile, which you kindly gave her the sponsored terrorists!"*

22:18 EEST: Business Insider article appears on the net

<http://www.businessinsider.com/donetsk-resident-speaks-about-malaysia-airlines-crash-2014-7?IR=T>

19 july: Plume picture "Photo 2" appears on SBU website:

[http://www.sbu.gov.ua/sbu/control/uk/publish/article?art\\_id=129099&cat\\_id=39574](http://www.sbu.gov.ua/sbu/control/uk/publish/article?art_id=129099&cat_id=39574)

21 july: Ukraine-at-war issues blog with geolocation of the launch site in full cooperation with Djukov <http://ukraineatwar.blogspot.nl/2014/07/launch-location-detected-of-missile.html>

27 january: Bellingcat issues Photo 1, the cable pic.

May 2015: Bellingcat issues new information: Aleynikov took Photo 1 and 2 from Balcony

May 2015: Marcel van den Berg, administrator of whathappenedtoflightmh17.com, issues thumbnails of "Photo zero" and Photo 4 to 8.

5 juni 2015: Black smoke photographed by yana:

<https://twitter.com/MaxvanderWerff/status/624651173346340864>

## Addendum II: used sources (URLs)

### **Sources pro-Kiev narrative:**

<http://www.businessinsider.com/donetsk-resident-speaks-about-malaysia-airlines-crash-2014-7?IR=T>

[http://www.sbu.gov.ua/sbu/control/uk/publish/article?art\\_id=129099&cat\\_id=39574](http://www.sbu.gov.ua/sbu/control/uk/publish/article?art_id=129099&cat_id=39574)

[http://en.censor.net.ua/photo\\_news/344472/torez\\_residents\\_who\\_photographed\\_russian\\_buk\\_after\\_missile\\_launch\\_at\\_mh17\\_deserve\\_an\\_award\\_butusov\\_photos](http://en.censor.net.ua/photo_news/344472/torez_residents_who_photographed_russian_buk_after_missile_launch_at_mh17_deserve_an_award_butusov_photos)

<http://ukraineatwar.blogspot.nl/2014/07/launch-location-detected-of-missile.html>

<http://www.rtlnieuws.nl/nieuws/binnenland/hoe-onderzocht-rtl-nieuws-de-nieuwe-mh17-fotos>

<http://www.rtlnieuws.nl/nieuws/binnenland/ooggetuige-mh17-mijn-doel-rechtvaardigheid>

<https://www.bellingcat.com/resources/case-studies/2015/01/27/examining-the-mh17-launch-smoke-photographs/>

<https://meduza.io/feature/2015/03/17/sled-nad-torezom>

<http://www.dailymail.co.uk/news/article-3006066/MoS-s-vital-clue-hunt-shot-MH17-Investigators-believe-missile-vapour-trail-photo-points-blame-Russia.html>

<http://www.whathappenedtoflightmh17.com/three-issues-with-the-fake-photo-claim-of-max-van-der-werff/>

<http://fakty.ua/203378-mne-prislali-foto-s-mesta-tragedii-ot-kotorogo-volosy-vstali-dybom-na-pole-lezhit-trup-mladenca>

<https://www.bellingcat.com/resources/interviews/2015/07/27/interview-with-Djukov/>

### **Dissident sources:**

<http://7mei.nl/2015/01/24/mh17-hardcore-dutch-war-propaganda/>

<http://7mei.nl/2015/02/02/mh17-bellingcat-photo-proof-spoof/>

<http://7mei.nl/2015/05/18/mh17-buk-launch-photos-are-cheats/>

<http://7mei.nl/2015/07/26/mh17-buk-plume-burns-witness-part-i/>

<http://www.scribd.com/doc/267001590/Bellingcat-the-Launch-Site>

Yana's black smoke pictures (2015/6/5 on Webtalk.ru) <http://mh17.webtalk.ru/viewtopic.php?id=210&p=26>

<https://hectorreban.wordpress.com/2015/09/06/the-mystery-of-the-two-faced-launch-plume/>

Calculations Michael Kobs <http://www.docdroid.net/Olszg0K/launch-spot-by-numbers.pdf.html>

## Addendum III: Letter to Sergei Parkhomenko

Dear Madam/ Sir,

As a freelance journalist from the Netherlands I would like to ask some questions to mr. Parkhomenko about a blogpost he wrote on the 17th of March concerning the alleged BUK launch plume. This plume could be the main evidence in a case against the Donbass separatists having fired a missile downing Malaysian Airways flight MH17, causing 298 casualties.

Now rumours have come up a "hybrid" international trial will be instated, this launch plume photo possibly will be at the forefront of the indictment.

As I understand it from his blogpost, mr. Parkhomenko has written down pieces of Facebook conversations and transcriptions of a taped interview he had with the plume photographer, mr. Aleynikov, regarding the circumstances shooting the pictures. It is this information I have some questions about.

Mr. Aleynikov stated he heard a roar "*much stronger than the already familiar sounds of running artillery, mortar explosions or bursts*", clearly alluding to the crash of the main fuselage and tanks at Hrabove. In a december 2014 interview with Dutch commercial TV RTL he said he first heard an explosion far less heavy than the second, possibly alluding to the impact or the launch of the missile.

Has he told anything to mr. Parkhomenko about hearing more sounds than one?

Mr. Aleynikov said, according to the blogpost: "*He ran to the **window** and **saw** that the wind spreads slowly **trail** of smoke on the horizon. Camera lay on the windowsill. He grabbed it and **ran up the stairs to the roof** to remove from there.*"

In the above mentioned RTL interview and in a Business Insider interview mr. Aleynikov had at the evening of the day of the crash, he said he went to the loggia (covered balcony) and saw nothing.

*"Although he did not see the plane crash, he said he ran to his window after hearing the sound of an explosion after the plane fell to the ground. He could not see the situation from his balcony, so he climbed to the roof of his house and "saw the smoke on the horizon."* (Business Insider)

*"Immediately I wanted to find out where the sound came from. What had exploded? Where? How? Then I ran to the covered balcony. I looked around and saw nothing."* (RTL/Olaf Koens)

Did or didn't mr. Aleynikov see the launch trail from his balcony? What is mr. Parkhomenko's conclusion about this?

On Facebook mr. Aleynikov told mr. Parkhomenko he grabbed his camera and ran to the roof. There he made his three pictures, at first the two of the launch plume and then, after some 3 minutes, the third of the smoke coming from the wreckage of the plane.

After Dutch citizen investigator Max van der Werff issued an article about this testimony, citizen investigators from Bellingcat passed on information, presumably stated by mr. Aleynikov, the photographer took the first two pictures from his southern balcony.

What does mr. Parkhomenko think about this?

In the blogpost mr. Aleynikov suggest he only took 3 pictures, two of the launch plume, one of the wreckage.

*“Therefore I did not shoot more if I knew about the event I would have been shooting, of course, more. But what exactly happened, I learned only a couple of hours.”*

After mr. Van der Werff’s article more pictures showed up on the website [whathappenedtoglightmh17.com](http://whathappenedtoglightmh17.com). In fact mr. Aleynikov had made 6 shots more of the smoking plane.

What did mr. Aleynikov tell mr. Parkhomenko exactly and what is his opinion about this?

Regarding the importance of the testimony of mr. Aleynikov, is mr. Parkhomenko willing to make the video of his interview with mr. Aleynikov public?

These are my questions. Hopefully mr. Parkhomenko has the opportunity to answer them for which I will be, of course, very grateful.

So thank you in advance and with kind regards,

Hector Reban

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