INTERNATIONAL COURT OF JUSTICE

APPLICATION OF THE INTERNATIONAL CONVENTION FOR THE SUPPRESSION OF THE FINANCING OF TERRORISM AND OF THE INTERNATIONAL CONVENTION ON THE ELIMINATION OF ALL FORMS OF RACIAL DISCRIMINATION

(UKRAINE v. RUSSIAN FEDERATION)

REJOINDER

SUBMITTED BY THE RUSSIAN FEDERATION

VOLUME II

(ANNEXES 4 - 6)

10 MARCH 2023

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VOLUME II

Annexes 4-6

Annex 4

Second Expert Report of Alexander Alekseevich Bobkov, 10 March 2023

(translation)

INTERNATIONAL COURT OF JUSTICE

APPLICATION OF THE INTERNATIONAL CONVENTION FOR THE SUPPRESSION OF THE FINANCING OF TERRORISM AND OF THE INTERNATIONAL CONVENTION ON THE ELIMINATION OF ALL FORMS OF RACIAL DISCRIMINATION

(UKRAINE v. RUSSIAN FEDERATION)

SECOND EXPERT REPORT OF ALEXANDER ALEKSEEVICH BOBKOV

10 MARCH 2023

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I. INTRODUCTION

A. QUALIFICATIONS

1. I, Alexander Alekseevich Bobkov, previously provided an expert report analysing satellite imagery, which was submitted to the International Court of Justice in "Application of the International Convention for the Suppression of the Financing of Terrorism and of the International Convention on the Elimination of All Forms of Racial Discrimination" (Ukraine v. Russian Federation) ("the First Report").[1]

2. My qualifications and experience are described in the First Report.

B. QUESTIONS PUT TO THE EXPERT

3. I have been commissioned to review the expert report of Ms Catherine Gwilliam and Air Vice-Marshal Anthony Sean Corbett (also referred to hereinafter as "Gwilliam and Corbett Report")[2] and the second expert report of General Brown (also referred to hereinafter as "Brown Second Report")[3] as it relates to my First Report and the satellite imagery analysis.

[1] Counter-Memorial on the ICSFT, Annex 1.

[2] Reply, Annex 2.

[3] Reply, Annex 1.

II. SUMMARY

4. In the course of my analysis I came to the following conclusions.

5. Shelling of the Buhas roadblock:

   (a) The data on the number and location of craters in Gwilliam and Corbett Report based on which General Brown draws his conclusions concerning the missile launch site is incorrect.

   (b) The potential position from which the Buhas roadblock could have been shelled, and which is shown as "Scorch Mark" in Figure 11 of Gwilliam and Corbett Report, is not such a position.

   (c) The military component of the Buhas roadblock had been increased by the time of General Brown's visit in 2018 (as compared to January 2015). This proves once again that the main purpose of the Buhas roadblock in 2015 was military one.

   (d) There were artillery positions of the Ukrainian Armed Forces ("UAF") near the Buhas roadblock, from which attacks were launched against the Donetsk People's Republic ("DPR"). This indicates that military activities against DPR forces were taking place deep within the UAF lines.

6. The shelling of the Kramatorsk airfield:

   (a) The "possible positions" of the alleged launches from a BM-30 Smerch multiple rocket launcher system ("MLRS") at the Kramatorsk airfield on 10 February 2015, which are described in Gwilliam and Corbett Report, are not such positions.

   (b) Gwilliam and Corbett made errors regarding the available satellite imagery nearest to the date of the shelling and the date of the image they analysed.

7. The shelling of Mariupol:

   (a) "Possible firing positions" that could have been deployed to shell Mariupol from a MLRS, which are described in Gwilliam and Corbett Report, are not such positions.

   (b) The conclusion that there are "possible D-30 howitzers" in Figure 30 of Gwilliam and Corbett Report is incorrect.

8. I set out my conclusions in more detail below.

III. GENERAL COMMENTS

9. General Brown makes the following assumptions in his second report:

> "Colonel Bobkov's report is based on a limited set of imagery that does not provide a balanced picture of events on the ground";[4]
>
> "Colonel Bobkov's report is a thorough analysis of specific but limited imagery. He appears to have been given clear parameters for the scope of his analysis, much of which is peripheral, rather than being free to analyse imagery which might have fallen out of his own assessment of the key issues".[5]

10. These hypotheses are wrong.

11. It is incorrect to compare (i) the amount of imagery analysed during the pre-task phase, (ii) the amount of imagery procured during the task phase and (iii) the amount of imagery used to illustrate the expert report or to support the expert's conclusions.

12. When I worked on analysing imagery, I only used my knowledge, experience and the appropriateness of analysing certain materials in order to assess the results contained in Gwilliam and Corbett Report and Brown Second Report (to the extent they relate to the satellite imagery analysis and my First Report). For example, to confirm my conclusions made in this report (in relation to the Buhas roadblock and Kramatorsk incidents), I used those WorldView-2 and WorldView-3 satellite imagery to analyse and illustrate my judgments that was not included as illustrations in my First Report. I, however, did analyse these images previously on the issues addressed in the First Report, but I felt it was possible to illustrate my conclusions in the First Report with exactly those images that were used in the First Report. The conclusions drawn in my First Report are sufficiently supported by the materials attached to it and, in my opinion, did not need to be supported by all the images at my disposal.

13. Moreover, despite General Brown's assumptions, the same General Brown and Ms Gwilliam and Air Vice-Marshal Corbett used the results of the interpretation of the imagery from my First Report in their analysis, thereby confirming the sufficiency of that imagery for the tasks at hand. For example:

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[4] Reply, Annex 1, Brown Second Report, ¶1.

[5] Reply, Annex 1, Brown Second Report, ¶4.

14. Buhas roadblock:

    (a) The figures (diagrams) from Gwilliam and Corbett Report, which are based on the results of my interpretation of the situation: Figure 11 "Overview of the Tactical Situation in the Volnovakha Region";

    (b) The paragraphs of Gwilliam and Corbett Report where they agree with me or use my conclusions for their argument: paras. 17, 18, 41, 20, 33, 36, 41, and 43;

15. Mariupol:

    (a) The figures (diagrams) from Gwilliam and Corbett Report, which are based on the results of my interpretation of the situation: Figure 28 "Distance from the Mean Point of Impact in the Vostochniy Neighbourhood to Ukrainian National Guard Locations " and Figure 27 "Trenches to the East of Mariupol";

    (b) The paragraphs of Gwilliam and Corbett Report where they agree with me or use my conclusions for their argument: paras. 61 and 62.

IV. DETAILED ANALYSIS

A. BUHAS ROADBLOCK SHELLING - 13 JANUARY 2015

i. Characteristics of the Buhas Roadblock

16. Ms Gwilliam and Vice-Marshal Corbett confirm that I correctly located the Buhas roadblock.[6] They also confirm that the roadblock was equipped with defensive breastwork. In particular, analysing the same satellite image of 13 January 2015[7] as the one I analysed, Gwilliam and Corbett confirm[8] the presence of the following objects at the roadblock I referred to in my First Report:

(a) Trenches for personnel about 100 m long;[9]

(b) Two army tents;[10]

(c) Protected observation posts on the roofs of buildings: I identified 2 posts, while Gwilliam and Corbett identified 1 post;[11]

(d) Dug-out positions for armoured vehicles:[12] I identified 2 pits that were intended for military vehicles based on their size and shape; Gwilliam and Corbett identified 4 such pits;[13]

(e) 9 large vehicles: I identified 8 box trucks and one off-road vehicle; Gwilliam and Corbett identified 7 trucks and 2 off-road vehicles;[14]

(f) Concrete barriers in the carriageway;

(g) Defensive breastwork;

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[6] Reply, Annex 2, Gwilliam and Corbett Report, ¶17.

[7] Reply, Annex 2, Gwilliam and Corbett Report, ¶18.

[8] *Ibid.*

[9] Reply, Annex 2, Gwilliam and Corbett Report, ¶28.

[10] Reply, Annex 2, Gwilliam and Corbett Report, ¶18, "Tents".

[11] *Ibid.*

[12] Reply, Annex 2, Gwilliam and Corbett Report, ¶18, "Pits".

[13] *Ibid.*

[14] *Ibid.*

(h) Fence perimeter.

17. I consider the differences between the results of the analysis of the satellite image of 13 January 2015 obtained by me and those obtained by Gwilliam and Corbett to be insignificant. They are caused by limitations inherent in the satellite imagery interpretation (due to the satellite imagery resolution, position of the sun and shadows, etc.).[15]

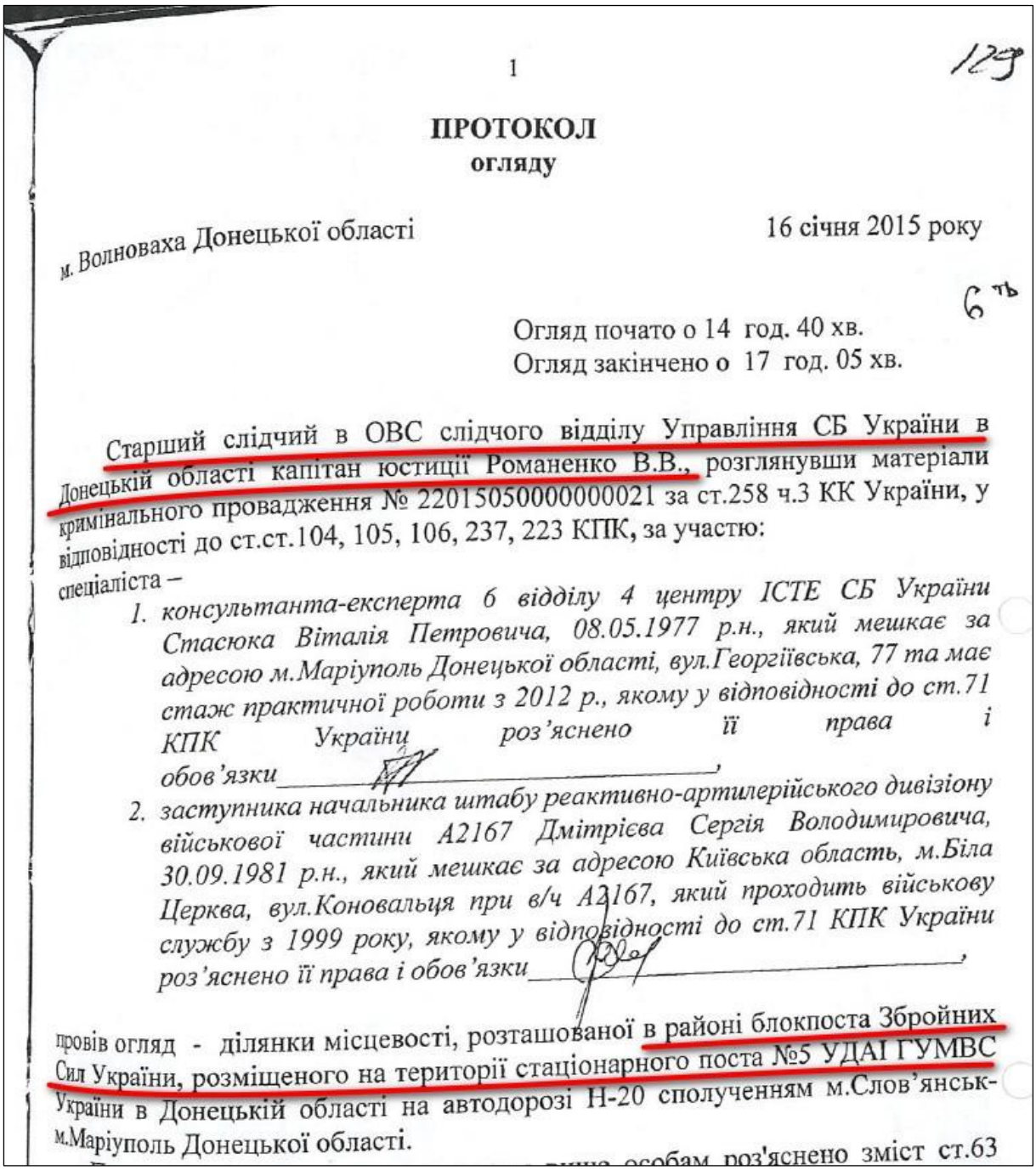
18. Gwilliam and Corbett explain the result of the imagery interpretation and conclude, unlike me, that the roadblock was not a military installation[16] and that there were no military targets within its immediate vicinity.[17] However, my conclusions regarding the characteristics of the roadblock and the equipment present there are supported by official data of the Ukrainian side, such as the Records of Roadblock Inspection by Investigators of the Security Service of Ukraine ("SBU")[18] (see, for example, Figures 1 and 2).

[15] Counter-Memorial on the ICSFT, Annex 1, First Report, ¶¶22-24.

[16] Reply, Annex 2, Gwilliam and Corbett Report, ¶19.

[17] Reply, Annex 2, Gwilliam and Corbett Report, ¶44.

[18] Memorial, Annex 87, Record of Review dated 16 January 2015 drafted by Captain of Justice V. Romanenko; *see* also Memorial, Annex 87, Record of Review dated 16 January 2015 drafted by Lieutenant Colonel of Justice O. Martynyuk.



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ПРОТОКОЛ
огляду

м. Волноваха Донецької області 16 січня 2015 року

6 тъ

Огляд почато о 14 год. 40 хв.
Огляд закінчено о 17 год. 05 хв.

Старший слідчий в ОВС слідчого відділу Управління СБ України в Донецькій області капітан юстиції Романенко В.В., розглянувши матеріали кримінального провадження № 22015050000000021 за ст.258 ч.3 КК України, у відповідності до ст.ст.104, 105, 106, 237, 223 КПК, за участю:

спеціаліста –

1. *консультанта-експерта 6 відділу 4 центру ІСТЕ СБ України Стасюка Віталія Петровича, 08.05.1977 р.н., який мешкає за адресою м.Маріуполь Донецької області, вул.Георгіївська, 77 та має стаж практичної роботи з 2012 р., якому у відповідності до ст.71 КПК України роз'яснено її права і обов'язки* _____,
2. *заступника начальника штабу реактивно-артилерійського дивізіону військової частини А2167 Дмітрієва Сергія Володимировича, 30.09.1981 р.н., який мешкає за адресою Київська область, м.Біла Церква, вул.Коновальця при в/ч А2167, який проходить військову службу з 1999 року, якому у відповідності до ст.71 КПК України роз'яснено її права і обов'язки* _____,

провів огляд - ділянки місцевості, розташованої в районі блокпоста Збройних Сил України, розміщеного на території стаціонарного поста №5 УДАІ ГУМВС України в Донецькій області на автодорозі Н-20 сполученням м.Слов'янськ-м.Маріуполь Донецької області.

особам роз'яснено зміст ст.63

Figure 1. Fragment of the Record of Review by SBU Captain V. Romanenko from Annex 87 to Ukraine's Memorial.

RECORD
of review

Volnovakha of Donetsk region — January 16, 2015

Review started at 2:40 PM — *6th*
Review ended at 5:05 PM

Senior investigator at the Internal Affairs Agency of the investigations department of the Directorate of the Security Service of Ukraine in the Donetsk region Captain of Justice V.V. Romanenko, having reviewed the materials of criminal proceedings No. 22015050000000021 under article 258, part 3 of the Criminal Code (CC) of Ukraine, in accordance with articles 104, 105, 106, 237, 223 of the Criminal Procedural Code (CPC), involving:

Specialist –

1. *Consultant-expert 6 of office 4 of the Institute of Special Technology and Judicial Expertise (ICTE) of the Security Service of Ukraine Vitaliy Petrovych Stasiuk, born May 8, 1988, who resides at the address 77 Heorhiyivska St., Donetsk region, Mariupol and who has been in service since 2012, who in accordance with article 71 of the CPC of Ukraine was explained his rights and obligations* [signature].
2. *Deputy chief of staff of the rocket launcher artillery battalion of military unit A2167 Serhiy Volodymyrovych Dmitriyev, born September 30, 1981, who resides at the address Konovaltsya St., Bila Tserkva, Kyiv region at military unit A2167, who has served in the military since 1999, who in accordance with article 71 of the CPC of Ukraine was explained his rights and obligations* [signature].

conducted a review – sections of land located near a checkpoint of the Armed Forces of Ukraine, located on the territory of fixed post No. 5 of the Department of the State Automobile Inspection of the Directorate of the Ministry of Internal Affairs of Ukraine (UDAI GUMBS) in the Donetsk region on highway H-20 connection Slov'yansk-Mariupol of the Donetsk region.

Figure 2. Fragment of the Record of Review by SBU Captain V. Romanenko from Annex 87 to Ukraine's Memorial.

19. For example, para. 21 of Gwilliam and Corbett Report states:

> "the car park area to the southwest of the checkpoint only contained civilian vehicles, with no clear markings, including six trucks and one passenger truck".

Gwilliam and Corbett say they found no evidence that those vehicles had been used to transport personnel.

20. However, the conclusion that those vehicles were specifically civilian and were not used to transport military equipment or personnel cannot be inferred from the available satellite imagery. From 0.5 m resolution satellite imagery it is possible to determine (with a certain probability) the type of vehicle (e.g. bus, truck, passenger car, off-road vehicle, etc.). With few exceptions, without additional information, it is impossible to determine the nature of the use of the vehicles or which of the trucks shown in the satellite images (mentioned by Gwilliam and Corbett) were used to transport civilian goods and which were used to transport personnel, military equipment and/or ammunition.

21. In this case, Gwilliam and Corbett erroneously interpret the lack of additional information that would allow them to draw a categorical conclusion as to the nature of the use of the equipment in favour of their version that the roadblock was civilian. At the same time, the experts do not provide evidence allowing them to argue that the trucks could not have been used and/or were not used for military purposes (such as transporting military supplies or personnel).

22. In para. 26 of their Report, Gwilliam and Corbett claim that according to their analysis, the presence of a BRDM-2 armoured reconnaissance vehicle and a MT-12 anti-tank gun in the satellite image of the Buhas roadblock dated 13 January 2015 is "not evident".[19] First of all, I never claimed that such equipment was present specifically in the 13 January 2015 image of the Buhas roadblock taken at 09:08 UTC. I merely stated the fact that images of the Buhas roadblock from open sources show a BRDM-2 armoured reconnaissance vehicle and a MT-12 anti-tank gun as well as other military equipment (a NSV large-calibre machine gun, RPG-7 grenade launcher with a grenade, a bag for the grenade launcher RPG-7, and an automatic grenade launcher, presumably AGS-17).[20]

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[19] Reply, Annex 2, Gwilliam and Corbett Report, ¶26, Figure 6, "Not evident".

[20] Counter-Memorial on the ICSFT, Annex 1, First Report, ¶¶43-46.

23. In any event, the experts Gwilliam and Corbett did not question my conclusions that the military equipment in question had been photographed in the relevant parts of the Buhas roadblock.[21] They only stressed that two photos were not taken on the day of the attack (13 January 2015).

24. That some military equipment did not appear in the satellite image of 13 January 2015 can be explained by the fact that this was mobile equipment (in particular, the BRDM-2 and the MT-12 anti-tank gun), which could have been in a different location at the time when the image was taken (including being used in military missions). However, the fact that not all military equipment was present in the satellite image of the roadblock does not disprove that the equipment was there at another time.

ii. Gwilliam and Corbett's Comparison of the Buhas Roadblock with the DPR Roadblock near Olenivka

25. Ms Gwilliam and Air Vice-Marshal Corbett compare the Ukrainian Buhas roadblock as of 13 January 2015 and the DPR roadblock in Olenivka as of 29 April 2016 (see Figure 7 of Gwilliam and Corbett Report). Based on the comparison, the experts refer to indications that the DPR roadblock in Olenivka was a more fortified position,[22] implying that the shelling of the roadblock in Olenivka by the UAF was justified.

26. In my opinion, the comparison of these two roadblocks was made incorrectly. It would be correct to compare either the Buhas roadblock and the roadblock in Olenivka as of 13 January 2015 (see Figure 4), or the roadblock in Olenivka and the UAF roadblock Berezovoye, which as of 29 April 2016 was used by Ukraine as an entry point for those crossing the contact line. That is, when comparing objects, experts should consider comparable objects (roadblocks) that exist at the same time, at the same stage of the conflict.

27. For the purposes of this comparison, I decided to use "WorldView-3" imagery of 21 February 2015. Figure 3 shows the results of comparing the Buhas roadblock (UAF) and the Olenivka roadblock (DPR) as of 21 February 2015.[23]

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[21] Reply, Annex 2, Gwilliam and Corbett Report, ¶26.

[22] Reply, Annex 2, Gwilliam and Corbett Report, ¶¶27-30.

[23] Satellite imagery of 13 January 2015 did not yet show any clear signs of the checkpoint.

28. In February 2015, the checkpoint in Olenivka was under construction, which is clearly visible in the images. There were virtually no trenches or dug-out positions for armoured vehicles at the checkpoint in Olenivka. There was a DPR strongpoint 400m further southeast, which had already existed by the time the construction of the checkpoint began, meaning that the checkpoint was being constructed at a fairly considerable distance from the existing military position (see Figure 4).

29. On the contrary, it can be seen from the image of the Buhas roadblock that both the entry point for civilians crossing the contact line and the locations of military formations (tents for personnel) and means of protection for personnel and equipment (trenches and dug-out positions for armoured vehicles) are part of a single facility: the military infrastructure is located in close proximity to the checkpoint.

Figure 3. Results of comparing Buhas (UAF) and Olenivka (DPR) roadblocks as of 21 February 2015.

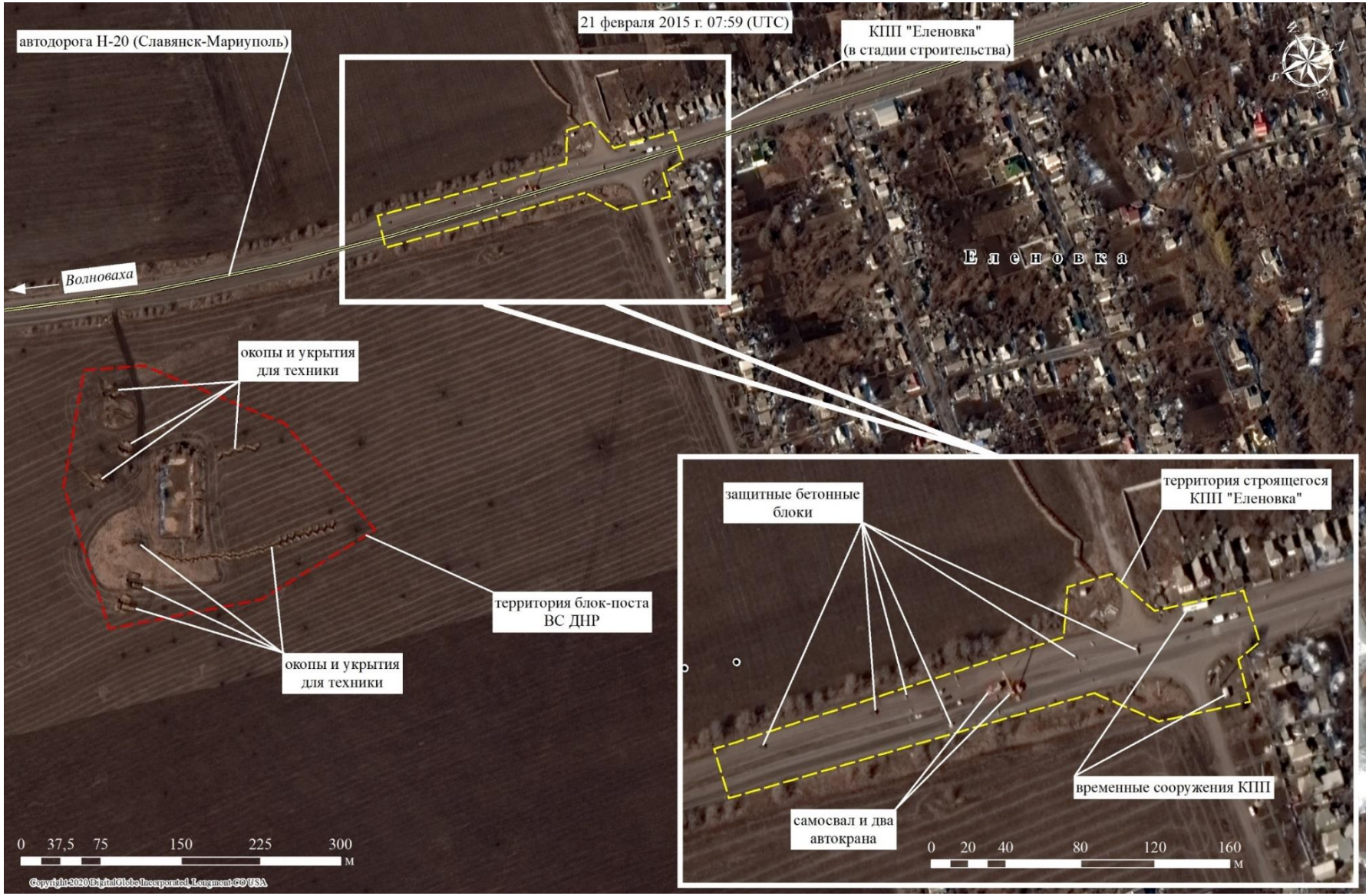
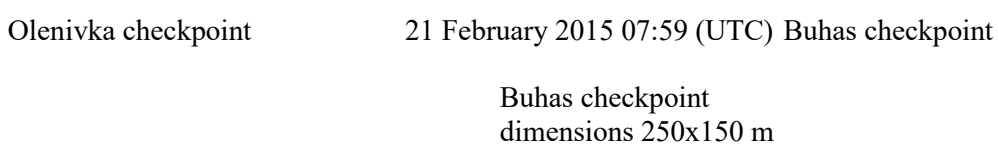
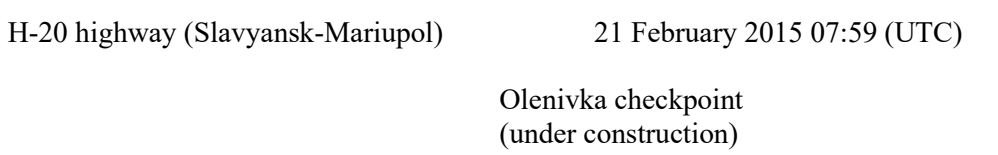


Figure 4. Olenivka roadblock (DPR) as of 21 February 2015.

* Figure 3



* Figure 4



30. If we compare the DPR checkpoint in Olenivka as of April 2016 (i.e. the period for which Gwilliam and Corbett analyse it), it would be appropriate to compare it with the Ukrainian entry point in the village of Berezovoye for civilians crossing the contact line.[24] This checkpoint had been in operation since June 2015, as can be clearly seen in open-source images (GoogleEarth), and was located on the same H-20 highway as the DPR checkpoint in Olenivka.

31. It can be seen from a satellite image of this location dated 8 April 2016 (GoogleEarth) that the crossing point for civilians and the UAF roadblock were located separately (see Figure 5). In other words, when constructing the new crossing point in Berezovoye, Ukraine (as well as the DPR in Olenivka) chose to separate the military facility from the

[24] Name according to GoogleEarth; position: 47°46'1.45 "N, 37°35'27.59 "E.

civilian facility, thereby refusing to use the same facility as both a military roadblock and a civilian vehicle checkpoint (unlike the Buhas roadblock in January 2015).

32. As of 8 April 2016, 16 prepared positions for armoured vehicles, more than 1,500 metres of trenches, one armoured personnel carrier, and signs of the deployment of military units in the forest belts were identified at the Ukrainian roadblock in the village of Berezovoye. These signs are comparable to those described by Gwilliam and Corbett in relation to the DPR roadblock in Olenivka.[25]

33. Thus, when comparing facilities with the same function (entry points for civilians crossing the contact line with nearby fortified roadblocks) and exist at the same time (April 2016), we see roughly the same composition of facilities and roughly the same dimensions and engineering equipment.

[25] Reply, Annex 2, Gwilliam and Corbett Report, ¶¶27-30.

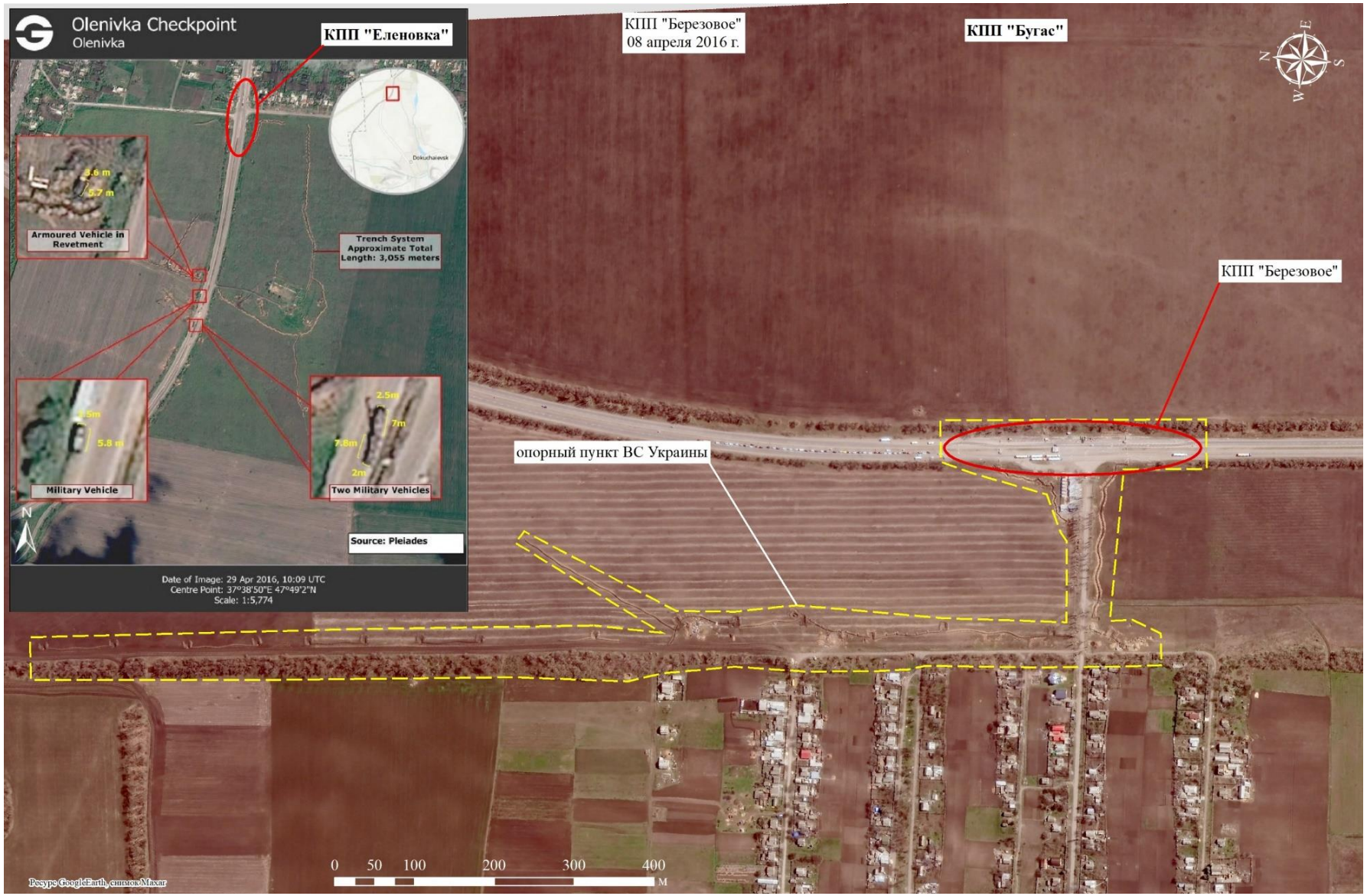


Figure 5. Results of the comparison of Berezovoye (UAF) and Olenivka (DPR) roadblocks as of 08 April 2016.

iii. Gwilliam and Corbett's Analysis of the Buhas Roadblock Shelling Impact

34. Paras. 31-33 and Figure 9 of Gwilliam and Corbett Report contain the results of their analysis of the Buhas roadblock shelling impact. The experts analysed an image dated 21 February 2015 (07:59 UTC) and, in Figure 9 of the expert report, they made markings in red dots, which appear to correspond to the craters they found. However, nowhere in the text do I find the total number of craters identified by the experts.

35. General Brown in his first report did not specify the number of the craters he used in his analysis.[26] It appears from Brown Second Report that he had conflicting data about 50 and 88 craters when preparing his first report.[27] In his second report, General Brown assumed that Gwilliam and Corbett had found 92 craters.[28] Nevertheless, it is not clear to me how General Brown came to the conclusion about 92 craters. My calculations based on Figure 9 of Gwilliam and Corbett Report show that the experts found a total of 87 craters.[29] This almost corresponds to the number of craters stated by Ukraine: 88.[30] However, the location of the craters in Figure 9 of Gwilliam and Corbett Report differs significantly from the location of the craters on map 2 on page 44 of Ukraine's Memorial and on the map in Annex 89 to Ukraine's Memorial.[31]

36. In my opinion, Ms. Gwilliam and Air Vice-Marshal Corbett made a gross error in their analysis, which subsequently affected the conclusions of Brown Second Report. The objects north of the Buhas roadblock (17 red dots) that Gwilliam and Corbett thought were craters are not craters (Figure 6). The exact same number and configuration of objects in the form of "bright spots" in the field where agricultural activity was taking place can be seen in the publicly available satellite images of the Buhas roadblock taken before the shelling, , in particular the GoogleEarth images taken on 11, 14 and 25 October

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[26] Memorial, Annex 11, The First Expert Report by Lieutenant General Christopher Brown ("Brown First Report"), ¶25.

[27] Reply, Annex 1, Brown Second Report, ¶15 (a) (iii).

[28] *Ibid.*

[29] There may be a slight error in my calculation, as the image in Figure 9 of Gwilliam and Corbett Report is low resolution and somewhat blurred.

[30] Memorial, ¶84; Memorial, Annex 87, Record of Inspection dated 16 January 2015 prepared by Lieutenant Colonel of Justice O. V. Martynyuk.

[31] For more details, *See* ¶40 et seq. and Figure 9 of this Report.

2014. I can assume with a high degree of certainty that these bright spots are traces of agricultural activities in 2014 (Figure 7). In any case, the possibility that these 17 objects are craters from the shelling of the Buhas roadblock on 13 January 2015 is excluded, as the same bright spots in the same number and configuration are present on earlier satellite images.

37. Consequently, the results of the analysis provided by Gwilliam and Corbett are incorrect. It was this data, however, that formed the basis of General Brown's conclusions about the shape and size of the fall of shot ellipse pertaining to the shelling of the Buhas roadblock and about the location of the alleged missile launch site. Consequently, General Brown's related conclusions are also incorrect (Figure 8).

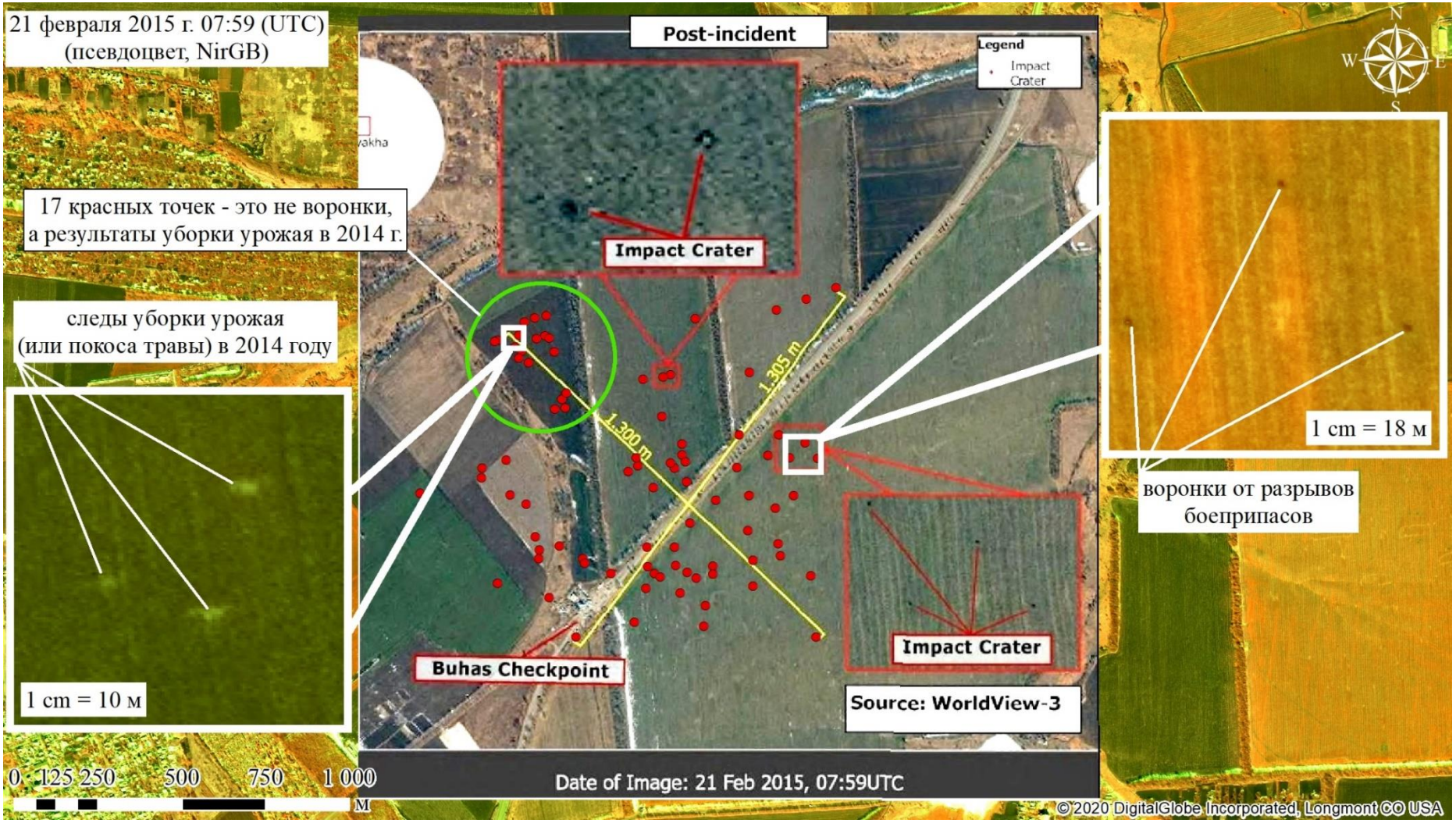

Figure 6. Results of the analysis of Figure 9 from Gwilliam and Corbett Report.

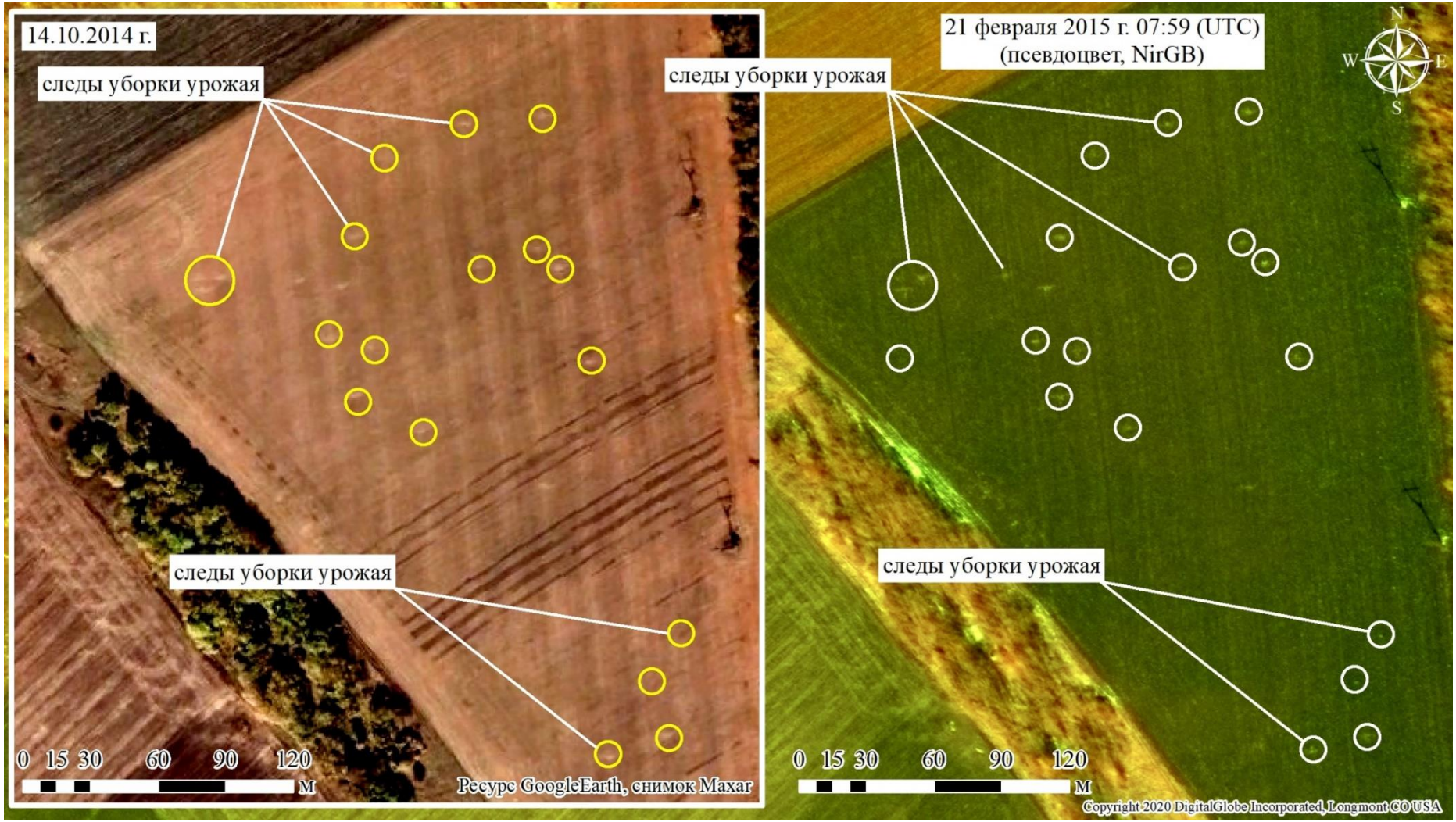

Figure 7. Results of comparing images of 14 October 2014 and 21 February 2015.

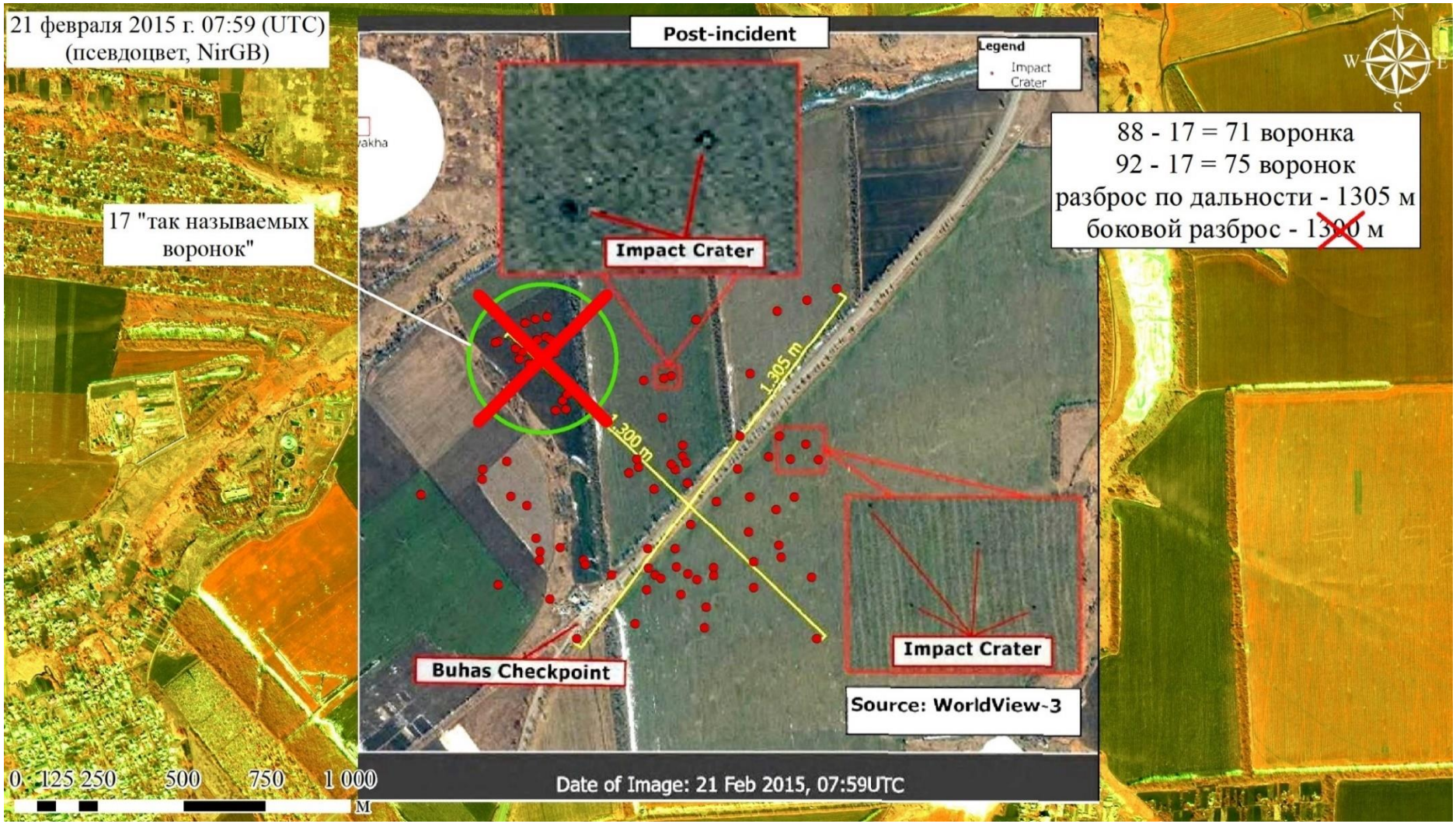

Figure 8. Results of the analysis of Figure 9 from Gwilliam and Corbett Report.

Figure 6*:

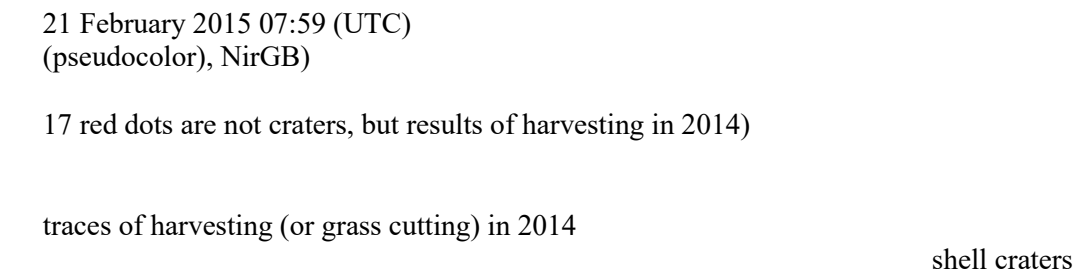

Figure 7*:

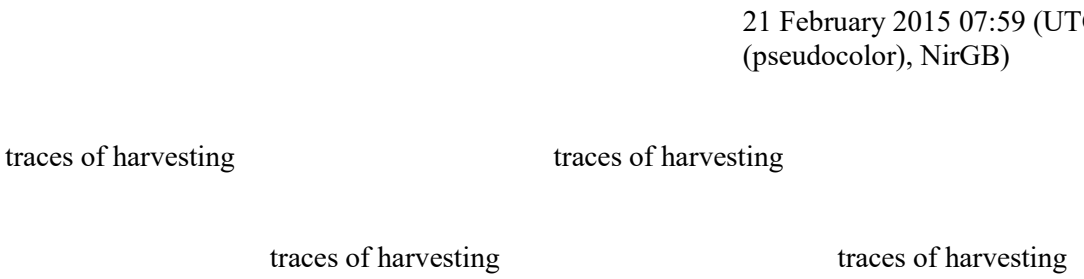

Figure 8*:

iv. <u>Potential Missile Launch Sites Identified by Gwilliam and Corbett</u>

38. In para. 34 of Gwilliam and Corbett Report, the experts come to the same conclusion I did after analysing all the information available to me and satellite imagery, both commercial (MDA/DigitalGlobe, Airbus Defence & Space, SIIS, Space View) and publicly available (GoogleEarth, Yandex): there is not a single image (at least, I am not aware of it) that would allow identifying the location from which the attack on Buhas roadblock was launched.

39. The other conclusions drawn by Gwilliam and Corbett in paras. 34-43 of the report, such as:

> "...the imagery evidence appears consistent with General Brown's conclusions..." (para. 34 of Gwilliam and Corbett Report),
>
> "... circumstantially the proximity to DPR Strongpoint No. 1 … is of interest..." (para. 38 of Gwilliam and Corbett Report),
>
> "A probable BM-21 was identified on imagery dated 23 February 2015, travelling east into the town of Dokuchayevsk... This aligns with General Brown's assessment that BM-21 systems were operating in Dokuchayevsk around the period of the attack..." (para. 39 of Gwilliam and Corbett Report),

and other similar conclusions are overly general and unspecific and do not shed any light on the Buhas roadblock incident.

40. The fact that both opposing parties (DPR and UAF) had BM-21 Grad MLRS launchers in January 2015 is well-known and has not been denied by anyone. Both parties repeatedly used them, which is supported by numerous photos, videos and other evidence. The experts were unable to locate the missiles launch site that hit the Buhas roadblock. The possible missiles launch sites given in the report cannot be definitively identified as those from which the Buhas roadblock was fired and Gwilliam and Corbett do not do so.

41. For example, Figure 11 of Gwilliam and Corbett Report shows a sector of possible launch site for BM-21 Grad MLRS missiles, which is based on the findings of Brown First Report.

42. In Figure 9 I have illustrated the data sets from which the experts make conclusion about the possible areas where Grads were deployed. I have used the data provided in Annex 89 to Ukraine's Memorial[32] and on page 44 of Ukraine's Memorial and in Figure 9 of Gwilliam and Corbett Report.

[32] Memorial, Annex 89, Map showing shell craters around the Buhas checkpoint, which were marked by investigators after inspecting the crime scene (dated 20 January 2015).

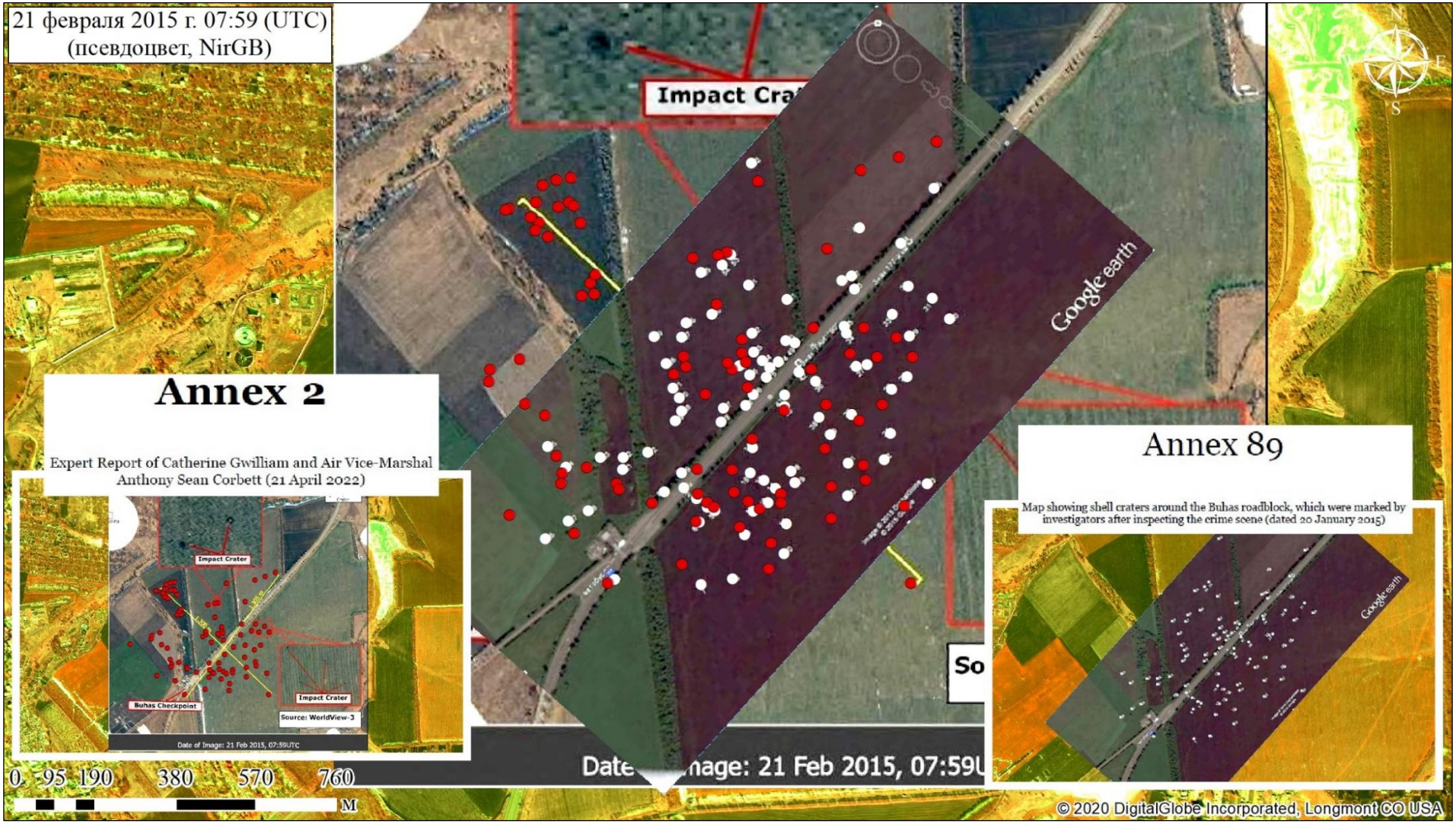

Figure 9. Results of the analysis of Figure 9 from Gwilliam and Corbett Report.

43. Comparing data from Brown First Report and those from Gwilliam and Corbett Report, it is clear that the number and location of shell craters near the Buhas roadblock change from report to report. First, there were 50 craters,[33] then 88,[34] and eventually General Brown uses 92 craters.[35] However, the conclusion about the possible area of origin for the attack, including direction and distance from the roadblock (see Figure 11 of Gwilliam and Corbett Report), remains unchanged, despite the change in the basic data.

44. For example, in para. 38 of Gwilliam and Corbett Report, the experts state:

> "...To the east of the area, in a field on the eastern side of the T0509 road in vicinity of position 47°46'20"N, 37°39'01"E is a large scorched area, within General Brown's assessed 19.4 to 19.8 km range from the Buhas checkpoint.... **While the cause of this particular scorched area cannot be determined based on the imagery alone, and it is possible that this is unrelated to DPR MLRS activity...**".

45. Gwilliam and Corbett note that the cause of this scorched area is unknown, and that the scorched area can be unrelated to MLRS activity. Nevertheless, the experts placed this area on the map in Figure 11 of their report, within the region of possible use of BM-21 Grad MLRS, which occurred on 13 January 2015. Thus, Gwilliam and Corbett refer to this location in their report as one of the possible missiles launch sites from MLRS against the Buhas roadblock on 13 January 2015.

46. However, a rudimentary analysis of Maxar (formerly Digital Globe) image database can easily establish that the scorched area of land shown in Figure 12 of Gwilliam and Corbett Report formed between 17 and 21 February 2015 and can have nothing to do with the events of 13 January 2015.

47. Comparing the conclusions from Brown's and Gwilliam and Corbett's reports, I realise that this point with a scorched land area was not chosen by chance - it fits perfectly with General Brown's conclusion that the distance to the firing point should be about 19.4 - 19.8 km. In other words, Gwilliam and Corbett were trying to find a point that would match the input data obtained from General Brown. This is a serious methodological failure in the study of satellite imagery, which makes it possible to question the correctness of their analysis.

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[33] Reply, Annex 1, Brown Second Report, ¶15 (a) (iii).

[34] *Ibid.*

[35] *Ibid.* – General Brown assumes that Gwilliam and Corbett found 92 craters.

v. The Condition of the Buhas Roadblock in 2018

48. General Brown mentioned in his second report that he had visited the Buhas roadblock in 2018. According to the expert, the roadblock did not change much and was still unequipped for military tasks.[36]

49. General Brown's statement is untrue. As a result of the interpretation of all satellite imagery from 2015 to 2018 inclusive, available on GoogleEarth, I have found that by 2018, i.e. at the time of General Brown's visit to the Buhas roadblock (Figures 10 and 11):

    (a) the area of the roadblock had increased by 42%;

    (b) concrete blocks on the carriageway designed to reduce the speed of vehicles on both sides of the roadblock had been removed;

    (c) the length of trenches for personnel had increased eightfold (up to 800 m);

    (d) observation posts made of concrete blocks and sandbags had been dismantled;

    (e) two army tents for personnel had been dismantled;

    (f) trucks and cars observed at the roadblock on 13 January 2015 were not present.

50. It can therefore be concluded that at the time of General Brown's visit to the Buhas roadblock in 2018 the facilities of the checkpoint for civilians crossing the line of contact between the opposing sides had been dismantled. The military component of the Buhas roadblock had been increased (at the time of General Brown's 2018 visit) as compared to January 2015. This proves once again that the primary purpose of the Buhas roadblock in 2015 was military and that the passage of civilians across the contact line was of secondary importance.

[36] Reply, Annex 1, Brown Second Report, ¶10.

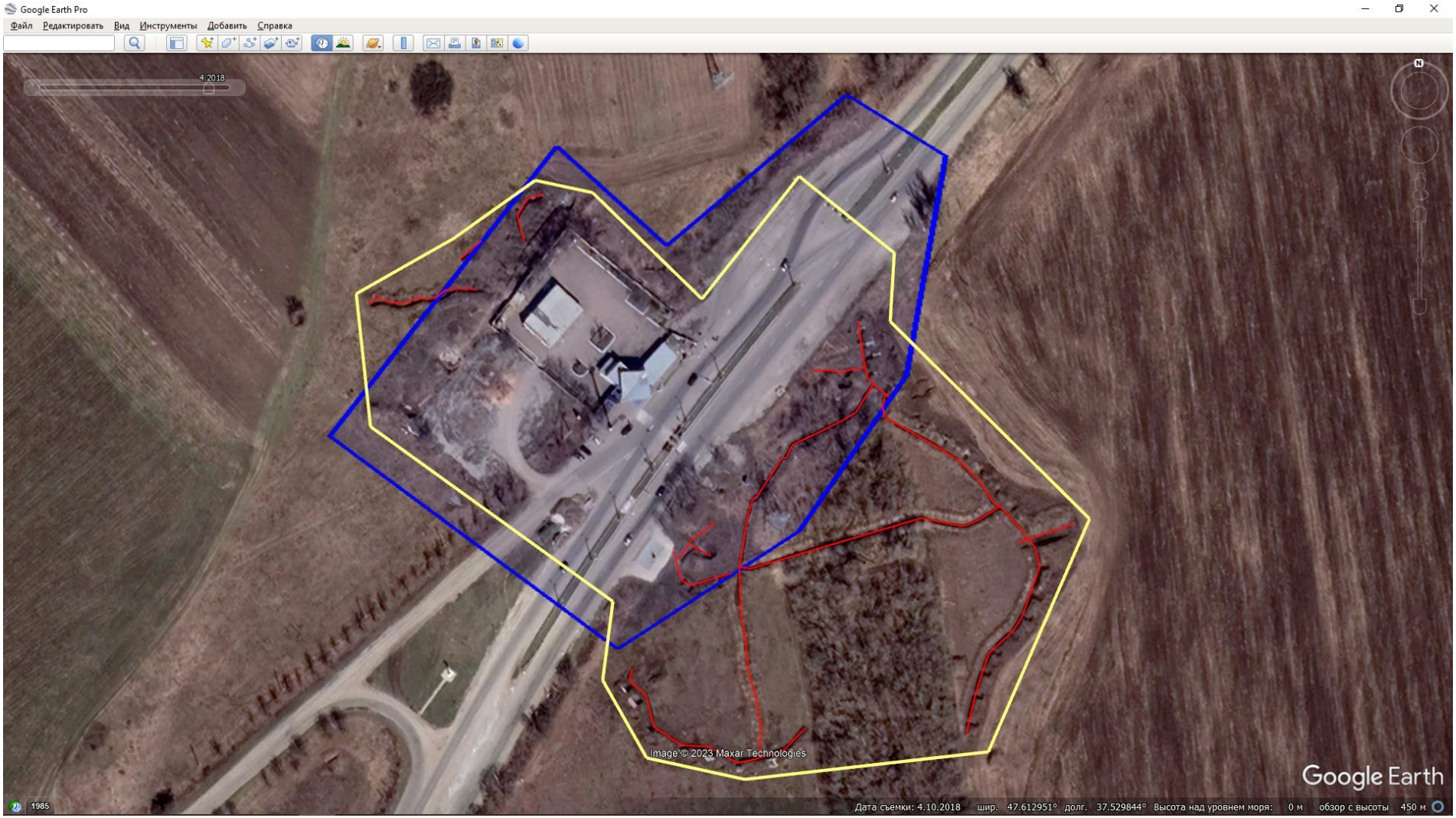


Figure 10: Buhas roadblock as of 10 April 2018 (blue outline shows Buhas roadblock area on 13 January 2015; yellow outline shows Buhas roadblock area in 2018).

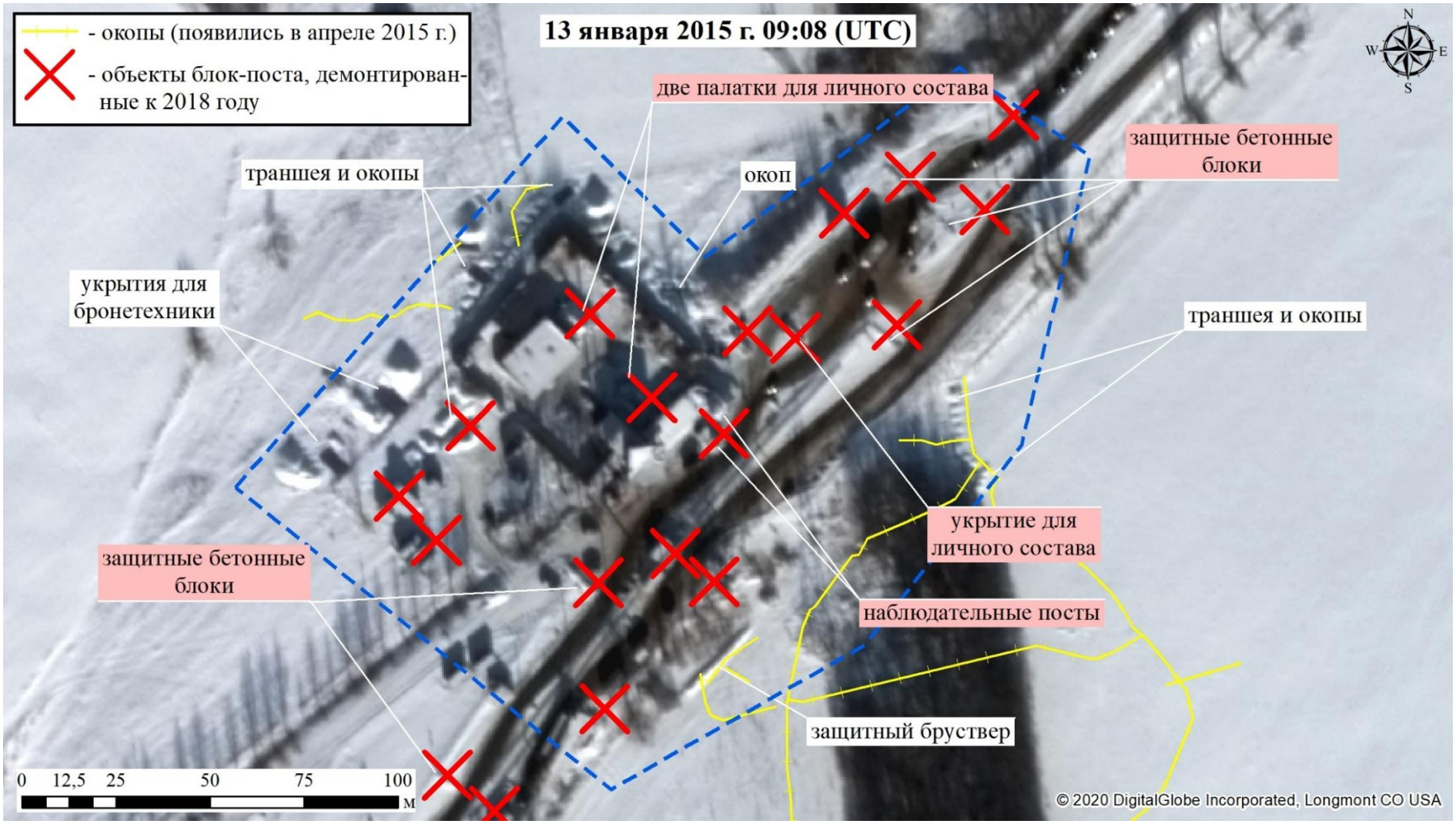
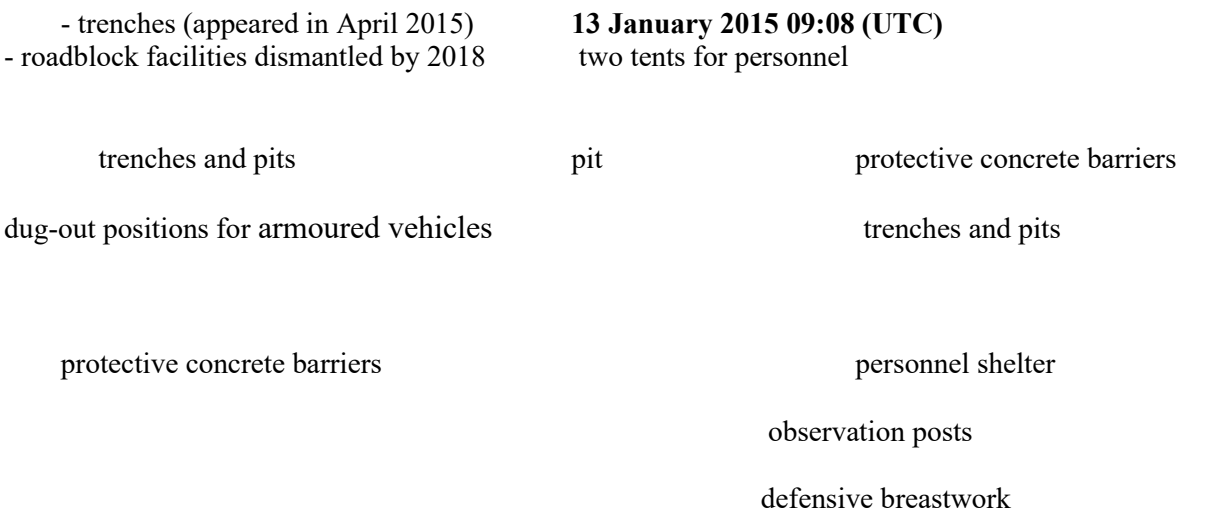


Figure 11: Buhas roadblock facilities that were dismantled or constructed as of 2018 (pink fill indicates dismantled facilities; white fill indicates new facilities).

Figure 11*:



vi. <u>Existence of Military Operations Near the Buhas Roadblock</u>

51. General Brown states that the data I cited in the First Report supports his point that there was no military activity near the Buhas roadblock at the time the shelling took place.[37] Brown refers to the absence of artillery shell craters in the immediate vicinity of the roadblock.

52. I believe that General Brown is deliberately manipulating the facts. His claim that the conduct of hostilities is confirmed by the mere presence of shell craters is not correct. In paragraph 4 and in Tables 2 and 4 and in Figures 18-24 of my First Report, there is a detailed analysis of the traces of fighting in the area of the roadblock.

53. For example, Figures 18 and 19 of my First Report show the positions of the UAF's Giatsint-B artillery battery with traces of firing and Figure 19 shows the position of the UAF's Giatsint-B artillery battery ready for firing. These positions were not "on the front line", but "somewhat in the depths of the defence" of the UAF, only 5.5-6 km east of the Buhas roadblock. This, actually, is also reflected in Brown Second Report, Figure 2, and in Gwilliam and Corbett Report, Figure 11 "Overview of the Tactical Situation in the Volnovakha Region" (see Figure 12 below). The same can be claimed with regard to the area of deployment of four MSTA-S self-propelled artillery systems, which were located just over 4 km north of the Buhas roadblock (Figure 12).

[37] Reply, Annex 1, Brown Second Report, ¶11(a).

54. In other words, there were UAF's artillery positions near the Buhas roadblock from which the DPR was attacked. I provided data on these artillery positions in my First Report. This refutes General Brown's assertion that there was no military activity near the Buhas roadblock.

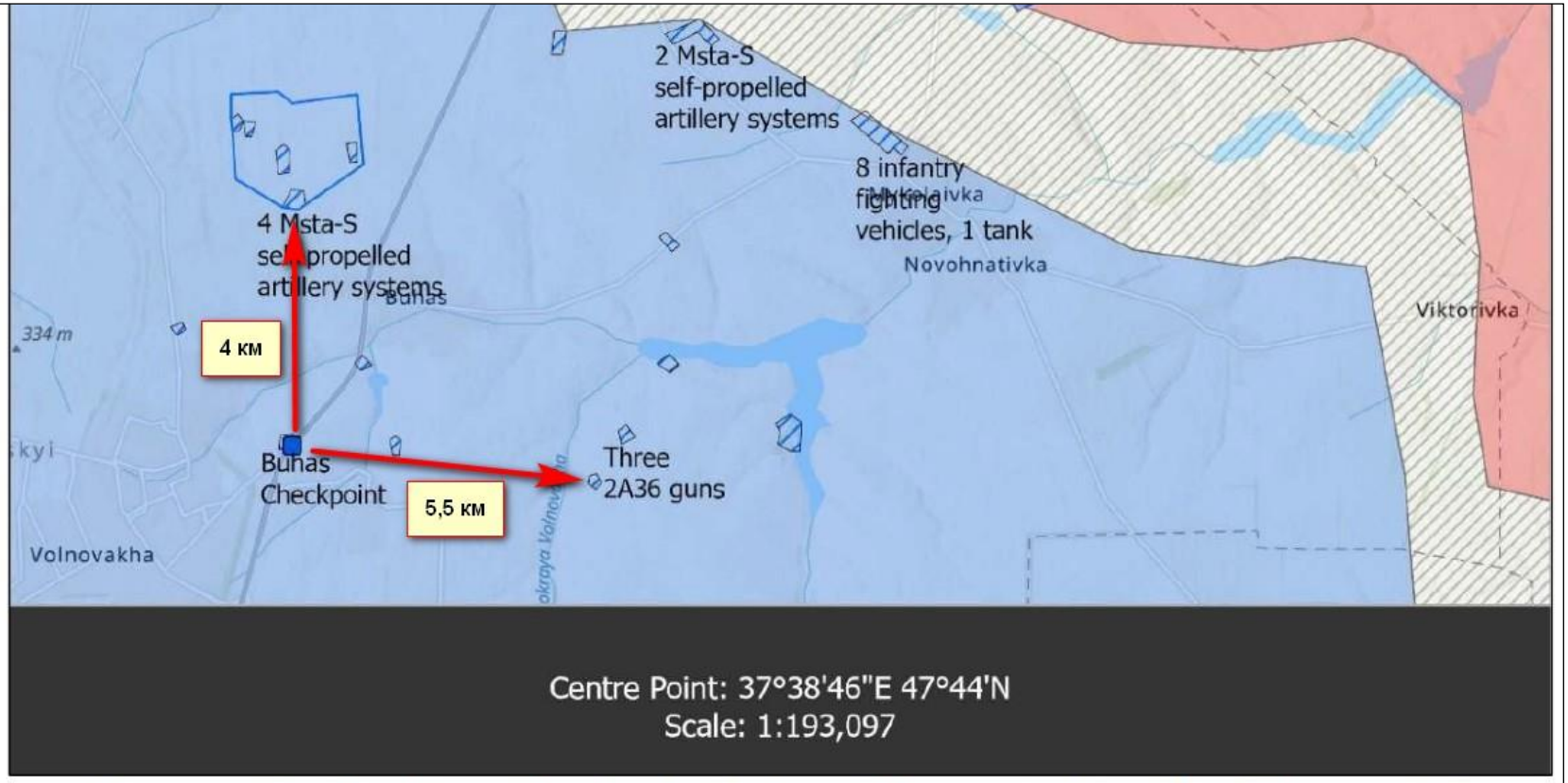


Figure 2. Tactical situation in the Volnovakha sector (Geollect Figure 11).[11]

[11] Reproduced from Gwilliam and Corbett Report, Figure 11 (Ukraine's Reply, Annex 2).

Figure 12: Fragment of Figure 2 from Brown Second Report.

vii. Conclusions

55. The data on the number and location of craters contained in Gwilliam and Corbett Report, on the basis of which General Brown draws his conclusions about the missile launch sites, is incorrect.

56. The potential position from which the Buhas roadblock could have been fired upon, and which is shown in Figure 11 of Gwilliam and Corbett Report as "Scorch Mark" is is not such a position.

57. At the time of General Brown's visit to the Buhas roadblock in 2018, the facilities of the checkpoint for civilians crossing the line of contact between the opposing sides had been dismantled. The military component of the Buhas roadblock had been increased by the time of General Brown's visit in 2018 (as compared to January 2015). This proves once again that the main purpose of the Buhas roadblock in 2015 was military one.

58. In the area of the Buhas roadblock there were UAF's artillery positions, from which attacks were launched against the DPR. This indicates that active military activities against DPR forces were taking place deep within the UAF lines.

B. KRAMATORSK AIRFIELD SHELLING - 10 FEBRUARY 2015

59. In paras. 77-86 of Gwilliam and Corbett Report, the experts describe two "possible firing positions" which could have been used for attacks on the Kramatorsk airfield from a BM-30 Smerch MLRS on 10 February 2015. The experts' conclusions are incorrect. The positions described have nothing to do with the shelling in question. Neither of these positions shows any signs that would allow one to conclude that they were used to shell the Kramatorsk airfield from a BM-30 Smerch MLRS on 10 February 2015.

i. Analysis of the First "Potential Firing Position"

60. Satellite images of the first of the two "possible firing positions" are provided in Figures 43 and 44 of Gwilliam and Corbett Report, and their analysis is given in paras. 80-82 of Gwilliam and Corbett Report. The experts base their conclusion regarding the first firing

position on the track width (3 metres) measured by them[38] and on the presence of marks of "MLRS firing activity". My analysis does not support either of these conclusions.

61. I can assume with a high degree of probability that the tyre tracks on the satellite image of the first position in question[39] are in fact not those of BM-30 "Smerch" deploy, but of BM-21 "Grad" deploy.

62. First, in Figures 43 and 44 of Gwilliam and Corbett Report the experts mark only four out of five "likely firing positions", ignoring one of them.[40] In Figure 44, Gwilliam and Corbett even draw a line labelled "40 m" directly across the central (third) position, as if masking it with their textual markings (see Figure 13 below). I cannot attribute this error to anything other than a distortion of the description of this firing position.

[38] Reply, Annex 2, Gwilliam and Corbett Report, ¶81.

[39] Reply, Annex 2, Gwilliam and Corbett Report, Figures 43 and 44.

[40] *Ibid.*, "Likely Firing Positions".

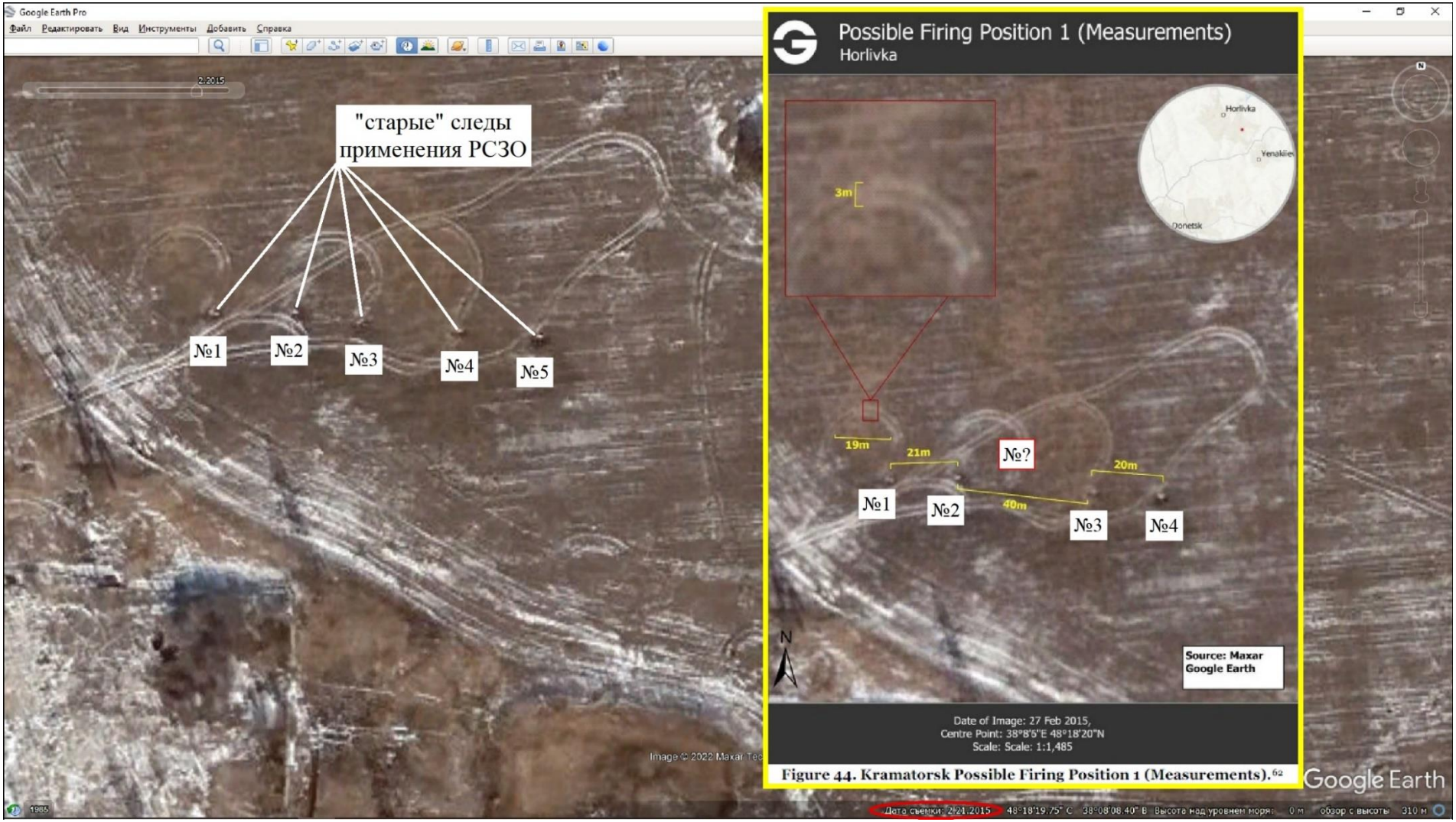


Figure 13. "Possible firing position 1" in the image dated 21 February 2015. Example of misrepresentation of information.

Figure 13*:

"old" traces of MLRS deploy

63. Secondly, para. 82 and Figure 44 of Gwilliam and Corbett Report indicate the width of the tracks from the wheels of vehicles measured by them in the images posted on GoogleEarth. Instead of giving the track width as accurately as possible, the experts rounded up the width to a whole number (3 metres, no decimal point). However, in Figures 5, 7, 13 and 15 of Gwilliam and Corbett Report all measurements are given with decimal places (e.g. "5.1 metres", "1.8 metres", etc.). This can be explained by the desire to "fit" the width of the tracks to their own conclusion that this position can be related to the firing from BM-30 "Smerch". After all, the experts further state: "The width of a BM-30 system is 3.1 metres".[41] I measured the track width on the same image in GoogleEarth. The track width I got was 2.76 m, or 2.8 m if rounded to tenths. (Figure 14).

[41] Reply, Annex 2, Gwilliam and Corbett Report, ¶82, "Width of a BM-30 system is 3.1 metres".

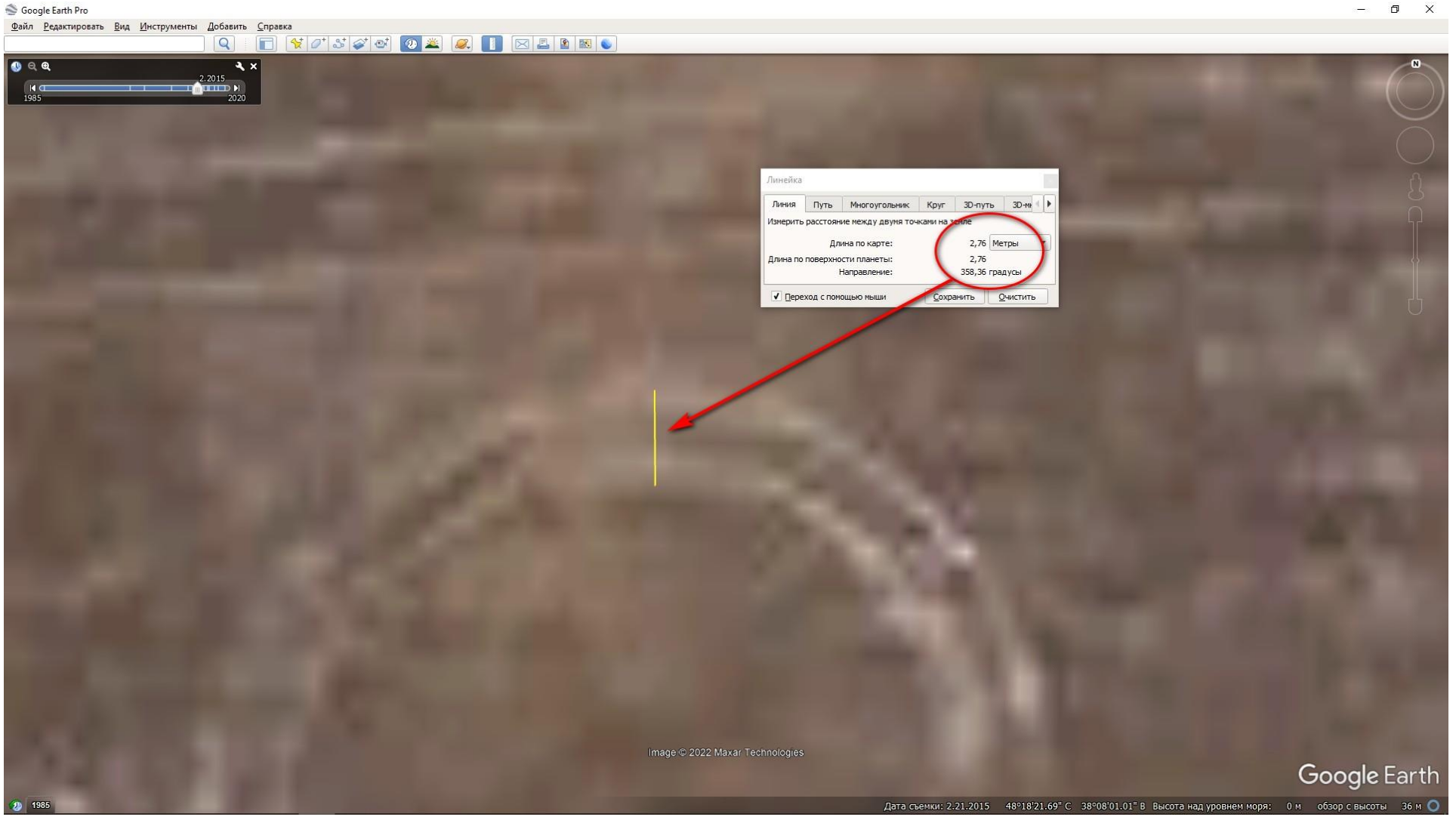


Figure 14. Results of measurement of the track width in GoogleEarth image of 21 February 2015.

Figure 14*:

Line	Path	Polygon	Circle	3D-path	3D-polygon
To measure the distance between two points on the ground Length on the map: 2.76 meters Length on the planet surface: 2.76 Direction: 358.36 degrees					

64. Third, the shape of the vehicle tracks in Figures 43 and 44 of Gwilliam and Corbett Report does not match the shape of the tracks of a BM-30 "Smerch". The BM-30 "Smerch" units have 8x8 wheel configuration and the two front axles are steerable (see Figure 15).[42] When a U-turn is made, the tracks from the wheels of the two front axles and the two rear axles are not aligned. The wheel tracks cross each other on U-turns. In Figures 43 and 44 of Gwilliam and Corbett Report and in Figure 16 below, we see that the tracks from the wheels of vehicles do not cross each other on turns. Consequently, other types of MLRS were deployed at this location, not a BM-30 "Smerch".

Figure 15. Photo of a BM-30 Smerch MLRS

[42] Dreamstime.com, *BM-30 Smerch* (10 September 2016), available at: https://ru.dreamstime.com/редакционное-изображение-bm-smerch-image80759060 (Exhibit A).

Figure 16. Area of MLRS deploy in the image dated 21 February 2015

Figure 16*: the wheel tracks do not cross each other on U-turns

65. Fourthly, I analysed the satellite imagery of Horlivka taken by WorldView-2 satellite on 12 February 2015 at 09:00 (UTC), i.e. 2 days after the shelling of the Kramatorsk airfield. I compared the "possible firing position 1" according to Gwilliam and Corbett with the area of recent deploy of MLRS near Horlivka (see Figure 17 below).

66. The results of the analysis suggest that the "possible firing position 1" referred to in Gwilliam and Corbett's report is most likely the site of a BM-21 "Grad" MLRS deploy. In my opinion, and based on my experience of interpreting satellite imagery, three MLRS vehicles were deployed once (positions 1, 2 and 3 in Figure 16) and two vehicles were deployed another time (positions 4 and 5 in Figure 16). The exact azimuth of the firing is impossible to determine due to the absence of scorch marks (erased by time and due to weather).

67. My conclusion that this was the location where a BM-21 Grad MLRS was deployed is supported by the small size of the launch traces (land disturbance caused by rocket engines). If a BM-30 "Smerch" had been deployed there, the size of the launch traces (crater formed by the rocket engines behind the rocket launcher) would have been significantly larger.

68. Fifthly, the absence of drop-shaped, "tail-like" blackish scorch marks (such as those in Figure 17) suggests that a MLRS at this location was deployed not 2 days ago (10 February 2015), but much earlier.

69. For illustration purposes, I provide in the upper part of Figure 17 an example of a satellite image showing a location where there are "fresh" signs of missile launches from a MLRS. Such signs are usually drop-shaped, "tail-like" scorch marks (black spots with a characteristic shape, see the upper part of Figure 17). The lower part of Figure 17 contains an image of a position with "old" signs of MLRS rocket launches from Gwilliam and Corbett Report.

70. The area of the MLRS deploy which is shown for illustration purposes in the upper part of Figure 17 has an approximate firing azimuth of 90° - 111° (i.e. to the east) and, therefore, cannot be the point from which the Kramatorsk airfield was shelled on 10 February 2015, which is north-west of Horlivka.

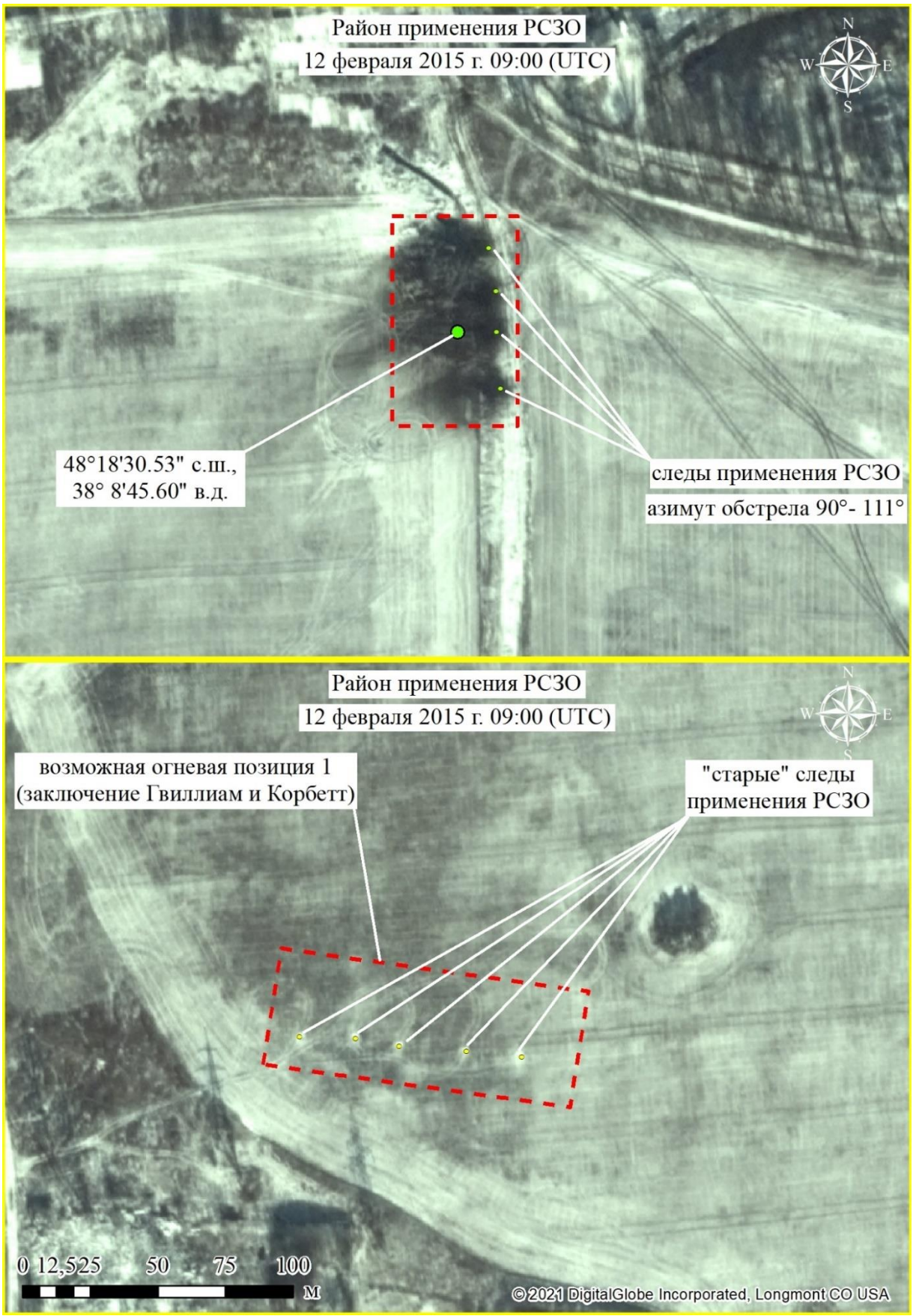
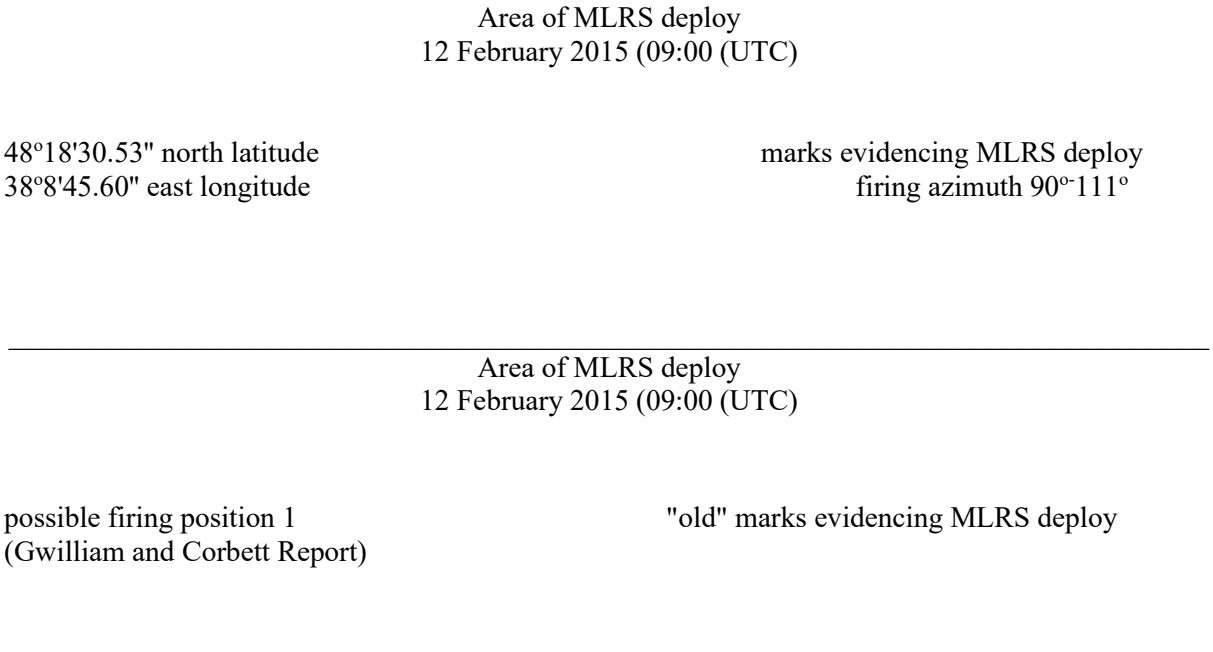


Figure 17: Example of MLRS missile launch sites "with evidence of deploy ("fresh") and without traces of deploy ("old").

Figure 17*:


Area of MLRS deploy
12 February 2015 (09:00 (UTC)
48°18'30.53" north latitude
38°8'45.60" east longitude
marks evidencing MLRS deploy
firing azimuth 90°-111°
Area of MLRS deploy
12 February 2015 (09:00 (UTC)
possible firing position 1
(Gwilliam and Corbett Report)
"old" marks evidencing MLRS deploy

71. Sixth, para. 79 of Gwilliam and Corbett Report states the following:

> "... Post-incident World View 2 imagery from 13 February 2015 and Maxar Google Earth imagery from 27 February 2015 was the nearest available imagery to analyse after the attack."

This is not true. There may have been a technical error, which nevertheless needs to be pointed out. The images of Horlivka nearest to the date of Kramatorsk airfield shelling are from 12 February 2015 (WorldView-2 satellite imagery). According to Maxar's database, on 13 February 2015, GeoEye-1 satellite was taking pictures (see Figure 18).

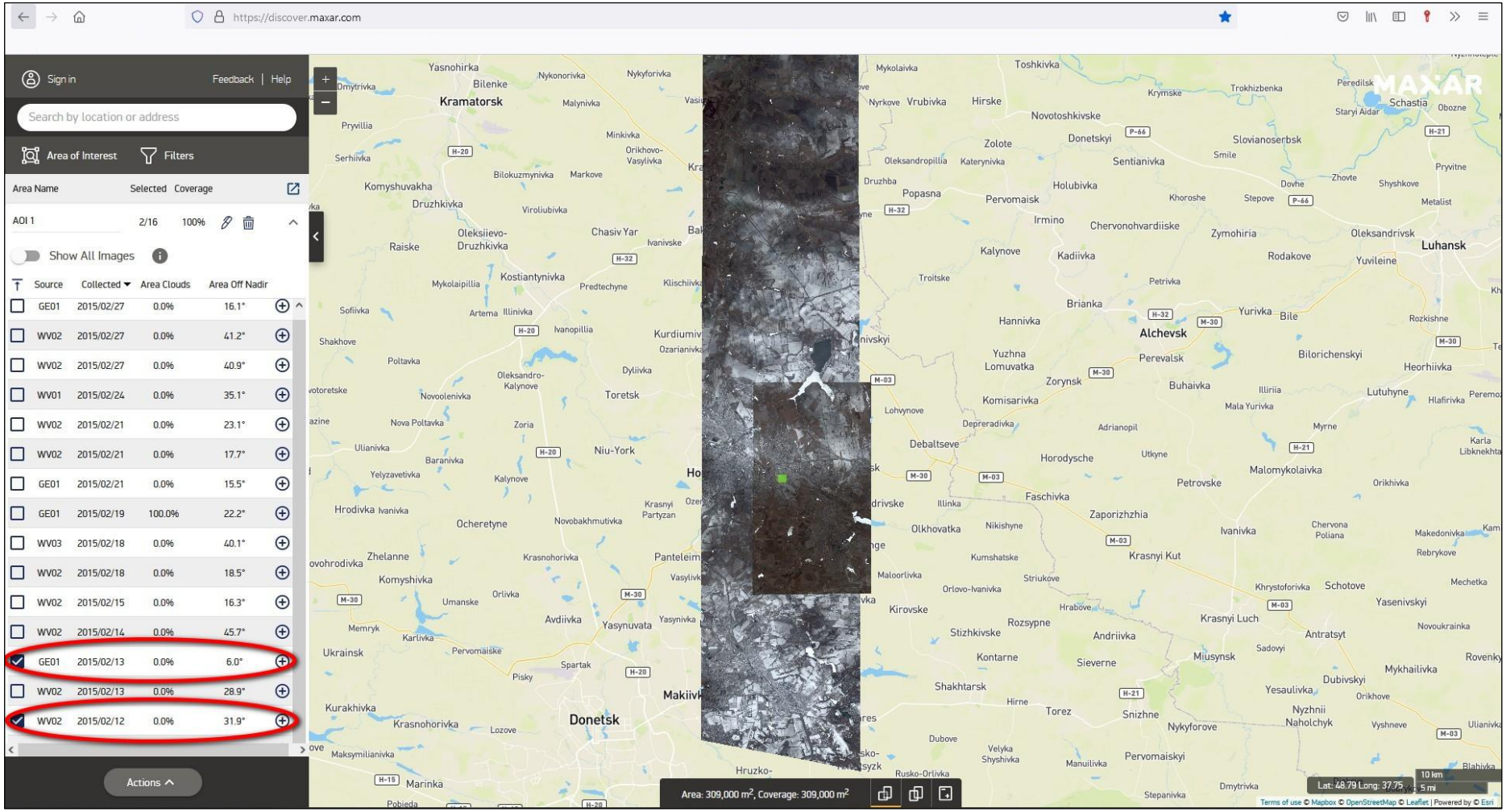


Fig. 18. Query window in Maxar's database of imagery. "WV"-2 images of 12.02.2015 and "GE-1" images of 13.02.2015.

72. Moreover, in Figures 43 and 44 of their report Gwilliam and Corbett analyse the image dated 21 February 2015 (included in GoogleEarth database), but the caption in Figures 43 and 44 states that the image was taken on 27 February 2015. The experts appear to have made another error. In fact, the given image from GoogleEarth database was taken on 21 February 2015 - Gwilliam and Corbett incorrectly stated the date of the image they analysed (Figures 19 and 22).

73. The fact is that there are two images of the area in question on GoogleEarth: one dated 21 February 2015 taken by WorldView-2 satellite[43] and the other dated 27 February 2015 taken by GeoEye-1 satellite[44] (see Figures 20 and 21).

74. Consequently, contrary to what was stated by Gwilliam and Corbett,[45] the nearest imagery available for analysis that was posted on GoogleEarth is not dated 27 February 2015, but 21 February 2015, and the image date given by the experts is incorrect.

75. Thus, "possible firing position 1" indicated by Gwilliam and Corbett is unrelated to the Kramatorsk airfield shelling in question.

[43] Image ID in Maxar's database: 103001003C442B00.

[44] Image ID in Maxar's database: 1050410012441D00.

[45] Reply, Annex 2, Gwilliam and Corbett Report, ¶79.

Figure 43. Kramatorsk Possible Firing Position 1.

Figure 19: Correct date of WorldView-2 image posted on GoogleEarth, which was analysed by Gwilliam and Corbett.

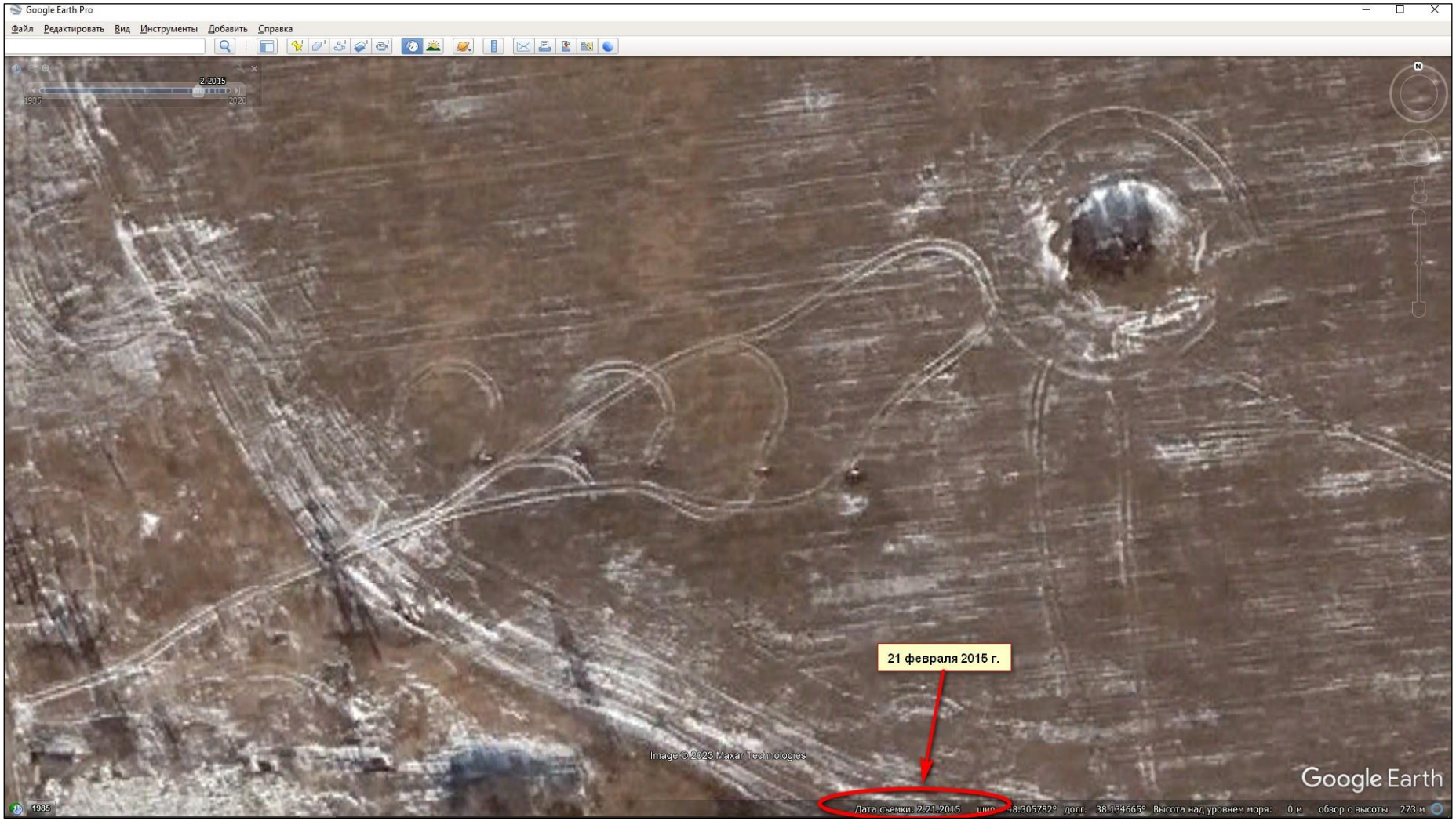


Figure 20: WorldView-2 image posted on GoogleEarth which was analysed by Gwilliam and Corbett.

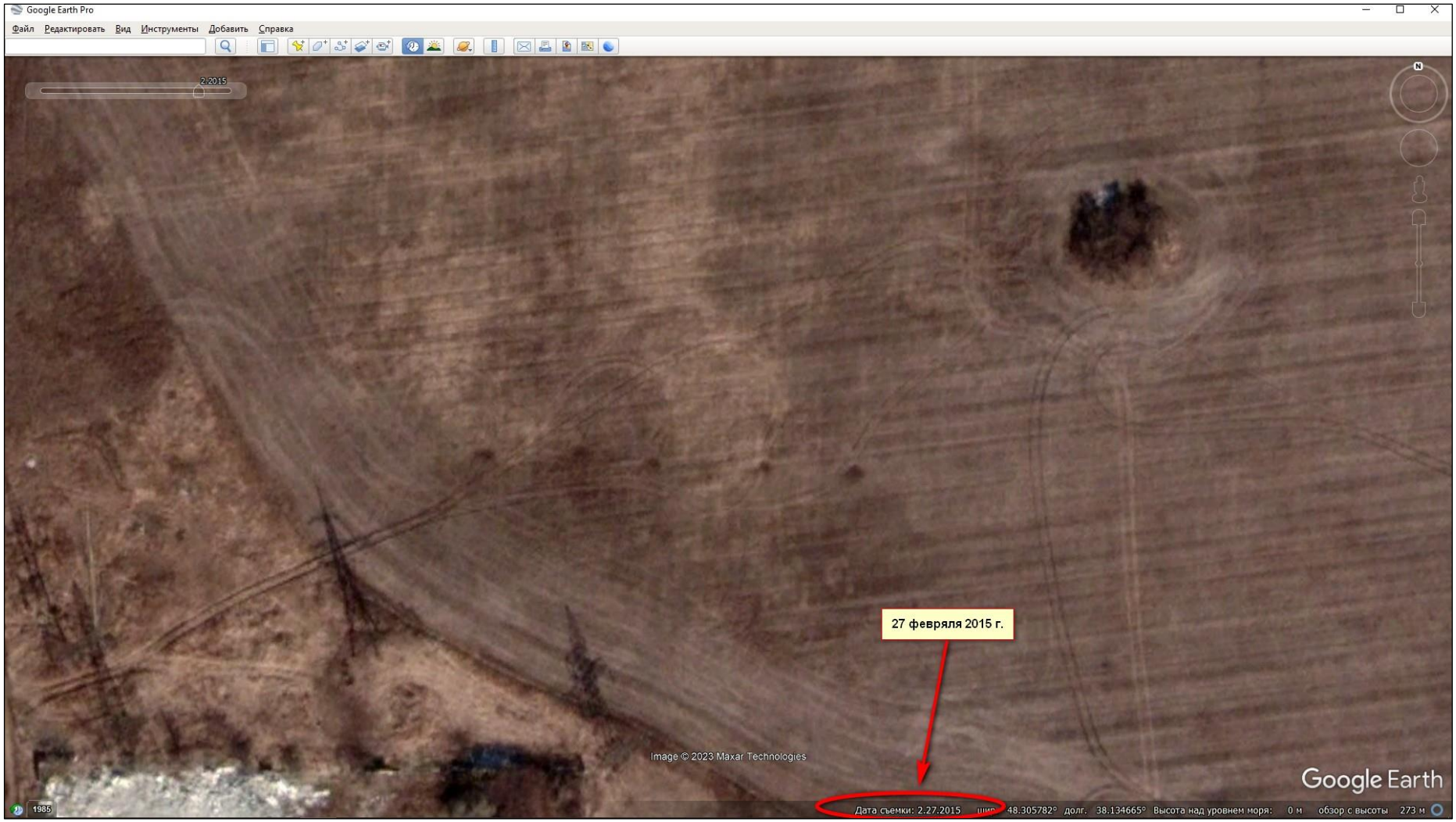


Figure 21: Image posted on GoogleEarth the date of which was stated by Gwilliam and Corbett in Figure 43 of their report.

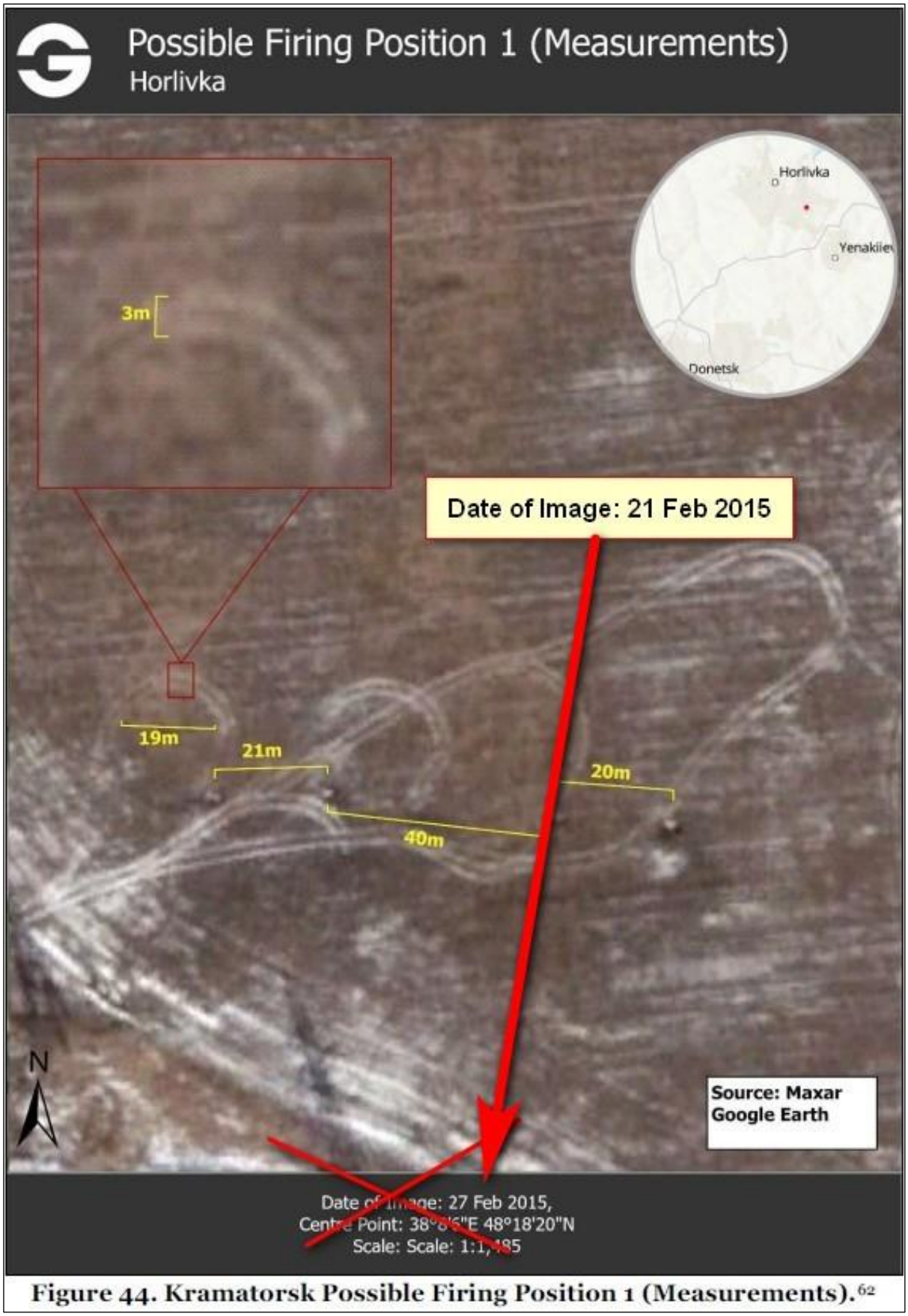


Figure 44. Kramatorsk Possible Firing Position 1 (Measurements).[62]

Figure 22: Correct date of WorldView-2 image posted on GoogleEarth, which was analysed by Gwilliam and Corbett.

ii. Analysis of the Second "Possible Firing Position"

76. Paras. 83-86 and Figures 45 and 46 of Gwilliam and Corbett Report describe "possible firing position 2" which "...could have been used for the attack on Kramatorsk...".

77. My analysis of WorldView-2 satellite imagery taken 2 days after the shelling[46] demonstrates that the location shown in Figures 45 and 46 of Gwilliam and Corbett Report could not have been used "for the attack on Kramatorsk". The satellite image of this location dated 12 February 2015 (i.e. 2 days after the shelling) does not contain the marks indicated in Gwilliam and Corbett Report. In effect, there is not a single sign in the image suggesting that any activity took place there (see Figure 23).

78. A comparison of satellite images of "possible firing position 2" dated 12 February 2015 and 27 February 2015[47] (Figure 23 below) clearly demonstrates that the marks identified in Gwilliam and Corbett Report are unrelated to the 10 February 2015 shelling.

[46] Specifically, on 12 February 2015 at 09:00 (UTC).

[47] Reply, Annex 2, Gwilliam and Corbett Report, Figures 45 and 46.

Figure 23. "Possible Firing Position 2" on WorldView-2 image dated 12 February 2015, 09:00 (UTC).

iii. Conclusions

79. The "possible positions" of the alleged launch of missiles from a BM-30 "Smerch" MLRS against the Kramatorsk airfield on 10 February 2015 (Figure 24), which are described in Gwilliam and Corbett Report, are not such positions.

80. The first position from Gwilliam and Corbett Report ("Possible Firing Position 1") contains signs of the deploy of a MLRS long before 10 February 2015. The satellite image of this position taken two days after the shelling of the Kramatorsk airfield (i.e., on 12 February 2015) shows no fresh traces of MLRS deploy. Moreover, all the signs mentioned in paras. 64-68 of this Report indicate that the firing was done from a BM-21 "Grad" and not from a BM-30 "Smerch".

81. The image of the second position from Gwilliam and Corbett Report ("Possible Firing Position 2") taken on 12 February 2015 (i.e. two days after the shelling) shows no evidence of any activity. This position is not relevant to the shelling in question.

82. Gwilliam and Corbett also made errors regarding the available satellite imagery nearest to the date of the firing and regarding the date of the image they analysed.

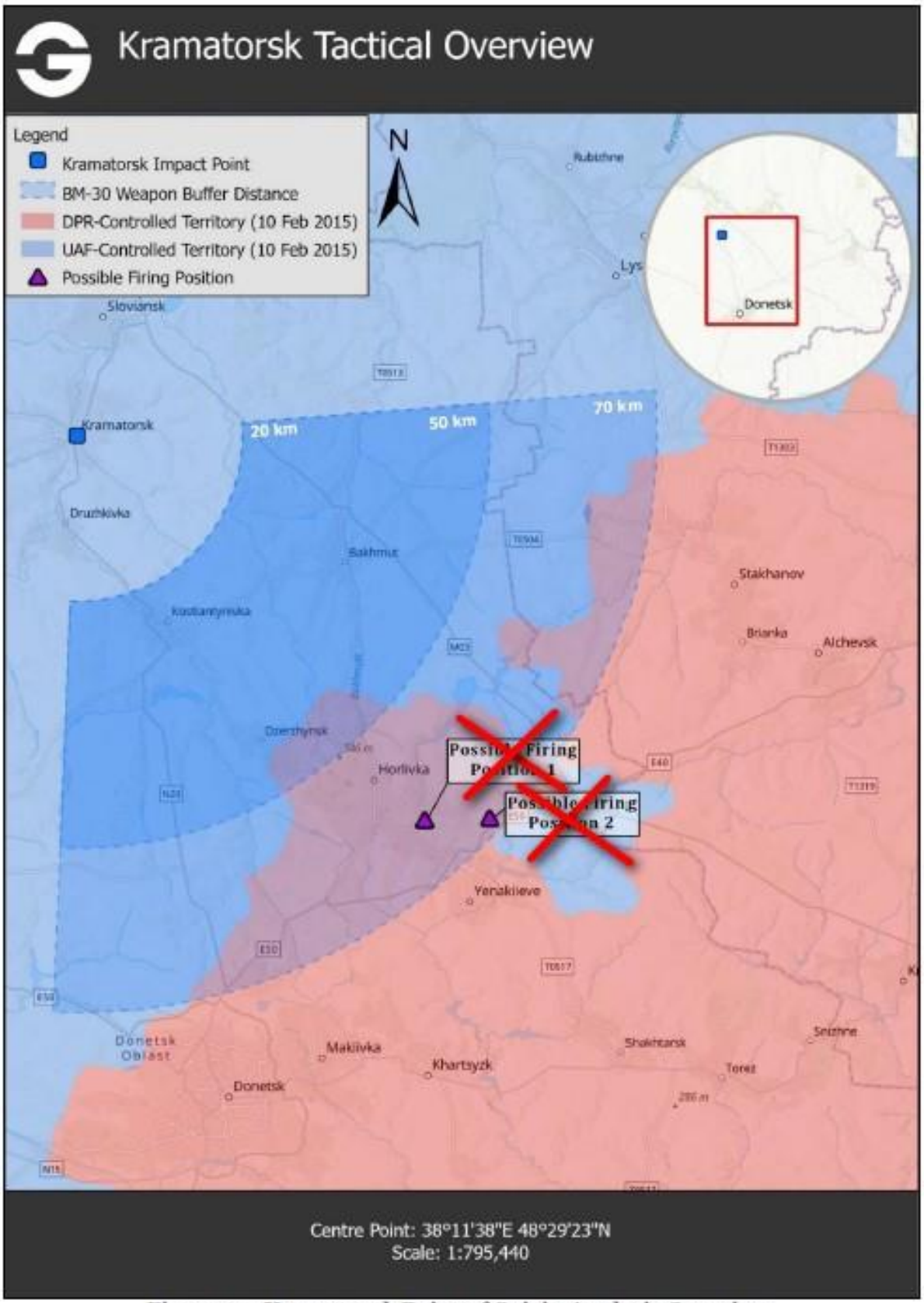


Figure 42. Kramatorsk Point of Origin Analysis Overview.

Figure 24. Figure 42 from Gwilliam and Corbett Report ("possible firing positions") incorrectly identified).

C. SHELLING OF MARIUPOL - 24 JANUARY 2015

i. Errors Regarding Dates and Time of Images Made by Gwilliam and Corbett

83. Ms. Gwilliam and Air Vice-Marshal Corbett analysed of satellite imagery of three areas that they considered as areas from which Mariupol could have been shelled on 24 January 2015. The coordinates of these areas, which I shall refer to as "Area A", "Area B" and "Area C", are provided in paragraph 63 of Gwilliam and Corbett Report.

84. I will start by describing Gwilliam and Corbett's errors regarding the dates and times of the satellite images they analysed.

85. Paras. 49-57 of Gwilliam and Corbett Report discusses the damage caused to the Vostochniy neighbourhood and includes Figures 17 – 27, which, as the experts point out, use Pleiades satellite imagery from 13 February 2015, 10:02 (UTC) (see, for example, Figure 25).

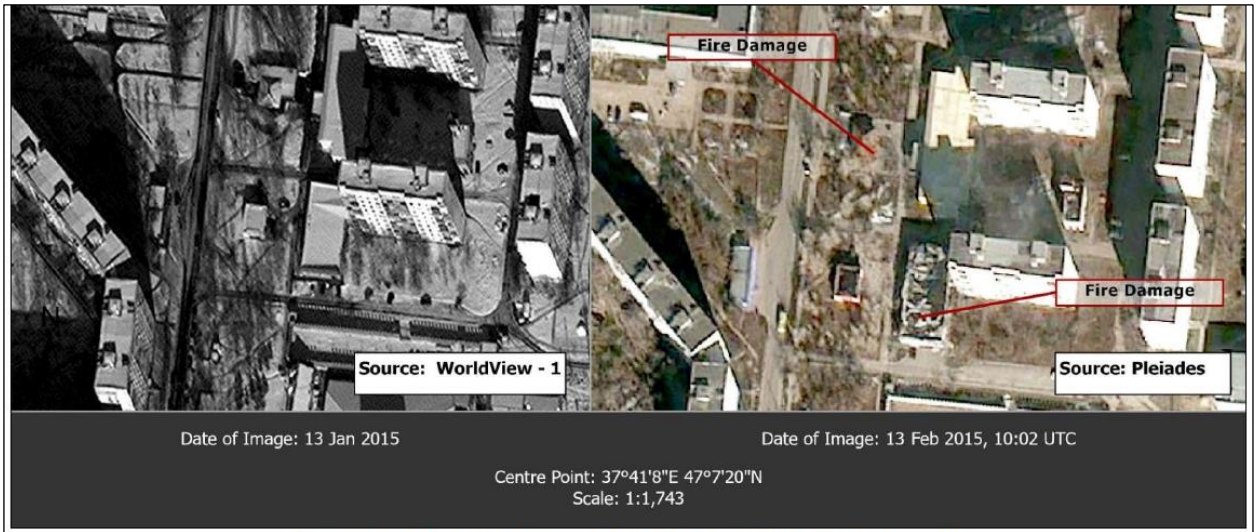


Figure 20. Mariupol Damage Graphic No. 2 (Satellite Imagery).

Figure 25: Fragment of Figure 20 from Gwilliam and Corbett Report

86. There is no imagery with such a time. The imagery of the Vostochniy neighbourhood in Mariupol was taken by Pleiades-1B spacecraft at 08:28 (UTC) on 13 February 2015 (see Figure 26).[48]

[48] Image ID: DS_PHR1B_201502130828100_FR1_PX_E037N47_0903_01048. It follows from the image ID that it was taken at 08:28 (UTC): "20150213**0828**100".

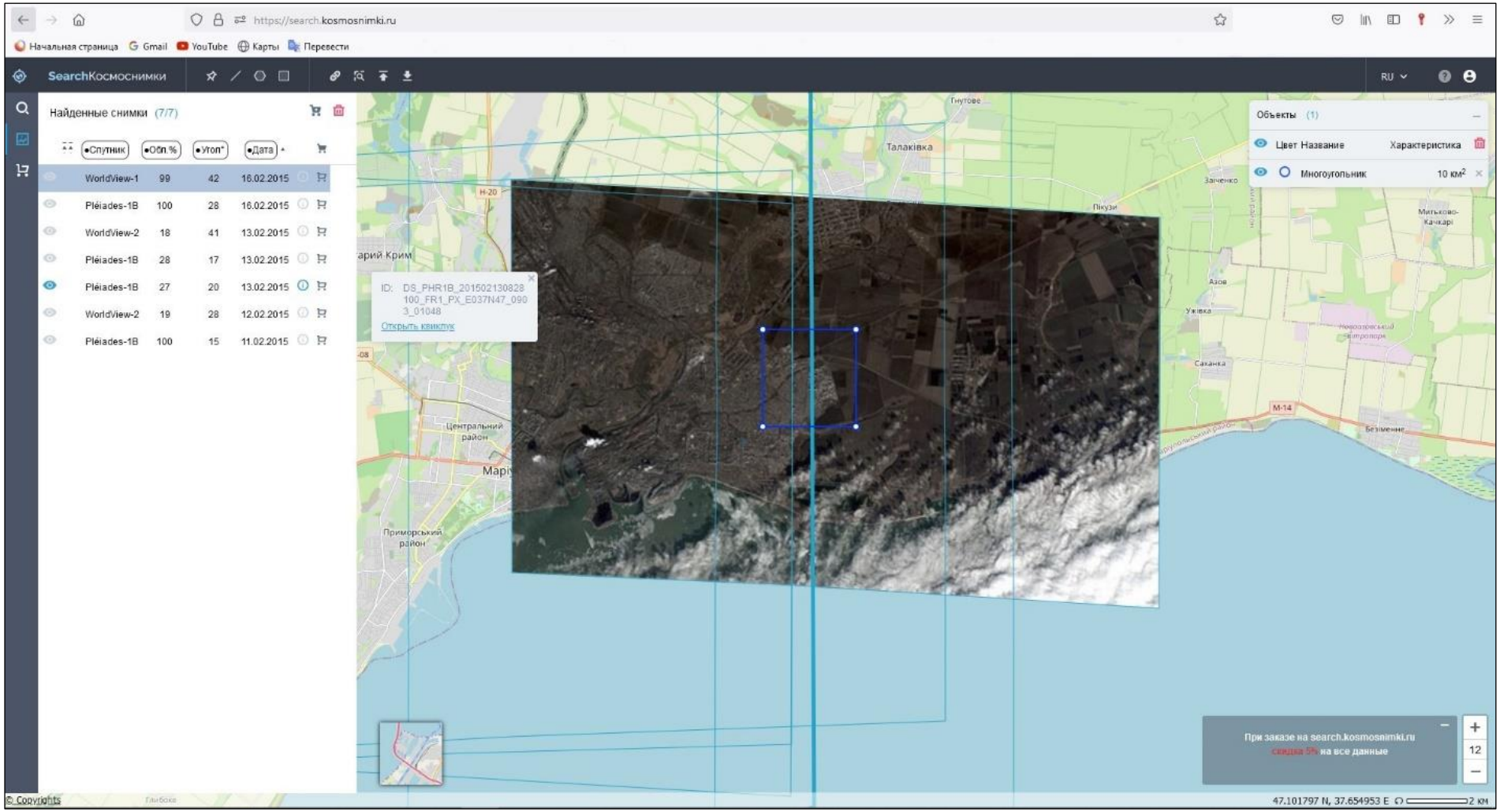


Fig. 26. Result of a query in SCANEX's satellite imagery database.

87. In paras. 63-69 of Gwilliam and Corbett Report, the experts identify potential points of origin for the attacks on Mariupol, analyse the relevant location in the images taken before and after the incident, and illustrate their analysis and conclusions with figures 30-34. As indicated by the experts, they used two Pleiades images taken on 18 January 2015 at 09:06 (UTC) and 17:59 (UTC) (see, for example, Figures 27 and 28 below).

88. No such satellite imagery exists. This area was imaged by Pleiades-1B spacecraft at 08:28 (UTC) on 18 January 2015 (see Figure 29 below). The correct satellite image was given in my First Report.[49]

89. Moreover, no imaging by Pleiades spacecraft was physically possible at 17:59 (UTC) on 18 January 2015. At this time of year at this latitude the Sun rises at about 05:10-05:13 (UTC), and sets at 14:05-14:09 (UTC).[50] Usually, satellite imagery is taken when the Sun is at least 5^{o} but never after sunset. In this case the experts are referring to an image taken almost 4 hours after sunset. I find it strange that Gwilliam and Corbett themselves did not identify this gross error in their analysis.

90. The same applies to the images in Figures 33 and 34 of Gwilliam and Corbett Report, for which the experts provide an analysis of "possible firing positions" 1 and 2. On the left side of each of the figures are satellite images allegedly taken on 18 January 2015 at 17:59 (UTC), i.e. significantly after sunset.

[49] In Figure 25 of the First Report and in Annex 2, "Satellite Imagery Characteristics" to the First Rwport, the image ID: DS_PHR1B_201501180828383_FR1_PX_E037N47_1105_01654. *See* Counter-Memorial on the ICSFT, Annex 1.

[50] SunCalc, Data as of 18 January 2015, available at: http://suncalc.net/#/47.2336,37.8611,7/2015.01.18/14:28 (Exhibit B).

Figure 30. Point of Origin Analysis Area A (Pre-Incident).

Figure 27: Fragment of Figure 30 from Gwilliam and Corbett Report.

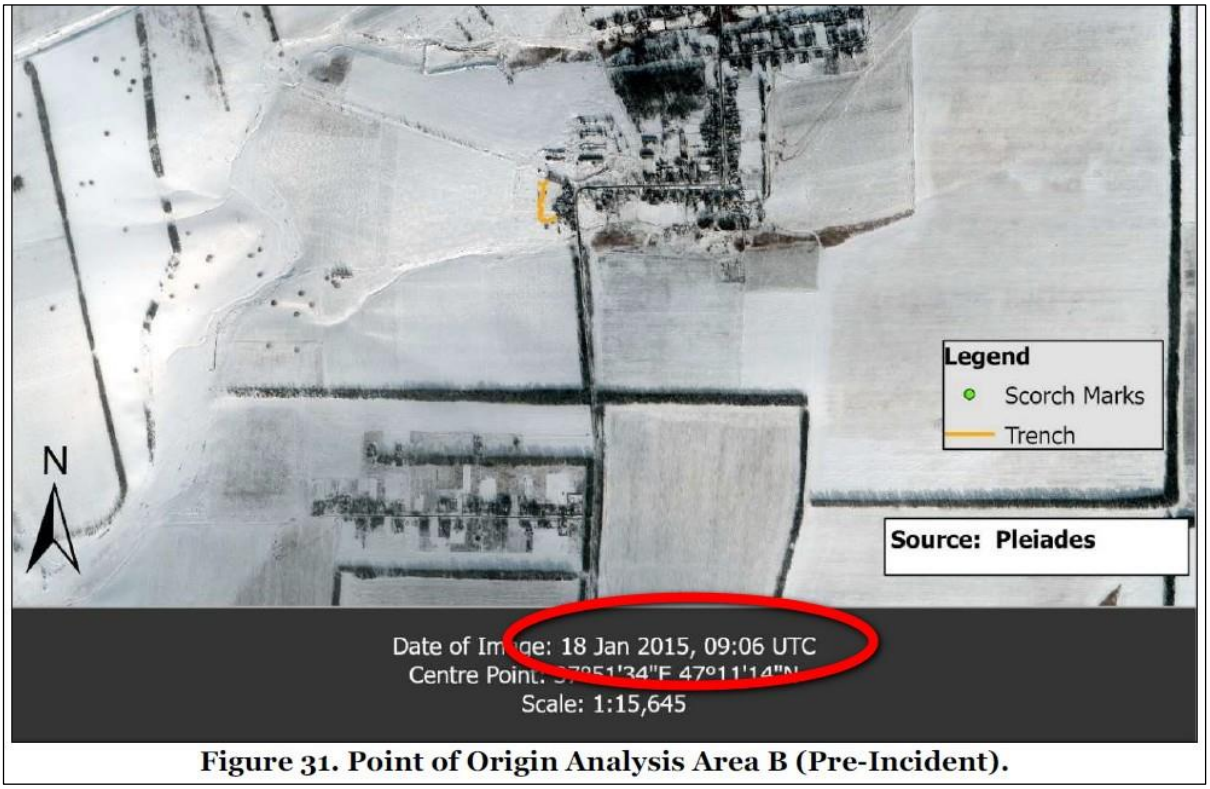


Figure 31. Point of Origin Analysis Area B (Pre-Incident).

Figure 28. Fragment of Figure 31 from Gwilliam and Corbett Report.

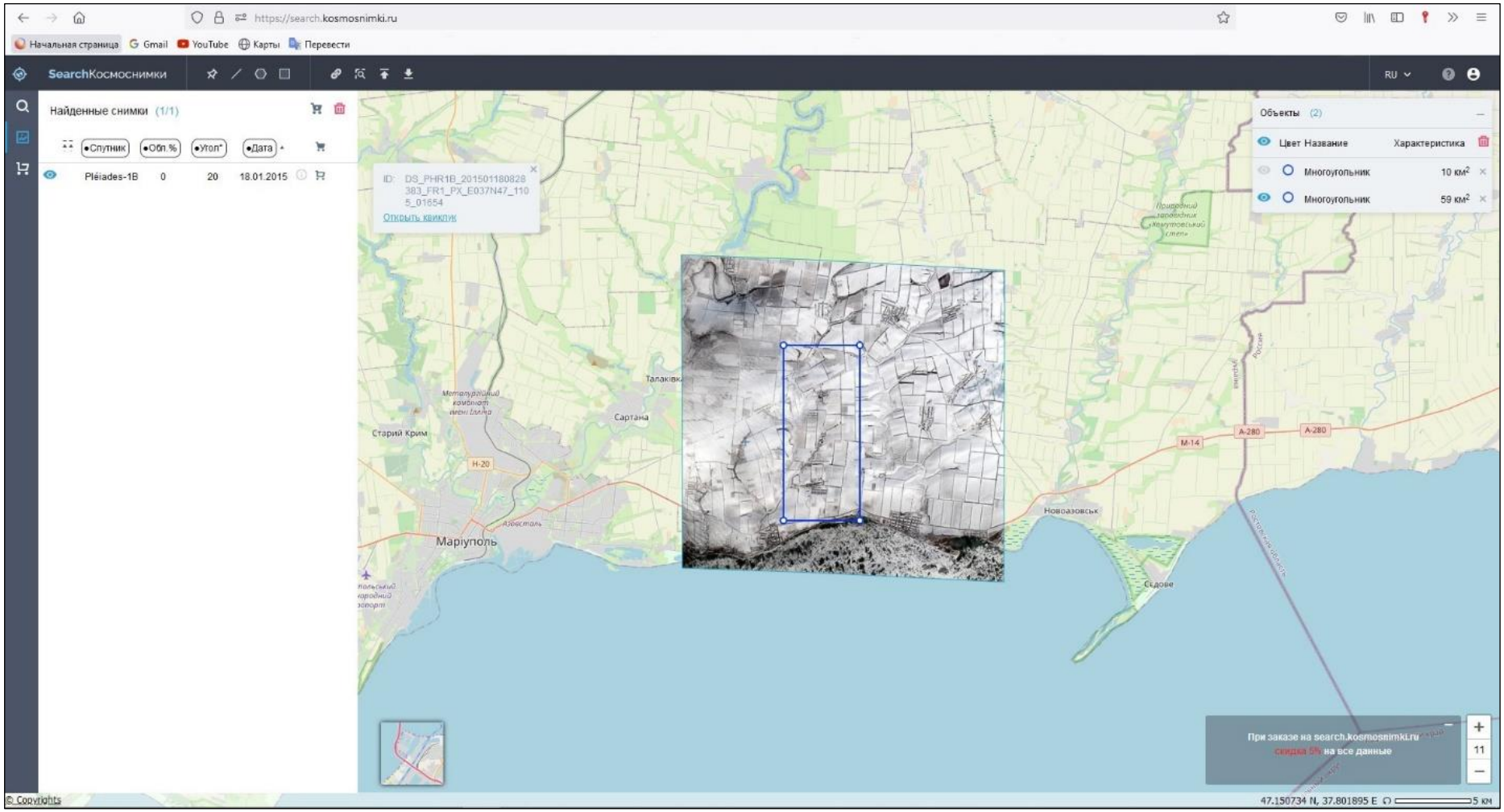


Figure 29. Result of a query in SCANEX's satellite imagery database.

ii. Errors in Gwilliam and Corbett's Analysis of Areas A, B and C Images Taken Before the Incident

91. In para. 67 and Figure 30 of Gwilliam and Corbett Report, the experts claim that they found

> "...three vehicles assessed to be possible D-30 ("Howitzer") artillery... The size and shape of the vehicles is more consistent with a Howitzer shape than what would be expected from box bodied vehicle features associated with MLRS weapon systems...".

This assumption is incorrect, as there are no military vehicles at this location in the analysed image.

92. In Figure 30 below, I provide an image taken by Pleiades spacecraft at 08:28 (UTC) on 18 January 2015.[51] The same image is given in Gwilliam and Corbett Report, but with the wrong time of image.[52] The image clearly shows that the artillery position is empty. What Gwilliam and Corbett took to be an image of three D-30 howitzers[53] are merely traces of artillery deploy (specifically, the black smudge on the snow which is characteristic of artillery deploy) and not the howitzers themselves. Therefore, Gwilliam and Corbett's assertion, even in the form of a suggestion, that there are three artillery pieces in the photo of Area A dated 18 January 2015 is incorrect.

93. It should be noted that Pleiades imagery is not the best material for determining the type of weapons and for other similar tasks. The fact is that Pleiades imagery is initially taken at a resolution of 70 cm[54] and only afterwards the resolution is "improved" to 50 cm by software. The result is inferior to satellite imagery initially taken at a higher resolution of 50 cm.

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[51] For more details on this image, see paras. 85 and 86 of this Report.

[52] Reply, Annex 2, Gwilliam and Corbett Report, Figure 30.

[53] *Ibid.*, "3x unidentified vehicles, Possible D-30 Artillery".

[54] Each pixel of a satellite image corresponds to a 70 cm by 70 cm square on the Earth's surface.

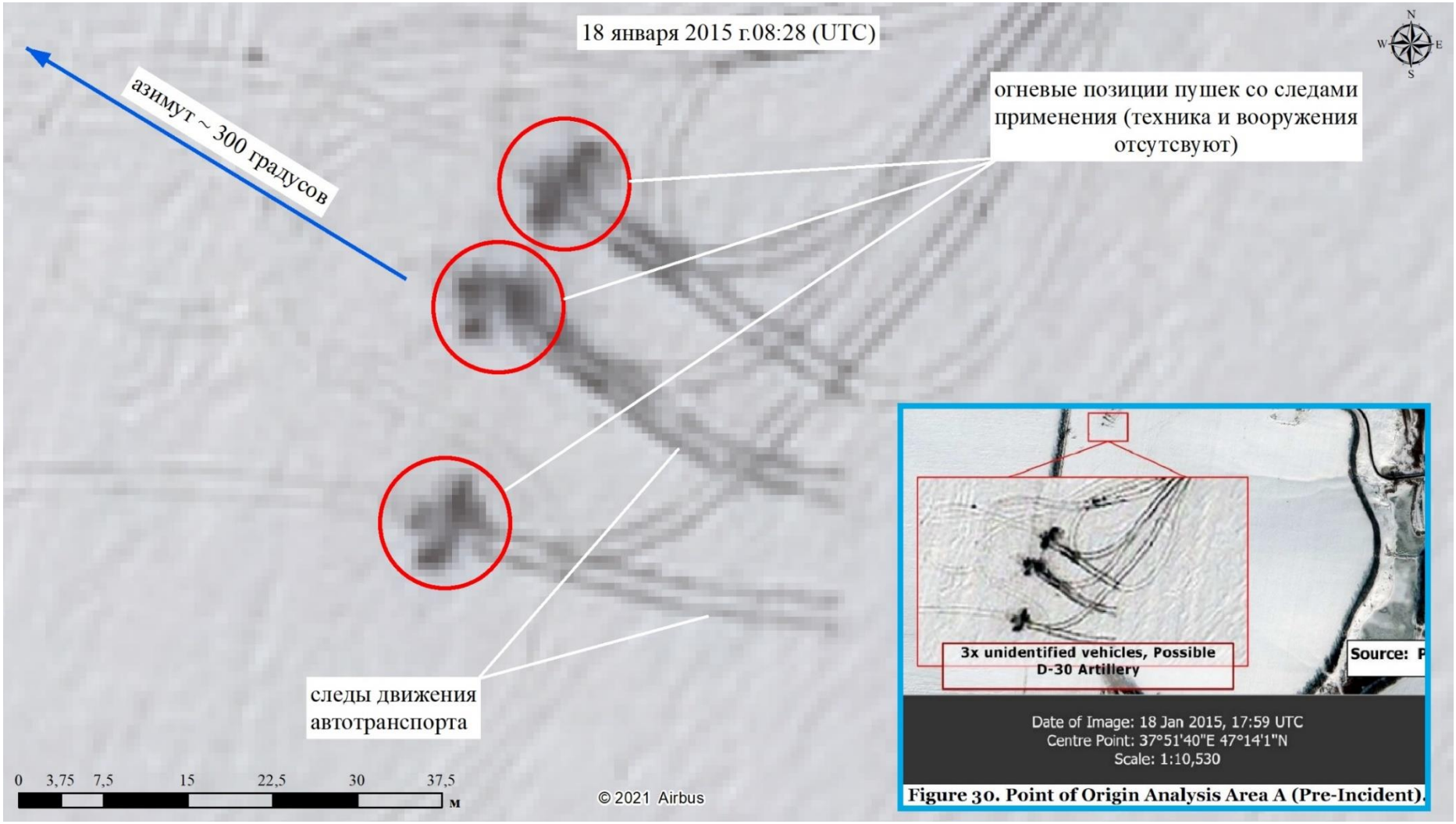

Figure 30. Image of Area A - empty artillery position with traces of military deploy.

Figure 30*:

18 January 2015, 08:28 (UTC)

azimuth: 30 degrees

guns' firing positions with traces of deploy (equipment or weapons are missing)

marks left by vehicles

94. Para. 68 of Gwilliam and Corbett Report states that Areas B and C analysed by the experts were

> "... commonly used for MLRS launches and the direction of scarring suggests launches directly to the west in the direction of Ukraine government-controlled territory and Mariupol...".

This wording is rather vague and ambiguous and could be misleading. Meanwhile, the clear contours of the traces of MLRS deploy in the satellite images of Area B and C make it possible to determine the azimuth of the firing directions.

95. In Figure 31 below, I provide the results of my analysis of the directions of firing from Areas B and C. The traces present in the satellite images[55] allow for a categorical conclusion that the described traces of MLRS deploy in Areas B and C indicate the shelling of specific military targets, but in no way of Mariupol, specifically:

(a) the shelling from Area B was directed at UAF positions near Hnutove and Talakivka;

(b) the shelling from Area C was directed at UAF positions north of Mariupol.

96. Consequently, Gwilliam's and Corbett's claim that Areas B and C were "... commonly deployed for MLRS launches... in the direction of...Mariupol" is unfounded.

[55] *See* Annex 2 "Satellite Imagery Characteristics" to the First Report, Table 1, image IDs: 1020010039D0BD00, DS_PHR1B_201501180828383_FR1_PX_E037N47_1105_01654, 10400100082AB300; *See* Counter-Memorial on the ICSFT, Annex 1.

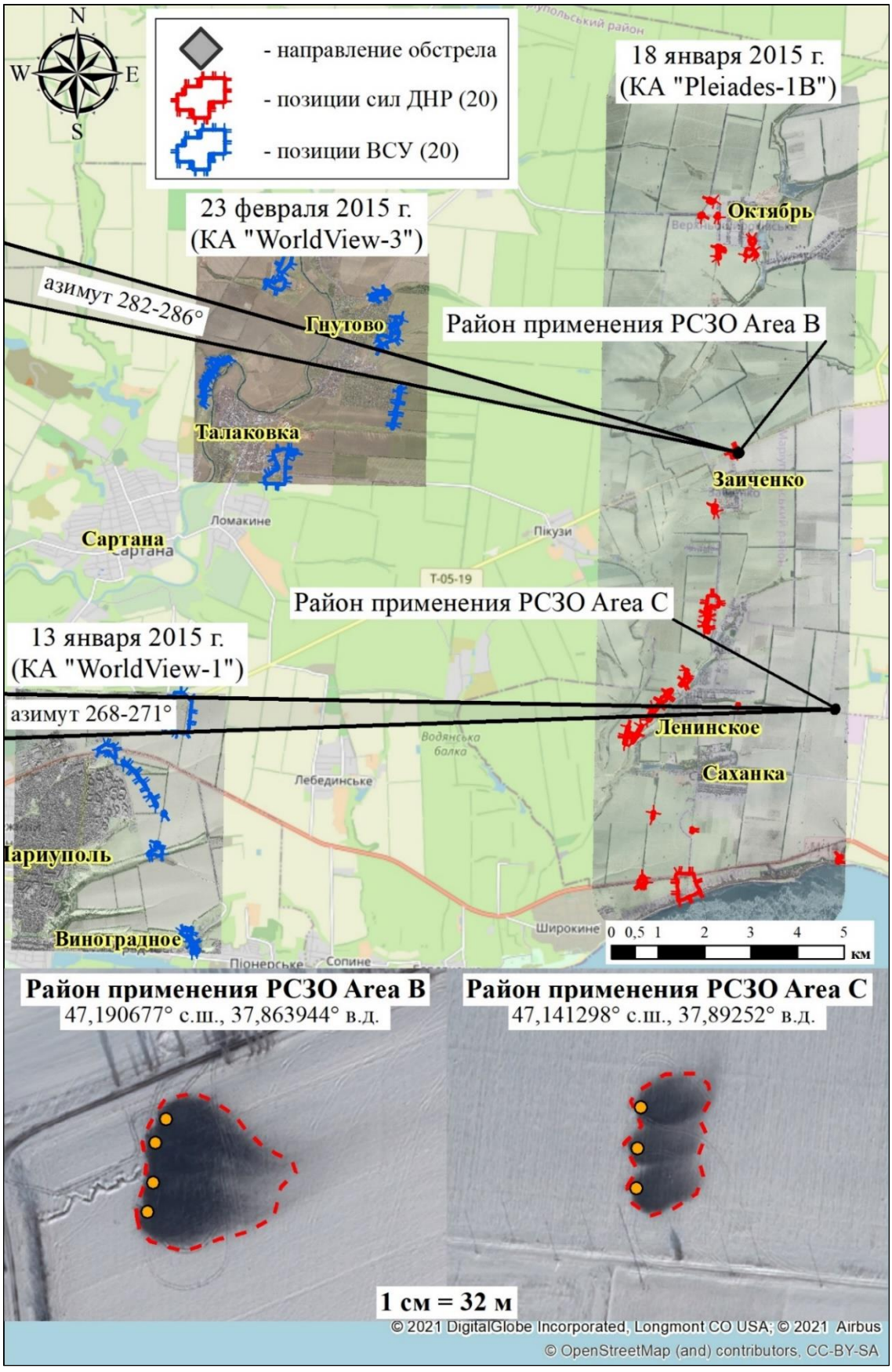

Figure 31. Areas B and C, areas of MLRS deploy before 24 January 2015 with firing azimuths.

Figure 31*:

- firing direction — 18 January 2015 (KA "Pleiades-1B)
- DPR forces positions (20)
- UAF positions (20)

23 February 2015 (KA "WorldView-3)

azimuth 282-286º — Area of MLRS deploy: Area B

Area of MLRS deploy: Area C

13 January 2015 (KA "WorldView-1)

azimuth 268-271º

Area of MLRS deploy: Area B	**Area of MLRS deploy: Area C**
47,190677º north latitude, 37,863944 º eastern longitude	47,141298º north latitude, 37,89252 º eastern longitude

iii. Gwilliam and Corbett's Errors in Analysing the Scene after the Incident

97. In para. 69 of Gwilliam and Corbett Report, the experts quite rightly point out that the available imagery cannot be used to determine the exact position from which the attack on Mariupol was carried out on 24 January 2015. However, Figures 33 and 34 refer to two "possible firing positions" for MLRS launches against Mariupol on 24 January 2015. These locations are not related to the shelling in question.

98. There is no way to call the first area a " possible position" from which Mariupol was shelled. From the "WorldView-2" image of 13 February 2015, 08:23 (UTC), which I used in my First Report[56] (the same image was used by Gwilliam and Corbett), I determined the azimuth of firing from this location (see Figure 32). As I noted above, the presence of clear traces of an MLRS launch (drop-shaped scorch marks, etc.) makes it possible to determine the firing direction with a fairly high probability. In this case, the azimuth of firing was about 276 degrees, which corresponds to the location of the UAF positions

[56] See Annex 2 "Satellite imagery characteristics" to the First Report, Table 1, image ID: 103001003DB8B600; *See* Counter-Memorial on the ICSFT, Annex 1.

near Hnutove and Talakivka. Thus, there is no way this location could have been involved in the shelling of Mariupol on 24 January 2015.

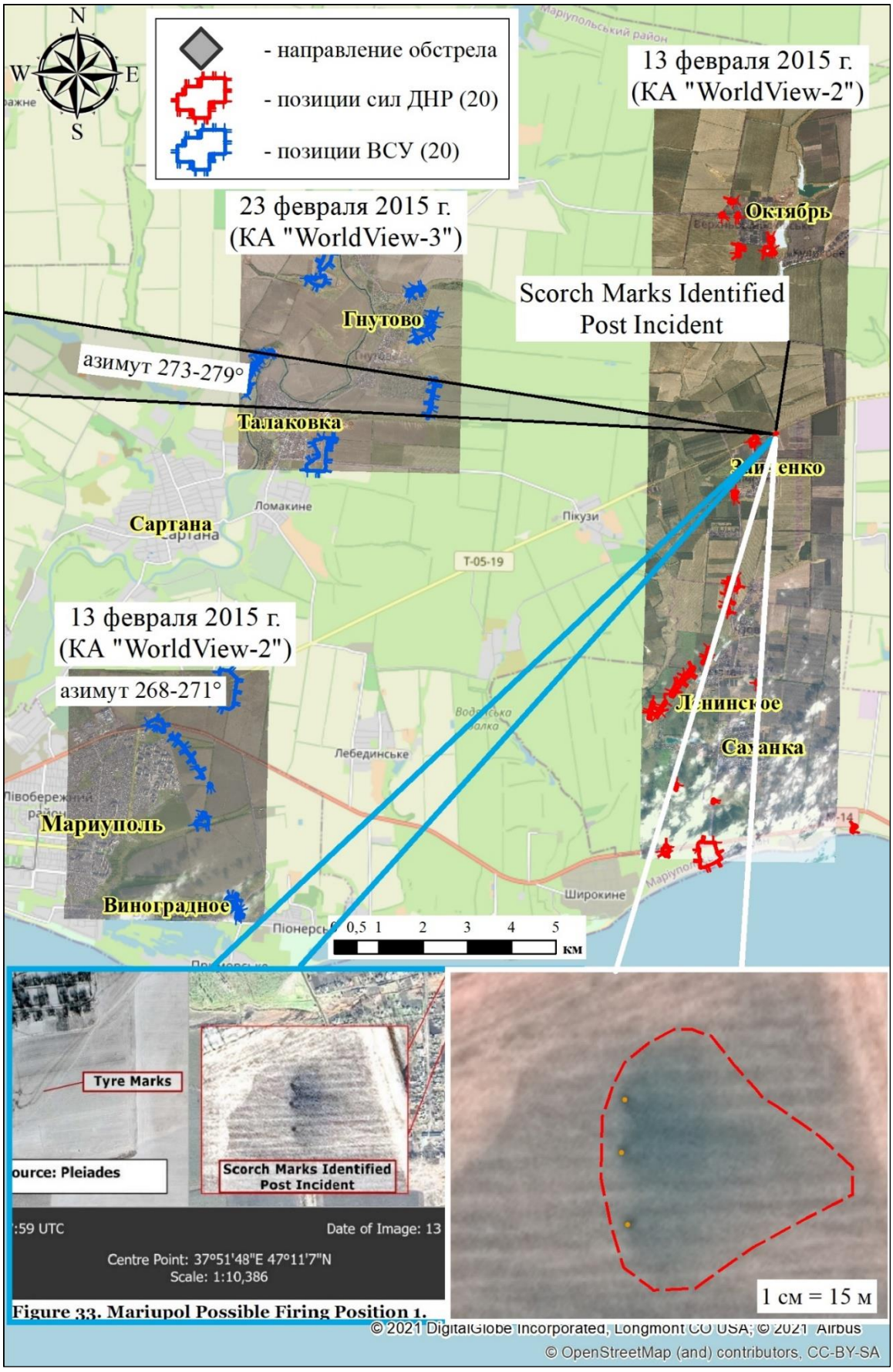

Figure 33. Mariupol Possible Firing Position 1.

Figure 32: Azimuth of firing from the position shown in Figure 33 of Gwilliam and Corbett Report.

Figure 32*:
- firing direction 13 February 2015 (KA " WorldView -2)

- DPR forces positions (20)

- UAF positions (20)

23 February 2015 (KA "WorldView-3)

azimuth 273-279°

13 February 2015 (KA " WorldView -2)

azimuth 268-271°

99. I have also analysed the area referred to in Gwilliam and Corbett Report as "Possible Firing Position 2".[57] There are satellite images of this location taken on 11 and 14 October 2014, 21 and 23 November 2014 and 18 March 2015 in open sources (in particular, GoogleEarth).

100. All of the satellite imagery for those dates show traces of a MLRS deploy, in particular: marks left by vehicles and patches of black colour: drop-shaped, "tail-like" scorch marks. However, my analysis of all this imagery showed that the images of 21 and 23 November 2014 contain the identifying features (marks left by vehicles and patches of black colour: the same drop-shaped, "tail-like" scorch marks) that are identical to those in the image of 13 February 2015 analysed by the experts Gwilliam and Corbett.[58] In other words, the tyre marks and scorch marks in the images of 21 November 2014 remained unchanged as of 13 February 2015 (see Figures 33 and 34 below). This implies that there was no further deploy of MLRS at this location after 21 November 2014. Thus, the second "possible firing position" identified by Gwilliam and Corbett bears no relation to the shelling of Mariupol on 24 January 2015 either.

[57] Reply, Annex 2, Gwilliam and Corbett Report, Figure 34.

[58] *Ibid.*

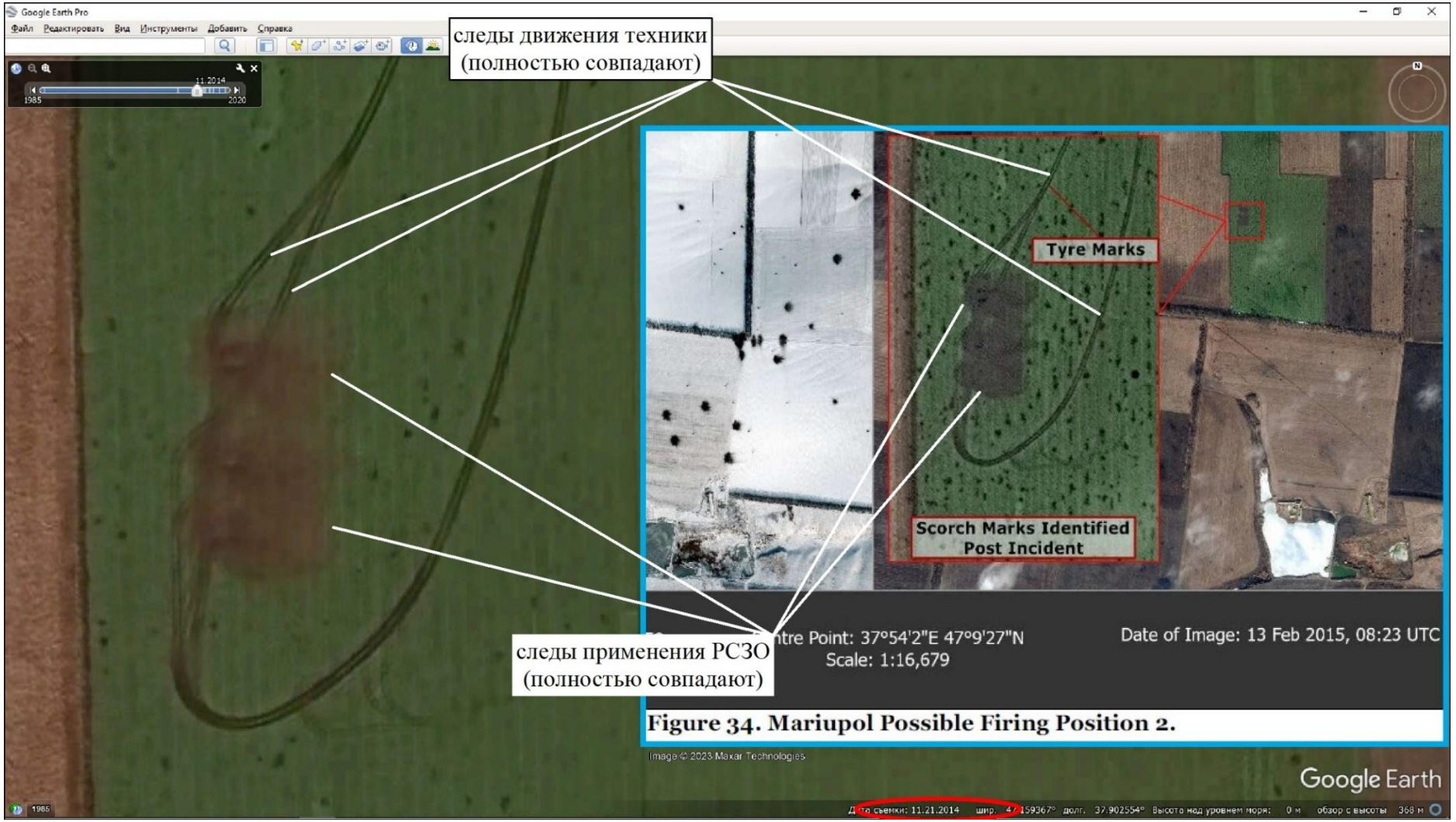

Figure 33. Results of comparing traces of MLRS deploy in GoogleEarth images of 21 November 2014 and those in Figure 34 from Gwilliam and Corbett Report.

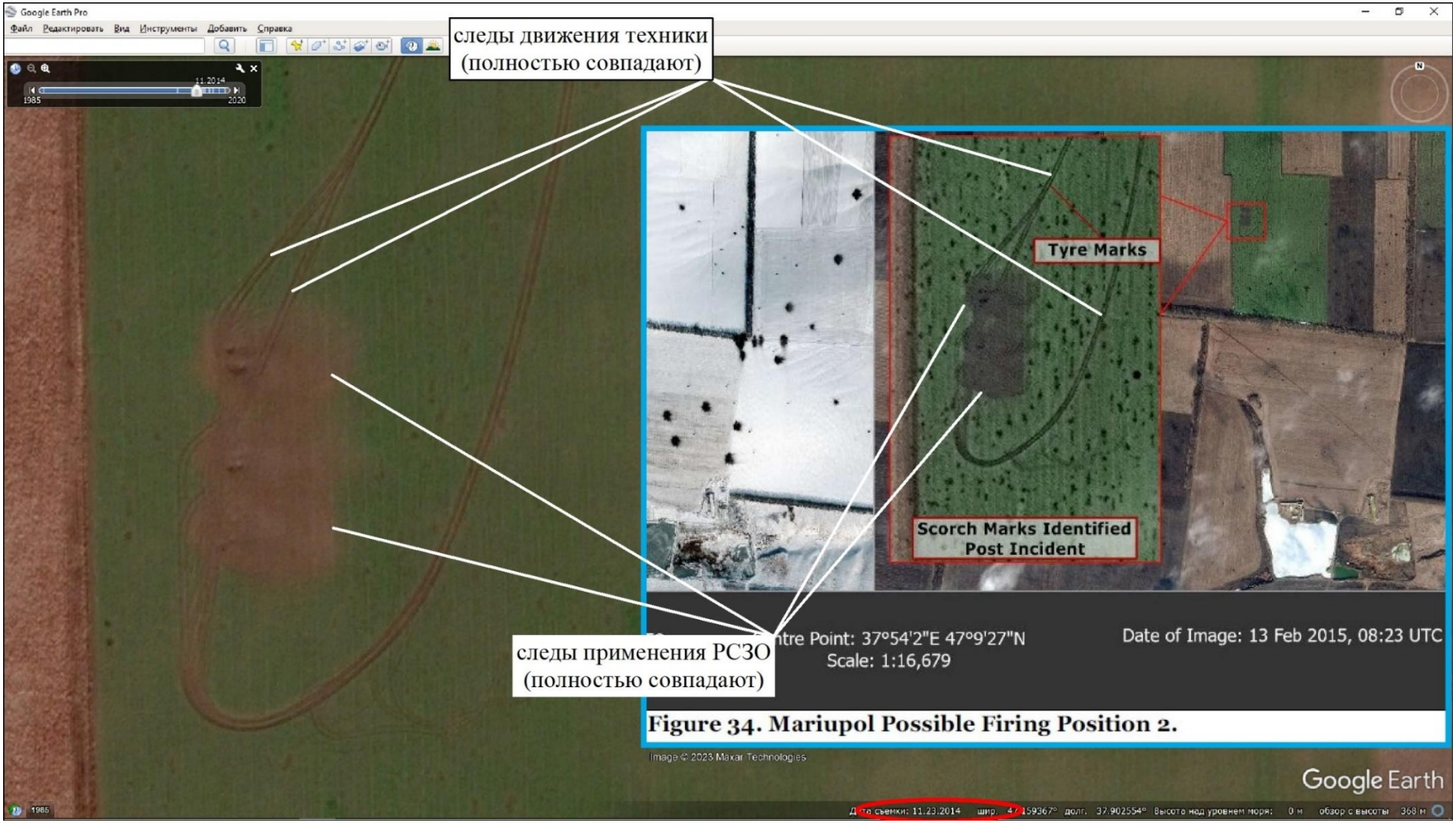

Figure 34. Results of comparing traces of MLRS deploy in GoogleEarth images of 23 November 2014 and those in Figure 34 from Gwilliam and Corbett Report.

iv. Conclusions

101. "Possible firing positions" that could have been deployed to shell Mariupol from a MLRS, as described by Gwilliam and Corbett, are not such positions.

102. The conclusion that there are "possible D-30 howitzers" in Figure 30 of Gwilliam and Corbett Report (Area A) is incorrect.

103. The positions identified in Gwilliam and Corbett Report as "Possible Firing Position 1" and "Possible Firing Position 2" (i.e. probable positions from which Mariupol could have been shelled on 24 January 2015) are not such positions. "Possible Firing Position 1" has the azimuth of firing directed not at Mariupol, but at the area of Hnutove and Talakivka, while the area of "Possible Firing Position 2" was not deployed for MLRS launches after 21 November 2014.

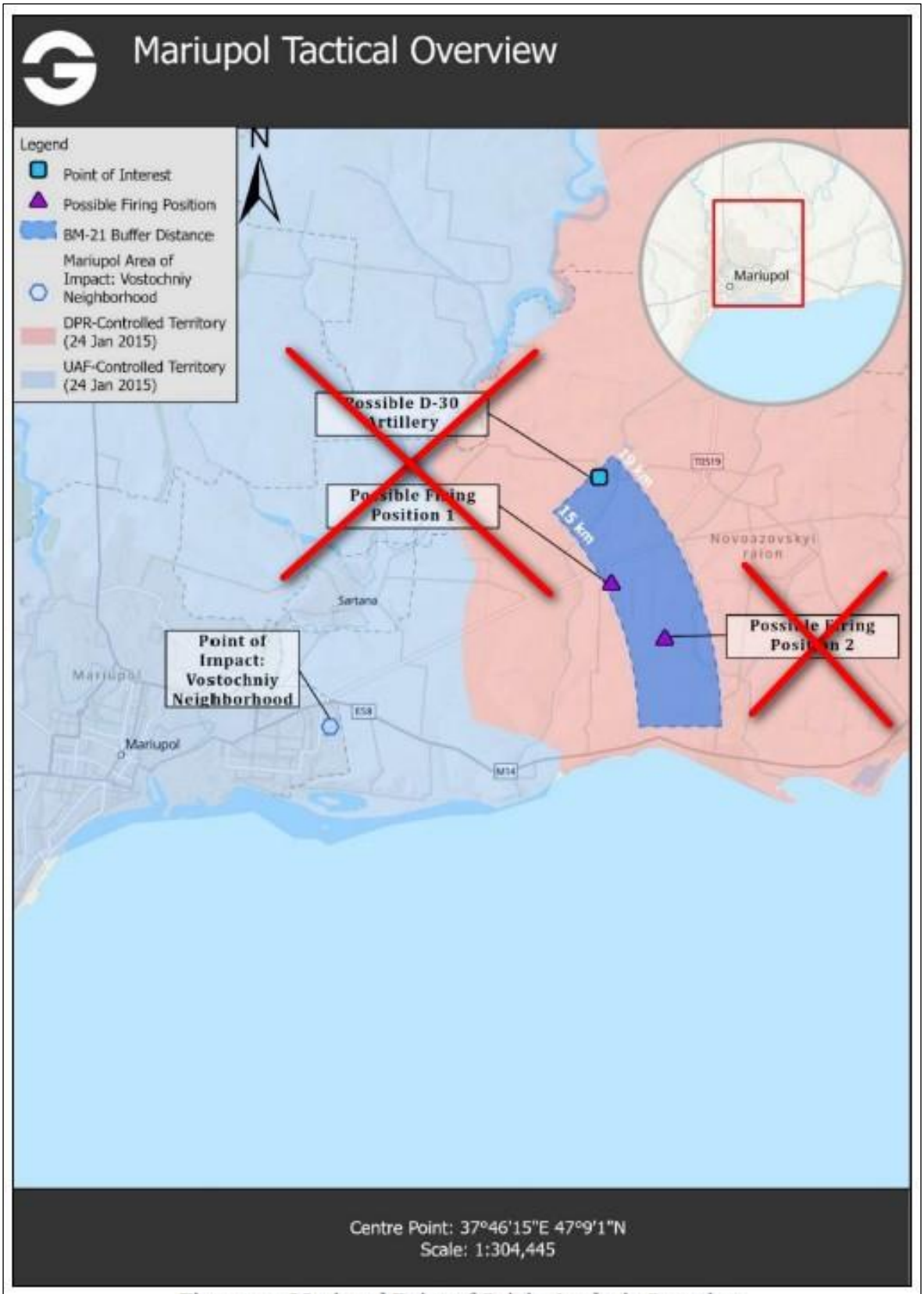

Figure 29. Mariupol Point of Origin Analysis Overview

Figure 35. Incorrectly identified positions in Figure 29 from Gwilliam and Corbett Report.

V. EXPERT STATEMENT

104. I confirm that all the matters in respect of which I have expressed my opinion are within my area of expertise and competence.

105. I understand that it is my duty to assist the Court in deciding the issues in respect of which this Report has been prepared. I have complied with, and will continue to comply with, that duty.

106. I confirm that the conclusions I have reached in this Report are unbiased, objective and impartial; they have not been influenced by the pressures of the proceedings or by any of the parties to the proceedings.

Expert

_____

Alexander Alekseevich Bobkov

Moscow, 10 March 2023

VI. SUPPLEMENT 1 - CHARACTERISTICS OF SATTELITE IMAGERY

In accordance with the selection criteria, imagery taken by WorldView-3 satellite (DigitalGlobe, USA) was purchased for the purpose of conducting an expert examination. The characteristics of the imagery are provided in Table 1 and in Figures 1-4 below.

Characteristics of the satellite imagery purchased for a study

Table 1

Date / time UTC	Unique image (route) number	Spacecraft	Resolution, m	Sun azimuth, degrees	Solar angle, degrees	Spacecraft azimuth, degrees	Spacecraft roll angle, degrees
21.02.2015 07:59	1040010008292C00	WorldView-3	0.50	151.0	27.4	108.0	43.1
12.02.2015 09:00:51	103001003B2B1A00	WorldView-2	0.50	168.8	27.4	336.0	31.5

The metadata of the image and the product based on it can be found in the file "15FEB21075905-S2AS-011713944050_01_P002.XML" (Figures 1 and 2).

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Figure 1. Image metadata contained in the file "15FEB21075905-S2AS-011713944050_01_P002.XML".

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Figure 2. Image metadata contained in the file "15FEB21075905-S2AS-011713944050_01_P002.XML".

The metadata of the image and the product based on it are contained in the file "15FEB12090056-S2AS-013495371010_01_P001.XML" (Figures 3 and 4).

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Figure 4. Image metadata contained in the file «15FEB12090056-S2AS-013495371010_01_P001.XML».

INDEX OF EXHIBITS

Number:	Name of exhibit:
Exhibit A	Dreamstime.com, *BM-30 Smerch* (10 September 2016).
Exhibit B	SunCalc, Data as of 18 January 2015.

Exhibit A

Dreamstime.com, *BM-30 Smerch* (10 September 2016)

(translation)

Translation

Dreamstime.com, *BM-30 Smerch* (10 September 2016), available at: https://ru.dreamstime.com/редакционное-изображение-bm-smerch-image80759060

BM-30 Smerch

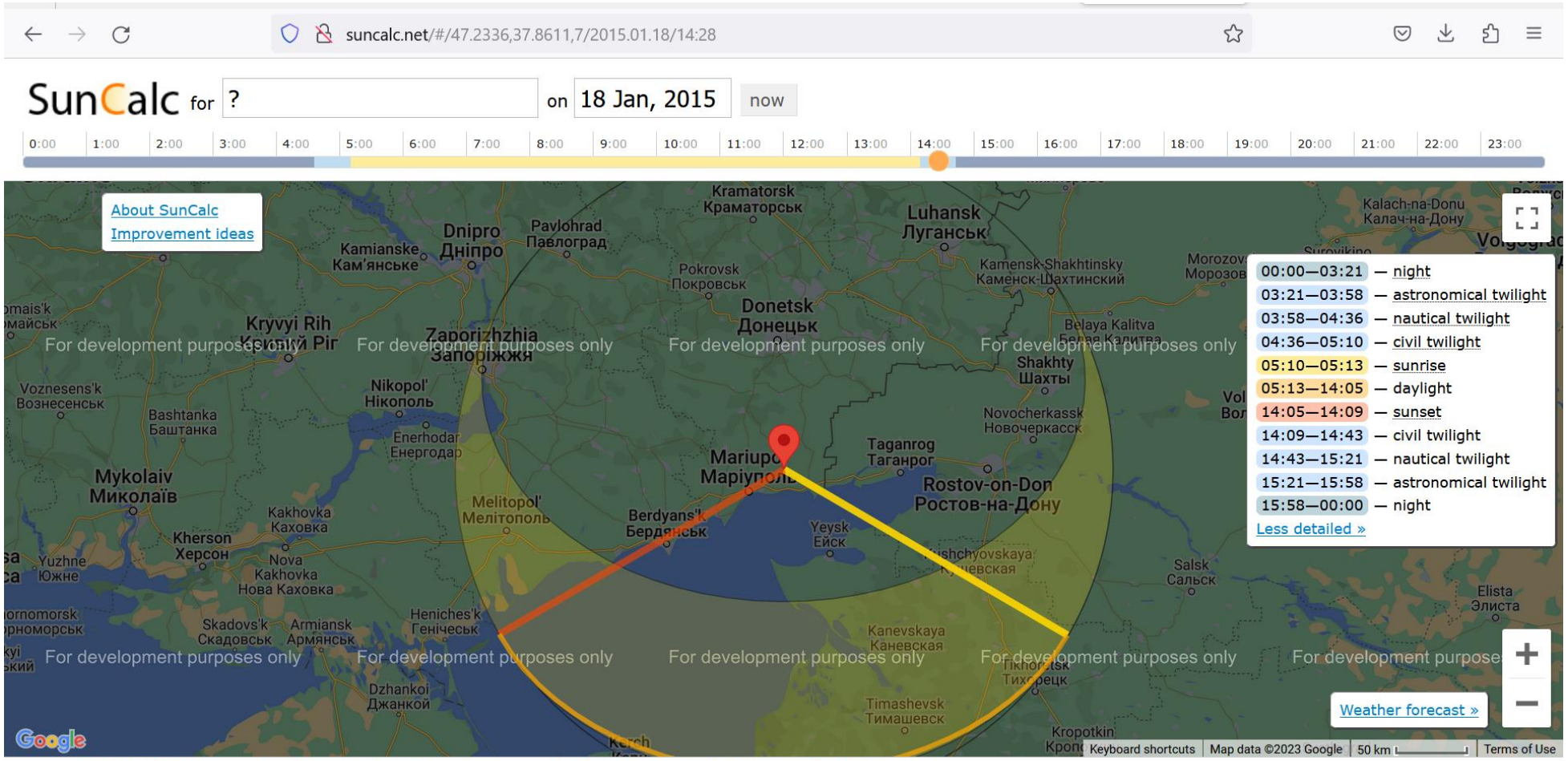
© Igor Dolgov

ALABINO FIRING GROUND, MOSCOW OBLAST, RUSSIA - SEPTEMBER 10, 2016: BM-30 Smerch Russian transit-loading heavy multiple rocket launcher at the international military-technical forum ARMY-2016.

Exhibit B

SunCalc, Data as of 18 January 2015

SunCalc, Data as of 18 January 2015, available at: http://suncalc.net/#/47.2336,37.8611,7/2015.01.18/14:28.



Annex 5

Expert Report of Vladislav Alexeyevich Filin, 10 March 2023

(translation)

INTERNATIONAL COURT OF JUSTICE

APPLICATION OF THE INTERNATIONAL CONVENTION FOR THE SUPPRESSION OF THE FINANCING OF TERRORISM AND OF THE INTERNATIONAL CONVENTION ON THE ELIMINATION OF ALL FORMS OF RACIAL DISCRIMINATION

(UKRAINE V. RUSSIAN FEDERATION)

EXPERT REPORT OF VLADISLAV ALEXEYEVICH FILIN

10 MARCH 2023

TABLE OF CONTENTS

I. INTRODUCTION

A. QUALIFICATIONS

1. My name is Vladislav Alexeyevich Filin. I am a colonel of the reserve, and my entire career has been connected with higher military educational institutions of the Ministry of Defence of the Russian Federation (hereinafter, the "MoD"). In 2000, I was awarded the academic degree of Candidate of Military Sciences and in 2009 - the title of Associate Professor. I describe my relevant experience below.

2. In 1988, I graduated with honours from the Tambov Higher Military Command School of Chemical Defence with specialisation in tactical command system of chemical-warfare troops, chemical weapons and chemical defence equipment engineer; with the military rank of Lieutenant. Subsequently, I did studies at the postgraduate school of the Military University of Radiological, Chemical and Biological ("RCB") Defence which I successfully completed in 2000.

3. I served in the Armed Forces of the Russian Federation ("RF AF"), in various military training institutions, as a platoon commander, company commander at the Saratov Higher Military Engineering School of Chemical Defence, adjunct, lecturer at the Department of Combat Application of Incendiary Munitions and Aerosol Countermeasures of the Military Academy of RCB Defence, senior lecturer, assistant professor at the Department of RCB Defence of the All-Russian Army Academy. In the course of my service I was engaged in direct training of soldiers, cadets, and officers and in organizing and planning the training of students as part of my job duties at the Department. One of the main areas of my official activities was immediate preparation and conduct of instructional firing from various types of weapons, including rocket-propelled infantry flamethrowers. I have experience in the use of various types of flamethrower and incendiary weapons of the Russian RCB Protection Forces of the MoD, including rocket-propelled infantry flamethrowers.

4. My teaching experience spans some 20 years and includes training in the general design, damage assessment and effectiveness of flamethrower and incendiary weapons of the Russian RCB Protection Forces of the MoD.

B. QUESTIONS PUT TO THE EXPERT

5. I have been asked to prepare an expert report for submission to the International Court of Justice in "Application of the International Convention for the Suppression of the Financing of Terrorism and of the International Convention on the Elimination of All Forms of Racial Discrimination" (Ukraine v. Russian Federation). I have been asked to assess Ukraine's claims of alleged MRO-A flamethrower firing at:

   (a) the regional office of JSC CB PrivatBank located at 2-A Malomyasnitskaya Street, Kharkov (hereinafter referred to as "PrivatBank Office") (28 July 2014, at 2:30 a.m.);

   (b) PrivatBank's ATMs; and

   (c) the military enlistment office at 56 Kotsarskaya Street, Kharkov (4 August 2014).

6. In particular, I have been instructed to:

   (a) Explain the procedure for dealing with launchers of infantry flamethrowers after the firing is completed;

   (b) Evaluate the likelihood of a failure of MRO-A Borodach ammunition and RPO-A Shmel ammunition during firing and explain the possible causes of such failure;

   (c) Evaluate the likely effects of an explosion of MRO-A Borodach ammunition and RPO-A Shmel ammunition;

   (d) Evaluate the evidence submitted by Ukraine for completeness and determine whether this evidence allows for the relevant conclusions to be drawn.

II. SUMMARY

7. I have come to the following conclusions in this Report.

8. The materials submitted by Ukraine and information about the incident from open sources do not allow for concluding that the PrivatBank Office was shelled indeed and, if there was shelling, what type of weapons was used. My conclusion is based on the following:

   (a) There is no video or photographic footage of a used launch tube ("casing");

   (b) There is no video or photographic footage of broken glass on the second floor of the PrivatBank Office or of any other damage to the PrivatBank Office;

   (c) There is no video or photographic footage of unexploded shell lodged in the ceiling board on the second floor of the PrivatBank Office;

   (d) There is no video or photographic footage of activities of demining unexploded shell at the PrivatBank Office.

9. The evidence submitted by Ukraine that the alleged MRO-A ammunition sample belonged to the Russian Armed Forces is clearly insufficient to assert that the weapons in question were transferred to Ukrainian citizens by the Russian side. The markings presented by the Ukrainian side do not correspond in format to the MRO-A markings used by the Russian Armed Forces. There are offers from online shops, including those in Ukraine, to sell MRO-A dummies (Appendices 2, 3), which could have been used in the staging of the incident.

10. The manufacturer guarantees the reliability factor of 0.99 (R_f=0.99) for rocket-propelled infantry flamethrowers. Accordingly, a munition failure after firing at the specified distances is virtually impossible, which is confirmed by my many years of experience in organizing and conducting infantry flamethrower firings. Such a failure can only be caused by the shooter not complying with fundamental rules of firing this type of weapon.

11. The actual results of the alleged shelling, as compared to the likely effect, suggest the following possible reasons for what happened:

   (a) the shooter did not have the minimal knowledge and skills that are necessary for firing (low competence);

(b) the purpose of the firing was not to cause harm;

(c) there was no shelling, it was just staged.

12. The actions to demine the unexploded munition were not actually performed by Ukrainian services and were staged. This is due to the fact that, given the design features of the detonator described in detail in paragraphs 61 through 67 of this Report, the MRO-A munition is not removable and has to be destroyed on site. There are no other safe methods of demining unexploded munition of this type.

13. The above conclusions, together with the failure to provide complete information about the incident, indicate that the incident was staged using a sequence of actions that fit within the content of the materials I have reviewed:

(a) the clap of the shot was simulated using a thunder flash (or other simulator);

(b) the shot mark on the building (broken glass), if there was one, was simulated by throwing a heavy object at a second-storey window;

(c) an imitation of MRO-A or RPO-A launch tube was left at the scene;

(d) the actions of police officers and security services' vehicles in setting up a cordon were actually feigned;

(e) the demining was simulated by taking out of the building a box containing a heavy object, but not an actual munition: otherwise there would have been an explosion with possible human losses.

14. In my view, the most probable version for what happened is that the incident was staged. This version is supported by the fact that no unexploded shell could have been taken out of the PrivatBank Office.

15. Another possibility, in my opinion, is that the incident could have been a demonstrative shelling, and the firing was deliberately done in such a way so that the damage was minimal.

III. DETAILED ANALYSIS

A. GENERAL REMARKS

16. My analysis is based on materials submitted by Ukraine to the ICJ, information from public sources (including reports of non-governmental organisations, official documents, news articles published on the Internet, social media posts) which have been provided to me (and translated where appropriate) by Monastyrsky, Zyuba, Stepanov and Partners law firm.[1]

17. I confirm that all the matters in respect of which I have stated my opinion are within my competence and expertise in the field of military science. My substantive criticism is mainly confined to my area of expertise, i.e. the use of flamethrower and incendiary weapons.

18. I would have been in a better position if I had been provided with photo and video footage showing the launcher at the scene after firing, the broken window block on the second floor of the building, the unexploded munition, and the principal activities to demine the unexploded munition. As shown below, the absence of such materials, combined with other circumstances, allows me to doubt the fact that the PrivatBank Office was shelled by the type of weapon Ukraine is referring to.

19. I have reviewed the Ukrainian criminal investigation materials and other documents provided to me, which I understand Ukraine submitted as evidence. As I pointed out in paragraph 9 above, the information submitted by Ukraine is incomplete. For instance, the Ukrainian materials I have reviewed do not contain data on the damage caused by the so-called "Kharkov Partisans" as a result of the use of the alleged weapon (MRO-A).

20. In addition, the data from Ukrainian sources is contradictory. Below I describe important contradictions in the data provided by Ukraine.

21. Ukraine claims that Vasiliy Pushkarev allegedly fired at the PrivatBank office from MRO-A rocket-propelled grenade (see e.g. para. 120 of Ukraine's Memorial). However,

[1] Unless explicitly stated otherwise in this Report, all the materials from public sources mentioned in this Report are deemed to have been provided to me by Monastyrsky, Zyuba, Stepanov & Partners law firm.

the suspect interrogation protocol of Vasiliy Pushkarev[2] states on his behalf that he used RPO-A Shmel (see para. 42 et seq. of this Report for further details). There it is also indicated that Pushkarev did not use earplugs, so he was allegedly stunned by a shot from an RPO-A.[3] However, the indictment against Pushkarev states that the earplugs found in the case were used because biological material was found on them.[4]

22. Para. 120 of Ukraine's Memorial states that "three extremists fired a MRO-A rocket-propelled grenade at the regional office of PrivatBank", but it follows from the suspect interrogation protocol of Vasiliy Pushkarev[5] that he alone was involved in doing the firing.

23. Footnote 367 to para. 166 of Ukraine's Memorial refers to Pushkarev's alleged use of several flamethrowers and involvement in several shelling incidents:

> "...the flamethrowers obtained by Pushkarev and left at the scene of his crimes, as established by the serial numbers on these weapons...".

24. However, it follows from the documents provided by Ukraine, specifically, the indictment in the criminal case against Pushkarev[6] and the suspect interrogation protocol of Pushkarev,[7] that Pushkarev was involved in only one alleged shelling – shelling of the PrivatBank Office on 28 July 2014, during which Pushkarev allegedly fired one shot at PrivatBank Office from MRO-A (with an inscription "For Odessa") and that MRO-A was allegedly left at the site of the shooting and found by the investigation:

> "At about 2:40 a.m., acting on a plan with an intention to bring the crime to an end, V. V. Pushkarev used a small-sized rocket-propelled flamethrower MRO-A marked "MRO-A MO.1.10.02 BB-03-08 OKFOL U-505 B 533-1-08" and having an inscription "For Odessa", which was loaded with a rocket-propelled grenade with a thermobaric warhead containing 1 kg of thermobaric compound "TBS OM-100MI-3LO" and an explosive shell, to fire at the aforementioned building of Commercial Bank "Privatbank" (Closed Joint Stock Company) and left a pack with the above flamethrower at the crime scene";

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[2] Memorial, Annex 242.

[3] *Ibid.*

[4] Memorial, Annex 145. It is indicated that it has not been possible to identify Pushkarev's DNA.

[5] *Ibid.*

[6] Memorial, Annex 145.

[7] Memorial, Annex 242.

> "On 28 July 2014, during the examination of the crime scene, the forensic expert team discovered and collected a pack of small-sized rocket flamethrower MRO-A with a trigger and firing mechanism and sight mechanism marked "MO.1.10.01 KL 4214 29 08" MRO-A MO.1.10.00MO.1.10.01 1-63715-2008."

25. Ukraine has not provided any other documents indicating that Pushkarev or others referred to as "Kharkov Partisans" used MRO-As. In particular, the inspection record of 3 December 2015, to which Ukraine refers, shows that it was drawn up in Kiev in relation to a large consignment of weapons (including more than 20 grenade launchers and flamethrowers) "seized from illegal paramilitary groups", which "arrived at military unit A0222 after a World War II weapons exhibition in Kiev, where weapons were displayed".[8] Consequently, the inspection record of 3 December 2015 refers to the weapons seized by the UAF from "illegal paramilitary formations" (probably implying DPR and LPR forces) and those weapons have nothing to do with those who are referred to by Ukraine as "Kharkov Partisans". This is also confirmed by the fact that the markings on two MRO-As identified in the inspection report of 3 December 2015, specifically:

> "14) Flamethrower (tube) MRO-A, MO.1.10.00, year of manufacture and manufacturer unknown (MO.1.10.01.1-6, 3311-2008)
>
> 15) Flamethrower (tube) MRO-A, MO.1.10.00, No. 30.1.10.01-16, 42-75-2008, year of manufacture and manufacturer unknown",

do not correspond to the markings cited in the indictment in the criminal case against Pushkarev (see above).

26. Thus, Ukraine's claim that Pushkarev fired several flamethrowers and left them "at his crime scenes" is not supported by the Ukrainian side's own evidence.

27. As can be seen from the citations above from the indictment in the criminal case against Pushkarev,[9] it cites three different markings belonging to the same MRO-A flamethrower, which was allegedly used to shell PrivatBank Office. No explanation whatsoever is provided by Ukraine regarding this contradiction: one MRO-A cannot have three different markings, and the markings cited could only have belonged hypothetically to three different MRO-As (subject to reservations I discuss below).

---

[8] Memorial, Annex 144.

[9] Memorial, Annex 145.

28. The marking on MRO-A flamethrowers cited in Ukrainian documents is generally contradictory and does not correspond to the standard marking of Russian MRO-A flamethrowers:

(a) This is the first marking cited in Pushkarev's indictment:

"MRO-A MO.1.10.02 BB-03-08 OKFOL U-505 B 533-1-08".

This marking contains too many symbols. This can be seen, inter alia, if one compares this marking with other examples of markings referred to by Ukraine. In particular, the symbols "OKFOL" are not present in any of the other examples.

(b) The second marking in Pushkarev's indictment:

"MO.1.10.01 KL 4214 29 08" MO.1.10.00MO.1.10.01 1-63715-2008".

This marking, according to the logic of the Ukrainian investigation, belongs to the same MRO-A which was allegedly left by Pushkarev at the site of the shelling of the PrivatBank office. As I said earlier, this marking cannot belong to the same MRO-A. It can be seen from this marking that it could (subject to a reservation) belong to two other MRO-As: "MO.1.10.01 KL 4214 29 08" to hypothetical MRO-A No 2 and "MRO-A MO.1.10.00 MO.1.10.01 1-63715-2008" to hypothetical MRO-A No 3. It should be noted, however, that the marking on hypothetical MRO-A No. 3 does not correspond to the marking format used either, since the marking cannot contain two designations at the same time: "…MO.1.10.00MO.1.10.01…".

(c) Another set of markings is cited by Ukraine in paragraph 34 of the witness statement of Major General Ivan Gavryliuk of the UAF.[10]

[10] Memorial, Annex 1.

c) MPO-A MO.1.10.00MO.1.10.011063715-2008

Figure 1 - Excerpt from testimony of AFU Major General Ivan Gavryliuk

The marking cited by Major General Gavryliuk (see Figure 1) is different from the marking cited in the indictment against Pushkarev:[11] "MRO-A MO.1.10.00.1.10.011-63715-2008" (hypothetical MRO-A No. 3).

29. Para. 173 of Ukraine's Memorial claims that " the PrivatBank bombers attended a military training camp in Russia". However, the actions allegedly performed by the suspect Vasiliy Pushkarev demonstrate either firing intended to cause minimal damage or the shooter's lack of firing skills and ignorance of basic rules of firing the alleged weapon, which I analyse in para. 56 below.

30. Para. 120 of Ukraine's Memorial states that the military enlistment office at 56 Kotsarskaya Street was also shelled by MRO-A. This claim by Ukraine is not supported by its own evidence. The suspect interrogation protocol of Vasiliy Pushkarev[12] and the indictment against Vasiliy Pushkarev[13] state that the alleged shelling of the military enlistment office was carried out by another suspect (Mikhail Reznikov) using RPO-A Shmel.

B. ALLEGED SHELLING OF THE PRIVATBANK OFFICE ON 28 JULY 2014

i. The Circumstances of the Alleged Shelling

31. The circumstances of the alleged shelling are defined by Ukraine's claims that at 2:30 a.m. on 28 July 2014, in Kharkov, Vasiliy Pushkarev[14] in collusion with others fired an MRO-A rocket-propelled infantry flamethrower at the PrivatBank Office. As it follows from media reports (Appendix 1) the shell hit the second floor and lodged in the ceiling of the office without bursting. Media reports say that the damage to the PrivatBank Office was minimal and that on the day of the alleged shelling the bank continued to operate

[11] Memorial, Annex 145.

[12] Memorial, Annex 242.

[13] Memorial, Annex 145.

[14] Memorial, Annex 242, Minutes of interrogation of suspect Vasiliy Pushkarev (31 August 2015), pp. 6-7, 11-12.

normally. Neither media publications nor the case file contain video or photographic footage showing:

(a) the PrivatBank Office (outside or inside) with visible shelling effects;

(b) a used MRO-A launch tube ("casing"), which was presumably left at the site of the shelling;

(c) the unexploded munition allegedly lodged in the ceiling on the second floor of the PrivatBank Office;

(d) the process of the alleged demining of the unexploded munition.

32. As I specify in detail below (see paras. 65-67 of this Report) the MRO-A or RPO-A projectile is an antiremoval mine. If clearance had actually taken place, the projectile would have been detonated on site. There are no other safe methods of clearing unexploded munition of this type. I believe that the clearance of the unexploded munition by the Ukrainian services has not really taken place and has been staged.

33. The fact that the materials provided by the Ukrainian side contain numerous contradictions and the evidence on key aspects of the incident is not presented at all (in particular, the photo or video recording of the fired launch container allegedly left at the site of the shelling, the unexploded munition allegedly stuck in the ceiling on the first floor of the PrivatBank Office, the alleged demining of the unexploded shell) indicate that the incident is staged. If investigative actions and demining activities had actually taken place, photo and video recording of these circumstances would have been obligatory.

34. At the same time, the indication in the protocol of interrogation of the suspect Vasiliy Pushkarev[15] that he was stunned by the gunshot, because he did not use earplugs, contradicts the indictment against Pushkarev,[16] that the earplugs found in the flamethrower case were used. I believe that the content of the interrogation report of the suspect Vasiliy Pushkarev[17] should be treated particularly critically, as the testimony was

[15] Memorial, Annex 242.

[16] Memorial, Annex 145.

[17] Memorial, Annex 242.

probably obtained under pressure and was only intended to further "confirm" the staged "incident" and to place responsibility for the "incident" on the suspect Pushkarev. Since, in my conviction, the firing was staged, Pushkarev could not really have been stunned by the gunshot.

35. I believe that the sequence of actions to simulate the shooting incident at the PrivatBank Office is consistent with the content of the materials I have studied and consisted of the following:

(a) the clap of the shot was simulated using a thunder flash (or other simulator);

(b) the shot mark on the building (broken glass), if there was one, was simulated by throwing a heavy object at a second-storey window;

(c) an imitation of MRO-A or RPO-A launch tube was left at the scene;

(d) the actions of police officers and security services' vehicles in setting up a cordon were actually feigned;

(e) the demining was simulated by taking out of the building a box containing a heavy object, but not an actual munition: otherwise there would have been an explosion with possible human losses.

ii. **Characteristics of the Alleged Shelling Target**

36. As far as can be ascertained from publicly available information, the target of the alleged shelling was a modern building constructed using the monolithic frame technology. The building is a reinforced concrete structure consisting of columns supported by a load-bearing foundation and horizontal floor slabs linking all vertical supports into a single strong frame. The exterior walls of the building on the façade side (in the area of the alleged shelling) are made of continuous heat insulating glass panels forming almost full glazing (Figure 2).

Figure 2 - Appearance of PrivatBank's regional Office[18]

37. In such buildings, the internal walls between load-bearing reinforced concrete structures are usually made of foam concrete blocks (gas-concrete and other heat and sound insulation materials). According to media reports, the munition hit the Office premises of PrivatBank. In view of the lack of precise information on the premises and based on the average standard dimensions of office premises having a similar purpose, I have assumed the following estimated dimensions of the premises: 6*12 m (width*length) with a ceiling height of 3 m.

38. To assess the effects of MRO-A and RPO-A ammunition with a thermobaric warhead (see paras. 54-58 of this Report), I have neglected the partitions between workstations, presumably made of thin plastic sheets, because the main element of the room structure affecting the destructive power of the air shock wave is relieving openings made of glass panels.

iii. Analysis of the Presumed Weapon Type

39. The Ukrainian Armed Forces, the Armed Forces of the Russian Federation and forces of the DPR and the LPR had various types of portable (hand-held) grenade launchers and flamethrowers in service during the period under review. For convenience, I will provide some of the abbreviations that are used to designate the respective type of weapon:

[18] GoogleMaps (June 2015), available at: https://maps.google.com.

(a) MRO-A is [Russian abbreviation for] small-sized rocket-propelled flamethrower;

(b) RPG is [Russian abbreviation for] hand-held anti-tank grenade launcher;

(c) RPO-A is [Russian abbreviation for] rocket-propelled infantry flamethrower.

40. These weapons have different purposes, in particular, the principal function of a MRO is to engage enemy manpower with thermobaric munition. The main destructive factor of thermobaric munition is an air blast which has a high-explosive effect. Unlike MRO, The RPG is designed to engage the enemy's armoured vehicles. The RPG uses a completely different munition, which has a shaped charge the explosive force of which is directed in one direction (forward), to burn through the armour.

41. Besides the lack of images of the used launch tube, I take into consideration the discrepancies and inaccuracies in the wording of the materials submitted by the Ukrainian side. Furthermore, according to media reports regarding the incident, other weapons could have been used for the alleged shelling. The weapons used for the alleged shelling of the PrivatBank offices on 28 July 2014 are referred to in completely different ways in these materials:

(a) "MRO-A grenade";[19]

(b) "Shmel flamethrower;[20]

(c) "hand grenade launcher-mukha";[21]

(d) "RPG";[22]

(e) "portable complex".[23]

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[19] Memorial, ¶120.

[20] Memorial, Annex 242, Record of interrogation of the accused Vasiliy Pushkarev.

[21] Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014), available at: https://vesti.ua/harkov/62977-v-harkove-iz-rpg-obstreljali-privatbank (Exhibit A).

[22] ZN.UA, *PrivatBank Office Fired at by Unidentified Persons in Kharkov* (28 July 2014), available at: https://zn.ua/UKRAINE/v-harkove- neizvestnye-obstrelyali-otdelenie- privatbanka-149773_.html (Exhibit B).

[23] Objective Media Group, *PrivatBank Office Fired at by Unidentified Person in Kharkov* (28 July 2014), available at: http://archive.objectiv.tv/280714/100933.htm (Exhibit C).

42. There is no mention of MRO-A "Borodach" in the suspect interrogation protocol of Vasiliy Pushkarev.[24] This document states on behalf of Pushkarev that he allegedly employed a "Shmel flamethrower" to fire at the PrivatBank offices and it was on the "Shmel" flamethrower" that the chalk inscription "For Odessa" was allegedly made. It also states that Mikhail Reznikov allegedly fired on the military enlistment office in Kharkov using a "Shmel flamethrower". Pushkarev's testimony says that he served in the UAF and the Interior Ministry and was a member of the "Berkut" special police unit, in view of which I believe that Pushkarev should have correctly identified the type of flamethrower if he had indeed fired it at the PrivatBank offices.

43. The various grenade launcher weapons available to the armed forces of Ukraine, the DPR, the LPR and the Russian Federation in the period under review have significant similarities in appearance and design. Figure 3 below shows the appearance of those types of weapons that are referred to in Ukrainian documents and could have been used in the alleged shelling:

(a) 72.5 mm hand-held anti-tank grenade launcher RPG-26 "Aglen",

(b) 72.5 mm hand-held anti-tank grenade launcher RPG-22 "Netto",

(c) 64 mm hand-held anti-tank grenade launcher RPG-18 "Mukha",

(d) 93mm rocket-propelled infantry flamethrower RPO-A "Shmel".

RPO-A Shmel

RPG-18 "Mukha"

RPG-26 "Aglen"

[24] Memorial, Annex 242.

MRO-A "Borodach"

RPG-22 "Netto"

Figure 3 - Comparative appearance of weapons that could potentially have been used in the alleged shelling of the PrivatBank offices

44. Each of the weapons shown in Figure 3 (MRO-A Borodach, RPG-18 "Mukha", RPG-26 "Aglen", RPG-22 "Neto", RPO-A "Shmel") has similar design and appearance. Major General of the UAF Ivan Gavryliuk also notes in para. 35 of his testimony:[25]

> " By its appearance and functional purposes, MRO-A resembles and is very similar to the rocket-propelled infantry flamethrower RPO-A "Shmel", which has been in service with the UAF since the times of the USSR."

45. For this reason, only detailed images of a specific used launch tube would allow one to say for certain what type of weapons it belonged to. In addition, each of the mentioned types of weapons was in the possession of the Ukrainian Armed Forces at the time in question, or at least was in the possession of the Ukrainian side. This is also evidenced by Ukraine's own documents, such as the inspection report of 3 December 2015, which allegedly confirms the seizure of MRO-As "from illegal armed formations".[26] In addition, I provide below examples of Internet advertisements for the sale of the MRO-A imitations, including in Ukraine (Appendices 2 and 3). Therefore, the statement by Major General Gavryliuk that MRO-A was never in service with Ukrainian armed forces, even if true, does not mean that MRO-As (or their imitations) were not in fact available to the Ukrainian side.

46. At the same time, RPO-A Shmel, the use of which to shell the PrivatBank offices is mentioned in the suspect interrogation protocol of Vasiliy Pushkarev,[27] is a Soviet weapon and has been in service with the UAF since the collapse of the USSR (I agree with Major General Gavryliuk with regard to this conclusion).

47. Accordingly, the Ukrainian side's claim that it was the MRO-A flamethrower that was employed in this case, all the more so the one provided by the Russian side, is dubious and insufficiently substantiated.

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[25] Memorial, Annex 1.

[26] Memorial, Annex 144.

[27] Memorial, Annex 242.

iv. <u>Analysis of the purpose and main operational characteristics of MRO-A Borodach and RPO-A Shmel flamethrowers and the destructive power of their ammunition and assessment of whether they correspond to the results of flamethrower use in the alleged shelling of the PrivatBank offices on 28 July 2014</u>

48. Since the Ukrainian documents (in particular, Pushkarev's testimony) refer to RPO-A Shmel, I analysed the characteristics of both types of ammunition - MRO-A Borodach and RPO-A Shmel.

49. The small-sized rocket-propelled flamethrower MRO-A Borodach with thermobaric munition was introduced into service in 2002.[28]

50. The MRO-A Borodach Flamethrower is designed to engage enemy manpower located in residential and industrial buildings, in defensive structures and in automotive vehicles and lightly-armoured vehicles with a high-temperature and excessive pressure field. The flamethrower can be fired from rooms with a space of 20 m^3 or more, at an angle of elevation up to 60^o (in a standing position), when the distance from the rear cut of the flamethrower to an obstacle is up to 1.5 m.

51. Composition of MRO-A Borodach:

Disposable launcher	1
Rocket with a thermobaric warhead	1
Detonator	1

The main operational characteristics of MRO-A:

Calibre, mm	72.5
Weight of flamethrower, kg	4.6
Weight of thermobaric compound, kg	1.0
Firing range, m:	
maximum	450
effective	300
point blank range	90

[28] Extract from Order of the Minister of Defence of the Russian Federation No 475, 11 December 2002 (Exhibit D).

52. The rocket-propelled infantry flamethrower "RPO-A Shmel" is designed to destroy covered firing positions of the enemy, disable lightly-armoured vehicles and automotive vehicles, and destroy enemy manpower.

53. Composition of the RPO-A Shmel:

Disposable flamethrower, pcs.	1
Removable reusable telescopic sight, pcs.	1
Detonator	1
Basic operational characteristics of RPO-A:	
Calibre, mm	93
Firing range, m:	
maximum	1000
effective	600
point blank range for a target 3 m high	200
Weight of flamethrower, kg	11
Weight of thermobaric compound, kg	2.1

54. The above data formed the basis for a predictive assessment of the destructive power of MRO-A Borodach and RPO-A Shmel munitions. In the meantime, given the low weight of munitions of the above listed weapons corresponding to their calibre, no assessment of potential destruction of /damage to the load-bearing structures of the building was carried out.

55. Given that the simulated premises with a volume of $V=216\ m^3$ have three glass window openings (relieving openings) with a large area of $S_{op}=6.48\ m^2$, no increase in the air blast effect on manpower, which is described in the works of American scholars W. Baker and P. Cox,[29] arises and no such increase was considered in the calculations.

56. The calculations made have shown that the possible effect of exploding two types of munitions, MRO-A Borodach and RPO-A Shmel, on manpower is almost identical under the conditions in question: within a radius of up to 4 metres from the point of detonation,

[29] W. Baker, P. Cox, Ya. Zeldovich (ed). EXPLOSIVE PHENOMENA. EVALUATION AND CONSEQUENCES (vol. 1, Mir, 1986), p. 213 (Exhibit E).

the manpower on the premises in question could receive thermobaric injuries of high to moderate severity.[30]

57. Possible damage resulting from a detonation of the above-discussed types of munition could include completely blown-out window openings, destroyed plastic partitions between workstations, destroyed or damaged office furniture, office equipment and precast partition walls that are within the munition effects radius.

58. Thus, the amount of damage required for both MRO-A Borodach and RPO-A Shmel to achieve the goal of the alleged shelling would be virtually identical.

59. In view of the aforesaid, there is no reason why the alleged firing would require the use of MRO-A Borodach rather than the more common and older weapon, RPO-A Shmel.

v. <u>Possible causes of failure of MRO-A Borodach (RPO-A Shmel) munition after the alleged firing and procedures for dealing with unexploded munitions</u>

60. I have analysed the possible causes of a failure of MRO-A Borodach and RPO-A Shmel ammunitions. The lack of allegations and evidence from the Ukrainian side regarding damage to the PrivatBank Office (such as photographs of damage to the office) and media reports indicating only the broken window and ceiling panels as the only damage to the PrivatBank Office[31] clearly indicate that the munition did not go off.

61. The possible cause of a failure of both MRO-A and RPO-A Shmel munitions is firing from a range of less than 25 metres. This conclusion is due to the particular design of the detonator of MRO-A and RPO-A munitions. In a simplified form, the detonator is a duralumin cup with a steel firing pin with a spring and a primer-detonator placed inside, which, in the travel (pre-firing) position, are bound by (filled up with) a solid pyrotechnic composition.

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[30] E. Nikulin, V. Russkov et al., MEANS OF CLOSE COMBAT. HAND-HELD GRENADE LAUNCHERS (Baltic State Technical University, 2007, p. 29 (Exhibit F).

[31] Appendix 1, *see*, for example, Vesti Ukraina report: "*According to Vesti's own sources, the incident took place at 03:00 AM. "Unidentified persons fired a shot from a handheld grenade launcher, Mukha, at the PrivatBank building. "To you for Odessa", was written on the discarded case. The projectile got stuck in the ceiling on the second floor of the building but did not explode. Later, the bomb squad arrived to disarm it," the source said*", Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014), available at: https://vesti.ua/harkov/62977-v-harkove-iz-rpg-obstreljali-privatbank (Exhibit A).

62. The essence of the detonator operation is that after the launch the pyrotechnic composition of the detonator is ignited and, when the munition is already in flight, the pyrotechnic composition, burning out, releases the spring and the firing pin thereby placing the detonator in the armed condition. When the munition subsequently comes into contact with an obstacle (when impact force, i.e. shock effect, arises), the firing pin pierces the primer-detonator under the action of the spring thereby initiating the explosive transformation of the main charge, the ammunition contents. Thus, 25 metres is the minimum necessary distance for the shell to munition fly before detonation of the main charge takes place. If the shell flies less than 25 metres, the pyrotechnic composition does not have time to burn out and, therefore, does not release the spring and the firing pin (the detonator is not placed in the armed condition). In such case, when the ammunition hits an obstacle (target), the spring and the firing pin are in the bound (filled-up) state and the primer-detonator is not pierced by the firing pin.

63. In the event of a detonator failure when the munition comes into contact with an obstacle, the munition has a self-destruct mechanism ensuring that the failing munition will detonate within 8 seconds of the failure.[32]

64. In this case, if firing took place indeed, self-destruct failed because the main detonator did not work, because this is the necessary condition for self-destruct operation.

65. Thus, firing from a distance of less than 25 metres leads to a failure of the munition, as the pyrotechnic composition does not have time to burn out and does not release the spring and the firing pin (the detonator is not placed in the armed position). The above features of the detonator design determine the safety precautions in relation to the firing of MRO-A and RPO-A, which strictly prohibit firing at targets located less than 25 metres away from the firing position.[33] This is because MRO-A is a close (and usually offensive) combat weapon. An unexploded munition is essentially an unremovable mine. Such munition must not be moved as any movement may cause an explosion. In addition, if a

[32] Small-Size Rocket-Propelled Flamethrower MRO-A. Operations Manual. Approved by VAIS.771342.905 RE-LU, p. 18 (Exhibit G).

[33] "*It is STRICLY PROHIBITED: to fire at targets closer than 25 m. There must be no obstructions in the area up to 25 m*", *see* Infantry Flamethrower Firing Course (KS PO-2011), approved by the Commander-in-Chief of the Ground Forces of the Russian Armed Forces on 3 November 2011. Appendix 2, p. 63, ¶2 (Exhibit H).

munition is detonated within 25 metres of the shooter, there is a possibility that fragments of the duralumin munition casing can hit the shooter.

66. If the alleged shot was fired from a distance of less than 25 metres, this could have led to the consequences described by the media: there was no explosion, the ammunition did not detonate but was "stuck" in the ceiling slab. Furthermore, according to media reports, the damage from the shot includes broken glass and damaged ceiling panels.[34]

67. An analysis of the media coverage of the incident[35] allows for calling into question the demining activities. An unexploded munition of any infantry flamethrower, including MRO-A, is unremovable and must be destroyed on site,[36] because in such case the detonator is placed in the armed position after the munition has collided with an obstacle (in this case after getting stuck in the ceiling slab) and any movement or load impact will inevitably result in its detonation. Therefore, the munition could not have been moved anywhere during demining, but could only have been detonated on site.

68. Assuming that the alleged shelling of the PrivatBank Office did take place, then an analysis of the circumstances leads to the unequivocal conclusion that the shooter had no intention of achieving destructive effect, i.e. no intention of harming the PrivatBank Office or the people inside.

69. If the Ukrainian side's claim that the shooting did take place is to be believed, it would then require a shot to be fired from a distance of less than 25 m - which, as noted above, is not in accordance with the rules of engagement for this type of weapon. Also

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[34] *See*, for example, the Vesti Ukraine report: "*Vesti learned from its own sources that "unidentified individuals fired a hand-held grenade launcher Mukha at the Privatbank building. The tube left behind said 'This is for you for Odessa'. The shell lodged in the ceiling on the first floor of the building but did not explode. Later, specialists arrived and cleared it," the source said* – Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014), available at: https://vesti.ua/harkov/62977-v-harkove-iz-rpg-obstreljali-privatbank (Exhibit A).

[35] *Ibid.*

[36] *"Destruction of Failed MPO-A rounds It is strictly forbidden to touch unexploded rounds. Such rounds must be destroyed at the point of impact in accordance with appropriate safety measures." See* Small-Size Rocket-Propelled Flamethrower MRO-A. Operations Manual. Approved by VAIS.771342.905 RE-LU, pp. 33-34. (Exhibit G). *"A flamethrower charge that has not detonated after firing is considered extremely dangerous and must be detonated at the point of impact. It is not to be handled in any way (extraction from the ground, relocation). To destroy it, an active charge of 0.2 kg is used, which is placed on the surface of the shell and detonated electrically by the standard detonation machine, observing the safety requirements for detonation operations." See* Infantry Flamethrower Firing Course (KS PO-2011), approved by the Commander-in-Chief of the Ground Forces of the Russian Armed Forces on 3 November 2011, p. 65, ¶8 (Exhibit H).

noteworthy is the fact that the alleged shot was fired at around 2am, at a time when the PrivatBank Office and its surroundings were deserted.

70. The above does not correspond to the claim of an allegedly terrorist nature of the incident. The materials presented by the Ukrainian side do not form a logical picture of a terrorist act, but are mutually contradictory and in their totality absurd. Against this background, the version about the staged nature of the incident seems the most logical and substantiated.

C. ALLEGED EXPLOSION OF PRIVATBANK ATM AND SHELLING OF MILITARY ENLISTMENT OFFICE

71. Ukraine has not referred to any circumstances surrounding the alleged explosion of a PrivatBank ATM.

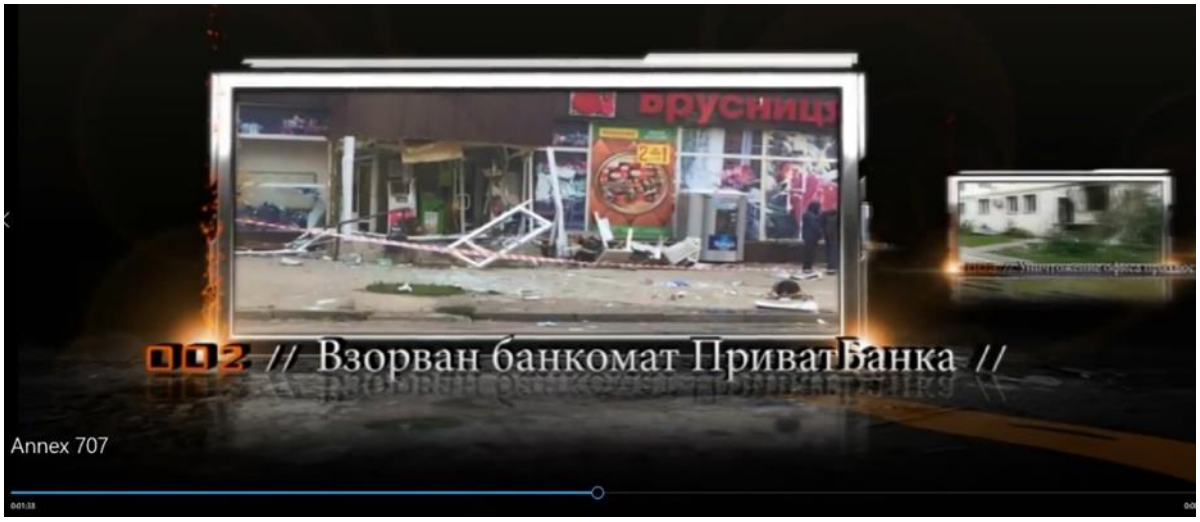


Figure 4 - The result of PrivatBank ATM explosion

72. There is a video footage, provided by the Ukrainian side, of the explosion of a PrivatBank ATM[37] (Figure 4) lasting 1 minute 38 seconds, which allegedly confirms that V. Pushkarev and his accomplices may have used a weapon similar to MRO-A for this purpose.

73. The fragment of the video footage in Figure 4 showing the consequences of the explosion of the PrivatBank ATM cannot serve as an argument for the unequivocal statement that

[37] Memorial, Annex 707 – a video of the explosion of an ATM at PrivatBank, allegedly confirming the involvement of a group of individuals in the PrivatBank office bombing case in the explosion at the military enlistment office.

in this case thermobaric munition was used, since such consequences could have been produced by an explosion of munition filled with any condensed explosive (trinitrotoluene, plastic explosive, hexogen, etc.), given that the main destructive factor of the above-listed compounds, including thermobaric explosive, is an air blast, which is specific to high explosives.

74. The sole indisputable argument for the use of thermobaric munition, under any circumstances of its use, can only be parameters of the explosion-generated shock wave recorded by certified instruments, such as: excessive pressure in the air shock wave front, impulse and duration of the compression phase, and specific energy.

75. The Ukrainian side alleges that, on 4 August 2014, the military enlistment office at 56 Kotsarskaya Street, Kharkov, was shelled from MRO-A.[38]Ukraine, however, has not provided any images or other evidence of the alleged weapon use, such as images of MRO-A's used launch tube, shell explosion site, etc.

76. The allegation that the military enlistment office was shelled from MRO-A contradicts the evidence submitted by the Ukrainian side. In particular, the record of suspect interrogation protocol of Vasiliy Pushkarev[39] and the indictment[40] against him state that another suspect, M. Reznikov, allegedly used RPO-A Shmel to fire on the military enlistment office.

77. To support the claim about the attack on the military commissariat, the Ukrainian side submitted the aforementioned video footage[41] showing the military commissariat building (Figure 5) allegedly shelled by "Kharkov Partisans".

[38] Memorial, ¶120.

[39] Memorial, Annex 242.

[40] Memorial, Annex 145.

[41] Memorial, Annex 707.

Figure 5 - Excerpt from the video footage of the military enlistment office

78. However, the caption on the video says that the building is located on Sokolova Street and not on Kotsarskaya Street. The building at 56 Kotsarskaya Street looks different (Figure 6[42]). Judging by the image of the building at 56 Kotsarskaya Street, I can assume that this was indeed the location of the military commissariat.

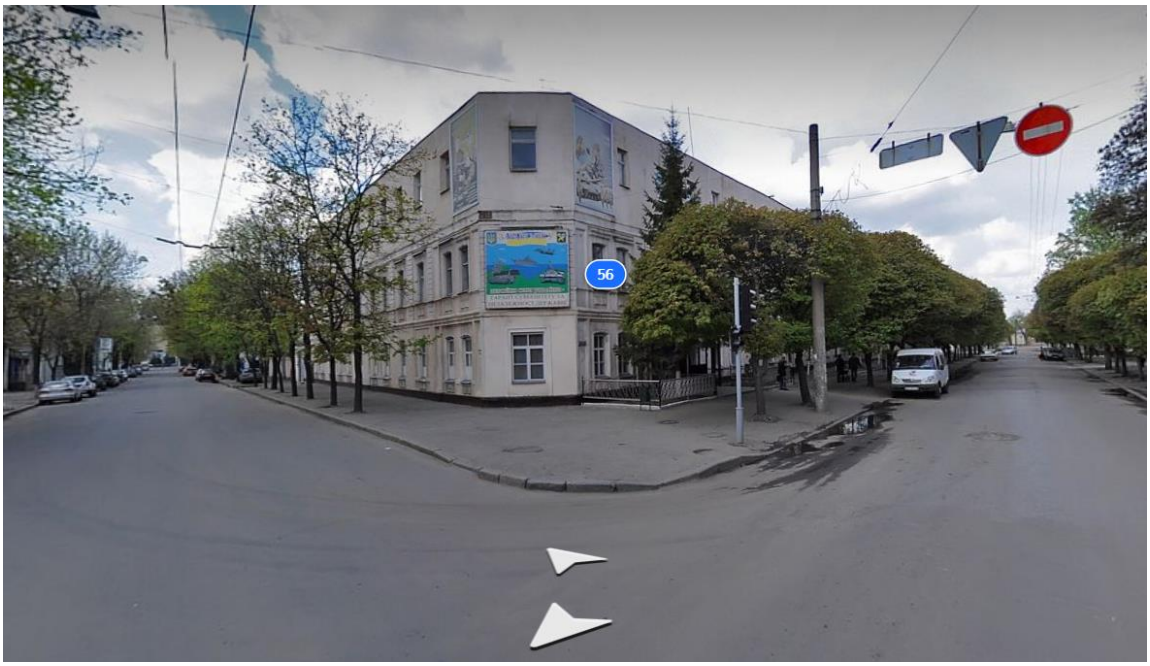


Figure 6 - View of the building at 56 Kotsarskaya Street, Kharkov

79. Taking into account the above contradictions in the documents of the Ukrainian side and the fact that the case file contains no video or photographic footage of:

(a) used launch tube of MRO-A flamethrower, which was allegedly used to fire at the military enlistment office,

(b) the site of the alleged munition explosion,

(c) the alleged damage caused by the munition to the military enlistment office,

Ukraine's claim that a MRO-A flamethrower was used to attack the military enlistment office is unsupported.

[42] Yandex Maps (2012), available at: https://yandex.ru/maps.

IV. EXPERT DECLARATION

80. I confirm that all the matters in respect of which I have stated my opinion are within my area of expertise and competence.

81. I understand that it is my duty to assist the International Court of Justice in deciding the issues in respect of which this Report has been prepared. I have complied with, and will continue to comply with, that duty.

82. I confirm that the conclusions I have reached in this Report are unbiased, objective and impartial; they have not been influenced by the pressures of the proceedings or by any of the parties to the proceedings.

Expert

Vladislav Alexeyevich Filin

Moscow, 10 March 2023

V. APPENDICES

Appendix 1

Table 1 - Excerpts from Internet publications about the PrivatBank Office incident

№	Source	Description
1	Vesti.ua[43]	*"Unidentified persons fired a shot from a handheld grenade launcher, Mukha, at the PrivatBank building. "To you for Odessa", was written on the discarded case. The projectile got stuck in the ceiling on the second floor of the building but did not explode. Later, the bomb squad arrived to disarm it," the source said.* *The press office of PrivatBank has confirmed reports of the shooting. "At 02:30 AM, a shot was fired from an unidentified weapon, the projectile hit the second floor but, fortunately, it did not explode. The incident is being investigated by the Security Service of Ukraine and the Ministry of Internal Affairs. The building was slightly damaged; a window is broken on the second floor and there is a hole in the ceiling. All PrivatBank offices are operating normally."*
2	ZN.UA[44]	*"At 02:30 AM, a shot was fired from an unidentified weapon. The projectile hit the second floor but, fortunately, it did not explode. At this moment, an investigation is underway. All PrivatBank offices are operating normally," the report says.* *Meanwhile, social media users claim that an RPG with its cover not removed was found near the building where the office is located."*
3	Objectiv Media Group[45]	*"A jet projectile was fired from a portable launcher. The shot went through a second-floor window of the VIP client conference hall," said Yury Shevchenko, deputy head of security of the regional department of PrivatBank."*
4	Interfax[46]	*"As the Bank's regional press team leader, Tatyana Tkachuk, told the Interfax reporter that the incident took place at half past two in the morning. The projectile hit the second floor but did not explode. Tkachuk did not specify what weapon was used to fire the shot. Meanwhile, social media users claim that an RPG with its cover not removed was found near the building."*

[43] Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014), available at: https://vesti.ua/harkov/62977-v-harkove-iz-rpg-obstreljali-privatbank (Exhibit A).

[44] ZN.UA, *PrivatBank Office Fired at by Unidentified Persons in Kharkov* (28 July 2014), available at: https://zn.ua/UKRAINE/v-harkove- neizvestnye-obstrelyali-otdelenie- privatbanka-149773_.html (Exhibit B).

[45] Objective Media Group, *PrivatBank Office Fired at by Unidentified Person in Kharkov* (28 July 2014), available at: http://archive.objectiv.tv/280714/100933.htm (Exhibit C).

[46] Interfax, *PrivatBank Office Shot at in Kharkov* (28 July 2014), available at: https://www.interfax.ru/world/388201 (Exhibit I).

5	MediaPort[47]	"*On Monday night of the 28th of July, an unidentified person fired a shot at the building of a PrivatBank office in Kharkov. According to unofficial information, the shot was fired from a grenade launcher. There was no explosion. No one was injured....* *"At 02:30 AM, a shot was fired from an identified weapon, the projectile hit the second floor but, fortunately, it did not explode. An investigation is now underway. All PrivatBank offices are operating normally," said Tatyana Tkachuk, head of the Bank's regional press team.* *According to her, the building was not seriously damaged.* *"A window was broken, and there's minor damage from the projectile hit inside the building. Almost everything has been restored," Tatyana Tkachuk explained.* *Local residents speculate that the bank building was fired at from a grenade launcher."*

[47] MediaPort, *PrivatBank Shot at in Kharkov* (28 July 2014), available at: https://www.mediaport.ua/v-harkove-strelyali-v-privatbank (Exhibit J).

Appendix 2

Table 2 - Internet advertisements for the sale of MRO-A imitations

№	Source	Description
1	MAGNUM[48]	Offer for sale of MRO-A small-sized rocket-propelled flamethrower (tube). Calibre:72.5 mm. Type: rocket-propelled. Length: 900 mm. Weight: 4.7 kg. Effective range: 90 m (max 450 m).
2	Guns.ru[49]	Offer for the sale of a new MRO-A dated 17 November 2014. Part of the identification number can be seen in the photo: MO.1.10.00.
3	Guns.ru[50]	Offer for sale of a new MRO-A dated 20 February 2012. The photo shows an identification number: MO.1.10.00 BB-01-04 No. 508.
4	Guns.ru[51]	Offer for MRO-A sale dated 26 May 2013. The photo shows an identification number: MO.1.10.09 BB-01-08 No. 720.
5	Guns.allzip[52]	Offer for MRO-A sale dated 20 February 2012. The photo shows an identification number: MO.1.10.00 BB-01-04 No. 508.
6	Guns.allzip[53]	Offer for MRO-A sale dated 26 May 2013. The photo shows an identification number: MO.1.10.09 BB-01-08 No. 720.
7	Abino[54]	Offer for sale of a mass-dimensional imitation of disposable used MRO-A launch tube, no gunpowder or explosives inside. The front rubber cover is new and undamaged, the rear cover is torn.

[48] MAGNUM, *MRO-A small-size rocket-propelled flamethrower (tube)* (31 January 2023), available at https://magnum.kiev.ua/product/1586 (Exhibit K).

[49] Guns.ru, *MRO-A (small-size rocket-propelled flamethrower) for sale* (17 November 2014), available at: https://forum.guns.ru/forummessage/216/1462309.html (Exhibit L).

[50] Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012), available at: https://forum.guns.ru/forummessage/216/947001.html (Exhibit M).

[51] Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013), available at: https://forum.guns.ru/forummessage/216/1174142.html (Exhibit N).

[52] Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012), available at: https://guns.allzip.org/topic/216/947001.html (Exhibit O).

[53] Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013), available at: https://guns.allzip.org/topic/216/1174142.html (Exhibit P).

[54] Abino, *MRO-A Tube in Asbest* (18 October 2017), available at: https://abino.ru/asbest/kollektsionirovanie/tubus-mro-a-maket-mmg-370970357 (Exhibit Q).

8	Guns.allzip[55]	Offer for sale of an MRO-A tube dated 23 August 2014. The photo shows an identification number: MO.1.10.0-09 BB-01-11.

[55] Guns.allzip, *RPG-26 (rocket-propelled grenade launcher), MRO-A (small-size rocket-propelled flamethrower) tubes with caps, RPO-A (rocket-propelled flamethrower)* (23 August 2014), available at: https://guns.allzip.org/topic/216/1414326.html (Exhibit R).

Appendix 3

Examples of Internet advertisements for the sale of MRO-A imitations

Корзина 0 пусто | Войти

MAGNUM

Главная страница | Оплата и доставка | Поиск | Статьи | Аренда, Комиссия | Контакты | FAQ | О нас

AK-12

Категории

- Пистолеты, револьверы
- Пистолет-пулемет
- Автоматы
- Пулеметы
- Винтовки
- Гранатометы, ПТРК
- Патроны
- Магазины и подсумки
- Аксессуары
- ЗИП
- Тактический обвес
- Антиквариат
- Оптика, прицел, ЛЦУ
- Сигнальное оружие
- Кассы (Шпили стальной)
- Макеты под холостой патрон
- Гранаты, мины, дымы
- Штыки, штык-ножи
- Уход за оружием
- Декор сувениры

Главная страница — Гранатометы, ПТРК — **Малогабаритный реактивный огнемет МРО-А (тубус)**

Малогабаритный реактивный огнемет МРО-А (тубус)

На складе: 1 шт.
Длина: Не указано
Вес: Не указано
Цена за шт. 4000 UAH.

Изображение временно отсутствует

Артикул: 1586

Купить

Калибр:72.5 мм
Тип: реактивный
Длина: 920 мм
Вес: 4.7 кг
Эффективная дальность стрельбы: 90 м (максимальная450 метров)

Малогабаритный реактивный огнемет МРО-А разработан на базе реактивной штурмовой гранаты РШГ-2 и предназначен для вооружения огнеметных подразделений химических войск в качестве более легкой и менее мощной альтернативы огнемету РПО-А "Шмель",тогда как РШГ-2, являясь по отечественной классификации "гранатой", поступает на вооружение обычных пехотных подразделений Российской армии. Основным внешним отличием МРО-А от РШГ-2 являются прицельные приспособления - у РШГ-2 они аналогичны прицелу противотанковой гранаты РПГ-26,тогда как у МРО-А прицельные приспособления аналогичны таковым для реактивного огнемета РПО-А "Шмель". Кроме базового варианта МРО-А с термобарической БЧ также выпускаются и поставляются на вооружение варианты МРО-З с зажигательной БЧ и МРО-Д с дымовой БЧ для минометной постановки дымзавес. МРО-А состоит на вооружении Российской армии с 2004 года.
Малогабаритный реактивный огнемет МРО-А представляет собой реактивный снаряд с термобарической боевой частью калибром 72.5 мм (иначе называемой "боеприпас объемного взрыва") и порохового реактивным двигателем, полностью отрабатывающим в стволе одноразового пускового устройства. Стабилизация гранаты на траектории осуществляется при помощи складных стабилизаторов и придаваемого ими гранате осевого вращения. Пусковое устройство представляет из себя трубу-моноблок из стеклопластика. С торцов пусковое устройство закрыто разрушаемыми при выстреле резиновыми крышками. Для приведение в боевое положение извлекается предохранительная чека и предохранительный рычаг, прекращающий спусковую клавишу, приводится в боевое положение, при этом взводится ударно-спусковой механизм, и можно произвести запуск гранаты нажатием на спусковой рычаг. При необходимости перевода гранаты обратное походное положение ударно-спусковой механизм снимается с боевого взвода при отпускании предохранительного рычага и горизонтальное положение и фиксации его чекой. Прицельные приспособления в виде неподвижной мушки и складного целика с набором диоптрических отверстий для разных дальностей стрельбы расположены на левой стороне пусковой трубы, в нижней передней части трубы также расположена передняя складная рукоятка для удержания огнемета. При выстреле позади пускового устройства образуется опасная зона глубиной до 30 метров и с раствором 90 градусов.

*MAGNUM online store

Small-sized rocket-propelled flamethrower MRO-A (tube)

In stock – 1

Length: not specified

Weight: not specified

Price per piece: UAH 4,000

Item No.: 1586

Buy

Calibre: 72.5 mm

Type: rocket-propelled

Weight: 4.7 kg

Effective firing range: 90 m (maximum range: 450 m)

GUNS.RU оружейный портал

Guns.ru Talks
купля-продажа деактивированных боеприпасов
МРО-А продам

тема закрыта

679 users and 387 guests on forum

Автор Тема: **МРО-А продам**

Sturm88 17-11-2014 14:24

Продам МРО-А новая.
цена 2500.

NeXuS 19-11-2014 18:49

Тубус... ?! Макет выстрела...?!
Очень нужно фото! Резерв до выяснения!!!

NeXuS 19-11-2014 18:59

Если не трудно, в ПМ отпишите. За темой не всегда получается следить...
Спасибо!

Sturm88 20-11-2014 16:00

* **GUNS.RU** weapon portal

Re: MRO-A for sale

Sturm88	A new MRO-A for sale. Price: 2,500.
NeXuS	A tube...?! A mockup warhead...?! I really need a photo! Pls reserve it for me until this has been clarified!!!
NeXuS	If it is not too much trouble, send me a PM. I'm not always able to follow the thread... Thanks!
Sturm88	

Продам тубус МРО-А

Поиск по сайту...

Главная > Купля-продажа >

Купля-продажа деактивированных боеприпасов

DOC30 20.02.2012 - 23:50 #1

Собственно сей тубус и продается

5.7 %

* MRO-A tube for sale

DOC30 20.02.2012 – 23:50

This is the tube that’s for sale

Тубусы рпг-26, мро-а с крышками, рпо-а

Поиск по сайту...

Главная > Купля-продажа > Купля-продажа деактивированных боеприпасов

grek81 23.08.2014 - 22:21 #1

РПГ-26 обе крышки целые,чека в наличии цена 2000р.+ доставка.
МРО-А 1шт. в наличии обе крышки в наличии,чека в наличии цена 2500р.+ доставка.
РПО-А обе крышки смяты давлением и 1/3 обожжена,но при желании легко выправить цена 2500р.+доставка.
Отправка раз в неделю.

grek81 23.08.2014 - 22:24 #2

grek81 23.08.2014 - 22:25 #3

2.4 %

* RPG-26 tubes, MRO-A with covers, RPO-A

grek81 23.08.2014 – 22:21

RPG-26 – Both caps intact, a safety pin included. Priced at RUB 2,000 + shipping. MRO-A – One piece in stock. Both caps and a safety pin included. Priced at RUB 2,500 + shipping. RPO-A – Both caps damaged by pressure and 1/3 is burnt, but easy to repair if desired. Priced at RUB 2,500 + shipping. Weekly shipments.

LIST OF EXHIBITS

Number:	Name of exhibit:
Exhibit A	Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014).
Exhibit B	ZN.UA, *PrivatBank Office Fired at by Unidentified Persons in Kharkov* (28 July 2014).
Exhibit C	Objective Media Group, *PrivatBank Office Fired at by Unidentified Person in Kharkov* (28 July 2014).
Exhibit D	Extract from Order of the Minister of Defense of the Russian Federation No 475, 11 December 2002.
Exhibit E	W. Baker, P. Cox, Ya. Zeldovich (ed). EXPLOSIVE PHENOMENA. EVALUATION AND CONSEQUENCES (vol. 1, Mir, 1986).
Exhibit F	E. Nikulin, V. Russkov et al., MEANS OF CLOSE COMBAT. HAND-HELD GRENADE LAUNCHERS (Baltic State Technical University, 2007).
Exhibit G	Small-Size Rocket-Propelled Flamethrower MRO-A. Operations Manual. Approved by VAIS.771342.905 RE-LU.
Exhibit H	Infantry Flamethrower Firing Course (KS PO-2011), approved by the Commander-in-Chief of the Ground Forces of the Russian Armed Forces on 3 November 2011. Appendix 2.
Exhibit I	Interfax, *PrivatBank Office Shot at in Kharkov* (28 July 2014).
Exhibit J	MediaPort*, PrivatBank Shot at in Kharkov* (28 July 2014).
Exhibit K	MAGNUM, *MRO-A small-size rocket-propelled flamethrower (tube)* (31 January 2023).
Exhibit L	Guns.ru, *MRO-A (small-size rocket-propelled flamethrower) for sale* (17 November 2014).
Exhibit M	Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012).
Exhibit N	Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013).
Exhibit O	Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012).
Exhibit P	Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013).

Exhibit Q	Abino, *MRO-A Tube in Asbest* (6 October 2017).
Exhibit R	Guns.allzip, *RPG-26 (rocket-propelled grenade launcher), MRO-A (small-size rocket-propelled flamethrower) tubes with caps, RPO-A (rocket-propelled flamethrower)* (23 August 2014).

Exhibit A

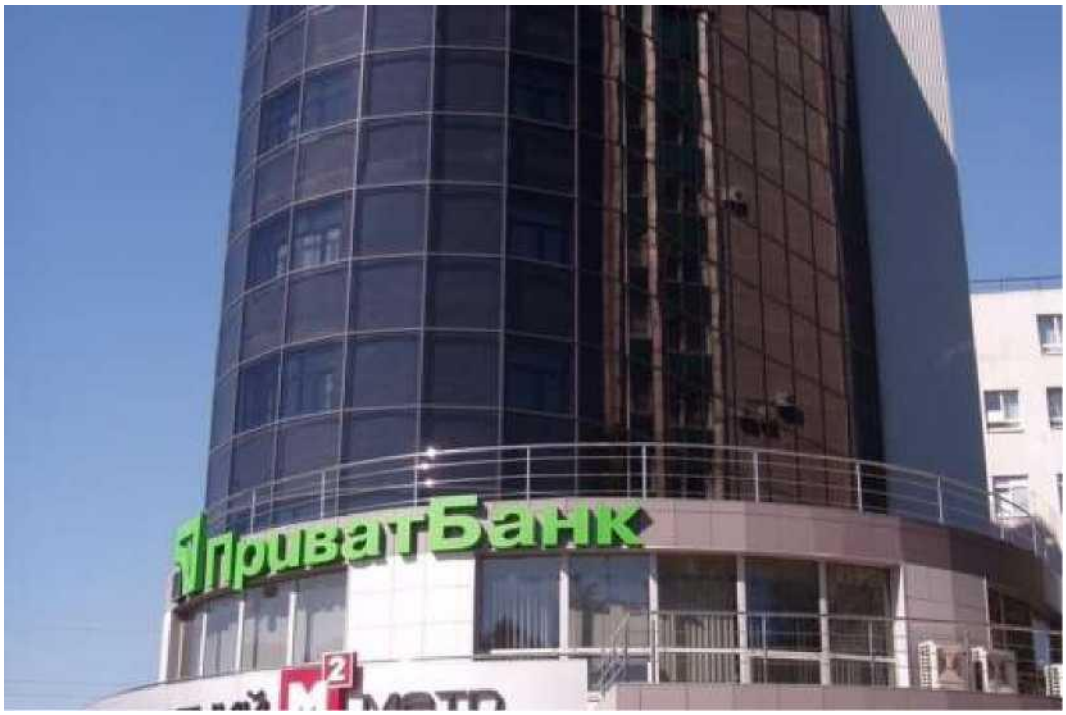
Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014)

(translation)

Translation

Vesti.ua, *RPG Fired at PrivatBank in Kharkov* (28 July 2014), available at: https://vesti.ua/harkov/62977-v-harkove-iz-rpg-obstreljali-privatbank.

RPG Fired at PrivatBank in Kharkov



The projectile got stuck in the ceiling of the second floor of the building

Last night, unidentified perpetrators fired a shot from a man-portable grenade launcher at the PrivatBank building located at 2-A Malomyasnitskaya Street in Kharkov.

According to *Vesti's* own sources, the incident took place at 03:00 AM. "Unidentified persons fired a shot from a handheld grenade launcher, *Mukha*, at the PrivatBank building. "To you for Odessa", was written on the discarded case. The projectile got stuck in the ceiling on the second floor of the building but did not explode. Later, the bomb squad arrived to disarm it," the source said.

The press office of PrivatBank has confirmed reports of the shooting. "At 02:30 AM, a shot was fired from an unidentified weapon, the projectile hit the second floor but, fortunately, it did not explode. The incident is being investigated by the Security Service of Ukraine and the Ministry of Internal Affairs. The building was slightly damaged; a window is broken on the second floor and there is a hole in the ceiling. All PrivatBank offices are operating normally," said Tetyana Tkachuk, head of the Bank's regional press team. She also noted that the room hit by the shell hosted a call centre. It is next door to the human resources department.

The Ministry of Internal Affairs' Chief Directorate for the Kharkov region has provided no comments so far, but promised to give details of the incident at a later time.

Exhibit B

ZN.UA, *PrivatBank Office Fired at by Unidentified Persons in Kharkov* (28 July 2014)

(translation)

Translation

ZN,UA, *PrivatBank Office Fired at by Unidentified Persons in Kharkov* (28 July 2014), available at: https://zn.ua/UKRAINE/v-harkove-neizvestnye-obstrelyali-otdelenie-privatbanka-149773_.html.

PrivatBank Office Fired at by Unidentified Persons in Kharkov

The projectile hit the 2nd floor but, fortunately, it did not explode. An investigation is now underway. All PrivatBank offices are operating normally.

On the night of Monday, 28 July, unidentified persons fired at a PrivatBank office on the Malomyasnitskaya Street. This is what Tatyana Tkachuk, PrivatBank local press team leader, told *Interfax-Ukraine*.

"At 02:30 AM, a shot was fired from an unidentified weapon. The projectile hit the second floor but, fortunately, it did not explode. At this moment, an investigation is underway. All PrivatBank offices are operating normally," the report says.

Meanwhile, social media users claim that an RPG with its cover not removed was found near the building where the office is located.

The public relations team of the Chief Directorate of the Ministry of Internal Affairs of Ukraine for the Kharkov region has confirmed that the PrivatBank office incident did take place and promised to provide a more detailed comment to *!zn* at a later time.

Exhibit C

Objective Media Group, *PrivatBank Office Fired at by Unidentified Person in Kharkov* (28 July 2014)

(translation)

Translation

Objective Media Group, *PrivatBank Office Fired at by Unidentified Person in Kharkov* (28 July 2014), available at: http://archive.objectiv.tv/280714/100933.html.

PrivatBank Office Fired at by Unidentified Person in Kharkov

Last night, shots were fired at the bank's office located at 2-A Malomyasnitskaya Street. No one was hurt as a result of the incident.

According to the bank's local press team leader Tatyana Tkachuk, the incident took place at 02:30 AM. The projectile hit the second floor but did not explode. An investigation is now underway.

"A jet projectile was fired from a portable launcher. The shot went through a second-floor window of the VIP client conference hall," said Yury Shevchenko, deputy head of security of the regional department of PrivatBank.

All PrivatBank offices in Kharkov are operating normally.

Exhibit D

Extract from Order of the Minister of Defense of the Russian Federation No 475,
11 December 2002

(translation)

Translation

Extract from Order of the Minister of Defense of the Russian Federation No 475, 11 December 2002.

EXTRACT FROM ORDER OF THE MINISTER OF DEFENSE OF THE RUSSIAN FEDERATION No 475

11 December 2002 Moscow

"On acceptance of a small-size thermobaric jet-propelled flamethrower MRO-A for service with the Armed Forces of the Russian Federation "

On the basis of positive results of state trials

I HEREBY ORDER AS FOLLOWS:

1. To put into service of the RF AF the small-size thermobaric jet-propelled flamethrower MRO-A (code name "Borodach") in the composition and with basic tactical and technical specifications according to Appendix No. 1 to this Order.

4. The MRO-A flamethrower, its specifications and design documentation, as well as its actual full and abbreviated name shall be regarded as unclassified.

Signed by: First Deputy Minister of Defence of the Russian Federation,
Army General A.Kvashnin

Appendix No. 1
to Order of the Minister of Defence
of the Russian Federation
No. 475 dated 11 December 2002

Composition and Basic TTS of MRO-A

I. PURPOSE

The MRO-A small-size thermobaric jet-propelled flamethrower is intended to create a high-temperature overpressure field to destroy enemy troops in residential and industrial buildings, defensive structures, automobiles and small armored vehicles.

II. COMPOSITION

Single-use firing device.
Firing unit with thermobaric warhead.

III. Basic TTS

Calibre, mm	72.5
Flamethrower mass, kg	4.6
Mass of thermobaric composition, kg	1.0
Type of thermobaric composition	OM-100Mi-ZLO
Firing range, m:	
Maximum	450
sighting range	300
direct fire	90
Temperature range for application, ºC	-40....+50

The flamethrower enables firing from rooms of 20-50 m3 and more in volume, at an angle of elevation up to 60° (from standing position), with the obstacle at a distance of up to 1.5 m from the rear part of the flamethrower.

Signed: Commander-in-Chief of Radiological,
Chemical and Biological Defense Corps of RF AF, Colonel-General V. Kholstov

Exhibit E

W. Baker, P. Cox, Ya. Zeldovich (ed). EXPLOSIVE PHENOMENA. EVALUATION AND CONSEQUENCES (vol. 1, Mir, 1986)

(extract, translation)

Extract
Translation

W. Baker, P. Cox, Ya. Zeldovich (ed). EXPLOSIVE PHENOMENA. EVALUATION AND CONSEQUENCES (vol. 1, Mir, 1986).

Explosive Phenomena. Evaluation and Consequences

p. 213

[...]

When a charge of condensed explosive is detonated inside a chamber, the resulting blast wave is reflected from the inner surfaces, converges to the geometric centre of the chamber, is reflected from it and falls again on the chamber wall, and so it repeats several times. The amplitude of the blast wave decreases after each reflection cycle, and the overpressure in the chamber decreases over time, the time required for the pressure to decrease depending on the volume of the chamber and the area of the relief holes through which the products of the explosion or combustion escape from the chamber, as well as on the type of explosive and the corresponding rate of energy release from the explosion.

[...]

Exhibit F

E. Nikulin, V. Russkov et al., MEANS OF CLOSE COMBAT. HAND-HELD GRENADE LAUNCHERS (Baltic State Technical University, 2007)

(extract, translation)

Extract
Translation

E. Nikulin, V. Russkov et al., MEANS OF CLOSE COMBAT. HAND-HELD GRENADE LAUNCHERS (Baltic State Technical University, 2007).

Means Of Close Combat. Hand-Held Grenade Launchers

p. 29.

[...]

In the zone of detonation transformation of thermobaric mixture, the temperature rises over 800 °C, an overpressure of 0.4...0.5 kg/cm^2 develops at a distance of 5 m from the point of detonation (for a human, a dangerous overpressure is about 0.2 kg/cm2), in an enclosed premise of 90 m3 an overpressure will be 4...7 kg/cm2. The destructive power of a TBM explosion is considerably greater than that of TNT.

[...]

Exhibit G

Small-Size Rocket-Propelled Flamethrower MRO-A. Operations Manual. Approved by VAIS.771342.905 RE-LU

(extract, translation)

Extract
Translation

Small-size rocket-propelled flamethrower MRO-A. Operations manual. Approved by VAIS.771342.905 RE-LU.

Small-size rocket-propelled flamethrower MRO-A. Instruction manual. Approved by VAIS.771342.905 RE-LU

p. 18

[...]

In the event of a fuse failure on encountering an obstacle, in no less than 8 s the composition 39 burns out, triggering the bouncing charge 37, resulting in the movement of the striker 17, the tip and triggering of the detonator cap 23, resulting in the detonation of the transfer charge 5 and detonator 1.

[...]

pp. 33-34

[...]

2.4 Guidance for the collection of used firing units and destruction of failed MRO-A

2.4.1 Collection of firing units

Used firing units must be collected.

When collecting the used firing units, make sure there is no round inside.

When accepting firing units, make sure there is no round inside, place the firing units in boxes, seal and sign "Used firing units from MPO-A".

2.4.2 Destruction of Failed MRO-A rounds

The destruction of failed MRO-A rounds shall be carried out only by persons familiar with the device and instructed in the destruction of MRO-A.

It is strictly forbidden to touch unexploded rounds.

Such rounds must be destroyed at the point of impact in accordance with appropriate safety measures.

[...]

Exhibit H

Infantry Flamethrower Firing Course (KS PO-2011), approved by the Commander-in-Chief of the Ground Forces of the Russian Armed Forces on 3 November 2011. Appendix 2

(extract, translation)

Extract
Translation

Infantry Flamethrower Firing Course (KS PO 2011), Approved by the Commander-in-Chief of the Ground Forces of the Russian Federation on 3 November 2011.

Infantry Flamethrower Firing Course (IF FC 2011). Approved by the Commander-in-Chief of the Ground Forces of the Russian Federation on 3 November 2011

APPENDIX 2

p. 63

[...]

SAFETY REQUIREMENTS FOR THE ORGANIZATION AND CONDUCT OF FIRING DRILLS FROM INFANTRY FLAMETHROWERS AND FLAMETHROWER TRAINING EQUIPMENT

[...]

General provisions

The safety of firing is ensured by the precise organization of firing, strict observance of this Firing Course, established rules and safety requirements, and high discipline of all servicemen.

Personnel who have not received the prescribed training and mastered the safety requirements are not allowed to perform firing and maintenance.

[...]

Safety requirements for firing

IT IS STRICTLY FORBIDDEN:

- To fire at targets closer than 25 m. There must be no obstructions in the area up to 25 m;

[...]

p. 65

[...]

SAFETY REQUIREMENTS FOR THE ORGANISATION AND CONDUCT OF FIRING DRILLS FROM INFANTRY FLAMETHROWERS AND FLAMETHROWER TRAINING EQUIPMENT

[...]

Safety requirements for destruction

Flamethrower destruction activities are among the most dangerous and are only carried out during daylight hours. As supervisors of such work shall be appointed officers who are familiar with the flamethrower construction and the rules of handling thereof.

A flamethrower charge that has not detonated after firing is considered extremely dangerous and must be detonated at the point of impact. It is not to be handled in any way (extraction from the ground, relocation). To destroy it, an active charge of 0.2 kg is used, which is placed on the surface of the shell and detonated electrically by the standard detonation machine, observing the safety requirements for detonation operations.

[...]

Exhibit I

Interfax, *PrivatBank Office Shot at in Kharkov* (28 July 2014)

(translation)

Translation

Interfax, *PrivatBank Office Shot at in Kharkov* (28 July 2014), available at: https://www.interfax.ru/world/388201.

28 July 2014 at 02:51 PM

PrivatBank Office Shot at in Kharkov

Moscow. 28 July. *INTERFAX.RU* – Last Monday night, unidentified persons fired at a PrivatBank office on the Malomyasnitskaya Street.

As the Bank's regional press team leader, Tatyana Tkachuk, told the *Interfax* reporter that the incident took place at half past two in the morning. The projectile hit the second floor but did not explode. Tkachuk did not specify what weapon was used to fire the shot. Meanwhile, social media users claim that an RPG with its cover not removed was found near the building.

The Chief Directorate of the Ministry of Internal Affairs for the Kharkov Region has confirmed that the PrivatBank office incident did occur.

As was previously reported, a series of arson attacks on PrivatBank ATMs was committed in Kharkov at the end of March. In April, "objects appearing to be explosive devices" were found near the entrances to two PrivatBank offices. In both cases, those objects turned out to be hoax bombs. Furthermore, two ATMs and a bank office were set on fire in Kharkov on the night of the 23rd of April. One of the owners of the PrivatGroup is Igor Kolomoysky, a billionaire businessman and the Governor of the Dnepropetrovsk Region.

Exhibit J

MediaPort, *PrivatBank Shot at in Kharkov* (28 July 2014)

(translation)

Translation

MediaPort, *PrivatBank Shot at in Kharkov* (28 July 2014), available at: https://www.mediaport.ua/v-harkove-strelyali-v-privatbank.

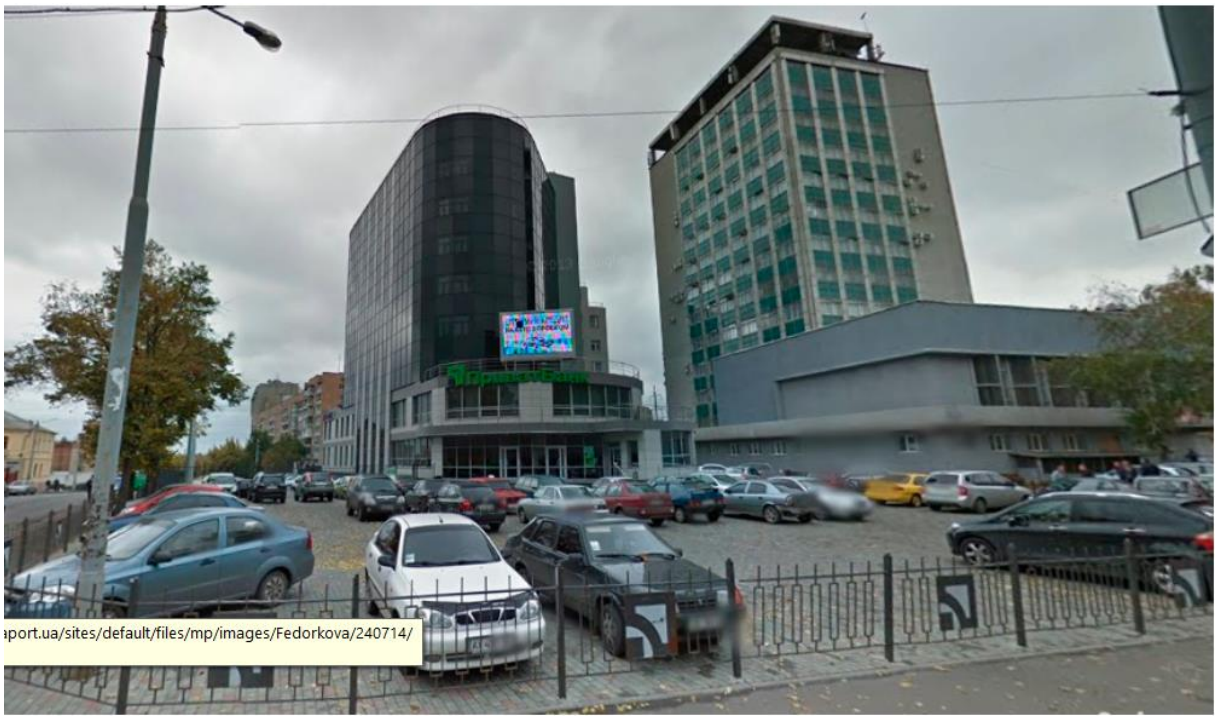
PrivatBank Shot at in Kharkov

By Tanya Fedorkova

On Monday night of the 28th of July, an unidentified person fired a shot at the building of a PrivatBank office in Kharkov. According to unofficial information, the shot was fired from a grenade launcher. There was no explosion. No one was injured.

The incident took place at a building located at 2-A Malomyasnitskaya Street, as the Bank's regional press team told *MediaPort*.

"At 02:30 AM, a shot was fired from an identified weapon, the projectile hit the second floor but, fortunately, it did not explode. An investigation is now underway. All PrivatBank offices are operating normally," said Tatyana Tkachuk, head of the Bank's regional press team.



PrivatBank office on the Malomyasnitskaya Street. Google street view

According to her, the building was not seriously damaged.

"A window was broken, and there's minor damage from the projectile hit inside the building. Almost everything has been restored," Tatyana Tkachuk explained.

The press office of the Chief Directorate of the Ministry of Internal Affairs for the Kharkov region promised to provide their comments on the incident at a later time.

Local residents speculate that the bank building was fired at from a grenade launcher.

“I heard a very loud bang and thought something exploded inside the house. I went outside. Firemen were busy near 5 Plekhanovskaya Street, pointing their flashlights at the façade of the building. There was no fire. There was a tube that looked like a grenade launcher on the ground near the building,” wrote a user of the *KharkovForum* message board.

This is not the first attack on PrivatBank in Kharkov.

A series of attacks on PrivatBank ATMs and offices took place in March 2014. On the 28th of March, unidentified persons broke windows of two PrivatBank offices on the Moskovsky Avenue and tried to set fire to some ATMs, and on the 30th of March someone threw a Molotov cocktail into the office of the bank on the Geroyev Truda Street. On the night of the 31st of March, unidentified persons put three ATMs on fire: at 33 Ludwiga Svobody Avenue, at 18/20 Sumskaya Street, and at 29A Gvardeitsev Shironintsev Street. PrivatBank announced a reward of UAH 200,000 for any information that could help detain the attackers.

In April, “objects appearing to be explosive devices” were found near the entrances to two PrivatBank offices. In both cases, the objects turned out to be hoax bombs.

Two ATMs and a bank office were set on fire in Kharkov on the night of the 23rd of April.

Exhibit K

MAGNUM, *MRO-A small-size rocket-propelled flamethrower (tube)* (31 January 2023)

(translation)

Translation

MAGNUM, *MRO-A small-size rocket-propelled flamethrower (tube)* (31 January 2023), available at: https://magnum.kiev.ua/product/1586.

MAGNUM

MRO-A small-size rocket-propelled flamethrower (tube)

In stock:	1 pc.
Length:	Unspecified
Weight:	Unspecified
Price per piece	UAH 4,000
Item No.:	1586

Buy
Calibre: 72.5 mm
Type: rocket-propelled
Length: 900 mm
Weight: 4.7 kg
Effective firing range: 90 m (maximum range: 450 m)

The MRO-A small-size rocket-propelled flamethrower is a derivative of the RShG-2 rocket-propelled assault grenade designed to be issued to flamethrower units of Chemical troops as a lighter and less powerful alternative to the RPO-A *Shmel* flamethrower, whereas the RShG-2, which is a "grenade" in Russian nomenclature, is issued to conventional infantry units of the Russian Army. The main difference in appearance between the MRO-A and the RShG-2 are the sights: on the RShG-2, they are similar to those of the RPG-26 anti-tank grenade, whereas the MRO-A sights are the same as those of the RPO-A Shmel jet-propelled flamethrower. Apart from the basic version with a thermobaric warhead (MRO-A), the MRO-Z version with an incendiary warhead and the MRO-D version with a smoke warhead are also produced and put into operational service. The MRO-A was adopted by the Russian Army in 2004.

The small-size MRO-A jet-propelled flamethrower consists of a projectile with a 72.5-mm calibre thermobaric warhead (also known as "fuel-air explosive") and a powder charge motor

that burns completely within the barrel of the disposable launcher. For trajectory stabilisation, the grenade has retractable fins that impart axial rotation to the grenade. The launcher is a single-piece fiberglass tube. On its ends, the launcher has rubber caps that are destroyed upon firing a shot. The firing mechanism is cocked by pulling out the safety pin and raising the safety lever to expose the trigger button; after that, the grenade can be launched by pulling the trigger. To de-cock and put the grenade back into safe transport mode, the safety lever is lowered to its horizontal position and the safety pin is inserted to secure the lever. A fixed front sight and a folding rear sight with a set of dioptric holes for different firing ranges are located on the left side of the launcher tube, and a forward folding grip handle for holding the flame thrower is provided on the underside of the barrel tube. When the launcher is fired, a 30-metre long and 90-degree wide backfire danger zone should be observed behind it.

Exhibit L

Guns.ru, *MRO-A (small-size rocket-propelled flamethrower) for sale* (17 November 2014)

(translation)

Translation

Guns.ru, *MRO-A (small-size rocket-propelled flamethrower) for sale* (17 November 2014), available at: https://forum.guns.ru/forummessage/216/1462309.html.

Buy and sell deactivated ammunition

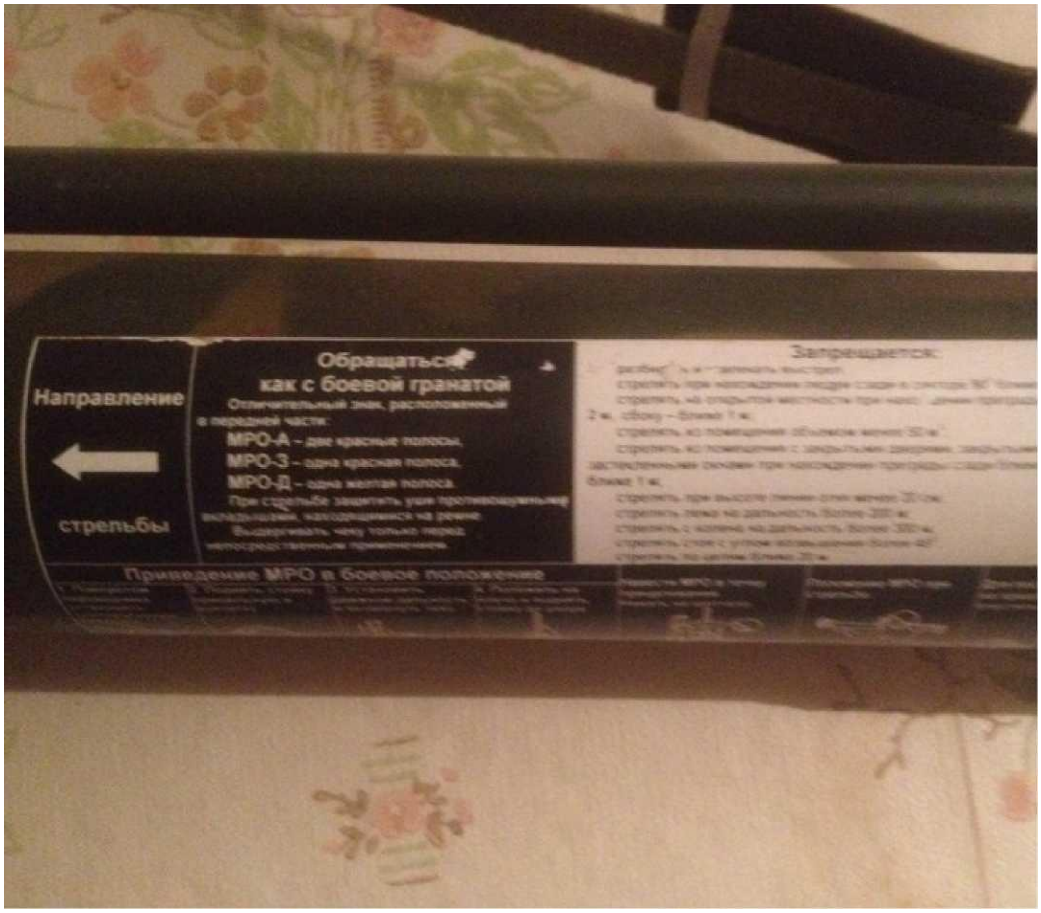
MRO-A (small-size rocket-propelled flamethrower) for sale

Sturm88 17-11-2014 14:24
A new MRO-A for sale.
Price: 2,500.

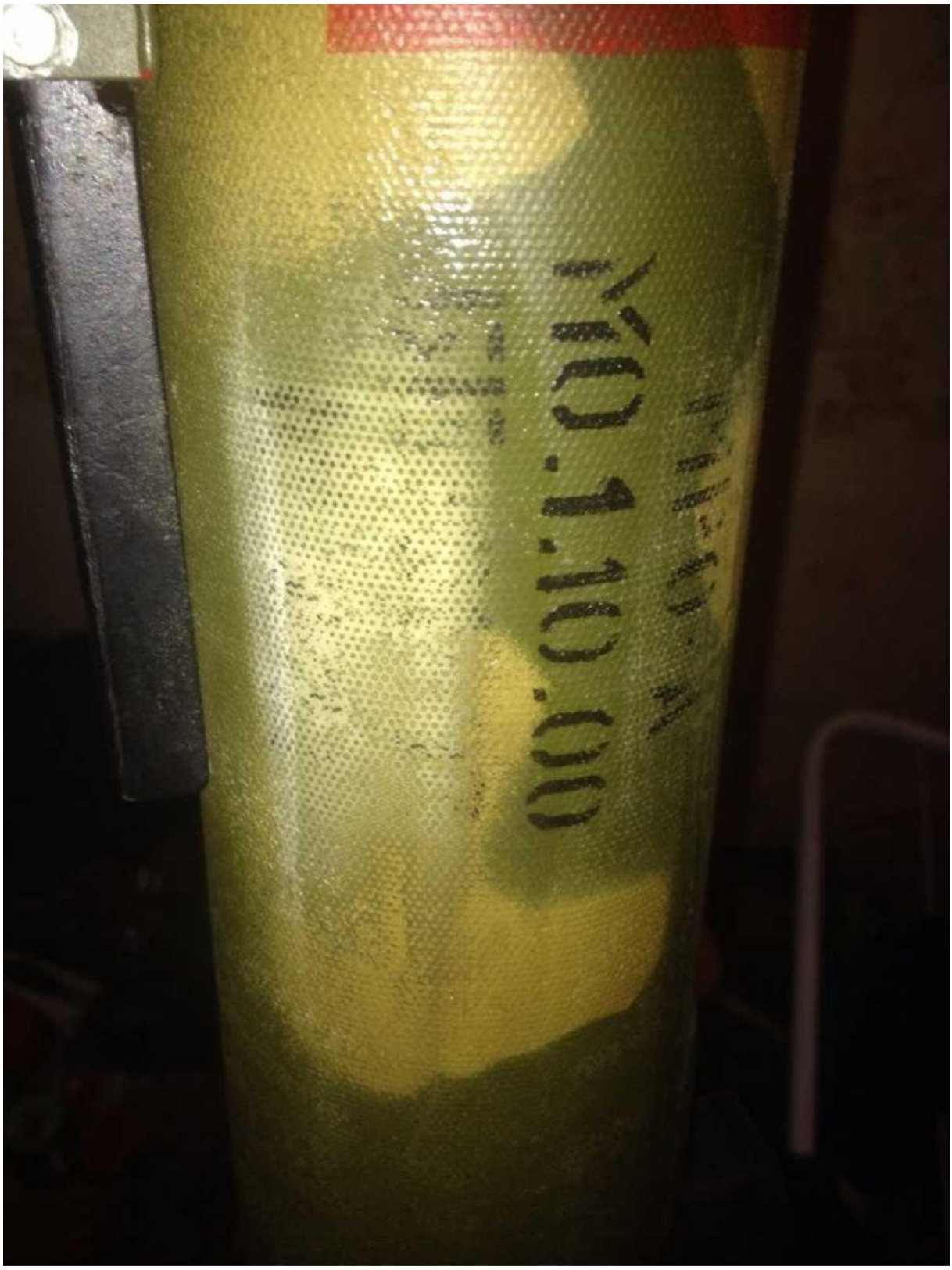
NoXuS 19-11-2014 18:49
A tube...?! A mockup warhead...?!
I really need a photo! Pls reserve it for me until this has been clarified!!!

NoXuS 19-11-2014 18:59
If it is not too much trouble, send me a PM. I'm not always able to follow the thread...
Thanks!

Sturm88 20-11-2014 16:00



Annex 5 Exhibit L



NoXuS 21-11-2014 12:23
I have to cancel the reservation. It is not because of the product or the seller.
Kudos for a good and rare tube!

Buy and sell deactivated ammunition

MRO-A (small-size rocket-propelled flamethrower) for sale

Exhibit M

Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012)

(translation)

Translation

Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012), available at: https://forum.guns.ru/forummessage/216/947001.html.

Buy and sell deactivated ammunition

MRO-A (small-size rocket-propelled flamethrower) for sale

MRO-A small-size rocket-propelled flamethrower tube for sale

DOC30 20-02-2012 23:50
This is the tube that's for sale

Annex 5 Exhibit M


МРО-А
М0.1.10.00
ББ-01-04
№ 508


30
25
20
15
МРО-А

yellowcat 21-02-2012 12:04
Please reserve for me until we get some photos and the price.

DOC30 21-02-2012 12:14
Let's start at RUB 4,000.

yellowcat 21-02-2012 12:20
I'm cancelling the reservation.

kocheef 21-02-2012 21:32
Any discounts?

DOC30 24-02-2012 18:50
Yes
RUB 3,500.

Fenrir 14 25-02-2012 12:18
I'll stay here for a while. An interesting item, I'd like to buy)))

DOC30 25-02-2012 23:13
I'll have to attach my mug here to avoid neighbours asking me to ship the device

kocheef 26-02-2012 14:56
Pls reserve for me, sent you a PM

DOC30 11-03-2012 23:34
I'm back...
The tube is still for sale

vovan55555 12-03-2012 01:02
Yeah, not a bad one, I'd buy but I don't collect modern junk, I'm more into history..

DOC30 22-03-2012 21:04
for sale

partisan48 04-04-2012 17:11
Still relevant?

DOC30 04-04-2012 21:05
Yes

RUBLEW 05-04-2012 14:42

quote:
Yes
Pls reserve for me until the price is clarified, after two months of discussions in the thread. I've sent my request by email.
Sincerely yours = Alexander Andreyevich

DOC30 05-04-2012 18:41

RUB 3,500.
Buyer to collect
St. Pete

RUBLEW 05-04-2012 20:02
quote:
after two months of discussions
Yes! Looks like they haven't finished yet. When you're done discussing, send me an email. I'm not keen on having to follow a thread to find out the price. Sorry.

Mykola 08-04-2012 18:07
Pls reserve for me

DOC30 09-04-2012 18:02
Sold

n777ur54 11-04-2012 15:52
any replenishments expected??

Buy and sell deactivated ammunition

MRO-A small-size rocket-propelled flamethrower tube for sale

Exhibit N

Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013)

(translation)

Translation

Guns.ru, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013), available at: https://forum.guns.ru/forummessage/216/1174142.html.

Buy and sell deactivated ammunition

MRO-A small-size rocket-propelled flamethrower tube for sale

Bivaliy 26-05-2013 19:23
An MRO-A tube for sale. It's empty, of course. The condition can be seen in the photo. No shipping, Moscow only. Buyer to collect from the East Administrative District, Partizanskaya metro station. RUB 1,800.

hasshasshin 30-05-2013 19:52
I'd like to have it if you can ship it...

Bivaliy 15-06-2013 21:49
Moscow only.

Buy and sell deactivated ammunition

MRO-A small-size rocket-propelled flamethrower tube for sale

Exhibit O

Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012)

(translation)

Translation

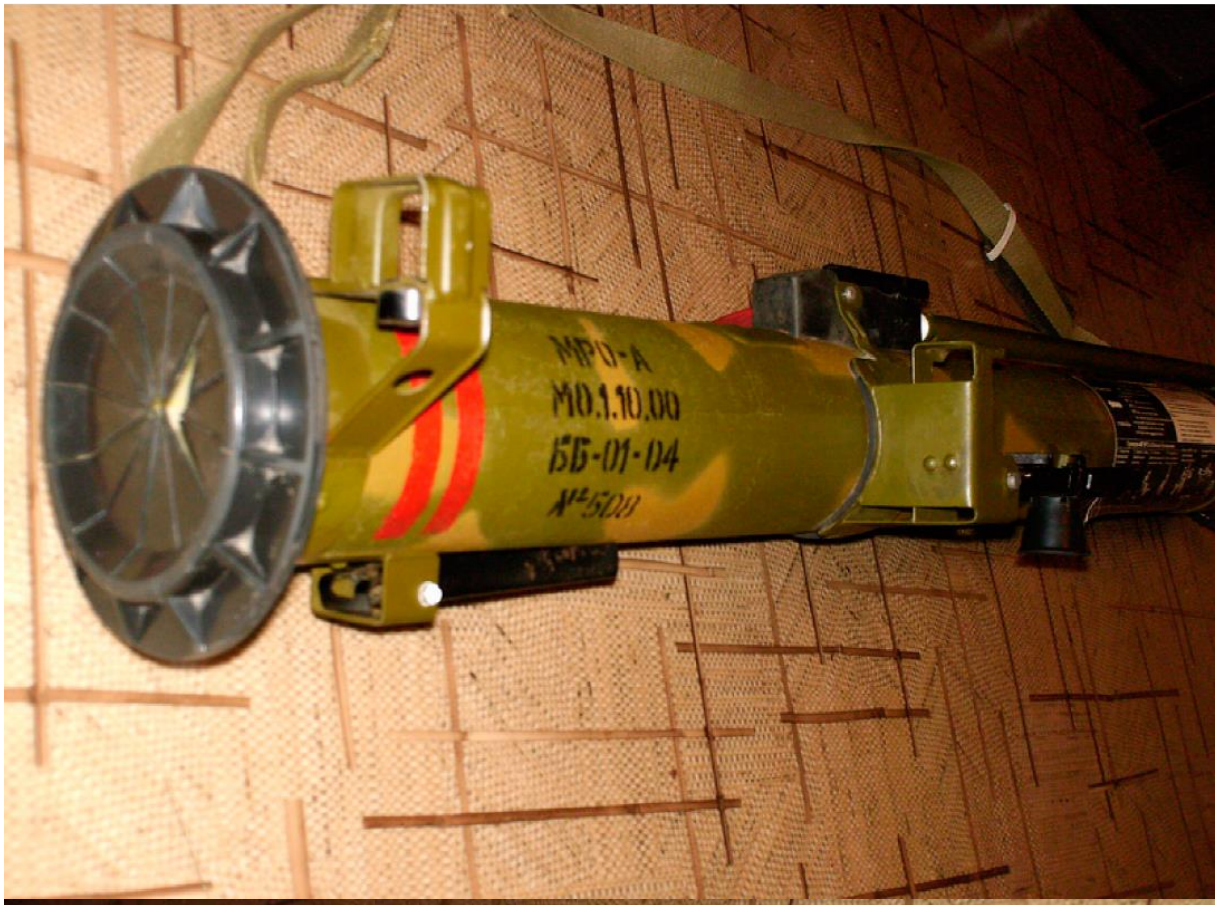
Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (20 February 2012), available at: https://guns.allzip.org/topic/216/947001.html.

MRO-A small-size rocket-propelled flamethrower tube for sale

Home > Buy and sell > Buy and sell deactivated ammunition

DOC30 20.02.2012 - 23:50 #1
This is the tube that's for sale

Annex 5 Exhibit O




МРО-А
М0.1.10.00
ББ-01-04
№ 508


МРО-А

yellowcat 21.02.2012 - 12:04 #2
Please reserve for me until we get some photos and the price.

DOC30 21.02.2012 - 12:14 #3
Let's start at RUB 4,000.

yellowcat 21-02-2012 12:20 #4
I'm cancelling the reservation.

kocheef 21-02-2012 21:32 #5
Any discounts?

DOC30 24-02-2012 18:50 #6
Yes
RUB 3,500.

Fenrir 14 25-02-2012 12:18 #7
I'll stay here for a while. An interesting item, I'd like to buy)))

DOC30 25-02-2012 23:13 #8
I'll have to attach my mug here to avoid neighbours asking me to ship the device

kocheef 26-02-2012 14:56 #9
Pls reserve for me, sent you a PM

DOC30 11-03-2012 23:34 #10
I'm back...
The tube is still for sale

vovan55555 12-03-2012 01:02 #11
Yeah, not a bad one, I'd buy but I don't collect modern junk, I'm more into history..

DOC30 22-03-2012 21:04 #12
for sale

partisan48 04-04-2012 17:11 #13
Still relevant?

DOC30 04-04-2012 21:05 #14
Yes

RUBLEW 05-04-2012 14:42 #15

quote:
Yes
Pls reserve for me until the price is clarified, after two months of discussions in the thread. I've sent my request by email.
Sincerely yours = Alexander Andreyevich

DOC30 05-04-2012 18:41 #16

RUB 3,500.
Buyer to collect
St. Pete

RUBLEW 05-04-2012 20:02 #17
quote:
after two months of discussions
Yes! Looks like they haven't finished yet. When you're done discussing, send me an email. I'm not keen on having to follow a thread to find out the price. Sorry.

Mykola 08-04-2012 18:07 #18
Pls reserve for me

DOC30 09-04-2012 18:02 #19
Sold

n777ur54 11-04-2012 15:52 #20
Any replenishments expected??

Exhibit P

Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013)

(translation)

Translation

Guns.allzip, *MRO-A small-size rocket-propelled flamethrower tube for sale* (26 May 2013), available at: https://guns.allzip.org/topic/216/1174142.html.

MRO-A small-size rocket-propelled flamethrower tube for sale

Home > Buy and sell > Buy and sell deactivated ammunition

Bivaliy 26-05-2013 19:23 #1
An MRO-A tube for sale. It's empty, of course. The condition can be seen in the photo. No shipping, Moscow only. Buyer to collect from the East Administrative District, Partizanskaya metro station. RUB 1,800.

hasshasshin 30-05-2013 19:52 #2
I'd like to have it it if you can ship it...

Bivaliy 30-05-2013 21:19 #3

Quote:
I'd like to have it if you can ship it...

Can't help you with this, it's written in black and in Russian, no shipping.
hasshasshin, if you find some friends in Moscow, I could cut the price...

Exhibit Q

Abino, *MRO-A Tube in Asbest* (6 October 2017)

(translation)

Translation

Abino, *MRO-A Tube in Asbest* (6 October 2017), available at: https://abino.ru/asbest/kollektsionirovanie/tubus-mro-a-maket-mmg-3.

Sverdlosk Region Asbest Recreation, sports and hobbies Collectibles Mock-up weapons

MRO-A Tube in Asbest

Price:
RUB 5,500

By:
Diana

Show phone number
+7 XXX XXX XX-XX

Ad date & time:
06 October 2017 at 04:49 AM

A mock-up DISPOSABLE used MRO-A tube, no gunpowder or explosives inside. In perfect grade A condition. The front rubber cap is new, INTACT, not torn, the rear cap is torn.

Exhibit R

Guns.allzip, *RPG-26 (rocket-propelled grenade launcher), MRO-A (small-size rocket-propelled flamethrower) tubes with caps, RPO-A (rocket-propelled flamethrower)* (23 August 2014)

(translation)

Translation

Guns.allzip, *RPG-26 (rocket-propelled grenade launcher), MRO-A (small-size rocket-propelled flamethrower) tubes with caps, RPO-A (rocket-propelled flamethrower)* (23 August 2014), available at: https://guns.allzip.org/topic/216/1414326.html.

RPG-26 (rocket-propelled grenade launcher), MRO-A (small-size rocket-propelled flamethrower) tubes with caps, RPO-A (rocket-propelled flamethrower)

Home > Buy and sell > Buy and sell deactivated ammunition

grek81 23.08.2014 - 22:21 #1

RPG-26 – Both caps intact, a safety pin included. Priced at RUB 2,000 + shipping. MRO-A – One piece in stock. Both caps and a safety pin included. Priced at RUB 2,500 + shipping. RPO-A – Both caps damaged by pressure and 1/3 is burnt, but easy to repair if desired. Priced at RUB 2,500 + shipping. Weekly shipments.

grek81 23.08.2014 - 22:24 #2

grek81 23.08.2014 - 22:25 #3

grek81 24.08.2014 - 22:23 #4
RUB 300 discount on all mock-ups

grek81 26.08.2014 - 11:27 #5
TOTAL: RPG-26 – 1,700, MRO-A – 2,200, RPO-A – 2,200 + shipping. The caps are all intact and available on all items, the tubes are new.

grek81 29.08.2014 - 21:28 #6
Anyone who wants to buy, send a PM. The tubes are excellent, new.

grek81 09.09.2014 - 12:09 #7
The MRO-A is gone, a single RPO-A is left. Now accepting orders for the above + RShG-2 (rocket-propelled assault grenade launcher). Send PMs.

AK- 74M 09.10.2014 - 16:27 #8
Reserving an RPO-A and RPG-26

MaDbI4 09.10.2014 - 20:13 #9
Would you consider exchange for body armour?

ilya.bubly 10.10.2014 - 23:13 #10
What's available?

MaDbI4 10.10.2014 - 23:23 #11
I've sent you a PM

aleks70 14.10.2014 - 10:34 #12
I've sent you a PM

AK- 74M 18.11.2014 - 12:32 #13
We have received the RPO-A and RPG-26, the quality is as advertised, everything is well packed. Thank you!

grek81 18.11.2014 - 16:34 #14
Only RPG-26s are in stock. They are new, both caps intact, earplugs included.

Curl_rus 24.12.2014 - 23:55 #15
How much for an RPG-26? How many pieces?

grek81 25.12.2014 - 02:34 #16
3 to 5 pcs of RPG-26 in stock. Some have been reserved, so it's 3 to 5 pcs.
The New Year's price is 1,500/pc.+ your shipping. Both caps intact!! Everything is new!

grek81 25.12.2014 - 02:36 #17
One RPO-A available, but without a belt and earplugs. The price of an incomplete set is RUB 2,000 + your shipping.

Curl_rus 25.12.2014 - 11:10 #18
Thanks, but I'm looking for cheaper options

grek81 25.12.2014 - 17:48 #19
Gentlemen, the RPO-A's are gone, no more left for now. RPG-26 - 3pcs in stock.

Mark007Ru 26.12.2014 - 19:20 #20
Greetings! On the RPG-26, are both caps intact?

grek81 28.12.2014 - 10:22 #21
Both are intact, as you can see in the photo!

viktorrrr 14.01.2015 - 16:53 #22
I've received my RPG-26, it's in perfect condition, THANK YOU SO MUCH!!!

grek81 14.01.2015 - 17:29 #23
Thank you for ordering!!
Only RPG-26's are still available – new, with a belt and earplugs, with a safety pin, both caps are intact
The price is the same, RUB 1,500 + your shipping.

zigfrid777 14.01.2015 - 19:42 #24
I sent you a PM.

Mark007Ru 14.01.2015 - 20:23 #25
I sent you a PM.

grek81 14.01.2015 - 20:45 #26
Replied to everyone

zigfrid777 14.01.2015 - 20:48 #27
The payment's made.

grek81 15.01.2015 - 12:20 #28
All RPG-26s have been reserved

vlad588 15.01.2015 - 13:50 #29
Good afternoon! Can you sell the front and rear caps for the 26 separately?

grek81 15.01.2015 - 16:19 #30
And what am I going to do with the tube then?? Unfortunately, I can't

VykhukhOl 21.01.2015 - 18:50 #31
I've got mine delivered. Thanks to the seller.

grek81 21.01.2015 - 21:06 #32
Thank you all!

KPD 21.01.2015 - 22:46 #33
Good evening. I'm interested in a RPG-26 tube, need a full set with two caps, etc., to be shipped to Moscow; also, I'd like to know if you have any deactivated RPG-26 warheads?
Sincerely, Kirill

zigfrid777 23.01.2015 - 20:34 #34
I've received by RPG-26 tube, very nice rubber caps, especially the rear one! A good quality product and a dependable seller! Thanks!

grek81 24.01.2015 - 20:16 #35
Greetings. No warheads are offered. Tubes are temporarily out of stock for now. To those who have received their orders - thank you for ordering!

PriZrak900 28.01.2015 - 04:15 #36
Received everything, thank you, the RPO tube is in excellent condition. I can't find where the burned spots are, it's all like a new one. Why did you not put the original crumbled caps in, did you throw them out? I would prefer to try and straighten them out, or I make their mock-ups. If you can get a deactivated RPO projectile, pls let me know, I need a complete set. Thanks again! I recommend it to everyone!

Mark007Ru 29.01.2015 - 05:24 #37
Thank you. Mock-up launcher received. Excellent quality.
A decent man, nice to deal with!
Sincerely, Mark007Ru

grek81 29.01.2015 - 17:50 #38
Thank you all. Nothing is available right now, I'll let you know when something comes in.

NoXuS 29.01.2015 - 21:25 #39
Pls reserve an RPG-26 and an MPO-A

grek81 29.01.2015 - 21:54 #40
Your reservation's accepted, it's first-come first-served basis here.

wquick 03.02.2015 - 01:02 #41
I'll stand in line for a nice 26th

Fidel 25 03.02.2015 - 14:03 #42
Pls reserve 1 MRO or RPO, if there' s going to be more of them.

grek81 03.02.2015 - 16:36 #43
Gentlemen, all items are expected, but there's already a queue of orders.. When something appears, I'll handle it in the order the reservations were made, and we'll take it from there.

Andriukha85
03.02.2015 - 20:29 #44
I am getting in the line for the RPO-A and the 26th

NoXuS 04.02.2015 - 21:44 #45
Pls reserve some tubes for me:
- MRO-A
- RPG-26

naemnik174 20.04.2015 - 13:09 #46
Hi, I am interested in an RPG-26 tube. Are they available, what's the price, are you shipping?

VCS 07.02.2015 - 08:14 #47
New RPG-26, with a belt and earplugs, with a safety pin, both caps are intact
Please reserve 2 of these for me.
When an RPG-18 becomes available, I'd like to have one, too.

grek81 07.02.2015 - 11:21 #48
Your reservations have been accepted. I'll write to you when they come.

maksimys03 07.05.2015 - 21:25 #49
Tube + caps. I would love to buy one. PM, please

puli 17.05.2015 - 17:22 #50
I'd also buy a tube with caps. PM

grek81 17.05.2015 - 19:48 #51
I'll send you all PMs when they come

znakomyi 15.07.2015 - 17:47 #52
Want RPG 18
RPG 26
MRO-A
One of each, complete sets including all caps

SergeyAkter 21.07.2015 - 09:15 #53
RPG-26 caps – are they original or imitations? If they are original, please reserve a tube for me.

Striker 29.07.2015 - 18:58 #54
Want an RPG 26 in mint condition with caps?

grek81 29.07.2015 - 21:47 #55

Expecting delivery, they are originals with caps. None are currently in stock. I'll send PMs to all those who requested once I get them.

kgo 13.08.2015 - 21:52 #56
Good evening!
I’d like a mint-condition RPO-A

WEST_TT 28.09.2015 - 21:12 #57
Are there any left?

Annex 6

Expert Report of Yuri Vladimirovich Bezborodko, 10 March 2023

(translation)

INTERNATIONAL COURT OF JUSTICE

APPLICATION OF THE INTERNATIONAL CONVENTION FOR THE SUPPRESSION OF THE FINANCING OF TERRORISM AND OF THE INTERNATIONAL CONVENTION ON THE ELIMINATION OF ALL FORMS OF RACIAL DISCRIMINATION

(UKRAINE V. RUSSIAN FEDERATION)

EXPERT REPORT OF YURI VLADIMIROVICH BEZBORODKO

10 MARCH 2023

TABLE OF CONTENTS

I. INTRODUCTION

1. My name is Yuri Vladimirovich Bezborodko. I am a Lieutenant Colonel of the reserve, Senior Researcher at the Research Centre of the Military Academy of Air Defence of the Armed Forces of the Russian Federation (hereinafter - "Russia's Air Defence Academy"). In 1984 I graduated from the Leningrad Higher Air Defence Command School. Served as head of the transporter erector launcher and radar (hereinafter referred to as "TELAR"), deputy commander of TELAR battery, commander of the Buk-M1 surface-to-air missile system (hereinafter referred to as "SAM") battery, executive officer and commander of the Buk-M1 separate anti-aircraft missile battalion.

2. In 1998 I graduated from the Military Academy of Air Defence of the Armed Forces of the Russian Federation. 1998 -2008 - Lecturer, Senior Lecturer at the Department of Anti-Aircraft Missile Systems and Medium-Range Systems of Russia's Air Defence Academy. Since 2018 - Junior Researcher, Researcher, Senior Researcher at the Research Centre of Russia's Air Defence Academy.

3. As a Buk-M1 SAM expert, I have been asked to provide comments on the following matters pertaining to the design, operation and combat performance of SAM's weapon systems (in particular, TELAR 9A310M1):

   (a) The Buk-M1 SAM system TELAR's capability to independently identify the type of target;

   (b) A description of the crew's actions in identifying the type of target and firing the Buk-M1 surface-to-air missile system;

   (c) The possibility of targeting errors and a review of known instances of civilian aircraft being hit by SAM systems;

   (d) Comparison of the technical characteristics of the Buk-M1 SAM system with other domestic and foreign surface-to-air missile systems in terms of their ability to identify target types.

4. I have also been instructed, in the process of answering the above questions, to identify and designate misrepresentations concerning the above issues which are contained in the

Expert Report of A. Skorik dated 6 June 2018[1] (hereinafter referred to as the "Skorik Report").

[1] Memorial, Annex 12.

II. SUMMARY

5. I have come to the following conclusions:

(a) The Buk-M1 SAM system 9A310M1 TELAR is technically capable of identifying the type of target when operating independently and firing without communicating with a command post and in the absence of data from a surveillance radar.

(b) The regulatory procedures for firing a Buk-M1 SAM system require that the type of target be determined prior to firing missiles.

(c) The Buk-M1 SAM system's workstations allow the operator to have access to all the data necessary to determine the type of target when deciding whether or not to fire.

(d) The specific nature of the readings displayed on instruments, on the basis of which the TELAR's combat crew makes a final decision to determine the type of target and to conduct fire, does not preclude the possibility of mistaken target identification (target type), especially in a stressful situation. There are many examples of this in history.

(e) The fundamental capabilities and limitations of today's principal surface-to-air missile systems used by both the Russian Armed Forces and the armed forces of other countries are similar to those of the Buk-M1 in terms of target type identification.

(f) The airborne target recognition systems used by foreign air defence systems are similar to those used by Russian/Soviet air defence systems.

(g) The target recognition systems with which modern SAM systems are equipped identify only the types and classes of airborne objects to varying degrees and do not automatically distinguish between civilian and military targets – a passenger airliner can only be classified as an aerodynamic target.

(h) Radar identification systems used for friend-or-foe identification can determine that the aircraft belongs to one state, one military alliance, etc., but cannot distinguish between civilian and military aircraft.

(i) Neither in 2014 nor today is there a single globally accepted radar identification system that could automatically distinguish between the civilian and military type of airborne targets.

(j) A transponder signal can only be recognized by a SAM's interrogator if it belongs to the same automatic radar identification system. Therefore, if a different radar identification system responder is used and activated on an aircraft than the one used in the SAM system, the SAM system will be unable to identify the target as "friend" and will identify it as "foe".

(k) It is possible that, even if a qualified SAM crew complies with the firing rules and requirements, a civil airborne object may be misclassified and fired upon by mistake.

(l) The crash of an Iranian airliner shot down by an Aegis Ballistic Missile Defence System of USS Vincennes cruiser; of a Russian passenger aircraft shot down by S-200V SAMs, and other examples of fatal air accidents confirm that tragic errors in target identification and SAM use are possible and, in a sense, even unavoidable.

(m) The misclassification of a target by a SAM system can be caused by an enemy's use of special tactics to employ airborne weapons (in particular, combat aviation) under the cover of civilian targets. In such case, as part of this tactics aircraft or drones are used by the enemy at the time when civil aircraft are flying on international air routes, which complicates the decision-making on destroying a target or jamming its radio-electronic systems. This may have been the tactic used by the Ukrainian Armed Forces in 2014, as Ukraine did not close the airspace over the conflict zone to civilian air traffic. Accordingly, UAF military aircrafts engaged in combat operations were in the air at the same time as civilian passenger aircrafts travelling on routes through the conflict zone. Since the opposing forces (DPR and LPR) were not using military aviation, such "human shield" tactics provided a military advantage to the Ukrainian side.

III. DETAILED ANALYSIS

A. BUK-M1 SURFACE-TO-AIR MISSILE SYSTEM TELAR CAPABILITY

i. Determining the type of target

6. The Buk-M1 surface-to-air missile system is designed to destroy enemy aircraft, cruise missiles, remotely piloted aircraft and helicopters at ranges from 3 to 32 km flying with course parameters up to 22 km at altitudes from 15 to 22,000 m and at speeds of up to 830 m/s on a head-on course and up to 300 m/s on a pursuit course.

7. The TELAR is part of the SAM system and, in the course of its operation, performs the following tasks:

   (a) detecting, capturing and tracking targets;

   (b) nationality identification of the target;

   (c) recognising the type of target;

   (d) aiming the missile launcher is in the direction of the target predicted intercept point;

   (e) issuing targeting instructions to the radar homing heads of missiles on the launcher;

   (f) target lighting up during the missile homing process;

   (g) launching missiles and using inertial-with-terminal correction guidance and control;

   (h) transportation and short-term storage of and controlling surface-to-air guided missiles (hereinafter also referred to as a "SAM");

   (i) combat unit training with the use of an built-in simulator;

   (j) functional check-out of the equipment.

8. The TELAR can destroy targets flying from any direction and approaching targets, targets that are moving away or manoeuvring or are stationary with an effective dispersion area (hereinafter also referred to as "EDA") of at least 0.1 m^2. The TELAR performs these tasks both as part of a SAM system (in the DNC mode) and autonomously in a given

sector of responsibility (120º in azimuth and 0...6º or 6...12º in elevation angle). Targets can be fired upon either from the TELAR itself or from the launcher attached to it.

9. The initial data for firing, selecting the method of target tracking, defining the characteristics of firing and determining the type of fire include:

   (a) the nature and type of airborne targets;

   (b) the airborne target 's flight parameters (altitude, speed and course profile);

   (c) slant range distance to the far edge of the launch area in case of firing on a collision course or on a pursuit course;

   (d) airborne target time in the launch area.

10. All the above data can be obtained by the TELAR itself and the TELAR' instrument panels display the relevant data to the TELAR crew.

11. The TELAR is capable of operating in the independent target search mode, without control or operational instructions from the command post and in the absence of data from a surveillance and acquisition radar. In this connection, the wording of paragraphs 10-12, 18, and 27-30, 39 of Skorik Report is misleading as it gives an impression that the TELAR needs interaction with the command post and surveillance and acquisition radar in order to fully identify the type of target and to solve combat tasks.

12. When the TELAR operates independently, airborne targets are searched for, detected, and identified using the sector plan position indicator of its own radar. The search for an airborne target based on targeting data is also carried out using a telescopic TV viewer (hereinafter also referred to as "TTVV").

13. An airborne target is detected near the target track at a range read from the digital display. Depending on the type of the airborne target and its visibility on the sector search display, the target is either automatically acquired or mixedly tracked. If the image of the airborne target is sufficiently sharp on the TTVV screen, the system switches to the semi-automatic tracking via TTVV.

Photo No. 1 - The TELAR commander's workplace

Figure 1 - TELAR commander's station

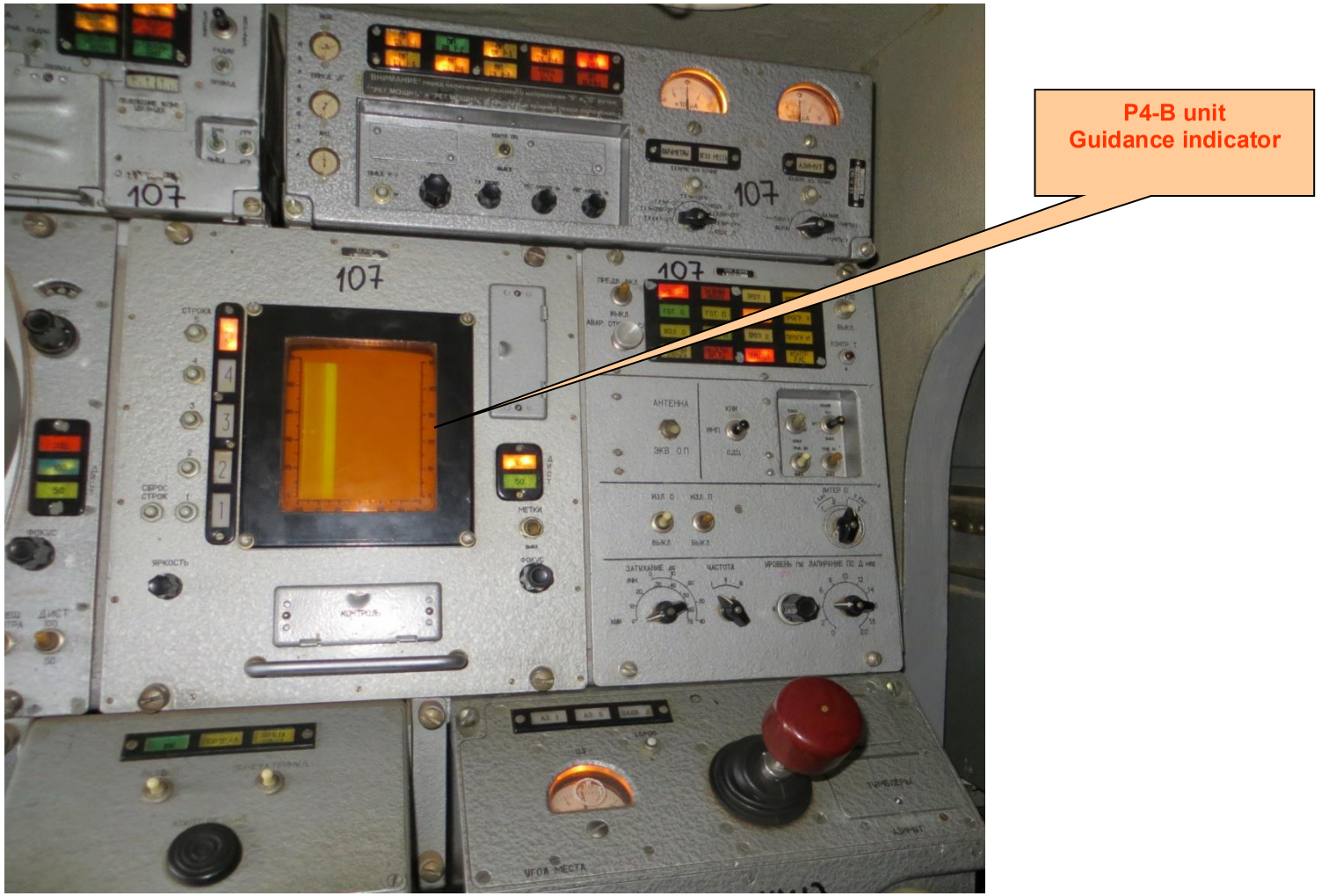


Figure 2 - Senior TELAR operator station

Figure 3 - TELAR operator's workstation

14. Once an airborne target is captured for tracking, its general and, before a SAM is launched, guaranteed identification is usually done.

15. Identification of the type of airborne target is performed automatically by the recognition system after the airborne target is captured by the TELAR. The type of airborne target is indicated on the P-19KMI unit display (see Figure 1) and at the same time an audio signal is produced which is characteristic of such type of airborne target.

16. To identify the type of target, an Automatic Target Class Recognition System (hereinafter also referred to as "ATCRS") is used which is a part of the TELAR's own radar. The recognition system allows for identification of the following types of airborne targets based on the signal properties (using a spectral analysis of the signal reflected from the airborne target and its speed): ballistic targets ("BT" indicator), helicopter ("Propeller" indicator) and aerodynamic target ("AT" indicator) (see Figure 1, "Target Class (Type) Recognition System Indicators"). The target type information is used when assigning the SAM guidance method and is taken into account in the central computer system (hereinafter also referred to as "CCS") of the TELAR.

17. From the ATCRS, target signature information (indicators "AT", "BT", "Propeller") is also sent to the intercom equipment in the form of an audio signal. By the frequency and tonal characteristic of the sound the TELAR operators can determine the class (type) of the target being tracked, the beginning of the target manoeuvre and the moment of launch of anti-radar missiles from the enemy aircraft.

18. From the output of the receiving system, the target signal is fed to the target class recognition unit to recognise the target tracked based on a spectrum analysis of the reflected target signal (presence of secondary modulation in the structure of the reflected signal).

19. The firing officer receives information on targets in the form of reflected signals (target markings) observed on indicators' screens and readings of pointer and digital indicators. In addition, the information can be transmitted from the command post.

20. In order to determine the type of target and the parameters of its movement and whether it belongs to one or another type of airborne weapon, the firing officer is guided by several indirect attributes, which include:

(a) the type and shape of the target no response to the query observed on the indicator screens and the television display of the target on the TTVV screen (see Figures 3, 5, 6, 8 and 9);

(b) change in the position and size of the kill zone displayed on the sector plan position indicator (see Figure 1);

(c) the altitude, course profile and speed of the target and changes in them recorded by the TELAR's instruments;

(d) the values of the target detection and tracking ranges; the presence and type of interference observed on the displays.

21. The type and shape of the target no response to the query is determined by the capability of the specific target to reflect electromagnetic energy, the combat order of the airborne weapon group, and the resolution of the TELAR's radar.

22. In practice, it is rarely possible to unambiguously determine the type of airborne target based solely on the performance of the ATCRS. For a more complete identification of the target type, it is necessary to pay attention to the readings of other instruments and, in particular, to the screen of the video receiver of the TTVV (see Figures 3 and 5).

23. The TTVV consists of a TV optical head (narrow-angle imaging device, see Figure 4) and a video receiver (TV screen, see Figures 3 and 5). When an airborne target is tracked automatically, the TV optical head turns towards the tracked target and the target appears on the screen of the video receiver (see Figures 6, 8 and 9). It should be noted that adverse weather conditions (cloud cover) and distance to the target can make identification difficult.

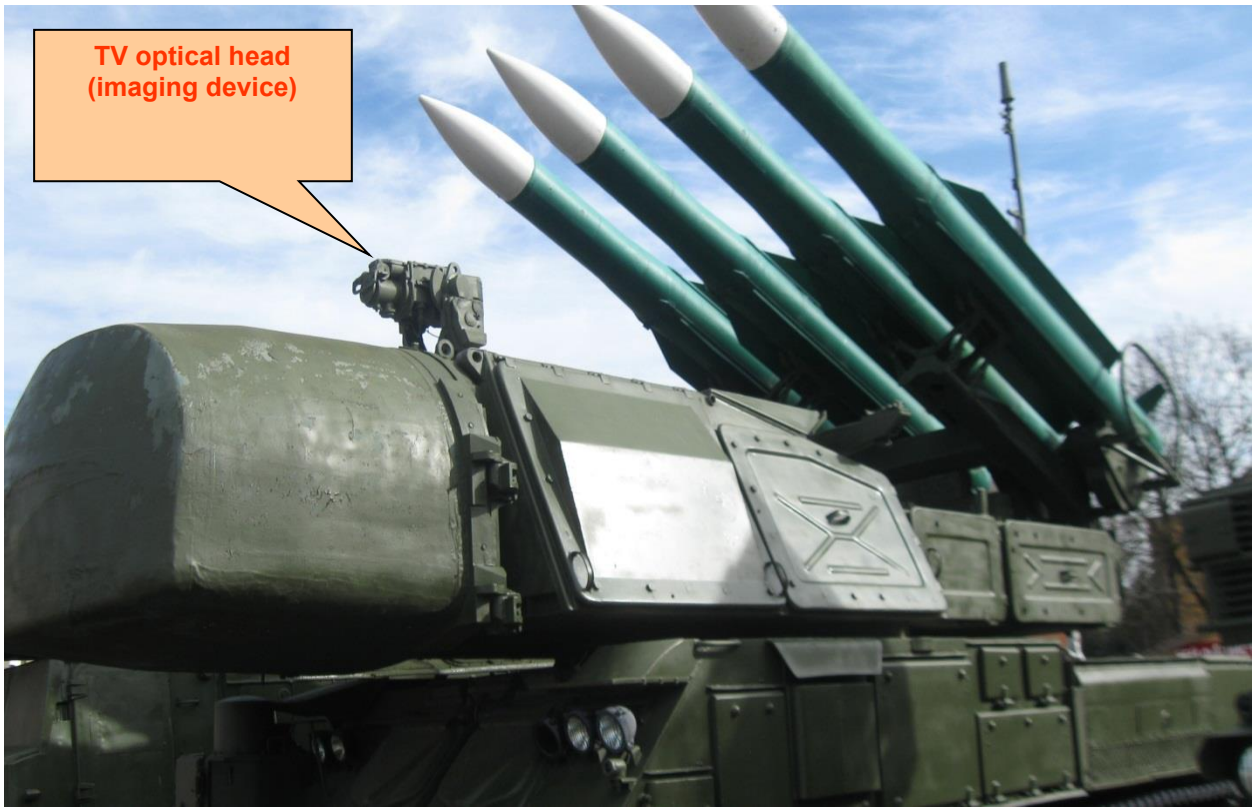


Figure 4 - TV optical head of TTVV

Figure 5 – TTVV's Video Receiver

24. The TTVV screen is also used to evaluate the optical visibility of observed local objects, the distance to which is determined by means of an automatic rangefinder of the TELAR's radar. The results of the visibility assessment are used to identify the threshold of possible transition to tracking the airborne target with the use of the TTVV and the sector within which the airborne target can be lost due to the effects of the sun on the TTVV equipment.

25. Thus, the TTVV is not only a means of airborne target detection, but also a means of tracking. When an airborne target begins to be automatically tracked, it appears in the cross wires of the video receiver screen (see Figures 6, 8, and 9). When the semi-automatic tracking mode is switched on, the airborne target is held in the cross wires by means of P-52T unit control wheel. Contrast images on the screen are also used by the operator for airborne target identification.

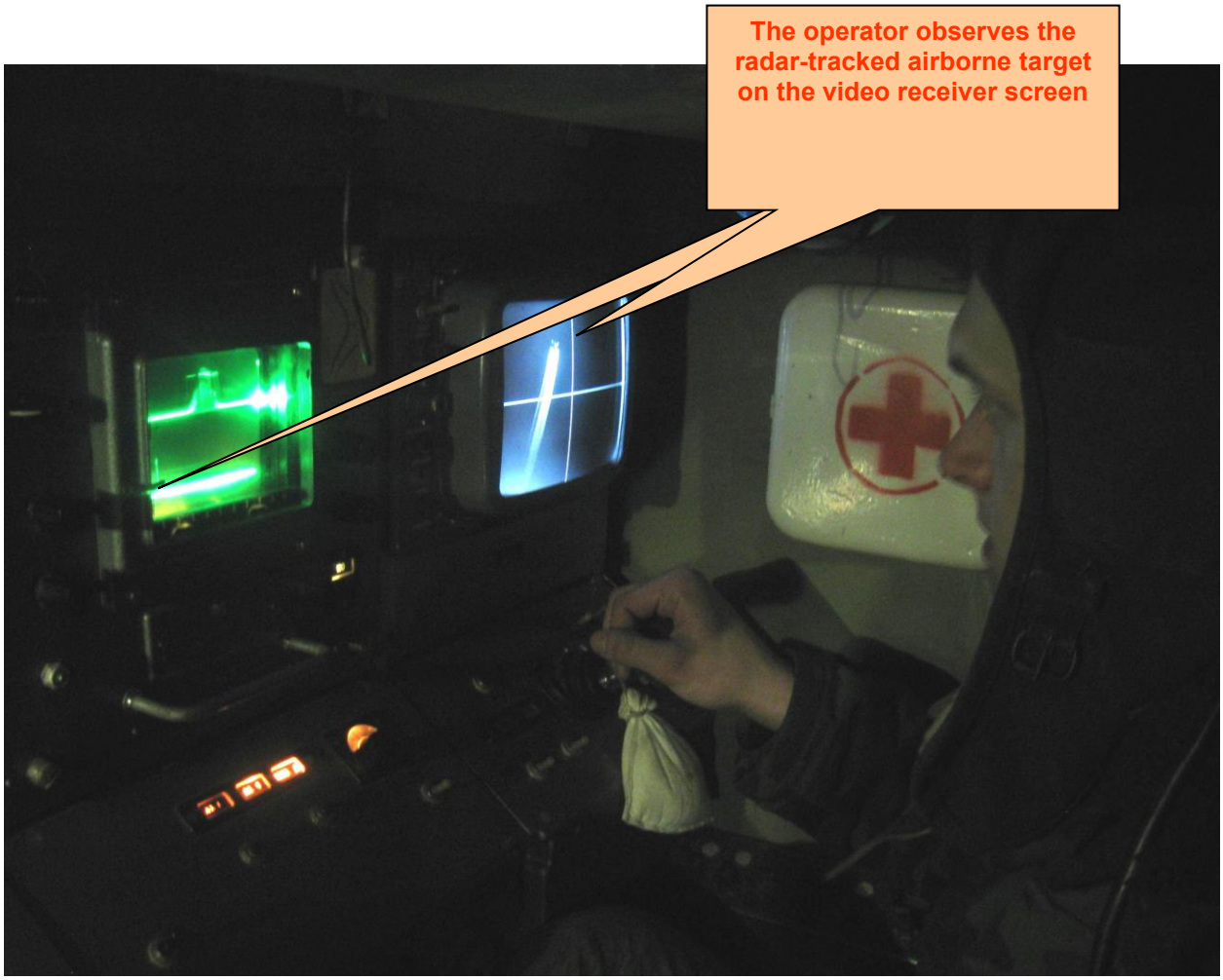


Figure 6 – Simultaneously operation of the operator and the radar and the TTVV

26. Preparation of fire without identifying the airborne target type and the airborne target flight parameters is impossible, as these are source data for solving other tasks, such as choosing the tracking method and determining the number of missiles to be expended and the type of fire and the firing sequence.

27. The instruments displaying this data are located at the TELAR commander's station directly in front of his eyes. From an ergonomic point of view, the important controls and displays are to be in sight of the person making a decision to fire upon an airborne target, namely the TELAR commander (see Figure 7).

Figure 7 - Combat team at their workstations (combat work in progress: search for an airborne target is underway)

28. This clearly contradicts the view expressed in the Skorik Report (para. 28, para. 30, para 39) that the TELAR commander is unable to take into consideration instrument readings and information displayed on the indicator screens when deciding whether to engage a target.

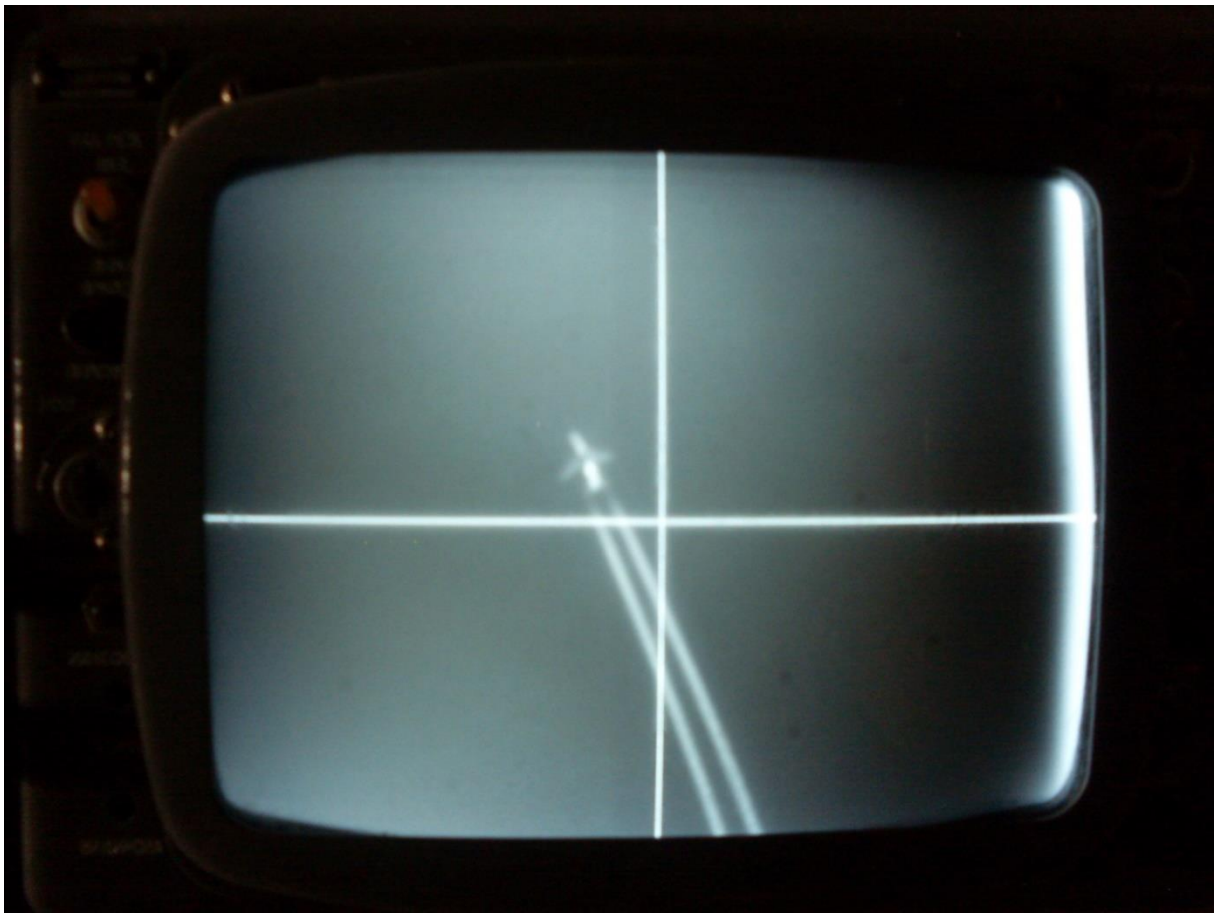


Figure 8 - Example of a target image on the TTVV at TELAR

Figure 9 - Example of a target image on the TTVV at TELAR

ii. <u>Nationality identification of the target</u>

29. In the process of detecting and capturing a target, the nationality identification (preliminary one upon detection and secure one in case of tracking) is performed by means of a ground radar interrogator (hereinafter also referred to as "GRI").

30. The ground-based radar interrogator, which is interfaced with the 9S35M1 radar, is designed to identify radar-detected airborne objects (aircraft, helicopters, drones) equipped with radar responders and operating on the "friend or foe" principle.

31. The GRI is part of a pulse radio system that operates on the principle of information exchange between the interrogator and transponder. The GRI provides identification of transponder transponder-equipped objects in the polar coordinate system. To provide identification, the GRI is interfaced to the radar, which ensures spatial cositing of radar's and the GRI's antenna radiation patterns during air surveillance and target tracking, and the radar's sounding impulses and the GRI's interrogation signals are emitted synchronously.

32. If the target does not have a responder belonging to the same radar identification system, its nationality identification is impossible using this system.

B. DESCRIPTION OF THE CREW'S ACTIONS WHEN IDENTIFYING THE TYPE OF TARGET AND FIRING THE BUK-M1 SURFACE-TO-AIR MISSILE SYSTEM

33. The basic combat document establishing the procedures for the preparation of fire and firing at airborne targets and for antiaircraft missile fire control at battery and battalion levels and the procedure for combat operations using weapons of "Buk-M1" surface-to-air missile system is "Regulations on Firing and Combat Work on Anti-Aircraft Missile Systems of Army Air Defence Corps, Part 6, Buk-M1 Surface-to-Air Missile System" (hereinafter also referred to as "Firing Regulations").

34. In accordance with Article 15 (Section 1 of the Firing Regulations, Chapter 2 "Preparation of Fire "), preparation of fire consists of preliminary and immediate preparation.

(a) **Preliminary preparation of fire** begins with the declaration of condition 1 and ends at the moment a fire mission is received from the command post of the antiaircraft missile battalion (also referred to as "combat centre") or a decision is made by the anti-aircraft missile battery commander (TELAR commander) to fire on an airborne target.

(b) **Immediate preparation of fire** begins at the moment when a fire mission is received from the combat centre or a decision is made by the anti-aircraft missile

battery commander (TELAR commander) to fire on the airborne target and ends when the "START" button is pressed.

35. **Preliminary preparation of fire** includes:

(a) putting the anti-aircraft missile system in an operational state (condition 1);

(b) assessing the air situation;

(c) assessing the optical visibility using a telescopic TV viewer (TTVV);

(d) assessing the readiness of the anti-aircraft missile system for firing.

36. The assessment of the air situation is made by the anti-aircraft missile battery commander (TELAR commander) based on the situation picture on the screen of the TELAR sector plan position indicator, when the TELAR operates independently and, additionally, using data received from the command post of the surface-to-air missile battalion, when the TELAR operates as part of the surface-to-air missile battery. As a result of the air situation assessment, the TELAR commander (anti-aircraft missile battery commander) determines:

(a) number, coordinates and flight parameters of airborne targets expected in the missile launch area; time of airborne targets flight to the far edge of the launch area and time intervals between airborne targets; coordinates of airborne targets tracked by other TELARs;

(b) type and importance of airborne targets;

(c) types of jamming and measures to protect against it; and

(d) presence of friendly aircraft in the air.

37. **Immediate preparation of fire** includes:

(a) receiving a fire mission or selecting an airborne target when a decision to fire on it is made at one's own discretion;

(b) searching for, detecting and identifying an airborne target;

(c) determining the radio jamming characteristics and intensity;

(d) switching on the jamming suppression equipment and tuning it out;

(e) capturing the airborne for tracking escort and identification friend or foe;

(f) determining the type of airborne target being tracked;

(g) choosing the launcher for firing;

(h) setting the selected launchers and missiles to "Target" mode;

(i) choosing the missile guidance method;

(j) determining the baseline data for firing;

(k) determining the number of missiles to be expended, the type of fire and rocket launch intervals;

(l) determining the moment of missile launch;

(m) determining whether an airborne target can be re-fired upon.

38. Thus, the assessment of the air situation and determining the airborne target type are a regulatively prescribed integral part of the TELAR crew work at all stages of preparation of fire.

39. In accordance with Article 18 of the Firing Regulations, Chapter 2 "Preparation of Fire", the TELAR commander (anti-aircraft missile battery commander) assesses the air situation based on the situation picture on the screen of the TELAR sector plan position indicator, when the TELAR operates independently and, additionally, using data received from the command post of the surface-to-air missile battalion, when the TELAR operates as part of the surface-to-air missile battery. As a result of the air situation assessment, the surface-to-air missile battery commander (TELAR commander) determines:

(a) number, coordinates and flight parameters of airborne targets expected in the missile launch area; time of airborne targets flight to the far edge of the launch area and time intervals between airborne targets; coordinates of airborne targets tracked by other TELARs;

(b) type and importance of airborne targets;

(c) types of jamming and measures to protect against it; and

(d) presence of friendly aircraft in the air.

40. See Appendix 1 for more details on the sequence of actions to be followed by the crew to assess the air situation and determine the type and characteristics of airborne targets, as prescribed by the Firing Regulations.

41. It follows from the aforesaid that the target type identification procedures followed by the TELAR crew are indispensable steps, when a TELAR conducts fire independently, and that failing such identification firing is not permitted.

i. <u>Firing upon single non-manoeuvring airborne targets</u>

42. Articles 33 – 62, Chapter 3, of the Firing Regulations define the characteristics of low-flying targets, single manoeuvring and single non-manoeuvring airborne targets, clustered airborne targets, cruise missiles, helicopters, and anti-radar missiles and codify rules for firing upon them.

43. Article 31 of the Firing Regulations unambiguously interprets the characteristics of a single non-manoeuvring airborne target. They include the presence of a separate no response to the query on the screens of TELAR's indicators and, in conditions of sufficient optical visibility, display of a single aircraft on the TTVV screen, with no abrupt change in its flight parameters (altitude, speed or course).

44. Passenger aircraft can also be classified exactly as such targets. The flight altitude of an Boeing-type passenger aircraft on an international route is 10,000-11,000 meters (excluding take-off and climb sections). The cruising speed is 800-900 km/h, which is about 200-250 m/s on R-43 unit indicator (see Figure 1) (depending on the flight angle of the aircraft relative to the TELAR). The speed of the target changes very insignificantly. The aircraft does not change its course (using a certain corridor), which can be observed on the R-4SA sector plan position indicator (see Figure 1). On the guidance display R-4V, the target is observed in upper line No. 5 (see Figure 2). The sector plan position indicator R-4SA (see Figure 1) and the precision plan position indicator R-4N (see Figure 3) display a power signal reflected from a passenger aircraft. In conditions of sufficient optical visibility, an image of the aircraft being tracked appears (see Figures 6, 8 and 9) on the TTVV video receiver (see Figures 3, 5). A vapour trail (condensation trail

left by passenger aircraft engines) can be observed. On the R-19KM1 unit, the "AT" (aerodynamic target) indicator is lit (see Figure 1).

45. Thus, the combination of instrument readings and information displayed on indicator devices makes it possible to determine the type of target being tracked, both by its trajectory and signal characteristics. This allows an operator to make an informed and independent decision on the targeting.

46. This refutes the view expressed in the Skorik Report that the type of target being tracked cannot be determined by a TELAR that operates independently, and that no possibility to distinguish between a civilian and military target exists. However, this does not exclude the possibility of a mistake in identification. Such errors, unfortunately, can occur due to a variety of factors; this aspect is examined in part C.

C. POTENTIAL TARGET IDENTIFICATION ERRORS AND INSTANCES OF CIVILIAN AIRCRAFT BEING HIT BY SAMS

47. Combat work is carried out by combat crews consisting of, in case of a TELAR, the anti-aircraft missile battery commander (TELAR commander), senior operator, operator, and driver mechanic.

48. The anti-aircraft missile battery commander (TELAR commander) must:

(a) direct work of the TELAR's and launcher's combat teams during the transition to the various operational readiness levels;

(b) in conjunction with the TELAR crew, switch on the equipment and take part in operational and functional checks;

(c) report to the commander of the anti-aircraft missile battalion (battery) on readiness for firing and the availability of missiles**;**

(d) study and assess the air situation, receive target designation, direct the work of the TELAR combat crew in searching for the target according to the command centre's data, and select airborne targets for firing;

(e) identify airborne targets, direct the work of the TELAR combat crew in capturing and tracking airborne targets;

(f) determine measures to protect the TELAR from jamming and anti-radar missiles (hereinafter also referred to as "ARM") of the enemy;

(g) make the selection of TELAR or launcher for firing;

(h) select the mode the airborne target acquisition by the radio-radar system (hereinafter also referred to as "RRS") and monitor the readiness of the TELAR, launcher and missiles for launch;

(i) determine the type of fire, the rate of missile consumption, and the timing of the launch; launch missiles from the TELAR or launcher; and, jointly with the TELAR operators, evaluate the results of the firing;

(j) assess the possibility of and decide on re-firing the target;

(k) report to the commander of the antiaircraft missile battalion on the battery's combat operations; the detection and characteristics of airborne targets and radio jamming; and the results of launches and missiles expended;

(l) direct the work of the battery crew at the changeover from fire position to travel position;

(m) in conjunction with the TELAR crew, switch off the equipment and check that the controls have been reset;

(n) maintain radio communication with the battalion command post, give instructions for loading of the TELAR or launcher and provide requests for missile replenishment;

(o) direct the work of the TELAR, launcher and vehicle crews when loading and unloading missiles.

49. The head of the TELAR crew is fully responsible for the decision to engage the target. Such decision is made on the basis of reports from the senior operator and the operator based on a comprehensive analysis of the situation. The combat work implies coordinated work of all crew members, as each of them has their own functional duties in the course of combat work.

50. In practice, however, situations may arise where an error, in particular, an erroneous identification, can result in a civilian aircraft being hit, among other things. Errors are inevitable, especially in areas where armed hostilities are taking place. Difficult ground

situation, time pressures, and a certain extreme situation have an impact on the process of combat work.

51. In addition, reasons for misidentifying the type of target can include the following:

(a) type of target information (radar situation or secondary information in the form of a target data sheet);

(b) An airborne target may be understood as a target group consisting of several aircraft or other airborne weapons, the intervals and distances between which do not allow to permit them based on their range and angular point;

(c) The enemy's tactic of employing airborne weapons under the cover of civilian targets. In such case, aircraft or drones are usually used by the enemy at the time when civil aircraft are flying on international air routes, which complicates the decision-making on destroying a target or jamming its radio-electronic systems. In my view, this was the tactic used by the Ukrainian Armed Forces during the so-called anti-terrorist operation in 2014;

(d) The lack of time in air defence tactics, the rapid and frequent change of launching (firing) positions, and the short-term and discontinuous use of air defence means.

i. <u>Description of the operation of the radar identification system</u>

52. As described in paras 29-32 above, a ground radar interrogator (GRI) is part of a pulsed radio communication system operating on the principle of information exchange between the interrogator and transponder. The GRI provides identification of friendly transponder-equipped objects in the polar coordinate system.

53. Radar identification systems are used primarily on aircraft belonging to one state, one military alliance, etc. For example, in the 1970s, Silicon-2 identification system was put into operation in the USSR. Both military and civilian aircraft of the USSR were equipped with the corresponding transponders.

54. Neither in 2014 nor today is there a single globally accepted radar identification system that can automatically identify the civilian or military nature of airborne targets. Radar

systems allow for distinguishing only between "friend" airborne targets (i.e. primarily those belonging to one state) and "foe" airborne targets.

55. The presence of a ground-based radar interrogator on anti-aircraft missile systems and complexes does not allow for determining to which state an airborne object belongs unless it is equipped with a transponder of the corresponding radar identification system. A transponder signal can only be recognized by a SAM system interrogator if it belongs to the same automatic radar identification system.

56. For example, if an aircraft uses an activated transponder of a different radar identification system from the one used on the SAM system, the SAM system will identify the target as "foe".

57. The target recognition systems with which modern SAMs are equipped make it possible to identify, to varying degrees, only the types and classes of airborne objects (a passenger airliner can only be classified as an aerodynamic target). In other words, if an airborne object, such as a passenger airliner, is not equipped with a responder of the same radar identification system used on the respective SAM system, then the SAM system will be unable to identify the target as "friend".

58. Therefore, the recognition systems of domestic and foreign SAMs do not allow for unambiguous automatic identification of an airborne object as a civilian aircraft.

59. Below I review some examples of aircraft accidents resulting from errors in the use of SAM systems, which are based on media reports from open sources.

ii. <u>Tu-154M Crash in the Black Sea</u>

60. A major air crash occurred on 4 October 2001. A Tu-154M airliner belonging to the Russian airline Sibir, which was on a scheduled flight SBI1812 between Tel Aviv and Novosibirsk, crashed into the Black Sea 1 hour and 45 minutes after take-off. All 78 people on board (66 passengers and 12 crew members) were killed.[2]

[2] Gazeta.ru, *"Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft* (4 October 2021), available at: https://www.gazeta.ru/science/2021/10/03_a_14047363.shtml (Exhibit A).

61. According to the report of the Interstate Aviation Committee (hereinafter also "IAC"[3]), the aircraft was unintentionally shot down by a 5V28 anti-aircraft missile of the S-200V complex,[4] which was launched by the 96th anti-aircraft missile brigade of the Ukrainian Air Defence Forces during the joint Russian-Ukrainian military exercises held at the test site on the Crimean peninsula.[5].

62. It is believed that during firing exercises with the participation of the Ukrainian Air Defence Forces, which took place on 4 October 2001 at Cape Opuk in the Crimea, the Ty-154 aircraft happened to be in the centre of the intended training target firing sector and had a radial speed close to that of the training target, as a result of which it was detected by S-200 radar and mistaken for the training target.[6] Given the lack of time and nervousness caused by the presence of high command and foreign guests,[7] the S-200 operator did not determine the distance to the target and "illuminated" the Tu-154 (which was at a distance of 250-300 km) instead of the low-observable training target (launched at a distance of 60 km). Thus, the strike of the Tu-154 by an anti-aircraft missile was most likely not a result of the missile missing the training target (as is sometimes claimed), but rather a result of the S-200 operator directly targeting the mistakenly identified target.

63. The S-200 crew did not foresee the possibility of such an outcome and did not take measures to prevent it. The size of the test site did not ensure the safety of SAM firing at such a range. The organizers of the firing exercise had not taken the necessary measures to clear the airspace: flights were prohibited only within a radius of 50 km, although the "certified" range of the S-200V system is 255 km,[8] and the technical range of the 5V28/5V28M missile is about 300 km.

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[3] Executive body of the Interstate Council on Aviation and the Use of Airspace of the Commonwealth of Independent States (CIS).

[4] RIA Novosti, *Tu-154 Tel Aviv – Novosibirsk Flight Crash in 2001* (4 October 2016), available at: https://ria.ru/20161004/1478372878.html?in=t (Exhibit B).

[5] Gazeta.ru, *Gazeta.ru, "Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft* (4 October 2021), available at: https://www.gazeta.ru/science/2021/10/03_a_14047363.shtml (Exhibit A).

[6] RIA Novosti, *Unsolved Mysteries of Tu-154 Tel Aviv – Novosibirsk Flight Crash* (4 October 2016), available at: https://ria.ru/20161004/1478448674.html (Exhibit C).

[7] KP.UA, *Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt* (3 October 2016), available at: https://kp.ua/politics/553004-katastrofa-v-nebe-nad-chernym-morem-ukrayna-denhy-zaplatyla-no-vynu-ne-pryznala (Exhibit D).

[8] KP.UA, *Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt* (3 October 2016), available at: https://kp.ua/politics/553004-katastrofa-v-nebe-nad-chernym-morem-ukrayna-denhy-zaplatyla-no-vynu-ne-pryznala (Exhibit D).

iii. A300B2 Crash in the Persian Gulf

64. On 3 July 1988, one of the biggest disasters in the history of world aviation occurred over the Persian Gulf. The U.S. Navy cruiser Vincennes shot down an Iranian Airbus A300B2 passenger jetliner with anti-aircraft missiles.[9] All of the two hundred and ninety passengers on board, including 66 children[10] and 16 crew members,[11] were killed.

65. Two anti-aircraft missiles from the cruiser Vincennes[12] struck the airliner at an altitude of four thousand metres.[13] According to a US government report, the ship's crew misidentified the civilian Airbus, mistaking it for an attacking F-14 Tomcat fighter of the Iranian Air Force.

66. Iran Air's flight 655 operated from Tehran to Dubai, with a stopover at Bandar Abbas airport, also home to Iranian military aircraft. The Airbus, which was equipped with a civilian transponder, flew the standard route within the international air corridor. The normal flight time over the Persian Gulf was about 30 minutes.

67. The US military claimed that the cruiser fired a missile while "on the border" of Iranian territorial waters. The passenger airliner was identified as an Iranian F-14 fighter due to a "technical error",[14] while failing to respond to the US cruiser on the military channel, and the cruiser allegedly did not have the equipment to establish communication on the civilian channel.

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[9] RIA Novosti, *Disaster over the Gulf. Why the Americans shot down an Iranian passenger airliner* (3 July 2018), available at: https://ria.ru/20180703/1523792998.html (Exhibit E).

[10] Ibid.

[11] The Islamic Revolution. Yesterday. Today. Tomorrow. 1979, *AIRBUS A300 CRASH OVER GULF (4 JULY 1988)* (22 August 2021), available at: https://iran1979.ru/katastrofa-airbus-a300-nad-persidskim-zalivom-4-iyulya-1988-g/ (Exhibit F).

[12] Historical Library, *Airbus A-300 Shot Down by US Cruiser*, available at: https://historylib.org/historybooks/Igor-Muromov_100-velikikh-aviakatastrof/71 (Exhibit G).

[13] RIA Novosti, *Disaster over the Gulf. Why the Americans shot down an Iranian passenger airliner* (3 July 2018), available at: https://ria.ru/20180703/1523792998.html (Exhibit E).

[14] Russia Today, *"Gross Violation of All Laws": Why US Has Not Admitted Guilt for Downing of A300 Airliner over Persian Gulf* (3 July 2018), available at: https://russian.rt.com/science/article/532374-ssha-iran-samoljot-katastrofa (Exhibit H).

iv. Boeing 7378KV Crash in Iran

68. On 8 January 2020, a Boeing 737-8KV of Ukraine International Airlines (UIA) was on a scheduled international flight PS752 between Tehran and Kiev, but about 3 minutes after take-off it was hit by two surface-to-air missiles fired from an Iranian air force base and crashed to the ground 15 kilometres from Tehran airport.[15] All 176 people on board - 167 passengers and nine crew members - were killed.[16]

69. Three days after the crash, the Iranian authorities admitted that Flight 752 was shot down by their air defence forces as a result of "human error" amid heightened military alert related to a possible US response to an Iranian missile attack on US military installations in Iraq.[17]

70. President of Iran Hassan Rouhani said that based on preliminary findings of an internal military investigation it was concluded that flight PS752 had been shot down accidentally as a result of "human error".[18]

71. The official report said that during the flight the aircraft came in close proximity to one of the important military installations of the Islamic Revolutionary Guard Corps and resembled an enemy object in shape and altitude.[19]

72. Amir-Ali Hajizadeh, Commander of the Aerospace Force of the Islamic Revolutionary Guard Corps, said that Iran's air defence system operator had identified the Ukrainian airliner as an "enemy object" (cruise missile), but due to channel interference was unable

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[15] Informator.ua, *Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?* (6 January 2023), available at: https://informator.ua/ru/tri-goda-tragedii-boeing-mau-nad-iranom-chto-stalo-s-vinovnikami (Exhibit I).

[16] Liga.News, *Ukrainian Boeing-737 Crashes in Tehran* (8 January 2020), available at: https://news.liga.net/incidents/chronicle/krushenie-ukrainskogo-boeing-737-v-tegerane-hronika-katastrofy (Exhibit J).

[17] RIA Novosti, *Iran Announces Cause of Ukrainian Boeing Crash* (17 March 2021), available at: https://ria.ru/20210317/krushenie-1601714106.html (Exhibit K).

[18] Akhbor.com, *Iran Admits Its Air Defence Shot Down Ukrainian Passenger Plane Due to "A Human Error"* (11 January 2020), available at: https://akhbor-rus.com/-p3523-162.htm (Exhibit L).

[19] Mir 24, *Downed by Mistake: Iran Gives Details of Ukrainian Boeing Shot Down* (11 January 2020), available at: https://mir24.tv/news/16393283/sbili-po-oshibke-v-irane-detalno-obyasnili-udar-po-ukrainskomu-boeing (Exhibit M).

to report this to the command, so he made a wrong decision himself and launched the missile at the target.[20]

73. On 21 January 2020, the Iranian Civil Aviation Organisation (CAOI) published a preliminary report on the causes of the crash of flight PS752, according to which the airliner crashed after it was hit by two short-range surface-to-air missiles fired from a Tor-M1 surface-to-air missile system.[21] The updated report also revealed that the air defence system which shot down the Ukrainian airliner had been moved shortly before the crash, resulting in a change in the geographical position and direction of the complex; the CAOI said that "due to human error" the data was not reconfigured after the move, nor were mandatory post-move actions carried out; [22] this in turn caused an error in data at the time of the aircraft detection such that the air defence system recognised it as "a target moving from a south-western direction towards Tehran" (Iraq is Iran's western neighbour).[23]

74. It is, therefore, possible that, even when the provisions of the firing regulations are followed by a qualified combat crew, situations may arise where an airborne object may be misclassified and fired upon by mistake.

D. COMPARISON OF THE TECHNICAL CHARACTERISTICS OF BUK-M1 WITH OTHER DOMESTIC AND FOREIGN ANTI-AIRCRAFT MISSILE SYSTEMS IN TERMS OF THE ABILITY TO IDENTIFY TARGET TYPES

75. Below I review the radar identification systems making part of some domestic and foreign-made air defence systems.

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[20] Lenta.ru, *Iran Delves into Details of Its Erroneous Attack on Ukrainian Airliner* (11 January 2020), available at: https://lenta.ru/news/2020/01/11/10sec/ (Exhibit N).

[21] Nasha Niva, *Iran confirms that the Iranian Boeing was shot down by two Tor-M1 missile systems* (21 January 2020), available at: https://m.nashaniva.com/ru/articles/244732/ (Exhibit O).

[22] Lenta.ru, *Iran reveals expanded version of Ukrainian Boeing crash* (12 July 2020), available at: https://lenta.ru/news/2020/07/12/iran/ (Exhibit P).

[23] Informator.ua, *Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?* (6 January 2023), available at: https://informator.ua/ru/tri-goda-tragedii-boeing-mau-nad-iranom-chto-stalo-s-vinovnikami (Exhibit I).

i. S-300V SAM SYSTEM

76. The ground-based radar interrogator, which is interfaced with station 9S32-1 of the S-300V surface-to-air missile system (hereinafter also referred to as "SAM"), is designed for friend-or-foe identification of airborne objects equipped with radar responders. Identification is made only the object begins to be tracked automatically. A conclusion about the nationality of the target is made by a special-purpose computer ("SPC-2") if there are identification signals coming from the GRI. The SPC-2 creates all necessary signals and control commands. The SPC-2 processes the information received from the GRI (general identification (GI) or secure identification (SI)) and makes a decision about the nationality of the target. The identification results are displayed on the commander's indicator screen and on the commander's information panel.

77. As a result of an air situation analysis, the multi-channel missile guidance station (hereinafter also referred to as "MCMGS") generates features of the following target types and displays their respective indicators: aerodynamic target, or "AT"; large target, or "LT"; small target, or "ST"; helicopter; group target, or "GT"; low-flying target, or "LFT"; jammer, or "J"; medium-range ballistic missile, or "MRBM"; and tactical ballistic missile, or "TBM".

ii. 9K317M Buk-M3 SAM System

78. The software-based identification system of 9K317M **Buk-M3** is part of the multi-function radar system (MFRS) processor, tracking system processor, and combat application processor, determining whether the target belongs to one of the following classes: large aerodynamic target, or "LAT"; aerodynamic target, or "AT"; helicopter, or "H"; remotely piloted vehicle, or "RPV"; aircraft missile, or "AM"; ballistic target, or "BT"; cruise missile, or "CM"; and anti-radar missile, or "ARM".

79. The 9A317M SRS provides:

(a) identification of air and surface objects equipped with radar responders and detected by radar stations;

(b) identification of airborne objects issuing distress and alert signals, followed by signals issued to the radar to determine the location of identifiable objects.

iii. Buk-M2" 9K317 Surface-to-Air Missile System

80. The 9K317 **Buk-M2** GRI is designed to identify detected airborne objects (aircraft, helicopters, unmanned aerial vehicles). GRI is a radar system that operates on the principle of information exchange between an interrogator and a responder. The GRI provides identification of objects equipped with responders. For this purpose, it is interfaced to radar equipment (hereinafter also referred to as "radar"), which ensures spatial cositing of phased array's and the GRI's radiation patterns, and for range determination the radar's sounding impulses and the GRI's interrogation signals are emitted synchronously.

81. The identification system is used to determine the class of the target being tracked using an analysis of the signal spectrum in relation to the signal reflected from the target. To determine the target class on the basis of trajectory characteristics, information about the target being tracked (range, speed, altitude) is received from the direct digital synthesizer (hereinafter also referred to as "DDS") via a digital communication line. To determine the class of the target based on signal characteristics, signals from the outputs of receivers are used, total harmonic distortion (hereinafter also - "THD") and linear-frequency modulation (hereinafter also - "LFM"). The identification results are output to the DDS via a digital communication line or to the intercom system for listening to the acoustic noise of the target.

82. The target classes are recognised on the basis of trajectory characteristics (aerodynamic - "A", ballistic - "B", helicopter - "H", remotely piloted aircraft - "R", anti-radar missiles and shells - "S", cruise missiles - "C", unidentified objects - "U") and on the basis of the target scattering cross-section value (which is determined indirectly based on the value of control signal from automatic gain control circuit ("AGC"). In case of uncertainty the recognition is made based on the spectrum of the signal.

iv. BM 9A331 Tor-M1 SAM

83. The 9A331 Tor-M1 SAM combat vehicle can independently search, detect, identify and track airborne targets and prepare, launch and target missiles. The BM 9A331 comprises:

    (a) A target detection station ("TDS") with antenna stabilisation system and GRI equipment;

(b) A guidance station with a TTVV.

84. The TDS identifies airborne targets in conjunction with the GRI and analyses the air situation, prioritising targets by threat level. For each target track that has undergone initial processing, the TDS generates a command to activate the GRI. The GRI operates in wavelength range using identification modes (general and secured, respectively).

85. The computer used for nationality identification of the targets compares the coordinates of the targets and the identification marks. When the coordinates match in terms of range and azimuth, the target is marked as "friend" and is excluded from further processing.

86. The type and profile of targets are determined on the basis of information on the commander's indicator screen and can be updated with the use of the TTVV (see Figures 6, 8 and 9).

87. The combat vehicle can identify the following target types: aircraft; helicopter; aircraft missile; anti-radar missile; and guided air bomb. The target type data is displayed in the logbook on the commander's display.

v. 9K33M3 "Osa-AKM" SAM system

88. The 9A33BM3 "Osa-AKM" combat vehicle includes a target detection station (TDS) with a ground radar interrogator (GRI).

89. The ground radar interrogator, which makes part of the 9A33BM3 combat vehicle, is designed to identify (determine whether they belong to own armed forces) airborne objects (aircraft, helicopters, unmanned aerial vehicles) equipped with radar identification system transponders.

90. The detected targets are identified by a ground-based radar interrogator, which sends interrogation pulses in the direction of the target at the command of the search operator. The friendly targets respond to the interrogation using the assigned code. The aircraft's transponder signal is received by the antenna of the GRI and is amplified and decoded and fed to the plan position indicator and displayed on the screen next to it as a special marking "friendly aircraft".

91. When the detected target fails to respond to the GRI, the search operator determines its movement parameters and whether the target can enter the combat vehicle's killing zone.

vi. <u>Foreign SAM Systems</u>

92. The main foreign SAM systems are as follows: Patriot PAC-3, Avenger, and Aegis (USA); SAMP/T (France, Italy); Huaci-9A (China); Spyder-SR (Israel); Iris-T SLS (Germany).

93. My multi-year experience and practice of SAM operation allow me to conclude that the identification principles and physical processes used by foreign air defence systems are similar to Russian identification systems. Identification systems allow only for identifying types and classes of targets to varying degrees. These foreign systems that are in service in other countries cannot automatically identify a civilian object (passenger airliner).

94. The cause of the aforementioned accident involving the USS Vincennes, which occurred on 3 July 1988 over the Persian Gulf, was that the passenger liner was attacked by an Aegis surface-to-air missile system making part of the U.S. total ship computing environment (also known as "TSCE") of the same name, which was installed on the cruiser. The Aegis TSCE and its component Aegis SAM system are sophisticated and complex systems which are an important part of the U.S. Navy's combat equipment. The fact that Aegis TSCE and SAM system mistook a passenger liner on a regular flight for a F-14 fighter attacking the cruiser (i.e. for a US-made aircraft widely used by the same U.S. Navy) confirms that tragic errors in target identification and SAM application are possible and, unfortunately, unavoidable.

IV. EXPERT DECLARATION

1. I confirm that all the matters in respect of which I have expressed my opinion are within my area of expertise and competence.

2. I understand that it is my duty to assist the International Court of Justice in deciding the issues in respect of which this Report has been prepared. I have complied with, and will continue to comply with, that duty.

3. I confirm that the conclusions I have reached in this Report are unbiased, objective and impartial; they have not been influenced by the pressures of the proceedings or by any of the parties to the proceedings.

Expert

_____

Yuri Vladimirovich Bezborodko

Moscow, 10 March 2023

V. APPENDIX 1

EXCERPTS FROM THE "REGULATIONS ON FIRING AND COMBAT WORK ON ANTI-AIRCRAFT MISSILE SYSTEMS OF ARMY AIR DEFENCE CORPS"

THE WORK OF THE SOW COMBAT UNIT WHEN FIRING IN A RESPONSIBLE SECTOR

SETTING A FIRE MISSION VIA VOICE COMMUNICATION SYSTEM (VCS)
Initial position: TELAR and launcher are in condition one, the telecode communication system (TCS) is switched off. Command has been received from the command post: "Such-and-such (call sign), operate in sector 00-00, zone low (high)".

TELAR commander	Senior operator (number 1)	Operator (number 2)
	Pulse mode	
1. Command: "Autonomous search". Sets UP – MANUAL - LOW switch on P-19KM1 unit to LOW (UP) position. Sets the switch POKH. PU - AUTO - MANUAL on P-52 unit to MANUAL position. Using the COURSE knob on R-4SA unit, sets, according to the grid COURSE on the same unit, grid bearing angle α_T^{COV} GM-569, taken from the TNA coordinator or V20-1 unit. By turning the azimuth handwheel on P-52 unit sets the centre of the search area on R-4SA unit indicator screen as per the azimuth grid on the screen in accordance with the specified primary fire sector. Switch POKH. Sets PU-AUTO-MANUAL switch to AUTO position.	Switches on the antenna drives and search and emission of the surveillance transmitter as per Appendix 9.	
2. Assesses the jamming environment on the display of R-4SA unit indicator. If there are background returns from local objects commands: **"MTI mode"**.	Activates the MTI system and tunes out passive jamming according to Appendix 13.	
When a target is detected, it identifies it (according to Appendix 9) and selects the most important one. Sets the C TELAR – OFF and C	Presses the sub-modulator button on R-51TsA unit and by moving the sub-modulator along the azimuth and range brings marker pips on the	

TELAR commander	Senior operator (number 1)	Operator (number 2)
launcher – OFF switches on R-19KM1 unit to C TELAR and C launcher positions, respectively. By turning the AZIMUT handwheel on P-52 unit brings the centre of the search area on the R-4SA unit's indicator screen to the target track and commands: **"Target, range 00"**.	screen of R-4V unit indicator to the target. Releases the sub-modulator button, when the indication on the screen of R-4V unit indicator approaches the target track position. Activates single line search with maximum signal amplitude by pressing the appropriate LINE button onR-4V unit.	
Monitors operators' work and the lighting up of ACQUISITION display on R-19KM1 unit, performs re-identification of the target in mode II, range VII. Monitors the presence of ARQ by intermittent flashing of the REQUEST digital display on R-4SA unit. Reads in the range and speed of the target using the digital display of R-43 unit and the altitude using the ALTITUDE and PARAMETER instruments on R-19KM1 unit. Reports to command post: **"Target, azimuth 00-00, range 00, no response to the querys"**.	Monitors AAI display for lighting up and, in case of false acquisition, resets target by pressing the sub-modulator and repeats the strobing operation by range and azimuth. Releases manipulator button. Monitors target acquisition based on the lighting up of AAI, AAII, ACQUISITION D on R-51TsA and reports: **"Got AA."**	Monitors AAI display on R-51TsA unit for lighting up and by using the handwheel D-V on the same unit moves the target position strobe (TP) so that the target track is the dark tracker on the upper (exact) part of R-4NA unit display, and monitors the lighting up of AAII, ACQUISITION D display on R-51SA unit. When a target appears on the screen of VPU-55, reports: **"There is a target on VPU ".**
3. When noise jamming is observed on the display of R-4SA unit indicator and the JAMMING display on R-52KA unit lights up, commands: **"Activate the jamming automatic equalizer".** When a target track is detected outside the jamming area, commands: **"Target, range 00".** If no target is detected, commands: **"Acquisition, jammer"**.	Sets ON AKP – OFF switch is set to AKP ON. Sets HDF – IMP – MTI switch on R-19KM1 unit to MTI position. Periodically toggles AKP switch until a target is detected when AKP is off.	

TELAR commander	Senior operator (number 1)	Operator (number 2)
Sets the C TELAR – OFF and C launcher – OFF to C TELAR and C launcher positions, respectively. Supervises the work of the operators. Reports to command post: **"Target – jammer, azimuth 00-00".**	Sets JAMMING FORCED. – OFF switch on R-52KA unit to JAMMING FORCED. Using FADE-OUT DB switch on R-19KM1 unit selects jamming in the main beam, presses the sub-modulator button left-right and strobes the signal along the azimuth, releases the sub-modulator button, when the indication on the screen of R-4V unit approaches the jamming signal position.	Sets Switch SEMI/AUTO D – AUTO.DU – MANUAL D. V to position MANUAL D. V. Monitors the lighting up of displays AAI, AAII. Reports: **"There is AA in the corners"**. When a target is detected against the background of jamming signals on the screen of R-4NA unit indicators, sets SEMI/AUTO D – AUTO.DU – MANUAL D. V switch to AUTO position and using the handwheel D-V of R-51TsA unit aligns the target position strobe with the target track so that the target track appears on the dark sight of upper part of R-4NA unit indicator screen.
Monitors the lighting up of the ACQUISITION display on R-19KM1 unit. Performs target identification. Reads in range and speed using the digital displays RANGE and SPEED on R-43 unit and reads in altitude and target parameter from ALTUTUDE and PARAMETER instruments on R-19KM1 unit.	Monitors the lighting up of ACQUISITION D display on R-51TsA unit. Reports: **"Got AA"**	Monitors the lighting up of ACQUISIION D display on R-51SA unit
Quasi-continuous radiation mode		

TELAR commander	Senior operator (number 1)	Operator (number 2)
1. If there are compensated returns from local objects, moisture targets or passive jamming, commands: **"HDF mode"**. When a target is detected, sets C TELAR – OFF and C launcher – OFF switches on R-19KM1 unit to C TELAR and C launcher positions, respectively, and selects the most important target.	Sets HDF - IMP. – MTI switch on R-19KM1 unit to HDF position. Uses the FADE-OUT DB switch on R-19KM1 unit to highlight the central component of the target.	
By turning the azimuth handwheel on P-52 unit, brings the centre of the search area on R-4SA unit indicator screen to the target track. Gives a command to the TELAR and launcher crews: **"Target, interval O"**. Reads in the time interval number from the display of R-4SA unit indicator.	Presses the button on R-51TsA unit sub-modulator and by moving the sub-modulator left-right, forward-backward brings the marker pips on R-4V indicator screen by azimuth and speed to the target track. Releases the sub-modulator button, when the indication on the screen of R-4V unit indicator approaches the target track position. Monitors the operation of AAI. In case of false target acquisition presses the sub-modulator from above and resets target. Presses the sub-modulator button and moves the sub-modulator left-right, forward-backward, strobes the target by azimuth and speed, releases the sub-modulator button. Monitors the lighting up of ASI, ASP, ACQUISITION D display on R-51TsA unit.	Monitors the lighting up of the AAI display on R-51SA unit.
	Reports: **"Got AA"**	By turning the handwheel D-V on R-51SA unit aligns the speed marker on R-4NA indicator display with the target track.
Monitors the lighting up of the ACQUISITION display on R-19KM1 unit. Reads in range and speed from the		Monitors the lighting up of the AAII and ACQUISITION D displays on R-51SA unit.

TELAR commander	Senior operator (number 1)	Operator (number 2)
digital displays RANGE and SPEED on R-43 unit and reads in altitude and target parameter from the ALTITUDE and PARAMETER instruments on R-19KM1 unit. Monitors the display of the far and near boundaries of the kill zone on the display of R-4SA unit indicator, as well as future range markers. Performs target identification. Reports to command post: **"Target, azimuth 00-00, range 00, no response to the query"**. 2. When noise jamming is observed on the display of R-4SA unit indicator and the JAMMING display on R-52KA unit lights up, commands: **"Acquisition, jammer".** When lateral components of jamming disappear and a target track appears, carries out work according to paragraph 1 (HDF mode) of this appendix. Sets the C TELAR – OFF and C launcher – OFF switches on R-19KM1 unit to the C TELAR and C launcher positions, respectively. Reports to command post: **"Target – jammer, azimuth 00-00".**	Sets JAMMING FORCED. – OFF switch on R-52KA unit to JAMMING FORCED. Sets FADE-OUT DB switch on R-19KM1 unit to the position at which jamming is highlighted in the main beam on the screen of R-4V unit indicator. Presses the sub-modulator button of R-51TsA unit. By moving the sub-modulator left-right brings the marker pips by azimuth to the jamming signal. Releases sub-modulator button and checks the lighting up of AAI, AAII, ACQUISITION D display on R-51TsA unit	Sets SEMI/AUTO D – AUTO.DU – MANUAL D. V switch on R-51SA unit to MANUAL position and turns the handwheel D-V to hold the speed marker in the centre of the R-4NA unit display. Monitors the lighting up of the AAI and AAP displays on R-51SA unit. Reports: **"Got AA in the corners**."

TELAR commander	Senior operator (number 1)	Operator (number 2)
Monitors the lighting up of the ACQUISITION display on R-19KM1 unit and the work of the operators. Performs target identification. Reads in range and speed on digital displays RANGE and SPEED on R-43 unit and altitude and target parameter from ALTITUDE and PARAMETER instruments of R-19KM1 unit. Reports to command post: **"Target, azimuth 00-00, no response to the query".**		When a target is briefly detected by turning the SPEED handwheel, aligns the speed marker on R-4NA unit with the target track. Monitors ACQUISIITON D on R-51SA unit. Reports: **"Got AA"**

LIST OF EXHIBITS

Number:	Name of exhibit:
Exhibit A	Gazeta.ru, *"Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft* (4 October 2021).
Exhibit B	RIA Novosti, *Tu-154 Tel Aviv – Novosibirsk Flight Crash in 2001* (4 October 2016).
Exhibit C	RIA Novosti, *Unsolved Mysteries of Tu-154 Tel Aviv – Novosibirsk Flight Crash* (4 October 2016).
Exhibit D	KP.UA, *Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt* (3 October 2016).
Exhibit E	RIA Novosti, *Disaster over Gulf. Why USS Vincennes Shoot Down Iranian Passenger Aircraft* (3 July 2018).
Exhibit F	Islamic Revolution of 1979: Yesterday, today, and tomorrow, *AIRBUS A300 CRASH OVER GULF (4 JULY 1988)* (22 August 2021).
Exhibit G	Historical Library, *Airbus A-300 Shot Down by US Cruiser*.
Exhibit H	Russia Today, *"Gross Violation of All Laws": Why US Has Not Admitted Guilt for Downing of A300 Airliner over Persian Gulf* (3 July 2018).
Exhibit I	Informator.ua, *Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?* (06 January 2023).
Exhibit J	Liga.News, *Ukrainian Boeing-737 Crashes in Tehran* (08 January 2020).
Exhibit K	RIA Novosti, *Iran Announces Cause of Ukrainian Boeing Crash* (17 March 2021).
Exhibit L	Akhbor.com, *Iran Admits Its Air Defence Shot Down Ukrainian Passenger Plane Due to "A Human Error"* (01 November 2020).
Exhibit M	Mir 24, *Downed by Mistake: Iran Gives Details of Ukrainian Boeing Shot Down* (11 January 2020).
Exhibit N	Lenta.ru, *Iran Delves into Details of Its Erroneous Attack on Ukrainian Airliner* (11 January 2020).
Exhibit O	Nasha Niva, *Iran confirms that the Iranian Boeing was shot down by two Tor-M1 missile systems* (21 January 2020).
Exhibit P	Lenta.ru, *Iran reveals expanded version of Ukrainian Boeing crash* (12 July 2020).

Annex 6

Exhibit A

Gazeta.ru, *"Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft* (4 October 2021)

(translation)

Translation

Gazeta.ru, *"Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft* (4 October 2021), available at: https://www.gazeta.ru/science/2021/10/03_a_14047363.shtml

"Do Not Make Tragedy of This". How Ukraine Shot Down Russian Aircraft

20 years ago, a Russian Tu-154 plane crashed near Crimea

By Maxim Borisov

© AP/Reuters

On the 4th of October 2001, a Siberia Airlines Tu-154 aircraft flying from Tel Aviv to Novosibirsk was shot down over the Black Sea. All 78 people on board were killed. The plane was hit by a Ukrainian anti-aircraft missile launched from an S-200V SAM system during the Russian-Ukrainian exercises in Crimea.

A Siberia Airlines Tu-154M aircraft performing flight SBI-1812 from Tel Aviv to Novosibirsk crashed over the Black Sea at 12:44 (Kiev time) less than 200 km from Sochi. Subsequently, luggage fragments, aircraft interior decoration parts, dead bodies and oil stains were found in the sea. All 12 crew members and 66 passengers, including 15 Russians and 51 Israeli citizens, were killed.

The disaster occurred during combat missile launches as part of joint Russian-Ukrainian air-defence exercises in Crimea. One launched missile was then lost, and that coincidence immediately seemed suspicious, but it was difficult to believe in a weird tragedy.

On the day of the crash, Russian President Vladimir Putin said that "the weapons used at that time could not reach the air corridors our aircraft flew in due to their [poor] tactical and technical characteristics".

Vladimir Rushailo, Secretary of the Russian Security Council, who was appointed the head of the commission investigating the Tu-154 crash, also noted that he thought "the Ukrainian

version of the disaster was unlikely". A terrorist attack was considered as the main version. When the plane disappeared from radars, it flew at an altitude of 11 km. The pilot of the Armenian Airlines An-24 aircraft flying at that time in about the same area saw a kind of flash.

The investigation of the crash by the Interstate Aviation Committee (IAC) resulted in a revision of the main version. The depth of the Black Sea was over 2000 m at the crash site, the sea bottom was trawled and examined by an echo sounder, and fragments of the floor covering were raised, which were found to contain hundreds of shrapnel holes. Mr. Rushailo said items not related to the aircraft's structure were also found at the site, and "the plane was destroyed as a result of an explosive impact". Not a single flight recorder was found. After those details had been published, Russian officials and press stopped calling the exercises joint and called them solely Ukrainian.

Less than one month later, before the official completion of the investigation, authorities announced that the crash had been caused by an unintentional hit by a Ukrainian anti-aircraft missile into the aircraft's body. Ukrainian President Leonid Kuchma acknowledged those findings and ordered to pay monetary compensations to the relatives of the victims. However, he sharply commended on the accident in late October by saying, "Look at what is happening around in the world and in Europe. We are not the first and not the last ones, you should not make a tragedy of this. Mistakes happen everywhere, and some of them are of a much larger – planetary – scale".

Ukrainian Defence Minister Aleksandr Kuzmuk and several other high-ranking military officers apologised to the relatives of the victims and resigned, but no one was put on trial.

"We have drawn a preliminary conclusion that the crash of this aircraft could have been caused by an unintentional hit by an S-200 missile launched during the exercises of the Ukrainian Air Defence Forces. This tragic accident could have occurred as a result of a failure of the anti-aircraft missile system. As a citizen of Ukraine, it pains me to say this. But there is a lot of information supporting this version", said Yevhen Marchuk, Secretary of the Ukrainian National Security Council.

Missile launches at the 31st Test Site at Cape Opuk near Kerch, which was controlled by the Russian Ministry of Defence, began to be considered as the main version. The Tu-154 could have found itself in the centre of the intended firing sector for a training target. Tu-143 "Reis" unmanned aircraft were used as such targets. The Tu-154 had a suitable radial speed and was in a "suitable" place, which resulted in the operator of the S-200B system mistaking it for the main target. The mistake could result from the shortage of time and the increased nervousness caused by the presence of high commanders and foreign guests (the exercises were observed by delegations of seven countries). Like a "Buk" system, an S-200 SAMS uses a guidance system that "illuminates" targets by a powerful ground-based radar so that a missile responds to a signal reflected from the target. Thus, the disaster could be caused not by a miss against a training target located 30-60 km away but by the initially erroneous guidance of the missile by the operator "illuminating" the Tu-154 passenger aircraft at a distance of 250-300 km. Serious troubles arose in determining whose radar – Russian or Ukrainian – could guide the missile to an inappropriate target.

When the lawsuit brought by Siberia Airlines in 2010 was heard in the court, forensic experts also called the hit of the aircraft by a Russian air defence system as a possible cause of the crash. During the work of the commission investigating the disaster near Sochi, the Russian military did not refute the information that a Russian air defence system on the Black Sea coast could hit the Tu-154M as a violator of the Russian state border due to a malfunction of the IFF transponder. In any case, no additional mark confirming the response by the aircraft to radar requests was seen. In line with this version, President Kuchma could even deliberately take the blame for the crash on himself for some time upon request of the Russian side.

As a result of all these legal conflicts, Ukraine has never been legally found guilty of the crash and no claims have been made against it at the international level, and a Ukrainian court later concluded that no Ukrainian missile could get into the Russian plane at all, despite the IAC's conclusions. One of the arguments against the Ukrainian trace was that no reliable radar data with missile marks in the vicinity of the aircraft had been submitted.

In 2012, the Kiev Commercial Appeal Court dismissed the Russian complaint against the award of the trial court, and the Supreme Commercial Court of Ukraine upheld that award. The attorneys for Siberia Airlines (now renamed to S7 Airlines) announced their intent to appeal before the European Court of Human Rights but did not take that opportunity.

In accordance with the treaty signed by Russia and Ukraine on 26 December 2003, the Ukrainian government paid $7.8 mln to the relatives of the deceased Russian passengers without recognising its legal liability "for humanitarian considerations". The Ukrainian authorities also paid $7.5 mln to the relatives of the killed Israeli passengers.

Exhibit B

RIA Novosti, *Tu-154 Tel Aviv – Novosibirsk Flight Crash in 2001* (4 October 2016)

(translation)

Translation

RIA Novosti, *Tu-154 Tel Aviv – Novosibirsk Flight Crash in 2001* (4 October 2016), available at: https://ria.ru/20161004/1478372878.html

Tu-154 Tel Aviv – Novosibirsk Flight Crash in 2001

© AP Photo / Andrew Kanyshchev

For details of the crash of the Tu-154 aircraft flying from Tel Aviv to Novosibirsk on the 4th of October 2001, please read *RIA Novosti*'s reference information.

On the 4th of October 2001, a Siberia Airlines Tu-154M aircraft of performing a charter flight from Tel Aviv (Israel) to Novosibirsk (Russia) crashed in neutral waters of the Black Sea. As a result of the crash, the plane was completely destroyed and sank.

All 78 people on board were killed including 66 passengers and 12 crew members. The passengers consisted of Russians, Israelis, and people with both citizenships.

The aircraft took off from the Ben Gurion Airport in Tel Aviv at 10:00 (Israel time) or 12:00 (Moscow time). The plane followed the designated route and there were no complaints.

At 13:44 (Moscow time), when the Tu-154M, following the standard route, was at an altitude of 11,100 metres above the Black Sea, its mark disappeared from the radar screens of the Rostov Air Traffic Control Centre and the communication with the liner was lost.

The crew of an Armenian Airlines An-24 aircraft flying from Yerevan (Armenia) to Odessa (Ukraine), which was in that area, noticed a flash and debris falling into the Black Sea at a distance of 183 kilometres from the Sochi Airport.

The planes and ships located at the scene of the tragedy launched an emergency search and rescue operation. An An-26 aircraft of the Russian Federal Border Guard Service urgently

flew to the place of the accident from Gelendzhik. The patrol border ship “Grif” also went there. In addition, an An-12 aircraft of the Russian Defence Ministry and a Mi-8 helicopter of the Sochi Search and Rescue Service with rafts and rescuers on board flew, and two rescue tugs, “Mercury” from Tuapse and “Captain Beklemishchev” from Novorossiysk, went there.

The bodies of the dead found in the sea, fragments of the crashed Tu-154M, and crew documents were delivered to the shore.

But the bodies of most of those killed in the accident could not be found during the search operation as they sank along with the wreckage of the aircraft.

In order to investigate the circumstances and causes of the incident, eliminate its consequences and provide assistance to the families and relatives of the victims, a commission led by Vladimir Rushailo, Secretary of the Russian National Security Council, was formed.

The Interstate Aviation Committee (IAC) and the Russian Ministry of Transport established their own joint commission to investigate the crash.

On the 5th of October 2001, Russian Deputy Prosecutor General Sergey Fridinsky opened a criminal case for the crash of the Tu-154 aircraft as an “act of terrorism”. According to the Department of Information and Public Relations of the Prosecutor General’s Office, the case was initiated on the instructions of Russian Prosecutor General Vladimir Ustinov, who also ordered Sergey Fridinsky to lead the investigation team.

The main version of the crash was believed to be an act of terrorism committed on board the aircraft, but other versions were also considered. The version of the terrorist attack was categorically rejected by the customs service of the Ben Gurion Airport in Israel, who claimed that all passengers who boarded the Tu-154 aircraft passed the most stringent customs control and not a single person would simply be able to carry any explosive into the plane.

Siberia Airlines noted the aircraft was in a good technical condition. It had been in operation since 1991 and was last overhauled in December 1999. The company called unlikely the version that some technical issues had occurred on board the aircraft.

Having examined the wreckage of the aircraft, the IAC’s investigative commission found that it was shot down at an altitude of 11,000 metres by an S-200 anti-aircraft missile launched by the Ukrainian Air Defence Forces, which conducted military exercises in Crimea on that day. The missile was launched from a position located near the city of Feodosia on the Crimean Peninsula. When hit by the missile, the aircraft’s structure received significant damage, which caused the passenger compartment to get depressurised and fuel and other combustible substances of the aircraft to ignite. The Tu-154M collided with water, collapsed, and sank at a depth of up to 2,000 metres.

In December 2001, the criminal case initiated by the Russian Prosecutor General’s Office over the crash was referred for further investigation by the Ukrainian Prosecutor General’s Office and was terminated in Russia.

Despite the fact that Ukrainian courts refused to recognise the involvement of the Ukrainian military in the tragedy, the Ukrainian government paid the relatives of the victims a compensation in the amount of USD 200,000 per victim in 2005.

In 2011, the Commercial Court of Kiev dismissed the claim filed by Siberia Airlines in 2004 to recover material damage from Ukraine for the crash of the aircraft. In its claim, Siberia Airlines demanded that the Court recover $15.32 mln from the Ukrainian Defence Ministry and the Ukrainian State Treasury for the downed plane and lost profits. The Court accepted as evidence the findings of the Kiev experts employed by the Kiev Scientific Research Institute of Forensic Examinations (KSRIFE). In January 2011, they conducted a second examination and came to the conclusion that a Ukrainian missile could not shoot down a passenger plane. The Ukrainian experts referred to the monitoring data of the Gelendzhik Radar Complex as of 4 October 2001, according to which an unknown object was observed in the airspace at a distance of 49.9 kilometres from the crash site 30 seconds before the explosion. The examination carried out by the KSRIFE found that if that unknown object was a 5V28 missile launched by a Ukrainian S-200V surface-to-air missile system (SAMS), then it could not fly the distance to the aircraft and hit it in 30 seconds due to its poor tactical and technical characteristics.

However, the experts claim that the crash of the Russian aircraft occurred as a result of an impact on its parts in the direction from above and to the middle by many solid items (striking elements) having a diameter of about 10 millimetres and possessing a significant kinetic energy. They were unable to find out if those striking particles belonged to a specific explosive device.

Siberia Airlines appealed against the award of the Commercial Court of Kiev before the Kiev Commercial Appeal Court, which left the award unchanged in May 2012. In June 2012, Siberia Airlines' lawyers appealed before the Supreme Commercial Court of Ukraine, which upheld the previous judicial acts in December, thereby putting an end to this case.

Those responsible for the crash of the aircraft have not yet been identified.

In September 2002, a memorial to the victims of the Tel Aviv – Novosibirsk flight crash was opened at the Zayeltsovsky Cemetery in Novosibirsk. The monument is made of white marble and black granite. The names of all the dead passengers of the flight are carved on the black background. Next to the monument there are symbolic graves of those dead whose bodies have not been found.

Prepared based on information from RIA Novosti and open sources

Exhibit C

RIA Novosti, *Unsolved Mysteries of Tu-154 Tel Aviv – Novosibirsk Flight Crash*
(4 October 2016)

(translation)

Translation

RIA Novosti, *Unsolved Mysteries of Tu-154 Tel Aviv – Novosibirsk Flight Crash* (4 October 2016), available at: https://ria.ru/20161004/1478448674.html

Unsolved Mysteries of Tu-154 Tel Aviv – Novosibirsk Flight Crash

© AP Photo / Ivan Sekretarev

By Alexander Khrolenko, Reviewer of Russia Today International News Agency

Against the background of the endless and inconclusive investigation into the crash of the Malaysia Airlines Boeing in Ukraine in 2014, the tragedy of the Russian Tu-154 aircraft shut down by a Ukrainian missile over the Black Sea in 2001 looks indicative, Alexander Khrolenko notes.

15 years ago, on the 4th of October 2001, a Siberia Airlines Tu-154 passenger plane flying from Tel Aviv to Novosibirsk fell into the Black Sea, 185 km south-west of Sochi, after being hit by a Ukrainian anti-aircraft missile. All 66 passengers and 12 crew members (27 Russians and 51 Israelis) onboard were killed.

Experts have found that the destruction of the Russian aircraft was caused by an impact of many solid objects (elements) having a diameter of about 10 mm and possessing a significant kinetic energy.

The special commission of the Interstate Aviation Committee has found that the liner was unintentionally hit at an altitude of 11,000 metres by an S-200 anti-aircraft missile launched by the Ukrainian Air Defence Forces during their exercises on the Crimean Peninsula.

For a long time, Kiev had denied the involvement of Ukrainian servicemen in the crash. Only in 2005, Ukraine paid the relatives of the victims USD 200,000 for each dead. Nevertheless,

Ukrainian experts at various levels had defended for years the absurd conclusions that no Ukrainian missile could shoot down the Russian Tu-154 aircraft over the Black Sea.

One would think, why deny the obvious things?

Mistake or Crime?

On the 6th of September 2011, the Kiev Commercial Court dismissed the claim for $15.32 mln filed by Siberia Airlines for the crash of its Tu-154 aircraft since it accepted as evidence the conclusions drawn by Kiev experts that the Ukrainian Air Defence Forces were not involved in the accident. The Court's concerns about the moral and material costs for the Ukrainian state are quite understandable: "Ukraine is above all". Perhaps, convenient expert findings could even help refund the USD 15.6 mln previously paid to the relatives of the victims.

But, as you know, the truth is more valuable than money. In 2015, the relatives of those killed in the crash of the Russian Tu-154 over the Black Sea in 2001 demanded once again its causes be officially investigated. They sent letters requesting the investigation to the Prosecutor General's Office and the President of Russia.

Nevertheless, the launch of the missile killing the aircraft from an S-200 surface-to-air missile system (SAMS) was neither impossible, nor accidental, nor made in an indefinite direction. Scheduled exercises require, first of all, a tactical plan, military professionalism, and strict observance of security measures.

Perhaps, it all began with a wrong organisation of the exercises or an incorrect assessment of the situation in the area of missile launches. The size of the firing ground was insufficient to ensure the safe launch of SAMS missiles at such fire range. No necessary measures to close the airspace were taken. There were several civilian aircraft in the area of destruction by air defence missiles. Meanwhile, an S-200 SAMS is capable of capturing a target up to 400 km away and hit it (by a S-200D SAMS version) from a distance of up to 300 km. And, given the fact that an S-200V SAMS missile flies the first 200 km by using its sustainers at a speed of 1,700 m/s and then performs a controlled flight along a downward trajectory (for example, from a height of 40 km), it can also easily engage a target at a distance of up to 300 km.

Probably, during the firing exercises conducted by of the Ukrainian Air Defence Forces on 4 October 2001 at Cape Opuk in the Crimea, the Ty-154 aircraft accidentally appeared in the centre of the sector of firing at a training target flying with a similar radial speed. Therefore, the "smart" radar of an S-200V SAMS detected the aircraft and mistook it for a training target (which was supposed to be launched at a distance of about 60 km from that area).

An S-200 SAMS uses a semi-active guidance system. The source of radiation (target illumination) is a powerful ground-based radar. A missile is guided by the signal reflected from a target. In order to scan the airspace and search for the target, the radar operates in the monochromatic radiation (MCR) mode by illuminating the target and determining its elevation angle, azimuth and radial speed. Phase-code modulation (FCM) is used to determine the distance to the target. Switching from MCR to FCM takes up to 30 seconds and may be skipped to save time in a combat situation.

The S-200 SAMS operator did not determine the distance to the target and "illuminated" the Tu-154 from a distance of 250-300 km (instead of the stealthy training target launched from a distance of 60 km). In this situation, the hit of the Tu-154 by an anti-aircraft missile looks like the result of not a miss on the training target but deliberate actions taken by the operator. There could be no coincidence. To hit the Tu-154, it was actually necessary to guide the missile onto the target in the manual illumination mode. I believe this obvious series of mistakes is a crime committed by particular military commanders and operators.

On the 4th of October 2001, S-300 SAMS missile launches were also practised as part of the exercises, which could well result in more civilian aircraft shot down over the Black Sea.

Hundreds of staff and commanding officers of various levels participated in the exercises. Many of them have some information concerning the crash of the Tu-154. Some of them remained in the Russian Crimea and could assist in conducting an unbiased investigation. That should be done so that it does not become a habit in Ukraine to shoot down civilian aircraft or shift liability from a sick head to a healthy one.

The Last Flight

On the 4th of October 2001 at 09:15 (Moscow time), the Tu-154 bearing board number N85693 and performing flight 1812 took off from the Ben Gurion Airport in Tel Aviv, Israel, heading to Novosibirsk.

At 13:39, the aircraft entered the flight information region of the Rostov-on-Don air traffic control centre, and its crew got in contact with the controllers and reported that the flight was going well.

At 13:44, when the aircraft was at an altitude of 11,000 metres 200 kilometres south-west of Sochi, it disappeared from the radar screens. Garik Hovhannisyan, the crew commander of the Armenian Airlines An-24 flying from Simferopol to Yerevan, told the controllers that he saw an explosion and a plane crashing down.

Search aircraft flew and rescue boats went to the scene of the accident. The exact coordinates of the crash were soon determined as 42.11º N and 37.37º E. The bodies of the dead found in the sea and fragments of the crashed Tu-154 were delivered to the shore by a bulk carrier named "Captain Vakula".

Russian President Vladimir Putin ordered to establish a special commission to investigate the disaster.

Foreign news agencies immediately linked the crash with the terrorist attack in the United States on the 11th of September 2001. The version of an explosion caused by technical reasons was also checked. A few hours later, U.S. intelligence experts clarified the situation. According to CBS, one of the satellites used by the U.S. Department of Defense recorded a missile launch from Crimea at about the same time when the Tu-154 fell into the Black Sea.

However, Ukrainian Defence Minister Alexander Kuzmuk said no air defence exercises took place on the 4th of October. And Ukrainian President (and Commander-in-Chief) Leonid Kuchma frivolously added that there had been tragedies of a larger scale.

Perhaps, images from the reconnaissance satellites of the U.S. Department of Defense could help find out the circumstances of the crash of the Malaysia Airlines Boeing in Ukraine, but Americans have their own interests in the burning Donbass.

Exhibit D

KP.UA, *Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt* (3 October 2016)

(translation)

Translation

KP.UA, *Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt* (3 October 2016), available at: https://kp.ua/politics/553004-katastrofa-v-nebe-nad-chernym-morem-ukrayna-denhy-zaplatyla-no-vynu-ne-pryznala

Sky Disaster over Black Sea: Ukraine Paid Money but Did Not Admit Guilt

Photo: The plane's wreckage has been retrieved, but the "black boxes" have never been found.
Photo: Radio Svoboda

On the 4th of October 2001, a Siberia Airlines aircraft flying from Tel Aviv to Novosibirsk suddenly disappeared from the tracking radars. Some time later, the bodies of some passengers and wreckage of the plane were found in the Black Sea. It turned out later that the aircraft had crashed into the sea. All 78 people on board, most of them Israelis, and all crew members were killed. Even 15 years later, the exact cause of the tragedy remains unknown.

Firing Sector

Whose missile shot down the liner is still a question.
Photo: *Komsomolskaya Pravda*'s archive

The initial investigation revealed that a Ukrainian missile fired during Ukrainian-Russian joint military exercises in the area was to blame for the crash. At first, the military denied their involvement in the tragedy, then partially admitted their guilt, and later the conclusions drawn by Ukrainian experts indicated that our country was innocent. However, Ukraine paid some compensations to the relatives of the dead Israelis and Russians.

Immediately after the crash, the Interstate Aviation Committee, which was established by the post-Soviet countries to investigate air disasters, began investigating into the crash. According to its conclusion, the Siberia Airlines plane was inadvertently shot down by a Ukrainian S-200 missile launched during Ukrainian-Russian joint exercises from Cape Opuk in Crimea, which exercises, incidentally, involved 23 foreign observers.

The Ty-154 aircraft accidentally appeared in the centre of the firing sector and, therefore, was detected by the radar of an S-200 surface-to-air missile system (SAMS) and mistaken for a training target. In a situation of the shortage of time and increased nervousness caused by the presence of high commanders and foreign guests, the S-200 SAMS operator did not double-check the target locking and pressed the “launch” button. Furthermore, those who arranged for the shooting failed to take all necessary measures to free up the airspace in the area of the exercises. They only prohibited flights within a radius of 50 km from that area, although an S-200V SAMS is capable of destroying targets at a distance of 255 kilometres.

The aircraft itself was in the area of responsibility of the Russian air traffic controllers. Ukrainian air traffic control authorities closed the airspace for flights only within their jurisdiction – up to the border of the area of responsibility of the Russian Federation.

Siberia Airlines demanded $15 mln from Ukraine but never received that amount.
Photo: *Komsomolskaya Pravda*’s archive

“We Know We Are Involved in Tragedy”

Following those conclusions, Ukrainian Defence Minister Alexander Kuzmuk apologised for the incident.

“We know that we are involved in the tragedy, although its causes have not yet been fully established”, he said.

However, Ukrainian President Leonid Kuchma dismissed him for the crash.

In 2003, Ukraine signed intergovernmental treaties on compensations with Russia and Israel. Under those treaties, Ukraine paid $7.8 mln to the relatives of the Russian victims and $7.5 mln, to those of the Israeli ones. The payment was made *ex gratia*, i.e. without Ukraine admitting its guilt for the tragedy.

That was why the claim filed by Siberia Airlines against the Ukrainian Ministry of Defence and the Ukrainian State Treasury for $15 mln was dismissed. The dismissal was based on the conclusions drawn by experts of the Kiev Scientific Research Institute of Forensic Examinations (KSRIFE) and the Kozhedub Kharkov Institute of the Air Force.

The experts came to the conclusion that the aircraft could not have been shot down by a Ukrainian missile. The missile exploded at a distance of 780 metres from the aircraft, so it could not destroy it. Since the aircraft’s “black boxes” have never been found, it is impossible to reliably find out the causes of the disaster, according to the Ukrainian experts. Based on the available information, the Ukrainian experts suggested that the plane suffered from an explosive device that could be located “between the ceiling inside the aircraft” and its body.

At the same time, an alternative version of the crash appeared. On the day of the tragedy, 23 missiles were fired by Ukrainian and Russian launchers, including Russian S-300s, during the exercises. According to the control data from of the Russian radar station in Gelendzhik, a Ukrainian missile was observed at a distance of 50 kilometres from the crash site 30 seconds before the explosion. This means that the missile could not get in contact with the plane in just 30 seconds. The maximum distance where a missile launched from the Ukrainian S-200 SAMS could fly in 30 seconds was 36 kilometres. The Russian S-300 SAMS was 11 kilometres closer to the aircraft’s route than the Ukrainian one. And, given its tactical and technical characteristics and speed, its missile could well fly 50 kilometres in 30 seconds. However, this alternative version remained just a hypothesis. The then Ukrainian leaders did not want to spoil relations with either Israel or Russia, so they made a gesture of goodwill by paying compensations to the relatives of the victims without admitting their guilt.

In September 2004, the Ukrainian Prosecutor General’s Office closed the criminal case instituted in relation to the disaster as the investigation had found no objective evidence reliably showing that the Tu-154 was shot down by an S-200 missile launched during the exercises of the Ukrainian Air Defence Forces. As a result, having passed all possible court instances in Ukraine, Siberia Airlines did not take the opportunity to appeal before the European Court of Human Rights.

Exhibit E

RIA Novosti, *Disaster over Gulf. Why USS Vincennes Shoot Down Iranian Passenger Aircraft* (3 July 2018)

(translation)

Translation

RIA Novosti, *Disaster over Gulf. Why USS Vincennes Shoot Down Iranian Passenger Aircraft* (3 July 2018), available at: https://ria.ru/20180703/1523792998.html

Disaster over Gulf. Why USS *Vincennes* Shoot Down Iranian Passenger Aircraft

© Photo: Khashayar Talebzadeh

MOSCOW, July 3 – *RIA Novosti*, by Nikolai Protopopov. Two hundred and ninety passengers, including 66 children and 16 crew members; on the 3rd of July 1988, exactly 30 years ago, one of the largest disasters in the history of the world aviation occurred over the Persian Gulf. Then the missile cruiser USS *Vincennes* shot down an Iranian Airbus A300B2 passenger aircraft with its anti-aircraft missiles. All those on board the plane died. *RIA Novosti* explains what caused the tragedy.

Two Missiles

On that day, an Iran Air aircraft (Flight 655) flew from Tehran to Dubai with a stopover in the Bandar Abbas Airport where Iranian military aircraft were also based. Equipped with a civilian transponder, the Airbus followed the standard route as part of an international air corridor. A flight over the Persian Gulf usually takes about 30 minutes.

Two anti-aircraft missiles launched from USS *Vincennes* overtook the liner at an altitude of 4,000 metres. The explosions literally broke it in half. None of its 300 passengers had a chance to survive. According to a U.S. government report, the ship's crew misidentified the civilian Airbus, mistaking it for an attacking F-14 Tomcat fighter of the Iranian Air Forces.

Justifying themselves, the sailors referred to the fact that the aircraft did not respond to repeated demands to change its route. They tried not to mention the fact that they attempted to

get in contact with the civilian aircraft's crew on a military radio frequency unfamiliar to them.

© Photo: US Navy

Act of Intimidation

According to Yuri Lyamin, a military expert, Iran and the United States were on the brink of war at that time. "The situation in the region was very tense, and U.S. Navy ships were in constant combat readiness", he tells *RIA Novosti*. "During the last months of the Iran-Iraq conflict, the United States repeatedly attacked Iranian ships. Americans sank several Iranian boats, destroyed an Iranian oil platform and damaged an Iranian military frigate".

"They did it consciously. They wanted to demonstrate to Iran that they would shoot down any aircraft, even civilian ones, if they considered them a threat to their ships", says Mr. Lyamin. "It was another element of their force pressure. After the disaster, Iran feared a large-scale clash with the United States. And this accident largely pre-determined their decision to end the war with Iraq. Tehran would not be able to fight on two fronts – it would be a suicide".

Many experts consider the plane crash over the Persian Gulf to be one of the bloodiest episodes of the protracted Iran-Iraq conflict. By that time, the confrontation had lasted eight years, with losses reaching hundreds of thousands on both sides. Iran and Iraq alternately invaded each other's territory, used chemical weapons, and exchanged missile strikes.

The missile cruiser USS *Vincennes* was part of a group of U.S. Navy ships tasked with guarding merchant caravans and oil tankers against the Iranian Navy. The United States wanted to support Iraq and sent ships to the Persian Gulf region in mid-1988.

The cruiser was made operational in 1985. It was armed with Tomahawk cruise missiles, powerful artillery guns, torpedoes, and SM-2 MR anti-aircraft guided missiles. The operators of its state-of-the-art naval weapons system Aegis were responsible for detecting air targets and guiding weapons to them.

© Photo: U.S. Navy

Mistake Unlikely

Of course, we cannot rule out that the U.S. anti-aircraft operators made a mistake, given the fact that the situation in the Persian Gulf was very nervous. However, according to experts, an experienced radar operator would easily determine the type of aircraft, even without having complete information on it.

"Yes, mistakes are inevitable, especially in areas where hostilities take place. But still, mistaking a passenger aircraft for a combat one was, of course, on the conscience of Americans only", Mikhail Khodaryonok, a military expert who had served in the Russian air defence forces for many years, told *RIA Novosti*. "One important detail of this situation is the data based on which the decision was made to shoot at the aircraft. As a rule, an operator receives radar data when he sees the primary situation. An experienced serviceman would immediately determine the type of the air object and its height even with the help of a two-coordinate locator, and, based on the speed of that object, would become unequivocally convinced that it is not a fighter but a passenger aircraft moving along the established corridors".

If the crew commander receives information in the form of secondary data (forms), such data is shown as digits and symbols. "This was a clear flaw on the part of U.S. commanders of all levels. They can be accused of the lack of professionalism, insufficient training of the crew and the failure to take every opportunity to identify the type of the aircraft", Mr. Khodaryonok notes.

In peacetime, he adds, in areas with heavy civilian air traffic, the crews of anti-aircraft missile systems would try not to shoot at an offending plane based on the radar data only. First, a fighter would take to the air to approach the aircraft in order to get a visual contact. The fighter's pilot would contact this plane on international frequencies, enter into a conversation with its crew and learn about their intentions. None of those actions was taken in this case, although the Americans had all necessary means to do that.

© Photo: U.S. Navy / MCS 3rd Class Charles Oki

“Awards Found Their Heroes”

The U.S. government still does not admit any wrongdoing by USS *Vincennes*’ crew. None of the sailors was held liable for the downing of the passenger plane. Moreover, the crew was awarded for the correct and accurate performance of their combat mission.

The White House expressed condolences in connection with the disaster. But U.S. President Ronald Reagan called the killing of nearly 300 people “necessary defensive actions”.

Later, in 1996, the United States still agreed to pay about $62 mln to the families of the killed passengers in exchange for the agreement by Iran to withdraw its lawsuit brought against the United States with the International Court of Justice.

Exhibit F

Islamic Revolution of 1979: Yesterday, today, and tomorrow, *AIRBUS A300 CRASH OVER GULF (4 JULY 1988)* (22 August 2021)

(translation)

Translation

Islamic Revolution of 1979: Yesterday, today, and tomorrow, *AIRBUS A300 CRASH OVER GULF (4 JULY 1988)* (22 August 2021), available at: https://iran1979.ru/katastrofa-airbus-a300-nad-persidskim-zalivom-4-iyulya-1988-g/

AIRBUS A300 CRASH OVER GULF (4 JULY 1988)

The largest aviation accident in Iran's history, **the crash of an Iranian Airbus A300 passenger aircraft over the Persian Gulf** occurred in the final months of the Iran-Iraq War. On Sunday, the 3rd of July 1988, when the Airbus A300 commercial passenger aircraft belonging to Iran Air performed Flight IR655 from Tehran to Bandar Abbas to Dubai, it was shot down by a surface-to-air missile launched from USS *Vincennes*, which was in Iran's territorial waters. All 290 people on board the aircraft, including 274 passengers and 16 crew members, were killed. The cause of the crash has been the subject of disputes and legal proceedings between the two governments for eight years. The United States has never apologised to the Iranian government and people for the incident, which had some signs of a war crime.

In 1984, hostilities between Iraq and Iran spread to the Persian Gulf, and air attacks on oil tankers and merchant ships of the neighbouring countries some of which assisted Iraq in transporting its oil became more frequent. The tension in the Strait of Hormuz was very high at the time of the incident. On the 17th of May 1987, the Iraqi Air Forces accidentally attacked the guided missile frigate USS *Stark*, killing 37 U.S. sailors. The U.S. Navy also engaged in firefights with Iranian gunboats in late 1987, and the guided missile frigate USS *Samuel B. Roberts* struck an Iranian naval mine in April 1988. In May 1988, the United States took part in Operation Praying Mantis, which sank the Iranian frigate *Sahand*, the Iranian high-speed strike ship *Joushan*, and three Iranian speedboats, damaged the Iranian frigate *Sabalan*,

destroyed two Iranian platforms, and damaged an Iranian fighter. A total of 56 Iranians were killed, while the United States lost only one helicopter along with the crew of two pilots.

On the 29th of April 1988, the U.S. Navy expanded the scope of its operations to guard all friendly and neutral vessels in the Persian Gulf. Around the same time, USS *Vincennes*, equipped with a new Aegis weapons system and under the command of Captain William C. Rogers, was urgently dispatched to the area for deployment and arrived in Bahrain on the 29th of May 1988. Since the Strait of Hormuz has a fairly small width at its narrowest point, those ships entering or leaving the Persian Gulf very often passed through Iranian territorial waters. Therefore, during the Iran-Iraq War, the Iranian military often had to inspect these vessels and board them in search of contraband cargo destined for Iraq.

On the morning of the 3rd of July 1988, USS *Vincennes* was passing through the Strait of Hormuz, returning from an escort mission. According to the United States, it entered Iranian territorial waters in pursuit of Iranian gunboats that opened fire on it. At the same time, an Airbus A300 driven by Captain Mohsen Rezayan (38), First Mate Kamran Teymuri (31), and Flight Engineer Mohammad-Reza Amini (33) took off from Bandar Abbas at 10:17 AM (Iranian time) to Dubai. The flight was supposed to take 28 minutes. At the time of the take-off, U.S. radars spotted the Iranian liner, possibly mistaking it for a military fighter, although its transponder sent civil-aviation signals.

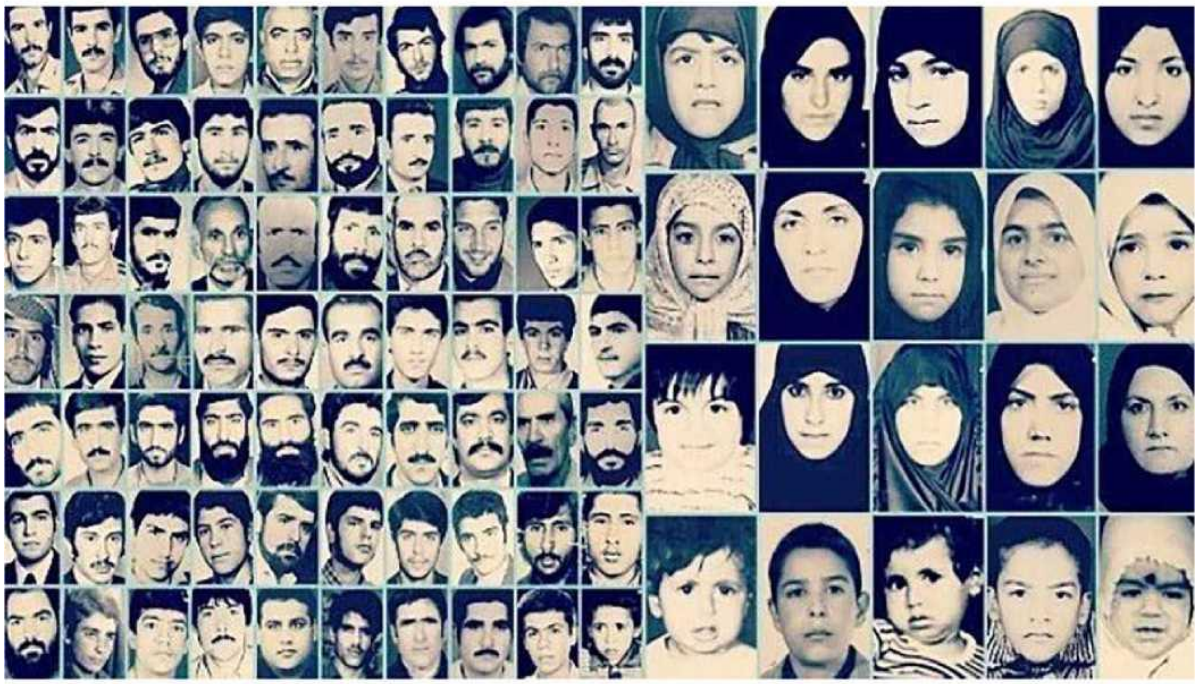
At 10:24 AM, USS *Vincennes* fired two SM-2 MR surface-to-air missiles, one of which hit the aircraft, causing it to fall apart and crash into the water. None of the 290 passengers and crew members survived. The cockpit voice recorder and flight data recorder have never been found. The U.S. Government officially acknowledged that *Vincennes* was in Iranian territorial waters at the time of the incident.

According to the documents submitted by Iran to the International Court of Justice, there were 290 people onboard the aircraft: 274 passengers and 16 crew members, including 254 Iranians, 13 citizens of the United Arab Emirates, 10 Indians, six Pakistanis, six Yugoslavs, and one Italian.

Pentagon officials initially said USS *Vincennes* shot down an Iranian F-14 fighter jet, but, within the next few hours, issued a refutation and confirmed Iranian reports that a civilian Airbus was hit.

According to the U.S. government, *Vincennes* mistakenly identified the aircraft as an attacking military fighter and mistakenly determined its flight profile as similar to that of the F-14A Tomcat during an attack. However, the cruiser's Aegis weapons system recorded that the aircraft was gaining altitude during the incident (whereas it should descend during an attack). According to that data, USS *Vincennes* unsuccessfully tried to get in contact with the approaching aircraft, seven times on a military emergency frequency and three times on a civilian emergency one, but the civilian aircraft did not have the equipment to receive signals on military frequencies, and messages via the civilian emergency communication channel could be sent to any other aircraft.

According to the Iranian government, the shooting was a deliberate and illegal act. Even if the aircraft had been misidentified as a military plane, which Iran has never accepted, such an incident constituted a blatant example of negligence and recklessness that can be considered an international crime rather than an accident. In particular, Iran expressed scepticism about the allegations of misidentification of the aircraft, noting that the cruiser's Aegis advanced radar correctly tracked the flight, two other U.S. Navy's ships in the area, *Sides* and *Montgomery*, also identified the aircraft as civilian, and the flight itself took place within an internationally recognised air corridor.



Iran considered it more plausible that USS *Vincennes*'s crew were eager to show their skills in real life. In the United States itself, a number of analysts reasonably accused Captain William C. Rogers of his overly aggressive behaviour in a tense and dangerous environment. Even if the aircraft were indeed an Iranian F-14 fighter, the United States had no right to shoot it down because it was flying in the Iranian airspace and was not following a trajectory that could be considered an attack profile. Even if the crew of the Iranian aircraft had committed any violations, as the U.S. military tried to claim, the U.S. government would still remain responsible for the actions taken by *Vincennes*' crew under international law.

Iran noted that while the United States strongly condemned similar incidents against civilian and military aircraft involving other countries in the past, this time it refused to take responsibility. This refusal was evidenced even by the coverage of the incident by U.S. media emphasising that was only a tragic mistake which the injured party bears no less responsibility for. The U.S. government has issued several diplomatic notes deploring the loss of life but has never officially apologised for or acknowledged its misconduct.

In Iran, the incident was perceived as a targeted attack by Americans in order to send a signal to Iran that the United States is ready to enter into a war with Iran on the side of Iraq. In mid-July 1988, Iranian Foreign Minister Aliakbar Velayati asked the U.N. Security Council to condemn the United States, saying the attack "could not have been a mistake" but was a "criminal act". U.S. Vice President George H.W. Bush defended the U.S. government's position before the United Nations, arguing that the U.S. attack was a wartime incident, and USS *Vincennes*'s crew acted in accordance with the tense situation. The Soviet Union asked the United States to withdraw its troops from the area and supported the Security Council's efforts to end the Iran-Iraq war.

USS *Vincennes* Captain William C. Rogers. Photo source: Military Wiki

Despite the incident, USS *Vincennes*'s crew were awarded combat orders upon completion of their duty in the combat zone. Moreover, Captain William C. Rogers in 1990 was awarded the Order of the Legion of Honour "for the exceptionally dignified conduct in the performance of outstanding service as a commander in the period from April 1987 to May 1989".

The International Court of Justice discontinued its proceedings in relation to this aerial incident on the 22nd of February 1996 following the settlement of the dispute and damages by the United States. The United States agreed to pay Iran $131.8 mln in compensation for the termination of the case. A total of $61.8 mln was paid on the claim in compensation for the 248 Iranians killed in the shooting, $300,000 for each employed passenger and $150,000 for each unemployed one. The remaining $70 mln most likely covered the value of the destroyed A300 aircraft. Noteworthy, the compensations paid by the United States to Iran only accounted for one tenth of the amount claimed by the United States against Iraq for the U.S. military killed onboard USS *Stark*.

Exhibit G

Historical Library, *Airbus A-300 Shot Down by US Cruiser*

(translation)

Translation

Historical Library, *Airbus A-300 Shot Down by US Cruiser*, available at: https://historylib.org/historybooks/Igor-Muromov_100-velikikh-aviakatastrof/71

By Igor Muromov. **100 Greatest Air Disasters**

Airbus A-300 Shot Down by US Cruiser

On the 3rd of July 1988, USS Vincennes *shot down an Iranian Airbus A-300 over the Persian Gulf, killing 290 passengers and crew members.*

In 1983, a Soviet Su-15 fighter shot down a South Korean Boeing 747, causing a high-profile international scandal. U.S. President Ronald Reagan got another reason to call the USSR an "evil empire". Five years later, he had to justify himself to the world community for the A-300 passenger aircraft destroyed by a U.S. missile cruiser.

... During the protracted conflict with Iraq, Iranian armed boats and aircraft unleashed the so-called "tanker war" in early 1988, attacking civilian vessels in the Strait of Hormuz in the hope of disrupting Iraq's maritime communications and preventing it from exporting its "black gold", oil, which was sold by Saddam Hussein to get the money to purchase the weapons needed to continue the war with Iran. While the victims of the Iranian bandit attacks were ships of neutral countries, the United States limited itself to menacing notes addressed to Ayatollah Khomeini. But when several stars-and-stripes-flagged tankers came under attack, the United States amassed in the Persian Gulf the largest naval group since World War II – a move that resulted in a sharp deterioration of the situation, multiplied the likelihood of armed clashes, and increased vulnerability of civilian objects to the extreme.

The U.S. missile cruiser USS *Vincennes*, which arrived in the area in May 1988, was involved in a serious incident in June. *Washington Post*'s correspondent Patrick Tyler reported that the ship's commander "attempted to make a change in the civil air traffic that could lead to a mid-air collision between two passenger planes". In other words, USS *Vincennes* forced a passenger plane to change its route, which almost led to its crash. This incident occurred on the 8th of June and served as a ground for the UAE government to voice its protest to the U.S. Embassy in Abu Dhabi.

"Warships pose a terrible threat to civilian aircraft and endanger human lives", a Dubai air traffic control service official warned. "The problem is that the commander of every new U.S. warship arriving in the Persian Gulf is not sufficiently informed and does not understand how to act in respect of the passenger air traffic". Another UAE air traffic control official said U.S. Navy's ship commanders occasionally confused passenger plane pilots by asking them to identify themselves and report their "intent", sometimes in a very aggressive tone.

"Over the past year, the U.S. armed forces have been increasingly empowered to make decisions to counter aggressive actions by Iranian forces in the Persian Gulf, but the question of when to open fire has haunted American commanders since the time when USS *Stark* failed to defend itself against a missile attack by an Iraqi aircraft in May 1987, which killed 37 U.S. sailors. Today, U.S. commanders are acting in a small and highly civilian-clogged combat zone that has become even more dangerous with tough new orders from the Reagan

administration who want to prevent Iran from trying to find "holes" in U.S. politics", Patrick Tyler wrote in *Washington Post*.

The U.S. commanders received a directive from the Pentagon to open pre-emptive fire if the enemy's actions can be regarded as "dangerous".

Disaster was imminent – and it did happen. In the Persian Gulf area near the Strait of Hormuz, on Sunday, the 3rd of June, at 10:54 AM (local time) (06:54 AM UTC), USS *Vincennes* launched two surface-to-air missiles in the direction of an Airbus A-300 flying along an international route, which had been "identified as an F-14 fighter" three minutes earlier. Moments later, the warship's commander was informed that the target had been hit. The wreckage of the plane with 290 pilgrims onboard fell into the sea. The version about the F-14 fighter approaching the cruiser "in a hostile manner" was reported to the Pentagon. At that time, nobody knew that the Independence Day, which is celebrated in the United States on the 4th of June, would be declared a day of national mourning in Iran. Iran's spiritual leader Ayatollah Khomeini waging the "tanker war" on Iraq called on his supporters to fight back by blowing up some American aircraft.

According to the Iranian news agency IRNA, Iran Air's Airbus A-300 flying to Dubai (United Arab Emirates) took off from the airport in Bandar Abbas. The aircraft's pilot last contacted the airport controllers at exactly 10:54 AM. 43 seconds later, the aircraft was gone. According to Tehran's radio, the aircraft flew "exactly in an international corridor".

Washington officials circulated their own version of the disaster.

On Sunday, the 3rd of July 1988, the cruiser USS *Vincennes*, the frigate USS *Montgomery* and the frigate USS *John H. Sider* were on alert. At 10:00 AM (local time), their radars detected three Iranian Navy missile boats going to intercept the Danish tanker *Karoma Maersk*. USS *Montgomery* rushed to rescue the vessel by opening fire on Iranian warships. The Iranian boats also fired on a helicopter taking off from USS *Vincennes*, which was headed for the scene of the event. At 10:42 AM, USS *Vincennes* opened fire on the boats and sank two of them. Five minutes later, an "unidentified aircraft" flying towards USS *Vincennes* appeared on the ship's radar screens.

The surveillance by the "friend or foe" identification system showed that the aircraft was transmitting signals used by Iranian fighters stationed in the war zone. Even after USS *Vincennes* radioed warnings three times on the International Air Defence (IAD) frequency of 121.5 MHz and four times on the Military Air Distress (MAD) frequency of 243 MHz, there was no response from the Iranian pilot. Nor did the aircraft change its route as required by the warnings. According to the U.S. combat regulations, the commander of a warship can solely make a decision to open fire on an aircraft approaching to the warship to a distance of less than 32 km. At 10:51 AM, the aircraft crossed that line, so USS *Vincennes*' computer system automatically brought two Standard-2 surface-to-air missiles into combat readiness.

Captain Rogers sent warnings. It seemed to him that the aircraft had entered a dive, gaining speed as if intending to attack his ship. He had no choice as the minimum striking range of the missiles was about 10 km. At 10:54:43 AM (6:54:43 AM UTC), when the aircraft reached the distance of 14 km to the ship, the captain fired a salvo of two missiles. At least one of them hit the passenger plane, causing it to explode and crash into the water.

A few hours later, Iranian Foreign Minister Ali Akbar Velayati issued a statement saying that "Washington has practically confessed to its crime, admitting that its armed forces shot down an Iranian warplane with missiles. There was no Iranian warplane in the area at the time. The U.S. missiles shot down an Airbus flying to Dubai".

The press of the Persian Gulf countries unanimously condemned the behaviour of the U.S. military. According to Qatar's *Al Raya*, it is the United States that is responsible for the crime: "No honest person can turn a blind eye to the mistake committed by the U.S. warship".

UAE's *Khaleej Times* wrote that one cannot look indifferently at the tragedy: "Almost 300 innocent people have become victims of the accelerated militarisation of the Persian Gulf, which has been going on for several months. Neither the new U.S. measures to protect merchant shipping nor the arms build-ups have brought an end to the Iran-Iraq conflict".

Dubai's *Gulf News* stated: "Foreign navies should not treat the airspace over the Persian Gulf as a sphere of their military activity. If warships protecting merchant ships pose a threat to civilian aircraft, this will cause a new serious crisis in the region".

U.S. President Ronald Reagan had to make a special statement. He acknowledged the responsibility of the U.S. Navy for the death of the Iranian aircraft, describing it as a "terrible human tragedy". However, he added, the U.S. warship fired the missiles as a "proper defensive action" in order to "defend itself against a possible attack". USS *Vincennes* acted in accordance with an "existing order" after the aircraft "had not responded to repeated warnings".

Although President Reagan expressed regret over the terrible human tragedy, he immediately stated that the U.S. policy of maintaining the presence of U.S. naval forces consisting of 25 to 30 warships intended to protect the sea routes against Iranian attacks will remain unchanged.

President Reagan's phrase calling the actions taken by USS *Vincennes* "a proper defensive action" became, in fact, the administration's official concept. The interpretation of the event as a "tragic accident" was immediately set out in special messages sent from Washington to the capitals of the U.S.-allied states. The leaders of a number of NATO countries such as British Prime Minister Margaret Thatcher immediately picked up on this interpretation to confirm the "right" of the U.S. Navy to "self-defence" in the Persian Gulf.

In the U.S. Congress, where the Democrats had a majority of seats, hearings were scheduled to find out the extent which the Pentagon was guilty of what happened to. In his letter to the congressional leadership aimed at ruling out any sentiment in favour of enacting the 1973 War Powers Act, President Reagan declared the incident closed. Enacting that Act would make the United States withdraw from the Persian Gulf, which would run counter to Washington's strategic interests in the area.

Admiral William James Crowe Jr., Chairman of the Joint Chiefs of Staff, insisted that "the aircraft was flying outside the normal air corridor at a high speed of more than 500 miles per hour (260 miles per hour in reality) and was descending (gaining altitude in reality) without responding to the radio signals sent to it". And the CBS correspondent in the Pentagon reported, "The government assumes it was something like a kamikaze attack". In other words, Iran allegedly decided to ram an American cruiser with its civilian aircraft.

However, ABC cited an important testimony: “One experienced European air traffic controller working at the Dubai Airport said Iranian aircraft conducted their operations to search for the victims of the tragedy within an air corridor established for civilian flights. This indicates that, contrary to the U.S. statements, the aircraft did not deviate from the usual route. In the Persian Gulf, there are constant issues due to the fact that warships are trying to force commercial aircraft to deviate from established routes. Many air traffic controllers working at regional airports are dissatisfied with the unprofessional, command-style methods practiced by the radio operators of U.S. warships”.

The Pentagon’s leaders further claimed that the Iranian aircraft sent two identification signals, a “civilian” one and a “military” one, and, therefore, could be mistaken for a combat aircraft. But it turned out immediately that the frigate USS *Sides*, which was operating in the same area, did not receive any “military” signal. Moreover, *Sides*’ radar showed that the aircraft was at a much higher altitude than claimed and did not show any intention to carry out an attack.

Refuting the allegations of the U.S. commanders, air traffic controllers from the Persian Gulf countries accused the U.S. Navy of constantly ignoring the signals that help distinguish military aircraft from civilian ones. They again blamed the Americans for unceremoniously interfering in the air traffic over the Gulf.

Many U.S. journalists focused on the technical aspects of what happened. Citing U.S. Navy officials, ABC reported that the commander of USS *Vincennes* “ordered to check whether a civilian aircraft was approaching the cruiser, but the missiles were launched before the check ended”. Therefore, the TV company questioned the qualifications of the operator of the ship’s radar installation.

According to another version, the root cause of the disaster was an error made by a computer onboard the cruiser. This could mean that the passengers and crew of the Iranian aircraft were the first victims of “artificial intelligence”, i.e. a procedure where computers are not limited to monitoring the situation but also draw conclusions and give recommendations to people.

Referring to the tragedy of the Iranian airliner, Jesse Jackson, the contender for the U.S. presidency from the Democratic Party, spoke frankly, “This is not a technical error or a computer error – this is a mistake in our politics”.

Indeed, many questions arose in connection with the tragedy over the Strait of Hormuz. For example, how could the crew of a cruiser equipped with the Aegis electronic tracking system, the most advanced one, mistake an airbus for a “small fighter”? After all, the Iranian aircraft was gaining altitude and was not going down as happens during an attack. And its speed was half that of the supersonic F-14.

USS *Vincennes* belongs to the Ticonderoga-class cruisers, which became entering service with the U.S. Navy in 1983. Those cruisers were equipped with the Aegis, the most up-to-date multifunctional weapon system of that time. It consists of Standard-2 anti-aircraft guided missiles, two computer-controlled universal launchers, and a circular-view radar station capable of detecting and tracking more than one hundred targets. It can distinguish false targets by the nature of a reflected signal and features a high noise immunity. In addition, the system is capable of identifying potentially dangerous targets, optimally distributing them among various types of weapons, and developing recommendations for opening fire. In short,

technically, the cruiser's equipment should exclude the tragedy. The speed of the aircraft, the absence of the mark typical of an F-14 and the presence of a much larger mark on the cruiser's locator screen, and the lack of traces of a manoeuvre characteristic of an attacking fighter – all this clearly indicated that the flying aircraft was civilian.

"The Pentagon claimed that the Airbus was attacked because it flew very low and extremely fast directly to the cruiser. However, even according to U.S. data, its speed and altitude clearly did not correspond to the concepts of a modern aircraft attacking a sea target. It is also doubtful that the United States had not provided accurate data on the place where the aircraft was shot down. The United States also said that the four minutes available to the cruiser were not enough to draw the right conclusion and distinguish an Airbus from a fighter. However, in our opinion, such a time frame is quite normal for a modern missile warfare where a warship equipped with the Aegis system is obliged to make the right decisions", an expert said in an interview with the Japanese radio and television company NHK.

Some prominent U.S. electronics experts, such as David Parnas, one of the Pentagon's leading consultants on SDI control systems three years ago, have called on the U.S. administration to learn a lesson from the Gulf tragedy with respect to its Star Wars program, too. In particular, he noted that the U.S. Navy has long called the Aegis a "Star Wars system at sea" since its principle of operation is the same as for the control systems developed for Star Wars weapons. "Obviously, if the most advanced computers cannot distinguish an Airbus from a fighter at a distance range, then it would be much more difficult or even impossible to distinguish a warhead from a conventional blank flying along the same ballistic trajectory in space", he emphasised.

Upon Iran's request, an emergency meeting of the U.N. Security Council was convened to discuss the destruction of the Iranian passenger airliner with 298 passengers and crew members onboard by missiles fired from the U.S. warship in the Persian Gulf.

Iranian Foreign Minister Ali Akbar Velayati was the first to spoke at the U.N. Security Council meeting on the 14th of July. His hour-and-a-half speech expressed bitterness for the dead, an angry condemnation of the behaviour of the United States, and a call for support from the international community. Mr. Velayati gave details of the tragedy that occurred on the 3rd of July and cited a transcript of conversation between the aircraft's pilot and the air traffic controller during the flight that lasted seven minutes the last of which turned out to be fatal. The pilot's phrase "all the best" was the last words heard by the controller. Then the communication was interrupted by two standard surface-to-air missiles launched by USS *Vincennes*.

The Iranian minister went on to say, "Even if we accept the U.S. claims that this was an accident, that in no way detracts from the serious responsibility of the United States. It is clear that, having endowed their naval officers in the Persian Gulf with such broad powers, and given the instability of the situation created by the presence of the U.S. Navy there, U.S. politicians were well aware of the inevitability of such tragedies but did nothing to prevent them".

In response, U.S. Vice President Bush placed all responsibility for the tragedy on... Iran, because, as he said, it did not prevent the route of its aircraft from crossing the combat zone. Therefore, according to him, it was Iranians themselves rather than the U.S. Navy who made the tragic mistake by directing the aircraft over the warship.

Shortly after the closed-door hearings began before the U.S. House Armed Services Committee where Pentagon officials testified, numerous contradictions emerged in the information they reported. Many congressmen accepted their statements that the disaster was accidental with scepticism if not distrust. They wondered how USS *Vincennes*, which was equipped with the most advanced electronic tracking and targeting system available in the U.S. arsenals, could "confuse" a huge civilian airbus with a combat aircraft F-14 that was three times smaller. "We have been told that the Aegis is the most gorgeous system in the world, and this just could not happen!", Rep. Patricia Schrouder indignantly said. (Curiously, the Washington administration asked the same question in 1983: How could a Soviet pilot mistake a passenger Boeing for a reconnaissance aircraft?)

Pentagon generals have eventually admitted that not only did not the aircraft deviate from its intended route but flew almost straight through the centre of the "20 km-wide air corridor established for civilian aircraft between Bandar Abbas and Dubai at the time when the missiles were fired at it".

However, despite all those facts, the U.S. administration achieved what it wanted: the congressional hearings actually reached an impasse. "The debate around the incident with the Iranian aircraft is mired down in technical details", Robert Baird, the leader of the Democratic majority in the Senate, summed up.

In an attempt to quickly hush up the scandal, the White House announced its intention to pay compensations to the families of the deceased passengers and crew members.

In the end, the United States finally placed all the blame for the tragedy in the Persian Gulf on Iran. The results of the large-scale propaganda were not long in coming. "Most Americans believe that the behaviour of USS *Vincennes*, which shot down the Iranian passenger aircraft, was justified", *Washington Post* concluded, noting that 71% of the participants in a nationwide survey conducted by the newspaper in conjunction with ABC believed so, with 74% of the respondents saying that "Iran is largely to blame for what happened". The opposite opinions were expressed by 24% and 14% of the Americans polled, respectively.

Here is one more interesting detail. The influential magazine *New Republic* of Washington, D.C. noted in its editorial "… as the initial apology for the tragic mistake of July 3 subsides, it becomes increasingly clear that we must apologise to the Soviet Union for our cheap reaction to the downing of the KAL-007 aircraft in 983, which the CIA also identified as a case of misidentification much later than Reagan sharply claimed otherwise. One can endlessly argue about the similarities and differences between the two incidents. Our victims were in the air over a war zone. On the other hand, their victims were in the air over the Soviet territory. (What if a mysterious aircraft appeared over California?) Retrospectively, it is clear that our reaction to the KAL-007 crash was part of our cynical propaganda and a result of our technological arrogance: allegedly, that could never happen to us".

Exhibit H

Russia Today, "*Gross Violation of All Laws": Why US Has Not Admitted Guilt for Downing of A300 Airliner over Persian Gulf* (3 July 2018)

(translation)

Translation

Russia Today, *"Gross Violation of All Laws": Why US Has Not Admitted Guilt for Downing of A300 Airliner over Persian Gulf* (3 July 2018), available at: https://russian.rt.com/science/article/532374-ssha-iran-samoljot-katastrofa

Special Operation in Ukraine

"Gross Violation of All Laws": Why US Has Not Admitted Guilt for Downing of A300 Airliner over Persian Gulf

By Svyatoslav Knyazev

30 years ago, a missile launched by USS Vincennes shot down the Airbus A300B2-203 passenger liner belonging to Iran Air. There were 290 people on board Flight IR655 from Tehran to Dubai via Bandar Abbas. Despite Washington's obvious involvement in those events, the White House has refused to admit guilt. The ship's captain who had given the command to destroy a civilian plane received one of the highest national awards of the United States. Historians and military experts agree that the actions of the American sailors may be classified as a war crime. RT finds out why the US has not apologised for the tragic incident in the Persian Gulf.

Missile launched from USS Vincennes / © U.S. Navy

Background

After the 1979 Islamic Revolution in Iran, the authorities of neighbouring Iraq feared that the revolutionary sentiments could spread to the territories controlled by the official Baghdad and inhabited mainly by Shiites. Furthermore, Saddam Hussein, who had just come to power in Iraq, cherished an idea to seize the oil-rich near-border areas of Iran.

The Iraqi leader counted on support from the United States and a number of European countries, and for a good reason. He also believed that the Soviet Union would not want to lose a powerful ally in the region, albeit it might disapprove of his actions. So, in September 1980,

the Iraqi army crossed the Iranian border. However, the situation developed quite differently from what Hussein had planned. The Iranians managed to stop the advance of his troops and even launched an effective counteroffensive.

An episode of the Iran-Iraq War / © Wikimedia Commons

Seeking to undermine the official Tehran's economy and to provoke retaliatory measures that would have caused global powers to get involved in the conflict, the Iraqi authorities initiated the Tanker War in 1982-1984 by starting to sink ships carrying Iranian oil. Tankers operated by third countries allied to Baghdad and soon became targets of retaliatory strikes by the Iranian Air Force. In 1987, the United States and France moved their naval forces to the Persian Gulf.

"By early July 1988, the war was already nearing its end, but the tensions in the region were still extremely high. The Americans supported Saddam Hussein," Irina Fyodorova, Senior Researcher at the Institute of Oriental Studies of the Russian Academy of Sciences, Cand. Sc. History, told *RT* in an interview.

Boats during the Tanker War / © Wikimedia Commons

On 14 April 1988, a US frigate was damaged by an unknown mine in the Strait of Hormuz. Moreover, there were global rumours that Iran had allegedly bought new anti-ship missiles from China. That is why the American command decided to send to the Persian Gulf a ship equipped with the Aegis integrated combat command and control system deemed to be able to effectively handle enemy missile strikes. That ship was the missile cruiser USS Vincennes.

The A300 Disaster

On 3 July 1988, the Americans received reports that Iranian speed boats were threatening a Pakistani vessel. The captain of USS Vincennes, William C. Rogers III, sent a helicopter to the potential area of conflict. When the Iranians saw the helicopter, they retreated to their territorial waters, but it did not stop the Americans and their helicopter violated the airspace of the Islamic Republic. The Iranians opened fire on the aircraft. The pilot reported the incident to the captain, and Rogers moved the cruiser into Iranian territorial waters, having receiving permission from his superiors to open fire. Soon two Iranian boats were sunk in the Iranian waters.

At about the same time, an Iranian passenger airliner, Airbus A300B2-203, en route to the UAE as Flight IR655, took off from the Bandar Abbas airfield. It was travelling within a 35-km wide international air corridor. The Aegis combat system of the American cruiser immediately recorded that the Iranian plane was taking off. According to experts, the plane's transmitters had a special code used by civilian aircraft only, but the sailors on USS Vincennes chose to ignore that fact for some reason. As it was claimed later by the American side, the A300 flight profile looked like an F-14 multi-role jet fighter diving into an attack profile, and the ship's commander allegedly decided that the Iranians were going to punish the cruiser for entering their territorial waters and attacking their gunboats.

The Americans made eleven attempts to establish radio contact with the A300. However, eight of those attempts were made on military frequencies and three on commercial emergency frequencies without specifying the Iranian jetliner's unique code obtained through the target recognition system and incorrectly giving the speed of the aircraft. The Iranian pilots whose plane was travelling within a civil air corridor with all the necessary transmitters engaged and at a different speed, could not even think that they were being addressed, especially because an Iranian patrol plane had passed nearby shortly before that.

Iranian Airbus A300B2-203 / © Werner Fischdick / Wikimedia Commons

As a result, Captain Rogers ordered to launch a SM-2MR surface-to-air missile at the civilian aircraft. The plane was hit, it broke into two parts and crashed into the water at the bay. 274 passengers and 16 crew members were killed.

According to the text of the official American report, the plane was identified as civilian only after the crash. The American side said that the incident may have been caused by a "psychological condition" of the crew and the alleged similarity of the airliner's flight profile to that of a fighter jet preparing to attack.

"Washington Won't Apologise"

"The A300 was shot down either by mistake, or intentionally, or through the incompetence of the American commanding officer. It is still unclear why the Americans did this. The incident can hardly be explained as a tanker protection operation. Perhaps, the United States wanted to demonstrate strength to Tehran who pursued a consistent anti-American policy," Mrs Fyodorova suggested while talking to *RT*.

She stressed that the incident was a great tragedy for Iran. Moreover, only after Tehran had appealed to the International Court of Justice, Washington agreed to pay compensation to the relatives of the victims, stressing that it was on an *ex gratia* basis and that the decision did not mean the United States recognised the Iranian claims as reasonable.

"The United States flatly refused to admit its guilt as a state. President Reagan and President Bush took turns to say something like Washington would not apologise, no matter what the facts were," Mrs Fyodorova noted.

Aviation experts draw attention to the fact that the incidents involving attacks by the military of various countries on civilian aircraft are by no means rare.

"For instance, look at the Tu-154 shot down by mistake by the Ukrainian army over the Black Sea in 2001. Then, official Kyiv spokesmen said something like "it can happen to anyone," Sergei Melnichenko, General Director, Flight Safety international advisory and analytical agency, said in an interview with *RT*.

According to Oleg Smirnov, Chairman of the Civil Aviation Commission of the Federal Transportation Oversight Agency community board and former Deputy Minister of Civil Aviation of the USSR, there are strict rules and regulations governing civil aircraft flights and behaviours of the military.

"As for the case of the Iranian airliner, it was a gross violation of all laws by the Americans. The place where the plane was shot down was outside the area of hostilities. It was a crime. There is no excuse for it," Mr. Smirnov believes.

As to how the incident is assessed by Washington, experts say it is demonstrated by how the American authorities treated those directly responsible for the incident.

"Instead of being held responsible, the commander of the cruiser received a high national award," Irina Fyodorova stressed.

Indeed, Captain William C. Rogers III was awarded the Legion of Merit, one of the highest

awards in the United States usually given for "exceptionally meritorious conduct in the performance of outstanding service", for his service between 1987 and 1989. Like their captain, the crew also received various awards.

Captain William C. Rogers III and his award, the Legion of Merit / © U.S. Navy / US Air Force

Contrary to a popular media myth, Captain Rogers was not at all "inexperienced". At that time, he was in his fiftieth year of age and had a long history of service in commanding positions on US Navy ships of various classes. Immediately prior to his assignment to USS Vincennes, Captain Rogers was the head of a section in the Planning Division of Chief of Naval Operations in Pentagon.

"The commanding officer of the cruiser committed a war crime and got away with it," Igor Korotchenko, editor-in-chief of the National Defence magazine and a member of the Russia's Ministry of Defence community board, said in an interview with *RT*.

The tragic incident over the Persian Gulf had an unexpected effect on the international conflict that arose as a result of the Boeing 747 disaster over Sakhalin in 1983.

"In the 1980s, the West insisted that the USSR should be expelled from the International Civil Aviation Organisation (ICAO) because of the downed Korean Boeing. After the Iranian A300 incident, the Americans stopped exerting any pressure on the international community about this," Anatoly Kostylev, Head of the Department of Civil Aviation Flight Safety at St. Petersburg State University of Civil Aviation, told *RT*.

However, according to experts, the circumstances of the two incidents were totally different. While the Soviet Armed Forces shot down a plane that violated the state border of the USSR against the background of American reconnaissance aircraft flights in the vicinity of military facilities, the US Navy sailors attacked an Iranian civilian aircraft after entering Iranian territorial waters.

"Unfortunately, the conduct of the United States during the A300 incident, both in terms of striking a civilian object and then attempting to evade responsibility, is quite typical of Washington," Igor Korotchenko summed up.

Exhibit I

Informator.ua, *Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?* (6 January 2023)

(translation)

Translation

Informator.ua, *Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?* (6 January 2023), available at: https://informator.ua/ru/tri-goda-tragedii-boeing-mau-nad-iranom-chto-stalo-s-vinovnikami

Three Years after UIA Boeing Tragedy over Iran: What Happened to Those Responsible?

By Olha Paliy

The 8th of January marks three years since the downing over Tehran of the Boeing 737 passenger plane operated by Ukraine International Airlines. All 176 people on board were killed including 24 children. Why did the tragedy happen? Have those responsible been prosecuted? *The Informator* tries to find out.

What happened?

In terms of death toll, the plane crash near Tehran is one of the fifty largest worldwide. On the 8th of January 2020, the Boeing 737-8KV airliner operated by Ukraine International Airlines (UIA) was making a scheduled international Flight PS752 from Tehran to Kiev. Approximately three minutes after taking off, the plane was shot down by two surface-to-air missiles fired from an Iranian Air Force base. The plane crashed 15 kilometres away from the Tehran airport. All 176 people on board were killed including 167 passengers and 9 crew members.

At first, the Iranian civil authorities were saying that the airliner crash was due to technical issues. UIA management stated in response that the aircraft had been airworthy, a pilot error was out of question, and experienced pilots had been assigned to the crew taking into account the complex nature of the flight. Meanwhile, a number of Western leaders claimed, based on intelligence data, that the plane was shot down by Iran's air defence.

Finally, on the 11th of January 2020, Iranian President Hassan Rouhani admitted that the plane was "unintentionally" shot down by missiles fired by the Islamic Revolutionary Guards Corps. According to Iranian officials, the tragedy was caused by human factor due to a possible US response to the Iranian missile strike on American military facilities in Iraq.

As stated by the Iranian side, the air defence system operator mistook Flight PS752 for a cruise missile, but disrupted communications prevented him from reporting that to his superiors and it was his own decision to shoot down the target. Two missiles were launched, 20 seconds apart, from a Russian-made Tor-M1 system located near the village of Bidganeh west of Tehran. The Boeing crashed into the ground in Halajabad (a suburb of Tehran) 15 kilometres north of its airport of departure. Parts of the crashed plane were strewn over 300 metres and damaged some ground facilities (in particular, a small football pitch).

How is Iraq Connected?

The Flight PS752 crash occurred amid a political crisis between the United States and Iran, just a few hours after the Iranian Air Force had carried out its missile attack on US military facilities in Iraq in retaliation for the assassination of the Al-Quds special force commander General

Qassem Suleimani in Baghdad. A few hours before the tragedy, the US Federal Aviation Administration (FAA) blocked the air space over Iran, Iraq, the Persian Gulf and the Gulf of Oman for civilian American aircraft. Other countries' planes were taking off from the Tehran airport following a normal routine that night. However, shortly before the Flight 752 crash, the Iranian military requested the country's government to halt civilian aircraft traffic for the duration of strikes on the US Ain al-Assad base in Iraq, but for some reason their request was not satisfied.

Investigation Begins

On the 1st of January 2020, Ukraine's President Vladimir Zelensky called on the Iranian government to bring to justice those responsible for the plane crash and discuss compensation issues.

Many of the killed passengers were students, postgraduates, researchers and professors of Iranian origin from 19 Canadian universities returning to Canada after the Christmas holidays. They chose to fly to Kiev because it was cheaper and more convenient to connect with a flight to Toronto. That is why Canada founded the International Coordination and Response Group for families of the victims of the UIA plane crash, headed by Canadian Foreign Minister François-Philippe Champagne. This group also included representatives from Ukraine, Afghanistan, Sweden, and the United Kingdom.

On the 21st of January 2020, the Civil Aviation Organisation of Iran (CAOI) published a preliminary report on the causes of the Flight PS 752 crash stating that the airliner crashed after it had been hit by two short-range surface-to-air missiles fired from a Tor-M1 anti-aircraft missile system. An update to the report also said that the air defence unit that shot down the Ukrainian airliner had been moved shortly before the disaster, which led to a change in the geographical location and orientation of the system. "Due to a human error" the air defence system misinterpreted the passenger plane as a missile moving from southwest towards Tehran (Iraq is Iran's western neighbour).

The CAOI released their final investigation report on the 17th of March 2021. It confirmed the preliminary findings.

Compensation to Victims' Families and Prosecution of Those Responsible

In June 2020, the Ministry of Foreign Affairs of Iran announced that it was ready to discuss with Ukraine compensation to families of the victims. However, Deputy Foreign Minister of Ukraine Yevgeny Enin said on the 9th of July that Ukraine had sent Iran four invitations since the beginning of 2020 to start negotiations, but a specific date could not be agreed. Finally, the first round of talks with Iran on the downed Flight 752 began in Kiev on the 29th of July. As a result, Tehran agreed to pay in full the necessary compensation.

Erik Kucherenko, an expert in international law, notes that "the US$ 150,000 compensation to relatives of each of the plane crash victims that has been promised by the Iranian government will not be paid directly to Ukraine, and most importantly, is being used as a tool to apply pressure on them. Iran is trying to close the case without accepting the illegal nature of its actions, which is considered totally unacceptable by Ukraine and its partner states," the expert says.

On the 20th of February 2021, the Iranian Military Prosecutor's Office completed its investigation into the causes of the UIA plane crash and began preparing an indictment against 10 suspects.

Iran Is Covering Its Tracks

In early January 2022, Iran officially announced to Canada, Sweden, Ukraine and the UK that it refused to negotiate over the disaster. On the 8th of January 2022, Iran released the names of the Islamic Revolutionary Guard Corps (IRGC) men charged with neglect of duty, gross negligence and failure to perform, as well as other persons involved in the downing of the Flight PS752 UIA Boeing-737 passenger plane.

In January 2022, UIA filed a lawsuit against Iran with a court in Ontario (Canada). The lawsuit mentioned Iran and the Islamic Revolutionary Guard Corps as two defendants, and the airline claimed compensation from Iran. This was not the only lawsuit. Relatives of the Canadian victims had already sued the state of Iran and the IRGC. Considering one of these claims, the Ontario Supreme Court of Justice found that Iran had intentionally shot down the Ukrainian plane.

Meanwhile, the legend of the passenger plane tragedy grew. The Israeli film director Leonid Kanfer presented his documentary "The Secret of Romeo's Death" on the second anniversary of the disaster.

"Why has the tragedy not been investigated? Why the downing of the Ukrainian UIA plane by the Iranians was not a fatal mistake of IRGC air defence but a deliberately targeted terrorist attack? The film examines the circumstances that led to the tragedy; the military conflict between Iran and the United States, the circumstances of the flight, the actions of the crew, the condition of the aircraft, the logistics of departures from airports, and the peculiarities of interaction between the military units in Tehran. We have studied the wreckage of the plane, some impressive elements, the logistics of Iranian missile strikes, and have come to a conclusion that many of the circumstances are simply shocking. Why is an investigation of the plane crash disadvantageous for Iranian, American and even Ukrainian authorities? How did the Ukrainian plane become a bargaining chip in a big political game? And why has Iran not yet paid compensation to relatives of the victims? This is what the new film directed by Leonid Kanfer is about," says the trailer of the film.

Will Justice Be Served?

On the 28th of December 2022, Ukraine, the UK, Canada and Sweden initiated an arbitration of the dispute over the downing of the passenger airliner in accordance with the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation.

"We requested that Iran submits to binding arbitration of the dispute related to the downing of Flight PS752 by two surface-to-air missiles launched unlawfully and intentionally by members of Iran's Islamic Revolutionary Guard Corps air defence unit," the statement said.

Iran has yet to agree to that. However, it doesn't matter. According to the 1971 Montreal Convention, if Iran fails to agree within six months from the date of the request for arbitration, any one of the claimant States may refer the dispute to the UN International Court of Justice.

However, the arbitration that has been initiated only concerns the matter of criminal prosecution of those responsible.

As noted by Erik Kucherenko, an expert in international law, seeing the futility of talks with the Iranian regime, especially in the context of the Iranian support of Russia's aggression against Ukraine, the member states of the International Coordination and Response Group for the Victims of Flight PS752, have decided to refer the case to international judicial and quasi-judicial institutions.

"After the arbitration has been initiated seeking to hold the perpetrators criminally liable, it is reasonable to expect that a similar processes will be launched on other tracks, making to possible to file a complaint with the ICAO Council on Iran's violation of the Chicago Convention. We must consistently use all available instruments of international law to ensure justice for our citizens and our State. That is exactly what the Ukraine's global leadership role is about," said Erik Kucherenko.

As reported earlier by *The Informator*, the Ukrainian intelligence have explained why Iran refrains from handing ballistic missiles over to Russia.

Exhibit J

Liga.News, *Ukrainian Boeing-737 Crashes in Tehran* (8 January 2020)

(translation)

Translation

Liga.News, *Ukrainian Boeing-737 Crashes in Tehran* (8 January 2020), available at: https://news.liga.net/incidents/chronicle/krushenie-ukrainskogo-boeing-737-v-tegerane-hronika-katastrofy

Ukrainian Boeing-737 Crashes in Tehran

All main news – Ukrainian news, Incidents – *LIGA.net*

Today morning, the Boeing 737 airliner operated by Ukraine International Airlines (UIA) was making a flight PS752 from Tehran to Kiev has crashed shortly after taking off from Imam Khomeini International Airport. According to preliminary reports, all 176 people on board died (167 passengers and 9 crew members). Terrorist attack or missile strike are not considered. Liga.net has chronicled the disaster.

08 January 2020

06:33 PM

Ali Abedzadeh, President of Iran's Civil Aviation Organisation, said that the pilots did not communicate with air-traffic controllers.

03:50 PM

Boeing says it is ready to provide any assistance that may be required.

02:52 PM

The youngest of the victims, Molani Kurdia, born 2018, was under two years of age.

02:48 PM

According to Prime Minister Goncharuk, there were no restrictions for Ukrainian airlines to operate in the Iranian airspace because "as of yesterday, there were no reasons to believe that these events would occur". "If we conclude that there were reasons for earlier response, but the authorities failed to react properly, we will take appropriate staff-related decisions," the Prime Minister emphasized.

02:41 PM

At least eleven students and graduates of the Iranian Sharif University of Technology were killed in the UIA Boeing 737-800 NG plane crash, as reported by ISNA. The university has published a list of the victims with a note that it may be supplemented.

02:33 PM

The UIA asked the families and friends of the flight passengers to call the UIA as soon as possible to obtain information and necessary assistance at 0-800-601-5-27 (calls from Ukraine) or +38-044-581-50-19 (overseas calls).

01:40 PM

“During the day, a board will be set up and an order of the State Aviation Service will be issued to conduct an unscheduled UIA flight safety inspection. Additional flight safety checks will be carried out at other airlines as well,” Oleksiy Goncharuk wrote in his Facebook post.

01:38 PM

Iranian authorities are not going to hand over the flight recorder to the aircraft manufacturer, Boeing, the chief of Iran’s Civil Aviation Organisation says.

01:16 PM

The plane from Tehran is not going to land, as displayed on the information board in the Boryspil airport:

Photo by: Serhiy Dolzhenko/EPA

01:13 PM

A full list of the aircraft crew is published on the UIA website. There are nine persons on the list: pilots Alexey Naumkin, Vladimir Gaponenko and Sergey Khomenko; flight attendants Ekaterina Statnyk, Igor Matkov, Maria Nikityuk, Denys Lyakhno, Valeria Ovcharuk and Yulia Sologub.

12:20 PM

The Ukrainian Embassy in Iran first deleted and then corrected its statement about the tragedy. It no longer mentions that terrorist attack and missile hit versions are not considered. There is also no information that the disaster could have been caused by technical problems.

12:19 PM

There were 169 persons on the flight passenger list, but two of them did not come on board. Both are not Ukrainian citizens. This was announced at a briefing by NSDC Secretary Oleksiy Danilov.

12:19 PM

According to PM Goncharuk, there were many students on board.
12:17 PM

“Until the causes of the tragedy are clear, we have decided to suspend the operation of Ukrainian airlines in the Iranian airspace. As soon as the causes are identified, the decision will be reviewed,” Prime Minister Alexey Goncharuk said at a briefing.

12:00 PM

Opinion

10:52 AM

A team of experts from the State Emergency Service and the examiner service of the Ministry of Internal Affairs has been set up to assist in the search operation. Decisions are expected from the Government of Ukraine and the Iranian side.

10:44 AM

The captain of the plane was Vladimir Gaponenko, the co-pilot was Sergey Khomenko, and flight instructor Alexey Naumkin was also on board as cabin crew reinforcement. Mr. Gaponenko and Mr. Naumkin had more than 10,000 flight hours. This has been announced at a special briefing by the company’s president Yevgeny Dykhne.

10:41 AM

The airworthiness of the entire civil aviation fleet of Ukraine will be checked, the president said.

10:41 AM

President Zelensky instructed Prosecutor General Ryaboshapka to initiate a criminal case on the airliner crash.

10:39 AM

Opinion

10:34 AM

According to Iranian rescuers, 147 Iranians and 32 foreign nationals from Canada, Germany, Sweden, Afghanistan and Ukraine were on board. The Minister of Foreign Affairs Vadym Prystaiko published quite different information in his Twitter post: 82 people from Iran; 63 from Canada; 2 + 9 (cabin crew) from Ukraine; 10 from Sweden; 4 from Afghanistan; 3 from Germany; 3 from the UK.

10:23 AM

The UIA president said that the crashed plane was in good order. Scheduled maintenance was carried out on the 6th of January.

10:19 AM

“Based on the data that the plane reached an altitude of 2,400 metres, the probability of a crew error is minimal, we simply cannot assume it,” Igor Sosnovsky, UIA VP for flight operations, said at a briefing.

10:17 AM

Two black boxes have been found at the crash site, the Iranian state broadcaster IRIB reports citing the Tehran prosecutor.

10:01 AM

There were eleven Ukrainians on board: two passengers and nine crew, the NSDC secretary said.

09:49 AM

The crashed plane was purchased by the UIA directly from the manufacturer in 2016, the company said in a statement. The last scheduled maintenance was carried out on the 6th of January 2020.

09:45 AM

To find out information about the people who were on board, please call at the airline’s hotlines 0 800 601 527 (calls from Ukraine) or +380 44 581 50 19 (overseas calls).

09:30 AM

The Ukrainian Embassy in Iran reports that the versions of a terrorist attack or a missile attack are not considered as the possible causes of the tragedy.

09:29 AM

Passenger lists are being prepared and will be published soon. Special planes are in preparation to take off for Tehran to pick up the bodies of the dead. These flights are being coordinated with Iran, President Zelensky said.

09:05 AM

As instructed by President Zelensky, an Ops Centre has been set up at the NSDC in connection with the disaster. Its members are the Prime Minister, the Foreign Minister, the Minister of Defence, heads of the Interior Ministry, the SBU, the SVR and the State Emergency Service. The NSDC reports that 168 people checked in for the flight, and 9 crew members were on board.

09:03 AM

After arriving at the site of the tragedy, rescuers were unable to help passengers and crew due to a strong fire, CNN reports.

08:58 AM

The plane took off from the airport at 04:42 AM and stopped transmitting signals two minutes later, at 04:44 AM, IRNA writes.

08:56 AM

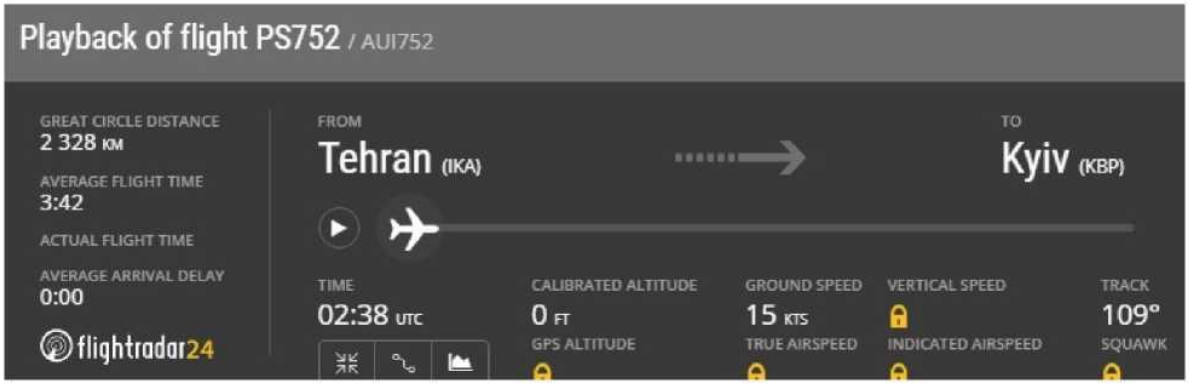
President Zelensky expressed his condolences to friends and families of the victims, urgently interrupted his visit to Oman and is returning to Kiev.

08:47 AM

Iranian media have published a video of the plane crash. As may be seen on the video, the airliner began to burn in the air and exploded when it collided with the ground.

08:44 AM

According to the Flight Radar 24 tracker, the airliner reached an altitude of almost 2,328 metres before taking a dive and crashing.



08:38 AM

A few hours before the tragedy, the US Federal Aviation Administration blocked the air space over Iran, Iraq, the Persian Gulf and the Gulf of Oman for civilian American aircraft.

#FAA Statement: #NOTAMs issued outlining flight restrictions that prohibit U.S. civil aviation operators from operating in the airspace over Iraq, Iran, and the waters of the Persian Gulf and the Gulf of Oman.

The Federal Aviation Administration issued Notices to Airmen (NOTAMS) tonight outlining flight restrictions that prohibit U.S. civil aviation operators from operating in the airspace over Iraq, Iran and the waters of the Persian Gulf and the Gulf of Oman. The FAA will continue closely monitoring events in the Middle East. We continue coordinating with our national security partners and sharing information with U.S. air carriers and foreign civil aviation authorities.

— The FAA (@FAANews) January 8,2020

Exhibit K

RIA Novosti, *Iran Announces Cause of Ukrainian Boeing Crash* (17 March 2021)

(translation)

Translation

RIA Novosti, *Iran Announces Cause of Ukrainian Boeing Crash* (17 March 2021), available at: https://ria.ru/20210317/krushenie-1601714106.html

Iran Announces Cause of Ukrainian Boeing Crash

© Photo: Facebook page of the Office of the President of Ukraine

MOSCOW, 17 March, *RIA News*. The Ukraine International Airlines passenger liner making a flight from Tehran to Kiev that was shot down in January last year had been mistakenly identified as an enemy target. This is stated in the final accident investigation report issued by the Civil Aviation Organisation of Iran.

"The plane was misidentified by the air defence unit as an enemy target and two missiles were launched," says the document published on Wednesday by the Iranian Tasnim agency.

The authors of the report note that neither the aircraft technical or operational condition, nor its flight path and altitude contributed to the misidentification. The document also provides a number of recommendations on how similar disasters can be prevented in the future.

It is noted that risk assessment and civil aviation safety measures were taken on the day of the crash, but they proved to be insufficiently effective due to the error that occurred. In particular, only permanent factors were taken into account in the risk assessment while changing conditions were omitted.

The document also provides a number of recommendations on how similar disasters can be prevented in the future. In particular, it concerns an exchange of information between military and civilian specialists, as well as risk assessment and measures to be taken in cases where military actions may present danger to civil aviation flights.

Along with the results of the investigation of the air disaster, the report contains a chronological description of the events. At 06:12 AM on the 8th of January 2020, the aircraft took off from the Imam Khomeini Airport in Tehran. In about three minutes, the first missile detonated in the proximity of the aircraft and, almost simultaneously, some of its systems failed, including the transponder and flight data recorder. After the detonation of the first missile, the crew did not sustain serious injuries and tried to cope with the situation. At 06:15 AM, the second missile was launched, and it is likely that it did not cause and damage to the aircraft. According to the investigation report, the aircraft maintained its structural integrity until it crashed into the ground and exploded at 06:18 AM southwest of Tehran.

The Ukraine International Airlines Boeing 737-800 crashed shortly after departure from Tehran in the early morning of the 8th of January 2020. 176 people were killed, including citizens of Iran, Ukraine, Canada, the UK, Germany, Sweden and Afghanistan. The disaster was the largest in terms of the number of deaths in the entire history of Ukrainian aviation.

Three days later, Iran admitted that the plane had been shot down by its air defence due to “a human error”. The plane was mistook for a cruise missile amidst a high alert announced due to a possible US response to the Iranian strike on American military facilities in Iraq.

Later, based on a report issued by the Civil Aviation Organisation of Iran, the Iranian authorities announced that the plane was shot down by two short-range surface-to-air missiles fired from a Tor-M1 anti-aircraft missile system. As a result, the plane began to rapidly lose altitude over a residential area. The plane was torn apart and caught fire as it dragged through a football pitch after clashing with the ground.

Exhibit L

Akhbor.com, *Iran Admits Its Air Defence Shot Down Ukrainian Passenger Plane Due to "A Human Error"* (1 November 2020)

(translation)

Translation

Akhbor.com, *Iran Admits Its Air Defence Shot Down Ukrainian Passenger Plane Due to "A Human Error"* (1 November 2020), available at: https://akhbor-rus.com/-p3523-162.htm

Iran Announces Cause of Ukrainian Boeing Crash

IRAN ADMITS ITS AIR DEFENCE SHOT DOWN UKRAINIAN PASSENGER PLANE DUE TO "A HUMAN ERROR"

On the 11th of January, Iran officially admitted that the Ukrainian passenger plane that crashed on the morning of the 8th of January near the Iranian capital Tehran had been unintentionally shot down by Iran's air defence due to "a human error". Meanwhile, Iranian Foreign Minister Javad Zarif blamed the "US adventurism" for the crisis that eventually led to the tragic accident. In his turn, Ukrainian President Vladimir Zelensky has demanded that Iran carry out a full investigation, prosecute those responsible, pay compensations and extend official apologies. Earlier, US media reported that the Ukraine International Airlines plane had been hit by a Russian Tor-M1 surface-to-air missile. The Boeing 737-800 crashed in the early morning of the 8th of January shortly after taking off from Tehran, the capital of Iran. The plane was *en route* from Tehran to Boryspol (Kiev). All 176 people on board were killed in the crash. 82 of them were from Iran, 63 from Canada, 11 from Ukraine, 10 from Sweden, 7 from Afghanistan and 3 from Germany.

President of Ukraine Vladimir Zelensky said on the 11th of January that his country would demand that Iran take full responsibility for the deaths of the people in the crash of the Ukraine International Airlines passenger plane, pay compensations, carry through an investigation, prosecute those responsible and extend official apologies via diplomatic channels.

Vladimir Zelensky:

“The morning was not good today, but it brought along the truth. Even before the end of the International Commission’s work, Iran has pleaded guilty to downing the Ukrainian plane.

However, we insist on the full acceptance of guilt. We expect Iran to pledge readiness to carry out a full and open investigation, to prosecute those responsible, to return the bodies of the dead, to pay compensations and to extend official apologies via diplomatic channels.

We hope further investigation will be carried out without any artificial delays and obstacles. Our 45 specialists should have full access and assistance to establish justice.”

The Ukrainian President’s statement was published after Iran’s national television had for the first time admitted on the 11th of January that the Ukrainian plane had been shot down by Iran’s air defence due to “a human error”.

In his Twitter post, the Iranian President, Hassan Rouhani, called the plane “a great tragedy and unforgivable mistake”, adding that **“Armed Forces’ internal investigation has concluded that, regrettably, missiles fired due to a human error caused the horrific crash of the Ukrainian plane and depth of 176 innocent people”**.

“Investigations continue to identify and prosecute those responsible for this great tragedy and unforgivable mistake,” said Rouhani.

Armed Forces' internal investigation has concluded that regrettably missiles fired due to human error caused the horrific crash of the Ukrainian plane & death of 176 innocent people.
Investigations continue to identify & prosecute this great tragedy & unforgivable mistake. #PS752

— Hassan Rouhani (@HassanRouhani) January 11,2020

The Iranian Foreign Minister, Mohammad Javad Zarif, also wrote on Twitter expressing profound condolences to the families of the victims of the “a human error”. Zarif stressed that it was a crisis caused by “US adventurism” that led to the disaster.

A sad day. Preliminary conclusions of internal investigation by Armed Forces:
Human error at time of crisis caused by US adventurism led to disaster.
Our profound regrets, apologies and condolences to our people, to the families of all victims, and to other affected nations.

— Javad Zarif (@JZarif) January 11,2020

The Boeing 737-800 operated by Ukraine International Airlines crashed in the early morning of 8 January shortly after taking off from Tehran, the capital of Iran. The plane was en route from Tehran to Boryspil (Kyiv). All 176 people on board were killed in the crash. 82 of them were from Iran, 63 from Canada, 11 from Ukraine, 10 from Sweden, 7 from Afghanistan and 3 from Germany.

The plane crash occurred at a time when Iran's air defence units were expecting a retaliatory US attack on their territory following Iran's missile strike on US military bases in Iraq in retaliation for the death of the influential Iranian General Qasem Soleimani who was killed on the 3rd of January at Baghdad airport upon the order of US President Donald Trump. Meanwhile, the US did not respond to Iran's missile strike on the US bases.

Exhibit M

Mir 24, *Downed by Mistake: Iran Gives Details of Ukrainian Boeing Shot Down* (11 January 2020)

(translation)

Translation

Mir 24, *Downed by Mistake: Iran Gives Details of Ukrainian Boeing Shot Down* (11 January 2020), available at: https://mir24.tv/news/16393283/sbili-po-oshibke-v-irane-detalno-obyasnili-udar-po-ukrainskomu-boeing

Downed by Mistake: Iran Gives Details of Ukrainian Boeing Shot Down

PHOTO BY: Zuma\TASS / Khalid Mohammed

The Ukrainian Boeing was downed by mistake. Three days after the air crash, Iran pleads guilty. The air defence system mistook the plane for a cruise missile. President Hassan Rouhani has promised to punish those responsible, *Mir 24*'s correspondent Anastasia Shishkina reports.

The passenger Boeing was flying over a critical military facility of the Islamic Revolutionary Guard Corps. The plane was misinterpreted for an "enemy target". The IRGC Aerospace Force Commander has admitted that. "I accept full personal responsibility for the unintentional downing of the Ukrainian plane. I heard about the heart-breaking tragedy of the Ukrainian plane when I was in the country's west following the missile attack operation against the US bases. When I made sure that has happened, I really wished I had died and wouldn't see that happening. We sacrificed our lives for the people for a lifetime, and today we trade our reputation with God Almighty," Commander Amir Ali-Hajizadeh said.

According to the general, this was an unintentional mistake. The Boeing was shot down two and a half hours after Iran launched a missile strike on two US military bases in Iraq. Tehran was awaiting a response strike from the United States. "The operator could shoot or not shoot at the target, he had only 10 seconds to decide. But he was supposed to get approval on that. This was the operator's error. In the situation, the communication system was disrupted, he could not get confirmation and made this terrible decision. The missile was fired, and the plane was shot down," he said.

President of Ukraine Vladimir Zelensky has responded to Iran's statements. On his social network page, he wrote that Kiev expects the full acceptance of guilt from Tehran. "The morning was not good today, but it brought along the truth. Even before the end of the International Commission's work, Iran has pleaded guilty to downing the Ukrainian plane. But we insist on the full acceptance of guilt... We expect Iran to pledge readiness to carry out a full and open investigation, to prosecute those responsible, to return the bodies of the dead, to pay compensations and to extend official apologies via diplomatic channels," he wrote.

The Iranian military authorities make excuses saying that they had requested air traffic be halted for the duration of the strikes on US bases in Iraq. Ukraine International Airlines argue back that there was no warning about a possible threat. "They checked in with the air-traffic control. They made a routine report about the take-off, received further flight instructions and strictly followed the controllers' instructions," said Igor Sosnovsky, Vice President of the UIA. The Boeing plane operated by Ukraine International Airlines was shot down on Wednesday a few minutes after taking off from the Tehran Airport. 176 people were killed. They were citizens of Ukraine, Iran, Canada, Sweden, Germany, and Afghanistan.

Exhibit N

Lenta.ru, *Iran Delves into Details of Its Erroneous Attack on Ukrainian Airliner* (11 January 2020)

(translation)

Translation

Lenta.ru, *Iran Delves into Details of Its Erroneous Attack on Ukrainian Airliner* (11 January 2020), available at: https://lenta.ru/news/2020/01/11/10sec/

Iran Delves into Details of Its Erroneous Attack on Ukrainian Airliner

An operator of the Iranian air defence system misidentified the Ukrainian Boeing 737-800 operated by Ukraine International Airlines (UIA) as an enemy target. IRNA reports that this is what Commander of the Aerospace Force of the Islamic Revolution Guards Corps (IRGC) Amir-Ali Hajizadeh has said.

Photo by: Social Media / Reuters

Due to disrupted communications, the "hostile object" had not been reported to the commanders, so the decision to launch an anti-aircraft missile was made independently. According to General Hajizadeh, the operator had five seconds to make a decision, and he made the wrong choice to launch a missile at the target.

Mr. Hajizadeh also said that Iranian authorities had been requested to suspend all flights during the missile attack on U.S. military bases, but the permission to do so had not been granted.

Earlier, the IRGC Airspace Force commander took responsibility for the plane crash and admitted that he wished he were dead when he learned about the accident.

The Iranian authorities admitted on the 11th of January that the Ukrainian Boeing 737-800 was shot down unintentionally. The crash was announced to have been caused by "a human factor". Iranian Foreign Minister Mohammad Javad Zarif explained that the error occurred at the time of a crisis caused by U.S. "adventurism".

The Boeing 737-800 operated by Ukraine International Airlines caught fire and crashed a few minutes after taking off from the Tehran Airport early in the morning on the 8th of January. All 176 people on board were killed, mostly citizens of Iran and Canada.

Exhibit O

Nasha Niva, *Iran confirms that the Iranian Boeing was shot down by two Tor-M1 missile systems* (21 January 2020)

(translation)

Translation

Nasha Niva, *Iran confirms that the Iranian Boeing was shot down by two Tor-M1 missile systems* (21 January 2020), available at: https://nashaniva.com/ru/articles/244732/

Iran confirms that the Iranian Boeing was shot down by two Tor-M1 missile systems

21 January 2020 / 08:48

> **The Iranian Civil Aviation Organization issued a second preliminary report on the crash of the U.S. International Airlines aircraft near Tehran**.

According to Bloomberg, the report states that the Boeing crashed after it was hit by two short-range surface-to-air missiles from the Tor-M1 antiaircraft missile system.

The report said the passenger plane took off at 6:12 a.m. local time and lost contact with air traffic controllers at an altitude of 8,100 feet (2,469 meters). At 6:15, the Boeing disappeared from the secondary surveillance radar, and at 6:18 - from the primary radar.

The plane first came into contact with the ground in a public park. The airliner then broke apart as it moved across the football field, nearby farmland, and orchards.

NN.by

Exhibit P

Lenta.ru, *Iran reveals expanded version of Ukrainian Boeing crash* (12 July 2020)

(translation)

Translation

Lenta.ru, *Iran reveals expanded version of Ukrainian Boeing crash* (12 July 2020), available at: https://lenta.ru/news/2020/07/12/iran/

Iran reveals expanded version of Ukrainian Boeing crash

12 July 2020, 00:21

The Iranian Civil Aviation Organisation has published an amended report on the investigation into the Ukrainian Boeing crash near Tehran in January. This was reported by "RIA Novosti".

According to the document, the air defence complex that shot down the Ukrainian airliner had been moved shortly before the accident, which led to "a change in the geographical position and direction of the complex". After the relocation, due to human error, the data was not reconfigured and the actions required in such situations were not carried out. This led to an error in the data when the aircraft was detected in such a way that the air defence complex recognised it as a "target moving from a south-western direction towards Tehran". In fact, the aircraft was flying northwest of Tehran, not southwest toward it.

On January 8, the level of alert of the air defence systems was changed. The military has warned civilian airspace control authorities that aircraft that have been granted permission can take off. The Ukrainian aircraft passed this procedure: the airspace control centre at 5:53 local time transmitted a request for takeoff to the coordination centre of the air defence system.

It is also noted that there was no data exchange between the air defence complex and the centre, due to which the operator identified the aircraft as an enemy target and, having received no response from the air defence coordination centre, launched the first missile at the aircraft and then the second.

In late June, Iran's prosecutor's office revealed the reasons for the destruction of the Ukrainian Boeing. Tehran pointed out that the Ukrainian airliner was shot down as a result of human error rather than an order from the country's top military authorities. For instance, the operator of the anti-aircraft missile system had information about the launched cruise missiles. At the same time, he was not able to correctly identify the location of the north - thus the aircraft that took off was under suspicion.

A Boeing 737-800 of Ukraine International Airlines (UIA) crashed after taking off from Tehran airport on the morning of 8 January. 176 people died, including citizens of Iran, Ukraine, Canada, the UK, Germany, Sweden and Afghanistan, as well as nine crew members. Iran has admitted shooting down the plane by mistake.