

# PARTS OF THE PROBLEM:

Tracing Western Tech in  
Russia's Deadliest Jets

**IPHR** International  
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The authors would also like to express sincere appreciation to **C4ADS** and other institutions and individuals whose contributions and support have greatly enhanced the quality of this research.

Cover Illustration: Maksym Filipenko.

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# Legal Disclaimer

This report identifies several companies and governments who are alleged to be involved in the manufacturing of components which have been acquired by the Russian military and used in their military hardware.

For the avoidance of doubt, we do not allege any legal wrongdoing on the part of the companies who manufacture the components and do not suggest that they have any involvement in any sanctions evasion-related activity.

Furthermore, we do not impute that the companies which make the components are involved in directly or indirectly supplying the Russian military or Russian military customers in breach of any international (or their own domestic) laws or regulations restricting or prohibiting such action. Where a link is drawn between components manufacturers and the aircraft being used in suspected war crimes, this is done solely to highlight ethical and moral concerns.

# Executive Summary

The SU-34 and SU-35 are among the most advanced Russian combat aircraft. They can strike distant targets while carrying several bombs or missiles such as KAB and UMPB D30-SN bombs and Grom-1 missiles – high-precision weapons, often used by Russia in attacks against civilian infrastructure in Ukraine.

The authors of this report analysed more than 60 cases of Russian aerial attacks on civilians and civilian objects between May 2023 and May 2024. In each case, we have geolocated the impact sites, established the weapons used and their accuracy ranges, explored the possibility of the presence of potential military objectives in the vicinity of targeted objects, and established the consequences of the attacks, including the level of damage and casualties. Where the aircraft, the weapon, and/or the intentional nature of the attack could not be ascertained with a high degree of confidence, the incident was removed from the list of analysed cases.

The ten selected attacks resulted in 26 civilian deaths and 109 injuries. In five of the ten attacks, children were among the victims. The attacks caused large-scale destruction or damage to civilian infrastructure, including at least 71 civilian houses and apartment buildings,<sup>1</sup> five schools, five medical facilities, and three energy infrastructure facilities.

The types of aircraft and weapons understood to have been used in the attacks were verified on the basis of official statements by the Ukrainian Armed Forces, the Office of the Prosecutor General of Ukraine, and local authorities. Russian sources and independent Ukrainian and international media sources were used to further corroborate the circumstances of the attacks.

The ten selected cases represent attacks with high-precision weapons targeted at civilian objects with no known military objectives not just within the accuracy range of the weapons employed but several hundred metres beyond it. Based on these findings, as well as the number of casualties, including children, and the scope of civilian infrastructure destruction, we conclude that the ten selected cases were, on the face of it, intentionally aimed at the civilian population and infrastructure, with no lawful military advantage being sought. As such, we conclude that these ten attacks amount to war crimes.

NAKO identified foreign components in Russian SU-34 and SU-35S<sup>2</sup> jets and established manufacturers of those components, their respective jurisdictions, and the components' export regulations.

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1 This is a conservative estimate based on official damage reports that specify the number of affected civilian homes. In four cases with reported damage/destruction to civilian homes, the exact number of affected objects is unknown and was not included in the estimate. Therefore, the real number of destroyed/damaged civilian homes is likely much higher.

2 SU-35S is a modification of the SU-35. The Russian Air Forces have been actively using SU-35S against Ukraine since 2014 but especially during the full-scale invasion. Russian and Ukrainian media use SU-35S and SU-35 denominations interchangeably and often colloquially refer to SU-35S as SU-35. Additionally, Russian and international sources report that as part of the Russian Aerospace Forces, SU-35 is used under the Su-35S name. Therefore, in this Report, the two names are used interchangeably. For more information, see Section IV. Reliance on Foreign Components in the Manufacture of SU-34 and SU-35S Aircraft.

The identification of components had two stages. First, the Ukrainian military and governmental investigators conducted a preliminary identification by analysing remnants of downed SU-34 and SU-35S jets and data leaked from Russia. Then, NAKO used these preliminary findings to verify that the identified components exist and are on the market by finding them in online datasheets and marketplaces (e.g., DigiKey, Mouser, and so on).

NAKO used information on the identified components from the online datasheets and marketplaces mentioned above to tie them to specific manufacturers and identify their head office jurisdictions. In several cases, the identified components were linked to regional offices of companies that produced them and not the head offices (e.g., the Swiss office of STMicroelectronics that is headquartered in the US).

Both stages of component identification (the preliminary identification by Ukrainian investigators and the consequent verification by NAKO) are reflected in Annex 1.

Finally, NAKO identified the components' Harmonised System (HS) codes, and US export control classification using the export HS codes and EAR/ECCN classifications given on the marketplaces mentioned above or the approximate export classification via the Schedule B Search Engine<sup>3</sup> and the High Priority Items List (HPIL)<sup>4</sup> developed by FinCEN and the US. Department of Commerce's Bureau of Industry and Security in coordination with the EU, Japan, and UK. Based on this list, NAKO categorised all identified components as either:

- **High Priority group**, which includes components that were (a) identified as items on the HPIL and (b) produced by the abovementioned countries.
- **Common/NA/NonCoalition group**, which includes other components that (a) are outside of HPIL regulation, (b) whose export classifications were not identified, and/or (c) were manufactured by other countries outside of HPIL regulation.

NAKO did not intend to identify only unique pieces of components. Thus, apart from unique ones, the overall list of electronics analysed contains the number of all identified components even if several components of the same type were found in the aircraft or its subsystems.

The component analysis had several limitations. First, NAKO was limited in its analysis to those components identified by the Ukrainian government and military sources. As noted above, the Ukrainian government and military experts derived information about the components from examining remnants of downed aircraft and data leaked from Russia. As for the leaked data, components may have been overgeneralised to their essential characteristics.<sup>5</sup> As for the information derived from downed jet remnants, the exact component series may not have been fully identified due to battlefield damage. In particular, the components' series may not have been fully reflected (e.g., SMW5xxxJ\*, where xxx shows a specific number of missing symbols and \* stands for any additional data that comprises an unknown number of symbols). In such cases, NAKO identified datasheet or marketplace evidence of the component's general series or a specific series and number for reference (SMW513RJT). Second, as NAKO did not have physical

3 Available at: <https://uscensus.prod.3ceonline.com>

4 **Supplemental Alert:** FinCEN and the U.S. Department of Commerce's Bureau of Industry and Security Urge Continued Vigilance for Potential Russian Export Control Evasion Attempts on the highest priority nine HS codes (May 19, 2023). <https://www.bis.doc.gov/index.php/documents/enforcement/3272-fincen-and-bis-joint-alert-final-508c/file>

5 In these cases, NAKO managed to identify only series without additional information on subtype of series.

access to the components and its verification process was based on the information provided by Ukrainian investigators, we cannot exclude the possibility of human error in the identification and/or interpretation of the components' types and origins.

It is noteworthy that the components described in this report may not necessarily come directly from the manufacturer to the final beneficiary. Such supplies, both before and after 24 February 2022, may also result from trade between intermediaries, certified resellers, and distributors. However, NAKO used customs data to understand how similar components reached Russia in 2023. In particular, we relied on Russia's customs data on incoming products from the main component manufacturers, general information on incoming products prioritised within the framework of the CHPL, key countries of trade and dispatch and alleged supplier companies, and the approximate aggregated value of contracts.

The primary dataset for analysing the supply chain was derived from customs data, which is inherently imperfect despite being the most comprehensive source available.

We aimed to collect comprehensive data, based on information as reported in available records for all seven manufacturers producing the highest number of components in 2023.<sup>6</sup> While based on more than 180,000 shipment records, this data still does not reflect all the imports of the items produced by the said manufacturers in 2023 – only the most prioritised ones.

The customs data contained geographic indicators both for the trading countries and dispatch countries. Data for supplier countries was unavailable, preventing the identification of the actual territorial origins of the alleged exporters. Given these limitations, we used the trading country indicator as a proxy. This approach identifies the country where the transaction occurred, providing insight into the counterparty in the financial transaction behind the foreign entity indicated in the data. For instance, even if a supplier might appear to be from a specific country (e.g., the name of the company contains the name of a country or a city such as China or Hong Kong), the trading country information reveals different states and companies behind the supply, highlighting these transactions' complexity and multinational nature. These complexities are reflected in Annex 2.

The dataset also provided the contract sums in US dollars (USD). However, the accuracy of these figures is questionable as the contract value can mistakenly be recorded in a different currency (e.g., Chinese Yuan) but placed in the dollar value row. This discrepancy means that the contract values reported in the study may not accurately reflect the actual monetary amounts. Consequently, any financial analysis based on these figures should be interpreted cautiously, considering the potential for significant deviations from the actual contract values.

The dataset contained numerous other issues: typographical errors, translation and transliteration errors, and situationally missing information, which limited our ability to identify importers and exporters. Thus, the dataset went through extensive data cleaning to eliminate duplicates, as well as a verification process, during which we corrected spelling mistakes in the names of importing and exporting companies. Although we did our best to eliminate duplicates and correct spelling errors there is still a possibility of duplicates or misspellings. In importer and exporter cases, approximately 200 duplicates or misspelt company names were corrected. However, the exporter data remains less reliable than the importer data due to the challenges in verification. We thus present only a fully identified list of Russian importers and their verified TINs in Annex 3.

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6 See section "2. Key Microelectronic Goods and Their Manufacturers"

After processing, correcting, and cleaning the data, we identified 1,330 Russian importers and 1,797 foreign suppliers. To reveal the biggest players in the field, Annex 2 and Annex 3 reflect only a portion of identified exporting and importing entities that have reached a 5,000 USD worth cumulative supply threshold. The entities whose supply value is below 5,000 USD were not included in the annexes.

Of the 1,119 microelectronic components in the SU-34 and SU-35S jets, 1,115 manufactured by 141 companies were identified and verified. Although based mainly in the United States, the initial manufacturers can also be traced to headquarters in Germany, Japan, Taiwan, and South Korea. The list of key manufacturers includes leading microelectronics producers, such as Analog Devices, Texas Instruments, Murata, Maxim, OnSemi, Intel, and Vicor.

These components play a vital role in the aircraft's advanced functionality, enabling precise targeting, communications, and navigation systems. The list of microelectronics includes integrated circuits (ICs), capacitors and transistors, field-programmable gate arrays (FPGAs), which are crucial for reconfigurable computing tasks, and specialised microcontrollers and digital signal processors. These semiconductors manage the aircraft's power regulation, signal processing, reconfigurable computing, and operational systems such as communications, targeting, and guidance.

Our supply chain analysis examines over 180,000 shipments of prioritised microelectronic goods produced by the leading manufacturers in 2023. The total value of these imports is approximately 805.6 million USD, with a significant share (36.3 per cent) consisting of small-value shipments under 10,000 USD. Russian importers utilise many trade routes involving countries such as China, Hong Kong, Turkey, the UAE, and several European nations.

Some Russian companies openly promote their expertise in circumventing sanctions. Our analysis also identifies foreign jurisdictions that facilitate the trade and export of these microelectronics, complicating the tracking of shipments and the enforcement of sanctions. In some instances, foreign suppliers are suspected of being shell companies with ties to the Russian military and offshore entities.

Therefore, we strongly recommend the manufacturers mentioned in this report ensure they comply with existing regulations while exporting to countries outside the Global Export Controls Coalition. For more information on enhanced due diligence and advanced know-your-customer policies, we recommend consulting the guide NAKO co-authored in partnership with The Royal United Services Institute (RUSI), the Open Society Justice Initiative (OSJI), and Heartland Initiative.<sup>7</sup>

This report's purpose is twofold. Firstly, it aims to illustrate Russia's continuing unlawful and barbaric assaults on the Ukrainian population, judged to be in conflict with international humanitarian law and punishable under international criminal law. Secondly, it aims to draw public and stakeholder attention to the fact that in the third year of Russia's full-scale war on Ukraine, western policymakers have largely failed to disrupt the Russian military's supply chains for importing components used in SU-34 and SU-35 aircraft.

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7 Managing risks created by Russia's invasion of Ukraine: enhanced due diligence and advanced know your-customer policies. RUSI, OSJI, NAKO, Heartland Initiative. <https://nako.org.ua/en/research/managing-risks-created-by-russias-invasion-of-ukraine-enhanced-due-diligence-and-advanced-know-your-customer-policies>

SU-34 and SU-35 aircraft, with advanced technical capabilities that rely on western components, kill and injure civilians and destroy civilian objects in Ukraine on an almost daily basis. As this report demonstrates, civil society organisations and research groups can – relying only on open-source intelligence – expose and trace the presence of Western components in Russian weapons systems. We call on manufacturers of these components and state stakeholders to introduce higher standards of due diligence and supply chain control to stop the flow of foreign components essential for sustaining the Russian war machine and its crimes in Ukraine.



*I went out to the garden to cover the seedlings, I was there for 10 minutes. I heard a hum, I didn't understand anything. The KAB fell 20 metres from our house and 10 metres away from me. When I came back to my senses a second later, I saw that there was nothing: the windows in the house were blown out, and the garage was destroyed. At first, I didn't even understand what fell next to me. Everything that grew nearby was cut down like with a sickle.*

*When I opened my eyes, I was scared that no one was left alive in the house.*

*The Russians bombed our house, and the next morning they wrote in the news that they had hit the military headquarters. There were no military objects near us. It's a residential neighbourhood.*

*We spent nine years building this house, with our money and energy. It's so sad Russia destroyed all this in one moment.<sup>8</sup>*

Survivor of Russian attack on Hlukhiv,  
Sumy Oblast, Ukraine

<sup>8</sup> Excerpts from an IPHR interview with the survivor of the Russian attack on a residential neighbourhood, described in this Report. The exact case is not specified for security concerns. The excerpts were modified to ensure clarity and anonymity. The context and essential details of the interview were preserved unaltered.

# I. What are IHL Violations and War Crimes?

## 1. What is an IHL violation?

International humanitarian law (IHL) is a set of rules and principles that seeks to regulate armed conflicts by imposing limits on the means and methods of warfare and protecting civilian persons and objects from attacks.<sup>9</sup> Unlike public international law, IHL is not concerned with such questions as who started an aggressive war (*jus ad bellum*).<sup>10</sup> Instead, its core principles, including the principle of humanity, seek to limit the effects of armed conflict and to prevent the infliction of suffering or destruction that is not necessary to achieving legitimate military aims (*jus in bello*).<sup>11</sup>

An IHL violation is a breach of the rules contained in the four Geneva Conventions of 1949 and their additional protocols, the Hague Conventions of 1907, and customary international law, which are the primary sources of modern IHL.<sup>12</sup> IHL applies once an armed conflict is established. The existence of an international armed conflict is established when one or more states use armed force against one or more other states<sup>13</sup> or when a state territory is actually placed under the authority of a hostile army (military occupation).<sup>14</sup>

The principle of distinction is among the most critical principles of IHL. It stipulates that civilians or civilian objects shall not be the object of attack or reprisals.<sup>15</sup> Civilians are defined negatively and include any person who is not a combatant or prisoner of war.<sup>16</sup> Likewise, civilian objects are all objects which are not military objectives,<sup>17</sup> including residential areas, dwellings, buildings, and houses.<sup>18</sup> Both deliberate<sup>19</sup> and indiscriminate<sup>20</sup> attacks against civilian objects constitute grave breaches of Additional Protocol I,<sup>21</sup> to which both Ukraine and Russia are parties.<sup>22</sup>

9 ICRC, What is international humanitarian law? 6 April 2022, p. 1, [https://www.icrc.org/sites/default/files/document/file\\_list/what\\_is\\_ihl.pdf](https://www.icrc.org/sites/default/files/document/file_list/what_is_ihl.pdf).

10 ICRC, What is international humanitarian law? 6 April 2022, p.1, [https://www.icrc.org/sites/default/files/document/file\\_list/what\\_is\\_ihl.pdf](https://www.icrc.org/sites/default/files/document/file_list/what_is_ihl.pdf).

11 ICRC, How Does Law Protect in War, Online Casebook, [https://casebook.icrc.org/a\\_to\\_z/glossary/fundamental-principles-ihl](https://casebook.icrc.org/a_to_z/glossary/fundamental-principles-ihl).

12 ICRC, International humanitarian law treaties, 3 March 2022, <https://blogs.icrc.org/cross-files/international-humanitarian-law-treaties-essential-documents/>.

13 ICRC, What is international humanitarian law? 6 April 2022, p. 3-4, [https://www.icrc.org/sites/default/files/document/file\\_list/what\\_is\\_ihl.pdf](https://www.icrc.org/sites/default/files/document/file_list/what_is_ihl.pdf).

14 The Hague Convention of 1907, Article 42, <https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-iv-1907?activeTab=default>.

15 Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts of 8 June 1977 ('Additional Protocol I'), Articles 48, 51, 52, 57; ICRC, How Does Law Protect in War, Online Casebook, <https://casebook.icrc.org/glossary/fundamental-principles-ihl>.

16 Additional Protocol I, Article 50.

17 Additional Protocol I, Article 52(1).

18 ICRC's study on customary international humanitarian law ('Customary IHL'), Rule 9, online version available at: <https://ihl-databases.icrc.org/en/customary-ihl>.

19 An attack is qualified as deliberate when the civilians or civilian objects are the direct object of the attack. See: Additional Protocol I, Article 51(2); Article 52(1); Article 85(3)(a).

20 Indiscriminate attacks are attacks that strike military objectives and civilian objects without distinction. See: Additional Protocol I, Article 51(4)(a-c); Article 85(3)(b).

21 Additional Protocol I, Article 85(3)(a-c).

22 ICRC, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/state-parties>.

## 2. What is a war crime?

The core principle behind the concept of war crimes is that individuals can be held criminally responsible for committing IHL violations. Not all IHL violations constitute war crimes, only those that are grave in nature. A serious IHL violation that amounts to a war crime must include one (or several) of the following types of conduct: (i) endangering protected persons;<sup>23</sup> (ii) endangering protected objects;<sup>24</sup> or (iii) breaching important values without physically endangering persons or objects.<sup>25</sup>

The most comprehensive list of war crimes is currently contained in Article 8 of the Rome Statute of the International Criminal Court.<sup>26</sup> War crimes, together with crimes against humanity, genocide, and the crime of aggression, represent the most serious crimes of international concern.<sup>27</sup> The four core international crimes<sup>28</sup> are considered to be of such gravity that they have no statute of limitation under international criminal law,<sup>29</sup> meaning that those responsible can be brought to justice no matter how much time has passed since they committed the crime.

The ICC Statute criminalises unlawful attacks against protected persons and objects as war crimes. The Statute prohibits deliberate or indiscriminate attacks against civilians<sup>30</sup> or civilian objects;<sup>31</sup> or directing attacks that might cause excessive harm to civilians, civilian objects or the environment.<sup>32</sup> Attacks on medical, religious, cultural, and educational objects constitute a separate crime given their special status in IHL.<sup>33</sup> Attacks on critical infrastructure (CI) objects, depending on their exact role and use at the time of the incident, may qualify either as a deliberate attack against a civilian object or an attack causing disproportionate civilian harm.<sup>34</sup>

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23 E.g., willful killings (ICC Statute, Article 8(2)(a)(i)), torture (ICC Statute, Article 8(2)(a)(ii)), killing of combatants rendered hors de combat ('incapable of fighting') (ICC Statute, Article 8(2)(b)(vi)). See also ICRC, How Does Law Protect in War, Hors de combat, [https://casebook.icrc.org/a\\_to\\_z/glossary/hors-de-combat](https://casebook.icrc.org/a_to_z/glossary/hors-de-combat).

24 E.g., intentionally attacking civilian objects (ICC Statute, Article 8(2)(b)(ii)) or extensive destruction of property (ICC Statute, Article 8(2)(a)(iv)).

25 E.g., declaring that no quarter will be given, i.e., ordering that there shall be no survivors (ICC Statute, Article 8(2)(b)(xii)), subjecting persons to humiliating treatment (ICC Statute, Article 8(2)(b)(xxi)), violating the right to a fair trial (ICC Statute, Article 8(2)(a)(vi)). See also: ICRC, How Does Law Protect in War, Quarter, available at: [https://casebook.icrc.org/a\\_to\\_z/glossary/quarter-denial](https://casebook.icrc.org/a_to_z/glossary/quarter-denial).

26 ICC, Rome Statute of the International Criminal Court, <https://www.icc-cpi.int/sites/default/files/RS-Eng.pdf>.

27 ICC Statute, Article 1; ICC, About the Court, <https://www.icc-cpi.int/about/the-court>.

28 European Union Agency for Criminal Justice Cooperation, Core international crimes, <https://www.eurojust.europa.eu/crime-types-and-cases/crime-types/core-international-crimes>.

29 ICC Statute, Article 29; See also: Convention on the Non-Applicability of Statutory Limitations to War Crimes and Crimes Against Humanity, <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-non-applicability-statutory-limitations-war-crimes>.

30 ICC Statute, Article 8(2)(b)(i).

31 ICC Statute, Article 8(2)(b)(ii).

32 ICC Statute, Article 8(2)(b)(iv).

33 ICC Statute, Article 8(2)(b)(ix).

34 ICC Statute, Article 8(2)(b)(ii) or Article 8(2)(b)(iv) respectively.

### 3. Who can prosecute IHL violations and war crimes?

IHL is universal: all parties fighting in a conflict are obliged to respect it.<sup>35</sup> The implementation of IHL is primarily the responsibility of states. They must respect and ensure respect for these rules in all circumstances.<sup>36</sup> All signatories to the Geneva Conventions also have the responsibility to prevent and punish IHL violations. IHL requires states to investigate serious violations by their nationals or on their territory and, if appropriate, prosecute the suspects.<sup>37</sup> For this purpose, the legal framework for criminal prosecution of IHL violations must be implemented into a state's domestic criminal law. Legislation in some states also allows the prosecution of war crimes irrespective of the nationality of the offender or the place where the violations were committed (universal jurisdiction).<sup>38</sup>

International criminal justice mechanisms complement domestic trials to ensure that war crimes do not go unpunished.<sup>39</sup> Over the past 30 years, the international community stepped in on several occasions to bridge the impunity gap by creating international *ad hoc* tribunals (ICTY and ICTR),<sup>40</sup> hybrid tribunals (ECCC, SCSL, STL)<sup>41</sup> and the International Criminal Court (ICC).<sup>42</sup> The latter is a permanent international judicial body with jurisdiction over any core crime committed on the territory of its 124 member states or by their nationals.<sup>43</sup> The court may also exercise jurisdiction over the nationals of non-member states when a situation is referred to the Office of the Prosecutor (OTP) by the UN Security Council or a country submits a declaration accepting the exercise of the ICC's jurisdiction *ad hoc*.<sup>44</sup>

### 4. The ICC investigation in Ukraine

Ukraine recognised the jurisdiction of the ICC over international crimes committed on its territory from 21 November 2013 by submitting two declarations in 2014 and 2015.<sup>45</sup> Subsequently, the OTP conducted a seven-year-long preliminary examination and opened an investigation into the situation in Ukraine in 2022.<sup>46</sup> On 17 March 2023, the OTP issued arrest warrants for Russian President Vladimir Putin and Russian Commissioner for Children's Rights Maria Lvova-Belova for

35 Customary IHL, Rule 139; Common Article 3 to the Four 1949 Geneva Conventions; ICRC, Frequently asked questions on the rules of war, 7 March 2022, <https://www.icrc.org/en/document/ihl-rules-of-war-faq-geneva-conventions>.

36 Article 1 common to the four Geneva Conventions; ICRC, What is international humanitarian law? 6 April 2022, p.6, [https://www.icrc.org/sites/default/files/document/file\\_list/what\\_is\\_ihl.pdf](https://www.icrc.org/sites/default/files/document/file_list/what_is_ihl.pdf).

37 Geneva Convention (III), Article 129; Geneva Convention (IV), Article 146; Additional Protocol I, Article 88.

38 Trial International, Universal Jurisdiction, <https://trialinternational.org/topics-post/universal-jurisdiction/>.

39 ICRC, Frequently asked questions on the rules of war, Who is responsible for responding to IHL violations? 7 March 2022, <https://www.icrc.org/en/document/ihl-rules-of-war-faq-geneva-conventions>.

40 International Criminal Tribunal for the former Yugoslavia (ICTY), <https://www.icty.org/>; International Criminal Tribunal for Rwanda (ICTR), <https://unictr.irmct.org/>.

41 UN, International and Hybrid Criminal Courts and Tribunals, <https://www.un.org/ruleoflaw/thematic-areas/international-law-courts-tribunals/international-hybrid-criminal-courts-tribunals/>.

42 The International Criminal Court was created by the adoption of the Rome Statute on 17 July 1998, which entered into force on 1 July 2002. <https://www.icc-cpi.int/>.

43 ICC, The States Parties to the Rome Statute, <https://asp.icc-cpi.int/states-parties>.

44 ICC Statute, Articles 12(3), 13(b).

45 Verkhovna Rada of Ukraine, Declaration to the ICC, <https://zakon.rada.gov.ua/laws/show/145-19#Text>.

46 ICC, Statement of ICC Prosecutor, Karim A.A. Khan QC, on the Situation in Ukraine: "I have decided to proceed with opening an investigation," 22 February 2022, <https://www.icc-cpi.int/news/statement-icc-prosecutor-karim-aa-khan-qc-situation-ukraine-i-have-decided-proceed-opening>.

their alleged responsibility for the war crime of unlawful deportation and transfer of children from occupied areas of Ukraine to the Russian Federation.<sup>47</sup>

On 5 March 2024, the ICC issued two arrest warrants against Sergei Kobylash, the commander of Long-Range Aviation in the Russian Aerospace Force, as well as Viktor Sokolov, the Commander of the Russian Black Sea Fleet for their alleged responsibility for the war crimes of directing attacks at civilian objects, causing excessive incidental harm to civilians or damage to civilian objects and the crime against humanity of inhumane acts.<sup>48</sup> On 24 June 2024, the ICC issued two more arrest warrants against top-level Russian officials – Sergei Shoigu, Minister of Defence of the Russian Federation at the time of the alleged conduct, and Valery Gerasimov, Chief of the General Staff of the Armed Forces and First Deputy Minister of Defence of the Russian Federation at the time of the alleged conduct.<sup>49</sup> All four suspects are accused of leading a campaign of missile strikes against numerous electric power plants and substations in Ukraine.<sup>50</sup> The ICC can try these and other suspected perpetrators and, if found guilty, sentence them to up to life imprisonment.<sup>51</sup> It is noteworthy however, that none of the six suspects have been apprehended by the time of this Report’s publication. Moreover, in September 2024, Mongolia, an ICC state party, refused to arrest Putin when he arrived in Ulaanbaatar with a state visit.<sup>52</sup> According to international experts, there is little to suggest any of the six Russian officials wanted by the ICC will be arrested any time soon.<sup>53</sup> Regrettably, the arrest warrants had also little if any deterring effect on the Russian military and civilian top-level officials, which continue to order, execute and oversee relentless Russian attacks against Ukrainian civilian infrastructure.<sup>54</sup> This state of affairs leaves international lawyers and human rights defenders once again in search for alternative ways to put an end to Russian atrocity crimes in Ukraine. Therefore, this Report seeks to analyze the role Western-manufactured components play in enabling Russia to continue its unlawful attacks. The Report speaks directly to relevant component manufacturers and state stakeholders, urging them to close existing loopholes by introducing higher standards of due diligence and supply chain control.

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- 47 ICC Statute, Article 8(2)(a)(vii) and Article 8(2)(b)(viii). ICC, Situation in Ukraine, [https://www.icc-cpi.int/situations/ukraine#:~:text=Jurisdiction%20in%20the%20general%20situation,\(3\)%20of%20the%20statute](https://www.icc-cpi.int/situations/ukraine#:~:text=Jurisdiction%20in%20the%20general%20situation,(3)%20of%20the%20statute); ICC, Situation in Ukraine: ICC judges issue arrest warrants against Vladimir Vladimirovich Putin and Maria Alekseyevna Lvova-Belova, 17 March 2023, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-vladimir-vladimirovich-putin-and>.
- 48 ICC, Situation in Ukraine: ICC judges issue arrest warrants against Sergei Ivanovich Kobylash and Viktor Nikolayevich Sokolov, 5 March 2024, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-sergei-ivanovich-kobylash-and>.
- 49 ICC, Situation in Ukraine: Situation in Ukraine: ICC judges issue arrest warrants against Sergei Kuzhugetovich Shoigu and Valery Vasilyevich Gerasimov, 25 June 2024, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-sergei-kuzhugetovich-shoigu-and>.
- 50 ICC, Situation in Ukraine: ICC judges issue arrest warrants against Sergei Ivanovich Kobylash and Viktor Nikolayevich Sokolov, 5 March 2024, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-sergei-ivanovich-kobylash-and>; ICC, Situation in Ukraine: Situation in Ukraine: ICC judges issue arrest warrants against Sergei Kuzhugetovich Shoigu and Valery Vasilyevich Gerasimov, 25 June 2024, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-sergei-kuzhugetovich-shoigu-and>.
- 51 ICC, Understanding the International Criminal Court, Factsheet, <https://www.icc-cpi.int/sites/default/files/2023-03/understanding-the-icc.pdf>.
- 52 Politico, Sorry not sorry, says Mongolia after failure to arrest Putin, <https://www.politico.eu/article/mongolia-failure-arrest-vladimir-putin-international-warrant-international-criminal-court/>; *Archived*.
- 53 Just Security, How will the ICC’s Arrest Warrant for Putin Play Out in Practice? <https://www.justsecurity.org/85597/how-will-icc-arrest-warrant-for-putin-play-out/>; *Archived*; CSIS, The ICC Wants Putin. Now What? <https://www.csis.org/analysis/icc-wants-putin-now-what>, *Archived*; *Opinio Juris*, What Does Mongolia’s Failure to Arrest Putin Mean? Integrity and the War on International Law, <https://opiniojuris.org/2024/09/19/what-does-mongolias-failure-to-arrest-putin-mean-integrity-and-the-war-on-international-law/>, *Archived*.
- 54 UN News, Ukraine in grip of third winter of escalating Russian attacks, <https://news.un.org/en/story/2025/01/1158816>; *Archived*.

## II. Suspected War Crime Case Studies

### Case № 1

**DATE AND TIME:** 25 MAY 2024, 16:00 EEST (UTC+3)

**LOCATION:** KHARKIV, KHARKIV OBLAST

**CONSEQUENCES:** 19 CIVILIANS KILLED; 54 CIVILIANS INJURED; A HYPERMARKET DESTROYED

**WEAPON USED:** UMPB D30-SN

**AIRCRAFT USED:** SU-34/SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS

On 25 May 2024, at 16:00, Russian forces attacked a busy hypermarket in Kharkiv,<sup>55</sup> resulting in scores of civilian casualties and massive damage to the hypermarket.<sup>56</sup>

Two UMPB D30-SN bombs struck the hardware and gardening departments of the Epicentr hypermarket in a densely populated residential neighbourhood of Kharkiv.<sup>57</sup> One more unexploded UMPB D30-SN<sup>58</sup> bomb dated '07.05.24' landed 80m from the hypermarket.<sup>59</sup> According to local authorities, up to 200 visitors were inside the hypermarket during the attack.<sup>60</sup> According to the head of the National Police in Kharkiv Oblast, the constant presence of Russian reconnaissance UAVs over Kharkiv proves that the Russian forces were aware of the civilian nature of the building and the fact that civilians were inside.<sup>61</sup>

55 50.02855102390478, 36.33468273650559.

56 Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16387](https://t.me/prokuratura_kharkiv/16387); Archived.

57 Росіяни бачили, що в «Епіцентрі» були цивільні — начальник поліції Харківщини, Media Port, Youtube video: [https://www.youtube.com/watch?v=d1ZpaC\\_X4Fg](https://www.youtube.com/watch?v=d1ZpaC_X4Fg); Archived.

58 UMPB, UMPB D30 and UMPB D30-SN all refer to the same weapon, considering the interchangeable use of these names in different sources. See, for example: Suspline Kharkiv, УМПБ: що це за авіабомба та чому росіяни почали застосовувати її? Пояснення експерта Defense Express, <https://suspilne.media/kharkiv/716242-umpb-so-ce-za-aviabomba-ta-comu-rosiani-pocali-zastosovuvati-ii-pasnenna-eksperta-defense-express/>; Archived; The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; Foundation for Defense of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb, [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); Archived; RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived.

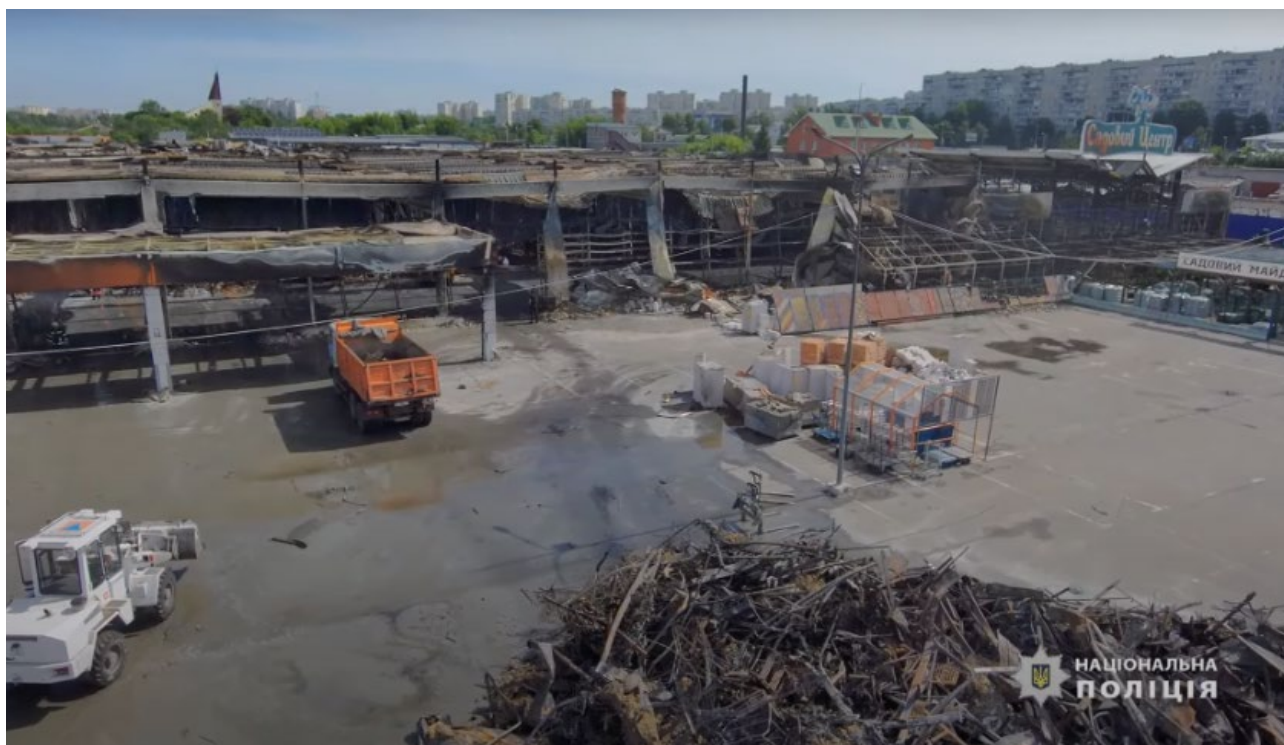
59 Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16460](https://t.me/prokuratura_kharkiv/16460); Archived.

60 Official Telegram Channel of President of Ukraine Volodymyr Zelenskyy, Telegram post: [https://t.me/V\\_Zelenskiy\\_official/10473](https://t.me/V_Zelenskiy_official/10473); Archived.

61 Media Port, Росіяни бачили, що в «Епіцентрі» були цивільні — начальник поліції Харківщини, YouTube video: [https://www.youtube.com/watch?v=d1ZpaC\\_X4Fg](https://www.youtube.com/watch?v=d1ZpaC_X4Fg); Archived.

As a result of the attack, 19 civilians, including six women and two children, were killed, while a further 54 civilians were injured.<sup>62</sup> A fire caused by the strikes engulfed 13,000m<sup>2</sup> of the hypermarket building<sup>63</sup> and took 16 hours to extinguish.<sup>64</sup> As a result of the strikes and the fire, the hypermarket was destroyed.<sup>65</sup> Numerous CCTV videos from inside and outside of the hypermarket show that there were no military targets present inside or near the impact site.<sup>66</sup> The UN Humanitarian Coordinator in Ukraine strongly condemned the strike.<sup>67</sup>

The head of the National Police in Kharkiv Oblast stated that a SU-34 conducted the attack with UMPB D30 bombs.<sup>68</sup>



*A screenshot taken from drone footage of the destroyed hypermarket. Source: **National Police of Ukraine in Kharkiv Oblast**.<sup>69</sup>*

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- 62 Oleg Sinegubov, Head of the Kharkiv Regional State Administration, Telegram post: <https://t.me/synegubov/9805>; *Archived*.
- 63 Ihor Klymenko, Minister of Internal Affairs of Ukraine, Telegram Post: [https://t.me/Klymenko\\_MVS/933](https://t.me/Klymenko_MVS/933); *Archived*.
- 64 Ihor Klymenko, Minister of Internal Affairs of Ukraine, Telegram Post: [https://t.me/Klymenko\\_MVS/933](https://t.me/Klymenko_MVS/933); *Archived*.
- 65 Епіцентр К, Facebook post: [https://www.facebook.com/epicentrkua/posts/pfbid0P4sLuH93BZzgYehHmndVEGYM9BGxPsTLsPVgRz47EXvZUguk7jL2Tze83sHTwFNzl?locale=uk\\_UA](https://www.facebook.com/epicentrkua/posts/pfbid0P4sLuH93BZzgYehHmndVEGYM9BGxPsTLsPVgRz47EXvZUguk7jL2Tze83sHTwFNzl?locale=uk_UA); *Archived*.
- 66 Де у Харкові, Telegram post: [https://t.me/place\\_kharkiv/74781](https://t.me/place_kharkiv/74781); *Archived*; Де у Харкові, Telegram post: [https://t.me/place\\_kharkiv/74784](https://t.me/place_kharkiv/74784); *Archived*; Media Port, Росіяни бачили, що в «Епіцентрі» були цивільні — начальник поліції Харківщини, YouTube video: [https://www.youtube.com/watch?v=d1ZpaC\\_X4Fg](https://www.youtube.com/watch?v=d1ZpaC_X4Fg); *Archived*.
- 67 United Nations, Russian attack on Kharkiv shopping centre 'utterly unacceptable', says senior UN official. <https://news.un.org/en/story/2024/05/1150241>; *Archived*.
- 68 Media Port, Росіяни бачили, що в «Епіцентрі» були цивільні — начальник поліції Харківщини, YouTube video: [https://www.youtube.com/watch?v=d1ZpaC\\_X4Fg](https://www.youtube.com/watch?v=d1ZpaC_X4Fg); *Archived*.
- 69 National Police of Ukraine in Kharkiv Oblast, YouTube video: [https://www.youtube.com/watch?v=\\_KXyMko9L0w](https://www.youtube.com/watch?v=_KXyMko9L0w); *Archived*.



*An unexploded UMPB D30 bomb discovered by the police near the hypermarket. Source: Office of the Prosecutor of Kharkiv Oblast.<sup>70</sup>*

## Case № 2

**DATE AND TIME:** 22 MAY 2024, 13:45 EEST

**LOCATION:** KHARKIV, KHARKIV OBLAST

**CONSEQUENCES:** 12 CIVILIANS INJURED; VARIOUS CIVILIAN OBJECTS DAMAGED AND DESTROYED

**WEAPON USED:** UMPB D30-SN

**AIRCRAFT USED:** SU-34

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS

On 22 May 2024, at 13:45, Russian forces attacked civilian infrastructure in the Shevchenkivskyi and Kholodnohirskyi districts of Kharkiv with two bombs.<sup>71</sup>

In Shevchenkivskyi District, a UMPB D30-SN bomb landed near the entrance of a café.<sup>72</sup> The blast damaged residential buildings, a car wash, civilian cars, and nearby shops.<sup>73</sup> As a result of the

<sup>70</sup> Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16460](https://t.me/prokuratura_kharkiv/16460); Archived.

<sup>71</sup> Office of the Prosecutor of Kharkiv Oblast, Telegram post: <https://t.me/syngubov/9618>; Archived.

<sup>72</sup> 50.068635000509055, 36.2124686617358.

<sup>73</sup> Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16258](https://t.me/prokuratura_kharkiv/16258); Archived.

attack, 12 civilians were injured, including a 16-year-old boy.<sup>74</sup> Four of the 12 injured civilians were hospitalised.<sup>75</sup> Among them, a trolleybus driver who was near the impact site at the time of the attack was seriously injured and his leg had to be amputated due to the injury.<sup>76</sup> In Kholodnohirskyi District, a UMPB D30-SN destroyed the premises of a local business that had been closed since the beginning of the Russian full-scale invasion.<sup>77</sup> A 42-year-old woman working near the site of the strike suffered an acute stress reaction.<sup>78</sup> No publicly available information indicates the presence of Ukrainian military objectives at the impact sites or within the bombs' striking range.<sup>79</sup>



Source: *Suspilne Kharkiv*.<sup>80</sup>

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- 74 Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16268](https://t.me/prokuratura_kharkiv/16268); *Archived*.
- 75 Oleg Sinegubov, Head of the Kharkiv Regional State Administration, Telegram post: <https://t.me/synegubov/9621>; *Archived*.
- 76 Igor Terekhov, Mayor of Kharkiv, Telegram post: [https://t.me/ihor\\_terekhov/1371](https://t.me/ihor_terekhov/1371); *Archived*; 24 канал, Водію тролейбуса, якого поранило в Харкові, ампутували ногу: що відомо про постраждалого: [https://24tv.ua/vistup-zelenskogo-frantsiyi-7-chervnya-golovni-tezi\\_n2571241](https://24tv.ua/vistup-zelenskogo-frantsiyi-7-chervnya-golovni-tezi_n2571241); *Archived*.
- 77 50.01415415427483, 36.182331551893675; Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16258](https://t.me/prokuratura_kharkiv/16258); *Archived*; Oleg Sinegubov, Head of the Kharkiv Regional State Administration, Telegram post: <https://t.me/synegubov/9622>; *Archived*.
- 78 Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16258](https://t.me/prokuratura_kharkiv/16258); *Archived*.
- 79 For more detailed analysis, see Section III. Legal Assessment of Case Studies.
- 80 Suspilne Kharkiv, Авіаудар по Харкову 22 травня: 12 людей постраждали, водій тролейбуса втратив ногу: [https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm\\_source=copylink&utm\\_medium=ps](https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm_source=copylink&utm_medium=ps); *Archived*.



*The ruins of the café where the bomb landed. Source: [Suspilne Kharkiv](#).<sup>81</sup>*



*A trolleybus, the driver of which sustained severe injuries. Source: [Suspilne Kharkiv](#).<sup>82</sup>*

81 Suspilne Kharkiv, Авіаудар по Харкову 22 травня: 12 людей постраждали, водій тролейбуса втратив ногу: [https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm\\_source=copylink&utm\\_medium=ps](https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm_source=copylink&utm_medium=ps); Archived.

82 Суспільне Харків, Авіаудар по Харкову 22 травня: 12 людей постраждали, водій тролейбуса втратив ногу: [https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm\\_source=copylink&utm\\_medium=ps](https://suspilne.media/kharkiv/749393-u-harkovi-prolunali-vibuhi-22-travna-pisla-poperedzenna-pro-mozlivist-aviaudariv/?utm_source=copylink&utm_medium=ps); Archived.

The Kharkiv Oblast Prosecutor's Office announced that Russian forces launched two UMPB D30-SN bombs from Belgorod Oblast but did not specify the jet model that conducted the attack.<sup>83</sup> There is a reasonable basis to believe that these bombs were launched by a Russian SU-34 or SU-35 jet. On 30 March 2024, a spokesperson for the Ukrainian Air Force stated that UMPB D30 bombs are typically launched from SU-34 and SU-35 jets.<sup>84</sup> On 29 May 2024, he further stated that, in the days prior, several SU-34 and SU-35 aircraft had been flying in a 'carousel' pattern and launching bombs at Kharkiv.<sup>85</sup> According to Ukrainian and foreign weapons experts, UMPB D30-SN bombs are most likely launched exclusively from SU-34 and SU-35 jets.<sup>86</sup>

The use of UMPB D30-SN by Russian SU-34 jets is further corroborated by Russian sources.<sup>87</sup> On the day of the attack, at 20:40, a pro-Russian blogger published a post that included three photos of two UMPB D30-SN bombs on a SU-34 aircraft, along with a video from inside the cockpit showing the launch of what appeared to be three UMPB D30-SN bombs.<sup>88</sup> The post alleged that it contains a 'unique and exclusive video of the use of the newest Russian UMPB bombs' that a SU-34 aircrafts drops on Kharkiv.<sup>89</sup>

The content of the blogger's post strongly suggests a connection to the attack described above.<sup>90</sup> One image from the post features a UMPB D30-SN attached to a jet, with the inscription 'Greetings from Belgorod! 22.05.24'. As noted above, the Ukrainian Prosecutor's Office confirmed that the attack originated from Belgorod Oblast.<sup>91</sup> According to open sources, this type of bomb was not used for any other attacks on 22 May 2024, making it highly likely that the bombs featured in the

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83 Office of the Prosecutor of Kharkiv Oblast, Telegram post: [https://t.me/prokuratura\\_kharkiv/16256](https://t.me/prokuratura_kharkiv/16256); *Archived*.

84 ТСН, Новини за 30 березня 2024 року | Новини України, YouTube video, (02:40:41-02:41:11): <https://www.youtube.com/live/LNdLKTm0wCo?t=9641s>; *Archived*.

85 5 канал, ЩО?!! РОСІЯ запусає ХОЛОСТІ ЛІТАКИ А чьо случілась? - Ілля ЄВЛАШ, YouTube video, (04:30-05:18): <https://www.youtube.com/watch?v=Rr96w5byPIY>; *Archived*.

86 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine: <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; *Archived*; Foundations for Defence of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb: [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); *Archived*; Defense Express, РФ заявляє про створення таємничого УМБП під літаки і "Торнадо-С": [https://defence-ua.com/weapon\\_and\\_tech/rf\\_zajavljae\\_pro\\_stvorennja\\_tajemnichogo\\_umpb\\_pid\\_litaki\\_i\\_tornado\\_s-14687.html](https://defence-ua.com/weapon_and_tech/rf_zajavljae_pro_stvorennja_tajemnichogo_umpb_pid_litaki_i_tornado_s-14687.html); *Archived*.

87 See: Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; *Archived*; Aviahub, Telegram post. <https://t.me/Aviahub34/2755>; *Archived*;

Photos offer insights on Russia's new UMPB D-30SN glide bomb, Foundation for Defense of Democracies. [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); *Archived*.

88 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; *Archived*.

89 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; *Archived*.

90 While two bombs from the video are likely to be the ones used in the attacks on the Shevchenkivskyi and Kholodnohirskyi districts, there is no information available about the third bomb. Given that these bombs are launched from Russian territory, are still under development, and are reportedly prone to failure, it can be presumed that the third bomb malfunctioned and did not reach Ukrainian territory. See: Foundation for Defense of Democracies, 'Photos offer insights on Russia's new UMPB D-30SN glide bomb', available at: [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); *Archived*;

Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, The Warzone. [https://t.me/prokuratura\\_kharkiv/16256](https://t.me/prokuratura_kharkiv/16256); *Archived*;

Що таке УМБП-30Д: Як армія Путіна перетворила Харків на випробувальний полігон, Dumka Media. <https://dumka.media/ukr/war/1714982693-shcho-take-umpb-30d-yak-armiya-putina-peretvorila-harkiv-na-viprobuvalniy-poligon>; *Archived*.

91 Office of the Prosecutor of Kharkiv Oblast, Telegram post. [https://t.me/prokuratura\\_kharkiv/16256](https://t.me/prokuratura_kharkiv/16256); *Archived*.

post were indeed used to attack Kharkiv on that day.<sup>92</sup> Another image from the post shows another UMPB D30-SN attached to a jet with an inscription urging people to subscribe to the channel of the pro-Russian blogger Kirill Fedorov.<sup>93</sup> This suggests the blogger's connection to the military and the authenticity of his photos and videos. In the post, Fedorov explicitly claims that UMPB D30-SN are used to attack Kharkiv.



*An inscription on a UMPB D30-SN bomb urging viewers to subscribe to the channel of the pro-Russian blogger Kirill Fedorov. Source: [Telegram post by Kirill Fedorov / War History Weapons](#).<sup>94</sup>*

- 92 RUSSIAN OFFENSIVE CAMPAIGN ASSESSMENT, MAY 22, 2024, Institute for the Study of War. <https://www.understandingwar.org/backgrounder/russian-offensive-campaign-assessment-may-22-2024>, Archived; Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, RBC-Ukraine. <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived.
- 93 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; Archived.
- 94 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; Archived.



The inscription 'Greetings from Belgorod! 22.05.24' seen on a UMPB D30-SN bomb. Source: *Telegram post by Kirill Fedorov / War History Weapons.*<sup>95</sup>



A screenshot from 00:06 minutes into a video showing the cockpit of a jet and the launching of the bombs. Source: *Telegram post by Kirill Fedorov / War History Weapons.*<sup>96</sup>

95 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; Archived.

96 Kirill Fedorov / War History Weapons, Telegram post. <https://t.me/warhistoryalconafter/165139>; Archived.

## Case № 3

**DATE AND TIME:** 27 MARCH 2024, 15:54 EET (UTC+2)

**LOCATION:** KHARKIV, KHARKIV OBLAST

**CONSEQUENCES:** ONE CIVILIAN KILLED; 19 CIVILIANS INJURED; CIVILIAN HOMES, A SCHOOL, AND A PRESCHOOL DAMAGED

**WEAPON USED:** UMPB D30-SN

**AIRCRAFT USED:** SU-34/SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS; ATTACKING SPECIALLY PROTECTED OBJECTS

On 27 March 2024, at 15:54,<sup>97</sup> Russian forces attacked a residential area in the Shevchenkovskyi district of Kharkiv,<sup>98</sup> striking the space between two apartment buildings.<sup>99</sup>

The attack damaged two five-storey apartment buildings, one four-storey apartment building,<sup>100</sup> a school, and a preschool.<sup>101</sup> No publicly available information indicates the presence of Ukrainian military objectives at the impact sites or within the bombs' striking range.<sup>102</sup>

One civilian man was killed and 19 other civilians were injured.<sup>103</sup> Four children (aged three months, two years, nine years, and 13 years) and two men had to be hospitalised.<sup>104</sup> Five women received medical treatment on the spot.<sup>105</sup>

Kharkiv Regional Prosecutor's Office stated that a Russian fighter jet from Belgorod Oblast had conducted an airstrike with a UMPB D30.<sup>106</sup> The head of the Kharkiv Military-Civilian Administration stated that it was the first time that Russia had shelled Kharkiv with this type of weapon, reportedly

97 Олег Синегубов – про ситуацію на Харківщині станом на 28 березня, Kharkiv Regional Military Administration. <https://kharkivoda.gov.ua/news/126167>; Archived; Igor Terekhov, Mayor of Kharkiv, Telegram post. [https://t.me/ihor\\_terekhov/1147](https://t.me/ihor_terekhov/1147); Archived.

98 50.03314236185636, 36.21789096231347.

99 У Харкові один чоловік загинув, 19 громадян поранені - серед них четверо дітей: поліція допомагає людям та документує наслідки авіаудару росіян, Національна поліція України. <https://www.npu.gov.ua/news/u-kharkovi-odyn-cholovik-zahynuv-19-hromadian-poraneni-politsiia-dokumentuie-naslidky-aviaudaru-rosiian>; Archived.

100 Олег Синегубов – про ситуацію на Харківщині станом на 28 березня, Kharkiv Regional Military Administration. <https://kharkivoda.gov.ua/news/126167>; Archived.

101 Office of the Prosecutor of Kharkiv Oblast, Telegram post. [https://t.me/prokuratura\\_kharkiv/14865](https://t.me/prokuratura_kharkiv/14865); Archived.

102 For more detailed analysis, see Section III. Legal Assessment of Case Studies.

103 У Харкові один чоловік загинув, 19 громадян поранені - серед них четверо дітей: поліція допомагає людям та документує наслідки авіаудару росіян, Національна поліція України. <https://www.npu.gov.ua/news/u-kharkovi-odyn-cholovik-zahynuv-19-hromadian-poraneni-politsiia-dokumentuie-naslidky-aviaudaru-rosiian>; Archived.

104 Потерпілих внаслідок ворожого удару по Харкову забезпечуємо тимчасовим житлом та комплексною допомогою – Олег Синегубов, Kharkiv Regional Military Administration. <https://kharkivoda.gov.ua/news/126166>; Archived.

105 Потерпілих внаслідок ворожого удару по Харкову забезпечуємо тимчасовим житлом та комплексною допомогою – Олег Синегубов, Kharkiv Regional Military Administration. <https://kharkivoda.gov.ua/news/126166>; Archived.

106 Office of the Prosecutor of Kharkiv Oblast, Telegram post. [https://t.me/prokuratura\\_kharkiv/14866](https://t.me/prokuratura_kharkiv/14866); Archived; Office of the Prosecutor of Kharkiv Oblast, Telegram post. [https://t.me/prokuratura\\_kharkiv/14865](https://t.me/prokuratura_kharkiv/14865); Archived.

from a distance of 90km.<sup>107</sup> As noted above, there is a reasonable basis to believe that UMPB D30-SN bombs are launched by Russian SU-34 and SU-35 jets.<sup>108</sup>



*A photo of a heavily damaged apartment building in Kharkiv. Source: **Office of the Prosecutor of Kharkiv Oblast.**<sup>109</sup>*

107 «Для удару по Харкову окупанти вперше застосували боєприпаси такого типу», - Олег Синегубов, Kharkiv Regional Military Administration. <https://kharkivoda.gov.ua/news/126161>; *Archived*.

108 See Case № 2.

109 Office of the Prosecutor of Kharkiv Oblast, Telegram post. [https://t.me/prokuratura\\_kharkiv/14866](https://t.me/prokuratura_kharkiv/14866); *Archived*.



Screenshots from drone footage captured by Kharkiv Regional Prosecutor's Office showing the damage. Source: *Office of the Prosecutor of Kharkiv Oblast*.<sup>110</sup>

110 Office of the Prosecutor of Kharkiv Oblast, Youtube video. <https://www.youtube.com/watch?v=XJqpkAQ5gQU>.

## Case № 4

**DATE AND TIME:** 2 FEBRUARY 2024, 13:45 EET

**LOCATION:** KHERSON, KHERSON OBLAST

**CONSEQUENCES:** TWO CIVILIANS INJURED; A THREE-STOREY APARTMENT BUILDING DESTROYED AND SURROUNDING APARTMENT BUILDINGS DAMAGED

**WEAPON USED:** GROM-E1

**AIRCRAFT USED:** SU-34

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS

On 2 February 2024, at 13:45, Russian forces attacked Kherson with Grom-E1 missiles.<sup>111</sup>

The attack partly destroyed a three-storey apartment building and badly damaged other surrounding apartment buildings.<sup>112</sup> Two civilians – a 73-year-old woman and a 17-year-old boy – were hospitalised with injuries.<sup>113</sup> No publicly available information indicates the presence of Ukrainian military objectives at the impact sites or within the missiles' striking range.<sup>114</sup>

The Office of the Prosecutor General of Ukraine stated that a Russian SU-34 aircraft conducted the attack.<sup>115</sup>

111 Окупанти обстріляли Херсон новітніми високоточними ракетами "Гром-1", Militarnyi. <https://mil.in.ua/uk/news/okupanty-obstrilyaly-herson-novitnimy-vysokotochnymy-raketamy-grom-1/>; Archived; Roman Mrochko, Head of Kherson Local Military Administration, Telegram post. [https://t.me/roman\\_mrochko/5733](https://t.me/roman_mrochko/5733); Archived.

112 32 Rishelievskya str, 46.635715622650785, 32.60947938452532; Roman Mrochko, Head of Kherson Local Military Administration, Telegram post. [https://t.me/roman\\_mrochko/5733](https://t.me/roman_mrochko/5733); Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post. <https://t.me/olexandrprokudin/2691>; Archived.

113 Office of the Prosecutor General, Telegram post. [https://t.me/pgo\\_gov\\_ua/21335](https://t.me/pgo_gov_ua/21335); Archived; Roman Mrochko, Head of Kherson Local Military Administration, Telegram post. [https://t.me/roman\\_mrochko/5733](https://t.me/roman_mrochko/5733); Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post. <https://t.me/olexandrprokudin/2691>; Archived.

114 For more detailed analysis, see Section III. Legal Assessment of Case Studies.

115 Office of the Prosecutor General, Telegram post. [https://t.me/pgo\\_gov\\_ua/21335](https://t.me/pgo_gov_ua/21335); Archived.



# ХЕРСОНСЬКА

МІСЬКА ВІЙСЬКОВА АДМІНІСТРАЦІЯ



*A partially destroyed three-storey apartment building. Source: [Head of the Kherson City Military Administration](#).<sup>116</sup>*

<sup>116</sup> Roman Mrochko, Head of the Kherson City Military Administration, Telegram post. [https://t.me/roman\\_mrochko/5733](https://t.me/roman_mrochko/5733); Archived.



*The street on which the attack took place. Source: [Head of the Kherson City Military Administration](#).<sup>117</sup>*

<sup>117</sup> Roman Mrochko, Head of the Kherson City Military Administration, Telegram post. [https://t.me/roman\\_mrochko/5733](https://t.me/roman_mrochko/5733); [Archived](#).



The remnants of a Grom-1E from the impact site. Source: *Militarnyi*.<sup>118</sup>

## Case № 5

**DATE AND TIME:** 18 OCTOBER 2023, 01:15 EET

**LOCATION:** NOVOBERYSLAV, KHERSON OBLAST

**CONSEQUENCES:** ONE CIVILIAN KILLED; ONE CIVILIAN INJURED; 14 CIVILIAN HOUSES AND AN EDUCATIONAL INSTITUTION DAMAGED

**WEAPON USED:** KAB

**AIRCRAFT USED:** SU-34

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS; ATTACKING SPECIALLY PROTECTED OBJECTS

On 18 October 2023, at 01:15, Russian forces launched six KAB bombs on the village of Novoberyslav in Kherson Oblast.<sup>119</sup>

The National Police in Kherson Oblast reported damage to a local educational institution and at least 14 civilian houses.<sup>120</sup> A 63-year-old civilian man died instantly from injuries sustained when one of the bombs struck the yard of his house.<sup>121</sup>

118 Russian Invaders Launch Grom-1 Missiles on Kherson, Militarnyi. <https://mil.in.ua/uk/news/okupanty-obstrilyaly-herson-novitnimy-vysokotochnymy-raketamy-grom-1/>; Archived.

119 Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2741>; Archived; Oleksiy Kuleba, Telegram post. <https://t.me/OleksiyKuleba/3766>; Archived; 46.857635596878254, 33.49331525467; 46.85707632339527, 33.493567851488976; 46.85804758448139, 33.49424266632063.

120 Police of Kherson Oblast, Telegram post. <https://t.me/khersonpolice/4237>; Archived.

121 Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2741>; Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post. <https://t.me/olexandrprokudin/1682>; Archived; Police of Kherson Oblast, Telegram post. <https://t.me/khersonpolice/4237>; Archived.

There is a reasonable basis to believe that the attack was intentional and not accidental. No publicly available information indicates the presence of Ukrainian military objects in Novoberyslav. Though it is located on the left bank of the Dnipro river, the right bank of which is occupied by Russian forces, no active military operations were underway at the time of the attack.<sup>122</sup> Furthermore, the use of high-precision bombs such as KABs suggests that civilian objects were the intended target, as argued in more detail in Section III. Legal Assessment of Case Studies.

Kherson Military-Civilian Administration reported that Russian forces carried out the strike with six KABs launched by three SU-34 aircraft.<sup>123</sup>



*A damaged educational institution in Novoberyslav. Source: Office of the Prosecutor of Kherson Oblast.<sup>124</sup>*



*A damaged civilian house in Novoberyslav. Source: Kherson Oblast Police.<sup>125</sup>*

122 DeepStateMAP, update of 18 October 2023, Novoberyslav, <https://deepstatemap.live/en/#11/46.8290000/33.4777000>; ISW, The Russian Offensive Campaign Assessment, October 18, 2023, <https://understandingwar.org/backgroundunder/russian-offensive-campaign-assessment-october-18-2023>; Archived.

123 Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post. <https://t.me/olexandrprokudin/1682>; Archived.

124 Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2741>; Archived.

125 Police of Kherson Oblast, Telegram post. <https://t.me/khersonpolice/4237>; Archived.



*The corpse of a civilian killed in Novoberyslav. Source: [Office of the Prosecutor of Kherson Oblast](#).<sup>126</sup>*

## Case № 6

**DATE & TIME:** 5 OCTOBER 2023, 12:40 EEST

**LOCATION:** BERYSLAV, KHERSON OBLAST

**CONSEQUENCES:** THREE CIVILIANS INJURED; A HOSPITAL AND AN EMERGENCY MEDICAL STATION PARTIALLY DESTROYED AND NEARBY APARTMENT BUILDINGS DAMAGED

**WEAPON USED:** KAB

**AIRCRAFT USED:** SU-34/SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING SPECIALLY PROTECTED OBJECTS

On 5 October 2023, around 12:40, Russian forces attacked Beryslav, Kherson Oblast.<sup>127</sup> The attack targeted a hospital and an emergency medical station.<sup>128</sup>

<sup>126</sup> Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2741>; [Archived](#).

<sup>127</sup> Office of the Prosecutor of Kherson Oblast, Telegram Post. <https://t.me/phogovua/2646>. [Archived](#); Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post <https://t.me/olexandrprokudin/1568>. [Archived](#); Russia attacks hospital in Beryslav in Kherson Oblast, injures 2, Kyiv Independent. <https://kyivindependent.com/russia-attacks-hospital-in-beryslav-kherson-oblast-injuring-2/>. [Archived](#).

<sup>128</sup> Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>. [Archived](#).

Three medical workers were injured.<sup>129</sup> An ambulance driver sustained shrapnel wounds to the head, a craniocerebral injury, and a broken leg.<sup>130</sup> A paramedic sustained an explosive injury, as well as a contusion and a shrapnel wound to his left knee.<sup>131</sup> A doctor was also wounded.<sup>132</sup>

The attack damaged the Beryslav Central District Hospital,<sup>133</sup> completely destroying its fourth floor and heavily damaging the third floor.<sup>134</sup> Two ambulances,<sup>135</sup> as well as apartment buildings, located approximately 250-300m from the hospital were also damaged.<sup>136</sup> According to *Medecins sans Frontières Ukraine*, this hospital was the closest medical facility for tens of thousands of people.<sup>137</sup> As a result of the attack, the hospital was forced to cease functioning.<sup>138</sup>

There is a reasonable basis to believe that the attack was intentional and not accidental. No publicly available information indicates the presence of Ukrainian military objects in Beryslav. Though it is located on the left bank of the Dnipro River, the right bank of which is occupied by Russian forces, no active military operations were underway at the time of the attack.<sup>139</sup> Furthermore, the use of high-precision bombs such as KABs suggests that civilian objects were the intended target, as argued in more detail in Section III. Legal Assessment of Case Studies.

- 129 Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Office of the Prosecutor General, Telegram Post. <https://t.me/phogovua/2646>; Archived; Police of Kherson Oblast Telegram Post. <https://t.me/khersonpolice/3890>; Archived.
- 130 Ministry of Health of Ukraine, Telegram post. <https://t.me/mozofficial/3657>; Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Office of the Prosecutor General, Telegram Post. <https://t.me/phogovua/2646>; Archived; Херсонська ОДА (ОБА), Telegram Post. <https://t.me/khersonskaODA/10903>; Archived.
- 131 The Ministry of Health of Ukraine, Telegram Post. <https://t.me/mozofficial/3657>; Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Office of the Prosecutor General, Telegram Post. <https://t.me/phogovua/2646>; Archived; Херсонська ОДА (ОБА), Telegram Post. <https://t.me/khersonskaODA/10903>; Archived; Russia attacks hospital in Beryslav in Kherson Oblast, injures 2, Kyiv Independent. <https://kyivindependent.com/russia-attacks-hospital-in-beryslav-kherson-oblast-injuring-2/>; Archived.
- 132 Police of Kherson Oblast, Telegram Post. <https://t.me/khersonpolice/3890>; Archived.
- 133 Address: Heroiv Ukrainy (ex-name: Pershoho Travnia str) 124; GPS coordinates: 46.83035250277248, 33.40022016826761; Office of the Prosecutor General, Telegram Post. <https://t.me/phogovua/2646>; Archived; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Police of Kherson Oblast, Telegram Post. <https://t.me/khersonpolice/3890>; Archived.
- 134 Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Police of Kherson Oblast, Telegram Post. <https://t.me/khersonpolice/3890>; Archived; The Ministry of Health of Ukraine, Telegram Post. <https://t.me/mozofficial/3657>; Archived; Russia attacks hospital in Beryslav in Kherson Oblast, injures 2, Kyiv Independent. <https://kyivindependent.com/russia-attacks-hospital-in-beryslav-kherson-oblast-injuring-2/>; Archived; Medecins Sans Frontieres (MSF) Ukraine, X post; [https://x.com/MSF\\_Ukraine/status/1710311986121097461?mx=2](https://x.com/MSF_Ukraine/status/1710311986121097461?mx=2); Archived.
- 135 Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram Post. <https://t.me/olexandrprokudin/1568>; Archived; Херсонська ОДА (ОБА), Telegram Post. <https://t.me/khersonskaODA/10903>; Archived; Police of Kherson Oblast, Telegram Post. <https://t.me/khersonpolice/3890>; Archived; The Ministry of Health of Ukraine, Telegram Post. <https://t.me/mozofficial/3657>; Archived.
- 136 Address: Hubaidulina str 67, 46.82831581784321, 33.398089042286294; Police of Kherson Oblast, Telegram Post. <https://t.me/khersonpolice/3890>; Archived.
- 137 Medecins Sans Frontieres (MSF) Ukraine, X post. Medecins Sans Frontieres (MSF) Ukraine, X post; [https://x.com/MSF\\_Ukraine/status/1710311986121097461?mx=2](https://x.com/MSF_Ukraine/status/1710311986121097461?mx=2); Archived.
- 138 Medecins Sans Frontieres (MSF) Ukraine, X post. Medecins Sans Frontieres (MSF) Ukraine, X post; [https://x.com/MSF\\_Ukraine/status/1710311986121097461?mx=2](https://x.com/MSF_Ukraine/status/1710311986121097461?mx=2); Archived; MOST, Після російського авіаудару лікарня у Бериславі на Херсонщині припиняє свою роботу, 07 October 2023. <https://most.ks.ua/news/url/pislja-rosijskogo-aviaudaru-likarnja-u-berislavi-na-hersonschini-pripinjaє-svoju-robotu/>; Archived.
- 139 The situation at the time of attack in Case № 6: DeepStateMAP, update of 5 October 2023, Beryslav, <https://deepstatemap.live/en?#12/46.8192000/33.4992000>; ISW, The Russian Offensive Campaign Assessment, October 5, 2023, <https://www.understandingwar.org/backgroundunder/russian-offensive-campaign-assessment-october-5>; Archived.

According to the head of Kherson Regional Military Administration, the attack was conducted with KAB bombs<sup>140</sup> launched by SU-34 or SU-35 aircraft.<sup>141</sup>



*One of the damaged hospital buildings. Source: [Ministry of Health of Ukraine](#).<sup>142</sup>*



*One of the damaged hospital buildings. Source: [Prosecutor's Office of Kherson Oblast](#).<sup>143</sup>*

140 Monitor, Telegram Post. [https://t.me/war\\_monitor/10843](https://t.me/war_monitor/10843); *Archived*; Nikolaevsky Vanyok, Telegram Post. [https://t.me/vanek\\_nikolaev/18232](https://t.me/vanek_nikolaev/18232); *Archived*.

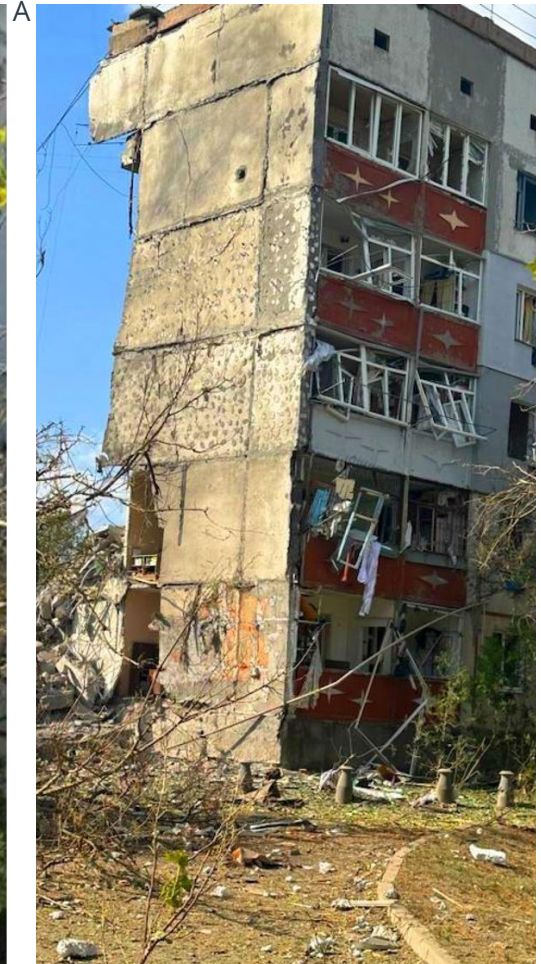
141 This assumption follows from a series of posts in a Telegram thread from the head of the Kherson Regional Military Administration. See: Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post, available at: <https://t.me/olexandrprokudin/1565>; *Archived*; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post, available at: <https://t.me/olexandrprokudin/1567>; *Archived*; Prokudin Oleksandr - Official page, Head of Kherson Oblast Military Civil Administration, Telegram post, available at: <https://t.me/olexandrprokudin/1568>; *Archived*; the type of the aircraft is also confirmed by a monitoring channel. See: Nikolaevsky Vanyok, Telegram post, available at: [https://t.me/vanek\\_nikolaev/18232](https://t.me/vanek_nikolaev/18232); *Archived*.

142 The Ministry of Health of Ukraine, Telegram post. <https://t.me/mozofficial/3657>; *Archived*.

143 Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/olexandrprokudin/1568>; *Archived*.



One of the damaged ambulances. Source: *Ministry of Health of Ukraine*.<sup>144</sup>



Damaged residential building close to the hospital. Source: *Kherson Oblast Police*.<sup>145</sup>

144 The Ministry of Health of Ukraine, Telegram post. <https://t.me/mozofficial/3657>; Archived.

145 Kherson Oblast Police, Telegram post. <https://t.me/khersonpolice/3890>; Archived.

## Case № 7

**DATE AND TIME:** 25 SEPTEMBER 2023, 10:00 EEST

**LOCATION:** BERYSLAV, KHERSON OBLAST

**CONSEQUENCES:** THREE CIVILIANS KILLED; ONE CIVILIAN INJURED; A LOCAL MUNICIPAL BUILDING DAMAGED AND A CIVILIAN HOUSE DESTROYED

**WEAPON USED:** KAB

**AIRCRAFT USED:** SU-34

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS

On 25 September 2023, around 10:00, the Russian forces attacked Beryslav, Kherson Oblast with four KABs.<sup>146</sup> At least two bombs struck civilian objects in a residential area.<sup>147</sup>

The attack killed three civilians and injured one more, resulting in the latter's hospitalisation.<sup>148</sup> During the attack, two of the killed civilians, a 73-year-old man and a 70-year-old woman, were at the local Housing and Maintenance Office, where they came to receive government assistance for damage caused to their home.<sup>149</sup> The third victim, a 55-year-old civilian man, also sustained severe injuries and later died in hospital.<sup>150</sup> The attack damaged the Housing and Maintenance Office and destroyed a civilian house.<sup>151</sup> Nearby civilian vehicles also sustained extensive damage.<sup>152</sup>

146 GPS coordinates: 46.833854397489425, 33.40138140526614. Office of the Prosecutor General, Telegram post. [https://t.me/pgo\\_gov\\_ua/17018](https://t.me/pgo_gov_ua/17018); *Archived*; Kherson Regional Prosecutor's Office, Telegram Post. <https://t.me/phogovua/2545>; *Archived*; Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram Post. <https://t.me/olexandrprokudin/1408>; *Archived*; September 25, 2023 - Russia-Ukraine news, CNN. [https://edition.cnn.com/europe/live-news/russia-ukraine-war-news-09-25-23/h\\_453379f02edbc1d130d2f2fa0fc2c813](https://edition.cnn.com/europe/live-news/russia-ukraine-war-news-09-25-23/h_453379f02edbc1d130d2f2fa0fc2c813); *Archived*; Russians drop bombs on Beryslav in morning, killing 1 and wounding another, people searched for under rubble | Ukrainska Pravda. <https://www.pravda.com.ua/eng/news/2023/09/25/7421286/>; *Archived*.

147 Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram Post. <https://t.me/olexandrprokudin/1408>; *Archived*.

148 Information on one killed and several injured persons. Office of the Prosecutor General, Telegram post. [https://t.me/pgo\\_gov\\_ua/17018](https://t.me/pgo_gov_ua/17018); *Archived*; Oleksandr Prokudin, The Head of the Kherson Regional Military Administration, Telegram post. <https://t.me/olexandrprokudin/1408>; *Archived*, was later updated as two killed and two injured (Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/olexandrprokudin/1409>; *Archived*; Kherson Regional Prosecutor's Office, Telegram Post. <https://t.me/phogovua/2547>; *Archived*), and finally as three killed and one injured (Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/olexandrprokudin/1416>; *Archived*).

149 September 25, 2023 - Russia-Ukraine news, CNN. [https://edition.cnn.com/europe/live-news/russia-ukraine-war-news-09-25-23/h\\_453379f02edbc1d130d2f2fa0fc2c813](https://edition.cnn.com/europe/live-news/russia-ukraine-war-news-09-25-23/h_453379f02edbc1d130d2f2fa0fc2c813); *Archived*; Litvinov, Beryslav District State Administration, Telegram Post. <https://t.me/beryslavrda/5687>; *Archived*.

150 Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/olexandrprokudin/1409>; *Archived*; Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/olexandrprokudin/1416>; *Archived*.

151 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgo\\_gov\\_ua/17018](https://t.me/pgo_gov_ua/17018); *Archived*; Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post, <https://t.me/olexandrprokudin/1408>; *Archived*; Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2545>; *Archived*.

152 Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2547>; *Archived*; Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/phogovua/2547>; *Archived*.

As noted above, despite its location close to the occupation line, there is a reasonable basis to believe that civilian objects in Novoberyslav were targeted intentionally. For detailed analysis, see Section III. Legal Assessment of Case Studies.

According to the Office of the Prosecutor General of Ukraine and the Kherson Prosecutor's Office, a SU-34 aircraft likely launched the KABs.<sup>153</sup>



*Buildings and vehicles destroyed by the attack. Source: [Head of Kherson Regional Military Administration](#).<sup>154</sup>*



*Buildings and vehicles destroyed by the attack. Source: [Head of the Kherson Regional Military Administration](#).<sup>155</sup>*

153 Office of the Prosecutor General, Telegram post. [https://t.me/pgov\\_ua/17018](https://t.me/pgov_ua/17018); [Archived](#); Office of the Prosecutor of Kherson Oblast, Telegram post. <https://t.me/phogovua/2545>; [Archived](#).

154 Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/oleksandrprokudin/1410>; [Archived](#).

155 Oleksandr Prokudin, The head of the Kherson regional military administration, Telegram post. <https://t.me/oleksandrprokudin/1410>; [Archived](#).



*Buildings destroyed as a result of the attack. Source: [Prosecutor's Office of Kherson Oblast](#).<sup>156</sup>*

## Case № 8

**DATE AND TIME:** 11 MAY 2023, 21:35 EEST

**LOCATION:** ARKHYPIVKA, CHERNIHIV OBLAST

**CONSEQUENCES:** TWO CIVILIANS INJURED; THREE CIVILIAN HOUSES DESTROYED; A GAS DISTRIBUTION NETWORK DAMAGED

**WEAPON USED:** FAB-500/KAB-500

**AIRCRAFT USED:** SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS

On 11 May 2023, at 21:35, Russian forces attacked the village of Arkhy pivka in Chernihiv Oblast with two aerial bombs.<sup>157</sup>

<sup>156</sup> Office of the Prosecutor of Kherson Oblast. Telegram post. <https://t.me/phogovua/2547>; *Archived*.

<sup>157</sup> Operational Command North (ОК Північ), Telegram post. [https://t.me/ok\\_pivnich1/2544](https://t.me/ok_pivnich1/2544); *Archived*; Інформація про надзвичайні ситуації та основні небезпечні події, які зареєстровані на території області за період з 8:00 10 травня по 8:00 11 травня 2023 року, Department of Civil Protection and Defense Work, Chernihiv Oblast Administration. <https://dcz.cg.gov.ua/index.php?id=474428&tp=0>; *Archived*.

As a result of the attack, two civilian women were injured.<sup>158</sup> A fire broke out in three civilian houses, destroying them all.<sup>159</sup> The bomb strike also damaged gas distribution networks in the area.<sup>160</sup> No publicly available information indicates the presence of Ukrainian military objectives at the impact sites or within the bombs' striking range.<sup>161</sup>

Operational Command North of the Ukrainian Armed Forces reported that Russian forces carried out the strike with two FAB-500 bombs launched by an SU-35 aircraft.<sup>162</sup><sup>163</sup> The Department of Civil Protection and Defence Work of Chernihiv Regional Administration also confirmed the use of a SU-35 but stated that it launched KAB-500 bombs.<sup>164</sup>



*Civilian houses which caught fire as a result of the attack. Source: [Suspilne Chernihiv](https://suspilne.media/chernihiv/473632-poraneni-dvi-zinki-tri-budinki-zniseni-polumyam-rosiani-skinuli-bombu-na-semenivsku-gromadu-so-na-vernigivsinii/).<sup>165</sup>*

- 158 Office of the Prosecutor of Chernihiv Oblast, Facebook post. <https://www.facebook.com/prokuraturachernihiv/posts/251522567394166>; Archived; Поранені дві жінки, три будинки знищені полум'ям: росіяни скинули бомбу на Семенівську громаду, що на Чернігівщині, Suspilne Chernihiv. <https://suspilne.media/chernihiv/473632-poraneni-dvi-zinki-tri-budinki-zniseni-polumam-rosiani-skinuli-bombu-na-semenivsku-gromadu-so-na-vernigivsinii/>; Archived.
- 159 52.234098212381845, 32.838047166417574; Office of the Prosecutor of Chernihiv Oblast, Facebook post. <https://www.facebook.com/prokuraturachernihiv/posts/251522567394166>; Archived; Поранені дві жінки, три будинки знищені полум'ям: росіяни скинули бомбу на Семенівську громаду, що на Чернігівщині, Suspilne Chernihiv. <https://suspilne.media/chernihiv/473632-poraneni-dvi-zinki-tri-budinki-zniseni-polumam-rosiani-skinuli-bombu-na-semenivsku-gromadu-so-na-vernigivsinii/>; Archived.
- 160 Chernihiv branch of "Gazmerezhi", Telegram post. <https://t.me/chernihivgas/111>; Archived.
- 161 For more detailed analysis, see Section III. Legal Assessment of Case Studies.
- 162 Operational Command North, Telegram post. [https://t.me/ok\\_pivnich1/2544](https://t.me/ok_pivnich1/2544); Archived; Суспільне Чернірів, Telegram post. <https://t.me/suspilnechernihiv/18492>; Archived.
- 163 Russian and Ukrainian media and military sources colloquially refer to SU-35S as SU-35. Since SU-35S is the only SU-35 model exploited by the Russian Air Force as of 2024, it is presumed, that Ukrainian authorities' reports of SU-35 attacks are in fact SU-35S attacks. This inference is further backed by the fact that numerous SU-35S planes were shut down by Ukrainian Air Defense. See: Military Balance 2024, IISS, p. 200; Sukhoi Massacre: Ukraine Has Shot Down Six Of Russia's Best Jets In Just Three Days, Forbes, <https://www.forbes.com/sites/davidaxe/2024/02/19/sukhoi-massacre-ukraine-has-shot-down-six-of-russias-best-jets-in-just-three-days/>. For a more detailed analysis, see: Section IV. Reliance on Foreign Components in the Manufacture of SU-34 and SU-35S Aircraft.
- 164 Інформація про надзвичайні ситуації та основні небезпечні події, які зареєстровані на території області за період з 8:00 10 травня по 8:00 11 травня 2023 року, Department of Civil Protection and Defense Work, Chernihiv Oblast Administration. <https://dcz.cg.gov.ua/index.php?id=474428&tp=0>; Archived.
- 165 Поранені дві жінки, три будинки знищені полум'ям: росіяни скинули бомбу на Семенівську громаду, що на Чернігівщині, Suspilne Chernihiv. <https://suspilne.media/chernihiv/473632-poraneni-dvi-zinki-tri-budinki-zniseni-polumam-rosiani-skinuli-bombu-na-semenivsku-gromadu-so-na-vernigivsinii/>; Archived.



*The remains of a burnt-out house after a fire caused by a bomb strike. A worker can be seen repairing a gas distribution network. Source: [Chernihiv branch of the State Natural Gas Supply Network](#).<sup>166</sup>*

## Case № 9

**DATE AND TIME:** 5 MAY 2023, 22:13 - 22:20 EEST

**LOCATION:** HLUKHIV, SUMY OBLAST

**CONSEQUENCES:** FIVE CIVILIANS INJURED; TWO CIVILIAN HOUSES DESTROYED AND DOZENS MORE DAMAGED; A SCHOOL DAMAGED; POWER LINES AND GAS DISTRIBUTION NETWORKS DESTROYED

**WEAPON USED:** KAB

**AIRCRAFT USED:** SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS; ATTACKING SPECIALLY PROTECTED OBJECTS

<sup>166</sup> Chernihiv branch of "Gazmerezhi", Telegram post. Chernihiv branch of "Gazmerezhi", Telegram post. <https://t.me/chernihivgas/111>; Archived.

On 5 May 2023, between 22:13 and 22:20, Russian forces attacked Hlukhiv, Sumy Oblast<sup>167</sup> with two guided aerial bombs.<sup>168</sup> Drone footage from the attack site shows that it was conducted in a densely populated area.<sup>169</sup>

The attack injured five civilians, among them a 12-year-old girl.<sup>170</sup> Four people were hospitalised, including the child.<sup>171</sup> As a result of the attack, two civilian houses were destroyed and between 34 and 50 more were damaged.<sup>172</sup> The blast also damaged the doors and windows of Hlukhiv School № 5.<sup>173</sup> Local power lines<sup>174</sup> and 30m of gas distribution networks were destroyed, leaving more than 100 households without gas.<sup>175</sup> To contain the consequences of the attack, dozens of Ukrainian State Emergency Service workers<sup>176</sup> had to dismantle 12 damaged civilian houses and cover the roofs of four houses, as well as 79 windows from 21 houses, with temporary isolating materials.<sup>177</sup>

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- 167 GPS coordinates: Berehova street 40 (51.691676369296296, 33.895328850064764); Kindergarten & School No 5, Pokrovska str, 63 (51.69248522737182, 33.895674391885294). See location of the attack also here: <https://liveuamap.com/en/2023/6-may-as-a-result-of-the-air-strike-on-hlukhiv-about-50-buildings>; Archived.
- 168 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); Archived; Operational Command North, Telegram post. [https://t.me/ok\\_pivnich1/2365](https://t.me/ok_pivnich1/2365); Archived; Sumy Regional Military Administration, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); Archived; Russia attacks Sumy Oblast with guided aerial bombs late on May 5, injuring 5, The Kyiv Independent, <https://kyivindependent.com/russia-attacks-sumy-oblast-with-guided-aerial-bombs-late-on-may-5-injuring-5/>; Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/11703>; Archived.
- 169 Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/11701>; Archived; Що розповідають глухівчани про авіаудар по оселям мешканців, Suspilne, Youtube video. <https://www.youtube.com/watch?v=V4FctGWCK34>.
- 170 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); Archived; Sumy Regional Military Administration, Telegram post. [https://t.me/Sumy\\_news\\_ODA/15957](https://t.me/Sumy_news_ODA/15957); Archived; Operational Command North, Telegram post. [https://t.me/ok\\_pivnich1/2365](https://t.me/ok_pivnich1/2365); Archived; Внаслідок авіаудару по Глухову знищені два будинки, без газопостачання лишилися понад 100 домоволодінь, Suspilne. <https://suspilne.media/sumy/467714-vnaslidok-aviaudaru-po-gluhovu-zniseni-dva-budinki-bez-gazopostacanna-lisilisa-ponad-100-domovolodin/>; Archived; This video (Що розповідають глухівчани про авіаудар по оселям мешканців, Suspilne, Youtube video. <https://www.youtube.com/watch?v=V4FctGWCK34>) features an injured civilian, as well as residents of the damaged property.
- 171 Sumy Regional Military Administration, Telegram post. [https://t.me/Sumy\\_news\\_ODA/15957](https://t.me/Sumy_news_ODA/15957); Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/11694>; Archived; Внаслідок авіаудару по Глухову знищені два будинки, без газопостачання лишилися понад 100 домоволодінь, Suspilne. <https://suspilne.media/sumy/467714-vnaslidok-aviaudaru-po-gluhovu-zniseni-dva-budinki-bez-gazopostacanna-lisilisa-ponad-100-domovolodin/>; Archived; Російська авіація завдала удару по Глухову на Сумщині, п'ятеро поранених, Ukrinform. <https://www.ukrinform.ua/rubric-regions/3705510-rosijska-aviacia-zavdala-udaru-po-gluhovu-na-sumsini-patero-poranenih.html>; Archived.
- 172 Operational Command North, Telegram post. [https://t.me/ok\\_pivnich1/2365](https://t.me/ok_pivnich1/2365); Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/11694>; Archived; Внаслідок авіаудару по Глухову знищені два будинки, без газопостачання лишилися понад 100 домоволодінь, Suspilne. <https://suspilne.media/sumy/467714-vnaslidok-aviaudaru-po-gluhovu-zniseni-dva-budinki-bez-gazopostacanna-lisilisa-ponad-100-domovolodin/>; Archived; Russia attacks Sumy Oblast with guided aerial bombs late on May 5, injuring 5, The Kyiv Independent. <https://kyivindependent.com/russia-attacks-sumy-oblast-with-guided-aerial-bombs-late-on-may-5-injuring-5/>; Archived.
- 173 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/11694>; Archived; Внаслідок авіаудару по Глухову знищені два будинки, без газопостачання лишилися понад 100 домоволодінь, Suspilne. <https://suspilne.media/sumy/467714-vnaslidok-aviaudaru-po-gluhovu-zniseni-dva-budinki-bez-gazopostacanna-lisilisa-ponad-100-domovolodin/>; Archived; У Глухові авіаударом зруйнувало школу та садочок, Youtube video. <https://www.youtube.com/watch?v=pEBd19Wder8>; російська авіація завдала удару по Глухову на Сумщині, п'ятеро поранених, Ukrinform. <https://www.ukrinform.ua/rubric-regions/3705510-rosijska-aviacia-zavdala-udaru-po-gluhovu-na-sumsini-patero-poranenih.html>; Archived.
- 174 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); Archived; Sumy Regional Military Administration, Telegram post. [https://t.me/Sumy\\_news\\_ODA/15957](https://t.me/Sumy_news_ODA/15957); Archived.
- 175 Внаслідок авіаудару по Глухову знищені два будинки, без газопостачання лишилися понад 100 домоволодінь, Suspilne. <https://suspilne.media/sumy/467714-vnaslidok-aviaudaru-po-gluhovu-zniseni-dva-budinki-bez-gazopostacanna-lisilisa-ponad-100-domovolodin/>; Archived.
- 176 Rescuers of Sumy region, Telegram post. [https://t.me/dsns\\_sumy/9161](https://t.me/dsns_sumy/9161); Archived.
- 177 Rescuers of Sumy region, Telegram post. [https://t.me/dsns\\_sumy/9161](https://t.me/dsns_sumy/9161); Archived; Що розповідають глухівчани про авіаудар по оселям мешканців, Suspilne, Youtube video. <https://www.youtube.com/watch?v=V4FctGWCK34>.

No publicly available information indicates the presence of Ukrainian military objectives at or near the impact sites.

Sumy Regional Military Administration and Operational Command North of the Ukrainian Armed Forces confirmed that Russian forces carried out the strike with two KAB bombs launched by a SU-35 aircraft from Russian territory.<sup>178</sup>



*The impact site of the attack. Source: [Office of the Prosecutor General of Ukraine](#).<sup>179</sup>*



*The impact of the attack on Hlukhiv School № 5. Source: [Suspline Sumy](#).<sup>180</sup>*

178 Sumy Regional Military Administration, Telegram post. [https://t.me/Sumy\\_news\\_ODA/15957](https://t.me/Sumy_news_ODA/15957); *Archived*; Operational Command North, Telegram post. [https://t.me/ok\\_pivnich1/2365](https://t.me/ok_pivnich1/2365); *Archived*; Russia attacks Sumy Oblast with guided aerial bombs late on May 5, injuring 5. The Kyiv Independent. <https://kyivindependent.com/russia-attacks-sumy-oblast-with-guided-aerial-bombs-late-on-may-5-injuring-5/>; *Archived*;

179 Office of the Prosecutor General of Ukraine, Telegram post. [https://t.me/pgov\\_gov\\_ua/11891](https://t.me/pgov_gov_ua/11891); *Archived*.

180 Suspline Sumy, Telegram post. <https://t.me/suspilnesumy/11703>; *Archived*.



*An aerial view of the attack's impact. Source: [Suspline Sumy](https://t.me/susplinesumy).<sup>181</sup>*

181 Suspline Sumy, Telegram post. <https://t.me/susplinesumy/11703>; Archived.

## Case № 10

**DATE AND TIME:** 24 MARCH 2023, AFTER 00:00 EET

**LOCATION:** BILOPILLIA, SUMY OBLAST

**CONSEQUENCES:** TWO CIVILIANS KILLED; TEN CIVILIANS INJURED; NUMEROUS CIVILIAN OBJECTS DESTROYED AND DAMAGED, INCLUDING A SCHOOL

**WEAPON USED:** KAB

**AIRCRAFT USED:** SU-35

**TENTATIVE LEGAL QUALIFICATION:** ATTACKING CIVILIANS; ATTACKING CIVILIAN OBJECTS; ATTACKING SPECIALLY PROTECTED OBJECTS

On the night of 24 March 2023, Russian forces conducted a massive attack against Sumy Oblast with various air- and ground-launched weapons.<sup>182</sup> In Bilopillia, Sumy Oblast, Russian forces dropped multiple aerial bombs and conducted more than 100 strikes with Grad multiple-launch rocket systems and other artillery.<sup>183</sup> The attack targeted multiple civilian objects, including the building of the city administration, a police department, a school, a nursery school, a dormitory, apartment buildings, and civilian houses.<sup>184</sup>

182 Dmytro Zhyvtskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvtskyi/7438>; *Archived*; Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; *Archived*; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); *Archived*; Двоє загинилих, 10 травмованих, зруйновані будівлі: що відомо про обстріл Сумського району 24 березня, Suspilne Media. <https://suspilne.media/sumy/423915-obstril-sumskogo-rajonu-24-berezna-so-vidomo/>; *Archived*; Кривий Пір, Костянтинівка, Білопілья: нові атаки шахедів, С-300 і Су-35 з керованими бомбами, BBC. <https://www.bbc.com/ukrainian/articles/c04v1klzgjo>; *Archived*.

183 Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; *Archived*; Suspilne Novini, Telegram post. <https://t.me/suspilnenews/19479>; *Archived*; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10927>; *Archived*.

184 Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; *Archived*; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); *Archived*; Масований Обстріл Прикордонних Населених Пунктів На Сумщині Із Загиблими Та Пораненими – Прокурори Документують Наслідки, Sumy Oblast Prosecutor's Office. [https://sumy.gov.ua/ua/news.html?\\_m=publications&c=view&t=rec&id=330357](https://sumy.gov.ua/ua/news.html?_m=publications&c=view&t=rec&id=330357); *Archived*.

The local school,<sup>185</sup> the police station,<sup>186</sup> and civilians houses in a residential part of Staroputyvlska street in Bilopillia<sup>187</sup> were attacked with KAB bombs. A police officer<sup>188</sup> and a school security guard died as a result of the attack.<sup>189</sup> Nine more civilians were injured.<sup>190</sup>

The attack resulted in the complete destruction of the local school – Bilopillia *Gymnasium* ('High School') № 4<sup>191</sup> – a historic building constructed in 1885.<sup>192</sup> According to the school's principal, it is beyond repair and will have to be demolished.<sup>193</sup> The main building of the police station<sup>194</sup> was

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- 185 Білопілья: як живе містечко на кордоні з ворогом, Army Inform. <https://armyinform.com.ua/2023/07/23/bilopillya-yak-zhyve-mistechko-na-kordoni-z-vorogom/>; Archived; Suspilne News, Telegram Post. <https://t.me/suspilnenews/19479>; Archived.
- 186 Andriy Yermak, Head of the Office of the President of Ukraine, Xpost. <https://suspilne.media/sumy/423921-zaginuli-policejskij-i-civilnij-devatero-ludej-poraneno-u-bilopilskij-gromadi-savcenko/>; Archived; Sergey Chizh, Facebook Post. <https://www.facebook.com/Chizhpolic/posts/pfbid02VsrkQE8wbzGTPBbsUib2MvXaRsDwEWsaN7Pe9Ut2Ah6LPfPPTAZSh9Nh9gMKGyqvl/>; Archived; Suspilne News, Telegram post. <https://t.me/suspilnenews/19479>; Archived.
- 187 Suspilne News, Telegram post. <https://t.me/suspilnesumy/10927>; Archived.
- 188 Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; Archived; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); Archived; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9477](https://t.me/police_su_region/9477); Archived; Suspilne News, Telegram post. <https://t.me/suspilnenews/19479>; Archived; Загинули поліцейський і цивільний, дев'ятеро людей поранено у Білопільській громаді — Савченко, Suspilne Media. <https://suspilne.media/sumy/423921-zaginuli-policejskij-i-civilnij-devatero-ludej-poraneno-u-bilopilskij-gromadi-savcenko/>; Archived; Кривий Пір, Костянтинівка, Білопілья: нові атаки шахедів, С-300 і Су-35 з керованими бомбами, BBC. <https://www.bbc.com/ukrainian/articles/c04v1klzgjo>; Archived; Sergey Chizh, Facebook Post. <https://www.facebook.com/Chizhpolic/posts/pfbid02VsrkQE8wbzGTPBbsUib2MvXaRsDwEWsaN7Pe9Ut2Ah6LPfPPTAZSh9Nh9gMKGyqvl/>; Archived;
- 189 Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://www.bbc.com/ukrainian/articles/c04v1klzgjo>; Archived; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); Archived; BBC, Кривий Пір, Костянтинівка, Білопілья: нові атаки шахедів, С-300 і Су-35 з керованими бомбами, <https://web.archive.org/web/20230330040943/https://www.bbc.com/ukrainian/articles/c04v1klzgjo>; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10924>; Archived; Kordon Media, «Революцію, дві війни пережила - рашистів не пережила» - директор про зруйновану школу на Сумщині, Youtube video. <https://www.youtube.com/watch?v=aTb6pfzJ60I>; Олександр Заріцький: будував Білопілья і загинув, тримаючи пост, Bilopillia City. читай на: <https://web.archive.org/web/20240609151231/https://bilopillia.city/articles/274540/oleksandr-zareckij-buduvav-bilopillya-i-zaginu-v-trimayuchi-post/>; Archived.
- 190 Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; Archived; 10 people were injured in total in Sumy Oblast: Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; Archived; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); Archived; Двоє загиблих, 10 травмованих, зруйновані будівлі: що відомо про обстріл Сумського району 24 березня, Suspilne Media. <https://suspilne.media/sumy/423915-obstril-sumskogo-rajonu-24-berezna-so-vidomo/>; Archived.
- 191 GPS coordinates: Klubna str 2 - 51.14403420840862, 34.272541589048814.
- 192 Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10924>; Archived; Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; Archived; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); Archived; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10928>; Archived; Kordon Media, Telegram post. <https://t.me/kordonmedia/92>; Archived; Білопілья: як живе містечко на кордоні з ворогом, Army Inform. <https://armyinform.com.ua/2023/07/23/bilopillya-yak-zhyve-mistechko-na-kordoni-z-vorogom/>; Archived; Kordon Media, «Революцію, дві війни пережила - рашистів не пережила» - директор про зруйновану школу на Сумщині, Youtube video. <https://www.youtube.com/watch?v=aTb6pfzJ60I>; Росіяни зруйнували школу, де навчались Малевич та Олесь, Youtube video. <https://www.youtube.com/watch?v=fO4J9b0auQo>.
- 193 Білопілья: як живе містечко на кордоні з ворогом, Army Inform. <https://armyinform.com.ua/2023/07/23/bilopillya-yak-zhyve-mistechko-na-kordoni-z-vorogom/>; Archived.
- 194 GPS coordinates: Soborna str 76 - 51.14558516282501, 34.3098281878826.

also destroyed and an adjacent building was damaged.<sup>195</sup> The bomb that landed on Staroputyvlska street<sup>196</sup> caused severe damage to several civilian houses.<sup>197</sup> No publicly available information indicates the presence of Ukrainian military objectives at the impact sites or within the bombs' striking range.<sup>198</sup>

According to the Ukrainian Air Force and local military administration, Russian forces attacked Sumy Oblast with ten Su-35 fighter jets, launching up to ten KAB bombs.<sup>199</sup> According to the Ukrainian Armed Forces news website, the guided bomb that hit the school was a KAB-500.<sup>200</sup>



*The destroyed School № 4. Source: [Head of Sumy Regional Military Administration](#).<sup>201</sup>*

195 Office of the Prosecutor General, Telegram post. [https://t.me/pgo\\_gov\\_ua/10733](https://t.me/pgo_gov_ua/10733); *Archived*; Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; *Archived*; Kordon Media, «Револіцію, дві війни пережила - рашистів не пережила» - директор про зруйновану школу на Сумщині, Youtube video. <https://www.youtube.com/watch?v=aTb6pfzJ60I>; Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; *Archived*; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10922>; *Archived*; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); *Archived*; Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10915>; *Archived*; Kordon Media, Telegram post. <https://t.me/kordonmedia/92>; *Archived*.

196 Approximate GPS coordinates: 51.1452830871658, 34.3013137168372.

197 Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10927>; *Archived*; Police of Sumy Oblast, Telegram post. [https://t.me/police\\_su\\_region/9485](https://t.me/police_su_region/9485); *Archived*; Sumy Regional Military Administration, Facebook post. <https://www.facebook.com/100066678391914/posts/3160090574295197/>; *Archived*; Kordon media, Telegram post (Photo 2). <https://t.me/kordonmedia/111>; *Archived*.

198 For more detailed analysis, see Section III. Legal Assessment of Case Studies.

199 FAKTI ICTV, Youtube video. <https://www.youtube.com/live/X5V3R1FhZfc?t=1836s>; Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; *Archived*; Кривий Пір, Костянтинівка, Білопілья: нові атаки шахедів, С-300 і Су-35 з керованими бомбами, BBC. <https://www.bbc.com/ukrainian/articles/c04v1klzgjo>; *Archived*; Двоє загиблих, 10 травмованих, зруйновані будівлі: що відомо про обстріл Сумського району 24 березня, Suspilne Media. <https://suspilne.media/sumy/423915-obstril-sumskogo-rajonu-24-berezna-so-vidomo/>; *Archived*.

200 Білопілья: як живе містечко на кордоні з ворогом, Army Inform. <https://armyinform.com.ua/2023/07/23/bilopillya-yak-zhyve-mistechko-na-kordoni-z-vorogom/>; *Archived*.

201 Dmytro Zhyvytskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvytskyi/7438>; *Archived*.



*A screenshot taken from drone footage showing a bomb crater near a civilian house.  
Source: [Suspline Sumy](#).<sup>202</sup>*



*The destroyed School № 4. Source: [Suspline Sumy](#).*

202    Suspline Sumy, Telegram post. [https://t.me/ok\\_pivnich1/2213](https://t.me/ok_pivnich1/2213); Archived.



The destroyed police station. Source: *Sumy Regional Military Administration*.<sup>203</sup>



A screenshot taken from drone footage showing the destroyed School № 4. Source: *Suspilne Sumy*.<sup>204</sup>

203 Dmytro Zhyvitskyi, Sumy Oblast Military Administration, Telegram post. <https://t.me/Zhyvitskyi/7438>; Archived.

204 Suspilne Sumy, Telegram post. <https://t.me/suspilnesumy/10927>; Archived.

# III. Legal Assessment of Case Studies

In all cases included in this report, Russian forces directed attacks against the civilian population or individual civilians not taking part in hostilities,<sup>205</sup> killing and injuring civilians. In all cases the attacks were also directed against civilian objects.<sup>206</sup> In seven cases, the attacks targeted objects with special protection under IHL, namely educational or medical facilities.<sup>207</sup> Finally, in two cases, the attacks also damaged critical infrastructure objects.<sup>208</sup>

These attacks violate Article 51(2) and Article 52(1) of Additional Protocol I (AP I), which prohibit making civilians or civilian objects the object of an attack, and constitute grave breaches under Article 85(a-b) of the Protocol. Attacks directed against medical facilities further violate Article 12 of AP I and Article 18 of Geneva Convention IV, which provide that civilian hospitals may in no circumstances be an object of attack but shall at all times be respected and protected by the Parties. Moreover, Article 27 of the 1907 Hague Convention, from which the relevant Rome Statute crime originates, provides that, in the context of hostilities, all necessary steps must be taken to spare, as far as possible, buildings dedicated to science and hospitals. Finally, under IHL, critical infrastructure objects benefit from a presumption of civilian status; an attack against them can only be justified if it is proved to present a concrete military advantage.<sup>209</sup> In the two cases of targeting critical infrastructure presented in this report,<sup>210</sup> there is no evidence to suggest that these objects were used for military purposes by the Ukrainian Armed Forces.

The ten cases of attacks described in this report also constitute war crimes under the Rome Statute, namely the war crime of intentionally directing attacks against the civilian population or individual civilians under Article 8(2)(b)(i), intentionally directing attacks against civilian objects under Article 8(2)(b)(ii), and intentionally directing attacks against hospitals or buildings dedicated to education under Article 8(2)(b)(ix)<sup>211</sup> of the Statute.

## 1. Precision of weapons used in attacks

To establish the war crimes of attacking civilians, attacking civilian objects and attacking specially protected objects,<sup>212</sup> it is required that the object of the attack was a civilian population, civilian object, or object with special protection, such as a hospital or building dedicated to education.<sup>213</sup> The accuracy of the weapon used is an important factor in determining the intended target of the attack. This section demonstrates that Russian forces employed high-precision guided bombs in all cases presented in the report. Consequently, in all cases, the buildings and infrastructure destroyed or damaged in the attacks are presumed to be the intended targets of the attacks.

205 RS, Article 8(2)(b)(i).

206 RS, Article 8(2)(b)(ii).

207 RS, Article 8(2)(b)(ix).

208 RS, Article 8(2)(b)(ii) or RS, Article 8(2)(b)(iv) depending on the circumstances.

209 AP I, Article 57(2)(a)(iii); Customary IHL, Rule 14; Marco Sassoli, *International Humanitarian Law*, Edward Elgar Publishing, 2019, 347, 360, 365; Giorgou and Zeith, 'When the Lights Go out', *Humanitarian Law & Policy Blog*, 20 April 2023, <https://blogs.icrc.org/law-and-policy/2023/04/20/protection-energy-infrastructure-armed-conflict/>.

210 Case 8 (11 May 2023) and Case 9 (5 May 2023).

211 'Intentionally directing attacks against buildings dedicated to religion, education, art, science or charitable purposes, historic monuments, hospitals and places where the sick and wounded are collected, provided they are not military objectives.'

212 Rome Statute, Article 8(2)(b)(i), Article 8(2)(b)(ii), and Article 8(2)(b)(ix), respectively.

213 Elements of crimes, p. 12, 15.

Specifically, in five cases, Russian forces used guided bombs of the KAB series. UMPB D30-SN bombs were deployed in three cases. A Grom-E1 missile was used in one case. Finally, in one case, either a FAB-500 or KAB-500 was employed.

## KAB<sup>214</sup>

The KAB-250<sup>215</sup> series are corrected aerial bombs, Russian new-generation unpowered precision guided munitions (PGMs) that provide land-attack capability to combat aircraft by using either laser or satellite guidance systems and a lethal warhead.<sup>216</sup> The accuracy range for the KAB-250 series<sup>217</sup> is 3-5m.<sup>218</sup>

The TV-guided KAB-500 series bombs are Russian new-generation unpowered PGMs that provide either land- or area-attack capability to combat aircraft by using different warhead options and TV terminal guidance.<sup>219</sup> The accuracy for all KAB-500 variants ranges between 4 and 12m.<sup>220</sup>

The Russian KAB-1500 series of bombs are laser- or TV-guided heavyweight PGMs.<sup>221</sup> Most KAB-1500 variants have an accuracy range of 4 to 7m<sup>222</sup> and, for other variants, it is evaluated at 7 to 10m.<sup>223</sup> 4 to 10m is therefore adopted as the accuracy range (CEP)<sup>224</sup> for all KAB-1500 series bombs. A military expert of the Ukrainian Armed Forces indicated that, in practice, the accuracy range of KAB bombs turns out to be around 15m.<sup>225</sup>

214 Or KAB (Russian abbreviation for корректируемая авиационная бомба/guided aerial bomb).

215 Ru: Корректируемая Авиационная Бомба (Korektiruemaya Aviatsionnaya Bomba).

216 Korektiruemaya Aviatsionnaya Bomba. Janes Weapons, Air-Launched, 2023-2024, p. 323.

217 Including KAB-250LG-E and KAB-250S-E.

218 Janes Weapons, Air-Launched, 2023-2024, p. 324.

219 Janes Weapons, Air-Launched, 2023-2024, p. 324.

220 CEP for KAB-500Kr, KAB-500-OD and KAB-500LG is 7 meters, and for KAB-500S (KAB-500S-E) 7-12 meters. Janes Weapons, Air-Launched, 2023-2024, p. 326, 328; See also Russian Defence Export, KAB-500Kr, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-500kr/>; *Archived*; Russian Defence Export, KAB-500-OD, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-500-od/>; *Archived*; Russian Defence Export, KAB-500S-E, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-500s-e/>; *Archived*. Additionally, the CEP for KAB-500Kr-E and KAB-500Kr-U is evaluated at 4-7 (Air Power Australia, Soviet/Russian Guided Bombs, <http://www.ousairpower.net/APA-Rus-GBU.html>; *Archived*; Russian Defence Export, KAB-500Kr-U, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-500kr-u/>; *Archived*), and for KAB-500L and for KAB-500KL it is evaluated at 7-10 (Medium, Details And Series Of The KAB-500 Laser Guided Bomb Developed By Russia, <https://medium.com/@AirPra/details-and-series-of-the-kab-500-laser-guided-bomb-developed-by-russia-da351b5c4290>; *Archived*; Air Power Australia, Soviet/Russian Guided Bombs, <http://www.ousairpower.net/APA-Rus-GBU.html>; *Archived*; Airbase.ru, KAB-500L, <https://archive.ph/D4htA>; *Archived*).

221 Janes Weapons, Air-Launched, 2023-2024, 328.

222 Including KAB-1500LG-F-E, KAB-1500LG-Pr-E, KAB-1500LG-OD-E, KAB-1500Kr, KAB-1500Kr-Pr, KAB-1500Kr-OD. Janes Weapons, Air-Launched, 2023-2024, p. 330; Russian Defence Export, KAB-1500LG-F-E, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500lg-f-e/>; *Archived*; Russian Defence Export, KAB-1500LG-Pr-E, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500lg-pr-e/>; *Archived*; Russian Defence Export, KAB-1500LG-OD-E, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500lg-od-e/>; *Archived*; Russian Defence Export, KAB-1500Kr, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500kr/>; *Archived*; Russian Defence Export, KAB-1500Kr-Pr, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500kr-pr/>; *Archived*; Russian Defence Export, KAB-1500Kr-OD, <http://roe.ru/eng/catalog/aerospace-systems/air-bombs/kab-1500kr-od/>; *Archived*.

223 Including UPAB-1500B-E, KAB-1500LF, KAB-1500L-Pr. Janes book, p. 330; Warfare.be, KAB CONTROLLED AIR BOMBS, <http://warfare.be/db/catid/345/linkid/2511/title/kab-controlled-air-bombs/>; *Archived*; aviationz, KAB-1500LF, <https://aviationz.narod.ru/vo/7/kab1500lf.html>; *Archived*; aviationz, KAB-1500L-Pr, <https://aviationz.narod.ru/vo/7/kab1500lpr.html>; *Archived*.

224 'Circular Error Probability'.

225 RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; *Archived*.

In light of the above and since the exact type of KAB is not always discernible from available evidence, the authors adopt an accuracy range of 3 to 15m as a general measure for analysing all attacks with KAB series bombs.

## FAB<sup>226</sup>

A FAB-500 bomb was potentially used in one case.<sup>227</sup> The FAB-500 are Russian-made parachute-retarded munitions, which provide a low-level ground-attack capability by using various warheads and a conventional simple configuration.<sup>228</sup> Unguided freefalling bombs are typically less precise,<sup>229</sup> with a CEP of 50 metres according to some military experts.<sup>230</sup> However, when equipped with a UMPK<sup>231</sup> guidance kit, these dumb bombs become high-precision guided munitions.<sup>232</sup> In Case 8 (11 May 2023), the use of 'guided' FAB-500 was reported.<sup>233</sup> Russia started to equip FAB bombs with UMPK modules in January 2023.<sup>234</sup> The UMPK module consists of a wing kit and a precision guidance package that is essentially bolted on to FAB freefall bombs.<sup>235</sup> The accuracy range of FAB bombs with the UMPK module is evaluated at approximately 10m,<sup>236</sup> but, according to some experts, this bomb modification is characterised by poor performance and is prone to failure.<sup>237</sup>

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226 Or ФАБ (Russian abbreviation for фугасная авиационная бомба/high explosive aerial bomb).

227 Case 8 of the Report.

228 Janes Weapons, Air-Launched, 2023-2024, 458.

229 CNN, Exclusive: Nearly half of the Israeli munitions dropped on Gaza are imprecise 'dumb bombs,' US intelligence assessment finds, <https://edition.cnn.com/2023/12/13/politics/intelligence-assessment-dumb-bombs-israel-gaza/index.html>, *Archived*.

230 Corporal Frisk, Finnish Military Blogger, Guest Post: Accuracy of Freefall Aerial Bombing, <https://corporalfrisk.com/2017/11/25/guest-post-accuracy-of-freefall-aerial-bombing/>, *Archived*.

231 'Unified Gliding And Correction Module'.

232 Army Recognition Group, Russian Su-34 Bomber Strikes Ukraine with New Upgraded Precision-Guided FAB-500 M62 Bombs, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/russian-su-34-bomber-strikes-ukraine-with-new-upgraded-precision-guided-fab-500-m62-bombs>, *Archived*.

233 Operational Command North, Telegram post, [https://web.archive.org/web/20230523193334/https://t.me/ok\\_pivnich1/2544](https://web.archive.org/web/20230523193334/https://t.me/ok_pivnich1/2544), *Archived*.

234 The Warzone, The Truth About Russia's Mysterious Winged Glide Bombs, <https://www.twz.com/the-truth-about-russias-mysterious-winged-glide-bombs>; *Archived*.

235 Foundation for Defense of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb, [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); *Archived*; The Warzone, The Truth About Russia's Mysterious Winged Glide Bombs, <https://www.twz.com/the-truth-about-russias-mysterious-winged-glide-bombs>; *Archived*. The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; *Archived*.

236 The Warzone, The Truth About Russia's Mysterious Winged Glide Bombs, <https://www.twz.com/the-truth-about-russias-mysterious-winged-glide-bombs>; *Archived*.

237 The Warzone, The Truth About Russia's Mysterious Winged Glide Bombs, <https://www.twz.com/the-truth-about-russias-mysterious-winged-glide-bombs>; *Archived*. Foundation for Defense of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb, [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); *Archived*.

## UMPB D30-SN

UMPB<sup>238</sup> D30-SNs are new variants of Russian-guided bombs, reportedly deployed in Ukraine for the first time in March 2024.<sup>239</sup> It appears to be Russia's attempt at introducing a lower-cost precision weapon with a longer strike range, to overcome Ukraine's defence capabilities.<sup>240</sup> The new guided bomb appears to have achieved a longer striking range, allowing Russian aircrafts to attack Ukrainian border regions from inside Russian territory.<sup>241</sup> Some sources put the CEP of this weapon at 7<sup>242</sup> or 7 to 10m,<sup>243</sup> while others evaluate it at 5m.<sup>244</sup>

Apart from these direct indications, the high accuracy of UMPB D30-SN bombs is reinforced by its specifications. The munition is based either on FAB-250 or KAB-250 bombs.<sup>245</sup> In either case,

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- 238 Or УМПБ (Russian abbreviation for универсальный межвидовой планирующий боеприпас/universal multi-purpose gliding bomb).
- 239 Army Recognition Group, Breaking News: Ukrainian City of Kharkiv Hit by New Russian UMPB D-30 SN Guided Bombs in First Use, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/breaking-news-ukrainian-city-of-kharkiv-hit-by-new-russian-umpb-d-30-sn-guided-bombs-in-first-use>; Archived; Suspline Kharkiv, УМПБ: що це за авіабомба та чому росіяни почали застосовувати її? Пояснення експерта Defense Express, <https://suspline.media/kharkiv/716242-umpb-so-ce-za-aviabomba-ta-comu-rosiani-pocali-zastosovuvati-ii-poasnenna-eksperta-defense-express/>; Archived; 24tv, Вбивчий гібрид ракети та бомби: як боротися з російськими УМПБ Д-30 СН, якими знищують Харків, [https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim\\_n2565777](https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim_n2565777); Archived.
- 240 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; Suspline Kharkiv, УМПБ: що це за авіабомба та чому росіяни почали застосовувати її? Пояснення експерта Defense Express, <https://suspline.media/kharkiv/716242-umpb-so-ce-za-aviabomba-ta-comu-rosiani-pocali-zastosovuvati-ii-poasnenna-eksperta-defense-express/>; Archived.
- 241 Foundation for Defense of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb, [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); Archived; RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived; The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; VoennoeDelo, Российские Су-34 оснастили новыми боеприпасами Д-30СН УМПБ, <https://voennoedelo.com/posts/id60145-unikalnye-vozmozhnosti-planirujushih-boepripasov-d-30sn-proryv-pvo-na-glubinu-do-300-km>; Archived.
- 242 Aif.ru, Умный и беспощадный. Боеприпас УМПБ Д-30СН кошмарит ВСУ днем и ночью, <https://aif.ru/politics/russia/umnyy-i-besposhchadnyy-boepripas-umpb-d-30sn-koshmarit-vsu-dnem-i-nochyu>; Archived.
- 243 VoennoeDelo, Российские Су-34 оснастили новыми боеприпасами Д-30СН УМПБ, <https://voennoedelo.com/posts/id60145-unikalnye-vozmozhnosti-planirujushih-boepripasov-d-30sn-proryv-pvo-na-glubinu-do-300-km>; Archived.
- 244 Army Recognition Group, Breaking News: Ukrainian City of Kharkiv Hit by New Russian UMPB D-30 SN Guided Bombs in First Use, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/breaking-news-ukrainian-city-of-kharkiv-hit-by-new-russian-umpb-d-30-sn-guided-bombs-in-first-use>; Archived; News.ru, Что за новый боеприпас УМПБ Д-30СН, который уничтожил телевышку в Харькове, <https://news.ru/weapon/chto-za-novyy-boepripas-umpb-d-30sn-kotoryj-unichtozhil-televyshku-v-harkove/>; Archived; Dzen.ru, Новый сюрприз от российской оборонки для Украины: ВС РФ начали применять новейшие высокоточные боеприпасы УМПБ Д-30СН, <https://dzen.ru/a/ZgWrinS06lGHQ6WN>; Archived.
- 245 RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived; The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; Army Recognition Group, Breaking News: Ukrainian City of Kharkiv Hit by New Russian UMPB D-30 SN Guided Bombs in First Use, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/breaking-news-ukrainian-city-of-kharkiv-hit-by-new-russian-umpb-d-30-sn-guided-bombs-in-first-use>; Archived.

Ukrainian and international weapon experts underscore that UMPB D30-SNs represent a substantial improvement on the older series and a new stage in the development of guided aerial bombs.<sup>246</sup>

The GLONASS navigation module renders the bomb 'a significant technological upgrade aimed at increasing strike effectiveness'.<sup>247</sup> The new weapon is equipped with a guidance system of the Kometa type, which uses both inertial and satellite navigation.<sup>248</sup> A Russian war expert suggested this as one of the reasons for evaluating the D-30SN's CEP as between 7 and 10m.<sup>249</sup>

Finally, many sources dub the UMPB D30-SN a Russian analogue of the American GBU-39 Small Diameter Bomb,<sup>250</sup> which has an accuracy range of 3 to 8m.<sup>251</sup> Therefore, both bombs belong to the extremely accurate class of weapons.

In light of the foregoing, UMPB D30-SNs are likely to be even more accurate than their predecessor FAB/KAB bombs. Since, the bomb's exact precision range is yet to be definitively established, we will use a conservative estimate of 10m.

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246 Foundation for Defense of Democracies, Photos offer insights on Russia's new UMPB D-30SN glide bomb, [https://www.fdd.org/analysis/op\\_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/](https://www.fdd.org/analysis/op_ed/2024/06/05/photos-offer-insights-on-russias-new-umpb-d-30sn-glide-bomb/); Archived; RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived; Army Recognition Group, Breaking News: Ukrainian City of Kharkiv Hit by New Russian UMPB D-30 SN Guided Bombs in First Use, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/breaking-news-ukrainian-city-of-kharkiv-hit-by-new-russian-umpb-d-30-sn-guided-bombs-in-first-use>; Archived; VoennoeDelo, Российские Су-34 оснастили новыми боеприпасами Д-30СН УМПБ, <https://voennoedelo.com/posts/id60145-unikalnye-vozmozhnosti-planirujuschi-boepripasov-d-30sn-proryv-pvo-na-glubinu-do-300-km>; Archived.

247 Army Recognition Group, Breaking News: Ukrainian City of Kharkiv Hit by New Russian UMPB D-30 SN Guided Bombs in First Use, <https://armyrecognition.com/focus-analysis-conflicts/army/conflicts-in-the-world/russia-ukraine-war-2022/breaking-news-ukrainian-city-of-kharkiv-hit-by-new-russian-umpb-d-30-sn-guided-bombs-in-first-use>; Archived; Gwara Media, News of Kharkiv Oblast, Telegram post, <https://t.me/gwaramedia/23047>; Archived.

248 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; War Obozrevatel, Коваленко: российские оккупанты устроили на фронте испытательный полигон для новых управляемых бомб. Что о них известно, <https://war.obozrevatel.com/kovalenko-rossijskie-okkupanty-ustroili-na-fronte-ispytatelnyj-poligon-dlya-novyih-upravlyaemyih-bomb-cto-o-nih-izvestno.htm>; Archived.

249 VoennoeDelo, Российские Су-34 оснастили новыми боеприпасами Д-30СН УМПБ, <https://voennoedelo.com/posts/id60145-unikalnye-vozmozhnosti-planirujuschi-boepripasov-d-30sn-proryv-pvo-na-glubinu-do-300-km>; Archived.

250 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; Dumka, Что такое УМПБ-30Д: Как армия Путина превратила Харьков в испытательный полигон, <https://dumka.media/rus/war/1714982693-cto-takoe-umpb-30d-kak-armiya-putina-prevratila-harkov-v-ispytatelnyj-poligon>; Archived; War Obozrevatel, Коваленко: российские оккупанты устроили на фронте испытательный полигон для новых управляемых бомб. Что о них известно, <https://war.obozrevatel.com/kovalenko-rossijskie-okkupanty-ustroili-na-fronte-ispytatelnyj-poligon-dlya-novyih-upravlyaemyih-bomb-cto-o-nih-izvestno.htm>; Archived; RBC-Ukraine, Cheap and dangerous. What are UMPB bombs that Russia struck Kharkiv with, <https://newsukraine.rbc.ua/news/cheap-and-dangerous-what-are-these-umpb-bombs-1711744305.html>; Archived.

251 Air Force Armament Museum Foundation, GBU-39A/B FLM Bomb, <https://afarmamentmuseum.com/details-gbu39.html>; Archived; Military History, Small Diameter Bomb, [https://military-history.fandom.com/wiki/Small\\_Diameter\\_Bomb](https://military-history.fandom.com/wiki/Small_Diameter_Bomb); Archived; Global Security, Small Diameter Bomb / Small Smart Bomb, <http://www.globalsecurity.org/military/systems/munitions/sdb.htm>; Archived.

Grom-E1 is a long-range air-to-surface cruise missile.<sup>253</sup> It provides Russian aircraft with land-attack capability outside of Ukrainian-defended airspace by using a combined guidance system and lethal warhead.<sup>254</sup> It is a high-precision missile with a CEP of 2 to 10m.

## 2. Intentional attacks

The most severe types of attacks on civilians and civilian infrastructure - and those that carry the greatest responsibility under international criminal law - are attacks intentionally directed at civilians and/or civilian objects.<sup>255</sup> For the purposes of proving this war crime, it is not necessary to show that the attack actually caused the death of civilians or damage to civilian objects - only that it was intentionally directed at them.<sup>256</sup> Nevertheless, injury and damage that these attacks caused to civilians and civilian infrastructure demonstrate the impact and gravity of such attacks. Furthermore, the high casualty rate among civilians, including children, further demonstrates that the attacks were directed at civilian objects. Specifically, the attacks resulted in 26 civilian deaths and 109 more injuries. In five out of ten attacks, children were among the victims. The attacks damaged or destroyed at least 71 civilian houses and apartment buildings,<sup>257</sup> five schools, five medical and three energy infrastructure facilities.

Considering the high accuracy of the weapons used,<sup>258</sup> it is highly likely that the Russian attacks were directed intentionally against the civilians and civilian objects that they ultimately hit.

The deliberate nature of the attacks against civilians and civilian objects is further corroborated by the absence of any military objectives, not just within the accuracy range of the employed weapons, but several hundred metres beyond it. Whilst the authors of the report did identify several potential dual-use objects<sup>259</sup> in the wider area around the impact sites, given the accuracy ranges of the weapons used (up to a maximum of 15 metres), these objects were located too far away from the targeted civilian objects to serve as a defence of proportionate collateral damage. For example,

252 Ru.: Гром-E1.

253 Janes Weapons, Air-Launched, 2023-2024, p. 265.

254 Janes Weapons, Air-Launched, 2023-2024, p. 265.

255 The Elements of Crimes: (i) The perpetrator directed an attack; (ii) the object of the attack was a civilian population and/or civilian object; (iii) The perpetrator intended the civilian population and/or civilian objects to be the object of the attack. ICC, Elements of Crimes, p. 18, <https://www.icc-cpi.int/sites/default/files/ElementsOfCrimesEng.pdf>.

256 ICC, Katanga and Chui, Decision on the Confirmation of Charges, 30 September 2008, para. 270, <https://www.legal-tools.org/doc/67a9ec/>.

257 This is a conservative estimate based on official damage reports that specify the number of affected civilian homes. In four cases with reported damage/destruction to civilian homes, the exact number of affected objects is unknown and was not included in the estimate. Therefore, the real number of destroyed/damaged civilian homes is likely much higher.

258 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived; Aif.ru, Умный и беспощадный. Боеприпас УМПБ Д-30СН кошмарит ВСУ днем и ночью, <https://aif.ru/politics/russia/umnyy-i-besposhchadnyy-boepripas-umpb-d-30sn-koshmarit-vsu-dnem-i-nochyu>; Archived.

259 Dual-use objects are objects that can be used by civilians as well as the military (e.g., a civilian bridge that becomes strategically important for warring parties during combat operations). The status of dual-use objects is not regulated by IHL and targeting decisions in each case depends on the specific circumstances. See: Customary IHL, Rule 8, <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule8>; ICRC, International expert meeting report: The principle of proportionality, <https://www.icrc.org/en/document/international-expert-meeting-report-principle-proportionality>, p.37-38; The Handbook of International Humanitarian Law, edited by Dieter Fleck, 4th ed., Oxford Scholarly Authorities on International Law, 2021, pp. 232, 263.

in Case № 2 (22 May 2024) a warehouse was located 250-300m from one attack site and a railway junction 300-500m from another attack site. The nearest potential military target in Case № 3 (27 March 2024) – the Kharkiv State Aircraft Manufacturing Company – was situated 3km from the impact site. The Beryslav Machine-Building Plant is located approximately 2.66km from the targeted hospital in Case № 6 (5 October 2023) and approximately 2.3km from the targeted civilian buildings in Case № 7 (25 September 2023). An airfield is located almost 2km from the place of impact in Case № 9 (5 May 2023). Bilopillia railway station,<sup>260</sup> the closest potential military objective in Case № 10 (24 March 2023), is located 200m from the destroyed school and even further from other impact sites. In any event, there is no evidence to suggest that these objects were being used for military purposes, and therefore qualified as legitimate military targets.

Even if there were Ukrainian military personnel present at or near the attacked civilian objects at the time of the attacks, under Article 50(3) of the AP I, the presence within the civilian population of individuals who do not fall within the definition of civilians does not deprive the population of its civilian character. The object can only be considered a legitimate military target if it plays part in active hostilities. Therefore, in the absence of evidence to the contrary, both targeted civilians and their property should be considered as having enjoyed protected status at the time of the attacks.<sup>261</sup>

Consequently, it is highly likely that Russian forces intentionally directed attacks against the civilian population and civilian objects in all 10 cases described in this report.

### 3. Indiscriminate attacks

Notwithstanding their advertised accuracy, it has been reported that UMPB D-30SN bombs and UMPK-fitted FAB bombs are prone to malfunctioning as a result of rushed output and low production quality. If that is indeed the case and the Russian Armed Forces deploying these bombs are unable to guarantee, to a degree of certainty, that they will hit the intended target, then these weapons should be deemed inherently indiscriminate. The deployment of inherently indiscriminate weapons in urban areas or areas with a high concentration of civilians and civilian objects is a grave breach of IHL and a war crime.<sup>262</sup>

It has been suggested that the new UMPB D-30SN bombs are currently being tested in real combat situations in Ukraine<sup>263</sup> and that Ukrainian civilians and critical infrastructure are the victims of ‘bloody experiments’.<sup>264</sup> Sources indicate that the new bombs are produced ‘in a hurry, on an emergency basis’, and through an accelerated, unestablished process, referring to the low

260 51.14220013827794, 34.27171430837021.

261 AP I, Article 50(1).

262 AP I, Article 85(3)(b); Rome Statute, Article 8(2)(b)(iv).

263 24tv, Вбивчий гібрид ракети та бомби: як боротися з російськими УМПБ Д-30 СН, якими знищують Харків, [https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim\\_n2565777](https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim_n2565777); *Archived*; War Obozrevatel, Коваленко: російські окупанти устроили на фронті испытательный полигон для новых управляемых бомб. Что о них известно, <https://war.obozrevatel.com/kovalenko-rossijskie-okkupanty-ustroili-na-fronte-ispytatelnyij-poligon-dlya-novyih-upravlyaemyih-bomb-cto-o-nih-izvestno.htm>; *Archived*.

264 24tv, Вбивчий гібрид ракети та бомби: як боротися з російськими УМПБ Д-30 СН, якими знищують Харків, [https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim\\_n2565777](https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim_n2565777); *Archived*.

production quality and the high defect rate of the ammunition.<sup>265</sup> On at least 78 occasions, the Russian Air Force accidentally bombed Belgorod Oblast of Russia and occupied territories, including with FABs and UMPBs.<sup>266</sup>

With regards to UMPK-fitted freefall bombs (FABs), Russian military channels have described them as makeshift devices that still need a lot of work, conceding the weapon's flaws and that they were made in a rush.<sup>267</sup> Apart from poor performance and a high failure rate, the UMPK has reportedly failed to deliver on its promised striking range.<sup>268</sup>

Article 51(4) of Additional Protocol I prohibits indiscriminate attacks. Attacks are indiscriminate when they employ a method or means of combat which cannot be directed at a specific military objective or the effects of which cannot be limited as required by the Protocol. When the command structure of an armed force is not certain about the weapon being in working order and is aware of the insufficient testing of its capabilities, yet proceeding with its deployment, this should be considered as employing indiscriminate means of warfare. Considering also that most of the affected civilian objects were located in densely populated residential areas, it is likely that Russian forces violated the prohibition on the use of indiscriminate weapons. As such, attacks described in cases 1, 2, 3, and 8 above may, in the alternative, amount to the war crime of causing excessive incidental damage.<sup>269</sup>

## IV. Reliance on Foreign Components in the Manufacture of SU-34 and SU-35S Aircraft

This section describes components that NAKO has obtained from confidential Ukrainian military sources and analysed in its report 'Wings of War. Analysing Western Parts in Russian Fighter Jets'.<sup>270</sup>

NAKO identified companies that manufacture the components and their countries of origin through open-source investigations. In total, NAKO was able to track the origins of 1115 microelectronic goods out of 1119 provided by the military. The components were also checked against the export control regulations of the involved States. This research had several limitations that affected the

265 War Obozrevatel, Коваленко: российские оккупанты устроили на фронте испытательный полигон для новых управляемых бомб. Что о них известно, <https://war.obozrevatel.com/kovalenko-rossijskie-okkupanty-ustroili-na-fronte-ispytatelnyj-poligon-dlya-novyih-upravlyaemyih-bomb-cto-o-nih-izvestno.htm>; Archived.

266 24tv, Вбивчий гібрид ракети та бомби: як боротися з російськими УМПБ Д-30 СН, якими знищують Харків, [https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim\\_n2565777](https://24tv.ua/umpb-d-30-sn-harakteristiki-dalnist-shho-vidomo-pro-bombi-yakim_n2565777); Archived; ASTRA Press, Telegram, <https://t.me/astrapress/56359>; Archived.

267 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived.

268 The Warzone, Russian Small Diameter Bomb-Like Glide Weapon Appears In Ukraine, <https://www.twz.com/air/russian-small-diameter-bomb-like-glide-weapon-appears-in-ukraine>; Archived.

269 Punishable under Rome Statute, Article 8(2)(b)(iv) (Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects ... which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated) and AP I, Article 85(3)(b) (launching an indiscriminate attack affecting the civilian population or civilian objects in the knowledge that such attack will cause excessive loss of life, injury to civilians or damage to civilian objects).

270 Wings of War: Analysing the Western Parts in Russian Fighter Jets. June 13, 2024. <https://nako.org.ua/research/wings-of-war-analysing-the-western-parts-in-russian-fighter-jets>.

comprehensiveness of the report. First, NAKO was limited in its analysis only to those components identified by the military sources. Second, NAKO analysts did not have physical access to the components and their verification process was based on the information provided by the Ukrainian military sources. Finally, the speed with which the Russian military complex adapts and modifies military aircraft can affect the relevance of this analysis in the future.

Note that the components described in this report may not necessarily come directly from the manufacturer to the final beneficiary. Such supplies, both before and after February 24, 2022, might also result from trade between intermediaries, certified resellers, and distributors.

## 1. General Information on the SU-34 and the SU-35S

The SU-34 and the SU-35S both derive from the SU-27 – a supersonic supermaneuverable fighter aircraft - yet their battlefield roles differ.

Characterised as an air superiority fighter, the Su-35S is mainly responsible for escorting and protecting other aircraft, including the Presidential IL-96PU.<sup>271</sup> On the battlefield, it provides cover and ensures the safety of fighter bombers, particularly the Su-34 bombers. This usage has been widely seen on the battlefield during Russia's full-scale war on Ukraine, especially following the destruction of an A-50 aircraft on February 23.<sup>272</sup> In particular, the Russian Ministry of Defence has stated that SU-35S escort SU-34 for strikes against the command posts and troops of the Ukrainian Armed Forces carried out using FAB-500 glide bombs.<sup>273</sup> According to Major Maksym Zhorin, executive officer of the 3rd Assault Brigade, Russian tactical aviation dropped 60 to 80 such bombs daily in Avdiivka.<sup>274</sup>

Increased usage of SU-34 paired with SU-35 closer to the strike targets led to aircraft losses on the Russian side. In February 2024, Ukraine claimed to have shot down ten SU-34 and two SU-35S.<sup>275</sup>

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271 Putin Flies To UAE With Su-35 Fighter Escorts (Updated). December 6, 2023. <https://www.twz.com/putin-flies-to-uae-with-su-35-fighter-escorts>.

272 RUSSIAN OFFENSIVE CAMPAIGN ASSESSMENT, MARCH 2, 2024. ISW. <https://www.understandingwar.org/backgrounders/russian-offensive-campaign-assessment-march-2-2024>.

273 Russian bombers engage Ukrainian command post in Kupyansk direction. February 24, 2024. <https://tass.com/politics/1750993>.

274 Telegram Channel of Maksym Zhorin. February 16, 2024. <https://t.me/MaksymZhorin/5007>.

275 Magical month: Ukraine shoots down 13 Russian planes worth over \$1 billion – full list & infographic. March 1, 2024. <https://english.nv.ua/nation/ukraine-s-february-aerial-triumph-over-1-billion-in-russian-aircraft-downed-50397560.html>.

## SU-34<sup>276</sup> Fighter-bomber

**NATO Designation:** Fullback

**Estimated amount**<sup>277</sup>

149+

**Estimated losses**<sup>278</sup>

26 SU-34,  
1 SU-34M

**Crew**

2



**Length:** 23.3 m

**Generation:** 4++

**Height:**

6.3 m

**Production cost:**

est. 36 million USD  
(2008)<sup>279</sup>

**Wingspan:**

14 m

**Production:**

2006 - Ongoing

**Max speed:**

1,900 km/h

**Flight range:**

4,000 km

**Max weight:**

45,100 kg

**Max combat load:**

8,000 kg

**Armament:**

- Air-to-air: P-27, P-73, P-77;<sup>280</sup>
- Air-to-surface: X-25, X-29, X-38, X-58, X-59;
- Cruise missile: X-36, X-65, X-СД;
- Anti-ship: X-31, X-41, X-35, X-61;
- Anti-radiation missiles: X-25, X-31, -58;
- Laser/satellite/TV-guided bombs: КАБ-500; and
- Other bombs: РБК-500, СПБЭ-Д, БетАБ-500ШП, ОДАБ-500, ОФАБ-100-120, ОФАБ-250-270

<sup>276</sup> Su-34 (Su-32) Fullback Fighter Bomber. September 4, 2020. <https://www.airforce-technology.com/projects/su34/>.

<sup>277</sup> As of 2022, according to the National Agency on Corruption Prevention (NACP).

<sup>278</sup> Attack On Europe: Documenting Russian Equipment Losses During The 2022 Russian Invasion Of Ukraine', Oryx <https://www.oryxspioenkop.com/2022/03/list-of-aircraft-losses-during-2022.html>.

<sup>279</sup> Sukhoi Su-34 / Su-32 "Fullback" <https://aerocorner.com/aircraft/sukhoi-su-32/>.

<sup>280</sup> Here and below, the weapons types are named in the original language (Russian) to avoid misidentification with other similar weapons or equipment.

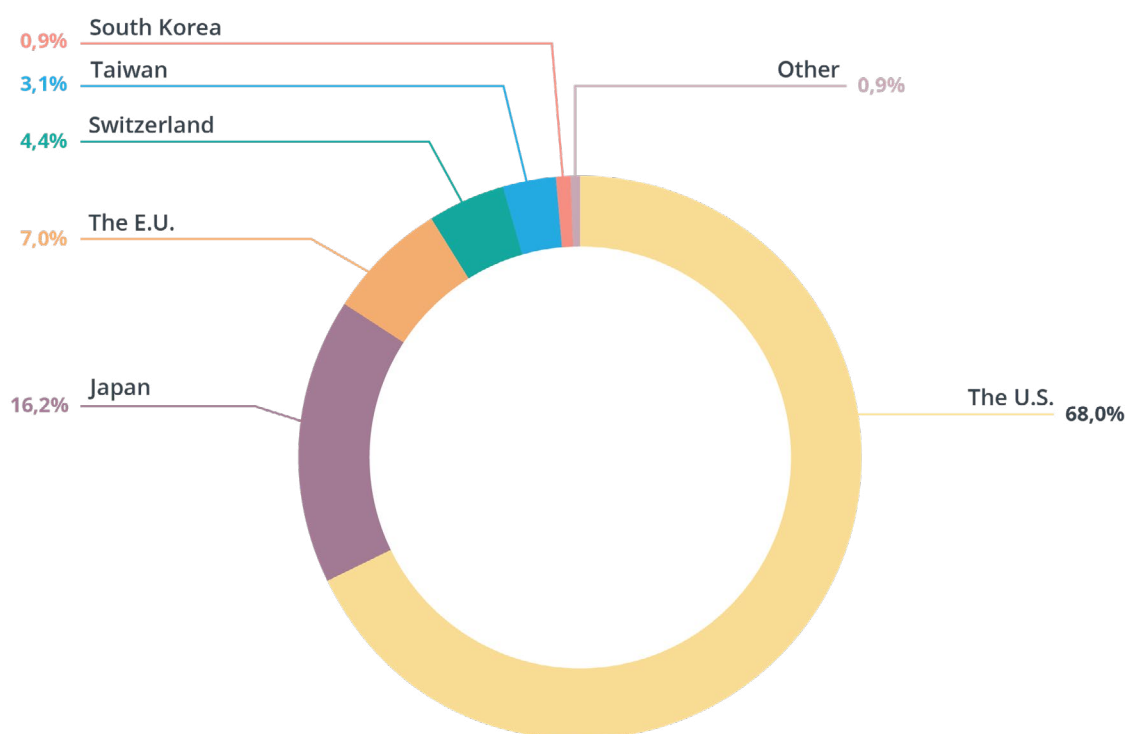
Developed by the Sukhoi Design Bureau and Novosibirsk Aircraft Production Association, the SU-34 retains the basic layout and construction of the SU-27 airframe along with conventional high-wing configuration and onboard equipment.

Capable of interception and intelligence surveillance-reconnaissance, the SU-34's primary role is combat. Fitted with a target designator and ten hardpoints for weapon payloads, the SU-34 can carry a range of missiles: air-to-air, air-to-surface, anti-ship, and anti-radiation missiles, guided and unguided bombs, and rockets.<sup>281</sup> It thus aims to replace the SU-24 tactical fighter.<sup>282</sup>

## Su-34: Foreign components

NAKO verified 227 of 228 components previously identified by military sources. In particular, evidence suggests that the electronic goods used in the manufacturing of the aircraft came from **59 companies located in eight different countries, with the United States being the undisputed leader.**

### EXHIBIT 1: ORIGIN OF COMPONENTS FOUND IN SU-34



The goods generally include a wide variety of integrated circuits – under varying levels of control – as well as transistors, capacitors, diodes, and filters. **66 percent of these products fall under stricter export control regulations as highly prioritised.**<sup>283</sup> Notably, a wide range of electronic integrated circuits, including memories, amplifiers, processors and microcontrollers of different types and modifications, and fixed ceramic dielectric capacitors.

281 Sukhoi Su-34 vs Sukhoi Su-35 – Flanker Family Comparison. January 12, 2023. <https://engineerine.com/su-34-vs-su-35-flanker-family-comparison/>.

282 Su-34 (Su-32) Fullback Fighter Bomber. September 4, 2020. <https://www.airforce-technology.com/projects/su34/>.

283 Russia Export Controls – **List of Common High-Priority Items**. February 23, 2024. The Department of Commerce's Bureau of Industry and Security (BIS). <https://www.bis.gov/articles/russia-export-controls-list-common-high-priority-items>.

## SU-34: TOP COMPANIES

 AHEAD OF WHAT'S POSSIBLE™	
 INNOVATOR IN ELECTRONICS	
	
	
	

Analog Devices produces priority analogue-to-digital converters, clock generators, phase-locked loops (PLLs), frequency synthesisers, and specialised integrated circuits, making it the leading company whose goods were identified in SU-34.

It also includes:

- **Murata's** ceramic capacitors and other electrical parts;
- Field-programmable gate arrays (FPGAs), which are extremely valuable for producing Russian weapons and equipment. **Intel's** FPGAs are present in the aircraft;
- Memories produced by **Cypress**, **Micron**, and **AMD**;
- Amplifiers made by **Agilent**, **Avago** (*currently known as Broadcom*) and **Qorvo**; and
- **NXP's** Microprocessors and **Marvell's** transceivers.

The full list of companies whose components have been found inside SU-34<sup>284</sup>:

Country	Company	Country	Company
Canada	DEI		ATC
	Geyer Electronic		Agilent
Germany	Harting		AMD
	Infineon		Analog Devices
	Neosid		ATC
	Hirose		Atmel
	<b>Murata</b>		Avago
	Omron		AVX
Japan	Panasonic		Broadcom
	Sony		Coilcraft
	<b>Taiyo Yuden</b>		CTS
	<b>TDK</b>		Cypress
	Toshiba	USA	Diodes Incorporated
South Korea	Samsung		EMC Technology
Switzerland	TE Connectivity		Holt Integrated Circuits
	<b>STMicroelectronics</b>		IDT
	JMicron		Integra
	TSC		<b>Intel</b>
Taiwan	WinBond		ITT Cannon
	Won-Top Electronics		<b>Kemet</b>
	<b>Yageo</b>		<b>Linear Technology</b>
The Netherlands	Nexperia		
	<b>NXP</b>		

284 Yellow highlighting indicates that the goods produced by the company which were found in SU-34 fall under enhanced customer due diligence in accordance with **Common High Priority List (CHPL)** developed by the United States in coalition with the EU, Japan, and the UK.

## SU-35<sup>285</sup> Air superiority fighter

**NATO Designation:** Flanker-E

**Estimated amount**<sup>286</sup> 118+

**Estimated losses**<sup>287</sup> 7 Su-35S

**Crew** 1



**Length:** 21.9 m

**Generation:** 4++

**Height:** 5.9 m

**Production cost:** est. \$85 mln<sup>288</sup>

**Wingspan:** 15.3 m

**Production:** 2013 - Ongoing

**Max speed:** 2,390 km/h

**Flight range:** 3,600 km

**Weight:** 34,500 kg

**Max combat load:** 8,000 kg

**Armament:**

- Air-to-air: P-27, P-37, P-60, P-73, P-74, P-77;
- Air-to-surface: C-25, X-29, X-31;
- Air-to-ship: X-31, X-35, X-59, Kalibr, П-800 Onix;
- Anti-radiation missiles: X-31, X-58; and
- Laser/satellite/TV-guided bombs: КАБ-500, КАБ-1500

<sup>285</sup> Su-35 Flanker-E Sukhoi <https://www.armyrecognition.com/military-products/air/fighter/su-35-flanker-e-sukhoi?highlight=WyJydXNzaWEiXQ==>.

<sup>286</sup> As of 2022, according to the National Agency on Corruption Prevention (NACP).

<sup>287</sup> Attack On Europe: Documenting Russian Equipment Losses During The 2022 Russian Invasion Of Ukraine', Oryx <https://www.oryxspioenkop.com/2022/03/list-of-aircraft-losses-during-2022.html>.

<sup>288</sup> Can America's Aging, But Mighty F-16 Overpower One of Russia's Most Advanced Fighters? March 21, 2024. <https://www.popularmechanics.com/military/aviation/a60268417/f-16-vs-su-35/>.

‘Our biggest enemy is Russian SU-35 fighter jets,’ said Andrii Pilshchykov, the late ace pilot of the Ukrainian Air Force.<sup>289</sup> While this aircraft allows Russian air patrols to strike targets almost 200 km into Ukraine, the Ukrainian Air Force is far more limited when it comes to flying and targeting hostile aircraft.<sup>290</sup>

Designed in 1970, it was initially intended to be the Soviet version of the F-15.<sup>291</sup> Manufactured in the 2000s at the Komsomolsk-on-Amur Aviation Plant, its current version is said to bear more resemblance to the F-16.<sup>292</sup> The SU-35’s improved engines, aerodynamics, avionics, and construction methods make the aircraft a significantly more developed version of the SU-27, capable of combating aerial, ground, and sea targets more efficiently.

SU-35S is a later model of the SU-35<sup>293</sup>, but in the current context of the Russian armed forces, all references to SU-35 aircraft should be understood to mean SU-35S model.

This conclusion stems from historical and technical designations that differentiate the SU-35S from its export analogue and developmental predecessors.

Initially, the term “SU-35” was associated with the export version of the domestic SU-27SM2, an upgraded version of the SU-27 (known in NATO terminology as the Flanker E).<sup>294</sup> However, in Russian aerospace and media sources, the SU-35 designation evolved to exclusively refer to the SU-35S model, an advanced SU-35 aircraft model for domestic use. Referred to during its development as the SU-35BM and occasionally as the SU-37 Terminator, the SU-35S underwent significant enhancements, making it distinct from the initial export model of the SU-35.

The SU-35S, designated by NATO as Flanker M, is the only variant of the SU-35 currently in service with the Russian Armed Forces. According to the IISS Military Balance Report of 2024, Russia has 111 units of this aircraft model.<sup>295</sup> As evident from IISS report, there are no operational “basic” SU-35 models in the Russian Air Forces, and if there were, they would be designated as SU-27SM2 models. Therefore, any references to the SU-35 by media or officials in the context of Russian military use specifically pertain to the SU-35S variant. The Russian Air Forces have been actively using SU-35S since 2014 but especially during the full-scale invasion, as is evident from the number

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289 Ukraine war: Jet pilots talk about the air war with Russia. May 9, 2023. <https://www.bbc.com/news/world-europe-65461405>.

290 Ibid.

291 Can America’s Aging, But Mighty F-16 Overpower One of Russia’s Most Advanced Fighters? March 21, 2024. <https://www.popularmechanics.com/military/aviation/a60268417/f-16-vs-su-35/>.

292 Ibid.

293 See, for example: Аэрокосмическое обозрение №5/2013, pp. 23, 26-27, <https://www.litres.ru/book/raznoe/aerokosmicheskoe-obozenie-5-2013-60963692/>; ВКС РФ получили партию новых истребителей поколения 4++ Су-35С, Tass.ru, <https://tass.ru/armiya-i-opk/20741621>; Сирийская премьера: на что способен новейший Су-35С, Tass.ru, <https://tass.ru/armiya-i-opk/2636216>; Су-35 / Су-35С - FLANKER-E, Military Russia, <http://militaryrussia.ru/blog/topic-533.html>.

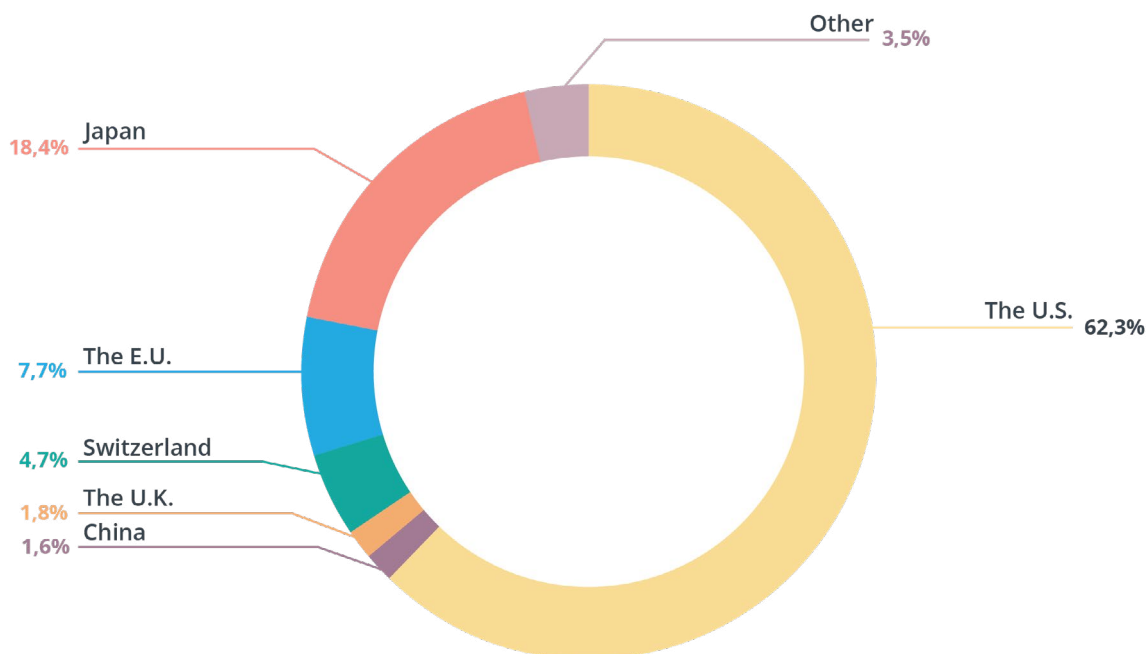
294 Janes International Defense Review 2006: IDR. Volume 39, p. 62

295 Military Balance 2024, IISS, p. 200; See also: ВКС РФ получили партию новых истребителей поколения 4++ Су-35С, Tass.ru, <https://tass.ru/armiya-i-opk/20741621>; Military Russia, <http://militaryrussia.ru/blog/topic-533.html>.

of SU-35S planes shot down by Ukrainian Air Defense.<sup>296</sup> Both Ukrainian<sup>297</sup> and the Russian<sup>298</sup> media use the designations SU-35S and SU-35 interchangeably to refer to SU-35S aircraft.

## SU-35S: Foreign components

### EXHIBIT 2: ORIGIN OF COMPONENTS FOUND IN THE SU-35S



Of all 891 components coming from 138 companies **58.9 per cent products fall under stricter export control regulations as highly prioritised**. Although the United States is also the leading supplier of foreign components found in this aircraft, compared to the SU-34, the components found in the SU-35S originate from a wider range of countries:













- **Asia:** Japan, Taiwan, South Korea, China, Kyrgyzstan, and Israel; and
- **Europe:** Germany, France, the Netherlands, Switzerland, the UK, Bulgaria, and Belarus

296 'Attack On Europe: Documenting Russian Equipment Losses During The 2022 Russian Invasion Of Ukraine', Oryx <https://www.oryxspioenkop.com/2022/03/list-of-aircraft-losses-during-2022.html>; Sukhoi Massacre: Ukraine Has Shot Down Six Of Russia's Best Jets In Just Three Days, Forbes, <https://www.forbes.com/sites/davidaxe/2024/02/19/sukhoi-massacre-ukraine-has-shot-down-six-of-russias-best-jets-in-just-three-days/>; Ukraine's Air Force shoots down two more Russian warplanes, Ukrainska Pravda, <https://www.pravda.com.ua/eng/news/2024/02/19/7442515/>; Also confirmed by Russian Military Bloggers: Военный Осведомитель, Telegram Post, <https://t.me/milinfofive/116524>.

297 Ukraine's Air Force shoots down two more Russian warplanes, Ukrainska Pravda, <https://www.pravda.com.ua/eng/news/2024/02/19/7442515/>; Що таке Су-35: все про винищувачі, які активно збиває Україна, їх характеристики та особливості, EspressoTV, <https://espreso.tv/poyasnuemo-shcho-take-su-35-vse-pro-vinishchuvachi-yaki-aktivno-nishchit-ukraina-kharakteristiki-ta-osoblivosti>; Масовий літакопад на фронті. Чим і як Україна могла збити 13 літаків РФ за лютий?, BBC News Україна, <https://www.bbc.com/ukrainian/articles/cyxd5z66yk1o>

298 ВКС РФ получили партию новых истребителей поколения 4++ Су-35С, Tass.ru, <https://tass.ru/armiya-i-opk/20741621>; Истребитель Су-35С: экстремально опасен, Rostec.ru, <https://rostec.ru/news/istrebitel-su-35s-ekstremalno-opasen/>; Су-35 сопровождал бомбардировщики на Купянском направлении, Ria Novosti, <https://ria.ru/20240224/su-35-1929234000.html>; Аэрокосмическое обозрение №5/2013, pp. 23, 26-27, <https://www.litres.ru/book/raznoe/aerokosmicheskoe-obozrenie-5-2013-60963692/>.

## SU-35S: TOP COMPANIES

Among the prioritised microelectronic goods, **55 per cent were identified as integrated circuits** of varying importance, including voltage regulators, complementary metal-oxide-semiconductors, analogue multiplexers, signal processors, switches, buffers, drivers, receivers, transceivers, and so on. Apart from Intel, FPGAs and memories also come from Maxim, Atmel, Cypress, Everspin Technologies, Macronix, Microchip, Micron, and Macronix.

**Ceramic capacitors** make up a third of the prioritised goods, coming from a wide selection of companies: ATC, AVX, Kemet, Murata, NXP, Panasonic, TDK, Vishay, NIC Components, Samsung, Taiyo Yuden, TDK, and Vicor.

**According to United States export controls, 6 per cent of verified components are also considered sensitive**, mainly, electronic items and devices, telecommunications equipment, navigation direction fighting equipment, airborne communication equipment, and all aircraft inertial navigation systems produced by the following companies:

- Analog Devices
- Atmel
- Cypress
- Digilent, Inc
- Intel
- Maxim
- Macronix
- Microchip
- Microsemi
- Micron
- Texas Instruments
- Xilinx

List of companies whose components have been found inside the Su-35S<sup>299</sup>

Country	Company	Country	Company
Bulgaria	LEM	USA	AirBorn
France	C&K		Alliance Memory
	Exxelia		AMD
Germany	Ebm-papst		Amphenol
	First Sensor		Anadigm
	Harting		Analog Devices
	Infineon		Apex Microtechnology
	Klauke		ATC
	Landmark		Atmel
	OSRAM		AVX
	Peak Electronics		Bel Fuse
	Physik Instrumente		Beta Transformer
	Powersem		BH Electronics
	RECOM International Power		Bourns
	Siemens		

<sup>299</sup> Yellow highlighting indicates that the goods produced by the company which were found in SU-35S fall under enhanced customer due diligence in accordance with **Common High Priority List (CHPL)** developed by the United States in coalition with the EU, Japan, and the UK.

Country	Company	Country	Company
Israel	Lambda	USA	Broadcom
Japan	Citizen		C&D
	Hamamatsu		Caddock
	Hirose		Coilcraft
	Hitachi		Cosmo Electronic Corporation
	Murata		CREE
	NEC		CRYDOM
	Nichia		Cypress
	Omron		DDC
	Panasonic		Digilent, Inc
	Renesas		Diodes Incorporated
	ROHM Semiconductor		Diotec
	Sanyo		Esterline Power Systems
	Sanyo Denki		Everspin Technologies
	Sharp		Exar
	Sony		Frontier Electronics
	Sumida		Holt Integrated Circuits
	Taiyo Yuden		Honeywell
	TDK		Hypertronics
	Torex Semiconductor		IDT
	Toshiba		Intel
South Korea	Hynix		Intersil
	i3 system		Kemet
	LG		Littelfuse
	Samsung		MACOM
Switzerland	TE Connectivity		Magnetics
	STMicroelectronics		Maxim
	TRACO Power		Micro-Coax
Taiwan	Crown Ferrite		Microchip
	FOCI		Micron
	InnoDisk		Microsemi
	Jamicon		Mini-Circuits
	Kingbright		Molex
	Macronix		NIC Components
	OhmCraft		ON Semiconductor
	Yageo		
Netherlands	Nexperia		Pericom
	NXP		Pico
UK	Dialog Semiconductor		Power Integrations
	Farnell		Pulse
	Harwin		Qorvo
	Laird		Samtec
	Smiths Connectors		Semtech
	TT Electronics		Skyworks Solutions
	XP Power		Staco Systems

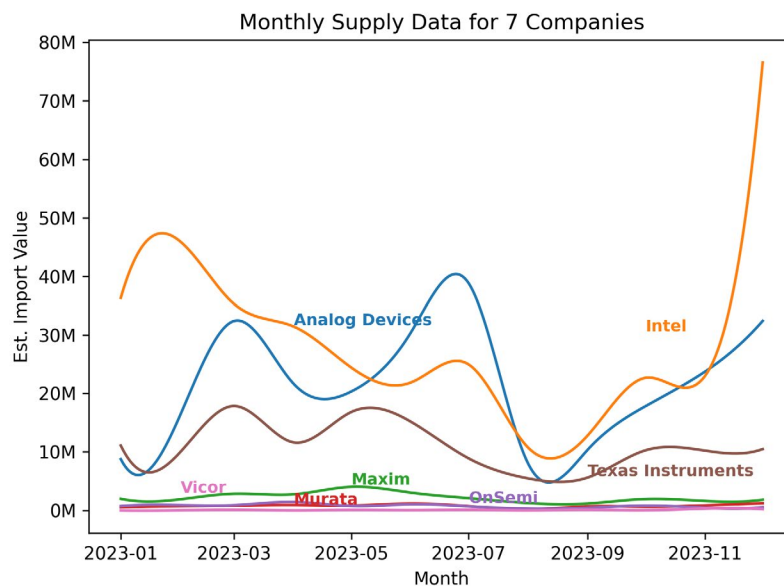
Country	Company	Country	Company
		USA	Texas Instruments
			Vicor
			Vishay
			Voltage Multipliers
			VPT
			Winchester Interconnect Micro
			Wolfspeed
			Xilinx

## 2. Key Microelectronic Goods and Their Manufacturers

Data collected by NAKO relates to Russian imports of goods produced by the seven leading companies identified in Su-34 and Su-35S above for the year 2023. We have focused on the following criteria for data collection:

- The data has to include one of the following top companies: Analog Devices, Texas Instruments, Murata, Maxim, OnSemi, Intel, and Vicor; and
- The data is narrowed down to highly prioritised goods (Tier 1 and 2 of the CHPL<sup>300</sup>).

### EXHIBIT 3. 2023 MONTHLY IMPORT BY MANUFACTURERS (MILLION USD)



Source: NAKO.

We have collected data on over 180,000 shipments in 2023 with an estimated worth of 805.6 million USD.

The overall supply value for 36.3 per cent of companies in 2023 is below 10,000 USD.






300 Russia Export Controls – **List of Common High-Priority Items**. February 23, 2024. The Department of Commerce's Bureau of Industry and Security (BIS). <https://www.bis.gov/articles/russia-export-controls-list-common-high-priority-items>

#### EXHIBIT 4. RUSSIAN IMPORTS OF PRIORITISED GOODS IN 2023 (MILLION USD)

<b>8532.24</b> Ceramic dielectric multilayer capacitors	<b>8542.31</b> Processors and controllers	<b>8542.32</b> Memories
8.5	411.2	1.1
<b>8542.33</b> Amplifiers	<b>8542.39</b> Electronic integrated circuits	<b>8548.00</b> Other electrical parts of machinery or apparatus
53.9	329.2	1.7

Source: NAKO

#### EXHIBIT 5. KEY MANUFACTURER IMPORTS IN 2023

Manufacturer	Shipments / Estimated Worth (million USD)	Countries of Trade / Dispatch <sup>301</sup>	Identified Regional Manufacturers <sup>302</sup>
 <b>ANALOG DEVICES</b> <small>AHEAD OF WHAT'S POSSIBLE™</small>	65,129 / 260.9	37 / 28	Ireland, Germany, China, Malaysia, Philippines, Singapore, USA, South Korea, Taiwan, Thailand
 <b>TEXAS INSTRUMENTS</b>	74,754 / 133.4	41 / 34	China (Chengdu, Shanghai), Germany, Japan, Malaysia, Mexico, Philippines, Singapore, South Korea (Seoul, HK Branch), Taiwan, Thailand, UK, USA
	8,180 / 365.8	28 / 25	China (Shanghai, Beijing, Chengdu, Zhongshan), Costa Rica, Hong Kong, Indonesia, Malaysia, Philippines, South Korea, Taiwan, Thailand, UK, USA, Vietnam
 <b>maxim integrated™</b>	12,608 / 26.3	30 / 23	China, Germany, Malaysia, Philippines, Thailand, USA
 <b>muRata</b> <small>INNOVATOR IN ELECTRONICS</small>	11,300 / 9.1	28 / 23	China (Dongguan, Shenzhen, Shanghai, Wuxi), Japan (Fukui, Izumo, Kanazawa), USA, South Korea, Thailand, Malaysia, Philippines, Singapore, Taiwan
 <b>onsemi</b>	8,790 / 8.9	30 / 18	China (Beijing, Shenzhen), India, Malaysia, Netherlands, Japan (Niigata), Philippines, Thailand, UK, USA
 <b>VICOR</b>	98 / 1	8 / 6	Unknown

<sup>301</sup> Trading country represents a country of transaction, while the dispatch country identifies the alleged state of forwarding. More on that in **Foreign Suppliers, Trading and Delivery** section.

<sup>302</sup> Although the majority of the analysed data does not specify the exact manufacturing origin of the imported goods, some, however, still indicate a more detailed place of supposed manufacturing. In some cases, it does not only cover the countries, but also specific cities of manufacturing.

## Russian Importers

The vast majority (97.7 per cent) of the Russian importers are private companies. They include plants working in various fields, from poultry breeding to the oil and gas industry, electronics and IT-related services, and logistics companies. However, 43.4 per cent of these private entities provide little information about their business activity apart from registration data, indicating that at least some of them could be shell companies. According to the Russian registry, in some rare cases, private and individual entities have already been dissolved long before 2023 (e.g., OOO Mayak, referred to as Lighthouse LLC in the customs data; TIN 7702776171).

Several such dissolved private companies work directly or indirectly with the Russian authorities and the military. Specifically, **Alfachip LLC** (TIN 7735517743), which has imported 2.3 million USD worth of electronic integrated circuits mainly produced by Analog Devices, openly states its cooperation with AO Milandr,<sup>303</sup> sanctioned by the US in 2022.<sup>304</sup> Milandr is reportedly listed in more than 500 contracts in the Russian government contracts database.<sup>305</sup> According to the media, it supplies microelectronics to the Ural Optical-Mechanical Plant, the Avtomatika Concern, and the Izhevsk Electromechanical Plant.<sup>306</sup>

Another such company is **CJSC NVP Bolid** (TIN 5018000402), a producer of security systems and dispatching. According to the media, Bolid works with **Rosgvardiya** (the Russian National Guard).<sup>307</sup> In 2023, it imported more than 654,000 ceramic capacitors, processors and controllers, amplifiers, and electronic integrated circuits from China and Hong Kong.

Another Russian company, **ARS Global LLC** (7816735115), publicly states that its main field of expertise is sanctions evasion. A vacancy announcement by **ARS Global LLC** on a job search website in Saint Petersburg claims the company specialises in delivering sanctioned goods to Russia through “parallel imports” via “partners from Turkey, Europe, the UAE, Serbia, and Armenia”.<sup>308</sup> It also states: “Every day we resolve new non-standard tasks. Our job is like an exciting game, in which we constantly overcome the obstacles, while the level of difficulty increases.”<sup>309</sup>

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303 <https://alphachip.ru/o-kompanii/>

304 U.S. blacklists companies for aiding Russian military. Reuters. December 7, 2022. <https://www.reuters.com/business/us-adds-24-companies-entities-export-control-list-2022-12-07/>

305 Ексклюзив: російська компанія попри заперечення постачає військовим мікрочипи. Voice of America. April 6, 2024. <https://www.holosameryky.com/a/rosijska-kompanija-prodaje-mikrochipy-vijskovym/7559598.html>

306 *Ibid.*

307 Росгвардия делает ставку на интегрированные системы. ru-bezh.ru. September 23, 2023. <https://ru-bezh.ru/infografika/rosgvardiya-delaet-stavku-na-integrirovannye-sistemy>

308 <https://spb.hh.ru/employer/9228398>

309 *Ibid.*

## EXHIBIT 6. ARS GLOBAL LLC COMPANY SELF-DESCRIPTION ON SPB.HH.RU



Санкт-Петербург  
[arsglobal.ru](https://arsglobal.ru)

**Вакансии**  
1 активная вакансия

Я хочу тут работать

Подписаться

Организация  
**ООО АРС Глобал** ✓

5,0 ★★★★★ 3 отзыва

**ARS Global** - сервис для доставки в Россию санкционных товаров, для юридических лиц, по параллельному импорту. Параллельный импорт - это сложное, но очень интересное и прибыльное направление.

Мы работаем с партнерами в Турции, Европе, ОАЭ, Сербии и Армении, а наши офисы находятся в Москве и Санкт-Петербурге.

Каждый день мы решаем новые нестандартные задачи. Наша работа похожа на увлекательную игру, где мы постоянно преодолеваем препятствия, а уровень сложности растет. Благодаря изменениям и трудностям, часть игроков выходит из игры и остаются те, кто умеет адаптироваться к новым обстоятельствам.

According to customs data, ARS Global LLC imported prioritised microelectronic goods only once. These goods were Intel processors, worth almost 7,000 USD and paid for via Kyrgyzstan. However, the website of ARS Global LLC, rebranded 4global,<sup>310</sup> implies that one of its key focuses is industrial equipment. Moreover, the website also demonstrates specific shipments of large equipment, including equipment produced by Siemens.<sup>311</sup> Such shipments through Kyrgyzstan can also be seen for several other logistics companies, such as the Moscow-based **Electra Pro LLC** (TIN 7718964660) and **Mechatronika LLC** from Ivanovsk (TIN 370002205, a joint stock company since 2024), who also openly acknowledge their maintenance of equipment and computer numerical controls<sup>312</sup> manufactured by Siemens, Fanuc, and Heidenhain.<sup>313</sup>

## EXHIBIT 7. SCREENSHOT FROM 4GLOBAL'S (PREVIOUSLY NAMED ARS GLOBAL) WEBSITE, SHOWING ITS DELIVERIES

4GLOBAL    ЧТО МЫ ВОЗИМ    СХЕМА РАБОТЫ    О НАС    КЕЙСЫ    ДОКУМЕНТЫ    АДРЕСА И КОНТАКТЫ    +7 (812) 602 70 40

### Грузы наших клиентов

Запчасти BMW из Германии

Оборудование EATON из Европы

Оборудование Helmholz из Германии

Оборудование HP из Европы

Оборудование Siemens из Германии

Резцы для фрез Wirtgen

Серверное оборудование из Китая

Запчасти к оборудованию Tetra Pak

310 <https://arsglobal.ru/>

311 *Ibid.*

312 Computer numerical control.

313 <https://mtronics.ru/uslugi/>

4global's website also adds: "In case suppliers refuse to interact with the Russian Federation directly, we will conduct negotiations on behalf of a foreign trading company, without referring to the Russian buyer."

## EXHIBIT 8. SCREENSHOT FROM 4GLOBAL'S (PREVIOUSLY NAMED ARS GLOBAL) WEBSITE

*В случае отказа поставщиков взаимодействовать с РФ напрямую, проведем переговоры от лица зарубежной торговой компании, не ссылаясь на покупателя РФ*

Contrary to the list of private entities, there is minimal evidence of many state- and military-related entities importing microelectronics directly associated with the Russian military industry. The exception is **Ural Optical-Mechanical Plant** (JSC PA UOMP, Uralskiy Optikomekhanicheskiy Zavod imeni E.S. Yalamova, TIN 6672315362), part of **Shvabe Holding** within **Rostec**. JSC PA UOMP produces bomb aiming systems, laser distance measuring systems, and optical laser systems for military aircraft. Customs data shows more than 300 shipments of electronic integrated circuits, processors, controllers, and memories from the China-based branch of Shvabe Holding, **Shvabe Opto Electronics Shenzhen Co. Ltd.** The estimated worth of the supplied microelectronic items manufactured by Texas Instruments, Analog Devices, Intel, OnSemi, and Maxim exceeded 370,000 USD. Earlier, NAKO also reported that JSC PA UOMP procured British optics worth more than 380,000 USD through Thailand from a Kyrgyzstani company, Shisan Ltd.<sup>314</sup>

Another entity with evident connections to the Russian military industry is **JSC Concern Aurora Scientific and Production Association** (Aurora JSC, Aktsyonernoe Obschestvo Kontsern Nauchno-Proizvoditelnoe Obyedinenie 'Aurora', TIN 7802463197). Aurora JSC is a leading manufacturer of maritime defence equipment, specifically, automated control systems for surface ships and submarines. It services marine equipment for submarines<sup>315</sup> and naval surface ships of the Russian Armed Forces.<sup>316</sup>

Another company from this group is **Huaming Co. Ltd** ("Huamin International" in customs declarations), a Moscow-based subsidiary of a Chinese state-owned investment company.<sup>317</sup> According to media reporting, Huaming's shareholders are four large Chinese companies: China National Petroleum Corporation (CNPC), China Oil and Foodstuffs Corporation (COFCO), China Great Wall Industrial Company, and China Precision Instruments Import and Export Company.<sup>318</sup> Huaming's main activity is investing in, building, and managing the China Business Center PARK HUAMIN. Apart from investments, this entity's focus includes real estate management and

314 Wings of War: Analysing the Western Parts in Russian Fighter Jets. NAKO. June 13, 2024. <https://nako.org.ua/en/research/wings-of-war-analysing-the-western-parts-in-russian-fighter-jets>

315 Joint Stock Company Concern Aurora Scientific and Production Association <https://www.opensanctions.org/entities/NK-fZ578waFAYEbDzPWVBopUZ/>

316 Ibid.

317 ООО "ХУАМИН ИНТЕРНЭШНЛ", <https://www.list-org.com/company/3336478>

318 ИНВЕСТИРЫ ИЗ КИТАЯ ЗАИНТЕРЕСОВАНЫ В СОТРУДНИЧЕСТВЕ С КРАСНОЯРСКИМ КРАЕМ. April 25, 2022. <https://ensib.ru/investory-iz-kitaya-zainteresovany-v-s/>

construction.<sup>319</sup> However, according to the data, in 2023, Huaming imported Intel processors and controllers worth approximately 86,500 USD.

## Foreign Suppliers, Trading, and Delivery

There are three country-specific identifications:

- **Supplier country:** A country where a supplier is allegedly based;
- **Trading country:** Transaction country;
- **Country of dispatch:** Forwarding country.

While, in some cases, the trading and dispatching countries may be the same, in others, the trading cycle can involve two or more countries. For example, one state can be responsible for the transaction and another – or several others – can be directly or indirectly involved in the operational part of the supply (dispatchers).

Additionally, customs data *does not identify the supplier countries*, which, based on this analysis, can and do differ from trading and departure information. Additionally, some suppliers state more than one address in their declarations from more than one country. We thus cannot fully identify the actual supplying country. However, we consider the address(es) given in microdata and the information on trade and departure.

15.7 per cent of shipments lack information on the trading countries and cannot be analysed. Therefore, the overall statistics include only the trading countries we were able to identify. As for supplier countries, the original data did not contain any such information. However, the customs data provides the alleged address of the supplier.

Although primarily focused on China and Hong Kong, the geography of traders and dispatchers are still quite diverse, covering not only Asia but also Europe, North and South America, and Africa.

While Hong Kong dominates trade and dispatch, the data also shows the important role of several other countries outside of the coalition – their share in transactional support and physical departure makes up 19.2 per cent of all supply.

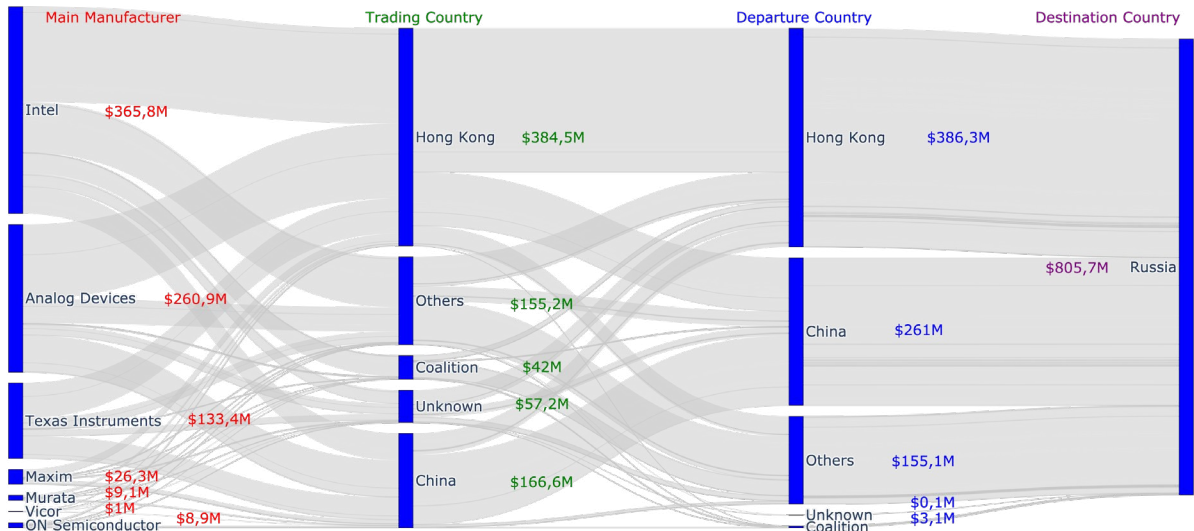
Among 43 countries that are stated as **transaction** centres for the shipments, 17 are located in **Europe**: Belarus, Cyprus, Czechia, Estonia, Finland, France, Georgia, Germany, Hungary, Italy, Latvia, Lithuania, Poland, Serbia, Slovakia, Switzerland, and the United Kingdom; while three more are from **the Americas**: Canada, the United States, and the British Virgin Islands; four more are from the **Middle East**: Israel, Turkey, Qatar, and the United Arab Emirates; two are from the **South Caucasus**: Armenia and Azerbaijan; four are from **Central Asia**: Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan; eleven are from **South and East Asia**: China, Hong Kong, India, Japan, Malaysia, Mongolia, Taiwan, Thailand, Singapore, South Korea, and Vietnam; and two more are from **Africa and the Indian Ocean**: Seychelles, South Africa.

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319 *Ibid.*

EXHIBIT 9. 2023 SUPPLY CHAIN (MILLION USD)

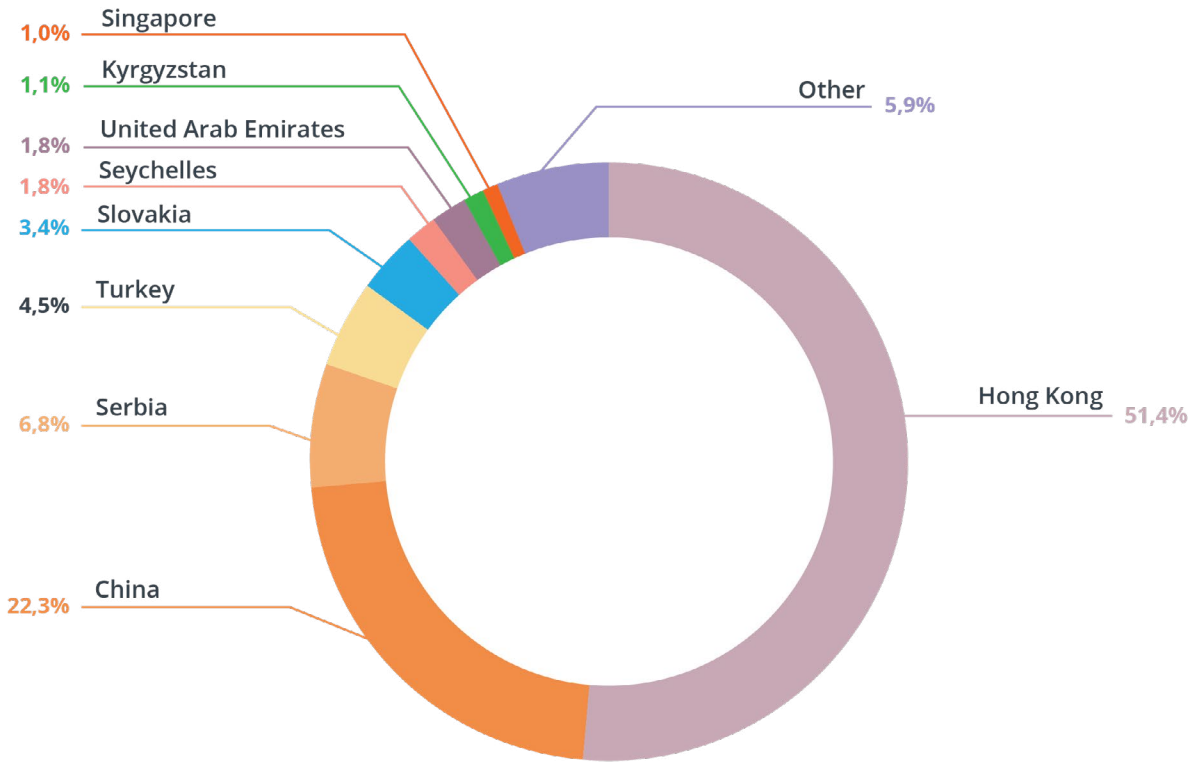
Flow of Goods in 2023 (in millions)



Source: NAKO

At the same time, **direct imports** to Russia originated from at least 39 countries, including Egypt, Ethiopia, Macao, the Maldives, Oman, Qatar, Sri Lanka, and Turkmenistan. The origins of some shipments’ dispatch and trade remained unknown.

EXHIBIT 10. MAIN TRADING COUNTRIES FOR 2023 (PER CENT)



Source: NAKO

For instance, transactions going through **Armenia** are linked to at least two supplying companies from Hong Kong and China: Ace Electronic HK Co Ltd and Shenzhen TX Freight Co Ltd. An example from **Azerbaijan** demonstrates the duality of transactions and companies' actual origins. Of the seven companies whose transactions went through Azerbaijan, only three can be local – Aabacus LLC, Tulpar Az LLC, and VVR Group Az LLC. The other companies are allegedly based in several Chinese cities. Among six companies whose transactions went through **Belarus**, only one is Belarusian (CHTUP SkyGlobal), while most of the remaining are also in China and Hong Kong. At the same time, Belarus is listed as the transacting country for imports to Russia from an apparent **Lithuanian forwarding company - Zetemzeja UAB** - supplying Russian Bulat LLC (TIN 7724309893) with OnSemi circuits worth more than 40,000 USD.

**The US** and **Canada** differ significantly, both in sums of contracts and dispatch. Namely, transactions made from counterparties in Canada made almost 7 million USD, while the US one is relatively small – only 73,000 USD. The American goods were dispatched to Russia directly from the US. However, in the case of Canada, the imports were dispatched from China, Hong Kong, Thailand, and the Maldives. **Alburton Enterprises Inc.** concluded the majority of Canadian contracts. This company, described as “quasi-Canadian”, has already been covered by the media for smuggling 80 million USD worth of microelectronic goods to Russia using a Canadian address.<sup>320</sup> According to CBS News, the company was incorporated in the British Virgin Islands in 2015 with Edward Poberezhkin as its owner.<sup>321</sup> However, Poberezhkin claimed he had not known of any activity of this company.<sup>322</sup>

A similar case could be seen with **UK** trading. While, overall, transactions analysed from the UK do not exceed 1.9 million USD, the majority of it this was sent by **Mykines Corporation LLP**, established and run by Ukrainian nationals, and has already been mentioned in the media in the context of Russia's supply chain and ties with Russia<sup>323</sup> and previously covered by NAKO.<sup>324</sup> Mykines ships goods predominantly from the Maldives. It is tied to two companies based in the British Virgin Islands: Emerette Investments Limited and Ventrax Trade Limited.<sup>325</sup> While Mykines' website states that it is “a solar energy company”,<sup>326</sup> customs data shows that Mykines profits mainly from smartphones and laptop supplies, with only a few Russian companies, one of which has been sanctioned by the US.<sup>327</sup>

Over 110,000 microelectronic goods worth more than 7 million USD list their trading country as **Georgia**. Although predominantly sent via Chinese companies, at least 1,300 microelectronics manufactured by Texas Instruments, Analog Devices, and Maxim were supplied through Osaka-based Hakito Components Co Ltd and dispatched from China.

Unlike Georgia, more than 38,000 USD worth of goods are linked to transacting parties in **Germany** that enabled the supply of microelectronics primarily via European states: Finland, Lithuania,

320 Why a Canadian address showed up on \$80M in war-goods shipments to Russia. June 26, 2024. <https://www.cbc.ca/news/canada/toronto/russian-sanctions-canada-equipment-china-1.7246038>

321 *Ibid.*

322 *Ibid.*

323 The UK business that shipped \$1.2bn of electronics to Russia. April 7, 2023. <https://www.ft.com/content/bdd8c518-bf10-4c9c-b53b-bf512e2e92>

324 Wings of War: Analysing the Western Parts in Russian Fighter Jets. NAKO. June 13, 2024. <https://nako.org.ua/en/research/wings-of-war-analysing-the-western-parts-in-russian-fighter-jets>

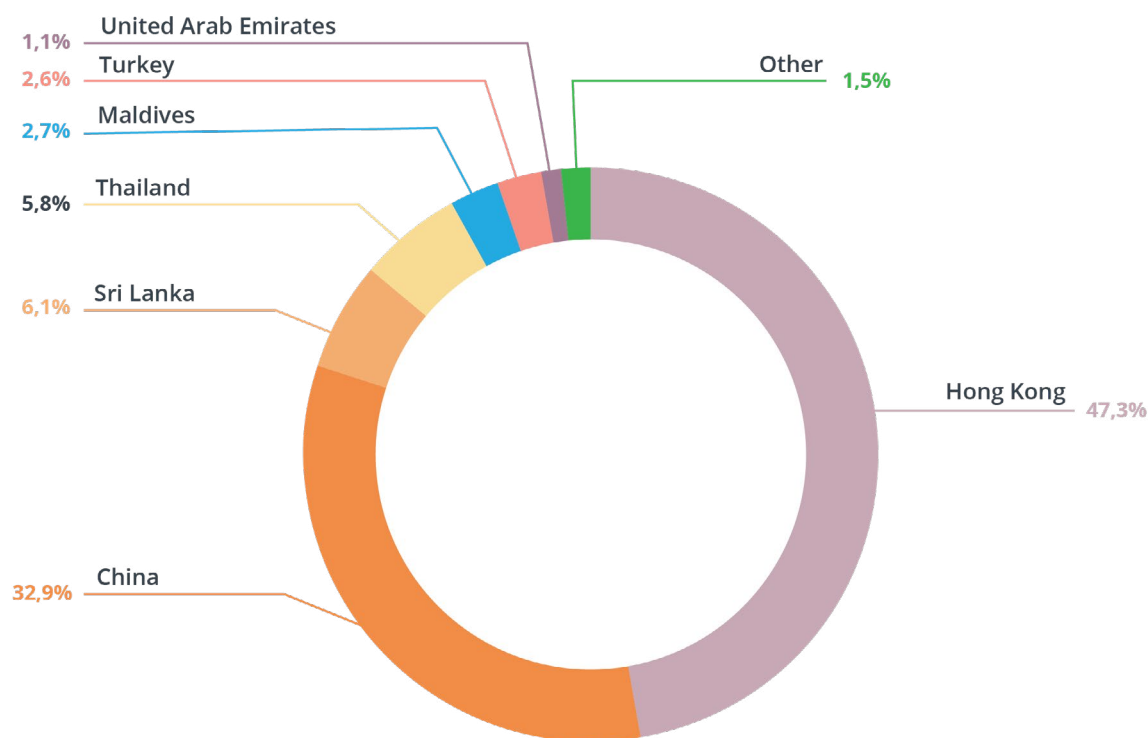
325 Companies House - GOV.UK <https://find-and-update.company-information.service.gov.uk/company/OC413685/officers>

326 Mykiness Solar. About Us. <https://mykinessolar.com/about-us.html>

327 SILKWAY LIMITED LIABILITY COMPANY. OFAC Sanctions List Search. <https://sanctionssearch.ofac.treas.gov/Details.aspx?id=44721>

Poland, and Germany itself. Notably, the supplies can be traced to **Salespro GmbH, Systec GmbH, Aktuelle Elektrotechnik GmbH, Wesemicon GmbH, and Tradec Gesellschaft F Prozesstechnik GmbH**. 310 shipments involved a transacting party in **Hungary: Matrix Metal Group Kft** was the supplier of over 1.5 million USD in shipments coming from Hong Kong, China, and Thailand. Most shipments made their way to Eksiton LLC (TIN 5040179240), sanctioned by the US.<sup>328</sup>

#### EXHIBIT 11. MAIN COUNTRIES OF DISPATCH IN 2023 (PER CENT)



Source: NAKO

Two **Slovakian** companies – Bompietro Trading Sro (via Hong Kong) and Carovilli Trading Sro (through Sri Lanka and Thailand) – made possible shipping of prioritised microelectronic goods worth over 25.4 million USD by trading them.

Trade through the **Baltics** made possible almost 2 million USD worth of imports of prioritised microelectronics to six Russian importers: Kvazar LLC (TIN 7805753313, sanctioned by the U.S.<sup>329</sup>), Spetsvoltazh LLC (TIN 7802634149, sanctioned by the U.S.<sup>330</sup>), Electronics Import Export LLC (TIN 7801654978), Kaskod Electro LLC (TIN 7810312804), MI Trans LLC (TIN 7839412865), and New Electronic Company LLC (TIN 5402020550). The supplier list includes **Lithuanian** Zetemzeja Uab, This Is UAB, **Latvian** OTK Group Sia, **Estonian** Tunebros OÜ, IdaTrading OÜ, and Elmec Trade OÜ. In addition, trade through Estonia enabled imports by Asia Link Shanghai International Logistics Co. Ltd, Cargo Marketing Logistics HK Co. Ltd, HK Vance Electronic Co Ltd, LL Electronic Co Ltd, Shenzhen Taigelong Technology Co Ltd, and Chinese citizen Qiao Qian.

**Serbia**, the third largest country of trade, ensured the financial support for contracts worth at least 50 million USD. 13 of 26 supplier entities are Serbian and make up the majority of the supply:

328 LIMITED LIABILITY COMPANY EKSITON. <https://www.opensanctions.org/entities/ofac-49776/>

329 Limited Liability Company Kvazar. <https://www.opensanctions.org/entities/NK-AHhJLKXXq34JrJ48QXSoAw/>

330 Limited Liability Company Spetsvoltazh. <https://www.opensanctions.org/entities/NK-UCuBNCagD2PC43UKwggDUN/>

Aktechnology Doo, Conex Doo, Goodforwarding Doo, Kominvex Doo, Lasopsys Doo, Logimix Doo, Metalik Kroj Doo, MKKK Doo, New Case Doo, Research & Development Co Tr Industries Doo, Soha Info Doo, TTS Logistics Doo, and Uspon Doo. The imports, however, mostly came through countries of dispatch in Asia, predominantly from Hong Kong (21.8 million USD) and Sri Lanka (21.3 million USD).

Another large country of trade, **Turkey**, was also one of the main forwarding centres of the microelectronics analysed: 16 million USD out of 33.4 million USD was shipped from Turkey and its 63 entities. Unlike many other countries, the majority of the entities involved in shipment originate in Turkey, not Hong Kong or China. Apart from that, dispatching countries include Denmark, Finland, Germany, Poland, Serbia, the UAE, the Maldives, Turkmenistan, and Ethiopia.

**The United Arab Emirates** made another valuable contribution to supporting the imports to Russia with over 13.7 million USD worth of goods. While some deliveries arrived in Russia via Hong Kong, China, and the UAE, other countries are involved in the supply chain contracted from within the UAE: Lithuania, Maldives, Oman, Thailand, and Turkey.

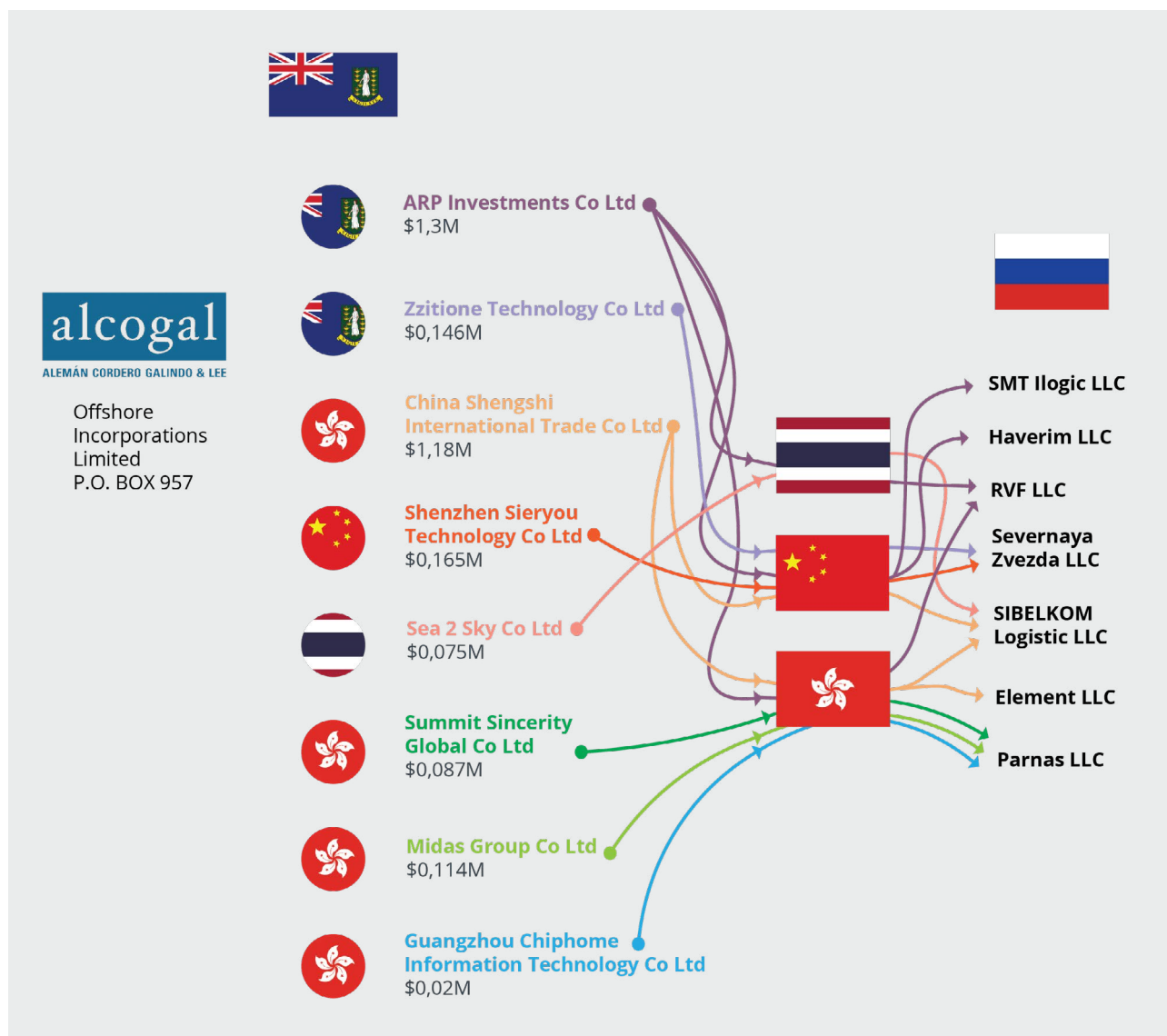
Over 2.3 million USD worth of **India-based transactions** involve at least 18 companies, mostly of Indian origin. In this case, most deliveries also came from India, not other third-party countries. The exception, however, would be the supply of several Murata items, dispatched from the UAE with Rapira Exim Private Co Ltd from New Delhi as a transactional counterpart.

Almost 3.7 million USD worth of supplies involved counterparties in **Kazakhstan** and at least 24 local and international supplier companies. 33 per cent of these transactions came from the Almaty-based **TOO Elem Group**. At the same time, in other cases, the geography of the departure countries is quite diverse. It includes China, Hong Kong, and European countries bordering Russia: Latvia, Lithuania, and Finland. Some supplies come from Turkey, the UAE, and the Maldives. **Kyrgyzstan's example** represents even bigger sums of contracts and number of companies – over 8.5 million USD came through 54 supplier entities. While in most cases, the geography of dispatch is quite similar to that of Kazakhstan, which also includes Uzbekistan and Poland.

**Mongolia** ensured almost 2 million USD in transactions. Of five supplier companies, at least two are based in Ulaanbaatar: Dafeng Asia LLC and Maximo Progress LLC. At the same time, the imports to Russia did not originate from Mongolia – 61 per cent were dispatched from Hong Kong, 20 per cent more came from other Chinese cities, and 17.1 per cent from Macao. The remaining items were delivered from the UAE. **Tajikistan's role**, while somewhat marginal, ensured shipment of 264,000 USD, 56.8 per cent of which came from local forwarders rather than Chinese forwarders. Vartech Impex is the only company that made a supply-related transaction via **Uzbekistan**, from where most items were delivered. However, customs data suggests the Maldives was another place of dispatch for the said company.

Of more than 3.5 million USD of trade involving counterparties in **Taiwan**, 2.4 million USD was dispatched from China and Hong Kong. 78.5 per cent of contracts concluded via **Thailand** were delivered from Thai suppliers. **Singapore** made transactions worth roughly 7.4 million USD via at least 14 entities, including local ones. However, the majority of imports were dispatched from China and Hong Kong. Although relatively insignificant overall (185,000 USD), **South Korea** is still quite important in terms of the dispatch of items produced by Texas Instruments and Murata. Specifically, at least three local South Korean companies exported the said goods directly from South Korea: Seyoung Co Ltd, LX Pantos Co Ltd, and Yestrade Co Ltd.

## EXHIBIT 12. TRADING THROUGH THE BRITISH VIRGIN ISLANDS, 2023



Source: NAKO

Several companies have connections to **offshore companies**, particularly numerous companies from Hong Kong and some based in the British Virgin Islands and Seychelles.

Two suppliers could be traced to **Alemán, Cordero, Galindo & Lee (Alcogal)**, a Panama-based law firm and one of the centres for the Panama Papers leaks. According to the International Consortium of Investigative Journalists (ICIJ), Alcogal created over 14,000 entities for more than 15,000 customers since 1996.<sup>331</sup> The Pandora Papers imply that Alcogal primarily serves 300 politicians from more than 90 countries, mainly from the US, Europe, and Asia.<sup>332</sup> Another company, allegedly based in Hong Kong, can be traced to the **Offshore Incorporations Centre** (PO Box 957, Road Town, Tortola, British Virgin Islands).<sup>333</sup>

331 Brenda Medina, Jesús Escudero and Emilia Díaz-Struck. When Latin America's elite wanted to hide their wealth, they turned to this Panama firm. International Consortium of Investigative Journalists. October 3, 2021. <https://www.icij.org/investigations/pandora-papers/alcogal-panama-latin-america-politicians/>

332 *Ibid.*

333 P. O. Box 957, Offshore Incorporations Centre, Road Town, Tortola, British Virgin Islands. ICIJ Offshore Leaks database. <https://offshoreleaks.icij.org/nodes/236312>

**Saldor Corporation**, a Seychelles entity, shares the same address with more than 2,000 entities, according to the ICIJ and the Pandora Papers.<sup>334</sup> In 2023, Saldor supplied two Moscow-based companies - **ITPort LLC** (*Itiport LLC* in customs data, TIN 9715424244) and **Silkway LLC** (TIN 9717089129) - with Intes processors, controllers, and other electronics integrated circuits worth more than 13.7 million USD mainly involving transactions through the Maldives.

### EXHIBIT 13. COMPARISON BETWEEN COUNTRIES OF TRANSACTIONS AND FORWARDING IN 2023 (USD)

Countries of Trade		Dispatch Countries	
Armenia	130,191.03		
Azerbaijan	387,941.58		
Belarus	925,562.08	Belarus	486,264.15
British Virgin Islands	2,922,802.63	British Virgin Islands	32,640
Canada	6,948,207.09		
China	166,689,998.59	China	261,007,891.08
Cyprus	815,266.54		
Czechia	47,234.47		
		Denmark	17,117.21
		Egypt	816,156.75
Estonia	1,771,621.66	Estonia	13,463.12
		Ethiopia	113,997.40
Finland	4,763.50	Finland	772,220.71
France	416,169.87	France	507,651.25
Georgia	7,094,965.87		
Germany	40,813.06	Germany	79,986.19
Hong Kong	384,574,694.31	Hong Kong	386,303,082.63
Hungary	1,552,923.30		
India	2,233,197.12	India	2,961,232.43
Israel	222.80	Israel	1,658.47
Italy	6,323.55	Italy	1,141.14
Japan	362,376.52	Japan	12,471.97
Kazakhstan	3,726,630.48	Kazakhstan	1,229,188.56
Kyrgyzstan	8,500,783.78	Kyrgyzstan	1,511,103.92
Latvia	2,141.04	Latvia	23,741.04
Lithuania	185,578.65	Lithuania	143,851.23
		Macao	1,710,331,.74
Malaysia	12,973.25	Malaysia	5,454
		Maldives	20,460,164.88
Mongolia	1,990,748.16		
		Oman	6,031.28
Poland	541.64	Poland	5,409.48
Qatar	3,601.27	Qatar	3,601.27
Serbia	50,919,576.64	Serbia	1,802,697.62
Seychelles	13,773,626.99		
Singapore	7,408,158.52		
Slovakia	25,421,471.78		
South Africa	521.69	South Africa	521.69
South Korea	185,978.61	South Korea	105,975.21
		Sri Lanka	45,419,677.43
Switzerland	286,545.53	Switzerland	155.50
Taiwan	3,542,367.69	Taiwan	1,370,188.12
Tajikistan	264,844.53	Tajikistan	150,401.32
Thailand	6,021,538.45	Thailand	45,983,499.35
Turkey	33,433,913.83	Turkey	22,701,979.79
		Turkmenistan	16,221.86
United Arab Emirates	13,727,222.63	United Arab Emirates	9,311,725.10

334 Suite 1, second floor, Sound & Vision House, Francis Rachel str., Victoria, Mahe, Seychelles. ICIJ Offshore Leaks database. <https://offshoreleaks.icij.org/nodes/240110001>

United Kingdom	1,911,704.85		
United States of America	73,459.19	United States of America	73,244.35
Uzbekistan	200,744.19	Uzbekistan	400,076.02
Vietnam	18,495.89	Vietnam	17,396.35

Source: NAKO.

Countries of Trade		Dispatch Countries	
Armenia	130,191.03		
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Source: NAKO

## V. Companies Replies to Authors' Inquiries

In Summer 2024 and Spring 2025, IPHR, NAKO, and Hunterbrook conducted two rounds of outreach<sup>335</sup> to 143 companies whose components were found in Russian SU-34 and SU-35S military jets that conducted attacks in Ukraine which possibly amounted to war crimes. We asked these companies about their awareness of their products' use in Russian military jets and their response to such use.

Forty-four companies responded to our queries: 19 from the United States, seven from Germany, four from Japan, three from the United Kingdom, three from Switzerland, two from the Netherlands, and one each from France, Ireland, Singapore, South Korea, and Taiwan.

The following companies replied to the 2024 queries by IPHR but did not reply to 2025 queries by Hunterbrook: Agilent, Analog Devices, Broadcom, C&D, CTS, Digilent, Honeywell, Microchip Technology, Vicor, Aptiv, LEM, Exxelia, First Sensor, Geyer Electronic, Siemens, Renesas, and TE Connectivity.

As documented through communication with the companies and general research, at least seven companies featured in the report have previously been notified or warned that products labeled as theirs were being diverted to Russia for military use during its invasion of Ukraine, these being the following: Harting, Murata, Peak Electronics, Stacosystems, Analog Devices, Intel, and Texas Instruments. Additionally, Analog Devices, Intel, Texas Instruments, and AMD were the subject of scrutiny during a hearing by the US Senate Permanent Subcommittee on Investigations titled "The US Companies' Technology Fueling the Russian War Machine".<sup>336</sup> As established by the Senate, components of these companies were found in the Russian Kh-101 cruise missile that struck the largest children's hospital in Ukraine in 2024.<sup>337</sup> Senators identified significant shortcomings in these companies' export control and compliance systems, including delayed identification of suspicious entities, inadequate response to external warnings, insufficient utilisation of modern analytics for due diligence, and lack of routine audits.<sup>338</sup>

In response to our queries, eleven manufacturers gave replies that went beyond standard compliance statements. These replies demonstrate how the company-labelled components ended

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335 The second round of outreach was conducted after IPHR and NAKO did additional research based on feedback received from companies during the first round of outreach in the summer of 2024. Additional findings were added to the report's list of identified components. The updated list of components and new questions were shared with the companies during the second round of outreach conducted by Hunterbrook in the spring of 2025.

336 U.S. Senate Permanent Subcommittee on Investigations, The U.S. Companies' Technology Fueling the Russian War Machine, hearing before the Permanent Subcommittee on Investigations of the Senate Committee on Homeland Security and Governmental Affairs, September 10, 2024, available at: <https://www.hsgac.senate.gov/subcommittees/investigations/hearings/the-us-companies-technology-fueling-the-russian-war-machine/>; for a detailed review of the hearing see Annex V.

337 U.S. Senate Permanent Subcommittee on Investigations, The U.S. Technology Fueling Russia's War in Ukraine: Examining Semiconductor Manufacturers' Compliance with Export Controls, Majority Staff Report, chaired by Richard Blumenthal, September 10, 2024, available at: <https://www.hsgac.senate.gov/wp-content/uploads/09.10.2024-Majority-Staff-Report-The-U.S.-Technology-Fueling-Russias-War-in-Ukraine.pdf>.

338 U.S. Senate Permanent Subcommittee on Investigations, The U.S. Technology Fueling Russia's War in Ukraine: Examining Semiconductor Manufacturers' Compliance with Export Controls, Majority Staff Report, chaired by Richard Blumenthal, September 10, 2024, available at: <https://www.hsgac.senate.gov/wp-content/uploads/09.10.2024-Majority-Staff-Report-The-U.S.-Technology-Fueling-Russias-War-in-Ukraine.pdf>, pp. 18-34.

up in Russian SU-34 and SU-35 aircraft: (i) legacy inventory shipped before 24 February 2022; (ii) counterfeit or relabelled parts that imitate genuine designs; and (iii) indirect distributor chains outside the companies' control.

**Legacy inventory** remains the single most common route. Peak Electronics traced the converter found in SU-35S wreckage to a model discontinued in 2006, while ITT noted that its C&K microswitch was produced only from 2000 until 2007 and has an essentially indefinite shelf life. NEC pointed out that its LCD module left the supply chain no later than 2011, SK Hynix confirmed its NAND flash last sold before 2008, and Broadcom said every identified chip except one is already obsolete. Harting and XP Power both cited deliveries that ended before the invasion and Recom Power highlighted that its converter has existed since before 2007. In short, many components can lie dormant for years before resurfacing.

**Counterfeit or relabelled parts** form the second pathway. Bourns discovered that a post-2022 shipment moving from China to Russia bore its branding but proved fake, leading to legal action. Peak Electronics, SK Hynix, and Recom all raised the likelihood that the parts recovered in Ukraine were replicas rather than authentic stock. Broadcom likewise observed that grey market online platforms facilitate the trade in counterfeit semiconductors.

**Indirect distributor chains** complete the picture. Bourns once relied on Russian distributors, XP Power on a single Russian outlet, and Traco Power had Russian channels for sales—all such relationships were terminated by late February 2022, yet older channel inventory can still circulate in Russia. Broadcom emphasised that it never sold the suspect chips directly and has blocked every active product line for Russia and Belarus, but it cannot track secondary market resales with absolute certainty.

Across these firms, compliance controls have tightened markedly since the invasion. Bourns now blocks every order to Russia or Belarus through its enterprise resource planning system and is adding a “no Russia” clause to all European distributor contracts. Harting screens every customer and supplier worldwide against the United States, European Union, and United Kingdom sanctions lists. Traco Power has published an embargo policy and rejects any order with a sanctioned routing. CTS Corporation has retained employees and distributors on export control duties, while XP Power requires independent verification of end-use declarations. Collectively, these actions demonstrate a clear trend: manufacturers are closing the obvious gaps, but legacy stock, counterfeits, and Russia- and Belarus-bordering non-sanctioned jurisdictions still pose significant diversion risks.

## 2025 OUTREACH QUERY:

*Dear Sir/Madam,*

*Hunterbrook Media, International Partnership for Human Rights, and the Independent Anti-Corruption Commission are preparing a joint investigative report on the use of corporate-produced components in Russian fighter jets deployed in the war against Ukraine. As part of this effort, we have identified a number of components manufactured by [company name] that were found in downed Russian [jet name] jet(s).*

*The identified components include:*

- [component(s) name(s)]*

*Our investigation connects these components to ten Russian airstrikes on civilian targets in Ukraine between May 2023 and May 2024. These attacks resulted in 26 civilian deaths, 109 injuries, and significant destruction of homes, hospitals, and schools. Legal experts we consulted concluded that these incidents may constitute war crimes.*

*Our findings are based on physical analysis of downed aircraft, leaked Russian procurement data, open-source intelligence, and over 180,000 international customs shipment records. The report calls for enhanced due diligence and stronger export control safeguards to prevent the diversion of sensitive components to sanctioned regimes.*

#### *Request for Comment*

*In light of these findings, we invite [company name] to provide an official comment on the following questions:*

- 1. Is your company aware of the presence of its products in the Russian military jets? Has it received similar reports from anyone else?*
- 2. Can you explain how the components listed above appeared in the Russian military jets?*
- 3. When was the last time your company sold the products mentioned in the email list to Russia or to any intermediaries known to be selling these products to Russia?*
- 4. What (if any) policies or procedures does your company have in place to ensure its products do not end up being used by sanctioned states or for improper purposes? Can you comment on why these measures failed to prevent the products of your company from becoming a part of the Russian military aircraft?*

*We would appreciate receiving your response by 16 May 2025.*

*Thank you for your attention and cooperation.*

## **2024 OUTREACH QUERY:**

*Subject: Request for Comment on Use of [company name] Components in Russian Military Jets*

*Dear [Name(s)],*

*The International Partnership for Human Rights (IPHR) and the Independent Anti-Corruption Commission (NAKO) are set to publish a report on 3 July 2024. This report states that components produced by [company name] were found in Russian military aircraft SU-34*

*and SU-35S. We are reaching out to inquire about your perspective on how your products may have been utilized in these jets.*

*The authors of the report documented ten strikes conducted by SU-34 and SU-35 aircraft against civilians and civilian infrastructure in Ukraine during 2023–2024. These attacks resulted in 26 civilian deaths, injuries to 109 civilians, and the destruction or damage of at least 71 civilian houses and apartment buildings, schools, and medical facilities. Based on our preliminary legal assessment, these attacks violate International Humanitarian Law and amount to war crimes under the Rome Statute of the International Criminal Court, including:*

- Article 8(2)(b)(i): Intentionally directing attacks against civilians;*
- Article 8(2)(b)(ii): Intentionally directing attacks against civilian objects;*
- Article 8(2)(b)(ix): Intentionally directing attacks against hospitals and buildings dedicated to education.*

*In light of these findings, IPHR is requesting [company name]’s official comment on the facts presented in our report. Specifically, we seek your responses to the following questions:*

*Is [company name] aware of the presence of its products in Russian military jets?*

*Is [company name] aware of the trade route through which these components appeared in the jets?*

*When was the last time [company name] sold the identified components to Russia or to any intermediaries known to be selling to Russia?*

*How does [company name] believe its products ended up in these aircraft?*

*What measures does [company name] have in place to prevent its products from reaching sanctioned states? Why might these measures have failed in this case?*

*We plan to publish the report on 3 July 2024 and would appreciate your response before that date.*

*Please accept the assurance of IPHR’s appreciation for your cooperation and commitment to transparency.*

*Attachment: Jet Report.pdf*

*Best regards,*

*International Partnership for Human Rights*

# Summary of companies' responses whose components were most often<sup>339</sup> identified in Russian military jets:

**Analog Devices** (102 components identified in the report; 47 components of its subsidiaries Maxim and Linear Technologies identified in the report)

<b>Incorporation:</b>	Massachusetts, USA
<b>Principal Place of Business:</b>	Massachusetts, USA

IPHR sent an email to Analog Devices, Inc. (NASDAQ: ADI) on 25 June 2024 and, on 26 June 2024, received a response from Ferda Millan, Global PR & External Communications. On 5 May 2025, Hunterbrook sent an email with an updated list of components and a query but received no response.

ADI stated that it fully complies with export laws and maintains robust internal controls to ensure adherence to US and international export regulations. The company explained that, following Russia's invasion of Ukraine, it "ceased business activities in Russia and the Russian-backed regions of Ukraine and Belarus" and instructed all distributors to halt shipments to these regions. ADI also described additional steps taken to strengthen export controls, such as enhanced customer screening and updated compliance requirements.

However, ADI's response did not answer whether it is aware of its products being present in Russian military jets or whether it had received similar reports from other sources. The company also did not address the question of how its components may have appeared in Russian military jets, nor did it specify when it last sold products to Russia or to any intermediaries potentially supplying Russia. While ADI described its export compliance policies, it did not comment on why these measures may have failed to prevent its products from ending up in Russian military equipment.

Instead, the company reiterated its general policy against unauthorized diversion and stated its support for government investigations into improper product use, without providing further details relevant to the inquiry. As a result, the substantive questions submitted to ADI remained unanswered.

**Murata** (123 components identified in the report)

<b>Incorporation:</b>	Japan
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Hunterbrook sent an email to Murata (Tokyo Stock Exchange: 6981) on 7 May 2025 and, on 16 May 2025, received a response from the Murata corporate communication department.

Murata acknowledged that it was aware of media reports suggesting its products may have been used for military purposes but stated that it was "unclear whether the products in Russian military jets are actually manufactured by Murata". The company emphasised its commitment to "contributing to the development of culture and the advancement of the electronics industry" and added that they "do not condone for [their] products to be used for military purposes".

<sup>339</sup> For this section, the Authors analysed the responses of companies which have more than 100 components identified in the report.

Regarding the presence of its components in Russian military aircraft, Murata stated that, under its policy prohibiting use for military purposes, it does not ship or sell products “to the Russian military or for military use”. The company noted it was not able to confirm whether the products in question were indeed manufactured by Murata.

Murata further stated that it has not shipped or sold its products to the Russian military or for military use and, since 2022, “has suspended all business activities, including exports, sales, and technical support, to Russia and Belarus”.

When asked about its policies and procedures to prevent diversion to sanctioned states or improper end-use, Murata pointed to its prohibition on the use of any of its products “for weapons of mass destruction or similar purposes”. This policy, Murata explained, is communicated to all distributors and is expressly incorporated in distributor agreements, which are concluded only after distributors give explicit consent. Murata also highlighted its public disclosure of its security export controls and restrictions on weapons of mass destruction and conventional weapons on its website.

Murata stated that, if it is confirmed that a product was used “without [their] knowing”, the company would “investigate how it could have been distributed, including distributor’s defects, and take necessary precautions and measures, including the suspension or restriction of transactions”.

In its correspondence, Murata reiterated its stance against the use of its products in military applications, and committed to taking further action if any violation of its policies is confirmed.

<b>Texas Instruments</b> (120 components identified in the report)	
<b>Incorporation:</b>	Delaware, USA
<b>Principal Place of Business:</b>	Texas, USA

Hunterbrook sent an email to Texas Instruments (NASDAQ:TXN) on 13 May 2025 and, on 16 May 2025, received a response from the Texas Instruments media relations.

In its response, Texas Instruments provided the following general commentary: “Texas Instruments (TI) strongly opposes the use of our chips in Russian military equipment and the illicit diversion of our products to Russia. TI stopped selling products into Russia and Belarus in February 2022. Any shipments of TI chips into Russia are illicit and unauthorized. It is our policy to comply with export control laws and we require our customers and distributors to do the same. If there is evidence indicating diversion, we investigate and take action.”

Texas Instruments did not address any of the specific questions posed in Hunterbrook’s inquiry. The company did not comment on whether it was aware of its products’ presence in Russian military jets, whether it had received similar reports from other sources, or provide any explanation as to how its components appeared in Russian military equipment. Texas Instruments also did not specify when it last sold products to Russia or intermediaries nor did it provide details about the effectiveness or limitations of its compliance measures. No further details were disclosed regarding the specific concerns raised in the inquiry.

# Conclusion and Recommendations

The Russian Armed Forces use high-precision KAB and UMPB D30-SN bombs and Grom-1 missiles to target civilians and civilian objects in Ukraine. These weapons are deployed using SU-34 and SU-35 fighter jets. As such, the SU-34 and the SU-35 are instrumental in the commission of war crimes of directing attacks against civilians, civilian objects, and protected objects. Our research reveals that SU-34 and SU-35 jets contain more than 1,000 critical components manufactured across 11 Global Export Control Coalition (GECC) countries<sup>340</sup> – most notably the United States. While the authors are not suggesting that these manufacturers are selling directly to the makers of SU-34 and SU-35 aircraft, the fact remains that these components are making their way into these aircraft and play a key role in the Russian Armed Forces' ability to commit war crimes in Ukraine.

Our supply chain analysis covers over 180,000 shipments of the prioritised microelectronic goods produced by leading manufacturing companies such as Intel, Analog Devices, and Texas Instruments in 2023. The list of such prioritised microelectronics includes ceramic capacitors, processors, controllers, memories, and electronic integrated circuits. Their imports are crucial for the Russian military industry.

With the approximate imports worth 805.6 million USD, a significant portion (36.3 per cent) were small-value shipments below 10,000 USD. Russian importers work through diverse trade routes involving countries such as China, Hong Kong, Turkey, the UAE, and European states. In some cases, Russian importers openly advertise their experience in circumventing sanctions. The analysis also shows foreign jurisdictions that enable trade and dispatch of said microelectronics, complicating the traceability of shipment and sanctions enforcement. Some of the foreign suppliers are suspected to be shell companies cooperating with the Russian military. For instance, our research outlines the example of several shell companies that can be traced to offshore entities, particularly in the British Virgin Islands and Seychelles.

## As such, the authors call on GECC countries to:

- Tighten export control regimes for critical components identified in this report to make it harder for suppliers to export and/or re-export these components to Russia;
- Tighten due diligence obligations on manufacturers and suppliers of these components; and
- Increase fines and rates of enforcement for export and re-export violations in relation to critical components identified in this report.

340 GECC has 39 members, namely, Iceland, Liechtenstein, Norway, Switzerland, Australia, Canada, the 27 member states of the European Union, Japan, the Republic of Korea, Taiwan, New Zealand, the United Kingdom, and the United States. See: First-of-its-Kind E5 Joint Guidance Prioritizes Industry Compliance to Prevent Diversion of Items Critical to Russian Weapons Systems, Paul Hastings LLP, [https://www.paulhastings.com/insights/client-alerts/first-of-its-kind-e5-joint-guidance-prioritizes-industry-compliance-to-prevent-diversion#\\_edn1](https://www.paulhastings.com/insights/client-alerts/first-of-its-kind-e5-joint-guidance-prioritizes-industry-compliance-to-prevent-diversion#_edn1); Exporting Commercial Goods Guidance for Industry and Academia, Export Enforcement Five, <chrome-extension://efaidnbmninnibpcapjpcglclefindmkaj/https://www.bis.doc.gov/index.php/documents/enforcement/3336-2023-09-26-export-enforcement-five-guidance-for-industry-and-academia-priority-hs-codes/file#:~:text=European%20Union%2C%20Japan%2C%20the%20Republic,Kingdom%2C%20and%20the%20United%20States>. For more information on GECC, see: Global Sanctions And Export Controls Blog, Baker McKenzie, <https://sanctionsnews.bakermckenzie.com/blog-series-sanctions-enforcement-around-the-world-five-eyes-partners-issue-joint-guidance-on-counter-russia-evasion-and-bis-issues-additional-guidance/#:~:text=The%20GECC%20is%20the%2039,from%20BIS%20and%20allied%20governments>.

The authors also put the manufacturers of these components on notice that their goods are being used by the Russian Armed Forces to commit war crimes and call on them to enhance their due diligence and “know your client” processes to prevent these components from being sold to Russian aircraft manufacturers in the future. Companies failing to take effective action to prevent their components from being used to commit Russian war crimes after getting clear notice from the evidence in this and other similar reports<sup>341</sup> risk being sued in a number of jurisdictions around the world for aiding and abetting war crimes.

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341 E.g., RUSI, Silicon Lifeline Western Electronics At The Heart Of Russia's War Machine, [https://static.rusi.org/RUSI-Silicon-Lifeline-final-updated-web\\_1.pdf](https://static.rusi.org/RUSI-Silicon-Lifeline-final-updated-web_1.pdf); *Archived*; Conflict Armament Research, New Kh-101 missile used to strike Kyiv children's hospital, <https://ukraine-2021-itrace.hub.arcgis.com/apps/edb4ed8bf3604c4ca47707ed1fe3a56c/explore>; KSE Institute, Foreign Components In Russian Military Drones, <https://kse.ua/wp-content/uploads/2023/08/230828%20Drones%20for%20KSE%20site.pdf?t=1693243181>; *Archived*; Conflict Armament Research, Weapons of the War in Ukraine, <https://www.conflictarm.com/reports/weapons-of-the-war-in-ukraine/>; *Archived*; IPHR & NAKO, Terror in the Details: Western Made Components in Russia's Shahed-136 Attacks; <https://iphronline.org/articles/western-made-components-in-shahed-136/>; *Archived*; IPHR & NAKO, Enabling War Crimes? Western-Made Components in Russia's War Against Ukraine, <https://iphronline.org/articles/western-made-components-in-russia-war-against-ukraine/>; *Archived*.