

Defense TECH MONTHLY

Edition 10.0

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Interception at 500 km*

*Fiber Prices Up 650% —
AI and Drones Fight for
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*Private Enterprises Join
the Air Defense Line*

P1-SUN FOR PATRIOT?

*Ukraine's War Experience Is Now
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NORTHEAST (SUMY-VOVCHANSK-KUPIANSK- LUHANSK-YAMPIL):

In the Southern-Slobozhansky direction, the enemy concentrated efforts in Vovchansk and toward Starytsia, Prylypka, Vilcha, and Vovchanski Khutory. In the Kupiansk direction, Russian army, **with more personnel lost than mobilised**, continues its attempts to infiltrate and build up its forces; Russian forces continue pressing along the Vilshana–Petropavlivka axis and the Pishchane–Kutyliivka route toward Kivsharivka and Kupiansk-Vuzlovyyi, aiming to isolate the southern part of the Ukrainian bridgehead on the eastern bank of the Oskil River. **In Luhansk Oblast, Ukrainian forces continue to hold the last remaining settlements in the region**, including Novoiehorivka, Hrekivka, and Nadiia, despite Russian claims of full capture. Fighting in the Yampil area continued throughout March, with **Russian forces maintaining persistent pressure and Ukrainian forces at risk of being flanked from multiple directions**. In Sumy Oblast, Russian forces are attempting to establish a border buffer zone, advancing into Hrabovske, Popivka, Vysoke, Sopych, and Komarivka, and securing observation posts along the border line.

EAST (KRAMATORSK-KOSTIANTYNIVKA- DOBROPILLIA-POKROVSK):

Following the fall of Siversk, the **enemy intensified assaults in the Sloviansk direction**, advancing in the areas of Kalenyky, Riznykivka, Nykyforivka, Fedorivka Druha, Pryvillia, Minkivka, Novomarkove, and Markove along the Sloviansk–Kramatorsk axis; Ukrainian forces reported destroying Russian infiltration groups approaching Kramatorsk on a near-daily basis throughout the month. **The Kostiantynivka direction remains one of the most active sectors**, with Russian forces sustaining assaults toward Illinivka and Berestok, advancing near Stupochky, and reaching the outskirts of Kostiantynivka. East of Dobropillia, the enemy continued to advance near Sofiiivka and Nove Shakhove. Active fighting continued near Pokrovsk, with the enemy focusing on Hryshyne and pressing toward Novooleksandrivka; further south, Russian forces concentrated on Kotlyne and attacked Udachne in an attempt to advance toward Serhiivka. From the Myrnohrad axis, assaults on Rivne and Rodynske continued.

SOUTH (OLEKSANDRIVSK-HULIAIPOLE-ORIKHIV):

Fighting continued along the Dnipropetrovsk–Zaporizhzhia oblast boundary, with Russian forces advancing toward Novopavlivka, Iskra, and Oleksandrohrad, while Ukrainian forces retook Berezove. **Huliaipole remains a priority focus for Russian forces, with frequent engagements** reported near Zaliznychne and Myrne and observed regrouping of additional enemy forces in the area. According to intelligence, Russia may deploy additional resources to the Huliaipole, Oleksandrivsk, or Orikhiv directions in April.





TREELINE: HIDING ANTENNAS IN PLAIN SIGHT



In March, footage from both sides documented a new creative masking technique: **antennas disguised as tree stumps on the Russian side**, and **Starlink terminals similarly concealed on the Ukrainian side**.

In a drone-saturated battlefield, identifying and destroying radar antennas, EW systems, electronic reconnaissance platforms, and UAV control panels has become a priority: if destroyed, the entire system goes offline.

The method is simple: a plastic frame, construction foam, and bark-colored paint. It builds on earlier concealment approaches, including debris-mimicking nets for urban environments.

The solution is low-cost, modular, and difficult to detect at a distance, with enough flexibility to adapt across terrain and seasons. Constraints remain. Foam insulation can trap heat, increasing the risk of overheating during prolonged use, while ventilation introduces potential thermal exposure. There is also a risk of signal attenuation depending on material thickness and configuration.

This is part of a growing set of field-expedient masking techniques, highlighting a broader trend: **survivability is increasingly tied to the concealment of critical nodes rather than the protection of platforms alone**.



Foam Tree Stump Concealing a Communication Node, Colored and Shaped to Match Surrounding Trees.
Source: [serhii_flash](#)



HUNT FROM AFAR: UKRAINE'S NEXT STEP IN DRONE INTERCEPTION

During the large-scale Russian drone attack on March 23–24, Ukraine for the first time reportedly downed Shahed drones using long-range remotely operated interceptors. Two Ukrainian developers announced combat-proven remote interception capability on the same day: **F-Drones, whose F7 Litavr system was used by the 190th Training Center of Ukraine's Unmanned Systems Forces, and Wild Hornets, which announced combat use of its HORNET VISION Ctrl system integrated with its STING interceptors.**

Limited information on the control link architecture was disclosed, including the extent to which Starlink satellite connectivity may have contributed. Yet, it is known that the Litavr conducted interceptions at ranges of up to 60 km, while published footage of the STING interceptor shows it engaging targets from up to 500 km, reportedly setting a world record.

The control architecture enables standoff operation, allowing pilots to engage targets from protected locations far from the launch site. This expands the operational reach of a single crew while removing the need for operators to be near launch sites exposed to Russian strikes. Technical crews are still required at launch points for assembly, deployment, and pre-launch preparation. Still, pilot resources can now be flexibly redistributed across sectors, while interceptors could be pre-positioned during "safe" windows. With several units already downing aerial targets remotely, this technology adds a new layer of flexibility to Ukraine's air defense architecture.

AI, WAR, AND THE FIBER CRUNCH: WHEN DEMAND OUTRUNS SUPPLY

Prices for optical fiber have been rising since late 2025, driven by surging AI data center construction, which requires kilometers of cabling for internal server and switching infrastructure, and by growing demand for fiber-optic drones, each consuming 10–40 km of fiber per mission, which is destroyed on impact along with the drone. **By March, prices for some fiber types had increased sixfold,** with Chinese suppliers issuing same-day quotations and prices shifting within hours.

Fiber Type	Price Before 2026	Approximate Price March 2026	Increase
G.652D single-mode fiber	\$2,60/km	\$12,30–17,36/km	~650%
A1 single-mode fiber	\$3,33/km	\$16,64–19,53/km	~487%
G.657.A2 fiber	\$5,06/km	\$30,38–33,28/km	~557%

Source: [YingFeng](#)

Over 60% of global fiber production is concentrated in China, and both Russia and Ukraine have become major consumers. Russia alone accounted for 10.5% of global optical fiber consumption in 2025, up from less than 1% previously. Following **Ukrainian strikes on the Optic Fiber Systems plant in Saransk in April–May 2025,** the country's only domestic producer covering 30–40% of national demand, roughly **20 Russian cable manufacturers were left entirely dependent on Chinese imports.** Recovery is not expected before end-2027. While, **by some estimates,** launching a new plant requires approximately \$60 million in investment and at least 2 years to reach stable capacity.

Rising raw fiber prices are now translating into sharp cost increases for finished assemblies and cable products. Ukrainian manufacturers report that total production costs for fiber-optic drones have roughly doubled. Smaller and mid-sized producers — unable to stockpile inputs — are absorbing the shock first, with some already pausing orders. **Demand is currently outpacing supply,** suggesting continued upward pressure on prices in the near term. More structurally, the disruption highlights a familiar vulnerability: dependence on a single supplier for a critical component.



UKRAINE REWRITES AIR DEFENSE: UKRAINE OPENS AIR DEFENSE TO BUSINESS

On March 2, **the Cabinet of Ministers expanded critical infrastructure protection rules to allow enterprises of any ownership form to establish their own air defense groups.** Companies can now procure equipment ranging from EW systems to active combat platforms, staffed by reserved employees who have completed the relevant training. **These private groups act exclusively on military orders within the Air Force control system,** with leaders operating inside a shared digital air picture.

By late March, **one participating company had already downed several enemy drones over Kharkiv Oblast, including Shahed and Zala families,** while a further **13 enterprises are at various stages of forming groups,** some already performing combat tasks while others complete training.

The model leverages private-sector resources to protect high-value infrastructure and localized nodes, while expanding overall air defense capacity without additional strain on frontline units. Structurally, it points toward a more distributed architecture by linking government, military, and industry into a single, layered system capable of faster, localized response to aerial threats.

KNYAZ VOLODYMYR SVYATOSLAVICH: RUSSIA'S RING-WING FIBER-OPTIC QUADCOPTER



In March, **photos were published of a new Russian fiber-optic quadcopter designated Knyaz Volodymyr Svyatoslavich,** featuring an unconventional ring-wing aerodynamic configuration. The wing allows the drone to launch vertically and then transition to fixed-wing-style horizontal flight, resulting in a significant increase in both speed and range, compared to conventional quadcopters.

The design provides greater range through partial aerodynamic lift during forward flight, improved flight efficiency through reduced aerodynamic losses, and higher payload capacity, meaning the platform can fly further or carry a heavier warhead. Using standard 10-inch motors, developers at Ushkuynyk reportedly matched the payload of the Knyaz Vandal Novgorodsky at approximately 3 kg while extending operational range to over 50 km, making it suited for medium-range strike missions.

The KVS is intended as a part of the broader drone "ecosystem" alongside the Vandal and the Knyaz Veshchy Oleg reconnaissance platform. A similar ring-wing concept appeared under the name Kometa **as early as mid-2025 but was not widely fielded.** The KVS represents a further development of this approach: it has reportedly undergone frontline combat testing, with a Ministry of Defense procurement contract expected shortly and full-scale deliveries anticipated in the near term.

Drones Knyaz Volodymyr Svyatoslavich. Source: [Dev.ua](https://dev.ua)



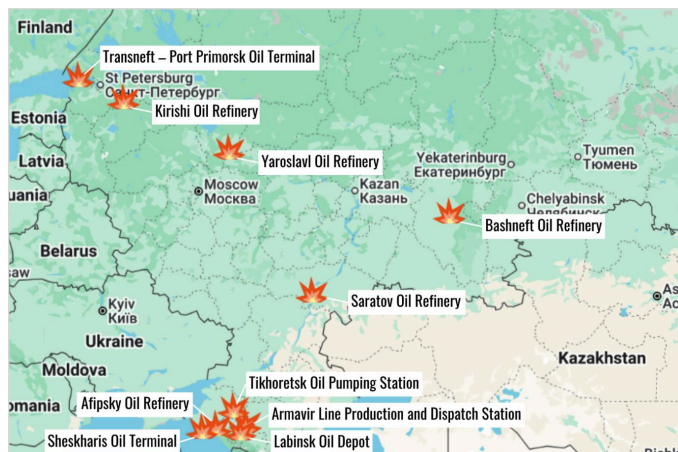
DEEP STRIKE CAMPAIGN: MARCH 2026

As global energy markets destabilized following the US-Israeli war on Iran, Russia emerged as one of the few economies to benefit directly. With oil prices elevated, the **Russian budget received an estimated \$1.3-1.9 billion in additional revenue in the first 12 days of the conflict alone.** Based on a taxation price of oil set at \$75 a barrel, **Russia's oil and gas revenues are expected to grow by 70% in April compared to March,** reaching approximately \$10 billion – the highest monthly level since October 2025.

In March, Ukraine responded by conducting strikes on Russian war-critical infrastructure almost daily, targeting oil refineries, pipeline pumping stations, fuel depots, and military-industrial facilities across the country. As Russia benefits from elevated oil prices that help cover its budget shortfalls, Ukraine is systematically disrupting the infrastructure that converts those revenues into military capacity.

THROUGH THE SHIELD: UKRAINE'S CAMPAIGN AGAINST RUSSIAN OIL

In March, Ukraine struck at least 5 oil refineries, down from 7 in **January** but up from 4 in **February.** Targets were concentrated primarily in southern Russia's Krasnodar Krai, with additional strikes reaching as far as Bashneft refinery near Ufa, **located approximately 1,400 km from Ukraine's border.** Overall, Ukrainian drone strikes on terminals and refineries have contributed to an estimated 40% loss in Russia's oil export capacity in March.



Facility	Date	Assessment
Afipsky Oil Refinery	March 14	AT-22/4 unit struck, a key node where the oil refining process begins.
Labinsk Oil Depot	March 16	Fire spread to adjacent tanks. At least 18 storage tanks were destroyed or damaged, approximately 70% of the facility's petroleum storage capacity was affected.
Saratov Oil Refinery	March 21	Secondary oil processing unit and RVS-10000 vertical storage tank reportedly damaged.
Bashneft Oil Refinery	March 22	The AVTM-9 process unit was damaged, causing a major fire at the facility.
Transneft Primorsk Oil Terminal	March 22	The largest crude oil export port along the Baltic coast. Storage tank farms and oil loading infrastructure reportedly struck. Fire at the facility confirmed.
Novatek Ust-Luga Terminal	March 22, 25, 27, 29 & 31	One of Russia's major Baltic Sea export terminals, handling approximately 700,000 barrels of crude per day. Struck five times in ten days, forcing repeated suspensions of export operations.
Kirishi Oil Refinery	March 26	One of Russia's three largest refineries (20 million tonnes/year, over 6% of national capacity). ELOU-AVT-2, ELOU-AVT-6 primary processing units, bitumen production, hydrotreating, and gas fractionation units damaged.
Yaroslavl Oil Refinery	March 28	Multiple FP-1 drone strikes confirmed. Russia's sixth largest refinery by capacity, processing approximately 15 million tonnes of oil per year.

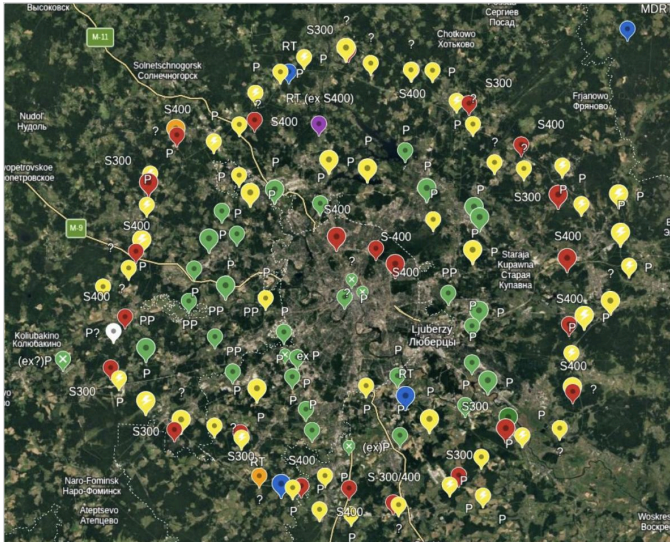
Facility	Date	Assessment
Sheskhari's Oil Terminal	March 2	Key Black Sea export hub used to accumulate and load oil onto tankers for export through the Black Sea and Bosphorus Strait.
Armavir Line Production and Dispatch Station	March 7	Key Transneft pipeline hub serving southern Russia's fuel distribution network. One 5,000 m ³ fuel storage tank destroyed.
Tikhoretsk Oil Pumping Station	March 12 & March 15	One of the largest oil logistics hubs in southern Russia, serving as the primary supply branch for petroleum products to Novorossiysk port.



The relative decline in confirmed strikes on Russian oil infrastructure compared to the peak periods of 2025 may **partly reflect strengthened air defenses**. According to an analysis published in March, from approximately December 2025, **almost all oil refineries within a 1,500 km radius of Ukraine have been equipped with air defense positions**, primarily Pantsir-S systems, with an estimated 100 additional new Pantsir deployments recorded over the past year.

Despite Russia's layered air defenses, at times, Ukraine has led a successful and effective strike campaign. Apart from direct economic pressure from lost oil production and refining capacity, Ukraine has forced Russia to redeploy air defense systems from the front lines and lower-priority objects to protect oil infrastructure.

Moreover, **Ukraine's sustained campaign has systematically targeted and destroyed Russian air defense systems**, significantly degrading Russia's capacity to protect its critical infrastructure. Notably, in the period of June 2025 - March 2026, **Ukraine struck 27 Pantsir systems**, while its production capacity at an **estimated rate of only 30-45 units per year**.

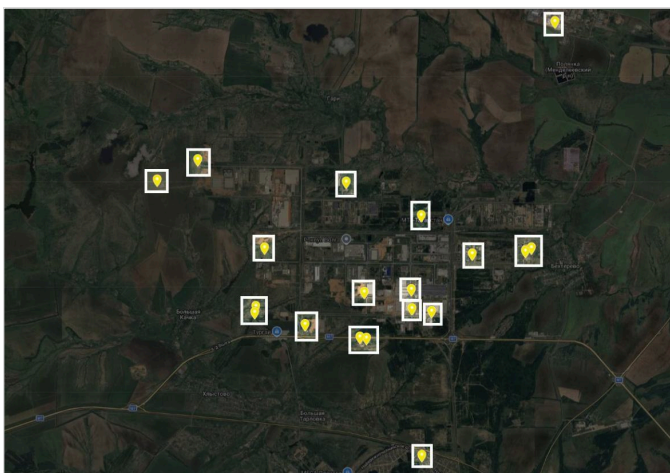


Estimated Air Defense Ring Around Moscow: Approximately 43 New Pantsir Towers Reportedly Built in 2025. Source: [jembobineuse](#)

Ukrainian Strikes on Russian Air Defense Systems (June 2025-March 2026). Source: [Tochnyi](#)

- Pantsir tower positions
- Elevated earthen emplacements or ramps accommodating Pantsir or comparable systems
- S-300 / 400
- Radio-technical units
- Probable Pantsir emplacements on earthen mounds (unconfirmed)

The systematic hollowing-out of Russian air defense forces has led it to seek passive methods of protecting critical facilities.



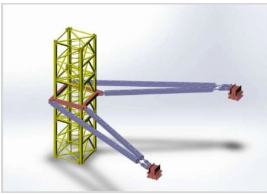
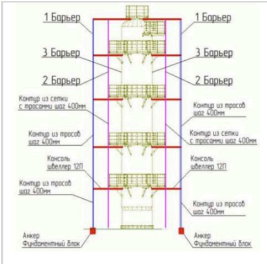


Pantsir-S1 Air Defense Ring Around Alabuga, Russia's Main Shahed Production Site. Source: [kromark](#)



In March, private intelligence and analytics company Dallas obtained a [confidential Rosneft presentation on physical protection strategies against Ukrainian strike drones](#). Acknowledging that none of the proposed solutions guarantee full protection or exclude blast and fragmentation effects, the document outlined the following measures and their limitations:

Solution	Description	Acknowledged Weaknesses
<p>Cable barriers around storage tanks</p> 	<p>Cable-and-mesh fencing (40×40 cm mesh) around vertical storage tanks (VST) on pipe-tube supports</p>	<p>Not resistant to drone fragmentation; protects only against multirotor drones</p>
<p>Barriers made from tubing-string posts around storage tanks</p> 	<p>Production tubing post barriers (500 mm standoff, 2 m spacing) with perimeter cable tensioning (3 m vertical intervals)</p>	<p>Labor-intensive installation; restricted post extension height above the tank roof</p>
<p>Scaffolding framework around storage tanks</p> 	<p>Modular metal scaffolding erected 5 m above the tank roof</p>	<p>Insufficient scaffolding volume to protect company facilities; high cost of solutions</p>
<p>Shipping container walls</p> 	<p>20–36 m walls of stacked 20/40-ft containers with cable infill at 40 cm spacing</p>	<p>Not yet pilot-tested; requires thousands of containers per refinery</p>
<p>"Tent" structure over tank farm</p> 	<p>Cable-and-mesh canopy on container supports with a 21 m central mast</p>	<p>"Difficulties in firefighting"; "high snow loads on the canopy"</p>



Solution	Description	Acknowledged Weaknesses
<p>Protection for process equipment units and tower crane sections</p> 	<p>Repurposed crane sections as 4 support columns with truss crossbeams and cables at 1 m spacing</p>	<p>Each installation requires individual engineering design; relies on surface foundations or guy-wire anchoring</p>
<p>Three-layer protection for column-type equipment</p> 	<p>Layer 1: cable screens 1–1.5 m from platforms; Layer 2: mesh (40×40 mm cell); Layer 3: Kevlar/aramid wrapping</p>	<p>Each installation requires individual engineering design; structural failure is inevitable under detonation; no open-source data available on armored fabrics</p>
<p>Cable fencing for pump stations</p> 	<p>6 mm cables at 500 mm spacing on cantilevered brackets</p>	<p>Designed only to damage the drone airframe; has no effect on the warhead.</p>
<p>Reinforced concrete panels</p> 	<p>Reinforced concrete wall panels replacing corrugated sheet windbreak fencing around pump stations</p>	<p>Applicable only to pump stations, the lowest-value target category</p>

Physical Protection Strategies Against Ukrainian Strike Drones. Source: [Dallas](#)



STRIKING THE ARSENAL: UKRAINE ESCALATES ATTACKS ON RUSSIA'S DEFENSE-INDUSTRIAL BASE

Reinforcing oil refinery defense forces Russia to accept reduced protection around military-industrial plants, airbases, and ports, making them more vulnerable to strike.

A case in point came on March 10, when a **Ukrainian missile struck the Kremny El plant in Bryansk, one of Russia's largest military microelectronics producers, manufacturing semiconductor components used in missile guidance systems**, Pantsir air defense complexes, and Iskander missiles. With customers including NPO Almaz-Antey, Russia's primary air defense manufacturer, and Rocket Technologies, which produces the Kh-59, Kh-69, Kh-101, and Kh-555 cruise missiles. At least seven Storm Shadow cruise missiles hit different parts of the plant, which sustained near-total destruction, with full reconstruction required before operations can resume. Notably, a Ukrainian drone circled over Bryansk throughout the strike, conducting real-time damage assessment and correcting missile trajectories, pointing to a significant gap in Russia's ability to defend even its most critical industrial facilities.

In March, Ukraine also struck several facilities connected to Russian aviation. Among them was the **Aviastar plant near Ulyanovsk**, Russia's primary assembly plant for military transport aviation, producing Il-76MD-90A military transports, Il-78M-90A tankers, and servicing An-124 Ruslan heavy aircraft, hit on March 16. The following day, the **123rd Aircraft Repair Plant in Staraya Russa** was struck, a facility specializing in repair, modernization, and maintenance of Russian Aerospace Forces transport aviation, including Il-76, Il-78, and L-410 aircraft, as well as D-30KP and AI-20 engines. On March 30, **Ukraine struck two more facilities in Taganrog**: the Atlant Aero UAV plant and the Beriev Taganrog Aviation Scientific and Technical Complex. Atlant Aero is engaged in the development and production of Molniya-type UAVs and components for the Orion UAV. The Beriev complex specializes in the maintenance and modernization of A-50 airborne early warning aircraft, Beriev-series amphibious aircraft for the Russian Navy, and Tu-95MS/MSM strategic bombers.

March also saw a sustained campaign against Russian chemical plants, aimed at disrupting warhead and munitions production. Several facilities were hit more than once:

Facility	Date	Assessment
Uralchem Chemical Plant (~1,300 km from Ukrainian border)	March 4 & March 13	Russia's largest ammonium nitrate producer; also makes ammonia and urea; hit twice by Ukrainian AN-196 Liutyi drones
Acron Chemical Plant	March 9	Produces ammonium nitrate, ammonia, and nitric acid used in explosives
KuibyshevAzot Chemical Plant	March 11 & March 14	Produces caprolactam, ammonium nitrate, ammonia, and nitric acid used in explosives. Drones reportedly damaged the dry ammonia unit, causing the plant to suspend operations
Metafrax Chemicals Plant (~1,600 km from Ukrainian border)	March 11	Produces methanol, a key explosive component
Nevinnomyssky Azot Chemical Plant	March 13 & March 19	Produces ammonia, ammonium nitrate, and nitric acid for explosives and rocket propellant
TogliattiAzot Chemical Plant	March 21	One of the world's largest ammonia producers
Apatit Chemical Plant	March 27	Europe's largest phosphate fertilizer producer; also makes sulfuric acid used in TNT production
Promsintez Chemical Plant	March 28	Produces 30,000+ tons/year of military explosives; struck by FP-5 Flamingo cruise missiles
Nizhnekamskneftekhim Plant	March 31	Produces synthetic rubbers, ethylene, propylene, and benzene; a fire broke out at an outdoor pumping unit, spreading across roughly 1,500 square meters.



TEACHING NATO TO FIGHT: UKRAINE BRINGS THE TRAINING HOME

In late March Ukrainian officials announced the decision **to abandon the practice of training troops abroad**. One of the key reasons mentioned is the limited capability of foreign instructors, who lack experience in modern large-scale warfare and do not fully grasp the dynamics of the battlefield.



REPMUS/Dynamic Messenger 2025. Source: [Marinha Portuguesa](#)

For instance, at **NATO's REPMUS/Dynamic Messenger 2025 naval exercise** held off the coast of Portugal in September 2025, the Naval Forces of the Armed Forces of **Ukraine took charge of planning, coordinating, and directing the opposing forces for the first time in the Alliance's history**. The exercise covered a broad range of warfare domains, among them the protection of critical underwater infrastructure, continuous organic surveillance, mine warfare at sea, subsurface operations, neutralizing multi-domain uncrewed vehicles and vessels, and command and control across integrated domains.

The **Ukraine-coordinated team won all five battle scenarios against Alliance forces**, with one scenario, registering so many hits on a frigate that it would have sunk in a real battle, before the NATO team detected any threat at all. The results reinforced Ukraine's earlier performance at the **Hedgehog 2025 exercise in Estonia** and demonstrated that unmanned systems pose a real threat to NATO's maritime forces.

OUT OF THE SHADOWS, INTO THE OPEN: RUSSIA'S SHADOW FLEET

In March, **Ukraine's Foreign Intelligence Service reported that the Kremlin is planning to increase the number of tankers flying the Russian flag**. For years, shadow fleet vessels operated under false flags and shell company registrations to avoid detection. However, as this strategy has been increasingly undermined by growing seizures by European countries and the U.S., registering vessels directly under the Russian flag is now seen as a deterrent against further interceptions. The move may also indicate coordination with Iran regarding safe passage through the Middle Eastern conflict zone.

The sanctioned Russian Maritime Register of Shipping is preparing to inspect and re-register approximately 80 tankers, owned by entities registered in the Seychelles (35 vessels), China (23), Azerbaijan (13), and Samoa (8), with ownership also spanning Vietnam, India, the UAE, and the Marshall Islands. Overall, **Russia's shadow fleet numbered around 1,341 vessels as of late March 2026**, with a significant share continuing to transport Russian oil despite sanctions.

Expanding the fleet under the Russian flag simplifies the deployment of intelligence assets on board for reconnaissance and sabotage operations against Western nations, particularly in the Baltic region, **through which over 40-45% of Russia's seaborne oil exports pass**. **Russia has also been placing former military personnel and mercenaries on board, drawn from private military companies such as the Wagner Group and Moran Security Group**. Their stated purpose is to deter Baltic states from boarding vessels and prevent crew cooperation with NATO authorities, further consolidating Russia's ability to profit from its oil exports unchecked.



RASSVET RISING: CAN RUSSIA CLOSE THE STARLINK GAP?

On March 23, [Russia launched the first 16 operational satellites of Bureau 1440's "Rassvet" constellation](#), a low-orbit broadband network widely seen as Russia's attempt to substitute Starlink. They successfully separated from the Soyuz-2.1B launch vehicle and were transferred to the company's Flight Control Center upon reaching their target orbit.

The launch had originally been scheduled for 2025 but was delayed due to production issues. Whether the [deployment roadmap of 156 satellites in 2026, 292 in 2027, and 318 in 2028](#) can be met on schedule remains an open question. Even if deadlines are met, commercial operation is not expected before 2027, when the constellation reaches approximately 250 satellites.

The scale gap with Starlink remains significant. [The US network launched over 11,000 satellites with roughly 10,000 remaining active](#), while Bureau 1440's maximum planned constellation stands at around 900. That said, even several hundred satellites with lower speed and latency characteristics could provide Russian forces with the basic front-line connectivity needed for communications and command, which has become particularly critical following the [Starlink shutdown in February 2026](#).

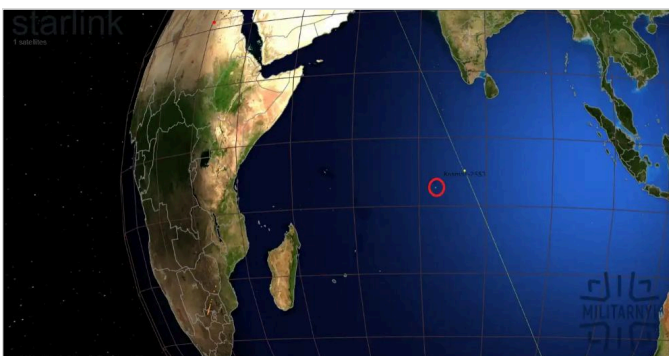
RUSSIAN EYES FOR IRAN: SATELLITE INTELLIGENCE IN THE GULF

In late March, [Russian satellites were reportedly capturing imagery of US military installations across the Middle East](#) on Iran's behalf. The targets photographed included Diego Garcia, Kuwait International Airport, the Greater Burgan oil fields, Prince Sultan Air Base, Shaybah oil and gas field, Incirlik Air Base, and Al Udeid Air Base.

Notably, [Prince Sultan Air Base was imaged on March 20, 23, and 25 and struck by Iran on March 26, injuring 12 US personnel](#). Based on Ukrainian experience, repeated satellite passes over the same facility over several days signal imminent attack: the first pass indicates preparation, the second a strike simulation, the third an attack within a couple of days.

Another base of Diego Garcia was reportedly tracked by Kosmos-2553 ("Neutron"), a Russian SAR satellite officially described as a radiation-testing demonstrator, on March 24. Three days before, Iran tried to strike the facilities with two ballistic rockets capable of reaching 4,000 km targets, well beyond the 2,500 km Iran officially claims. According to sources, one missile fell short, while the second one was intercepted.

Even if unsuccessful, the Diego Garcia strike signals a shift from regional containment to global reach, carrying direct implications for European security. It also illustrates the [strategic depth of the Russia-Iran partnership](#): easing sanctions on Russia strengthens both.



Russian Satellite Kosmos-2553 ("Neutron") Over Diego Garcia Island Base, March 24. Source: [Militarnyi](#)

THREAD AND DEAD: UKRAINE'S HUNT FOR THE FIBER-OPTIC DRONE SOLUTION

In early March, footage from a Russian waiter drone positioned on a road showed what was presumably a Ukrainian drone, [allegedly equipped with a laser](#), sweeping the route and potentially burning the fiber-optic cables of a dormant Russian drone before it could activate, cutting out its feed. Given that fiber-optic operators frequently exploit the same route corridors, using laser-equipped systems to clear routes ahead of ground missions would mark a notable shift in how this threat is managed.



Reportedly Ukrainian UAV Sweeps Road With Laser.

Source: [dimOkq](#)

Countering fiber-optic drones remains one of the top priorities for both Ukraine and Russia. Unlike conventional FPVs, fiber-optic drones emit no radio signal, transmitting commands through a physical cable and leaving electronic warfare systems blind.

In this context, the existence of reliable alternative detection methods becomes critically important. Snake Island Institute, in cooperation with partners, is conducting field testing to evaluate the performance of detection technologies under conditions similar to combat to assess the effectiveness of systems in detecting low-altitude, small-size targets at the tactical level, including fiber-optic FPV drones. This is a direct opportunity to test your system against a real-world threat profile, receive structured feedback, and put your technology in front of the Ukrainian Defense Forces. We invite specialized manufacturers, R&D teams, independent experts, and representatives of the Ukrainian Defense Forces to participate. Find the [registration link](#) on our social media or contact us to register.

WHITELISTED: HOW RUSSIA IS USING THE DRONE THREAT TO REWIRE ITS INTERNET

[Moscow's mobile internet has been disrupted since March 6](#), with outages lasting nearly three weeks, resulting in business losses of nearly \$12.6 million per day. Officials have said the measures are intended to protect against Ukrainian drone attacks; similar restrictions have been applied in other Russian regions before.

The disruptions coincide with what appears to be a broader rollout of a "whitelist" system, under which mobile users can only access a pre-approved set of platforms.

Russian media reports the system uses deep packet inspection (DPI) technology, allowing operators to block most internet traffic while permitting specific services. Companies seeking whitelist inclusion must route traffic through Russian infrastructure, maintain domestic servers, and prevent users from hiding their IP addresses.

However, the rollout has encountered technical difficulties. According to some sources, Roskomnadzor's filtering infrastructure is overloaded, leading to some blocked services becoming temporarily accessible. Experts suggest attempts to block Telegram may be contributing to the problem, as restricting it requires significant processing capacity.

The whitelist system is part of Russia's longer-term push to establish a sovereign internet, "Runet," an internet infrastructure independent from global networks and subject to full state control.

IRAN'S "UNFORGETTABLE LESSON" VS UKRAINE'S HARD-WON ONE: LEARN BEFORE YOU GO TO WAR

On March 24, **Russia conducted the largest aerial attack since the beginning of the full-scale invasion, launching nearly 1,000 drones and more than 30 missiles.**

Ukrainian forces destroyed **over 94%** of them.



Russian Geran-2, Found in the United Arab Emirates.

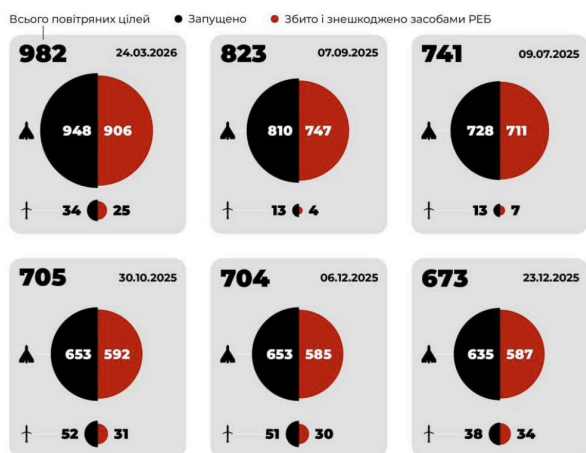
Source: [United24](#)

6 НАЙБІЛЬШИХ ПОВІТРЯНИХ АТАК

TOP LEAD

Ворог встановив кривавий рекорд: майже 1 000 повітряних цілей протягом однієї доби — 24 березня — атакували Україну і вдень, і вночі. Під ударом — житлові райони та інфраструктура по всій країні.

Найбільші атаки ворога за кількістю повітряних цілей у 2022–2026, од.



t.me/uawarinfographics

Six Largest Air Attacks on Ukraine.

Source: [uawarinfographics](#)

- Launched
- Shot down and neutralized by electronic warfare means

Overall, in four years of full-scale war, **Ukraine has engaged approximately 140,000 aerial targets, over 44,000 of which were Shaheds.** No other nation has amassed the unique experience Ukraine possesses in rapidly adjusting to combat the Iranian Shahed drones, which Russia has adapted into the Geran-2 and is now providing to Iran. Furthermore, Ukraine has become a crucial testing ground for both domestic and Western technologies, exemplified by the deployment of US-based Merops drones—which are now also in use in the Middle East—within the country.

Drawing on the experience of fighting modern drone war, **Ukraine has received 11 formal requests for drone-defense support** from countries neighboring Iran, European states, and the US. In early March, **it deployed 228 specialists to the Middle East to assist local air defense forces** in countering Iranian-made attack drones, **with already confirmed cases of shooting down Iranian drones.** In late March, **Ukraine signed 10-year defense partnerships covering joint weapons production with Saudi Arabia and Qatar;** a similar agreement with the UAE is expected within days. Beyond joint production, **the contracts also cover the transfer of Ukrainian maritime drones,** and Ukraine's experience using naval drones to unblock maritime trade routes may prove valuable to its Gulf allies, potentially applied to the Strait of Hormuz in exchange for weapons of Ukrainian interest. These contracts offer Ukrainian manufacturers a stable export base worth billions of dollars.

Drone cooperation with the US, however, remains less settled. A five-year agreement proposed last autumn, covering the supply of Ukrainian drones in exchange for royalties and other compensation, **with a stated value of \$50 billion and production capacity of up to 10 million drones annually, has yet to be signed,** as US officials continue to question the need for Ukrainian expertise. Nonetheless, three Ukrainian companies, SkyFall & Skycutter, Ukrainian Defense Drones, and General Cherry, were **recognized under the Pentagon's Drone Dominance initiative: a \$1.1 billion program to rapidly equip US forces with low-cost one-way attack drones.** The US aims to procure over 200,000 drones by 2027. Ukraine currently **produces 4 million** per year, **with a capacity for 10 million.** The cost advantage of Ukrainian systems relative to the targets they are designed to strike is among their most significant operational qualities. On March 20, Ukraine demonstrated this at the tactical level, destroying a Ka-52 helicopter worth approximately \$17-20 million with a fiber-optic FPV drone costing roughly \$1,000. It is precisely this quality that US forces in the Middle East have yet to internalize.

Ukrainian specialists deployed in the Middle East reported that [Gulf operators have fired up to eight Patriot interceptor missiles against a single aerial target](#), with each missile costing around \$4 million. They also described cases where SM-6 missiles, valued at approximately \$6 million each, were used to destroy Shahed drones costing more than \$70,000. While also, during March, [Iranian drones flew unimpeded over US Victory Base, striking an HH-60M medical evacuation helicopter and an AN/MPQ-64 Sentinel radar](#). With casualties continuing to happen, such a relationship between war costs and the neglect to protect assets and deploy cost-effective solutions is costing the US a lot. With the [Pentagon requesting an additional \\$200 billion to sustain the Iran campaign](#), the US will eventually be pushed toward the same solutions Ukraine developed over four years of full-scale war: mobile fire groups and light anti-drone missiles or UAV interceptors.

Until the US learns from the Ukrainian experience, Ukraine pays for its inefficiency. On the March 24 attack, [Ukrainian forces intercepted all 18 Kh-101 and all 5 Iskander-K cruise missiles](#), but none of the 7 Iskander-M and S-400 ballistic missiles, primarily due to a shortage of specialized interceptors and the absence of PAC-3 missiles. [Ukraine received approximately 600 PAC-3 missiles for the full duration of the full-scale war](#). The US and its allies [launched over 800 in the Middle East conflict in the first three days alone](#). With [current Patriot production at 620 units per year](#) and a seven-year agreement to raise that figure to 2,000, supply will not meet demand. As a result, future assistance packages to Ukraine may be stripped of air defense components as Washington works to replenish its own stocks and those of Gulf allies.

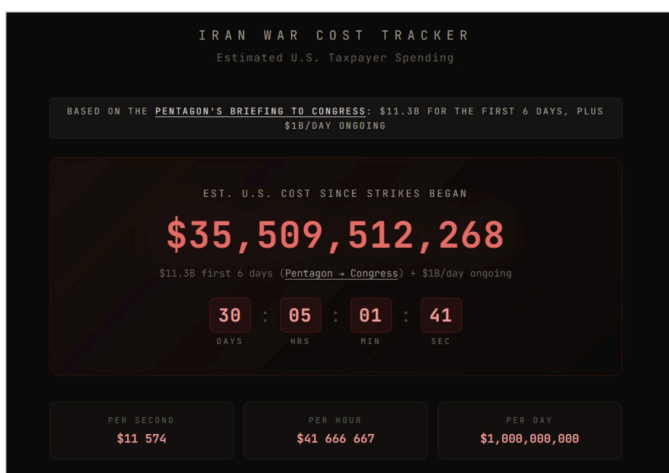
The [Pentagon reported spending \\$11.3 billion in the first six days of operations](#), with costs running at roughly \$1 billion per day thereafter, though the true figure may be higher.

Some of the most costly failures included:

- Kuwait's air defense [shot down three American F-15E fighter jets](#) that were pursuing drones
- [An Iranian missile evaded more than ten interceptors](#) before reaching its target
- Iran's strike on Prince Sultan air base in Saudi Arabia [damaged a US E-3 Sentry](#), the airborne command-and-control aircraft that tracks drones, missiles, and aircraft across hundreds of miles of battlespace.
- [Iranian strikes have knocked out 17% of Qatar's LNG export capacity](#), at an estimated cost of \$20 billion in annual revenue, with supply disruptions extending to Europe and Asia.

Ukraine spent four years developing the most cost-efficient air defense doctrine in the world. That knowledge is hard-won, battle-tested, and transferable, but cannot be absorbed by reading reports or selectively borrowing hardware. The countries best prepared for future conflict will not be those that use the most expensive systems or extract individual solutions from Ukraine's experience, but those that understand why those solutions work and build the institutional capacity to keep adapting.

Building that capability requires deeper integration: joint development, shared training, and direct exposure to operational environments. Supporting Ukraine and strengthening allied air defense are not parallel efforts — they are the same investment.



Iran War Cost Tracker. Source: [Iran Cost Ticker](#)



- 24tv.ua. "Дрони оптоволоконні: Україна ймовірно застосувала лазер проти ворожих дронів". 24tv.ua, 2026. [Link](#)
- Allied Maritime Command. "Dynamic Messenger 2025: NATO Drives Maritime Innovation Through Allied Experimentation". Allied Maritime Command, 2025. [Link](#)
- ArmyInform. "Ukraine Has Received 11 Requests From Other Countries for Support in Countering Shahed Drones — President". ArmyInform, 2026. [Link](#)
- BBC. "US jets shot down over Kuwait in 'apparent friendly fire incident', officials says". BBC, 2026. [Link](#)
- BBC. "Article on Ukraine–Middle East cooperation". BBC, 2026. [Link](#)
- Cabinet of Ministers of Ukraine. "Yulia Svyrydenko: Critical Infrastructure Enterprises Will Be Eligible to Create Air Defense Groups — Government Approves Decision". Cabinet of Ministers of Ukraine, 2026. [Link](#)
- Censor.NET. "Nevinnomyssk Under Drone Attack, Explosions Reported at Azot". Censor.NET, 2026. [Link](#)
- Dallas Analytics. "Системы защиты от несанкционированного применения БПЛА на объектах Компании". Dallas Analytics, 2026. [Link](#)
- Defence Blog. "Ukraine Confirms Interception of Over 140,000 Aerial Targets Since 2022". Defence Blog, 2026. [Link](#)
- Defence-UA. "Empty Patriot launchers explained: 600 interceptors received vs 250 ballistics". Defence-UA, 2026. [Link](#)
- Defence-UA. "Two Critical Aviation Facilities in Russia Hit by Ukraine, Including Aviastar Plant". Defence-UA, 2026. [Link](#)
- Defence-UA. "Ukraine Claims First Remote Interception as Litavr Downs Shahed Drone During Mass Attack". Defence-UA, 2026. [Link](#)
- Defense News. "Ukraine deploys units to 5 Middle East countries to intercept drones". Defense News, 2026. [Link](#)
- dev.ua. "Russia Has Created FPV Drones With a Ring-Shaped Wing and a Flight Range of Up to 50 km". dev.ua, 2026. [Link](#)
- Drone Dominance. "Drone Dominance". Drone Dominance, 2026. [Link](#)
- Eurasian Times. "Starlink Cut-Off Leaves Russian Troops 'Blind' — Moscow Launches Rassvet Satellites to Counter SpaceX". Eurasian Times, 2026. [Link](#)
- Euromaidan Press. "800 US interceptors spent in three Middle East days — more than Ukraine got all winter". Euromaidan Press, 2026. [Link](#)
- Euromaidan Press. "Nearly Half of Russia's Elite Pantsir-S1 Air Defense Systems Destroyed — SBU". Euromaidan Press, 2025. [Link](#)
- Financial Times. "Russia rakes in \$150mn a day in extra revenue from surging oil prices". Financial Times, 2026. [Link](#)
- Focus.ua. "Нові дрони з кільцевим крилом ЗС РФ застосовують у війні в Україні: чим вони небезпечні". Focus.ua, 2026. [Link](#)
- France 24. "Zelensky agrees defence cooperation with UAE, Qatar on Gulf tour". France 24, 2026. [Link](#)
- Interfax-Ukraine. "Article on Gulf security cooperation". Interfax-Ukraine, 2026. [Link](#)
- Iran Cost Ticker. "Iran Cost Ticker". Iran Cost Ticker, 2026. [Link](#)
- Kyiv Post. "Ukraine Emerges as Drone Superpower, Producing 4M UAVs a Year". Kyiv Post, 2026. [Link](#)
- Kyiv Post. "Ukraine slams costly US tactics with interceptors in Gulf". Kyiv Post, 2026. [Link](#)
- Liga.net. "At Least One Frigate Sunk in NATO Drills Led by Ukrainians and Using Maritime Drones — FAZ". Liga.net, 2026. [Link](#)
- Militaryni. "Explosions Reported at Acron Chemical Plant in Veliky Novgorod". Militaryni, 2026. [Link](#)
- Militaryni. "Flamingo Missiles Strike Russian Explosives Plant Promsintez in Samara Region". Militaryni, 2026. [Link](#)
- Militaryni. "FPV drones attacked helicopter parking & US radar in Iraq". Militaryni, 2026. [Link](#)
- Militaryni. "The Only Fiber Optic Plant in Russia Shut Down for Nearly a Year After Ukrainian Drone Strikes". Militaryni, 2026. [Link](#)
- Militaryni. "Zelensky: Russian Satellites Captured Persian Gulf Images for Iran". Militaryni, 2026. [Link](#)
- Militaryni. "СБС уразили Саратовський НПЗ: на території заводу спалахнула пожежа". Militaryni, 2026. [Link](#)
- Militaryni. "У Таганрозі уразили виробництво БПЛА 'Молнія'". Militaryni, 2026. [Link](#)
- Ministry of Defence of Ukraine. "Disrupting Russian Oil Exports Along the Baltic Sea Coast: Impact and Consequences of Strikes in the Leningrad Oblast". Ministry of Defence of Ukraine, 2026. [Link](#)
- Ministry of Defence of Ukraine. "Ukrainian OPK has capability to produce 10 million drones per year". Ministry of Defence of Ukraine, 2026. [Link](#)
- NATO. "Exercise Hedgehog 25: NATO Forces Execute Large-Scale Defence Drills in Estonia". NATO, 2025. [Link](#)
- NV. "Russia Launches Largest Strike of War with 982 Targets, ISW Says". NV, 2026. [Link](#)
- NV. "UAVs Strike Major Cherepovets Factory". NV, 2026. [Link](#)
- Oboronka. "There Is a Shortage of Fibre Optics in Ukraine. What Will Happen to Drones and How Are Manufacturers Responding?". Oboronka, 2026. [Link](#)
- Pravda. "Russia attacks Ukraine with 426 aerial assets, air defences intercept most but hits reported". Pravda, 2026. [Link](#)
- Radio Svoboda. "У Москві запрацювали 'білі списки' доступних медіа та інтернет-ресурсів". Radio Svoboda, 2026. [Link](#)
- RBC-Ukraine. "Zelensky: Ukraine offered US \$50B drone deal". RBC-Ukraine, 2026. [Link](#)

- Reuters. "Exclusive: Iran attacks wipe out 17% of Qatar's LNG capacity for up to five years, QatarEnergy CEO says". Reuters, 2026. [Link](#)
- Reuters. "Lockheed Martin more than triple Patriot missile production capacity". Reuters, 2026. [Link](#)
- Snake Island Institute. "Defense Tech Monthly: February 2026". Snake Island Institute, 2026. [Link](#)
- Snake Island Institute. "Defense Tech Monthly: January 2026". Snake Island Institute, 2026. [Link](#)
- SZRU. "Судна тіньового флоту під прапором РФ масштабують гібридні загрози для Європи". SZRU, 2026. [Link](#)
- Telegram @bureau_1440. "Первые спутники целевой группировки связи БЮРО 1440 — на орбите". Telegram, 2026. [Link](#)
- Telegram @DniproOfficial. "БПЛА "Лютый" атакували виробництво аміаку на хімічному заводі мінеральних добрив «УРАЛХІМ» у м. Кірово-Чепецьк, 1300 км від кордону". Telegram, 2026. [Link](#)
- Telegram @DniproOfficial. "У Лабінську Краснодарського Краю уражена нафтобаза". Telegram, 2026. [Link](#)
- Telegram @exilenova_plus. "Масштабна пожежа на території промзони №1 підприємства Нижнекамскнефтехим". Telegram, 2026. [Link](#)
- Telegram @exilenova_plus. "Не типова сигнатура пожежі для Киришського НПЗ за останні 10 днів". Telegram, 2026. [Link](#)
- Telegram @exilenova_plus. "Пожежні розрахунки на «Башнефть-Новойл» біля АВТМ - 1 сьогодні вранці". Telegram, 2026. [Link](#)
- Telegram @exilenova_plus. "Тольятти, Самарская область, был атакован Тольяттиазот". Telegram, 2026. [Link](#)
- Telegram @exilenova_plus. "Фото пожара на КуйбышевАзот после атаки, пишут горит 11 цех". Telegram, 2026. [Link](#)
- Telegram @kiber_boroshno. "Аналіз супутникового знімку за 15.03 після атаки на Афіпський НПЗ 14.03". Telegram, 2026. [Link](#)
- Telegram @milinfolive. "Пока все обсуждают палки в колеса нашим дронам на Starlink от уже не нашего Илона Маска, хочется вспомнить и как там поживает заявленный российский аналог "Старлинка"?". Telegram, 2026. [Link](#)
- Telegram @milinfolive. "Спутниковый снимок уничтоженного E-3 Sentry ВВС США прямым попаданием на авиабазе имени принца Султана в Саудовской Аравии". Telegram, 2026. [Link](#)
- Telegram @oko_gora. "Судя по публикации Губернатора Пермской области, также было атаковано хим.предприятие в Губахе". Telegram, 2026. [Link](#)
- Telegram @serhii_flash. "Одна з найактуальніших тем на фронтах – це пошук і знищення, РЕБ, РЕР і пультів управління БПЛА". Telegram, 2026. [Link](#)
- Telegram @serhii_flash. "Пам'ятаєте мою публікацію, як ворог робить колоди і стовбури дерев з монтажної піни і ховає всередину антени". Telegram, 2026. [Link](#)
- Telegram @uawarinographics. "Fighting propaganda". Telegram, 2026. [Link](#)
- Telegram @zedigital. "Приватна ППО вже працює — перші результати перехоплення ворожих цілей". Telegram, 2026. [Link](#)
- The Moscow Times. "Ukrainian Drones Damage Ust-Luga Port Again". The Moscow Times, 2026. [Link](#)
- The Washington Post. "Iran cost budget — Pentagon". The Washington Post, 2026. [Link](#)
- Tochnyi.info. "Blinding the Bear and Pulling Its Fangs: Ukraine's Long-Range Campaign Against the Russian Air Defence". Tochnyi.info, 2026. [Link](#)
- Ukrainska Pravda. "Ukraine Struck 15 Russian Plants, Oil Refineries and Terminals in March". Ukrainska Pravda, 2026. [Link](#)
- UNIAN. "Палає нафтоналивний термінал 'Шеххаріс' в РФ: що відомо про атаку на Новоросійськ". UNIAN, 2026. [Link](#)
- UNITED24 Media. "Drones Strike Key Oil Pumping Hub in Russia's Krasnodar Region, Massive Fire Reported". UNITED24 Media, 2026. [Link](#)
- UNITED24 Media. "Iran Launches Russian Geran Drones — Copies of Its Own Shaheds. Moscow and Tehran Spread Them to Allies". UNITED24 Media, 2026. [Link](#)
- UNITED24 Media. "Russia Sets Three Oil Export Records Via Baltic Ports in January 2026—Here's What We Know". UNITED24 Media, 2026. [Link](#)
- UNITED24 Media. "Ukrainian Pilot Sets World Record — Two Shaheds Downed From 500 km Using STING Interceptor, Video". UNITED24 Media, 2026. [Link](#)
- Voennoedelo.com. "Ukraine Ends Overseas Troop Training Amid War Challenges". Voennoedelo.com, 2026. [Link](#)
- Wall Street Journal. "Russia Is Sharing Satellite Imagery and Drone Technology With Iran". Wall Street Journal, 2026. [Link](#)
- X @dim0kq. "Very interesting footage from Russians indicating that Ukrainian Forces use laser light beam to fry fiber optic on "waiter" drones". X, 2026. [Link](#)
- X @jembobineuse. "A short thread about the massive expansion of SHORAD positions in Russia last year". X, 2026. [Link](#)
- X @jembobineuse. "The "inner" positions were NOT abandoned, with the exception of one or two". X, 2026. [Link](#)
- YF Connectivity. "Fiber Optic Cable Price Surge in 2026: Latest Market Data as of March". YF Connectivity, 2026. [Link](#)
- YouTube. "REPMUS & DYNAMIC MESSENGER 25". YouTube, 2025. [Link](#)
- YouTube. "Ukrainian teams in the Gulf region: Units help intercept Iranian drones & boost defences". YouTube, 2026. [Link](#)



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EDITORIAL & DESIGN TEAM

- **Viktoriia Honcharuk** – Director, Defense Tech at Snake Island Institute
- **Catarina Buchatskiy** – Visual Design, Director of Analytics at Snake Island Institute
- **Oleksandra Balabukha** – Defense Tech Analyst at Snake Island Institute
- **Oleksandra Onopriienko** – Layout Design



Edition 10.0