PROLIFERATED DRONES

A Perspective on Russia

By Isabelle Facon

Introduction

In recent years, Russia has grown increasingly aware of the importance of unmanned aerial vehicles (UAVs) in modern warfare as well as increasingly interested in expanding its own use of drones. In addition to military missions (surveillance, reconnaissance, communications, intelligence, electronic warfare, strike, etc.), drones will be used for domestic security purposes (e.g., border patrol, coastal surveillance) and for civilian purposes (e.g., search and rescue, prevention of major forest fires,[1] Arctic exploration). Russia seriously lags behind the West in drone technologies. In theory, given its proven ability to develop complex air and space systems, Russia should be able to master the competencies required to design and produce UAVs. However, shortcomings in key technologies associated with drone development (optics, electronic systems for light aircraft, composite materials, etc.) will need to be overcome. As an additional hurdle, the Russian armed forces have experienced difficulties in formulating requirements and specifications for Russian drone manufacturers.[2] In recent years, Russia has worked to improve the situation, so far with only relative success. As a clear sign of increasing reliance on unmanned systems, a growing number of military exercises involve the use of UAVs, and the number of flights carried out by UAVs is said by Russian Ministry of Defence (MoD) sources to have doubled in 2014 from the previous

year.[3] Russia has also covertly used drones – including, presumably, the small optical surveillance and reconnaissance drone Orlan-10 – in support of the insurgents fighting in Donbass (Ukraine).[4] In addition, there have been reports that the Russian armed forces may be using drones in their operations in Syria.[5]

Technology

The Russian military operates a fleet of about 500 drones.[6] Russian officials stress that short-range drones are the most needed in the armed forces.[7] While the development of advanced drones obviously poses a significant technological challenge to the Russian defense industry, indigenous production has slowly progressed in the mini and tactical UAV categories (although in the latter category, Russian products lag behind the systems of leading competitors).[8] The Russian MoD has tested and placed orders for small drones such as the Eleron-3SV (Enics, Kazan), the Granat and the Takhion (Izhmash Unmanned Systems, Izhevsk), and the Korsar (United Instrument Manufacturing Corporation, Rostec, currently in testing).[9] In 2013, the Russian Air Force Academy began receiving the lightweight (18 kilogram) Orlan-10 (Special Technological Center, St. Petersburg). The Ministry of Internal Affairs (MVD) is equipped with Zala drones (Zala Aero Group, Izhevsk), while the Border Guards have been using Zala-421, Irkut-10 (Irkut company), and Orlan systems.[10] These are mainly tactical systems. Their small weight does not allow them to be equipped with complex payloads and used as weapon platforms.

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In 2011 Russia launched the development of three categories of heavier drones: the 1-ton Inokhodets (developed by Tranzas, similar to the MQ-1 Predator class), the 4.5-ton Altius-M (developed by Tranzas and Simonov, its capabilities are often compared to the MQ-9 Reaper), and the 15-ton Okhotnik (Sukhoi, MiG).[11] These programs are projected to be mature for production in the 2018-2020 time frame. In early 2015, the Russian press announced that the Russian United Instrument Manufacturing Corp. had constructed two prototypes of the amphibious, dual-use Chirok drone.[12] Russian Helicopters (Rostec), for its part, is working on projects based on unmanned rotary-wing aircraft. There has also been information about MiG and Sukhoi conducting joint work on a stealth attack drone.[13]

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While Russia is prioritizing domestic research and development (R&D), it has also tried to supplement its indigenous effort through foreign technology acquisition, with a view to better formulating requirements for and accelerating the development of domestically built drones. In 2009 the MoD acquired 14 Bird-Eye 400, I-View Mk 150 and Searcher Mk II drones from Israel.[14] In 2010 Oboronprom and Israel Aerospace Industries (IAI) signed a $400 million contract allowing the former to assemble under license Bird-Eye 400 (Zastava) and Searcher Mk II drones (Forpost) at Ural Works of Civil Aviation (Ekaterinburg). Apparently, Russia also tried to obtain medium-altitude long-endurance (MALE)-class Heron drones from Israel, which reportedly rejected the project under U.S. pressure but also out of a concern that it could jeopardize Israel's access to the arms markets of Russia's neighbors.[15] In 2011, OAO Gorizont acquired a license to assemble the Austrian Schiebel S-100 drone helicopter. It was used alongside the Zala 421 during the 2014 Winter Olympics in Sochi.[16] The MoD is said to have expressed an interest in testing the Yabhon United 40 MALE UAV (Adcom Systems, United Arab Emirates), which has so far not been confirmed.[17] In the future, the Russian military is likely to procure drones

predominantly from the domestic industry, possibly working in cooperation with Belorussian firms on some aspects.[18]

Strategic Implications

One of the challenges Russia faces in using drones is reconciling the different outlooks of the army, the air force, the navy, and other user services (e.g., the Federal Security Service, MVD, Ministry of Emergency Situations). Accordingly, the Russian MoD State Unmanned Aviation Center (GTsBA, Kolomna), which became operational in late 2014, trains UAV operators from other ministries and agencies. Russia will also have to work on narrowing the differences in military and civil certification procedures.

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While lagging behind the West in the corresponding technologies and systems, Russia has "developed a fairly comprehensive strategy for utilizing unmanned aircraft systems and, more broadly, robotics technology in warfare,"[19] which is a sign among others that the Russian military is increasingly focused on no-contact warfare. Russia has certainly investigated carefully how other countries, particularly the United States, have managed to integrate and operate drones in their own armed forces. However, geographic and cultural particularities will be key in defining the roles that Russia will set for its drone fleet. The country represents a huge landmass of about 17 million square kilometers, with approximately 22,000 kilometers of land borders and 37,600 kilometers of coastline. Thus, the surveillance of the national territory and of adjacent areas will be a primary task for drones (e.g., monitoring and tracking NATO ships in the Black Sea).[20] Russian drones (Takhion, Eleron) are surveilling areas in the Arctic and parts of the Northern Sea Route –

in keeping with Moscow's vision that the region is set to become a zone of tensions, if not conflict, with Western powers (in early 2014 Russia set up a division of UAVs in the region).[21] UAVs will also be increasingly used in navigation, search and rescue missions, and monitoring of the ecological and ice conditions in the Arctic Ocean. Monitoring of critical infrastructure and pipelines is certainly another essential mission for Russian drones.

Russia, unlike Western powers, does not have specific requirements for overseas deployment of forces; its military culture is not centered on expeditionary missions. In this sense too, its needs are quite different from the United States'. The Russian government probably considers that the use of drones in contested areas in its immediate neighborhood offers useful added value as compared with traditional systems such as manned aircraft. In the 2008 Georgia war, the inability to deploy UAVs to the conflict zone in time and in sufficient numbers (which compelled the Russian military to instead send fighter jets and bombers for intelligence-gathering missions) and the negative comparison with the Israeli-made drones operated by the Georgian military were important factors behind Russia's acceleration of its drone effort in recent years.[22] A few years later, Russia is using drones in eastern Ukraine. The endurance and relative ability of drones to operate with impunity are seen as assets in dealing with asymmetrical opponents such as those that the Russian forces could potentially face either in the Northern Caucasus (Russia used surveillance drones in the Chechnya wars) or in Central Asia, where Russia has strong security interests and alliance commitments (within the framework of the Collective Security Treaty Organization).[23]

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In case of a high-intensity conflict, Russia may deploy drones in operations combining the

use of reconnaissance and offensive electronic warfare (EW) drones and of other systems tasked specifically to saturate enemy air defenses. In the future, if Russia succeeds in developing long-range high-altitude drones, it is quite likely that it will be inclined to equip them with air-to-air missiles designed to destroy Airborne Warning and Control Systems, Joint Surveillance Target Attack Radar Systems, and air-refueling capabilities, which are crucial for complex air campaigns. Russia would not hesitate to send drones far from its national airspace to seek and possibly destroy such high-value targets.

In case of an intrusion of foreign drones over its territory, Russia would first try to identify the geographic origin of the drone, its features (optical/radar reconnaissance, EW warfare, armed, etc.), and its ownership. In a second and more complex phase, the Russians could use passive means to deceive enemy drones and possibly try to take control of them through electronic means. They may use the Krasukha-4 electronic warfare system, aimed at protecting important assets and infrastructure (reportedly, the system was deployed at the Russian air base in Latakia, Syria in October 2015 and will also be deployed in the Arctic). Krasukha-4 offers complete coverage from radar detection and has the capacity to jam airborne radars of both aircraft and drones. The system creates powerful interference on the frequencies of radar and other radio-emitting sources.[24] If communication between the drone and its operators is lost, the automation and software systems cannot guarantee autonomous operation. That weakness came to light when the Iranians reportedly took control of a U.S. RQ-170 Sentinel drone, presumably using Soviet-specific equipment (the Russians and the Chinese apparently asked Iran for permission to inspect the drone).[25] In addition to this means of degrading and even destroying a drone by "soft killing," the Russian air defense forces may use interceptors and surface-to-air missiles (SAMs) to destroy incoming enemy drones. The Russians are likely to have this potential vulnerability of drones in mind, aware as they are that during the Balkans war in the 1990s, U.S. drones were lost to the Serbian air defenses, which operated Soviet- and Russian-made anti-aircraft missiles and artillery.

The public debate about the use of drones and the various issues it raises, including juridical and ethical ones, is almost nonexistent. This is explainable primarily by the absence, so far, of attack systems in the UAV inventory of the Russian armed forces. When President Vladimir Putin called for speeding up the development of Russian drone systems, however, he used the issue to once again criticize the United States' international

conduct, suggesting that the United States was using them unethically. "Drones," he said, "are finding an increasingly wide use all over the world, but we are not going to operate them as other countries do. It is not a video game."[26]

Constraints

The Soviets designed drones as early as the 1950s, primarily through the Lavochkin and Tupolev experimental design bureaus.[27] These drones were used for air defense training and later for reconnaissance purposes. However, other defense priorities led Moscow to neglect this domain; as a result, there was no backlog of UAV projects to bank on when the Soviet Union collapsed.[28] Due to stringent financial constraints, the situation was not corrected in the 1990–2005 period, broadening the technological gap with Western forces (the situation was further complicated by the transfer in 2002 of army aviation to the air force, which deprived drones of one of their main potential customers). The government's ambition to accelerate the integration of UAVs into the armed forces' inventory has been hampered by bottlenecks in the Russian industry, which in 2015 still needs to adjust to the requirements of modern technologies and management.[29] The current military also lacks the full spectrum of skills needed for equipping drones, especially in optics and electronics systems.[30] Leading developers of UAVs, such as the Vega Radio Engineering Corp. (Tipchak, Luch drones), have drawn a lot of criticism on the part of the MoD.[31] The Russian industry has still not developed weapons suitable for equipping UAVs.[32]

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The sanctions that the West has imposed on Russia as a result of the Ukrainian conflict have significantly reduced the margins for maneuver for acquiring foreign technology

needed in the production of advanced UAVs (navigation and control systems, cameras, opto-electronic observation systems, engines, etc.).[33] The current economic crisis may affect the funding of the drone programs (in 2014, the MoD announced that roughly $9 billion will be spent on military UAVs by 2020).[34]

Further contributing to Russia's interest in indigenous production, foreign-made UAVs, which have been designed for a certain type of climate, have difficulties operating in the harsh Russian winter.[35] Indeed, many current systems are almost useless in Russia's northern latitudes, where fog, rain, and snow are frequent.

Conclusion

Recent Western military operations have made the Russians realize the force multiplier effect of UAVs. Although in recent years Russia has certainly achieved progress in UAV technologies, it still lags behind the West, except in the lower end of the spectrum (i.e., short-range and very-low-payload systems). To overcome its lack of medium- and heavy-size drones, the Kremlin has, over the past decade, pursued several tracks – investing money in drone-related R&D, reorganizing and rationalizing the ad hoc components of its defense industry (an ongoing process), acquiring foreign technology, and harmonizing the requirements expressed by various operators. Russia's current industrial and technological bottlenecks should not lead analysts to make hasty conclusions. After all, major West European powers have not yet reached the development phase of the various medium- and heavy-weight drone programs they launched around a decade ago, and very few can undertake this without teaming up with partners. If Russia gets ahead in building 1-ton (or heavier) operational drones, one may bet it will probably conceptualize – and may have already – innovative forms of engagement that in the future may pose real challenges to Western airpower. In a situation of exacerbated tension, Russia may aim at reducing the room for maneuver of Western forces by constraining their use of airspace; neutralizing some of their key, high-value airborne assets with "killer drones"; or forcing them to deploy operational enablers far away from the theater of operations – thus making these systems lose part of their efficiency.

Response: Japan Perspective

By Tetsuo Kotani

Isabelle Facon argues that, despite the Kremlin's aspirations, Russian medium- and heavy-weight drone programs will continue to face difficulties due to industrial, technological, and financial constraints. If Russia does overcome these difficulties, however, its use of drones in "no-contact warfare" could eventually restrict the air power of others in the region.

For Japan, the development of Russian drones poses a challenge in terms of territorial air defense. Russia's aerial activities around Japan greatly increased in 2014, reaching close to the height of the Cold War era.[36] Russian military aircraft frequently fly around the Japanese archipelago, occasionally violating Japanese territorial airspace. The question is whether or not Russia will fly short-range surveillance drones from the Northern Territories – the sovereignty of which is disputed by Japan and Russia – partly to reinforce its territorial claim. If a drone violates Japanese airspace, then the Japan Air Self-Defense Force will respond based on its usual procedures vis-à-vis manned aircraft, including downing – procedures that were reaffirmed after a Chinese drone flew near the Senkaku Islands in the East China Sea.[37] The deployment of even short-range Russian drones would increase the chances for unintended incidents and escalation; the introduction of longer-range drones would increase these chances much higher.

Japan recently revised its aviation law to regulate drones after a drone was found on the roof of prime minister's residence.[38] With the introduction of new regulations, Japan will

hasten the development of drones for both civilian and defense use. Understanding that Russia's development of drones requires foreign technologies, Japan should tighten its export controls to prevent Japanese technologies from being used in Russian drones. Although Japan has been reluctant to impose economic sanctions, it should also reconsider the implications of sanctions on the Russian drone programs.

About the Authors

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Endnotes

1. Almost 50 percent of Russian territory is covered with forest.
2. "A Russian drone with a complicated history," SputnikNews.com, August 11, 2011, http://sputniknews.com/analysis/20110811/165713287.html.
3. "Number of drone flights in Russian army doubles in 2014," News.Az, January 7, 2015, http://news.az/articles/region/94770.
4. Maksym Bugriy, "The Rise of Drones in Eurasia (Part Two: Russia)," *Eurasia Daily Monitor*, 11 no. 117 (June 27, 2014).
5. Martin Chulov and Kareem Shaheen, "Turkey shoots down unidentified drone near Syrian border," *The Guardian*, October 16, 2015, http://www.theguardian.com/world/2015/oct/16/turkey-shoots-down-drone-near-syrian-border.
6. Jaroslaw Adamowski, "Russian Defense Ministry Unveils $9B UAV Program," *Defense News*, February 19, 2014.
7. "Russia to Receive Hundreds of New Drones Over Next Decade," SputnikNews.com, May 18, 2015,

http://sputniknews.com/military/20150518/1022267492.html.
8. Bertrand Slaski, "UAVs in Russia – Interview of Denis Fedutinov," *DSI – Défense et Sécurité Internationale* (December 9, 2011), http://www.dsi-presse.com/?p=3952.
9. "Russian Army to Receive Corsair Surveillance Drones in Late 2016," SputnikNews.com, December 25, 2014.
10. "Izhevsk Company Supplies Drones to Border Service," Interfax-AVN, February 1, 2010; and "Russian Border Service Plans to Use Russian-Made Drones," Interfax-AVN, June 2, 2010.
11. Chris Bigger, "Russia's Project Altair Makes an Appearance at Kazan," Bellingcat.com, January 29, 2015, https://www.bellingcat.com/; pictures and characteristics available at http://militaryrussia.ru/blog/topic-719.html; and "Drones, post-Afghanistan Era," *Armada International* (June 2, 2014), http://www.armada.ch/drones-2/.
12. Franz-Stefan Gady, "Russia to Develop New Attack Drone," *The Diplomat* (February 11, 2015), http://thediplomat.com/2015/02/russia-to-develop-new-attack-drone/.
13. "MiG & Sukhoi associés pour un drone furtif!," *Avia News (24 heures)*, March 19, 2013, http://psk.blog.24heures.ch/archive/2013/03/19/mig-sukhoi-associes-pour-un-drone-furtif.html.
14. "Russian Defense Ministry Not Planning to Buy More Israeli Drones," Interfax-AVN, August 6, 2014.
15. "Russia's Israeli UAV Deals: Quid Pro Quo?" DefenseIndustryDaily.com, August 10, 2014, http://www.defenseindustrydaily.com/israel-and-russia-in-uav-deal-05459/.
16. "Drones, post-Afghanistan Era."
17. "Procurement of UAE Heavy Drones is Not on the Agenda – Source," Interfax-AVN, July 18, 2013.
18. "Russian Defense Ministry Not Planning to Buy More Israeli Drones."
19. Bugriy, "The Rise of Drones in Eurasia (Part Two: Russia)."
20. "Black Sea Fleet Procures Sukhoi Su-30 Fighters, Orlan Drones," Interfax-AVN, January 13, 2015. A regiment of UAVs is supposed to be established in Crimea in 2015.
21. "Aerial Reconnaissance and Observation Drones Fly over Arctic Circle," Interfax-AVN, April 7, 2014.

22. Dan Gettinger, "'Drones are Not Toys': The Russian Program," Center for the Study of the Drone, March 5, 2014, http://dronecenter.bard.edu/drones-toys-russian/.
23. Granat, Leyer and Zastava drones have been in use in the 201st Russian military base in Tajikistan since 2014. "Russian Troops in Tajikistan Learn to Rely on Drones in Using Artillery," Interfax-AVN, April 16, 2014.
24. For more details see "Krasukha-4," Deagel.com, April 10, 2015, http://www.deagel.com/Special-Purpose-Vehicles/Krasukha-4_a003129002.aspx.
25. David Blair and Alex Spillius, "Iran shows off captured US drone," *The Telegraph*, December 8, 2011, http://www.telegraph.co.uk/news/worldnews/middleeast/iran/8944248/Iran-shows-off-captured-US-drone.html.
26. "Putin says drones aren't toys, Russia won't use them like other nations," RT.com, November 28, 2013, http://www.rt.com/news/putin-drones-not-toys-457/.
27. Yefim Gordon, *Soviet/Russian Unmanned Aerial Vehicles: Red Star Volume 20* (Midland Publishing Ltd., 2005); and Denis Fedutinov, "Russia Launches MALE-Class UAV Project," *Moscow Defense Brief*, no. 1 (2012).
28. Slaski, "UAVs in Russia – Interview of Denis Fedutinov."
29. Susanne Oxenstierna and Fredrik Westerlund, "Arms Procurement and the Russian Defence Industry: Challenges up to 2020," The Journal of Slavic Military Studies, 26 no. 1 (2013), 1-24.
30. Bugriy, "The Rise of Drones in Eurasia (Part Two: Russia)."
31. See the official website of the Vega Radio Engineering Corp.: http://www.vega.su/production/pilotless/; and Fedutinov, "Russia Launches MALE-Class UAV Project."
32. "UAV Manufacturer Says Russian Drones Not Yet Militarized," SputnikNews.com, October 13, 2014.
33. Slaski, "UAVs in Russia – Interview of Denis Fedutinov"; and "A Russian drone with a complicated history."
34. Adamowski, "Russian Defense Ministry Unveils $9B UAV Program."
35. "A Russian drone with a complicated history."
36. "Japan protests after 'Russian' plane enters airspace," Agence France-Presse, September 16, 2015, http://news.yahoo.com/japan-scrambles-jets-intercept-

russian-plane-222619504.html.
37. Shawn Brimley, Ben FitzGerald, and Ely Ratner, “The Drone War Comes to Asia,” ForeignPolicy.com, September 17, 2013, http://foreignpolicy.com/2013/09/17/the-drone-war-comes-to-asia/.
38. Andy Sharp and Maiko Takahashi, “Japan to Bolster Laws After Drone Lands on Abe’s Office Roof,” Bloomberg.com, April 22, 2015, http://www.bloomberg.com/news/articles/2015-04-22/drone-lands-on-roof-of-japanese-prime-minister-s-office-in-tokyo.

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UAV Aileron – 3CB: Vitaly Kuzmin via commons.wikimedia.org

Russian: ZALA 421-21: Vitaly Kuzmin via commons.wikimedia.org