



AIR POWER IN THE RUSSIA-UKRAINE WAR

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Since February 24, the world has been engaged in the conflict between Russia and Ukraine. In 2021, Russia began a military build-up on the border with Ukraine and escalated tensions. In mid-December 2021, Russia issued a set of demands that must be met to withdraw its troops from the Ukrainian border. These demands included a permanent ban on Ukraine's entry into the North Atlantic Treaty Organization (NATO), a reduction of NATO forces in Eastern Europe, and a pullback of the missile systems and military deployments from near Russia's borders. The United States responded by sending a strong message that any Russian invasion would be met with dire consequences for Russia's economy. Finally, on February 24, 2022, Russia invaded Ukraine

Background

The Russo-Ukrainian war began in 2014 when Russia annexed Crimea from Ukraine. Crimea, which was part of Ukraine, was important to Russia as the Russian Black Sea fleet was stationed there under a formal treaty with Ukraine. The pro-EU Ukrainian government was hinting at upsetting such an arrangement. In such an event, it would have very serious geostrategic implications for Russia. Russia thus intervened militarily and annexed Crimea, and also created the self-proclaimed breakaway states of Donetsk People's Republic (DPR) and Lugansk People's Republic (LPR). Ukraine, hereafter, became a pro-EU nation. More recently, there has been a move to make Ukraine part of the EU and NATO. In 2019, amendments were made to the Constitution of Ukraine, which enshrined the irreversibility of the country's strategic course towards EU and NATO membership.

Russia has been cautioning the West against bringing NATO to its border. Earlier, the Czech Republic (now Czechia), Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia,

Bulgaria, and Romania had joined the EU. Ukraine's membership in the EU and NATO would complete a wall of western allied countries and thus restrict Russia's access to the Black Sea.

Evolving Scenario

Russia's 'Special Military Operation' began with the deployment of ground forces and the employment of massive standoff ballistic and cruise missile strikes, along with airstrikes by fighters and helicopters of the Russian Federation Aerospace Force (RFAF). Initial strikes have caused extensive damage to the major airfields, air defence (AD) networks, communication centres, and S-300 missile systems of the Ukrainian Air Force (UkrAF). Even though there is a large disparity between RFAF and UkrAF assets in terms of numbers and types of aircraft and AD systems, RFAF was unable to gain control and establish air superiority over the Ukrainian airspace.

The Russian air campaign commenced with a counter-surface force campaign in which low-level strikes were carried out by fighters and helicopters over the first few days. A considerable number of fighters and helicopters were shot down by the UkrAF interceptors and air defence assets like Surface-to-Air Missiles (SAMs) and shoulder-fired "Stinger" missiles. Some reasons which played in the Ukrainian favour could be that the Russians were flying at low altitude and within the launch range of the SAMs, bad weather in the north region, inadequate usage of the electronic counter-measures by the Russian aircraft, and most importantly, an incorrect assessment of the Ukrainian air defence capabilities by the Russians.

Fig 1: Russian Sukhoi Su-35 jet fighters



Russian Sukhoi Su-35 jet fighters fire missiles during the Aviadarts competition, as part of the International Army Games 2021, at the Dubrovichi range outside Ryazan, Russia on August 27, 2021.

Source: REUTERS/Maxim Shemetov/File Photo. <https://www.reuters.com/world/europe/what-happened-russias-air-force-us-officials-experts-stumped-2022-03-01/>. Accessed on Apr 11, 2022.

Russian Federation Aerospace Force

With approximately 3,800 aircrafts, manned by 1,65,000 personnel, the RFAF is the second largest air force in the world. RFAF's fighter inventory includes MiG-31/35, Su-24/25/27/30/34/35 (Fig 1), Su-57 (78 on order), and MiG-29 (likely to be replaced with MiG-35). The strategic bomber inventory includes the TU-160/22M/95. RFAF also has A-50 Airborne Warning and Control System (AWACS), AN-12 AEW aircrafts and IL-22 Jammer aircrafts on its strength. The reconnaissance inventory includes AN-30, IL-20, M-55, TU-124 and TU-214R aircrafts. Its impressive line-up of strategic and transport aircrafts includes AN-12, AN-22, AN-26, AN-72, AN-124, AN-140, AN-148, IL-18, IL-62, IL-76, L410, TU-134, and 9 TU-154 with IL-78 in tanker role. Helicopters comprise of Eurocopter AS 350, KazenAnsats, KA 27, KA-52, KA-226, Mi-8/Mi-17, Mi-24/Mi-35, Mi-26, Mi-28, and Mi-38.¹

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Ukrainian Air Force

The Ukrainian Air Force (UkrAF) is manned by 45,000 personnel and has more than 200 aircraft on its strength. The fighter inventory includes the MiG-29/Su-24/Su-25 and Su-27. Transport inventory includes the An-26, An-70, An-72/74, IL-76 and the An-30 in the reconnaissance role. An inventory of 46 helicopters includes the Mi-24, Mi-26, Mi-8, Mi-2 and Airbus H-225. They also have 47 L-39 trainer aircrafts in addition to unidentified Unmanned Aerial Vehicle (UAV) inventory that includes RQ-11, TB-2, PD-2, Birds Eye 400, Fly Eye, Warmate, BqAK P-100 and Switchblades.

Russian War Strategy

The Russian strategy is based on local wars with neighbours and regional or large-scale wars with NATO. Russia considers the United States of America a threat. Accordingly, Russians believe that the commencement of a large-scale war with NATO will feature a massed missile-aviation strike.² In Russia's assessment, unlike military conflicts in the 20th century, during modern-day wars, forces may be deployed during peacetime itself, thereby employing pre-positioned forces for strategic and offensive operations. In the meantime, military forces from peacetime locations are moved into position to either launch an offensive or be ready to move into the battlefield unhindered without major opposition from the enemy. The events during the ongoing conflict unfolded in a similar manner. A study by Michael Kofman, *Russian Military Strategy: Core Tenets and Operational Concepts*, highlights the core tenets of Russian military strategy and operational concepts.³ Russia is likely to follow an 'active defence strategy' to prosecute

future wars. The concept of operation includes pre-emptive strikes by surface-to-surface missiles, airstrikes, and if the war escalates, further usage of the nuclear arsenal against an enemy is justified. The strategy highlights the integration of defensive and offensive operations, manoeuvre defence, degradation of command and control setup, and continuous engagement of the enemy forces across the area of operation. The notion of victory is defined as degrading the military-economic potential of an enemy, and destroying their ability and will to fight. It can be seen that Russia is not intending to destroy Ukraine as a whole, but to cripple the war-waging capability of Ukraine, thereby bringing it to the negotiation table.

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Russian Air Strategy

An air strategy is meant to achieve desired objectives, and its prosecution requires a dedicated campaign like counter-air campaign, counter-surface force campaign, strategic air campaign and combat enabling operations.⁴ The air strategy followed by Russia indicates that RFAF has conducted parallel operations during this war. RFAF started with offensive counter-air and air-land operations that included air interdiction and battlefield airstrikes along with conventional strategic air operations. However, Russian forces were seen as lacking in the conduct of combat enabling air operations like surveillance and reconnaissance missions and the employment of UAV/RPA. The AWACS and Airborne Early Warning and Control (AEW&C) systems were not reported to have participated actively in the war. Electronic warfare and cyber-attacks have also been limited. Ground-Based Multi Rocket Launch Systems (MRLS) and helicopter gunships have been extensively used.

Although the loss of a few combat aircraft, helicopters, and airborne assault aircraft to air defence systems and Man-Portable Air-Defense Systems (MANPADS) of UkrAF may have taken the RFAF by surprise, it definitely won't deter the RFAF from continuing offensive operations and establishing air superiority over Ukrainian airspace. During the initial phase of the war, it is assessed that active electronic countermeasures were not used to ensure the safety of aircraft. However, as the war progressed, the restricted use of air power by RFAF has created confusion and doubt amongst air power followers regarding the performance and employment philosophy of Russian assets.

A combined offensive by the US and allied forces against Russia may have also been considered by the RFAF to save its inventory for the large-scale war. Whatever may have been the reason, the restricted use of air power against Ukraine and the inadequate

air support to Russian ground forces in Ukraine is difficult to understand. Poor training status of Russian pilots with limited flying hours, non-availability of precision-guided munitions, utilisation of dumb bombs, employment philosophy, and non-availability of electronic warfare suits for Russian aircraft are some of the reasons cited by western air power experts for the failure to establish air superiority over the war zone. However, it is very unlikely that even after having such a large inventory of modern aircraft, and high-tech air defence systems, Russia is unable to achieve its desired objectives. The air campaign-related aspects are still evolving, and the lessons from the same will be analysed in due course.

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Losses

The Russian Defence Ministry, through their dispatches, has claimed the loss of a total of 125 Ukrainian aircraft, 91 helicopters, and 394 UAVs of Ukraine, 226 anti-aircraft missile systems, 1948 tanks/armoured vehicles, 212 multiple launch rocket systems, 838 field artillery and mortars, and 1,848 units of special military vehicles during the operation. Most Ukrainian aircraft were destroyed on the ground, whereas most Russian fighters were shot down by SAMs in Ukraine. Ukraine claims to have shot down at least 49 fighters, 81 helicopters, 335 tanks, 1105 armoured vehicles, and 123 artillery systems. The air defence network of Ukraine, including the S-300, Buk-M1 AD system and various types of radar, has been reportedly destroyed to a large extent. According to the last known reports, 16 major airfields have become non-operational, 39 storage bases containing 70 per cent fuel reserves and military equipment, and one million and 54 thousand tonnes of ammunition have been destroyed by Russia.

Assessment

The war is not yet over; so is the fog of war. The losses claimed by both sides seem to be exaggerated by the media as part of information warfare. The only sources of information are the media (which seems to follow the western narrative) and dispatches by the Russian Ministry of Defence. Major lessons will emerge only after the war; once we have an official and corroborated narrative from both sides.

RFAF has not deployed modern aircraft with precision-guided munitions in this conflict. Is Russia waiting for offensive action by the US and NATO countries, hence waiting to deploy its best aircraft and precision weapons? Probably yes.

Intelligence, Surveillance, and Reconnaissance (ISR) operations should be conducted before and during the war to assess the enemy's dispositions, assess the Enemy's Order of Battle (E-ORBAT), and carry out a damage assessment. Russian forces were deployed well in advance for the military exercise on the Ukrainian border. A timely assessment of

Ukrainian Electronic Order of Battle (E-ORBAT) could have saved Russian assets.

Blinding the air defence network of the enemy assumes great importance in the execution of low-level operations. Suppression of Enemy Air Defence (SEAD) by soft/hard kill should have been undertaken by Russia to neutralise, destroy, or degrade Ukrainian air defence systems like radars, SAM systems, and communications centres to avoid initial losses.

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The strategic air campaign by the RFAF was conducted exceptionally well to address Ukrainian targets like command-and-control centres, industrial infrastructures, vital economic targets and nuclear installations. However, usage of civil infrastructure by Ukrainian ground forces has been one of the major limitations for unrestricted use of air power by RFAF. Ukrainian forces have been using school buildings, hospitals, shopping malls, and other civilian infrastructure to house its military troops. Actions taken against such military targets are being projected as atrocities against the civil population. The employment of air power against targets in urban areas is a difficult task, and a large number of civilian casualties are expected during such operations.

Eastern Ukraine is known to have a large Russian-speaking and pro-Russian population. It has been reported by Russians that Ukrainian military forces are using a large number of civilians as a 'human shield' in Kyiv, Kharkiv, Chernihiv, Sumy and more than 20 other blocked large settlements. This could be one of the reasons that RFAF has not been able to execute an air campaign as desired.

Most importantly, the utilization of air power on the active battlefield has already been defined by air forces of every nation, but successful employment of air power in urban warfare, without loss of civilian population is yet to be evolved.

Notes:

¹ James Hackett (ed.), *The Military Balance 2021*, International Institute for Strategic Studies (London: Routledge, 2021), p 197.

² Michael Kofman et al., *Russian Military Strategy: Core Tenets and Operational Concepts* (Washington: CNA, August 2021), available at [https:// www.cna.org/CNA_files/pdf/Russian-Military-Strategy-Core-Tenets-and-Operational-Concepts.pdf](https://www.cna.org/CNA_files/pdf/Russian-Military-Strategy-Core-Tenets-and-Operational-Concepts.pdf). Accessed on April 05, 2022.

³ Ibid.

⁴ Indian Air Force, Basic Doctrine of Indian Air Force, Sep 17, 2012, available at <https://www.scribd.com/doc/109721067/Basic-Doctrine-of-Indian-Air-Force-2012-PDF>. Accessed on April 06, 2022..



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