

RETEX - 44 days over Nagorno-Karabakh

Pierre Grasser, PhD in history of international relations.

*Thanks to Mrs. Blanche Lambert (production of maps).
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At the time, Nagorno-Karabakh is an integral part of the Socialist Republic of Azerbaijan under the USSR. This situation wavered in 1988, when the National Assembly of Nagorno-Karabakh proclaims the independence of the region, where a majority of Armenians live. Anxious to regain control, Azerbaijan sends troops to the region. The clashes between the inhabitants of Nagorno-Karabakh, supported by Armenia, and the Azeris increase. The disputes turn in favor of the Armenian party and are suspended by a cease-fire in 1994.

Baku has always contested the fairness of this agreement. Repeated skirmishes occur in the 2000s. Impoverished and with a declining population, Armenia thinks it can compensate for its military weaknesses by focusing on the training of its soldiers. However, the clashes in 2016 reveal a shift in the balance of power. Aided by oil revenues, Baku makes use of its diplomatic ties to obtain new stand-off weapons. The fighting resumes on 27 September 2020. The intensity of the conflict, its technical and operational specifics and the lessons learned in aviation are worth an assessment, which follows.



Armenia, Azerbaijan and Nagorno-Karabakh, until 27 September 2020

I - TWO ARMIES, TWO VISIONS OF HIGH INTENSITY COMBAT

A) Armenia, a modernization barely begun

Criticized after the conflict, the Armenian forces have some assets in September 2020.



(RR) Armenian Su-30SM, armed with 4 R-73 air-to-air missiles (short range) and 4 R-27ER (medium range), Erebuni airport, date unknown.

Controversy over the air component. Maintaining a combat-ready air force is an expensive choice, one that not all former socialist bloc nations can make. Armenia's operational fleet consists of eight Su-25 tactical bombers and seven L-39 trainers, as well as six Mi-24 attack helicopters and two transport helicopters. An ambitious leap in capability is attempted with the purchase of four Russian Su-30SM multi-role fighters, to be delivered in December 2019, which becomes controversial due partly to the cost. There is little data on the level of training in the air force. Aircraft did not leave Armenian territory and did not participate in any major exercises with Russia.

Obsolete surface-to-air defense. Although powerful in terms of quantity, the Armenian ground-air component are nonetheless apportioned into two commands:

- The air force deploys six S-300PS and S-300PT/SA-10 surface-to-air batteries with a range of about 75 km against aircraft. Four batteries of S-125/SA-3, with a range of 23 km and capable of dealing with medium-sized drones, rounded out the system.
- Ground forces provide the backbone of the anti-aircraft defense of Nagorno-Karabakh. They implement two Kub/SA-6 batteries (range : 24 km) and one Krug/SA-4 (50 km). This outdated equipment hardly poses a threat to drones. In addition, some forty short-range (9 km) Osa/SA-8 systems are distributed along the front line. Four Tor M2/SA-15C surface-to-air systems are delivered by Russia in December 2019. Their range against drones is about 9 km, with a higher hit probability than the SA-8. This parameter, combined with its high cost, makes the Tor a priority target.

A ground component with Soviet roots. The Armenians' main asset is their non-guided conventional artillery. Hundreds of 122 mm and 152 mm guns are reinforced by multiple rocket launchers. There is a deep strike capability, with *Tochka/SS-21* (120 km) and *Elbrus/Scud* (300 km) systems. Several *Iskander-E* complexes are also acquired in 2016. These implement the 9M723E theater ballistic missile, with precise inertial guidance and a range of just under 300 km. The motorized forces have mostly T-72B tanks and BMP-2 armored personnel carriers. About 40,000 men¹ are appointed to the defense army of Nagorno-Karabakh, but they lack field experience.

C4I capabilities² below requirements. Armenia is equipped with efficient Russian *Repell* jamming units. However, no modern electronic reconnaissance means are present, despite a favorable geographical situation for intercepting transmissions from Azerbaijan.

B) For Azerbaijan, calculated investments in multiple areas.

In the face of the Karabakh army and the Armenian army, Azerbaijan proposes a rather different military strategy. Despite a defense budget twice as high as that of Armenia (1.4 billion dollars³ in 2018 against 670 million⁴), choices have indeed been made.

An Air Force focused on tactical support. The Azeri air force has two main missions. The first is to ensure the protection of Baku, using 13 MiG-29 fighters, dating from the Soviet era and never modernized⁵. A second component is to intervene on the front line. Here they are better prepared: 19 Su-25 assault bombers, upgraded in 2019 (laser-guided bombs, jamming pods). In addition to these aircraft, there are 24 Mi-35M3s, 21 Mi-24s and 60 Mi-17s, helicopters dedicated to providing fire support, evacuating the wounded, or dropping off troops at hard-to-reach points.

Surface-to-air defense: capabilities outside the front line. Azerbaijan belongs to the restricted club of powers with IADS⁶. The country has multi-layered, coherent and centralized air defense (with its fighters), an-

1. D. Verkhoturov, "The Second Karabakh", *Agentsvo Politicheskoi Novosti*, 16 November 2020, <https://www.apn.ru/index.php?newsid=38869&fbclid=IwAR0jo3nuT29FVbCOOa-JEyEs2Z8bbw5WT8QwwqRejDf5WzQPqqyHrOoeJ50>.

2. C4I: Command, Control, Communications, Computers and Intelligence

3. "Azerbaijan, Government Defense Spending", *Countryeconomy.com*, March 22, 2021, <https://fr.countryeconomy.com/gouvernement/depenses/defense/azerbaidjan>.

4. "Armenian Defense Spending", *Macrotrends.net*, March 22, 2021, <https://www.macrotrends.net/countries/ARM/armenia/military-spending-defense-budget>

5. A new navigation system is installed, at the Ukrainian factory of Lvov, on these aircraft during an upgrade in 2007.

6. IADS : Integrated Air Defense System

ti-aircraft defense (with surface-to-air systems) and radar-based multi-layered surveillance capabilities. Two batteries of S300PMU2/SA-20-B are purchased from Russia in 2007. A belt of five S-125/SA-3 surface-to-air batteries also surrounds Nagorno-Karabakh. This does not however ensure denial of access to the enclave. Its purpose is to prevent Armenia from using its aircraft outside its borders. Lastly, Baku purchases three batteries of *Buk* M1-2/SA-11 systems from Belarus, as well as six batteries of *Barak-8* from Israel. These medium- and long-range weapons are credible for countering Armenian ballistic projectiles in their final trajectory.

Some well-equipped land forces. When seen in proportion to its population, Baku's effort to arm its 118,000-strong army is substantial. Some units have cutting-edge equipment, while most have more conventional solutions. The case of armored vehicles illustrates this, since 100 modern T-90S tanks and 12 recent *Khrizantema-S* tank hunters are acquired from Russia. These MBT are alongside 250 T-72s from the Soviet period, which have been slightly renovated. The infantry has hardly been given priority for individual equipment. In contrast, 100 Spike anti-tank missiles are obtained in 2012 from Israel. Although it has little ammunition to arm them with, Azerbaijan has these long-range strike capabilities:

Model	Manufacturer/origin	Number	Year of acquisition	Range (km)
LORA ⁷	IAI/Israel	50 missiles	2018	400
Polonez ⁸	Belarus and China	10 launch vehicles	2018	200
EXTRA	IMI/Israel	50 missiles	2008	130
T-300 ⁹	Roketsan/Turkey	9 launch vehicles	2016	120
SMERCH ¹⁰	Bought in Ukraine	12 launch vehicles	2008	90

7. S. Roblin, "Cluster Munitions and Missiles Rain Down on Armenian and Azeri Cities", October 7, 2020, <https://www.forbes.com/sites/sebastienroblin/2020/10/07/rockets-cluster-munitions-and-missiles-rain-down-on-armenian-and-azerbaijani-civilians/?sh=66009a7142c2>

8. A. Helehayeu, "Polonez rockets arrive in Azerbaijan", Belsat, September 28, 2018, <https://naviny.belsat.eu/en/news/belarusian-polonez-systems-arrive-in-azerbaijan/>

9. R. Shirinov, "Turkey delivers T-300 rockets to Azerbaijan", Azernews, September 21, 2016, <https://www.azernews.az/nation/102564.html>

10. "Azerbaijan – Cluster munition ban policy", The monitor, October 30, 2020, <http://www.the-monitor.org/en-gb/reports/2020/azerbaijan/cluster-munition-ban-policy.aspx>

Suicide UAVs and C4I, the decisive Azeri assets. Faced with Armenian surface-to-air means, Azerbaijan very early on choose to use unmanned equipment: 15 *Hermes 900* reconnaissance drones, *Harops*, *Harpys*, *Orbiters* and *Skystrikers*. Finally, several *Bayraktar TB2* UAVs, whose radar signature is particularly discreet, are present on Azeri soil in September 2020. They can carry out reconnaissance or attack missions, using missiles with a 9 km range. In addition to the UAVs, the Azeri C4I has been reinforced with R-934 jamming station from Belarus, and especially Israeli EL/M-2084 counter-battery radars. Equipped with active electronic scanning antennas, this equipment is used to locate large-caliber enemy fire.

II - THE VICTORY OF BAKU, AFTER AN INITIAL HESITATION

Between Yerevan and Baku, the outcome of the 2020 clashes for control of Nagorno-Karabakh is decided in a few days. However, the Azeri ground forces make mistakes and sometimes give the impression of fumbling. It is thanks to its elaborate air offensive, planned in advance, that the Azeri army turns the conflict around.

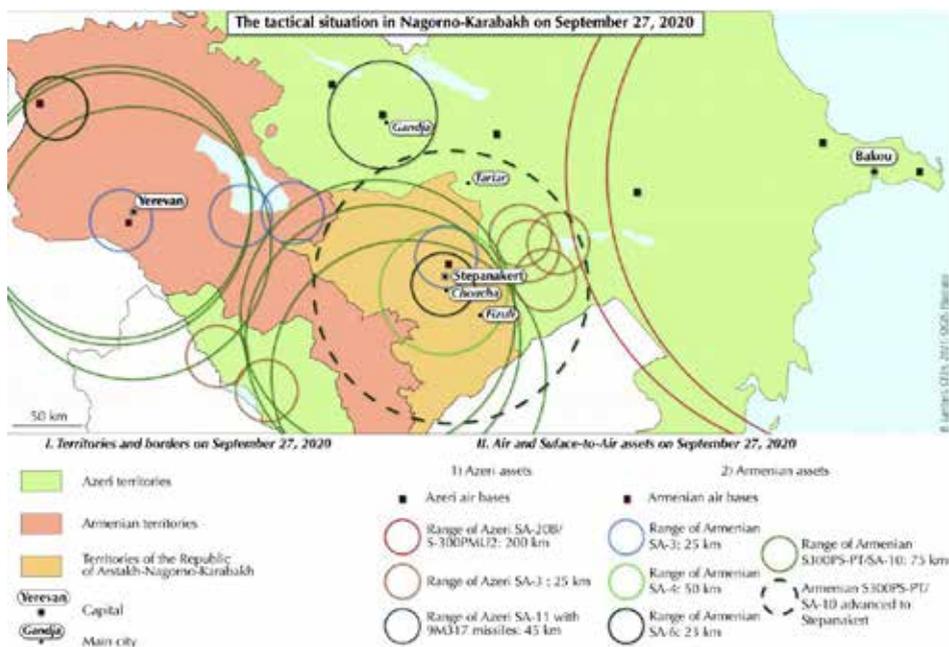
A) Some doubts, for two days, about the outcome of the conflict

Summer 2020: implementation of the Azeri plan and Yerevan's wait-and-see attitude

The final preparations of the two factions for the conflict are not fully known. The available information suggests that the Azeri army is fairly well prepared. The schedule of equipment acquisitions, as well as the training schedule, attest to this. Six F-16 fighters, as well as an unspecified number of *Bayraktar TB2* drones, arrive from Turkey in July 2020 as part of a joint exercise. They did not return to Turkey at the end of the exercise.

Azerbaijani publications have recently revealed that some Su-25 pilots had been training since 2019 in techniques of approaching and neutralizing short-range surface-to-air systems. The process makes it possible to definitively destroy surface-to-air systems and save expensive drones, which Baku does not have in such large numbers. As to ground forces, conscripts are recalled to active duty in July.

Although Armenia has a reputation for being more open than Azerbaijan, it gives little information about its preparations. In response to a spike in tension in the spring of 2020, it organizes a large-scale artillery exercise in May and installs a long-range S-300PS surface-to-air battery in Nagorno-Karabakh during the summer, but does not mobilize until September 27.



48 hours of Azeri trial and error

Three separate assaults are carried out simultaneously by Azerbaijan in the early days of the conflict. One in the north is a ruse to divert the adversary. A second, messy one, is an attempt to take the shortest route to the enclave's capital. The third attack, to the south, is the real focus of the operation.

NORTH FLANK: trapping Armenian forces. The Karabakh Self-Defense Forces have set up a chain of concrete strongholds in the northeast corner of Nagorno-Karabakh. When the Azeri assault begins at 6 a.m. on 27 September, Armenian forces in the area are taken by surprise, and one stronghold fell quickly in the morning, followed by another in the afternoon. The Armenian forces suffer losses when they send reinforcements in unprotected trucks. They are attacked by a wave of Azeri suicide drones and scattered. This attack, especially the air assault, destabilized the Armenians. Faced with the presumed urgency of the situation, the Armenian air force is called in support. In order to avoid the Azeri long and medium range air-defense-systems, the crews flew at low altitude. An Armenian Su-25 crashed into the ground on 29 September, killing its pilot. Overestimating the Azeri offensive, the Armenians



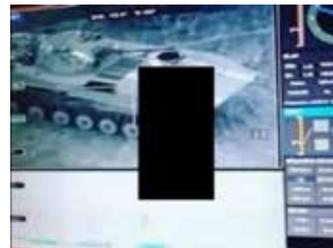
(RR) The Armenian Su-25, destroyed by collision, carried two R-60M/AA-8 air-to-air missiles,

withdrew from the area. However, the attackers did not advance any further. This maneuver of deception is successful beyond Baku's expectations. The deployment of new-generation air munitions is decisive.

EASTERN FLANK: the Azerbaijani defeat. For Baku, conducting an offensive from the eastern flank is the option that offers the shortest approach to Stepanakert (36 km). The examination of videos from the Armenian border network on 27 September shows that an imposing Azerbaijani mechanized column - 14 BMP armored vehicles and 3 T-72 tanks – is heading towards the village of Karakhanbeyli, which blocked the road to the capital of Karabakh. The assault has no air support and the defenders hold on. By 3 October, 5 BMPs have been burned, as well as 2 T-72s. For the attackers, this failure raises questions: they engaged a powerful contingent, without air support, in a defended sector. In any event, this demonstrates the high level of performance of the Armenian forces when fighting in the absence of a concomitant attack from the air.

SOUTH FLANK: Baku's main strike. Despite the fact that the distance to reach Stepanakert is the longest, an attack with two pincers is launched on September 27, 2020 on the southeast flank. The northern strike targets the abandoned village of Horaditz, 8 km south of Fizuli. It has artillery support and is covered by a *Bayraktar* TB2 drone. The assault of the Azeri column is quickly immobilized by mines and anti-tank missiles. No help comes from the air, since the *Bayraktar* operators give priority to the destruction of three *Strela-10/SA-13* surface-to-air systems, 8 km further north. Air-land coordination could obviously be improved.

Simultaneously, a second attack is launched below, following the Arax valley. Baku prematurely announces the “liberation” of the border village of Nuyger on 27 September. The claim is premature, as the line has still not moved on the 29th. Worse, 10 light armored vehicles - BMP-2 and BTR-82 – are abandoned in a minefield. Azerbaijan redoubled its efforts to wipe out the defenses. *Bayraktar* drones neutralize the artillery. At least six 122 mm guns and five BM-21 rocket launcher vehicles are destroyed. A suicide drone is also engaged, against an Armenian T-72 at Nuyger, on 27 September. Finally, Azeri *Mi-35M3* helicopters make a rare appearance. The Azeris fire their rockets in the direction of Nuyger, where resistance continues on 6 October. On the ground, powerful Dana self-propelled guns and TOS self-propelled rocket launchers support the offensive. The infantry launches at least one Spike long-range anti-tank missile. Azerbaijan releases



the video of the shot, which strangely enough is aimed at a BMP-2 of its own forces. The main Armenian lines in the Arax valley give way between 3 and 4 October, after two days of engagements.

B) Azerbaijan prevails with its modern capabilities

On the battlefield: the victory of attack drones?

Azerbaijani efforts are then directed at south Karabakh. Troops follow two routes. First along the Arax valley, to retake control of the border with Iran. In addition to the border pockets in Nuyger, the Azerbaijani encounter resistance in Jebrail, mid-valley. One of the Azerbaijani Su-25s is destroyed by surface-to-air fire on 4 October. The ground fighting destroys two Armenian T-72 tanks and Jebrail falls on 17 October.



The second focus of Azerbaijani efforts extends northwards, towards Stepanakert. Several fortified towns block access, including Fizuli, whose suburbs are reached on 5 October. The stiff resistance encountered there immobilizes the attackers, who have little support when they reach the city. In fact, the airspace of southern Karabakh is still protected by a 2K12/SA-6 surface-to-air battery and by an S-300PT/SA-10, south of Stepanakert. They are neutralized between 6 and 8 October by Harop suicide drones. Before this date, the expensive Hermes and Bayraktar TB2 UAVs seem to be absent from central Karabakh. This temporary absence of air threat is exploited by Armenia. They gather their forces on the eastern flank of Karabakh in preparation for a counterattack. The aim is to cut off the supply routes of the attacking expeditionary force in the Arax valley. However, despite its audacity, the operation is a fiasco. The Horaditz positions are abandoned on 10 October, freeing the route to Fizuli for Azerbaijan.

In contact with the attacking troops, the defensive strongholds around Fizuli are solid. However, Azerbaijan takes advantage of the virtual disappearance of the surface-to-air threat to engage its drones. The city falls on 17 October. The new Azerbaijani objective then becomes the capture of Shusha, another firmly held foothold. A Bayraktar drone is destroyed there on 18 October, probably by a mobile surface-to-air system that has survived the previous attacks. The effectiveness of the other Bayraktars engaged should not be eclipsed by this event. Here again, the bombardments of the defensive positions are made possible by the lack of anti-drone defense. Gradually stripped of its defenses, Choucha falls on 9 November.

The fall of Shusha leads the Armenian government to lose hope, and it begins talks with Russia and Azerbaijan. A cease-fire is concluded on the evening of 9 November. In return for the cessation of hostilities, Yerevan

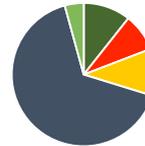
agrees to give up two thirds of Karabakh. The territories remaining under the authority of the Republic of Karabakh are demilitarized, while a Russian peacekeeping force is deployed.

**Armenian losses, battle for Fizuli
(5 - 17 octobre 2020)**



■ T-72 : 1 ■ 2S1 : 2 ■ BM-21 : 8 ■ Artillery : 2

**Armenian losses, battle for Choucha
(18 octobre - 9 novembre 2020)**



■ BMP : 0 ■ T-72 : 5 ■ 2S1 : 4 ■ BM-21 : 5 ■ Artillery : 31 ■ MTLB : 2

Strikes beyond the frontline, pursuing the Azeri advantage by other means

FOR ARMENIA, A COUNTER-PRODUCTIVE USE OF LONG-RANGE SURFACE-TO-SURFACE WEAPONS

Yerevan has three categories of long-range attack systems, which it commits chronologically in the following order: first, a heavy multiple unguided rocket launcher (BM-30 *Smerch*), then tactical ballistic missile systems (*Iskander-E* and *Tochka*) and the powerful but obsolete *Elbrus* (*Scud*) missiles. These weapons are increasingly used as the situation on the front deteriorates.

- Multiple rocket launchers are the first weapons used by Armenia in its long-range strikes on 27 September, targeting the cities of Barda and Tartar. Despite the knowledge of the locations of the Azeri forces, the means of attack are unguided munitions, unsuitable for strikes in urban areas.
- More precise, theater ballistic missiles take over from rocket launchers. Chronologically, the *Tochka* is used first. Several groups of enemy troops are located by the Armenians and targeted⁷. Regarding the *Iskander-E*, at least two 9M723 missiles are launched in the direction of Shusha on 9 November 2020, just after its capture by the Azeris. Yerevan favors tactical use of these expensive munitions.
- The *Scud-B* missile, due to its combat record, constitutes the *last resort* of the Armenian arsenal. In total, four strikes are carried out towards Ganja, from 4 to 17 October. The impact zones are sometimes more

7. Images from an Armenian X55 drone, released on October 21, show 15 Azeri Dana self-propelled guns, 5 km south of Fizuli.

than six kilometers away from the air installations, which the Karabakh Minister of Defense claimed to have targeted. However, these strikes prompt the departure of Turkish F-16s. The results are mixed, given the political damage caused by these attacks on Armenia's image.

1) Concerning the Azeri stand-off armaments: a succession of battle achievements.

Azerbaijan's use of *stand-off* weapons contrasts with Armenia's. First, targeting work has been seriously prepared. Moreover, the Azeri arsenal is varied, capable of striking a wide range of targets. Finally, the known engagements of these weapons are effective. The destruction of the nerve center of Armenian hardware is achieved.

The destruction of Armenia's short-range surface-to-air defenses: Azerbaijan's main weapons for attacking Armenian forces are attack drones: which are not invulnerable. Short-range surface-to-air systems are the main threat. The destruction of these assets is a prerequisite for other actions. Azerbaijan employs two techniques to this end. The first is to attack sites already identified before the war, such as SA-8s near the border in the early days of the conflict. Secondly, in order to push their defenses into the open, Azerbaijan



(RR) Armenian aerial photo of Dana guns of Azeri forces, at Marjan, 5 km south of Fizuli.



(RR) Shusha, November 9, 2020: shot of the submunitions disperser of a 9M723 missile, launched by Iskander.



(RR) The serial number of the missile. Two munitions of this type are found, to the east and west of downtown Choucha.

uses some decoys. Former An-2 transport biplanes, remotely controlled, flew over the interior of Armenian lines. The surface-to-air systems deployed in Karabakh opened fire, revealing their own position and attracting strikes in return. It is not known how tracking is achieved, since Azerbaijan is not known to possess the required electronic equipment. The Baku forces are at least able to make use of their EL/M-2084 MMR counter-artillery sensors, which can locate the launching position of a missile.

At the end of the conflict, Armenian forces engage only a small number of surface-to-air systems, which could no longer cover each other. In addition, they are redeployed from one area to another, which require them to travel in a transport configuration during which they are vulnerable. A modern *Tor/SA-15* is neutralized in this way. Long observed by a TB-2 drone, it is attacked while sheltering in a house west of Stepanakert, around 9 November.

Destruction of Armenian medium- and long-range surface-to-air batteries: Armenia's S-300PT/PS are old variants of the S-300P family. However, even with a limited range of 75 km, their many electronic scanning radar arrays offer solid chances of a hit. They are prime targets for Azerbaijan to gain control of the skies for its tactical UAVs.

- The S-300PS site in Stepanakert allow them gain full control of the sky of Karabakh, but also part of its Azerbaijani approaches ([see map](#)). To neutralize the site, on 9 October⁸, the attacking forces choose *Harop* suicide drones. The site is completely knocked out, and some specialized operators lose their lives.
- The S-300PS battery in Kakhnut, 18 km west of Karabakh, is targeted on 15 October by several *Harop* suicide drones. The site remains technically operational after these attacks, which only hit unmanned equipment.
- The Goris battery is located 24 km from Karabakh, and 49 km from Stepanakert. The system is destroyed by *Harop* drones, but human loss is probably limited.
- A detached battery at Syunik is attacked around 17 October. In order to carry out its strike, Azerbaijan implements a *Bayraktar* TB2 drone, probably not carrying ammunition to reduce its radar signature. It is used to guide an artillery strike, carried out by long-range guided rockets, to film it⁹. The damage and human toll are still unknown, but the hits cover the entire surface of the surface-to-air site.



(All RR) An Armenian Tor-M2/SA-15c, deployed in the Khodjanvend sector, east of Stepanakert.

All fixed surface-to-air systems covering Karabakh are out of service as of 19 October. With the exception of the S-300PT/PS at Syunik (hit by a long-range rocket), the Azeri *modus operandi* remains the same. It is based on the use of a small number of *Harop* suicide drones. This equipment, prac-

8. D. Mihailova, “Harop attacks on S-300PS positions in the Stepanakert region”, Diana Mikhailova blog, October 12, 2020, <https://diana-mihailova.livejournal.com/5569650.html>

9. “Azerbaijan destroys Armenian equipment”, Azerbaijan Ministry of Defense Youtube channel, October 17, 2020, https://www.youtube.com/watch?v=T_yX7xLJNes

tically absent from the front line, is favored for the approach and attack of sensitive targets. Their low radar signatures, combined with a low altitude flight profile, make them difficult to detect. For Armenia, a lack of readiness seems to persist, even after several days of conflict. No camouflage is observed on the images, and the batteries are left unprotected, without any bastion walls.

Neutralization of Armenian long-range ground-to-ground assets Yerevan's attacks on Azeri cities arouse international disapproval. Therefore, Baku hardly needs justification to carry out reprisals. The first are directed against the R-300/Scud-B ballistic systems, but Azerbaijan has to wait until it has neutralized the Armenian surface-to-air defense. Baku announces on 13 October the destruction of a *Scud-B*, south of Lake Sevan, deployed in open terrain. Then, the Armenian BM-30 *Smerch* multiple rocket launchers are also hit with precision. The BM-30 crews still seem to pay little attention to the air threat: their dispersal area for firing is close (3 km) to their base (Srkhavend, south of Karabakh).



(RR): Circled in blue, a Harop suicide drone will hit a 5P85 launcher, from the S-300PS site in Kakhnut, October 15, 2020.



RR: Syunik's S-300PS battery, filmed by Bayraktar drone, around 17 October 2020.

- **Strike against the Karabakh Defense Minister.** Minister Jalal Harutyunian is driving around the Khodjanvend area in an all-terrain vehicle on 26 October. He joins a line of Armenian military trucks, which he passes at high speed. The behavior of this car, usually reserved for the authorities, catches the *eye of a Bayraktar* drone operator, who is following the cargo convoy. A strike is launched, after which two figures, including J. Harutyunian, extract themselves from the burning carcass. The video shows how the choice to hit the ministerial vehicle is fortuitous and at the initiative of the Azeri operator.

Summary: Started on 27 September 2020, the Nagorno-Karabakh conflict can be described as a medium-intensity conflict as far as air warfare is concerned. For Azerbaijan, it is a decisive victory, but a costly one, as 2783 of its soldiers have fallen and many weapons are lost. On the Armenian

side, the resulting damage to equipment seems significant, but must be put into perspective. It is old weaponry, which Russia has in large quantities in storage facilities. They can be replaced. The human toll, on the other hand, is estimated at 8,000 soldiers killed¹⁰, which is considerable for a country of this size, whose birth rate is stagnant at 1.3 children per woman. The backbone of the Armenian army is durably weakened.

Azeri President Aliyev's victory speech on December 1st 2020, is modest. The success of the Azeri armed forces is however indisputable. But Azerbaijan is the aggressor here and could not prolong the hostilities without the risk of sanctions. Moreover, its arsenal, effective in open terrain, would have shown its limits as the front moved closer to urban areas, while ammunition stocks are being depleted. The display of a certain restraint is therefore the most suitable posture to adopt.



(RR) The UAZ car of the Karabakh Minister of Defense, after being targeted by a Bayraktar drone.

III - A CONFLICT THAT IS A PRECURSOR TO THE NEW MODERN COMMITMENTS

A) A modern way of waging war

- **Exaggeration of « winners »**

The Nagorno-Karabakh conflict has seen intense attempts to influence both sides, as in most contemporary conflicts.

Azeri President Ilham Aliyev's speech on December 1st 2020, is delivered in a well-prepared setting, with a military parade and presentation of captured equipment. Statements concerning the number of Armenian losses are made¹¹ and are generally accurate. The aim of this communication, directed towards foreign countries, is twofold. There is the question of proving the Azeri victory to the world by showing the assets taken from the enemy, but also of fostering good relations with countries having supplied the weapons, by recalling the effectiveness of their equipment.

The strategy is different for Armenia. From the beginning of the conflict, declarations seek to galvanize the population, while in the meantime the front is giving way. Their credibility deteriorates over time. It even col-

¹⁰ D. Verkhoturov, *op. cit.*

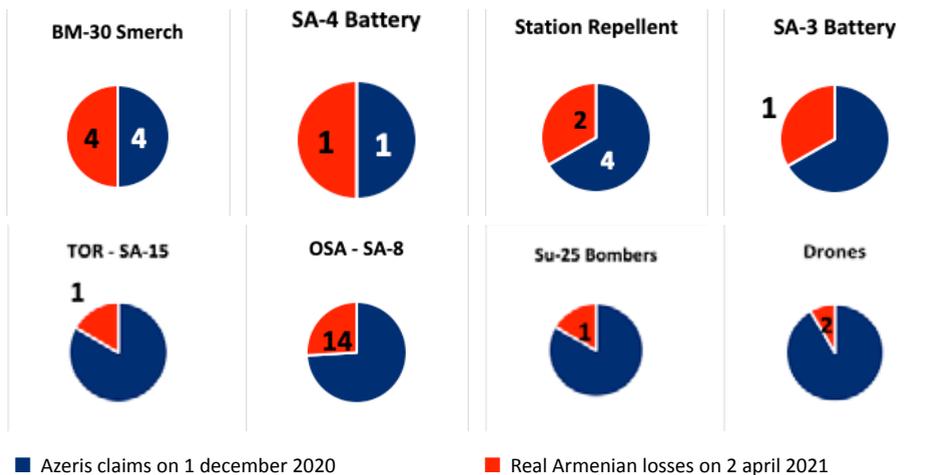
¹¹ I. Aliyev, "Address to the Nation", Presidency of Azerbaijan, December 1, 2020, <https://en.president.az/articles/48205>

lapses with the publication of the list presented below, on October 20¹² 13. The site *lostarmour.com*, highlights the exaggerations based on freely available information. The effect of the Armenian communications is ultimately the opposite of what is intended.

• **Collateral damage and civilian casualties**

Unsurprisingly, the conflict resulted in civilian casualties in both countries. The warring parties have levelled the same accusations of war crimes at each other. However, it seems that Azerbaijan is also winning the war of opinion.

On the evening of 27 September 2020, the first day of the war, the two sides blame each other for strikes against non-combatants. On the Armenian side, two civilians are killed in Nagorno-Karabakh and a civilian transport bus is hit by a drone strike 20 km inside the Armenian border. Azerbaijan announced, on the same time, the death of 17 citizens as a result of attacks on the city of Tartar. The announcements follow one another for more than a month, during which both sides in the fight tend to exaggerate the number of their missing.

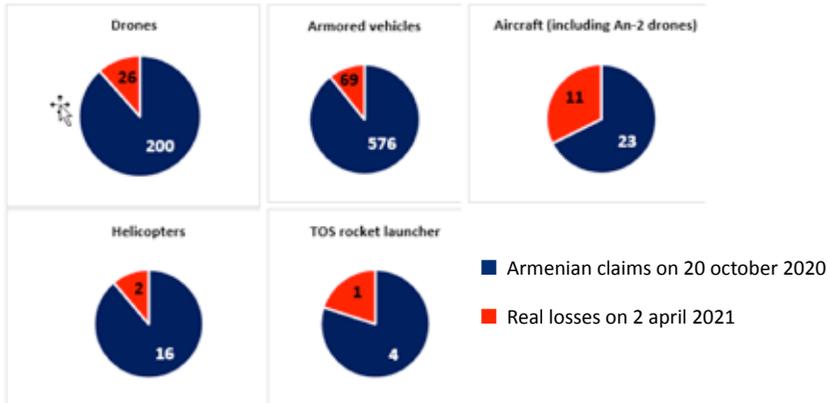


On the side of Baku, 100 non-military victims are mentioned. The Nagorno-Karabakh authorities announce 63. For its part, Amnesty International identifies 79 Azeri civilians and 11 Armenians who died in the strikes.

Even if Yerevan is the only side to evacuate its population from the war zones, the work on influence carried out by Azerbaijan is effective. The spectator will remember above all the pinpoint precision of the impact of the

12. The number of lost aircraft includes a piloted Su-25 and 10 Antonov An-2 drones.
13. "Loss Update", 1 - News, October 20, 2020, <https://www.1lurer.am/en/2020/10/20/Enemy-losses-Update/340567>

Azeri *stand-off* ammunition. To explain this result, Russian defense analysts mention the audience of Armenian and Russian pseudo-accounts on social networks, *a priori* managed by Azeri circles to discredit Yerevan¹⁴. By amplifying the faults of its opponent, Baku managed to hide its own.



- **The lack of adaptation of the Armenian military during the conflict**

During the 44 days of combat, Armenian infantrymen appeared to remain in compact groups, with little regard for the air threat. Moreover, although trained, the surface-to-air operators appeared to be out of touch with their environment. Azeri radio-controlled An-2 aircraft flew over the Armenian camp twice in eight-day intervals to lure the Armenian surface-to-air defense. Their ruse worked both times. Is this a sign of a lack of learning on the part of the Armenian soldiers, or a failure to transmit instructions?

Failures can perhaps come from Command or intelligence services. Command echelons may have been neutralized by targeted strikes or by jamming communications. Although data is lacking on this subject, the Azeri R-934 jamming stations – dedicated to the disruption of radio exchanges – are probably active. A structural failure of the Armenian aeronautical intelligence services is also possible. Probably with limited human resources, it could have been overwhelmed and thereby unable to properly inform all echelons of the forces.

B) Lessons on air warfare

The shelling suffered by the Armenian forces is accomplished with new weaponry. In the long run, the security of infantrymen and ground bases could be more precarious in the face of these new perils from the air. No military power today is capable of saturating its front line with multi-laye-

14. "Some Lessons on the Nagorno-Karabakh War", CAST-BMPD, February 2, 2021, <https://bmpd.livejournal.com/4249202.html#cutid1>

red surface-to-air systems. The answers to these challenges are organized around two themes: what is the place of combat aircraft in this new framework and how can surface-to-air defense be redesigned?



(RR) The various wrecks of Azeri Harop drones have an antipersonnel charge

With the increased use of drones, some countries are actually questioning the value of maintaining manned combat aircraft. The debates in Mexico, Switzerland, Bulgaria, and even Armenia over the purchase of Su-30SM fighters, before the war, illustrate this well. In fact, it seems that the analysis of the Karabakh confrontations pleads for a better division of labor between types of air asset. The more powerful and versatile fighter aircraft have a higher agility or survivability than drones due to their performance. In addition, they have a much heavier strike force, thanks to the more powerful and varied ammunition they carry. In this respect, aircraft remain irreplaceable in the context of high-intensity air conflicts, which is not the case in the Karabakh war. While drones excelled in gradually damaging Yerevan's military assets, they could not hold off a rapid breakthrough. The Azeris needed more than six weeks to take 50 km of lines held by Armenia.

However, the presence of fighter aircraft will not prevent us from rethinking the surface-to-air architecture. Certainly, fighter aircraft can play a significant role in the fight against drones. The combination of electronic scanning radar and modern air-to-air missiles offers real opportunities for interceptors against this type of target. Two limitations must be emphasized, however. The cost of each air-to-air weapon is very high, so that it will soon become ruinous to systematically counter inexpensive drones using sophisticated missiles. In addition, the weak signatures returned by gliding bombs and other suicide drones can complicate the success of interception.

In any case, the problem is much more extensive than this. It is likely, for example, that Azerbaijan, like many Western powers, would have been hard-pressed to respond to attacks by drones and guided rockets, since solutions are so lacking. The best existing equipment today is Russian – SA-22/*Pantsir* and SA-15/*Tor* – or Chinese, with the HQ17. Their munitions are remotely controlled and cheap, since the electronics involve only a handful of servo-controls, a proximity fuse and a few receivers.

Although a medium-range surface-to-air segment based on Western missiles featuring effective active self-guiding and high maneuverability does exist, it is only supplemented by very short-range surface-to-air missiles (about 3.5 km) of the *Stinger* or *Mistral* type. In fact, there is a capability gap

between very short-range and medium-range systems, which can be exploited by a whole family of UAVs, currently in service or under development. In Europe in general, and in France in particular, there are still opportunities to revive short-range surface-to-air systems. These systems require radars, a control interface and infrared optics to operate. Domestic manufacturers know how to produce such units. However, there are constraints. The needs are urgent and the operational culture of Western air forces does not always encourage this type of solution.

The need is there, and the market exists, which could limit the cost of developing such systems. Many countries would undoubtedly like to buy French or European equipment for geopolitical reasons, and avoid depending on Russian or Chinese arms dealers.

Finally, beyond the choices made to combat drones in the sky, this conflict has once again highlighted the importance of air superiority in achieving victory on the battlefield. The Azeri forces advance is successful when they are able to exploit the third dimension and bomb the Armenian forces that faced them. Had the Armenians been able to compete for control of the skies and deny it to Azeri forces, the outcome of the conflict would likely have been different.