

IRMO
BRIEF01
2018

Choosing the new guardians of Croatia's airspace

by Jan Ivanjek

Croatian Air Force has entered into the final leg of its decade-long process of procuring replacement for the outdated MiG-21 fighter jets. According to the planned timeline outlined by Defense Minister Damir Krstičević, the current fleet consisting of 1970s era MiG-21s will be replaced by 12 fourth generation multirole fighters starting from 2020. 10 single seaters and a pair of twin seaters will be acquired, with the first two aircraft to be delivered by summer of 2020. This is intended to correspond with the 25th anniversary of Operation Storm, which ended the Croatian Homeland War, and the two new fighters are expected to participate in the festivities of the Victory Day, celebrated on August 5th.

The resource clock on the MiG-21s is ticking: the new fighter must be chosen and a contract signed by mid-2018.

Four proposals were submitted for the tender and were opened in October 2017. One of the major requirements was a government to government contract. There was also a fifth contender, South Korea, but they ultimately did not submit their offer. It was explained that their FA-50 Golden Eagle Lead In Fighter Trainer and light attack jet was not capable of fulfilling the technical and operational capabilities demanded by Croatia, which specify a multirole fighter.

The four submitted offers from Greece, Israel, Sweden and the United States are being kept confidential until the winner is announced, at which time their details will be released to the public. Therefore, no official information is available regarding price tags or details of accompanying industrial cooperation, though industrial cooperation offered as part of the deal will be one of three major factors in the decision, the other two being cost of the program and capabilities of the aircraft themselves.

Full spectrum capabilities

Another major difference from several previous attempts to replace the MiG-21s are the missions expected of the new combat aircraft. Up until this year, when the very survival of Croatia's fast jet component was under question, any new fast movers were only expected to conduct basic Air Policing as part of NATO's Integrated Air Defense System (NATINADS). But the security situation in the Balkans has been deteriorating in the past several years, in parallel with worsening relations between NATO and Russia. There's threatening rhetoric coming from Serbia and rearmament of its military, the rise of radical Islamism in Bosnia, threats of secession from Republic of Srpska, increasing competition between Western, Russian and Turkish interests in the region and the accompanying, massive employment of special warfare methods, often termed hybrid warfare in the media. In such conditions, a concentrated effort to reinvigorate the Croatian Armed

Forces as a whole, spearheaded by Minister Krstičević, is underway and thus the missions required of Croatia's future fighter fleet have been significantly expanded.

The jets and their pilots will be expected to conduct not only air policing, but also to maintain a necessary level of training to establish air superiority over Croatia and Croatian Armed Forces' area of operations, to provide close air support to the Army and the Navy, conduct recon and interdiction sorties and even to execute strategic strikes. A minimum of 130 flight hours per year per pilot would be needed to achieve the necessary level of proficiency for all of that. While costly, that would ensure a significant leap in the Air Force's combat capabilities and also provide deterrence in case of hostilities in the region, as it is imperative to prevent any future conflict from being fought on Croatia's soil.

New fighters will provide both full spectrum combat capabilities and deterrence to prevent a possible future conflict from being fought on Croatian soil.

Second hand options

Greece offered their second hand F-16C/D Block 30 Fighting Falcons. These fighters date back to the late 1980s and can safely be assumed to be the cheapest option. Block 30s

were the last of the analogue F-16s, and were superseded by the first digital Block 40s. While still an exponential improvement over MiG-21s, Greek jets have not been upgraded and would certainly demand a comprehensive upgrade, such as the F-16V standard, within a decade of entering service, or replacement by an entirely new fighter. Both options are likely to at least triple the initial acquisition costs. Though they can carry all the weapons certified on the F-16, including precision guided munitions (PGM), anti-ship missiles, AIM-120 AMRAAM medium range air-to-air missiles (AAMs) and air-to-ground missiles, they lack a helmet mounted display (HMD). In combat terms they outmatch the MiG-29, the most likely adversary, but will likely be inferior to production MiG-35s a decade down the line. At best, they would ensure Croatia's ability to enforce air superiority for the next 10-15 years.

Israel is also offering second hand aircraft, the F-16 Barak. It must be stressed that only the Barak is being offered, and no mixed fleet of the Barak and the much older F-16 Netz was under consideration, as some foreign publications recently claimed. Though of a similar vintage as the Greek Block 30s, the Barak has been radically upgraded in Israel since entering service, most recently as part of a fleet-wide Barak 2020 program. Its avionics, radar, mission computers, cockpit, electronic warfare and countermeasure suites have all been replaced or upgraded by Israeli equipment, which resulted in the twin seaters, the Brakeets, receiving a dorsal hump for specialized avionics for electronic warfare

(EW), electronic support measures (ESM) and suppression of enemy air defense (SEAD). The Barak also has an increased maximum take-off weight compared to standard F-16 by as much as two tons and can carry a significant payload. In addition to all standard F-16 armaments, the Barak is integrated with a wide range of Israeli-made AAMs and PGMs, such as the Python 4 and 5 short range missiles and Derby medium range missiles, as well as the Spice series of smart bombs. They are all flown with DASH helmet mounted displays.

Despite their age, the Baraks are among the most advanced F-16s in the world, roughly corresponding to Lockheed Martin's Block 52+ variant in capabilities and surpassing them in some areas, such as EW. They are certain to be quite affordable, and given that they can carry the heaviest payload of all four candidates offer the most hitting power per sortie. Another advantage lies in their optimization for the SEAD role, in the light of relatively sophisticated air defense systems rumored to be under consideration by potential adversaries, such as the S-300PS (NATO reporting name SA-10 Growler), which also operate old yet effective systems like the SA-6 Gainful and the SA-3 Goa. In terms of air threats, the Barak is far superior to the MiG-29 and would also be able to defeat the MiG-35. Croatian Air Force would have 15-20 years of aerial supremacy with the Barak, but due to their age their operating costs could be 50-60% percent higher than newly built F-16s, and would have to be replaced after some 20 years.

Newly built fighters

Sweden offered its JAS 39 Gripen. Saab has had a significant presence promoting the Gripen in Croatia for over a decade. The version being offered is the C/D variant, said to be newly built despite the production line closing in 2015, and integrated with MS20, the latest software package for the type. The newest, and far more capable Gripen E was not offered, presumably because of time constraints, as it is yet to enter production. The Gripen C is much smaller and lighter than the F-16, carrying only half of the latter's payload, but is more economical, cheaper to operate and requires less infrastructure adjustments. It must be stressed that upgrading Gripen C to Gripen E standard is impossible due to major structural changes in the E. The MS20 software upgrade enables the use of Meteor long-range AAM, with a range that exceeds 200 km, and also comes with a much improved PS-05/A Mk. 4 radar. The Gripen also carries RBS-15 ASMs, which are the primary anti-surface weapon arming Croatian fast attack craft and shore missile batteries.

Unlike the F-16, the Gripen is not integrated with an anti-radiation missile, reducing its ability to conduct SEAD missions except from very close in, thus increasing the risk of a shootdown. Being able to carry only half of the F-16's payload also reduces its impact per sortie. Another disadvantage is two weapons pylons fewer than the F-16. If equipped with a pair of drop tanks under the wings to extend range in a strategic strike mission, the Gripen could only carry two missiles on wingtip rails and another pair under the wings, or four Mk

82 bombs in their stead. The F-16 with two drop tanks can carry a combination of 6 AAMs or 4 AAMs and six Mk 82 bombs. In terms of air combat, the Gripen has an advanced, long range radar and is highly agile. It can be equipped with the Cobra HMD, but it is unclear if those have been offered. It is certainly capable of defeating a MiG-29, but it would likely be overpowered by the MiG-35. Being newly built, the Gripen is a long term solution for at least 30 years.

The United States offered newly built F-16 Block 70/72. In fact, Croatia was at the time the only nation to be offered this, newest of the Vipers. Even as a gesture, that is a strong message of support for Croatian military modernization program. The Block 70 represents a quantum leap forward in technology and capability even compared to the Barak and the Gripen. Essentially, it's a hybrid of a 4th generation airframe and 5th generation avionics, sensors and mission systems. It provides all 5th generation fighter capabilities save one: stealth, which is often overvalued.

F-16 Block 70's main sensor is a next generation AESA radar, the AN/APG-83, developed from the radars found on the F-22 and F-35. Block 70 is the only candidate with an AESA radar, which offers a significant improvement over mechanically scanned radars. It is more reliable, requires less maintenance, it has a far higher resistance to jamming and can be used to conduct an electronic attack to jam or even neutralize

enemy sensors. It can simultaneously map terrain and scan, track, engage and guide weapons on air, ground and sea targets at ranges exceeding 300 km. Another advantage it offers is the low probability of intercept. Due to its beam being exceptionally agile across a wide range of frequencies per every pulse, adversaries have only minimal chances of detecting that they are being targeted, virtually negating their radar warning receivers and leaving them no options to defend against a beyond visual range missile shot.

Other advantages the Block 70 offers are complete net-centricity, allowing for the fighters to share sensor data in real time with all datalink enabled platforms, air or ground. This gives pilots maximum situational awareness, which is further enhanced through an advanced cockpit design, allowing the pilot to focus on fighting the jet instead of diverting attention to flying it. In combination with 5th-generation sensor fusion utilizing the JHMCS II helmet mounted display, this gives the Block 70 pilots complete, real time picture of the battlespace, thus greatly increasing their combat effectiveness. Naturally, these exceptional capabilities would come at a steep procurement cost, and it is a certainty that the Block 70 is the most expensive offer on the table.

The acquisition price is offset by the far lower operating costs of the new jets, which are only half those of 30-year old F-16s. Due to the exceptional technological level of the Block 70, no upgrades would be required for at least the next 30-40 years. No existing or projected

version of the MiG-35 could successfully oppose it, and even the Su-35 air superiority fighter would be at a distinct disadvantage attempting to engage the Block 70s. Its combat capabilities would ensure Croatia's ability to impose total air dominance anywhere within the fighter's combat radius in the next 40 years.

Another factor to consider is combat record. The F-16 has flown hundreds of thousands of combat missions and remains the second most effective fighter in service with over 70 confirmed kills of enemy aircraft in air combat. The Gripen is yet to fire a shot in anger.

While some candidates offer exceptional capabilities and others only very good ones, any of the four options will be a massive leap forward. There are no bad choices. Outside of their combat capabilities, the complexity of introducing a new fighter jet system into the air force will improve the level of technical and technological knowledge and expertise on a national level, since cooperation with civilian institutions and industry will be necessary because of the Air Force's small size, and the required industrial cooperation will likely open hundreds of jobs in manufacturing, science and technology and R&D. Another positive effect will be a significant spike in recruitment. This is particularly important since the Air Force has had significant problems with very low application rates in the past several years: usually less than 10 cadets would commence their pilot training pipeline per year. Engineers and technicians are also needed, and interest in those positions will likewise be improved. The Air Force's size will also have to be expanded.

Croatia's airmen to aircraft ratio is about 15:1, while combat effective air forces maintain around 50:1 ratio.

The fighter contract will be the largest single defense procurement in Croatia's history, and is slated to open numerous jobs and provide significant industrial cooperation.

A long-term ally

However, combat aircraft acquisition is also a political decision. Ordering fighter jets, the most potent and flexible conventional weapons system in existence, from a country is a significant, long-term commitment. This requires a partner whose interests overlap with the buyer's own. Thus the political power of the partner, as well as their likely inclination to support Croatia in various scenarios, including kinetic conflict, becomes important.

Croatia has had no major disputes with any of the four competing countries, but their individual political and economic power differs greatly, as does the level of support, both technical and political, that they would be willing to provide to Croatia. This will require a careful weighing of all the benefits, but also possible risks in choosing a partner, whether by merit of their own policies conducted at home and abroad, or the by danger of cutting off critical support to Croatia in the event of a future conflict in the Balkans where Croatia's

interest would conflict with those of the nation providing the new fighters. Because of its vulnerable supply chain centered on Sweden, the Gripen is more susceptible to adverse effects of a possible arms embargo. The F-16 and its parts are manufactured around the globe, thus providing alternative sources to keep the aircraft flying in the event of losing support from the primary supplier.

An important milestone was reached on December 14th, when the Parliamentary defense committee gave unanimous support to the acquisition. Its chairman, Igor Dragovan, stressed that all members want the best, but the best also carries the highest costs and that this acquisition should not endanger other programs in the Armed Forces. This could imply that newly built fighters have been deemed too expensive. If that is the case, Israel could be the front runner, offering the most for the money spent, due to the superior capabilities of the Barak compared to Greece's basic F-16 Block 30s. However, Prime Minister Andrej Plenković stated that all of the offers will be analyzed further before a decision by the Government is made.

12 multirole fighters are being sought, but additional procurements in the future are necessary: Croatia requires at least 18 jets to provide timely coverage of its entire airspace.

Whatever choice is made, it will be a major leap forward for Croatia, not only through security and deterrence provided by modern jets, but also through industrial cooperation, science and technology. However, additional aircraft should be acquired in the next decade, following the entry into service of the first 12 that are about to be ordered. Due to its specific geographic shape, Croatia requires a minimum of 18 fighters to effectively provide air policing, and simultaneous combat training and flight training, assuming a serviceability rate of around 70%.

Jan Ivanjek is a Zagreb based Croatian journalist focusing on military technology, strategy and tactics, as well as matters of terrorism.

IRMO

Institut za razvoj i međunarodne odnose
Institute for Development and International Relations

Institute for Development and International
Relations - IRMO

Lj. F. Vukotinovića 2, Zagreb, Croatia

www.irmo.hr



Hanns Seidel Stiftung

Amruševa 9, Zagreb, Croatia

www.hanns-seidel-stiftung.com.hr