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Turkey's S-400 Dilemma

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EXECUTIVE SUMMARY

- This report's core military assessment of a possible S-400 deal concludes that Ankara's immediate aim is to procure the system primarily for air defense missions as a surface-to-air missile (SAM) asset, rather than performing ballistic missile defense (BMD) functions. This priority largely stems from the Turkish Air Force's currently low pilot-to-cockpit ratio (0.8:1 by open-source 2016 estimates). Thus, even if the procurement is to be realized, Turkey will first and foremost operate the S-400s as a stopgap measure to augment its air superiority calculus over geo-strategically crucial areas. This is why the delivery time remains a key condition.
- Although it is not a combat-tested system, not only Russian sources but also many Western military analysts evaluate that the S-400 is a robust anti-access & area-denial (A2/AD) asset. Therefore, if SAM configuration is planned correctly, the system could theoretically give a boost to Turkey's air defense capabilities. However, it would be unrealistic to portray the S-400 solution as a panacea for protecting the Turkish territory and population against ballistic missiles. In the absence of a robust network of satellites, radars, early-warning aircraft, and sensors connected with a tactical data link, as well as without a layered interception capacity including exo-atmospheric coverage, the S-400s' BMD role would be very limited.
- Turkey's air defense and airspace control concepts have principally depended on its robust fighter aircraft squadrons. In this context, a highly combat-ready air-to-air deterrent has always been commissioned for scramble and combat air patrol missions. Thus, from a defense planning standpoint, Ankara's intentions to swiftly procure the S-400 as a SAM system reflects the shift in the Turkish Air Force's (TAF) operational focus from an offensive counter-air (OCA) posture to a more balanced one with more defensive counter-air (DCA) factors.
- In fact, modern air defense concepts vary between fighter aircraft-dominant postures, SAM-dominant postures, and balanced force structures. However, if Ankara is to replace its fighter aircraft-dominant concept with a SAM and aircraft mixed understanding, which could be an effective alternative indeed, then it has to maintain utmost interoperability within its principal arsenal. Key importance of interoperability between aircraft and integrated air and missile defense systems can be better understood by examining the Israeli Air Force's (IAF) recent encounter in the Syrian airspace. On March 17, 2017, a Syrian S-200 (SA-5) battery fired an anti-aircraft missile to hunt down an IAF fixed-wing aircraft (probably an F-15 or F-16 variant). The missile was tracked by Israel's Green Pine radars, and intercepted by an Arrow air and missile defense (AMD) system battery. This very incident presents a critical case study to understand networked and integrated AMD architecture and interoperability with other platforms. In this respect, while the Turkish Air Force will be a major operator of the F-35 multirole stealth fighters in coming decades, providing a data-link to interoperate these game-changer and advanced assets with the S-400s would be problematic, not only for technical reasons but also due to political-military sensitivities.
- Despite Ankara's rapid procurement and follow on co-production intentions, it remains doubtful if the Russians can indeed deliver the first batteries by 2019. In this respect, top Russian defense sources report that the deliveries to India are 'likely' to start by 2020. Meanwhile China will keep receiving additional batteries. Besides, Russian military-industrial complex is not at the export-oriented shape of the 1990s, since state orders hold an important place in the 2010s. Thus, unless the Russian defense industry really boosts its capabilities in a very short time –or overrides export protocols by delivering one of the operating batteries

which is technically very hard— there is a slim likelihood of Turkey getting two fully-operational batteries by 2019. Furthermore, in case the S-400 deal fails to meet fast delivery demands, then it would lose its ‘stopgap measure’ characteristics, since Turkey could well augment pilot-to-cockpit ratio of its air deterrent, say, between 2025 and 2030.

- In the meanwhile, the Turkish government will likely pursue opportunities for the co-production of a NATO-friendly system —probably the Aster-30 Block-1 NT of EUROSAM— for gaining a layered BMD capacity supported by the NATO architecture. In terms of defense economics, the French–Italian consortium EUROSAM could agree for (albeit limited) cooperation with the Turkish industry, since such a venture would reduce the production costs. Militarily, Turkey would have some advantages from such a project. Its industry will gain an important experience and promote new jobs, and Ankara would be able to operate an advanced strategic defensive weapon system that is compatible with the NATO architecture. Besides, this NATO-friendly system could also arm the Turkish Navy’s future TF-2000 air defense frigates which would provide a more flexible missile defense portfolio. Furthermore, since Turkey intends to operate a light aircraft carrier, the flagship’s naval battle group must have combined defensive capabilities to respond traditional air and missile threats as well as burgeoning anti-ship cruise missiles (ASCM). In this regard, the Aster family of EUROSAM offers the most complete solution with “one missile for all” design philosophy.
- Defense partnerships are not immune to political fluctuations and diplomatic considerations. In case Ankara’s NATO allies, especially the US, overreacts to the S-400 deal, EUROSAM might find itself under pressure in carrying on with any cooperative project. For example, back in 2015, a Franco–Russian naval procurement deal for the Mistral-class amphibious assault vessels failed due to NATO allies’ negative stances following the annexation of Crimea in 2014. Furthermore, Turkey might have two additional hardships for a possible co-production project for the Aster-30 Block-1 NT. First, although EUROSAM is likely to enjoy such a venture for lowering the production costs, it is doubtful that the Turkish defense industry could benefit from any game-changer technology transfers. Secondly, the Aster-30 line’s interception tests are conducted in cooperation with Israel, using Sparrow family of missiles which is one of the best targets to mimic Scud-based systems as well as Iran’s longer-range Shahab variants. Thus, future trajectory of the Turkish–Israeli bilateral relations could affect Turkey’s participation in the interception tests of the Aster-30 Block-1 NT.
- The S-400 deal is a good example of ‘political-military’ affairs in context. On the political side, the procurement of a multi-billion USD non-NATO system marks Ankara’s uneasiness with its NATO Allies due to lack of cooperative defense industrial opportunities and ongoing political strains. On the other hand, militarily, Turkey indeed needs to have strategic defensive weapon systems and capabilities. In this respect, Ankara’s primary motivation for obtaining long range / high altitude air and missile defense system is to mitigate its vulnerabilities in terms of ‘intra-war deterrence’ vis-a-vis burgeoning missile inventories in Turkey’s neighborhood. Another critical issue is to sustain full airspace control and maintain considerable air superiority over key areas of concern, such as the Aegean.
- Moscow uses lucrative technology transfer and licensing options to protect its advantageous position in the Indian, and partially Chinese, defense markets. Although Turkish–Russian defense ties are still superficial, there is a good possibility that the Kremlin could offer very attractive and flexible opportunities to gradually distract Ankara from its traditional military partnerships. In fact, reluctance of Turkey’s NATO allies in promoting technology transfer and co-production ventures for high-end weapon systems is giving Moscow an invaluable opportunity to dominate the Turkish defense market.

- Geopolitically, Turkey and Russia have very compartmentalized relations with lots of competition and cooperation going on simultaneously. In other words, although the S-400 deal seems on the verge of conclusion, Ankara and Moscow will keep having different positions over a number of key issues, such as the Nagorno-Karabakh dispute or fate of the Assad regime in Syria.
- Although the rhetoric of ‘Greece, despite being a NATO member, operates Russian air and missile defense system’ has become a justification or reaction argument among Turkish strategic community, in fact, having Russia as a strategic arms supplier to both Turkey and Greece would create a dangerous escalation pattern. It is possible to observe coming results of such a scenario in contemporary Russian arms sales to conflicting Azerbaijan and Armenia which feeds a regional arms race. Notably, weapons transfers to Yerevan and Baku includes game-changer systems such as SS-26 Iskander tactical ballistic missiles, S-300 air and missile defense system variants, and TOS-1A thermobaric multiple-launch rocket systems. This policy brings about a vicious cycle augmenting the sustainability of Russian arms exports through keeping both Azerbaijan and Armenia militarily sharp. Besides, it would be much more beneficial for Moscow to ignite a similar arms race between two NATO-member countries. All in all, Russia’s defense ties with Greece should be a security concern for Ankara not only for maintaining military strategic balance, but also for averting a regional escalatory arms race.
- This study does not fully rule out Turkey’s prospective defense cooperation with the Russian Federation. In fact, there are many advanced tactical systems that can make a real difference. For example, BMPT-72 ‘Terminator-2’ armored fighting vehicle (tank support vehicle in Russian designation) could boost the Turkish Army’s armor survivability in hybrid warfare situations and urban environments. This very need was seen during Operation Euphrates Shield. In the air defense segment, low-to-medium range Pantsir

family of SAM systems, especially modified variants mounted on tracked chassis, would be a very good organic air defense component for Turkey’s principal maneuver units. However, the S-400 is a strategic weapon system by design and functions. Both in theory and practice, impacts of strategic arms procurements go well beyond defense planning issues, and produce geopolitical results. Therefore, even if Ankara takes solely military parameters into consideration for defense planning, the S-400 deal would inevitably resonate politically in Moscow and in NATO capitals. Likewise, each time Turkey’s allies fail to meet Ankara’s co-production demands, this has always sent political signals that exceeded military-technical concerns.

ROAD TO THE S-400 DEAL: ASSESSING THE DIPLOMATIC ROADMAP

Without a doubt, the biggest milestone in Turkey's S-400 journey was President Recep Tayyip Erdogan's March 2017 visit to Moscow. Before the visit, it was made clear that the S-400 deal was a top agenda item for the Turkish President discussions with his Russian counterpart, Vladimir Putin¹. On his way back to Turkey, the Turkish President told the journalists that while the reason of Russia's exclusion from the 2013 T-Loramids tender was the unaffordable cost of the offer, this time, the underlying cause for the S-400 talks remains Ankara's unmet demands by its NATO allies². The same 'unmet demands' emphasis was observed in the Turkish Foreign Minister's statements too. In April 2017, the Foreign Minister stated that Turkey could have well received this type of systems from NATO, but its allies' stances were not supportive at all³. It is mainly co-production and technology transfer shortcomings, and partially the delivery roadmap, that made the Turkish government look for alternatives. In fact, back in 2013, when the initial decision favoring the Chinese missiles was taken, Ankara underlined that its priorities were the three criteria mentioned above.

Following President Erdogan's March 2017 visit to Moscow, the Turkish press reported that the S-400 deal was about to be finalized. According to the news stories, the initial batch of the deal would cover immediate delivery of three "systems" –noting that the Turkish media may not be accurate in understanding the difference between 'an S-400 battery' and an

S-400 system', thus, probably what they meant was three batteries⁴.

As noted earlier, the delivery timeline remains critical for Ankara. At the time of writing, press sources claimed that the first batch of the S-400s could be delivered by 2019⁵. Such an early delivery might be unlikely due to several reasons. Firstly, the Russian defense industry has been recently facing some problems, such as shortage of technical personnel, and could not meet some deadlines⁶. And secondly, top Russian figures note that the S-400 supplies to India, which is the most important defense partner of Moscow, will start by 2020⁷. Meanwhile, China, depending on its order in 2014, will probably start receiving the batteries in 2018⁸. Besides, Moscow will keep looking for new markets for its high-end systems. Thus, it remains unclear if Turkey could indeed receive the first batch in 2019, unless Moscow opts for overriding the export protocols and delivering one of the operationally-ready batteries –though such an option would be highly unrealistic and unlikely–.

In fact, speculations about such an early delivery of the S-400 system is even causing concerns among the Russian strategic community. In this regard, some defense experts told that selling the S-400 system to a NATO nation might also enable the US to have its hands on critical Russian technology. Thus, according to the critics, Moscow may want to finalize the deal in the 2020s, when the S-500 line enters into service as the highest-tech Russian air and missile defense

4 Vatan, <http://www.gazetevatan.com/s-400-lerde-son-duzluk--1048520-gundem/>, Accessed on: June 19, 2017.

5 Hurriyet, <http://www.hurriyet.com.tr/s-400-natodan-bagimsiz-olacak-40520681>, Accessed on: June 26, 2017.

6 For a detailed analysis, see: Richard, A. Bitzinger. *Russian Arms Transfers and Asian Military Modernisation*, RSIS, 2015.

7 Rostec, <http://rostec.ru/en/news/4519196>, Accessed on: July 26, 2017.

8 Franz-Stefan, Gady. "India, Russia to 'Soon' Set Delivery Date for S-400 Missile Air Defense System", *the Diplomat*, <http://thediplomat.com/2017/06/india-russia-to-soon-set-delivery-date-for-s-400-missile-air-defense-systems/>, Accessed on: July 27, 2017.

1 Hurriyet, <http://www.hurriyet.com.tr/cantada-teror-rakka-ve-s-400ler-olacak-40389174>, Accessed on: June 19, 2017.

2 Hurriyet, <http://www.hurriyet.com.tr/erdogandan-natoya-fuze-site-mi-40392310>, Accessed on: June 19, 2017.

3 Star, <http://www.star.com.tr/guncel/cavusoglu-s400-icin-prensip-te-anlastik-haber-1212302/>, Accessed on: June 2017.

asset⁹ –although the S-400 and the S-500 have different design philosophies, the latter being a particular system for intercepting missiles–. Nevertheless, in case Moscow decides to approach the deal cautiously, delivery of the S-400s could be postponed. Besides, the framework might also include significant limitations such as not to use the batteries in any NATO exercises. Moreover, Russian experts draw attention to the very fact that the export version might be intentionally downgraded in several functions, such as counter–electronic warfare measure and number of targets that could be engaged simultaneously¹⁰.

Apart from the delivery time, another issue is the financing. It was reported that two batteries would be procured through an off-the shelf model, while the remaining talks were about finalizing a deal with Russia for a comprehensive co-production project¹¹. Interestingly, Sergey Chemezov, CEO of the Rostec Corporation, also hinted at a previously discussed a loan deal for the S-400s between Russian and Turkish governments¹². Even more importantly, Chemezov also told the Turkish media that prospects for S-400 co-production, and even a larger deal that would incorporate 5th generation fighters, might be on the table¹³. Nevertheless, it would be precise to approach co-production deals cautiously, since such ventures could range from minor roles to game-changer technology transfers. For example, back in 2013, Russian Rosoboronexport was planning to mount the An–tey–2500 system (the S-300V line) on a Turkish-ma-

nufactured chassis, which could offer very little, if any, critical know-how to the Turkish defense industry¹⁴. Any ideal co-production deal, be it for the S-400 or a NATO-compatible system, should include certain novelties that Turkish defense firms like ASELSAN or ROKETSAN would really gain new design and production capabilities. Notably, at the time of writing, the Turkish President’s Spokesperson told that the deal would include a significant technology transfer opportunity¹⁵.

In fact, some Russian experts also took the deal with concern. Apparently, this reserved stance stemmed from the previously cancelled Ka-50-2 attack helicopter procurement deal between Turkey and Russia¹⁶. Nevertheless, at the time of writing, President Erdogan told that the S-400 deal was finalized and the procurement framework would also include some co-production efforts¹⁷. Although Russian press sources reported that the Kremlin’s Press Secretary Dmitry Peskov declined commenting on the issue¹⁸, both President Putin’s aide for military technical cooperation, Vladimir Kozhin, and the Rostec CEO Sergey Chemezov earlier hinted that the agreement was indeed secured¹⁹. Thus, it is understood that while there is no finalized official procurement protocol yet, Ankara and Moscow agreed on the framework. However, details of the loan –if it is still on the table– still remain to be seen.

14 Rostec, <http://rostec.ru/en/news/1949>, Accessed on: July 26, 2017.

15 Hurriyet, <http://www.hurriyet.com.tr/kalin-acikladi-bu-is-buyuk-oran-da-bitti-40533111>, Accessed on: July 29, 2017.

16 Russia Beyond The Headlines, https://www.rbth.com/defence/2017/03/16/will-russia-arm-turkey-with-anti-aircraft-s-400s_721088, Accessed on: June 19, 2017.

17 Hurriyet, <http://www.hurriyet.com.tr/erdogandan-flas-aciklamlar-40530302>, Accessed on: July 25, 2017.

18 TASS, <http://tass.com/defense/957699>, Accessed on: July 25, 2017; Sputnik, <https://sputniknews.com/military/201707251055866011-krmlin-erdogan-s-400-no-comments/>, Accessed on: July 25, 2017.

19 Sputnik, <https://sputniknews.com/military/201707251055866011-krmlin-erdogan-s-400-no-comments/>, Accessed on: July 25, 2017; Russia Today, <https://www.rt.com/news/394604-turkey-russia-s-400-contract/>, Accessed on: July 25, 2017.

9 Sputnik, <https://tr.sputniknews.com/analiz/201703161027657767-rusya-ve-turkiyenin-s-400-anlasmisinden-kim-kazancli-cikacak/>, Accessed on: June 19, 2017.

10 Sputnik, <https://tr.sputniknews.com/analiz/201703161027657767-rusya-ve-turkiyenin-s-400-anlasmisinden-kim-kazancli-cikacak/>, Accessed on: July 27, 2017.

11 Daily Sabah, <https://www.dailysabah.com/politics/2017/03/24/turkey-to-buy-2-batteries-of-s-400-systems-from-russia>, Accessed on: June 19, 2017.

12 <http://www.chinatopix.com/articles/113581/20170417/russia-confident-selling-s-400-missile-system-turkey.htm>, Accessed on: June 19, 2017.

13 Milliyet, <http://www.milliyet.com.tr/rusya-ve-turkiye-den-s-400-ekonomi-2462094/>, Accessed on: June 19, 2017.

Recently, some important Western figures have already started to voice their negative reactions about the S-400 deal. In this regard, the US Joint Chiefs of Staff General Joseph Dunford told that although Ankara has not ‘yet’ formalized such a procurement project, if it really does so, then such a procurement would be concerning²⁰.

In fact, the grounds for the abovementioned critical comments differ from the previous criticisms to the failed Chinese HQ-9 deal back in 2013 caused by Ankara’s intent to integrate a non-NATO system of a “usual suspect” country in cyber affairs, China, with the Alliance’s layered BMD network. Besides, although Ankara then realized that it would not be possible to operate the Chinese system with NATO assets, nevertheless, Turkey’s possible defense business with the China Precision Machinery, which faced sanctions due to its ties with Iran, Syria, and North Korea, remained another problem²¹. This time, all along, Turkish officials explained that the system would not be integrated with the NATO infrastructure²². Thus, no one could worry about a Russian cyber or electromagnetic spectrum infiltration into any NATO system’s operational cycle or design characteristics. Besides, NATO has no official rule banning its members to procure Russian arms. In this respect, the early S-300 variants at the Greek Armed Forces’ inventory has been primary reference among the Turkish strategic community when defending Ankara’s non-NATO air and missile defense possibilities.

On the other hand, “Almaz-Antey” (officially Concern VKO ‘Almaz-Antey’), which takes part in designing the S-400 system, is already sanctioned by the US²³

and the EU²⁴ following the annexation of Crimea by Moscow. Thus, a joint-venture with Concern VKO ‘Almaz-Antey’ might trigger certain reactions. Furthermore, some lucrative deals between NATO-member countries and Russia were canceled following the annexation of Crimea. Under President Hollande, France canceled for instance the sale of two Mistral amphibious assault ship to Moscow in 2015, and even paid a compensation around € 890 million²⁵. At present, many Russian state-owned enterprises are restricted from accessing Western financial markets and services²⁶.

However, Ankara has its own concerns too. Above all, the US support to the PYD/YPG for anti-ISIL operations remains a grave security problem for the Turkish administration due to these groups’ organic ties with the PKK terrorist organization. Notably, recent arms transfers to the YPG have triggered a serious military threat perception among the Turkish elite given the mounting hybrid warfare trends at Turkey’s doorstep. Thus, differently from the 2013 Chinese missile deal, this time any NATO reaction criticizing the S-400 deal could indeed fall on deaf ears in Ankara where weapons being provided to the YPG are viewed as a tactical game-changer. For Ankara therefore, the S-400 deal is as much about signaling to its NATO allies about its disillusionment with the perceived lack of support.

www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/Pages/20140716.aspx, Accessed on: July 25, 2017.

20 Daily Sabah, <https://www.dailysabah.com/diplomacy/2017/07/25/us-chief-of-staff-ankara-moscow-missile-deal-a-concern>, Accessed on: July 25, 2017.

24 General Court of the European Union, Press Release 6/17, <https://curia.europa.eu/jcms/upload/docs/application/pdf/2017-01/cp170006en.pdf>, Accessed on: July 25, 2017.

21 Reuters, <http://www.reuters.com/article/us-turkey-china-defence-idUSKBN0LN0W220150219>, Accessed on: July 25, 2017.

25 Defensenews, <http://www.defensenews.com/naval/2015/08/09/mistral-dispute-with-russia-settled-france-eyes-exports/>, Accessed on: July 27, 2017.

22 Hurriyet, <http://www.hurriyet.com.tr/s-400-natoya-entegre-edilmeyecek-40397688>, Accessed on: July 25, 2017.

26 NATO Review Magazine, <http://www.nato.int/docu/review/2015/Russia/sanctions-after-crimea-have-they-worked/EN/index.htm>, Accessed on: July 27, 2017.

23 The Department of the Treasury, Executive Order 13662, <https://>

MILITARY STRATEGIC ASSESSMENT OF THE S-400 DEAL

The S-400 Triumf (NATO designation SA-21 Growler) is a four-generation advanced air and missile defense system, designed to protect high-value military, political, and economic targets from ballistic and cruise missiles, and air strikes. Open-source military assessments indicate that with the 48N6 family of missiles, the system's operational range is about 250km against air platforms and about 60km for intercepting ballistic targets. Furthermore, some studies suggest that the new 40N6 could boost the range up to 400 kms for some targets although there is no confirmation for such a capability. An S-400 system is composed of a command & control vehicle, multi-mode radar components, and launcher units (eight launcher units in a standard deployment pattern)²⁷. However, it is reported the new missiles' size would allow only two missiles per transporter-erector-launcher (TEL), while previous S-300 and S-400 batteries could carry four²⁸. Thus, it would be fair to assume that the extended-range S-400s will be capable of intercepting their targets at longer distances but it might be easier to saturate them. Besides, maneuverability of the 40N6 interceptors is still unknown.

Experts report that the S-400 enjoys numerous advantages over the S-300 line that gives a clear edge to the Russian Aerospace Forces (VKS). First, even some Western analysts suggested that while the S-300 SAM family's anti-ballistic capacity was comparable to the Patriot PAC-1 and PAC-2, the S-400 is more capable than the Patriots in terms of mobility, survivability, and performance. Furthermore, since S-400 uses a more advanced software (due to Russia's access to the Western computational technology until recently) and radar refinements, as well as new missiles, it can better respond to a broader range of targets than the S-300



family could do²⁹. Besides, it is reported that due to its sophisticated electronic warfare systems, jamming the S-400's engagement and target acquisition radars would be very challenging. Last but not least, the system is believed to have a better capability in engaging stealth aircrafts³⁰. An important indicator of the S-400 system is the Russian Federation's firm reliance on it for defending the most critical parts of the national airspace including Moscow³¹. The S-400 is reported to perform interceptions up to 56km altitude³². This compares unfavorably with the US-manufactured

27 IHS Jane's, Artillery and Air Defense: S-400, August 2016.

28 Ibid.

29 Keir Giles. Russian Ballistic Missile Defense: Rhetoric and Reality, The US Army SSI, 2015, pp.15-16.

30 Ibid.

31 Ibid.

32 IHS Jane's, Artillery and Air Defense: S-400, August 2016.

THAAD's 150km interception altitude³³. However, while THAAD is a tailor-made for anti-missile missions, the S-400 is a complete air and missile defense system. Thus such a comparison alone might be misleading³⁴. Still, the S-400 does not have exo-atmospheric interception capability, which makes it insufficient against WMD-tipped ballistic missiles.

This report concludes that one of the most important reasons of the rapid S-400 procurement for Turkey is air defense and airspace control in key areas, rather than ballistic missile defense. For one, in the absence of NATO systems integration, the procured S-400s would operate standalone. Yet, modern ballistic missile systems enjoy complicated trajectory and flightpath characteristics, increased warhead / re-entry vehicle maneuverability, reduced warhead observability, more advanced guidance, navigation, and terminal guidance technology, and shortened launch-cycles. Thus countering the threat is a very hard task which necessitates a complex network of radars, sensors, early warning components, command & control (C2) structures, and layered interceptors³⁵. Without being integrated to a network, the S-400s would suffer from limited reaction time, imperfect real-time cueing, incomplete layering, and lower kill ratio. In particular against WMD warhead-delivering ballistic missile threats –say the Syrian Scuds–, which any ‘leaker’ threat could cause significant troubles, layering missile defenses remains a must. Professional missile defense modeling assessments suggest that “an architecture built upon the terminal defense is impractical” to meaningfully minimize the risks³⁶.

However, despite serious drawbacks in the ballistic

33 IHS Jane's, Surface-to-Air (SAM) Systems THAAD, 2014.

34 Keir Giles. Russian Ballistic Missile Defense: Rhetoric and Reality, The US Army SSI, 2015, p.40.

35 For a reference study, see: Ronald. C. Wiegand, “Heads not Tails”: How to Best to Engage Theater Ballistic Missiles?, The US Air University Maxwell Air Force Base, 2006.

36 Ibid. p.19.

missile defense (BMD) segment, as a surface-to-air missile system (SAM) the S-400 might still be an air defense solution for Turkey –leaving political drawbacks and delivery time problems aside–. In fact, some experts indicate that Ankara's initial aim with the its defensive strategic weapons project (T-LORAMIDS) was to counter 70% air targets (or air-breathing targets) and 30% ballistic missiles³⁷. In order to put this approach in context, first, the readers would need a brief conceptualization of Counterair Operations.

In doctrine, counterair missions cover offensive and defensive operations for ensuring the desired degree of control of the air ranging from air parity, to local air superiority, and to air supremacy as well as providing protection for the joint force's fighting capabilities. Counterair missions deal with a broad array of air and missile threats including manned and unmanned aircraft, air-breathing aerodynamic missiles (i.e. cruise missiles), ballistic missiles, terrorist use of civilian aircraft, the adversary's capabilities in cyberspace and the electromagnetic spectrum, and space-based assets³⁸. To confront such a massive threat composition, counterair framework is composed of offensive counterair operations (OCA) and defensive counterair operations (DCA). OCA missions are primarily about destroying or neutralizing enemy aircraft, missiles, launch platforms, and support structures, if possible at their sources. OCA missions have four main types of operations as follows: Attack (strike) operations, suppression of enemy air defenses (SEAD), fighter escort, and fighter sweep (seeking out and eliminating enemy aircraft and targets of opportunity)³⁹. The

37 Nilsu Goren. “Turkey Turbulent Journey with the EEPA and Quest for a National System” in Missile Defense Extended Deterrence and Non-Proliferation in the 21st Century, Catherine Kelleher [ed.] Center for International Security Studies at Maryland, 2017.

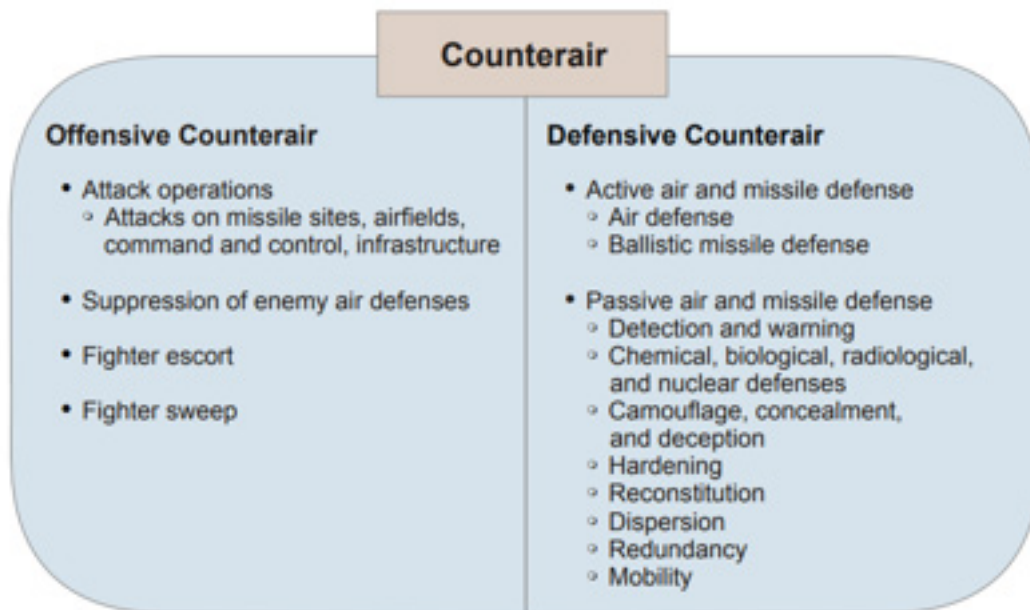
38 For a detailed doctrinal point of view about counterair operations with detailed assessments of offensive and defensive counterair missions, see: The US Joint Chiefs of Staff, Joint Publication 3 – 01 Countering Air and Missile Threats, 2017.

39 Ibid.

Israeli Air Forces' (IAF) success in the 1967 Six-Day War is a good example of offensive counterair operations. On the first day of the war, the IAF destroyed 85% of the Egyptian Air Force, mostly when parked on the ground⁴⁰. Notably, at the outset of the conflict, within only three hours, the IAF struck 19 Egyptian airfields simultaneously destroying 318 aircraft on the ground. Furthermore, 13 of 19 Egyptian airfields in the Sinai were left out of the combat only two hours and fifty minutes after the war began⁴¹. Without a doubt, achieving such an offensive air operations success would depend on doctrine, platforms and munitions, and of course, talented and well-trained pilots with excellent flight hours. If these requirements cannot be met, defensive counterair missions would have to do most of the job.

DCA is about neutralizing or destroying enemy aircraft and missiles that attempt to penetrate through friendly airspace. Thus, DCA framework mainly covers air defense and ballistic missile defense operations which necessitate integrated use of aircraft, SAM systems, anti-aircraft artillery (AAA), as well as electronic warfare (EW) assets⁴². In the theater, synchronizing offensive and defensive counterair operations remains vital to boost mission effectiveness⁴³.

Counterair Framework



Retrieved from: *The US Joint Chiefs of Staff, Joint Publication 3 – 01 Countering Air and Missile Threats, 2017.*

40 Kenneth P. Werrel, Archie FLAK AAA and SAM: A Short Operational History of Ground-Based Air Defense, the US Air University Maxwell Air Force Base, 1988, p.138.

41 Ronald D. Jones, Israeli Air Superiority in the 1967 Arab-Israeli War: An Analysis of Operational Art, the US Naval War College, 1996, pp.5-6.

42 The US Joint Chiefs of Staff, Joint Publication 3 – 01 Countering Air and Missile Threats, 2017.

43 Ibid.

SAM remains at the epicenter of DCA missions. In this regard, contrary to the 1967 Six-Day War, the 1973 Arab – Israeli conflict (the Yom Kippur War) was a true example of air defense operations, especially at its initial phase. With the Soviet help, the Arab air defenses – a formidable buildup of surface-to-air systems at the time – managed to limit the IAF’s freedom of movement to a considerable extent, and provided the ground forces with a robust protective umbrella. By the early 1970s, the Egyptians managed to establish a layered SAM architecture of the Soviet-manufactured SA-2, SA-3, and SA-6 systems, as well as multi-barreled anti-aircraft guns and underground C2 nodes⁴⁴. Having formed the air defense as a separate branch in 1968, the Egypt operated 150 SAM batteries during the war (mostly SA-6), in addition to the Syrians’ 47 SAM batteries in a smaller battlefield, along with numerous Soviet-made ZSU-23-4 anti-aircraft artillery. Even during the first days at the Suez front, Israel lost around 50 aircrafts which peaked to 80–90 by the first week of the clashes. On the Syrian front, however, the IAF’s successful strikes on C2 centers made them destroy half of the SAM systems just in four days. Yet, in the Suez front, the Israeli Army took credit for opening a route for the Air Force⁴⁵. In other words, the Egyptian defensive counterair capabilities were proven effective. Notably, the most recent example of a -partially- successful DCA took place during the air defense engagements of the 2008 Russo – Georgian War. Having covertly modified the Soviet legacy air defenses by Ukrainian help, the Georgian SAM systems downed several Russian platforms including Su-25 close air-support aircraft, Tu-22M3 bomber, and Su-24 attack aircraft⁴⁶.

44 For a detailed assessment, see: Bruce A. Brant, *Battlefield Air Interdiction in the 1973 Middle East War and Its Significance to NATO Air Operations*, the US Army Command and General Staff College, 1987.

45 For a comparative analysis of the 1967 and 1973 air and air defense wars, see: Kenneth P. Werrel, *Archie FLAK AAA and SAM: A Short Operational History of Ground-Based Air Defense*, the US Air University Maxwell Air Force Base, 1988.

46 Carlo Kopp. “Proliferation of Advanced Air Defense Systems”, <http://www.ausairpower.net/SP/DT-SAM-Proliferation-March-2010.pdf>, Ac-

To make a long story short, this study concludes that the underlying reason for the fast procurement of the S-400 system is Turkey’s urgent need for compensating its shortfalls in offensive counterair capacity with new defensive counterair capabilities centered on SAM systems, such as the S-400. The primary reason for such a stopgap measure is the problematic pilot-to-cockpit ratio in the Turkish Air Force. Following the failed coup attempt of July 2016, the Turkish press reported that more than 260 pilots were dismissed, which caused a decrease in the pilot-to-cockpit ratio to 0.8:1 (0.8 pilot per seat)⁴⁷. Probably, the hostile use of aircraft during the failed coup attempt (35 fixed-wing and 37 rotary-wing aircraft were reported by the press sources⁴⁸) coupled with possible infiltrations into the Air Force compelled Ankara to such drastic measures.

Although Turkish defense planners opted for rotationally commission former military civilian airliner pilots and tried other way-outs (such as training new pilots from non-flying personnel pool)⁴⁹, the Turkish Air Force’s combat capabilities need to be seriously augmented. There are various approaches to the pilot-to-cockpit ratio in the doctrine and literature. A healthy average of 1.25 crew per cockpit is generally assumed effective for sustaining a combat-capable and air deterrent⁵⁰. Technically, keeping a large enough pool of pilots depends on a three-stage process. The first phase is production which means training new pilots for the platforms. The second one is absorption which stands for introducing the pilots into operational units for giving them required flight hours and experience. And

cessed on: July 29, 2017.

47 Hurriyet, <http://www.hurriyet.com.tr/sivil-pilotlara-tsk-gore-vi-40198620>, Accessed on: July 19, 2017.

48 Hurriyet, <http://www.hurriyet.com.tr/son-dakika-tsk-darbecilerin-sayisini-acikladi-40172117>, Accessed on: July 21, 2017.

49 Ibid.

50 For detailed assessment, see: Albert A. Robbert et.al. *Reducing Air Force Fighter Pilot Shortages*, RAND, 2015.

finally, the third stage is sustainment which is basically managing the loss of experienced pilots and the new production batches. Furthermore, production capacity should be kept at an optimum level. If it remains too low, sustainment balance cannot be maintained, and if it boosts too high, then this would mean allocating unnecessary resources to an overcrowded segment. On the other hand, since absorption capacity is directly linked with operational capabilities, there is no upper limit for this segment, and the higher level is assumed the better⁵¹. Moreover, inexperienced pilots need experienced ones for enough development in a given time. Thus, high absorption capacity has a positive effect on production rates and sustainment stability. Some statistical studies show that when the proportion of experienced pilots fall below 60% in operational squadrons it negatively affects overall readiness⁵².

The Turkish Air Force officially reports a total of 289 F-16 variants and F-4/2020 (49 platforms) in its arsenal⁵³. The IISS' Military Balance 2017 suggests a 280-strong fighter and ground-attack aircraft force for the same platforms (F-16 variants and F-4/2020)⁵⁴. And in 2016, the Turkish press reported "around 300" platforms in the abovementioned segment⁵⁵. Assuming some 300 combat aircraft operated by the TAF, Ankara would need producing 375 pilots for an acceptable 1:1.25 pilot-to-cockpit ratio, and 450 pilots for a safer, 1:1.5 one. Besides, depending on the number of newly produced pilots, it would take time for the inexperienced ones to go through absorption processes to gain more flight hours and experience in combat missions. Turkey opted for overcoming this gap by initiating a 'reserve pilot' concept by harvesting

former military personnel from commercial airliners⁵⁶. But, without a doubt, dual-use of commercial pilots for combat-readiness and civilian transport flights on a rotational basis cannot be a true stopgap measure, let alone a permanent solution.

In light of the discussion above, it is seen that the drastic decrease in the TAF's pilot-to-cockpit ratio to has adversely affected both absorption and sustainment capacities. Indeed, although new pilots can always be produced due to Turkey's demographic advantages, giving them enough flight hours and combat experience would take time. Yet, the threat landscape in Turkey's neighborhood has been worsening for some time which necessitates an urgent boost in combat capabilities. Additionally, having pilots with part-time combat training and part-time commercial airliner duties is not an ideal situation. On the other hand, Ankara has to go strictly with background checks and security protocols in commissioning military personnel in order to mitigate challenges emanating from insider risks. Thus, as mentioned earlier, an accelerated SAM procurement is probably seen as a way-out by the Turkish administration to overcome the pilot shortage through opting for a quick-fix, defensive solution.

In fact, modern air defense concepts vary between fighter aircraft-dominant postures, SAM-dominant postures, and balanced ones⁵⁷. However, if Ankara is to replace its fighter aircraft-dominant concept with a SAM and aircraft mixed understanding, which could be an effective alternative indeed, then it has to maintain utmost interoperability within its principal arsenal. Key importance of interoperability between aircraft and integrated air and missile defense systems can be better understood by examining the Israeli Air

51 Ibid, pp.6-7.

52 Ibid. p.8.

53 The Turkish Air Force official website (in Turkish), https://www.hvkk.tsk.tr/tr-tr/T%C3%BCrk_Hava_Kuvvetleri/Hakk%C4%B1m%C4%B1zda/G%C3%BCn%C3%BCm%C3%BCz_Hava_Kuvvetleri/Envanterdeki_U%C3%A7aklar, Accessed on: July 21, 2017.

54 IISS, Military Balance 2017, Routledge, London, 2017, p.168.

55 Hurriyet, <http://www.hurriyet.com.tr/ihraclar-sonrasi-tdkda-kac-pilota-ihiyac-var-40174392>, Accessed on: July 21, 2017.

56 Haberturk, <http://www.haberturk.com/gundem/haber/1327458-hava-kuvvetlerine-ihiyat-pilot-uygulamasi>, Accessed on: July 21, 2017.

57 For several fighter aircraft-dominated and SAM-dominated air defense configurations, see: Michael J. Lostumbo et.al. Air Defense Options for Taiwan: An Assessment of Relative Costs and Operational Benefits, RAND, 2016.

Forces' (IAF) recent encounter in the Syrian airspace. On March 17, 2017, a Syrian S-200 (SA-5) battery fired an anti-aircraft missile to hunt down an IAF fixed-wing aircraft (probably an F-15 or F-16 variant). The missile was tracked by Israel's Green Pine radars, and intercepted by an Arrow air and missile defense (AMD) system battery⁵⁸. This very incident presents a crucial case study to understand networked and integrated AMD architecture and interoperability. In this respect, while the Turkish Air Force will be a major operator of the F-35 multirole stealth fighters, providing a datalink to interoperate these game-changer advanced platforms with the S-400s would be problematic, not only for technical reasons but also due to political-military sensitivities.

TURKEY'S DUAL-TRACKED DEFENSIVE STRATEGIC WEAPON SYSTEMS VISION

Battlefield use of missiles indeed is real and tangible around Turkey. The Syrian civil war has witnessed ballistic missile launches by the regime for years. Russia had reportedly combat tested its SS-26 Iskanders in 2008 against Georgia, a decade after using the SS-21 Tochka missiles in Chechnya⁵⁹. All these conflicts took place right at Ankara's doorstep. Now, the SS-26s are deployed both in Syria and Armenia, surrounding Turkey's southeastern and eastern frontiers. Furthermore, the threats emanating from Iran and Syria have not come to an end following the nuclear deal and the chemical disarmament agreement. Open-source intelligence estimates suggest that Tehran has conducted 14 ballistic missile tests as of early 2017 since the announcement of the Joint Comprehensive Plan of Action⁶⁰. Many of these tests included medium range

ballistic missiles that are capable of delivering WMD-tipped warheads and reaching deep Turkish territory. Notably, back in 2011, Tehran openly threatened Ankara with striking the Turkish soil due on account of the X-band radar deployment under NATO's missile defense efforts⁶¹. One year later, in 2012, top Iranian officials warned Turkey that the Alliance's Patriot missile defense systems deployments could "ignite the third world war"⁶². Moreover the Syrian chemical deal also left the Assad regime's missile arsenal intact⁶³, along with serious faults in the chemical disarmament program. Besides, the international community does not have any biological disarmament perspective in progress. All in all, since the first Gulf War, Turkey has been facing serious intrawar deterrence vulnerabilities⁶⁴ due the rise of strategic weapon systems at its doorstep. At this point, one might argue that Turkey's recent offensive missile developments could hint at a burgeoning offensive leverage. Indeed, the last missile test was conducted in May 2017 in the Black Sea region for the Bora short range ballistic missile⁶⁵ – probably an advanced J-600T Yildirim variant which is originally a Chinese B-611 derivative⁶⁶–. However, Turkey's ballistic missile trends, limited with the Missile Technology Control Regime, cannot match those of Iran, Syria, or Russia. In addition, in terms of WMD

iranian-ballistic-missile-tests-since-the-nuclear-deal/, Accessed on: June 19, 2017.

61 <http://web.hurriyetdailynews.com/iran-threatens-to-hit-turkey-if-us-israel-attack.aspx?pageID=238&nID=7864&NewsCatID=338>, Accessed on: June 19, 2017.

62 <http://www.reuters.com/article/us-syria-crisis-iran-idUSBRE8BE07K20121215>, Accessed on: June 19, 2017.

63 For detailed assessment of the remaining chemical arsenal, see: France, National Evaluation: Chemical Attack in Syria, April 2017, <http://www.diplomatie.gouv.fr/en/country-files/syria/events/article/chemical-attack-in-syria-national-evaluation-presented-by-jean-marc-ayrault>, Accessed on: July 28, 2017; Can Kasapoglu, the Shayrat Connection, FRS, 2017; Dany Shoham, "Syria's Chemical Weapons Obfuscations", BESA Center Perspectives Paper No: 305, 2015.

64 For Intrawar Deterrence factors in Turkey's missile defense perception, see: Can, Kasapoglu. The Militray Strategic Rationale of Turkey's T-Loramids Project and the Eurosam Offer, FRS, 2014.

65 CNNTurk, <http://www.cnntrk.com/turkiye/son-dakika-turkiye-sinop-ta-fuze-denemesi-yapti?page=1>, Accessed on: June 19, 2017.

66 IHS Jane's, Turkey, 2017.

58 Uzi Rubin. "Arrow Intercepts a Syrian Missile: Technological Operational and Political Aspects" BESA Perspectives Paper No: 437, April 2017.

59 For a detailed assessment of the Russian surface-to-surface missile use, see: Stefan Forss. The Russian Operational-Tactical Iskander Missile System, Finland National Defense University, 2012.

60 <http://www.defenddemocracy.org/media-hit/behnam-ben-taleblu->

efforts, Turkey has a very clean record, and the only deterrent remains the B-61 tactical nuclear weapons on Turkish soil⁶⁷, and either these assets' future role in NATO's nuclear posture, or possible withdrawals, is not clear.

Furthermore, in the course of the Syrian civil war, Ankara saw that missile defense assistance requests are not immune to political fluctuations. Besides, NATO's BMD configuration and the European Phased Adaptive Approach do not cover entire Turkish territory⁶⁸. Although it is reported that additional THAAD batteries might be to the unprotected territories as a "potential surge" in times of crisis⁶⁹, feasibility of this measure is highly debatable. Thus, Turkish defense planners see the very need having national BMD capabilities. Besides, NATO's BMD configuration and the European Phased Adaptive Approach do not cover entire Turkey.

The most important parameter of Ankara's long range / high altitude air and missile defense project is the fact that Turkey has been pursuing a dual-track way forward strategy. In this regard, the chairman of Turkey's chief procurement body, Undersecretariat for Defense Industries (SSM), has made it absolutely clear that any procured system –in this case the S-400– will be a stopgap measure, while his team is focusing on producing Turkey's "national" strategic defensive capabilities⁷⁰. Although the SSM has been developing indigenous capabilities at low and medium altitudes⁷¹, the term "national" probably hints at a comprehensive

co-production venture. In fact, while Ankara has been trying to secure the S-400 contract with best possible conditions, the Turkish Defense Ministry also announced a separate (reportedly co-production) project with the French-Italian consortium EUROSAM in July 2017⁷².

Despite the Turkish officials did not give any clue about the details of the abovementioned project, most probably, the goal is to integrate the Turkish defense industry into the Aster-30 Block-1 NT (NT: new technology) production efforts (B1NT). The B1NT program depends on an initial contract under French mandate in 2015, and the following Arrangement of Cooperation signed by French and Italian defense ministers in June 2016. Within this framework, the missile manufacturing giant MBDA is responsible for developing the new system of the Aster line⁷³.



Aster-30 Block-1 Air and Missile Defense System

67 For tactical nuclear weapons and NATO-nations, see: Tom Nichols et.al. [ed.] *Tactical Nuclear Weapons and NATO*, the US Army SSI, 2012.

68 Nilsu Goren. "Turkey Turbulent Journey with the EEPA and Quest for a National System" in *Missile Defense Extended Deterrence and Non-Proliferation in the 21st Century*, Catherine Kelleher [ed.] Center for International Security Studies at Maryland, 2017.

69 Ibid.

70 Anadolu Agency, <http://aa.com.tr/tr/gunun-basliklari/demirden-suudi-arabistana-gemi-satisi-aciklamasi/828771>, Accessed on: June 19, 2017.

71 For the official declaration of the air and missile defense projects, see: <http://www.ssm.gov.tr/anasayfa/projeler/Sayfalar/projeler.aspx?projeGrubulD=21>, Accessed on: July 27, 2017.

72 Hurriyet, <http://www.hurriyet.com.tr/yerli-hava-ve-fuze-savunma-sisteminde-mutabakat-imzalandi-40520523>, Accessed on: July 27, 2017.

73 MBDA, <http://www.mbda-systems.com/press-releases/mbda-welcomes-italys-participation-aster-30-block-1-nt-programme/>, Accessed on: July 27, 2017.

Aster-30 Block-1 missiles (under the sol-air de moyenne portée/terrestre – SAMP/T system) are already deployed in Turkey as a part of the Italian capacity of the ongoing NATO mission⁷⁴. The next variant, Block-1 NT, is expected to be available by 2023⁷⁵. The NT design will use a new Ka-band active seeker which is expected to give a real boost to the current Aster-30 Block-1's seeker operational performance. This upgrade would mark increased target acquisition range, acquisition of targets with lower radar cross-section, increased direct-hit probability⁷⁶, and better performance in engaging targets with higher terminal speeds⁷⁷. Thereby, MBDA's main aim with the Aster-30 Block-1 NT is to gain medium-range ballistic missile interception capacity up to 1,500km range, and to better respond separable warheads⁷⁸. In fact, given ballistic missile trends at Turkey's Middle Eastern doorstep, such capabilities would better meet Ankara's defense requirements compared to the short-range ballistic missile interception focus of the T-Loramids project. Furthermore, the Aster-30 depends on a 'one missile for all' design philosophy. Thus, it offers flexible and broad arrange of solutions against ballistic and cruise missiles, as well as manned and unmanned platforms with the same interceptor.

Besides, like the rest of the Aster line, Aster-30 Block-1 NT will be used by both ground launchers and naval platforms⁷⁹. Therefore, given the fact that

74 NATO, http://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_01/20170113_1701-factsheet-patriot_en.pdf, Accessed on: July 28, 2017.

75 MBDA, file:///C:/Users/Guest/Downloads/2016-06-14-France-and-Italy-Join-Together-to-Develop-Aster-30-Block-1-NT.pdf, Accessed on: July 27, 2017.

76 MBDA, <http://www.mbda-systems.com/wp-content/uploads/2017/01/2017-01-What-the-Aster-B1-NT-brings.docx.pdf>, Accessed on: July 27, 2017.

77 IHS Jane's, Aster15/Aster 30, March 2017.

78 MBDA, <https://www.youtube.com/watch?v=JG2B-Ot9SL4>, Accessed on: July 27, 2017.

79 MBDA, <http://www.mbda-systems.com/press-releases/mbda-welcomes-italys-participation-aster-30-block-1-nt-programme/>, Accessed on: July 27, 2017.

Turkey has long been pursuing the TF-2000 air defense frigates project⁸⁰, opting for an Aster-based strategic defensive weapon system procurement could provide Turkish defense planners with more flexibility. In this regard, the British Royal Navy is none of the operators of the Aster line for its vessels, and in March 2016, London declared that it is considering the Aster-30 Block-1 NT modernization for its Type-45 destroyers⁸¹. Likewise, the Italian Navy deployed its Orizzonte-class frigates to imply the Libya no-fly zone in 2011⁸², and could be the next candidate for the NT upgrade. Relatedly, since Turkey intends to operate a light aircraft carrier, the flagship's naval battle group must have combined defensive capabilities to respond traditional air and missile threats as well as burgeoning anti-ship cruise missiles (ASCM). In this regard, the Aster family of EUROSAM offers the most complete solution.

In addition, the Aster line is completely compatible with NATO's tactical data link and ballistic missile defense architecture (such as AN/TPY-2, Smart-L, and AN/SPY-1 radars, AEGIS system, the Standard Missile line, THAAD and Patriot systems, as well as the Link-16 operating systems). Thus, in case Ankara decides for joining the Aster-30 Block-1 NT efforts, Turkey's BMD capabilities would enjoy both better layering and more efficient real-time data sharing.

Last but not least, Aster-30 Block-1 interceptors are tested by the Israeli-made Black Sparrow missiles that very effectively mimic shorter range Scud-derivatives. For longer range and even exo-atmospheric targets, Israel developed Blue Sparrow (Scud C and D mimic) and Silver Sparrow (longer range Iranian Shahab line mimic) missiles. Most probably, the B1NT program

80 The Undersecretariat for Defense Industries, <http://www.ssm.gov.tr/anasayfa/projeler/Sayfalar/proje.aspx?projelID=39>, Accessed on: July 27, 2017.

81 MBDA, file:///C:/Users/Guest/Downloads/2016-06-14-France-and-Italy-Join-Together-to-Develop-Aster-30-Block-1-NT.pdf, Accessed on: July 27, 2017.

82 Ibid.

will include such tests too. In fact, the referred testing model serves Turkey's needs best, since it helps the interceptor gain specific capabilities against an important proportion of Syrian and Iranian ballistic missile arsenals⁸³. However, current fluctuations in the Turkish – Israeli relations might be a negative factor in Ankara's efforts to join the Aster-30 Block-1 NT development.

Finally, being a part of the B1NT project could benefit Turkey for even longer term steps in, probably, the 2030 for contributing to the development of the Aster Block-2. Although the current development plans and status are unknown, open-source defense sources report that the design aim with the Block-2 variant is to intercept intermediate-range ballistic missiles over 3,000km range⁸⁴.

However, defense partnerships are not immune to political fluctuations and diplomatic considerations. In case Ankara's NATO allies, especially the US, overreacts to the S-400 deal, EUROSAM might find itself under pressure in carrying on with any cooperative project. As mentioned earlier, back in 2015, a Franco-Russian naval procurement deal for the Mistral-class amphibious assault vessels failed due to NATO allies' negative stances following the annexation of Crimea in 2014. Furthermore, although the EUROSAM is likely to enjoy such a venture for lowering the production costs of the Aster-30 Block-1 NT, it is doubtful that the Turkish defense industry could benefit from any game-changer technology transfer.

83 For a detailed report with references to interviews with MBDA officials, see: Can, Kasapoglu. The Military Strategic Rationale of Turkey's T-Loramids Project and the Eurosam Offer, FRS, 2014.

84 IHS Jane's, Aster15/Aster 30, March 2017.

RUSSIA AS A DEFENSE PARTNER: ASSESSING MOSCOW'S DEFENSE TIES WITH FUTURE S-400 OPERATOR NATIONS

Russia remains a giant in arms exports. It holds the second place after the United States, and is striving to expand through new opportunities. At present, India, China, and Vietnam come into the picture as the main clients, making Asia the most important market for the Russian arms –around 70% of Russia's arms exports have been flowing into this region in the 2000s–. While the Middle East and North Africa (MENA) market follows Asia, Moscow faces a more intense competition there, especially due to the heavy involvement of American and European defense industries⁸⁵. Notably, the Russian leadership sees its defense industry as a source of the nation's most advanced technologies and knowledge, and as an efficient lever in military security and international relations⁸⁶.

At this point, it is critical to understand Moscow's role as a defense partner. This would be important given the fact that Ankara hints at further defense cooperation possibilities with the Russians. Thus, hereby this study examines two confirmed, future operators of the S-400 system, namely New Delhi and India, to make some comparative analyses for the Turkish case.

India, which made more than 10% of the global arms imports between 2000 and 2016, accounts for 30% of Russia's defense exports. Without a doubt, Moscow enjoys the lion's share in New Delhi's defense modernization as it supplied 72% of the Indian arms imports in the given period⁸⁷. These imports include

85 Richard Connolly and Cecilie Sendstad, Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, March 2017, p.2..

86 The European Parliament – Directorate-General for External Policies / Policy Department, Russia's National Security Strategy and Military Doctrine and Their Implications for the EU, 2017, p.8.

87 Ibid. pp. 12–13.

high-end systems such as the T-90 main battle tanks, S-400 air and missile defense systems, R-73 air-to-air missiles, and Project 11356 Admiral Grigorovich-class frigates⁸⁸. Furthermore, Russian-Indian defense partnership incorporates lucrative opportunities for New Delhi such as production licenses and joint ventures⁸⁹. These joint ventures, along with technology and know-how transfers, reflects Moscow's policy for protecting its strong position in the Indian defense market⁹⁰. Furthermore, such flexibility in the defense exports portfolio draws attention as an encouraging factor for potential markets, possibly including Turkey.

When it comes to the Chinese, who enjoy a more advanced and larger defense-industrial base than India, it is seen that military-technical cooperation between Beijing and Moscow is centered on more complex and even unique characteristics. First, shifts in Russia's perceptions about the end-use of military equipment and technology by the People's Liberation Army (the PLA) remain major determinants in military-technical cooperation. Russian arms sales to China peaked in the early to mid-2000s, since the PLA was an ideal client of –some of which outdated– weapons systems, while Beijing was interested in licensing older military technology. In fact, it is reported that since the end of the Cold War, around 80% of China's arms imports have come from Russia, while more than 25% of all Russian defense exports have been shipped to China. This gigantic arms trade volume is estimated some \$ 26 billion between 1992 and 2006⁹¹. The Chinese defense planners' underlying reasons for such a policy was the PLA arsenal's compatibility with Soviet-era systems, as well as China's dependence on arms imports⁹². Yet, later in the due course, Moscow's drawbacks, which

stemmed from Beijing's reverse-engineering of advanced Russian weapon systems, triggered a downtrend in the defense ties. In this respect, by the early 2010s, Beijing accounted for only 10% of Russian arms exports while it was 60% back in 2005⁹³. Nevertheless, as a result of the sanctions imposed by the US and the EU following the annexation of Crimea in 2014, as well as the economic problems due to the decline in oil and gas prices, Russia eased its reservations about transferring high-end systems to China (such as the S-400) in recent years. Some experts indicate that especially the PLA Navy and the PLA Air Force benefited from the extensive defense relations with Russia⁹⁴.

As noted earlier, regarding the arms transfers to China, the primary drawback voiced by the Russian strategic community is China's advancing military modernization⁹⁵. Clearly, Moscow's policy circles, at least some of them, might have concerns about the possibility that Beijing could opt for using its military capabilities against Russia one day⁹⁶. Notably, some experts even assess that one of the underlying reason behind the Kremlin's hold onto its robust non-strategic nuclear weapons remains the intention to compensate for the PLA's conventional, and especially numerical, superiorities over the Armed Forces of the Russian Federation⁹⁷.

All in all, how to interpret the aspirations for deepening military business with Moscow? To start with, there are a few almost unique advantage of doing de-

88 Ibid. p.13.

89 Ibid.

90 Ibid.

91 Ethan Meick. China – Russia Military-to-Military Relations: Moving Toward a Higher Level of Cooperation, US – China Economic and Security Review Commission – Staff Research Report, 2017, pp.12-13.

92 Ibid.

93 Richard Connolly and Cecilie Sendstad, Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, March 2017, p.15.

94 Ethan Meick. China – Russia Military-to-Military Relations: Moving Toward a Higher Level of Cooperation, US – China Economic and Security Review Commission – Staff Research Report, 2017, pp.12-13.

95 Ibid.

96 Richard Connolly and Cecilie Sendstad, Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia, Chatham House, March 2017, p.14.

97 Simon, Saradzhyan. Russia's Non-Strategic Nuclear Weapons in Their Current Configuration and Posture: A Strategic Asset or Liability?, Harvard Kennedy School – Belfer Center, 2010, pp.13-14.

fense procurement business with the Russians. Firstly, Russia is more willing sell technologically high-end systems and platforms (i.e. Su-35 fighters, S-400 air and missile defense systems, and Iskander tactical ballistic missiles) more easily than most of the Western nations⁹⁸. Furthermore, they offer very capable weapons at very competitive prices and with little restrictions. Besides, contrary to the 1990s, Russian defense industry is now paying more attention to after-sales services of repair, overhaul, and maintenance⁹⁹.

Furthermore, especially developing nations benefit from recent changes in Moscow's arms transfers policy. To compete with the West, Russia now offers more lucrative payment and financing options to its prospective clients. These flexibilities include offsets, debt-swapping, counter-trade, and in very important cases, even licensed production agreements¹⁰⁰. Besides, the Russian defense industry offer a broad array of options to its clients ranging from basic arms to high-end systems. Nevertheless, missile and aircraft segments are taking the lead in Moscow's defense businesses, along with some naval platforms¹⁰¹.

Since Russia is more flexible in selling advanced weapon systems and offering lucrative payment plans, Ankara could indeed expect certain advantages that many Western countries cannot match. More importantly, although Turkey is not able to offer a massive arms import portfolio to Moscow like India or China does, still, selling strategic weapon systems to a geopolitically key NATO nation would matter to Russian foreign and security policy, especially after the annexation of Crimea. Besides, at a time when the Turkish leadership and public opinion are frustrated with

98 Richard Connolly and Cecilie Sendstad, *Russia's Role as an Arms Exporter: The Strategic and Economic Importance of Arms Exports for Russia*, Chatham House, March 2017, p.9.

99 Richard, A. Bitnizger. *Russian Arms Transfers and Asian Military Modernisation*, RSIS, December 2015.

100 Catherine A. Theohary. *Conventional Arms Transfers to Developing Nations 2008 - 2015*, Congressional Research Service, 2016, p.8.

101 Ibid.

leading NATO allies due to their support to the YPG in Syria, coupled with recent political tensions between some European capitals and Ankara, the Kremlin is probably pursuing a significant opportunity to ignite more disagreements between Turkey and its traditional Western allies through the S-400 deal. Thus, it won't be surprising if Moscow were to offer some really attractive terms of co-production and financing.

Nevertheless, both Turkey and Russia may have revisited some drawbacks about the air and missile defense deal. On Moscow's end, arming Ankara with high-end arms might bring about the 'Chinese case' in a smaller scale. Clearly, the Su-24 incident in 2015 showed how fragile Turkish - Russian relations are. Thus, giving a boost to Turkey's strategic defensive capabilities - in case the S-400 export version is not significantly downgraded- and the Turkish defense industry's know-how might be questioned among Russian strategists. After all, there are many issues that Turkey and Russia remain at odds such as the Nagorno-Karabakh dispute or future of the Assad regime of Syria.

On Turkey's end, doing such a critical defense business with the Russian Federation might also bring about its disadvantages. Firstly, Russia is known with benefiting from importing nations' competitions and strategic parity calculations for promoting its own arms sales. The case of Azerbaijan and Armenia sets a good example in this regard. While Moscow sells advanced SS-26 Iskander missiles to Yerevan, which is a true game-changer¹⁰², it also markets the S-300 variants and TOS-1A thermobaric multiple-launch rocket systems to Baku¹⁰³. Thus, although there is a good possibility that Ankara could indeed operate the S-400 system in the 2020s, most probably, Russia will have transferred other advanced weaponry to Iran,

102 Eduard Abrahamyan. "Armenia's New Ballistic Missile will Shake Up the Neighborhood, The National Interest, October 2016, <http://nationalinterest.org/feature/armenias-new-ballistic-missiles-will-shake-the-neighborhood-18026?page=2>, Accessed on: July 28, 2017.

103 Reuters, <http://www.reuters.com/article/us-russia-azerbaijan-arms-idUSBRE95H0KM20130618>, Accessed on: July 28, 2017.

the Assad regime, and even to Greece. Especially the latter case remains a low-to-medium possibility / very high impact scenario since it would mean the Kremlin sustaining an arms race within NATO. Athens has very close and strategic ties with Moscow. Especially, the economic crisis and public reactions against the troika-backed austerity measures augmented the Greek – Russian partnership. Athens is working with Russia

for the maintenance and modernization of the S-300 systems¹⁰⁴. In fact, in the course of the S-400 negotiations, some Turkish experts criticized NATO for showing double-standards to Athens' S-300 inventory and Ankara's possible Russian arms procurements¹⁰⁵.

Armenian SS-26 Iskander Tactical Ballistic Missile



Azerbaijan's S-300 PMU-2 Air and Missile Defense System

¹⁰⁴ Henry Stanek. "Is Russia's Alliance with Greece a Threat to NATO?", The National Interest, July 17, 2016, <http://nationalinterest.org/feature/russias-alliance-greece-threat-nato-16998>, Accessed on: July 28, 2017.

¹⁰⁵ Mustafa Kibaroglu. "Double Standards mar NATO's S-400 Stance", Anadolu Agency, <http://aa.com.tr/en/analysis-news/double-standards-mar-natos-s-400s-stance/870791>, Accessed on: July 29, 2017.

This report argues that although the rhetoric of ‘Greece, despite being a NATO member, operates Russian air and missile defense system’ has become a popular argument among Turkish strategic community, in fact, having Russia as strategic arms supplier to both Turkey and Greece would mark a dangerous escalation pattern. In such case, there is no good reason to rule out the emergence of a new ‘Azerbaijan – Armenia arms race pattern’ within NATO.

CONCLUSION AND POLICY RECOMMENDATIONS

- It seems that Ankara’s ideal way-forward in defensive strategic systems modernization is to run a dual-track model in which short-term air-defense requirements are to be met by the Russian SAMs, and long-term BMD perspective will be pursued through a NATO-friendly co-production solution. In theory, this perspective seems effective. However, navigating through political obstacles may not be easy at a time of political strains between Ankara and the West.
- Of particular importance is the strategic communications aspect of this path. Namely, Turkish authorities need to explain more clearly to its partners in the Alliance but also to the wider strategic community the rationale behind this decision. This is a complicated endeavor at a time when the quality and effectiveness of Turkey’s communications in the West has been hampered by other political difficulties. But it is still an obligation at the least to prevent the contagion in the political realm of this important decision to buy these critical systems from Russia.
- Ballistic missile technology and design trends are improving rapidly. This already offense-dominant threat landscape necessitates a well networked, integrated, and layered architecture. This is why NATO capabilities are important to Turkey, especially in countering longer range missiles and possible WMD delivering warheads. Turkey’s Western allies’ reluctance in technology transfer and co-production flexibilities have hindered the relationship. Moscow would surely seek to capitalize on every opportunity to deepen the mistrust between Turkey and its NATO Allies.
- From a military-technical standpoint, Turkey’s future strategic defensive weapons posture should address a wide-array of threats ranging from longer range interception of WMD-delivering ballistic missiles and separable warheads to effective C-RAM (counter – rocket, artillery, and mortar) capabilities in hybrid warfare situations. In this regard, the Israeli model is centered on the Arrow line with exo-atmospheric interception capability, the David’s Sling at short-to-medium altitudes, and the Iron Dome as the principle C-RAM asset. Such a broad layering offers a good case study to analyze. In this respect, a good way-forward could be layering future Aster-line capabilities with the indigenous Hisar line, while focusing on the C-RAM link to complement the network.
- This study does not fully rule out Turkey’s prospective defense cooperation with the Russian Federation. In fact, there are many advanced tactical systems that can make a real difference. For example, BMPT-72 ‘Terminator-2’ armored fighting vehicle (tank support vehicle in Russian designation) could boost the Turkish Army’s armor survivability in hybrid warfare situations and urban environments. This very need was seen during Operation Euphrates Shield. In the air defense segment, low-to-medium range Pantsir family of SAM systems, especially modified variants mounted on tracked chassis, would be a very good organic air defense component for Turkey’s principal maneuver units. However, the S-400 is a strategic weapon system by design and functions. Both in theory and practice, impacts of strategic arms procurements go well beyond defense planning issues, and produce geopolitical results. Therefore, even if Ankara takes solely military parameters into consideration for defense planning, the S-400 deal would inevitably resonate politically in Moscow and in NATO capitals.



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Turkey's S-400 Dilemma

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