

SECURITY ISSUES IN EURASIA

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ASIA-PACIFIC THEATER IN FOCUS: COMPARISON OF WEAPONS SYSTEMS OF NEAR- PEER COMPETITORS, CURRENT ISSUES

Abstract

Comparison of military capabilities and weapons systems that can be brought to bear in case of regional crisis by near-peer competitors in Asian-Pacific, namely the USA, China, and Russia, is increasingly taking a prominent place in contemplations of academic community. Add to this equation the capabilities of such “middle-weight” military powers as the both Koreas, Japan, and other countries of the South China Sea (SCS), and we have an increasingly contested and congested region, where the balance of forces is positively worth studying. To begin with, regardless of numerous incentives for cooperation, first of all for the sake of trade relations, the United States and China are also indirectly facing off on a number of issues in Western Pacific, including on Pyongyang’s behavior and China’s assertiveness in SCS, to name but a few. Following a fairly tough response of the United States to North Korea, the problem of balance of forces in Asian-Pacific strategic realm, in fact, is becoming more vital. After the American new administration came to power, there was a certain tension in the relations with China as it was. One should take into account that it has been already several years there exist problems in relations between China and Japan as well in respect of laying claims to certain disputed islands. Rumors are flying that China is actively creating artificial islands which can become military strongholds far from its shores at approximately operational depth. Philippines and Vietnam are seriously concerned in that regard. This tension is already manifested in concrete actions and statements.

Keywords: *USA, China, China’s People-Liberation Army (PLA), UAV, fighter, missile, navy, air supremacy.*

Introduction

In October 2018, in the South China Sea, the Chinese torpedo boat forced American USS Decatur (DDG-73) torpedo boat to leave the area,

nearly bringing real collision risks. At the end of the same month, American former general Ben Hodges announced that clash between US and China is not far from reality and that could not wait a long time.¹

In this respect, it will be very interesting to study the balance of forces in the Asian-Pacific region, especially within the analysis of American military doctrine and Chinese specific military actions to counter it. It is common knowledge that today some political circles and professional staffs in the United States are really concerned about the actions of China and Russia and their capabilities that can significantly limit the US access to key regions of Eurasia.² At present, China and Russia have great potential to influence American traditional Land Forces, Air Forces, Navy and even the command and control networks and orbital groupings.³

These two countries are perceived in the US as potential adversaries trying in every way to reach the level of the American military and developing powerful technologies. Russia as well as China, in particular, is developing powerful satellite systems, various long-range missiles, fighter jets, UAVs etc. New Electronic Warfare (EW) systems are being developed to suppress or weaken the command and communication systems of the US and its allies.⁴ China's People-Liberation Army (PLA) also has the capability to destroy satellites, disrupt extraterrestrial intelligence, wreck command and control networks, etc.⁵ Some experts believe the US Armed Forces cannot be sure to provide reliable and secure communication and signals during the conflict on the theater of military operations, i.e. on operational and strategic level. On theater level, the US Armed Forces are already considered vulnerable.⁶ Many of them claim that China has created an arsenal of means within the A2/AD (anti-access and area denial) strategy, which is capable to cause the U.S. armed forces irreversible

¹ "Amerikanskiy general predskazal voynu SshA s Kitayem cherez 15 let," (in Russian), ["An American General forecasted war between US and China in 15 years"], *Russia Today*, October 25, 2018, <https://russian.rt.com/inotv/2018-1025/Business-Insider-amerikanskij-general-predskazal> (accessed November 7, 2018).

² David Ochmanek, "The Role of Maritime and Air Power in DoD's Third Offset Strategy," *RAND Corporation* (Santa Monica, December 2014), https://www.rand.org/content/dam/rand/pubs/testimonies/CT400/CT420/RAND_CT420.pdf (accessed November 7, 2018).

³ David Shlapak, "Question of Balance: The Shifting Cross-Strait Balance and Implications for the U.S.," *RAND Corporation* March 2010, https://www.rand.org/content/dam/rand/pubs/testimonies/2010/RAND_CT343.pdf (accessed November 7, 2018); Evan B. Montgomery, "Contested Primacy in the Western Pacific: China's Rise and the Future of U.S. Power Projection," *International Security*, Vol. 38, no. 4, (2014): 115–149.

⁴ Randy J. Forbes, "Caucus Brief: Chinese Military Capable of Jamming U.S. Communications System," *The Congressional China Caucus*, September 20, 2013, <http://forbes.house.gov/news/documentsingle.aspx?DocumentID=350448> (accessed November 7, 2018).

⁵ Wendell Minnick, "China Developing Capability to Kill Satellites, Experts Say," *Defense News*, August 4, 2014.

⁶ Robert Martinage, "Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability," *Center for Strategic and Budgetary Assessments (CSBA)*, Washington, DC, October 27, 2014, 23, <http://csbaonline.org/uploads/documents/Offset-Strategy-Web.pdf> (accessed November 7, 2018).

damage that will induce additional huge losses for recovery or turn out to be impossible to heal altogether.

The vulnerability of the land bases is considered to be the most salient as they are few and identified and can be exposed to attacks not only by traditional offensive armaments but also by terrorist and other capabilities. Especially problematic might be strikes launched by the Chinese Army to target the US military installations located in South Korea, Japan, the Philippines and other parts of the region. Some experts assert that these attacks are extremely dangerous also for the Carrier Strike Groups (CSG) when the CSGs strikes may not be as effective, as long as only the 2nd artillery corps of the Chinese Army has formed seven brigades of short-range ballistic missiles, three medium-range ballistic missile brigades and three brigades of ground-based cruise missiles.⁷ Based on various estimates, the number of Chinese short-range missiles for close range operations runs up to 1000 and “CJ-10/20” “H-6K” bombers armed with cruise missiles can reach as far as even American bases “Apra Harbor” and “Andersen”.⁸ PLA is currently developing ballistic missiles with the range of 3000-5000 km “beyond the second chain of islands” (Japan, Guam and the Mariana Islands, right up to Indonesia) bringing its capabilities closer to high-precision strikes.⁹ In 2013 according to “The US-China Economic and Security Review”, PLA in multifaceted way is rapidly developing its striking capabilities directed to American installations, Navy and Air Force bases located in the Pacific, including in Guam.¹⁰

The US potential adversaries’ reconnaissance and strike networking systems include torpedoes, air, sea, and ground-based anti-ship cruise missiles, as well as ballistic anti-ship missiles in relation to China and Iran. Chinese “DF-21D” ballistic missiles (aircraft carrier “killer”) have more than 1500 km range, which allows them to attack large warships, including aircraft carriers in the Western Pacific.¹¹ As stated by a num-

⁷ Ron Christman, “China’s Second Artillery Force” in *China’s Near Seas Combat Capabilities*, Eds. Peter Dutton, Andrew Erickson and Ryan Martinson, *China Maritime Studies*, no. 11, (Newport: Naval War College Press, February 2014) 31–34.

⁸ Toshi Yoshikihara, “Chinese Missile Strategy and the U.S. Naval Presence in Japan: The Operational View from Beijing,” *Naval War College Review*, Vol 63, no. 3, (2010), <https://www.usnwc.edu/getattachment/69198ee2-edc2-4b82-8f85-568f80466483/Chinese-Missile-Strategy-and-the-U-S--Naval-Presen> (accessed November 5 2018).

⁹ Andrew Erickson, “Beijing’s Aerospace Revolution” in *Chinese Aerospace Power*, Eds. Andrew Erickson and Lyle Goldstein, (Annapolis: Naval Institute Press, 2011), 7.

¹⁰ U.S.-China Economic and Security Review Commission, 2013 Report to Congress, Washington, DC: GPO, November 20, 2013, 233, http://www.uscc.gov/Annual_Reports/2013-annual-report-congress (accessed November 5, 2018).

¹¹ Office of the Secretary of Defense, Annual Report to Congress, “*Military and Security Developments Involving the People’s Republic of China 2013*,” 5–6, http://archive.defense.gov/pubs/2013_china_report_final.pdf (accessed November 7, 2018); Ronald O’Rourke, “China Naval Modernization: Implications for U.S. Navy Capabilities,” Congressional Research Service (CRS) Report for Congress, Washington, DC: CRS, August 2018, 5–6, <https://www.fas.org/sgp/crs/row/RL33153.pdf> (accessed November 5, 2018).

ber of experts, the range of Chinese anti-ship ballistic missiles had to be increased up to 3000km by 2015.¹² In 2018 China demonstrated its anti-ship new missile models (Operative-tactical ballistic missiles “CM-401” and “WS-600L”, ultrasonic, universal missile “HD-1” etc).

Iran also is working to create similar missiles called “Khalij Fars” which is the modification of “Fateh-110” missile with the estimated range of 300km and has mounted infrared/optical head for automatic aiming in the final part of the trajectory.¹³ Russian missiles long before were able to hit targets up to 1000 km, while the new-cruise missiles have twice as higher technical data, which were shown during the Syrian war either. According to some experts on PLA, China strives to increase the range of its conventional assets all the way to 8000km by 2020.¹⁴

Having in mind that China is creating artificial islands in the South China Sea, in unsafe areas for Vietnam and the Philippines, as well as has claims on Senkaku islands; experts have concluded that China can use these islands as large springboards for air forces, Navy and other services of Armed Forces. The situation became especially strained by the fact that according to some information, the Chinese “YJ-26” – was able to detect the American fifth-generation “F-22” fighters.¹⁵ In this regard, some of the American theorists also have other concerns. They believe within the areas close to the theater of military operations (500-1000 miles), the most part of the aircraft of the US Air Forces have limited combat capabilities due to lack of airfields. A solution to this problem could be the use of aerial refueling planes, but they are of the opinion that this approach is also susceptible to failure. American ground-based fighters’ combat range reaches up to 300-600 miles, depending on the type of the aircraft, weapons and flight characteristics. From 2019 onwards short-range fighters and long-range bombers ratio will make ten to one (10:1), and the medium altitude long-endurance and long-range UAVs (e.g. MQ-9 Reaper), approximately three to one. In 2019 American Air Forces will be equipped with 971 fighters and 96 heavy bombers.¹⁶

¹² Amy Chang and John Dotson, “*Indigenous Weapons Development in China’s Military Modernization*,” Staff Research Report, Washington, DC: U.S.-China Economic and Security Review Commission, April 5, 2012, 23.

¹³ Jeremy Binnie, “Iran Rolls Out Ballistic Missiles,” *Jane’s 360 Defence*, March 6, 2014, <https://www.janes.com/article/35187/iran-rolls-out-ballistic-missiles> (accessed November 2, 2018).

¹⁴ Mark Stokes, “China’s Evolving Conventional Strategic Strike Capability: The anti-ship ballistic missile challenge to U.S. maritime operations in the Western Pacific and beyond,” Project 2049 Institute (Arlington, September 14, 2009), 2, http://project2049.net/documents/chinese_anti_ship_ballistic_missile_asbm.pdf (accessed May 10, 2018).

¹⁵ “Kitayskiy radar YJ-26 sposoben obnarujit F-22,” (in Russian), [Chinese YJ-26 radar can detect F-22], *Voenni paritet*, [Military parity], November 17, 2014, http://www.militaryparitet.com/tp/data/ic_ttp/7072/ (accessed November 5, 2018).

¹⁶ U.S. Department of Defense, *Annual Aviation Inventory and Funding Plan: Fiscal Years (FY) 2014–2043*, Washington, DC: DoD, May 2013, <http://breakingdefense.com/wp-content/uploads/sites/3/2013/06/DoD-Aircraft-Report-to-Congress-.pdf> (accessed November 7, 2018).

China's new capabilities result in most serious consequences for the US Air Forces as some Chinese fighters' operational range without refueling is 950-1400 km, which, as suggested by a number of experts, makes US tanker planes and fighters vulnerable. According to many experts, the main threat to US Air Forces and airborne weapons (AW), is a land- and sea-based unified Air Defense (AD) system. Integration of AD system becomes more prevailing and reliable. Prevalence of a modern unified Air defense system makes traditional American Air Force design problematic, since the vast majority of aircraft have little flying range and are not stealthy. The number of aircraft with low visibility (B-2, F-22 and RQ-170 Sentinel) comprises less than 10% of the US Air Forces inventory.¹⁷

Air Supremacy issues

Combat and logistic support of high tempo air operations is also problematic.¹⁸ Detection of surface ships in the seas and oceans, their tracking and attacking requires not only a wide network of radars but also a creation of command, control and communication (C3) system that collects, processes, unifies and distributes the data to strike systems by expediency. Thus, it is not about ordinary reconnaissance-strike systems but networks, the emergence of which in China and Russia, in particular, has been a serious challenge for the United States throughout the past two decades. They were displayed during the Syrian war. For example, according to some estimates, China's reconnaissance-strike network now has the capability to detect and guide American surface warships not only in the South China Sea but also in the western part of the Pacific Ocean. According to naval expert Norman Friedman: "Probably by around the year of 2030 we will have to admit that it might be possible to detect, identify and guide them a few hundred or a few thousand miles away from the shore, given appropriate efforts are exerted to resolve this problem."¹⁹

In the western sector of the Pacific Ocean and the South China Sea, the launching distance of missiles without entering the engagement zone of the air defence system can exceed 1,500 miles. This, as considered by some experts is 500 miles in excess of the range of Tomahawk missiles' strikes on ground targets and almost three times exceeds "F / A-18E / F Super Hornet" multipurpose fighter's operational radius without refuel-

¹⁷ Carlo Kopp, "Evolving Technological Strategy in Advanced Air Defense Systems," *Joint Forces Quarterly*, Issue 57, (2010): 93.

¹⁸ Martinage, "Toward a New Offset Strategy," 26-27.

¹⁹ Norman Friedman, "The U.S. Navy of 2030," *Defense Media Network*, June 21 2012, <https://www.defensemedianetwork.com/stories/the-u-s-navy-of-2030/> (accessed November 5, 2018).

ing. In subsequent campaigns, when China's reconnaissance-strike network gets completely expanded and assigned to operational readiness, US destroyers and cruisers armed with cruise missiles might get under attack during combat application of their main weapons. Similarly, if Carrier Strike Groups (CSG) have to maintain distance in order to avoid anti-ship ballistic missile attacks, the use of carrier aviation with combat payload, for both execution of combat mission and return to the estimated area will require several circles for air refueling.²⁰

Some experts say the situation is not good in the space domain as well. Russia and China are developing capabilities for creating attack laser systems in order to carry out direct attacks (hit-to-kill), creating satellite interceptor aircraft, to accurately arrest anti-satellite systems, direct-ascent anti-satellite (ASAT) intercepts and co-orbital attacks.²¹ The former director of National Intelligence J. Clapper noted: "Chinese and Russian servicemen realize the unique information benefits provided by space systems and therefore they develop capabilities to deny use of space to the US".²²

There are certainly even worse assumptions in relation to the use of ground forces, which is quite natural. Thus, the increasing vulnerability of military bases located in the immediate vicinity of the theater, capabilities to hit large surface ships and CSGs with ballistic and long-range cruise missiles, without entering air defense zone, development of joint air defense system, as well as the potential loss or weakening of space-based key capabilities can qualitatively change the capacity of American potential. Such actions can be enhanced by other threats, such as aggressive electronic cyber-attacks on centralized command and control nodes, communication networks, U.S. intelligence computer systems.

Different View

Certainly, it is hard to ignore all these concerns, as China and Russia today evidently and intensively are developing their offensive and defensive potential, creating weapons and new tools of warfare; and it is obvious by doing this they are rapidly reducing their backwardness from

²⁰ Martinage, "Toward a New Offset Strategy," 28.

²¹ Andrea Shalal-Esa, "China's Space Activities Raising U.S. Satellite Concerns," *Reuters*, January 14, 2013, <https://www.reuters.com/article/us-china-usa-satellites/chinas-space-activities-raising-u-s-satellite-security-concerns-idUSBRE90D08620130114> (accessed November 4, 2018); Brian Weeden, "China's BX-1 Microsatellite: A Litmus Test for Space Weaponization," *The Space Review*, October 20, 2008, <http://www.thespacereview.com/article/1235/1> (accessed November 4, 2018).

²² James Clapper, Worldwide Threat Assessment of the U.S. Intelligence Community, *Director of National Intelligence, Statement for the Senate Select Committee on Intelligence*, January 29, 2014, 7, https://www.dni.gov/files/documents/Intelligence%20Reports/2014%20WTA%20%20SFR_SSCI_29_Jan.pdf (accessed November 2, 2018).

American Armed Forces that used to exist after the Cold War. On the other hand, the American military culture has a quite flexible tradition to rapidly assess their potential opponents' capabilities, sometimes even overestimate them, to use them for developing their own projects thus contributing to the Armed Forces improvement. And here it is worth analyzing everything in terms of use of concrete available forces. It is clear that this hypothetical collision will be close to China's coast involving also allies from both sides. And surely the main forces at play would be Navy and Air Force; involvement of other services of Armed forces can be limited, otherwise it might turn into a world war with the use of nuclear weapons, which is unlikely.

The US Air Forces currently have about 600 two-engined fighters of the fourth and fifth generation "F-15" and "F-22". Of course, not all of them are combat-effective at a time, the major part might be decommissioned by 2025, but the bulk of them will still have combat efficiency and after the specified time they will be replaced with more powerful aircraft. Within a short period of time they can be deployed to the Pacific zone. The radius of their flight without extra tanks makes more than 600 miles. They can cover ranges of up to 800 miles with about 4-5 tons of payload and if fitted with additional fuel tanks. This figure of aircraft should be added by 200 similar fighters just to count for Japan's and South Korea's involvement, not to mention Australia. If we add aircraft from Australian bases, the number will increase, amounting to approximately 900 platforms. Here we don't count American heavy bombers, as well as 500 similar to "F-18E / F" Navy fighters, about 200-300 of which can be concentrated in this region.

China, purely in quantitative terms can contrast with about 400 two-engined fighters. Only the ratio of these makes 2-2.5 / 1. But that is not the point. Yes, Chinese fighters have the same flight range, as some American experts note. They are mostly Russian "SU-27" family's old and new fighter aircraft or their Chinese modification "J-11". Although having the same flight range as American fighters they, still yield the top place to American platforms by some capabilities. First, these aircraft cannot carry as much payload; they can take on board amount of armament equal to American fighters only in "air-to-air" mode, but as a multipurpose aircraft they lag behind on their armament. They have poor aiming equipment and limited range in air fights, relating to both radars and missiles. In Chinese Air Force particularly weak are refueling and airborne control systems, without which it is impossible to carry out a modern air battle. Chinese fighters cannot carry operational range "air-to-surface" missiles, such as the "AGM-158 JASSM", "AGM-154A JSOW"

and “AGM-84E SLAM”, which are launched from ordinary fighters firing two or more missiles. American fighter jets with similar missiles can have operational range of up to 1,000 miles. These missiles are launched without entering the Chinese ground air defense zone. Both sides do not count one-engined fighters that are quantitatively significant, but have problems in operational radius and armament carrying capabilities; however, in that regard “F-16” jet also significantly surpasses its Chinese competitors, while the new generation fighters ‘F-35’ are on the whole beyond comparison. This single-engined fighter can have a combat radius of 640-760 miles with combat payload.²³

American Army’s capabilities are as follows: it is planning within 30-50 days to be able to launch up to 1,000 cruise missiles daily.²⁴ The Air Force and Navy together already possess:

1. About 2000 “AGM-158 JASSM” multifunctional cruise missiles of various types,
2. About 20 000 “AGM-154A JSOW” multifunctional cruise missiles
3. About 1000 “AGM-84E SLAM” missiles.

The same program includes about 5,000 sea and air launching large cruise missiles (“BGM-109”, “AGM-86”) having a flight range of 500-2500 km. Now the Navy is already armed with 3000 long-range cruise missiles and by 2025 their number will be 6000.²⁵ According to other information, today the Navy has 4000 cruise missiles and in the future might have up to 7,000. These are mainly missiles launched from American submarines and here Chinese fleet, on the whole, is unable to compete with them. Some experts fear that the American fleet can be monitored and subjected to attacks. Of course, similar possibilities cannot be excluded but still there are some buts here. Firstly, it is possible to detect surface ships but the world’s most powerful underwater fleet (combined number of which is about 50 and they carry over 1,000 long range cruise missiles) cannot be so easily detected. Even after having been detected it is not so easy to hit a big aircraft carrier as:

- This class of warships is armed with the world’s most reliable and powerful anti-missile system “Aegis”
- The American fleet is equipped with still the most powerful detection systems: even in case of mutual pressure on each other, that

²³ Gary North, “F-35: The future is now,” *Lockhed Martin Corporation*, April 2016, <http://www.fisher.org.il/2016/Adir%20Powepoint/GaryNorth.pdf#page=7> (accessed November 7, 2018).

²⁴ S. Lavrenov, “Voyna XXI veka. Strategiya i vooryzhenie SShA,” (in Russian), [S. Lavrenov, XXI Century War.US strategy and armament.] M. AST. Astrel, 2005, 80.

²⁵ A.V. Aleshin, A.N. Popov, V.V. Puchnin, “Voenno-morskaya mosh Rossii v sovremennix geopoliticheskix usloviyax,” (in Russian), [“Russian naval power in modern geopolitical circumstances”], *Voennaya Misl*, [Military thought], (2016): 12-14.

might cause disruption of some systems of both sides, American warships will have advantage because they are greater in numbers and have more accomplished and advanced network.

- In practice, an aircraft carrier has never been hit by a ballistic missile so far. Above mentioned Chinese missile still have to demonstrate their reliability.
- Such ships, as proven in practice, are not immediately hit and sunk even with one ton of combat payload, and aircraft on deck can take off and complete their mission.
- The American main surface ships can launch their missiles from about 1000-1500km off the coast: “BGM-109, Tomahawk Block IV” has 900-1000ml. or 1600km launching range.²⁶
- Submarines can do it from a closer distance as they can be detected with more difficulty.

Here we should also note that Chinese side has problems also in matters of fleets; so in number and total tonnage of ships they are inferior to US Pacific fleet and if we take into account allies’ fleets then the difference multiplies not in favor of China.

The Chinese fleet has an aircraft carrier CV-16 *Liáoníng Jiàn*, designed with the basis on the 1143.6 Soviet project. China is building a similar carrier by their own design – Type 001A or CV-17 – that is to be tested soon.²⁷ Both ships are listed in the same series as the Russian “Admiral Flota Sovetskogo Soyuza Kuznetsov” carrier. Some experts claim that China is making big steps already and can push the U.S. out of the first island chain (Japan, Korea, the Philippines) even with two or three of these carriers. We consider that claim to be too optimistic, as even in case of mass production, the Chinese aircraft carriers will still have a number of issues. Firstly, the lack of catapults means that the fighters take off with half of fuel and weapons. For the same reason, the ships cannot carry large airplanes with airborne command posts and aerial refueling capacities. This shortcoming further undermines the abilities of Chinese carriers, which take on board and operate half the amount of planes their American counterparts do as it is. Another issue is the fighting efficiency of the aircraft, although it is not the whole story. Accompanying combat and logistics ships (bunkers, supply ships, etc.) play a big role in the operation of aircraft carriers. Combat ships in a squadron must be able to protect aircraft carriers with their major weapons and support the carriers

²⁶ “Tomahawk Cruise Missile,” US Navy fact file, http://www.navy.mil/navydata/fact_display.asp?cid=2200&tid=1300&ct=2 (accessed November 5, 2018).

²⁷ Gabriel Dominguez, “Future Chinese carriers to deploy J-20, J-31 stealth fighters, says report,” *Jane’s Defence Weekly*, December 7, 2017, <http://www.janes.com/article/76242/future-chinese-carriers-to-deploy-j-20-j-31-stealth-fighters-says-report> (accessed November 5, 2018).

in combat, particularly with cruise missiles. The Chinese fleet has neither these ships nor, which is more important, the experience in their coordinated operation. Contrary to that, the US Navy in this region can concentrate up to 8 aircraft carriers, apart from amphibious ships.

Chinese Navy doesn't have cruisers and in quantity and quality of destroyers they are inferior even to the Japanese Navy. Chinese "Type 052D" destroyer warships, total number of which doesn't reach 20, by almost all its fighting qualities are inferior to Japanese "Atago class" and partly "Akizuki-class destroyer", number of which exceeds 30. Moreover, pointless is even to compare it with American "Arleigh Burke" class warship, as they are almost unanimously accepted by all experts to be the best of their type in the world. Chinese submarines also can have trouble even with Japanese fleet only, not including South Korean one.

Chinese surface fleet has 1400-1500 anti-ship and anti-air missiles in total, 10 percent of which are able to hit only coastal targets or surface ships that are in the distance of 250km and more. In the meantime, Japanese warships have missiles of the similar amount and almost of the same type, not including South Korean warships. It is true, general launching range of Japanese anti-ship missiles is partly inferior to the armament of recent Chinese destroyers, but compared with other warships it even surpasses them. American Pacific fleet for short-term duration can concentrate from 40 to 45 out of its 60 destroyers, thus providing more than 4,000 anti-ship, SAM and other missiles that are able to deliver strikes to coastal areas, and surpassing Chinese fleet missiles by all their technical characteristics. This number does not include about 1400-1500 similar missiles, that can be launched from American cruisers and about 1,000 long-range cruise missiles launched from submarines.

Thus China in response to its 1400-1500 sea-based and about the same number of ground-based missiles can expect to get about 6,000 American only marine platform-based missiles, from which cruise and long-range surface-to-air missiles have an absolute advantage in all types of technical performance. To this, you need to add about 2000-3000 "AGM-86", "AGM-158 JASSM" and "AGM-84E SLAM" cruise missiles that can be launched from American bombers and some fighters. Thus the ratio actually becomes three to four. The US air force and navy can counter 400 Chinese fighters which will operate without aerial refuelers and airborne control systems with 900 fighters and about 40 airborne control systems and aerial refuelers. Chinese airborne control systems are very few and air refuelers are old, with short-range flight capability as well as no experience in this kind of operations.

Now one should try to simulate what could happen in a limited regional conflict. Let us conditionally recognize that for some reason the situation is tense and the conflicting sides are concentrating forces. Japanese, two Korean states' forces are brought into combat readiness, Taiwan and China are making combat preparations and meanwhile, the US aircraft carrier groupings are arriving in the region. One of the sides in accordance with the degree of readiness will attempt to use force, trying to rapidly administer a surprise strike. Having regard to American experience and quality of its forces, probably the US Navy joint formation will be one to carry out attack first; but conceiving of China as being able to administer the first strike. At its first strikes China can launch at most 2000 anti-ship and anti-ground ballistic and cruise missiles. This is the maximum that Chinese Armed Forces are able to do today. Having regard to US electronic-warfare capabilities, as well as regional ballistic-missile defense and naval AMD (Anti-Missile Defense) systems capacities, Chinese missiles may not have so high efficiency. Results at best might make 30-40%, which means loss of about a dozen ships, and around the same number of ground targets taken out of the battle space. Each target is hit by several missiles.

Naturally, the counter strike in the first phase can be delivered even minutes later, and about 4000 cruise missiles will be launched at a time from all types of platforms; and as the Chinese targets will mainly be of ground nature and most of them might give their positions away just after the first strikes, then American strikes will definitely produce greater effect. Certainly, Chinese EW and AMD systems will become operational either, suppression systems will also be brought to bear on satellites, but in this regard, American forces again have a higher level of performance, as well as valuable expertise. For comparison, the U.S. currently has more than 570 satellites in space, while the number of Chinese satellites does not reach 190.²⁸

To our estimates, Chinese Air Forces and Navy have about 150 anti-aircraft missile systems, which can be used as AMD systems.²⁹ These systems are able to hit six targets at a time. In ideal conditions all of them can hit up to 900 air targets at a time, but not cruise missiles; abilities to hit the latter get limited, not including the impact of EW. So, even the counter strike by the U.S. has greater chances to be more effective. American allies in the region have about 50 "Patriot" SAM systems; about 100 similar missiles American Forces can deploy to protect their land bases

²⁸ "How many satellites are orbiting the Earth in 2016?," *Pixalytics*, August 24, 2016, <http://www.pixalytics.com/sats-orbiting-earth-2016/> (accessed November 7, 2018).

²⁹ The International Institute For Strategic Studies, *The Military Balance 2017*, (London: Routledge, 2017), 250-258.

and to this amount they can add several “THAAD” missile defense systems. American Navy can increase this number by approximately 60 pieces of “Aegis” SAM defense system, while Japanese and South Korean Navies can add to that number about ten similar systems. “Patriot” and “THAAD” systems are able to hit 8, while “Aegis” systems can destroy 18 targets at a time. Moreover, the last two systems can even hit Chinese satellites in the orbit, while ordinary Chinese anti-missile systems do not have appropriate capabilities to do that. Hence all American SAM systems together can hit over 2000 various types of missiles. Anti-missile capabilities of these systems are significantly higher than Chinese systems of the same type. At the security forum held in China In 2016, the first deputy chief of the Russian General Staff, Lieutenant-General Victor Poznikhir in his report alerted about capabilities of these systems. As he noted, the modeling showed that particularly American naval missile defense systems and cruise missiles are posing a threat to Russian and Chinese ballistic missiles, as well as upsetting the balance of power in favor of the US.³⁰ According to him, these systems are able to hit Russian ballistic missiles even before they reach the highest altitude of their flight when the warheads are not detached yet.

Experience and Challenges

This simple calculation shows that even given EW impacts and other electronic jamming from both sides directed to each other, there will be less Chinese missiles to get to their targets than American ones, if nothing, launched in a greater amount. In this situation, when the sides exchange couple of strikes using long-range firing assets and make attempts to concurrently interdict each other and hit those missiles also in the air, then the Air Force will be the entity to first assume control over the situation. As we noted, American Air Force and Navy together have about 900 two-engined fighters apart from allies’ similar aircraft. Most of them will be used primarily to establish air superiority, by which, first of all, they will deprive Chinese fighters of performing any other tasks; then by providing up to 3000 sorties on a daily basis, they will gain air suprem-

³⁰ “Pervij zamnachalinka GOU Generalnogo Shtaba VS RF general-leytenant Viktor Poznixir vistupil na Syanshanskom forume po bezopasnosti,” Ministerstvo oboroni (in Russian), [“Lieutenant General Victor Poznikhir, First Deputy Head of Russian General Staff Main Operations Directorate, gave a speech at Xiangshan Security Forum”], *Defence Ministry*, October 10, 2016, http://function.mil.ru/news_page/world/more.htm?id=12099373%40egNews (accessed November 5, 2018); “Opasnost PRO SShA dlya yadernix potencialov RF i Kitaya okazalos nedooceneno,” (in Russian), [“The Threat of US Missile Defense for Russian and Chinese Nuclear Powers is Underestimated”], *Interfax*, October 11, 2016, <http://www.interfax.ru/world/531967> (accessed November 7, 2018).

acy by destroying Chinese fighters through their airborne control systems. Certainly, there will be losses, but they will be less. Owing to the airborne control systems, as well as more powerful radars of American two-engined fighters, C2 systems and long-range “air-to-air” class missiles, it is not difficult to guess the outcome of the air battles. Even suffering some losses, the US forces will still be definitely able to deprive the Chinese fighters of operational flights and some amount of American fighters will even take part in delivering strikes to Chinese fighters’ air-dromes, AD installations, and other targets. Certainly, all sides will suffer losses, but in all respects the side which is better prepared, experienced and has more resources will be able to achieve greater success. The number of first strikes by cruise missiles, UAVs, along with missile decoys can daily make up to 5000-6000, which in accordance with the appropriate EW can ensure a breakthrough of Chinese defense. One should be reminded that tactical fighters at this time can carry “air-to-air” missiles, four long-range cruise missiles, own EW assets and additional fuel tanks at a time while one-engine fighters that are not counted in this equation can ensure up to 1000ml flight radius with additional fuel tanks, minimal armament and missile decoys. But only with their flights and launching some “ADM-160 MALD” and “ADM-141 TALD” missile decoys from each fighter, American aircraft can reveal the Chinese AD system, force them open useless fire and then suppress them.

The fact is that over the past years the American military has completely mastered the strategy of breaking similar protections, while China has no experience or some specific assets: the core of this model is that Chinese side is willing to assume the role of a goalkeeper that will try to administer blows only from the ground depths. Thus actually the initiative will pass to the American side and if the latter is able to deliver the first punch then everything will be easier. Over these years the following pattern has been formed, which can break any defense.

1. Air grouping initially will be composed of approximately 50-60% strike aircraft and 40-50% of supporting air force special assets. These include primarily reconnaissance, airborne control and EW flying assets. This percentage may somewhat decrease, taking into account those aircraft of new generation, which successfully combine strike and other functions.
2. During the first strikes until air superiority is not completely ensured, the density of strike assets must be at least 1,5-2 times more than AD target engagement channels. Additional aircraft with their secondary problems may further complicate the situation for ground AD, but just strike assets launched from aircraft must be in that ra-

tio (*Digital formula refers not only to ground AD but also to the confrontation with enemy fighters which are more dangerous for air superiority. The quantity is provided by not simple rules. Only few aircraft can take off, but missiles launched from those aircraft also become target engagement channels and thus exceed the permissible amount of AD strikes. Today micro-UAVs have already been used which already provide hundreds of targets per plane*).

3. The first strikes should be electronic-firing, 1-2 or 1-1 ratio, i.e. 1 EW aircraft falls to 1-2 strike aircraft. No matter what total EW suppression will be provided by superior's assets, which can also be beneficial for secondary means, this ratio is necessary at the beginning of the strikes. The strike asset possessing its own EW can be considered a suppressive tool, but they are few as a rule. Division of general strike aircraft into groups and their tactical flexibility are greatly dependent on these requirements.
4. The preliminary strikes if not fully, but have to be predominantly of high precision. Preferably, strikes in this phase are launched more from aircraft and long-range UAVs.
5. As long as the enemy's AD system is not generally destroyed, 70-80% of combat flights must be conducted just for that purpose. This is the first phase of strikes. For this mission, it is urgent to constantly allocate forces in the further phases of operation and not merely through combat flights (Destruction is a relative concept to this issue. It is necessary that surface-to-air missile systems (SAM) mostly be deprived of their combat capacities and lacking organized and active countering (*even given full air superiority, approximately ten percent of combat flights are conducted to complete that task. For destruction of AD pockets, other airborne weapons are actively used, especially tactical and operational high precision ballistic missiles*)).
6. The main portion of strikes in all phases must be carried out in the direction of mobile targets, as well-trained enemy disguises the targets carefully, and just after the first strikes they get them out from cover and quickly maneuver.

These are basic, but not all conditions under which almost any level of ground-based AD system or the unity of the AD of Air Forces built on that basis can be neutralized. In April 7, 2017 the US Navy launched strikes to Syrian Al-Sharyat air base which was a reassertion of the above-mentioned pattern and criteria. US Navy launched 59 missiles to ensure the required density, which together with other assets guarantees overcoming of any ground-based AD system. Syrian and Russian new generation SAM and ground-based EW stations had been located along

the direction of the missiles' flights and they actually did not do anything to head off the air strikes. If the Russian side did not take steps toward that end, it was only because of technical difficulties for implementation. China's Air Forces and long range AD can hit at best about 2000-3000 targets at a time, not including army's AD and AD systems deployed in depth, actions against which are less likely. Combat operations will take place at best on the coast or coastal areas of China. It is naive to think that there might be an action to occupy China. As we noted, in the first phase air strikes can be carried out through daily 5000-6000 sorties, including with decoy missiles. Of course, the targets of initial destruction can be just as many, but the gradual destruction or suppression is a matter of time. The next strikes may doubly come down but this time the Chinese air defense and air superiority capabilities would be significantly weakened. And it was then that the tactical air forces could put into action more than 20,000 "AGM-154 JSOW" air-to-surface missiles, which are mostly launched beyond the long-range AD assets operational zone, from distances of 110-556 km.³¹ Moreover, even American single-engine fighters can carry these missiles. That is, once air superiority is established, American planes can operate more easily and confidently, striking targets of second-hand importance. Additional density at this stage can be provided by various UAVs which can operate more effectively in conditions of fairly suppressed air defenses. The US Air Forces and Navy are ready for such density of air strikes and are able to conduct operations spanning from one to six months, whereas the Chinese side simply cannot withstand this. The Russian Air Forces and Navy will suffer almost the same fate in the Pacific theater, although there are some differences. The Russian Navy has counter-strike capabilities in a certain depth of an ocean but the Russian side has other problems associated with actual supply of modern anti-ship missiles, communications and control systems, etc.

In April 2017 media reported about a new Russian missile "3M22 Zircon (Циркон)" under testing that can break the velocity of Mach 8. Many experts immediately considered this fact as very dangerous for American ships, especially for carrier vessels. In reality though, detection and engagement of ships at such speeds is quite difficult.³² Undoubtedly, this is a new issue, a new challenge for carrier vessels. However, there are several systemic problems that seriously hinder successful employment of even such missiles. First of all, it is about air superiority: the point is that air

³¹ "JSOW-ER," Guide to Military Equipment and Civil Aviation, http://www.deagel.com/Land-Attack-Cruise-Missiles/JSOW-ER_a001153007.aspx (accessed November 7, 2018).

³² Dave Majumdar, "Russia's Monster Battle cruisers Are Getting Hypersonic Anti-Ship Missiles," *The National Interest*, February 19, 2016, <http://nationalinterest.org/blog/the-buzz/russias-monster-battlecruisers-are-getting-hypersonic-anti-15263> (accessed November 7, 2018).

superiority, especially in the vast of ocean and not-so-littoral sea areas to be provided by carrier vessels, has a decisive role for navies, and Russian ships without air superiority are doomed to detection and engagement, before having time for fulfilling their essential task. The second problem is the reliability of these missiles: it is a known fact that technology attains such speeds not for the first time. Nevertheless, the motors that provide for such velocities are not as reliable as solid propellant rocket engines. The thing is that such missiles (“SS-N-12 Sandbox”, “SS-N-19 Shipwreck”, “SS-N-26 Strobile” and others) currently deployed on the best Russian vessels have large dimensions – up to 10-11m length and weigh 3-4, sometimes up to 7 tons. Aerial vehicle of such parameters is easily detected regardless of its velocity, especially taking into account the fact that today main American naval detection assets are not shipborne radars, but various sensors installed onboard aerial vehicles such as “E-2D Advanced Hawkeye”, “Boeing P-8 Poseidon”, project “UCLASS” and others. For example, flying at such velocities will make the missile to overheat; this is the best “gift” for modern sensors which can detect such missiles at ranges of up to several hundred kilometers. It should be reminded that the thermal detection sensor of American “F-35” fighter has detected such missiles at one thousand kilometer range. And after detection, it is possible to hit such missiles with shipborne “Aegis” system. After detection comes the next major issue for a Russian missile: it can be hit not only with modern or future AMD systems which decision-making capabilities are increasing at incredible rate, but also with EW assets. Suppressing systems and especially airborne EW systems are not “embarrassed” by speed; they do their job in a matter of seconds.

Conclusion

Those American experts that are warning about China’s and Russia’s increasing military power are certainly doing important reviews. Indeed, these countries are increasing their military expenditures, manufacture new weapons, adopt the automatic control systems and basically repeat achievements of the American military machine and even try to surpass it. However American military system possesses and develops such technologies, that are out of competition and yet dictate the common directions of development. That are orbital fighters, such as “X-37B”, orbital control systems, fifth generation fighters “F-22” and “F-35”, modernized and improved fighters “F-15” and “F-18”, which have active radars

and ultrasonic speed, long range missiles “AIM-120D”, “JSOW-ER”, “JASSM-ER” and also automatic control systems.

A lot of systems or weapons having been manufactured over the last years of the Cold War and after that are now considered worn out and liable to decommissioning; so by the end of 2020s the American military will take out of service significant number of aircraft, ships and other military hardware. Therefore, appropriate substitutes must be found for all of them, though the majority of new systems have already been created or are under development. Here, taking necessary steps towards upgrading and enhancement of the US Armed Forces will ensure their dominance in the world for a long time and force its rivals to lag well behind. After the Cold War, the US and its allies got too much carried away by the so-called “irregular warfare,” it’s time to re-focus again on traditional warfare.