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China's Search for Aerial Dominance in the Indian Ocean: Implications for India

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ABSTRACT

Even as China's primary security focus is on the East Asian and the South China Sea theatre to make its 'active defence' strategy successful, it is simultaneously enhancing the expeditionary capabilities of the PLA Air Force and the PLA Naval Aviation (PLANAF) to gain aerial/over-water dominance in the Indian Ocean. Even though China faces geographical and technological constraints to expand its aerial dominance beyond the near seas, however, without aerial dominance PLAN ships would be highly vulnerable to surface missiles, air, and underwater attacks in the Indian Ocean. Strategic bombers and aircraft carrier are going to be the main platforms for China to establish its aerial dominance in the Indian Ocean. To counter China's threat India has to formulate an 'active denial strategy' centred on the eastern part of the Indian Ocean.

Keywords: China's aerial power, aerial dominance, Indian Ocean, Indian Air Force

Indo-Pacific is a maritime entity, however, in recent times major stakeholders including China, Japan, India, and Australia have been attempting to enhance their aerial capabilities over the maritime domain. 'Aerial/over-water'[1] dominance is necessary to protect naval assets both on the seas and at shores, and also it will help them dismantle the offensive and defensive systems of the enemy with long-range precision strikes. Aerial dominance is achieved through shore-based air assets and aircraft carrier, using fighter aircraft, maritime strike aircraft, and strategic and maritime strike bombers as well as unmanned aerial vehicles and maritime helicopters. Fighter aircraft operating from aircraft carrier have dominated the over-water space for a long time but now shore-based long-range strike systems are being developed because carriers are now vulnerable to aerial attack. Even though a carrier strike group (CSG) is comprised of an aircraft carrier, destroyers with air defence mechanisms, submarine-hunting equipment, and submarines, which can provide aerial and underwater protection not only for the carrier itself but also for other naval platforms, the CSG is still not a full proof protective weapon system. For instance, the anti-ship ballistic missile DF 21/26D that China developed demonstrates that ballistic missiles can be used for denying the manoeuvrability of enemy aircraft carrier and the US carrier strike groups (CSG), the most powerful weapon system on the surface water, is highly vulnerable to China's ballistic missile attack in the western Pacific.[2] As a result, the US is developing long-range attacking systems under the Pacific Deterrence Initiative (PDI) to target China's command and control facilities established along the east coast of China, from Guam.[3]

A significant development in the competition for over-water dominance is that countries maximum seeks to avoid damage to both men and material in a direct confrontation, rather looking for long-range precision systems to strike enemy targets. To get extended aerial coverage and long-range precision strikes, countries are focusing on developing sixth generation maritime strike aircraft, strategic bombers, and drones operating from aircraft and unmanned ships, which would help them to dominate the over-water space for the next few decades. While for China, aircraft carrier is still the most potent weapon system to provide aerial coverage in the Indian Ocean because it can not only provide protection for the carrier itself and other naval platforms but can use for offensive operations in distant waters. For PLA Air Force's (PLAAF) air operations in the Indian Ocean, it must cross 'sovereign' spaces of the Southeast Asian countries which would lead to interdiction or denial that will hurt most of China's military operations in the Indian Ocean. The Indian Ocean is strategically a critical arena for China because it depends on the ocean for energy lifelines as well as for its global power projection.[4]

The Taiwan crisis during the 1995-96 period, where the US sent two aircraft carrier to the Taiwan Strait to prevent China from meddling in the Taiwan election which China felt threatened by the US naval power, heralded China's military modernization aimed to thwart US naval access to the Chinese periphery- the East and South China Seas - and developed anti-access area-denial (A2/AD) capabilities.[5] The A2/AD capabilities involve a range of systems in three domains- surface water, under-water, and over-water - which include "advanced and extended-range air defence, air-to-air and precision strike capabilities, sea-launched cruise missiles (SLCM), C4ISR (command, control computers, communication, intelligence, surveillance, and reconnaissance) systems, and force projection enablers such as aerial refuelling, airlift, and logistic capabilities.[6] China's main concern has been the undeterred manoeuvrability of US aircraft carrier in the Western Pacific and its ability to launch an aerial attack on the strategic installations on Chinese shores. To degrade the U.S. military's ability to penetrate China's anti-access environment, China sought to enhance conventional precision strike systems consisting mainly of cruise and ballistic missiles as well as attacks on key enabling capabilities, such as space-based networks that enable C4ISR missions. Apart from intermediate range ballistic missiles and hypersonic weapons, China has strengthened its air force with the latest fifth generation stealth fighter aircraft and strategic bombers to target US assets around the second island chain including the US naval base of Guam. With the A2/AD capabilities and other enablers, China could establish partial aerial dominance in the western Pacific by pushing US carrier outside the second island chain and is now focusing on the Indian Ocean in part of 'protecting maritime rights and interests' enshrined in the 2015 Military Strategy Paper.[7]

China's Over-water Dominance Strategy

China's over-water dominance strategy is premised on two factors; expeditionary capabilities of its air force and naval aviation comprising shore-based air assets and aircraft carrier. Since China doesn't have an overseas military base to project its airpower beyond

its periphery, it has to depend on shore-based air assets and carriers. The capabilities of air and naval aviation that China developed have been to secure the 'first and second island chain' in the Pacific theatre[8]; it will invariably help China to extend its over-water dominance towards the Indian Ocean. The People's Liberation Army Navy (PLA Navy/ PLAN) has been on the cusp of becoming a two-Ocean navy- the Indian and the Pacific Oceans- with aircraft carrier as its central pillar. To ensure the 'active defence' strategy works effectively in the near seas and to protect 'maritime rights and interests' in the far seas China necessarily requires strong air power capabilities. Today, the PLAN is the largest navy in the world in terms of the number of ships with 367 ships including three aircraft carrier and 42large destroyers[9], and is expected to reach 425 by 2030.[10]

Even though the PLAN plays the "primary role" in the far seas operations, the PLA Air Force (PLAAF) is an "essential" force in making offensive-defensive maritime campaigns successful.[11] The PLAAF is the third largest air force in the world after the US and Russia, and is 'closing the gap with the US Air Force across a spectrum of capabilities'.[12] The air systems that China has recently developed are advanced ones matching similar types of US systems.[13] Its modern inventory includes stealth fifth-generation fighters, advanced bombers including stealth H-20, large transport aircraft (Y-20), attack helicopters, *AWACS (Airborne Warning and Control System),* and Unmanned Aerial Vehicles (UAVs).[14] Like the PLAN, China wants to make the PLAAF a formidable air force in the world quantitatively as well as qualitatively. However, its expeditionary experience has been very limited and its anti-submarine warfare (ASW) capabilities are weak. It is trying to gain experience in faraway operations through joint exercises with friendly air forces such as Turkey, Russia, Thailand, Central Asian Republics, and Pakistan.[15]

China's intention to achieve over-water dominance can be seen in its naval modernisation program launched in the 1990s. Until then, China's main security focus was on the northern continental theatre, however, with the normalisation of relations with the former Soviet Union, Beijing shifted its attention to the maritime theatre. Before the 1990s, China's focus on the maritime domain was to prevent an amphibious invasion by sea and the concept of aerial coverage on the maritime front was to protect the coastal areas and heavily relied on land-launched cruise missiles to counter the enemy invasion. As the changes in modern warfare brought by technology which was demonstrated during the 1991 Gulf War, Chinese leadership understood the importance of aerial dominance in a theatre and has given considerable attention to modernise its Air Force, including naval aviation. Indeed, the PLA Naval Aviation and the expeditionary capabilities of the PLAAF would serve as the aerial coverage required for China's military operations in the Indian Ocean region (IOR).

PLA Naval Aviation and the IOR

PLA Naval Air Force/PLA Naval Aviation (PLAN AF) was established as a sub-unit of the PLA Navy in 1949, and became one of the PLA Navy's five operational branches in 1952.[16] The former Soviet Union continued as the source of aircraft for the PLA NA and initially

inducted *Tu-2* bombers, *Mig 17*s as *J-5*(licensed production), and *Mi-4* helicopters as *Z-5,* and later through reverse engineering *IL-28* transporters and *Tu-16* bombers were made as *H-5* and *H-6* respectively. When China launched the naval modernisation in the 1990s it sought to enhance the capability of naval aviation also, and in 1997 ordered 38 Russian made *SU-30*'s naval version, a maritime fighter aircraft comparable to the American McDonnell Douglas F-15E Strike Eagle, and Russia's *Sukhoi* Aviation Corporation delivered China specific *SU-30 MKK*s in 2000.[17] In 2001, China renegotiated and ordered 38 improved version of SU-30MKKs with upgraded avionics and maritime strike capabilities, known as *Su-30 MKK2*, and another 24 were ordered in 2003, all delivered in 2004. This variant also features a new C4ISTAR (command, control, communications, computers, intelligence, surveillance, target acquisition, and reconnaissance) suite as well as a new mission computer.[18]

Today, China's naval aviation consists of shore-based aviation assets and aircraft carrier. Shore-based aviation assets are maritime strike aircraft and long range bombers as well as helicopters. Major inventories of the PLAN NA are 2 regiments with H-6DU/G/J bombers, 1 brigade with J-10A/S Firebird; and Su-30MK2 Flanker G, 1 brigade with J-11B/BS Flanker L, 1 brigade with J-11B/BS Flanker L; and JH-7A Flounder, 1 brigade with J-8F Finback; and JH-7A Flounder.[19] Also, the PLANAF has 1 brigade ground attack capability with JH-7 Flounder and 2 regiments of anti-submarine warfare with KQ-200.[20] PLANA's ELINT/ISR/ASW capability includes I regiment with Y-8JB/X; Y-9JZ; KQ-200, Airborne Early Warning & Control system comprises 3 regiments with Y-8J; KJ-200; KJ-500, and 1 regiment transportation with Y-7H; Y-8C; CRJ-200/700.[21] The PLA NA has a total of 394 combat capable aircraft, which include 45 bombers (27 H-6G/G mod and 18 H-6J), and 24 Russian-made Su-30MK2 *Flanker* G.[22]

China has a total of 60 indigenously built *J-15 Flanker* carrier-strike aircraft for its three aircraft carrier.[23] China's Shenyang Aircraft Corporation (SAC) developed *J-15* when the first carrier *Liaoning* neared its completion for commissioning, using a *T-10K* prototype plane acquired from Ukraine in 2001 which itself was a derivative of the Russian *SU-33* fighter, and a successful take-off and landing expedition was taken place from the deck of *Liaoning* on November 25, 2012.[24] The *J-15* is a two engine fourth generation carrier-borne aircraft, comparable to the US Navy's *F/A-18C/D Hornet* and *F/A-18E/F Super Hornet*, French *Rafale M*, and the Russian *Mig-29K*.[25] It has a combat radius of 1,500 kilometers, and can approximately carry 12 tons of weapons including PL-12 beyond visual range air to air missiles (BVRAAMs); PL-7, PL-8, PL-9, AIM-9L/M short-range air to air missiles (SRAAMs), YJ-91 anti-radiation missiles, YJ-83K anti-ship missiles, and KD-88 air to surface missile, as well as various bombs, including guided ones.[26] China has also developed a carrier version of the fifth generation fighter aircraft J-20 as J-35, which will be operated from the fourth carrier.[27]

PLA NA's ship based helicopters are 33 (14 Ka-28 *Helix* A; 14 Z-9C; 5 Z-18F) anti-submarine warfare (ASW) helicopters, 12 helicopters for airborne electronics warfare, 18 multipurpose helicopters, and 11 helicopters for search and rescue operations.[28] China is reportedly also developing a carrier-based airborne early warning (AEW) aircraft, called the KJ-600, that is similar to the U.S. Navy's carrier-based E-2 Hawkeye AEW

aircraft, and also a stealth drone aircraft.[29] In June 2022, China unveiled the world's first 'autonomous seaborne drone-carrier' named *Zhu Hai Yun, which* can be controlled remotely and navigate autonomously in open water and can carry 'dozens of drones, unmanned ships, and submersibles'.[30] From the Soviet era aircraft to indigenously made modern aircraft and bombers, China's naval aviation has the capabilities to conduct attacks not only in the western Pacific but towards the Indian Ocean.

Aircraft Carrier

Aircraft Carrier is the most powerful weapon system for offensive and defensive purposes as well as to expand over-water dominance beyond one's periphery. Even though it was Mao's dream to expand Chinese influence across the globe, the Deng-Huaqing duo took the initiative in the 1980s to expand China's naval influence beyond the East Asian waters by sending its first ever foreign naval expedition to the Indian Ocean for a four month sojourn during the 1985-86 period.[31] The Chinese military leadership also harboured having an aircraft carrier both as a national prestige as well as to project its power beyond the East Asian theatre. They advocated the importance of an aircraft carrier necessary to make the PLAN from a coastal navy into a blue water navy in a phased manner from 2000 through 2050.[32] Indeed, the aircraft carrier has been considered as an indispensable weaponry in the final stages of Admiral Liu Huaqing's island chains strategy to establish Chinese dominance between the areas of the second and third island chains, which includes the Pacific and the Indian Ocean, during the 2020 to 2050 period.[33] Admiral Liu had famously said in 1987 that "Without an aircraft carrier, I will die with my eyelids open; the Chinese Navy needs to build an aircraft carrier," using a saying that refers to dying with an unfulfilled wish because China lacked the technology and financial position to own an aircraft carrier at that time.[34]

Aircraft carrier had indeed been a fascination for China for a long time. It purchased Australia's decommissioned carrier HMAS *Melbourne* in February 1985 for accustomed to carrier operations but had to be broken up for scrap because before its departure for China, the Australian navy stripped *Melbourne* of all electronic equipment and weapons and welded her rudders into a fixed position so that she could not be reactivated.[35] China also attempted to purchase the blueprints of Spain's proposed conventional take off/ landing ship *Empresa Nacional Bazán* during the 1995-96 period but the negotiations didn't become successful.[36] It then purchased a former Soviet *Kiev*-class aircraft carrier from Ukraine in 1998, which was refurbished in China with the name *Liaoning* (Type 001) that entered service in 2012. The second carrier, *Shandong*, modelled after *Liaoning* and a fully indigenous one, was commissioned in 2019. The displacement of *Liaoning* is 60,000 to 66,000 tons and can accommodate an air wing of 30 or more fixed wing airplanes and helicopters, including 24 J-15 fighters.[37] The displacement of *Shandong* is estimated at 66,000 to 70,000 tones, with a wing of 44 aircraft that include 36 J-15 fighters.[38] Both *Liaoning* and *Shandong* launch fixed-wing aircraft using a "ski ramp" at the ship's bow. The third carrier, Type 003 *Fujian*, a larger super-carrier with more than

80,000 tons of displacement, was launched in June 2022.[39] It is roughly comparable to the U.S. Navy's Ford Class and is using EMALS (electro-magnetic aircraft launch system) in its deck for the smooth launching of aircraft.[40] However, press reports in December 2021 stated that CATBAR (Catapult Assisted Take-off But Arrested Recovery) version aircraft will be operated from Fujian and China has developed a second generation J-15 *Flanker*, an upgraded catapult capable version, to be operated from *Fujian*.[41] With a combat radius of 1500km, the J-15 *Flanker* can strike targets up to the middle of the Bay of Bengal from a carrier operating in the western part of the South China Sea.

China's all three carriers are conventional diesel powered ships while mulling to build the fourth one as nuclear powered and is expected to achieve a breakthrough in nuclear-powered technology by 2027.[42] However, US analysts believe that the fourth one will also be a conventional carrier because 'China's naval nuclear reactor technology is not advanced enough to support an aircraft carrier'.[43] The latest J-35 carrier fighter will be operated from the fourth carrier which has a combat range of 2000 KM, providing extended aerial coverage for maritime operations. [44] Aircraft carrier is crucial for the PLAN to provide air protection for the surface ships in the Indian Ocean and China requires a minimum of four carriers to permanently deploy one carrier in the Indian Ocean throughout the year. As per the *Economist*, China plans to build a fleet of somewhere around six carriers by 2030.[45]

PLAAF's expeditionary role

The PLAAF's over-water dominance towards the Indian Ocean is depended on the advancement of its long-range precision strike capabilities. The PLAAF became a 'strategic air force' in the 2000s but was still focusing on the near seas to ensure 'active defence'. [46] 'Strategic air force' notionally meant "the ability to directly support national policy objectives and achieve a wide range of strategic goals".[47] When Xi Jinping assumed office in 2013, the expeditionary nature of the PLAAF gathered momentum. During his visit to the PLAAF Headquarters in April 2014, President Xi called on to "accelerate the construction of a powerful people's air force for offensive and defensive operations," and emphasised the need "to defend China's maritime interests and strengthen its over-water capabilities".[48] Similarly, the 2013 edition of Science of Military Strategy highlighted the need for "shifting the strategic defence from coastal periphery to the external forward edge", and the want for "building overseas strategic strong points that depend on the homeland, radiate into the surrounding areas, and move toward the two oceans".[49] It also called for the PLA Air Force to have an "effective combat radius (platform plus missile range) of 3,000 km from China's borders," effectively covering the aerial distance up to Guam.[50]

China's military leaders have long advocated the importance of far seas over water dominance in China's military strategy. In 2014, in a speech by the then vice-Commander of the PLAAF, General Ma Xiaotian, stated, "winning the initiative in the air is important in effectively responding to all kinds of security threats at sea…. [We must] fully recognize the new circumstances in the defence of maritime rights. [It] gives the Air

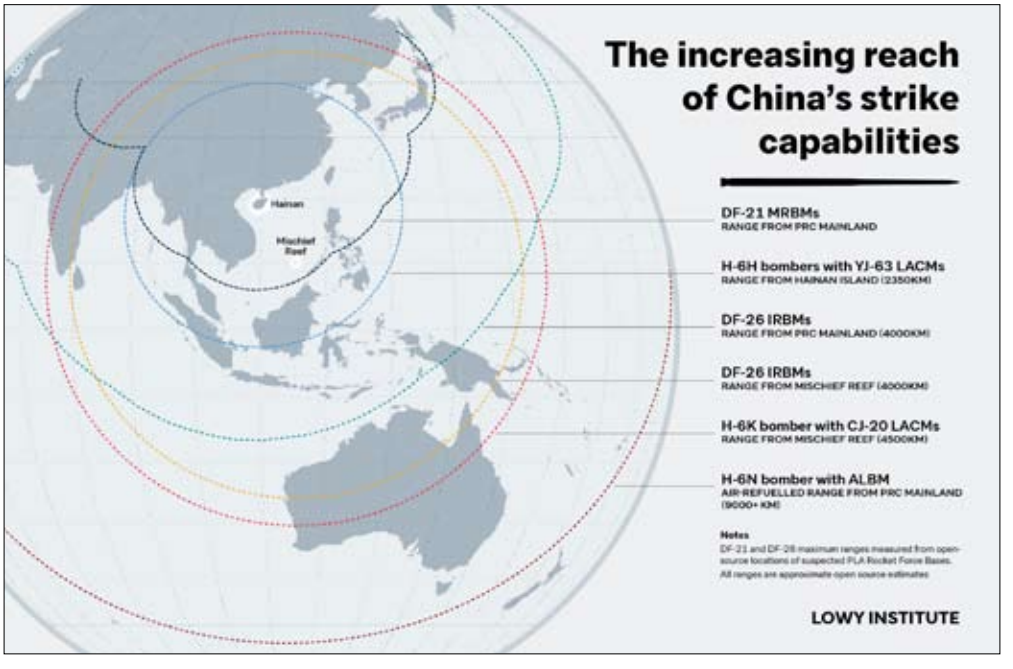
Force new meaning to accelerate the transition from territorial air defence towards attack and defence…. [We must] transform the 'center of gravity' of sea operations towards the employment of air power."[51] When Ma became the PLAAF commander, he argued in 2015 that "because our national development, maritime rights protection, foreign economic activities, and non-war military actions are increasing by the day, it will be necessary for us to further increase our awareness of the urgency of making preparations for maritime military conflict properly."[52]

China developed a new long range strategic bomber H-6N, capable of launching hypersonic as well as ballistic missiles, and the bomber was revealed in the PLAAF's 70th anniversary parade in 2019.[53] The H-6N is reportedly a refurbished and advanced version of the Tu-16 *Badger* bomber, with a combat range of 3000kms and in-flight refueling capability.[54]A video appeared in a Chinese military magazine *Modern Ships in late 2019* demonstrating the launch of China's Air Launched Ballistic missile (ALBM) CH-AS-X-13, an air-launched variant of the DF-21, from the H-6N.[55] The Pentagon had in 2018 reported that China was developing a nuclear-capable, air-launched ballistic missile, which can be fired from its strategic bombers.[56] This suggests that the combination of DF-21 missile -1700 KM or 1500 km range CJ 20 cruise missile- plus the approximate operational range of 1500 km of the H-6N would give the PLAAF enough firepower to target the US base of Guam, and Carrier Strike Groups even outside the second island chain in the Pacific. It can also target the Indian military assets and naval platforms in the Indian Ocean too (Figure-1).

China's Southern Theatre Command (STC) is primarily responsible for the Indian Ocean operations. As a maritime command, the STC's operational area is the South China Sea and is also responsible for assuring the security of sea lines of communication (SLOCs) passing through the Indian Ocean, China's critical lifeline for energy. In 2017, the chief of the Southern Theatre Command General Wang Jiaocheng was replaced by Vice Admiral Yuan Yubai, former commander of the PLAN's North Sea Fleet, the first time ever in the history of the PLA that a naval officer heading multi-service forces of one of its regional combatant headquarters.[57]Given the strategic significance as well as the vastness of the maritime areas to be covered, the STC has been the first command to receive PLAN's H-6J maritime strike bombers.[58] H-6J bombers took part in PLA's coordinated air and naval forces exercise in the East China Sea in June 2022, and three H-6 bombers (two H-6J and one H-6K) flew past Miyako Strait into the Pacific Ocean, a demonstration of its long range precision strike capability.[59] One H-6J can carry four YJ-12 anti-ship cruise missiles, while PLAAF's H-6K is equipped with electronic countermeasure pods for jamming enemy radar, apart from carrying six land attack cruise missiles (LACM).[60] Similarly, China's second carrier *Shandong* entered service in 2019 at Sanya in Hainan Province under the Southern Theatre Command.[61] China's air assets in the South China Sea are going to be a major aerial threat to India in the Indian Ocean. China has equipped various military outposts in the artificial islands in the South China Sea with hangars for fighter aircraft and installed advanced anti-ship and anti-aircraft missile systems, and military jamming equipment. [62] The Fiery Cross reef in the Spratly islands group has a runway long enough to land a Chinese H-6K bomber, which has a 3000 km combat

range and can target up to the west coast of India with a 1500 km range land attack cruise missiles (LACM).[63] With one time aerial refueling, the entire Indian Ocean will come under the range of Chinese bombers, highly vulnerable to Indian military assets as well as the aircraft carrier deployed in the Indian Ocean (Figure 1).

Figure 1: Coverage of China's bombers and missiles from Mischief Reef, SCS



Source: Thomas Shugart, "Australia and the Growing Reach of China's Military", The Lowy Institute, August 9, 2021, https://www.lowyinstitute.org/publications/australia-and-growing-reach-china-s-military.

With an eye on aerial dominance in the Indian Ocean, China has built an airfield and a naval base closer to the Indian Ocean at Cambodia's Sihanoukville in the Gulf of Thailand. *The Washington Post* in June 2022 reported that "China is secretly building a naval facility in Cambodia for the exclusive use of its military" on the northern portion of Cambodia's erstwhile US Ream Naval Base on the Gulf of Thailand.[64] Cambodia and China had secretly signed an agreement in 2019 to enhance the infrastructure including communication and surveillance systems, radar facilities, and long wharves to enable larger foreign warships to dock with Chinese funds, reported the *Wall Street Journal*.[65] At the Dara Sakor airfield, China has built a 2-mile long runway, big enough for China's long-range bombers and military transport planes to operate.[66] As per international law, "all acts of hostility in neutral territory, including neutral lands, neutral waters, and neutral airspace, are prohibited, "[67] so without concurrence of the host country China cannot use the foreign territory for a belligerent act. However, given the economic interdependence between China and Southeast Asia -the Association of Southeast Asian

Nations (ASEAN) became the largest trade partner of China in 2022[68]- and Southeast Asia's economic dependence on China has been increasing in the 'America first' era of Washington,[69] Beijing could arm-twist the regional states to use their airspace for PLAAF's military operations in the Indian Ocean. Beijing has already used economic coercion against Japan in 2010[70] and Australia in 2020,[71] the same could also be applied to the Southeast Asian states to comply with China's security demands. Similarly, if China's 'all-weather' friend Pakistan or Myanmar allows its territory for the Chinese planes to refuel, then PLAAF's aircraft will be able to target Indian assets in the Indian Ocean from airfields in western China. In recent times, China has enhanced its airfields close to the Indian border, including the Hotan, Gar Gunsa, Kashghar, Hopping, Dkonka Dzong, Linzhi, and Pangat airbases in the Xinjiang and Tibet region.[72] The PLAAF has already deployed Sukhoi-30s and six H-6 bombers with KD-63 cruise missiles at Kashgar airbase in Xinjiang.[73]

Challenges and Limitations for China

China faces considerable challenges to extend its air cover into the Indian Ocean; from geographical disadvantages to doctrinal and technical aspects. Firstly, since China doesn't have foreign air bases in the Indian Ocean region (IOR) it has to depend on home-based aerial assets, while for carriers it has to cross narrow channels in the Southeast Asian archipelago. For home-based air coverage, geography creates the most obstacle for aircraft to operate freely in the Indian Ocean. Unlike ships which can pass through narrow channels, either between two islands (Sunda and Lombok) or the waters dividing nations like the Malacca Strait, as they are called international shipping lines, fighters cannot fly freely through the air space of Southeast Asia, if they have to transit 'sovereign airspace' it requires host-country's consent. [74] The 1944 Chicago Convention on International Civil Aviation stipulates that state aircraft (military, police, and customs) are not allowed to traverse the sovereign space unless it is authorized by some special agreement, and also the necessary arrangements have to be made to ensure safety while navigating the state aircraft.[75]

However, overflights of sovereign territory are subject to tracking and interdiction, which may lead to counterproductive. Besides, the refusal of countries to grant overflight rights can create significant operational problems. In a hostile environment, even friendly countries may not grant permission to use their airspace. For example, US strike aircraft based in Britain were not allowed to fly over the airspace of France and Spain for air strikes on Libya in 1986, it had to fly over international waters including through the Strait of Gibraltar.[76] As a result, the search for airpower access to the IOR from the home-based assets is still an insurmountable task for the PLAAF.

Secondly, China currently pursues a defensive military posture towards the Indian Ocean. As mentioned elsewhere, the PLA's priority is to defend the near seas while its far seas mission is to 'protect maritime rights and interests and nuclear counterattacks'.[77] The far seas mission is predominantly a PLAN's objective and strategic submarines are

used for nuclear counterattacks from oceans. Its aircraft carrier is not yet ready to take up operational missions in the Indian Ocean, they are still undergoing operational training in the East China Sea and the South China Sea. Similarly, using airfields of either the Indian Ocean littoral states or Southeast Asian countries including Cambodia for aerial missions is going to be highly improbable due to the pressure from the US as well as India. New Delhi can take leverage of the Quad partnership to dissuade the regional countries from using their territory or airspace against India as the US has a considerable influence over them than that of India.

Thirdly, PLA Air Force's (PLAAF) operational experience beyond the East Asian theatre has been very limited. The PLAAF lacks real-time combat experience as it has never been involved in aerial combat, not even being used in the 1962 border conflict with India or the Vietnam war of 1979. It has also not participated in any of the peacekeeping missions, humanitarian assistance and disaster relief missions, or any other limited military tasks under the United Nations (UN). UN international peacekeeping missions with other countries' forces in distant regions are considered operational experiences in an unfriendly environment. Only once in PLAAF's history has it participated in military operations other than war (MOOTW) was in 2011 during the Libyan crisis when large-scale Chinese nationals were evacuated from Libya. However, after the Libyan evacuation, the Chinese government conducted a few more noncombatant evacuation operations (NEOs) in the IOR and nearby areas, including the Ebola crisis in November 2014, and evacuation of the Chinese nationals from Iraq in 2014 and Yemen in 2015, but PLAAF was not used for these missions due to unknown reasons.[78]

Fourthly, as per China's security strategy far seas is the secondary objective of the PLA, primarily PLAAF has to focus on East Asia and the South China Sea theatre. The PLAAF's primary objective is to gain areal supremacy within the area of the first island chain and also to keep enemy forces away from the second island chain area. Even if China settled the Taiwan problem in its favour then Japan would remain a major roadblock to China's ambition of a full spectrum dominance in the Western Pacific. Unless China gets complete dominance in the Western Pacific it will not shift its arsenals to the Indian Ocean.

Fifthly, China's overseas military assets in Djibouti or any MSR (Maritime Silk Route) assets in the Indian Ocean littoral area are inadequate to facilitate PLAAF's operational requirements.. Pakistan is the only country that hosts a seaport and airport nearby at Gwadar which can be utilised for military purposes because of the close military relationship between the two. All the ports China has built in the Indian Ocean region including the Djibouti base can be blockaded by joint operations of the Indian and the US navies in a real-time crisis. Similarly, using Pakistan airspace by the PLAAF amounts to be tracked by India as the Indian Air Force actively operates 20 airbases under Northern and Southwestern Air commands along the India-Pakistan border. Indian Navy's western naval command based at Bombay can create a blockade against Pakistan's major ports as was in the case of the 1971 Indo-Pak war.[79] This is the same case for PLAAF's operations through Myanmar airspace to target India's assets in the Indian Ocean which can be shot down by the Indian Air Force before the aircraft reaches the actual theatre.

Sixthly, it is not proven whether China's advanced aerial systems are technologically efficient for faraway combat operations. Even though China claims that its latest aerial systems are at par with similar categories of the US' advanced systems. In practice, China's modern aircraft is either a modified soviet-era system or a copied version of the US systems, so the technological modernisation is not incremental. For instance, J-20 is China's fifth generation stealth fighter aircraft but is reportedly developed with stolen technology from the US systems of the F-22 Raptor, and F-35 Lightning, while the J-35 is a stolen technology of the US' *B-2* stealth bomber.[80] The composite material being used in the Chinese aircraft may not technically be at par with the US systems. So the Chinese systems would not have the same level of agility that an advanced fighter aircraft of the US could perform in a war.

Seventhly, It is believed that China's anti-submarine warfare (ASW) capabilities are not advanced enough to protect the aircraft carrier from submarine attacks.. China's existing ASW strategy is largely depended on surface ship anti-submarine capabilities; its aviation anti-submarine is based on Z-9C, Ka-28, Helix A, and Z18F helicopters.[81] These systems would be sufficient in the shallow water bodies of the Yellow Sea and East China Sea whose average depth is 40 meters and 350 meters respectively, while the average depth of the SCS is 1,200 meters and China is attempting to covert the SCS as a Chinese lake to prevent enemy submarines operating there.[82] Similarly, surface ships are on the surface water and face serious threats from underwater, so aviation anti-submarine mechanisms can protect carriers from underwater threats, particularly in the far seas. Maritime Patrol Aircrafts (MPA) are powerful assets in ASW operations as they have more range, endurance, and speed, can carry more payload as compared to ASW helicopters, and can be deployed in support of the fleet. [83]China's maritime patrol aircraft KQ-200 (Y-8Q) entered service in 2018, which China has less than 20 in number,[84] , and are largely doing reconnaissance around Taiwan. [85] The KQ-200 is based on the Soviet Antonov An-12 and is technically not at par with the US P-8I Poseidon that the Indian Navy operates, and a Y-8 was reported to have crashed into the South China Sea in March 2022, killing all seven crew members onboard.[86] However, the US Department of Defence report in 2022 on China's Military Power observes that "it will still require several years of training and systems integration for the PLAN to develop robust offensive deep water ASW capability".[87]

And finally, an aircraft carrier is a highly costly weapon worth around 3-5 billion dollars so much so that loss of it is a heavy loss for the nation. Even though the carrier strike group (CSG) comprises systems to protect the carrier from aerial, surface and underwater attacks it would need a mix of ships to provide the required protection. Besides, sinking an aircraft carrier would indeed be a strategic shock for the nation. Apart from submarines, with supersonic Brahmos cruise missiles, fitted on surface ships. India can also target Chinese aircraft carrier from longer ranges the moment it enters the Indian Ocean water crossing the narrow straits of the Southeast Asian archipelago. Carriers can also be targeted by the Indian Air Force operating from the Car Nicobar Air Force Base or from Thanjavur air station where the Indian Air Force has deployed one squadron of SU-30 MKI fighter aircraft. In this regard, the Chinese aircraft carrier would be highly vulnerable to Indian attack with submarines and fighter aircraft in the Indian Ocean.

Conclusion

In recent times, China has been enhancing its aerial capability to dominate the over-water domain in the Western Pacific theatre. Chinese warplanes frequently intrude into the air defence identification zones (ADIZ) of Taiwan and Japan, demonstrating Chinese assertiveness as well as its proven capabilities of power projection. China's air force modernisation with fifth generation fighter aircraft and hypersonic weapons has led to a competition for aerial dominance in East Asia; Japan is vying for developing 6th generation fighter aircraft program in collaboration with the United Kingdom and Italy,[88] while the US is going ahead with the *B-21 Raider* bomber, the world's first sixth generation jet[89] Until China resolves the Taiwan question, it will be preoccupied with the East Asian theatre. But at the same time, a simultaneous two-ocean navy means PLAAF has to provide aerial coverage for the PLAN in both oceans.

China could also launch independent air operations against India in the Indian Ocean, following a land skirmish in the Himalayas between the two nations. China fears that India would attempt to interdict the Chinese SLOCs in the Indian Ocean during an India-China border war in the Himalayas which will force China to end the war quickly because without the energy coming from the Middle East and Africa China cannot prolong the war. China could arm-twist its close partners- Pakistan and Myanmar, or the Southeast Asian states, shall the US not pressurised them from giving their air space for China to use against India. In this situation, China's Western and Southern Theatre Commands could launch simultaneous aerial operations against Indian aircraft carrier, platforms ships, command and control stations in the peninsula, and Indian military assets in the Andaman and Nicobar Islands.

To overcome the bottlenecks of the PLAAF in the Indian Ocean, China may establish a dual use airfield, on the lines of dual use MSR ports, in the littoral countries, notably in the East African region. The 2022 Department of Defence report states that "the PRC is likely already considering and planning for additional military logistics facilities to support naval, air, and ground forces projection", other than Djibouti base, in faraway regions.[90] A dual use airport in the African continent on the western side of the Indian Ocean and a naval base-cum-airfield in Cambodia from east of the Indian Ocean would be enough to provide aerial support for the PLA Navy operations in the Indian Ocean as well as to neutralise the Indian threat. Undoubtedly, Chinese MSR ports along the littorals and dual use airports on both sides of the Indian Ocean would mount significant challenges for the Indian navy in its backyard.

Policy Options for India

As the primary areas of interest of the Indian Navy is the Indian Ocean which include 'the Arabian Sea, Bay of Bengal, Andaman Sea, and their littoral regions',[91] China's military forays into the Indian Ocean is a security threat to India. To deter the Chinese aerial threat in the oceanic flank which is mostly to come from China's Southern Theatre Command,

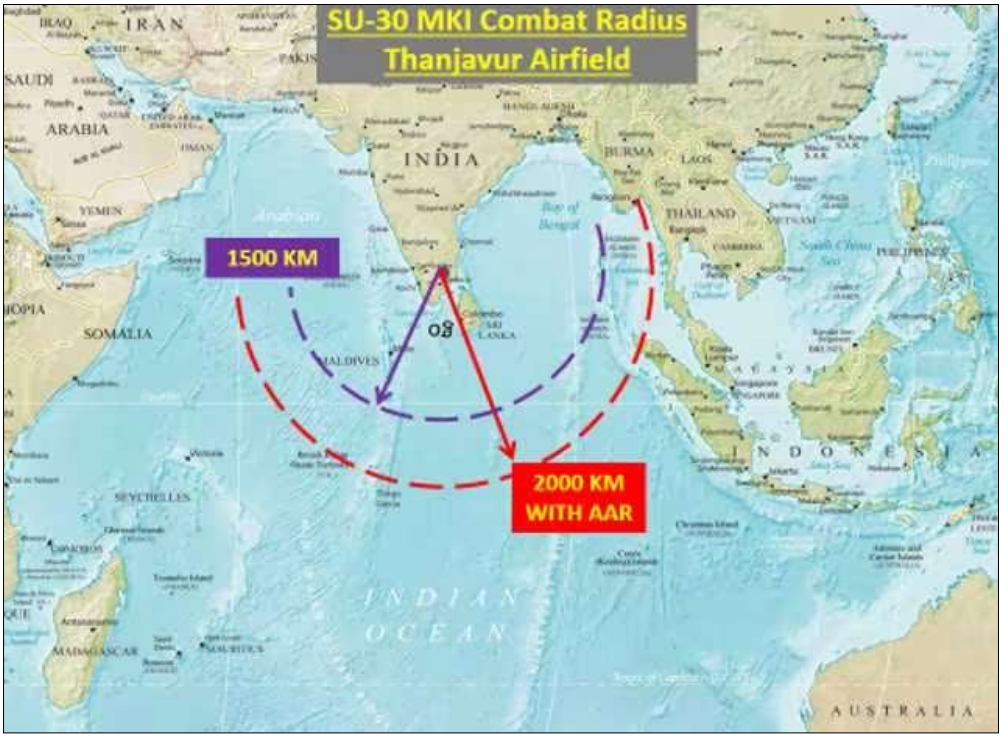
New Delhi has to devise an 'active denial strategy' with its own A2/AD capabilities in the eastern part of the Indian Ocean. An "'active denial strategy' requires maintaining a forward military presence but be oriented toward denying an opponent the benefits of military aggression, rather than trying to ensure a decisive defeat".[92] The entry of Chinese naval ships into the Indian Ocean will be from the South China Sea and the aerial threat is also from there, denying their entry to the Indian Ocean from the east would be the most appropriate strategy to counter China in the Indian Ocean. According to a study, the average cost of an A2/AD capability is about one-fiftieth of the cost of the power-projection capability that it could neutralize in war.[93] In this regard, an 'active denial strategy' would be more economically prudent than a naval competition between China and India in the Indian Ocean for dominance. For an 'active denial strategy' in the Indian Ocean, there are three levels with which India can neutralise the aerial and naval threats from China before reaching the Indian Ocean;

Andamans-based A2/AD Capabilities: An anti-access area-denial capabilities in the eastern part of the Indian Ocean could deter the Chinese aerial as well as naval threats. Strengthening the Andaman and Nicobar Command by modernising airfields and also by installing air defence systems with powerful long-range radars, and Surface-to-Air Missiles (SAM),[94]could counter the aerial threat. Indian Navy's 2015 *Maritime Doctrine* highlights the importance of 'integral air assets' and the lack of it would 'severely constrain the navy and be largely vulnerable in undertaking operations within hostile aerial maritime strike range.' [95] The mainstay of airpower of the IAF is SU-30 MKI and its operational radii of action is 1,500 kilometers, which can increase to over 2,000 kilometers with one aerial refueling and can be operated from many international airports, major naval airbases, and its air force stations at Trivandrum, Sulur, and Thanjavur as well as from the Andamans. From the Andaman airbase, the SU-30 MKI can cover a significant part of the South China Sea and thus can effectively deter China's aircraft carrier even before entering the Indian Ocean (Figure 2). India has robust anti-submarine warfare capabilities with P-8I Neptune maritime patrol aircraft which could detect and neutralise Chines submarines before entering the theatre. Also, the three aircraft carrier plan of the Indian Navy for strengthening the 'integral air assets' would bolster the A2/AD capabilities. Besides, the deployment of attack submarines in the eastern Indian Ocean will be a force multiplier in India's A2/AD capabilities.

Bay of Bengal Security Community: India needs to strengthen its security cooperation with the littoral countries of the Eastern Indian Ocean. New Delhi can consider creating a security community grouping of countries from both South Asia and Southeast Asia that share the Indian Ocean waterbody which would help negate using their airspace by China against India.

Air Domain Awareness (ADA) with Quad members: Cooperation on Air Domain Awareness with the Quad members particularly the US will help gather intelligence about PLAAF's preparations targeting India. The US has established early warning systems in all the domains- land, sea, and space- to monitor China's military activities, and early warning information from the US will help deter incoming bombers and fighter aircraft targeting India.

Figure 2: Combat Radius of SU-30MK from the Andaman and Nicobar Command



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Even though China is a superior military power to India the geographical constraints and distance should be made advantageous by New Delhi. China has adopted an A2/AD strategy in the western Pacific to prevent the US, while the US is now looking for long range precision strike capabilities under the Pacific Deterrence Initiative (PDI) and also formulating an 'active denial strategy' against China in the near seas so that China would not be able to target the US bases in the Western Pacific as well as its allies' territories. In a similar manner, an 'active denial strategy' against China in the eastern Indian Ocean can effectively counter the Chinese aerial as well as naval threat against India.

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