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CHINA'S AIR FORCE CONTRIBUTION TO ACCESS DENIAL

by

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Biography

Lt Col Michael Flaherty is a career Air Force intelligence officer. He graduated from the University of Maryland with BA degrees in Chinese Language and East Asian History and received his MA in Warfare Studies from the American Military University. He has served as a senior China air/air defense analyst at the Defense Intelligence Agency and Joint Chiefs of Staff/J2, Intelligence Crisis Management Directorate as well as in several intelligence tours in the Pacific AOR. He has also served as an intelligence squadron operations officer, squadron commander and deputy group commander prior to attending Air War College.

Introduction

The national security strategy of China is built upon the concepts of sovereignty and territorial integrity. It is these core interests which define Chinese military strategy and drive air force development. Since the 1990s, the People's Liberation Army Air Force (PLAAF) has adopted a new offensive and defensive doctrine and modernized capabilities designed to carry out its mission of defending these interests. These capabilities and doctrine increasingly enable the PLAAF to deter or counter U.S. intervention in matters of sovereignty and territorial integrity, particularly as regards Taiwan. In this scenario, PLAAF doctrine and capabilities are designed to hold U.S. carriers and other naval combatants at risk, deny or disrupt regional airfields and bases, and deny airspace over or near Chinese territory or forces.[1]

While China has never officially acknowledged an anti-access strategy, the Chinese concept of "active defense" as well as recently modernized PLAAF capabilities, doctrine and campaign planning have predisposed the PLAAF towards this approach in its role of defending China's sovereignty and territorial integrity. Yet the PLAAF still faces significant challenges. These include an inability to refit all units with cutting edge weapon systems, weaknesses in China's aviation industry, lagging development of force projection enablers, and deficits in training. Still, these developing capabilities and doctrine represent a steadily increasing challenge to U.S. force projection capabilities. These developments have also contributed to U.S. concerns over China's expanding force projection capabilities as well as misperceptions about the "preemptive" nature of Chinese military doctrine. If not clarified, these factors create the potential for dangerous miscalculations on both sides of the Pacific, particularly if renewed tensions over Taiwan occur. Any assessment of the implications of these developments must first examine the formulation of China's access denial strategy, as well as the PLAAF's

transition to an offensive and defensive doctrine which predisposes it towards this strategy. What then remains is the demonstration of how developing PLAAF capabilities, doctrine and training combine to support an access-denial strategy with significant implications for U.S. power projection.

Formulation of China's Access Denial Strategy

China's most significant security concern is Taiwan. The U.S. deployment of two carrier groups to the region during the 1995-96 Taiwan Strait crisis still remains in the Chinese memory as a galling infringement on China's sovereignty. The value and logic of an access-denial strategy are therefore obvious in reference to Taiwan. But such a strategy has clearly appealed to Chinese strategists since at least the 1991 Gulf War. A key lesson learned from the Gulf War was that allowing a modern military opponent unfettered access to air, land and sea territories in which to build up and employ forces, as well as regional bases and logistics hubs to sustain them was a recipe for defeat. In discussing the lessons of the Gulf War, General Liu Jingsong, former president of the PLA's Academy of Military Science pointed out that the very assembly and positioning of Coalition forces constituted "first firing" and justified action, which could postpone or even deter actual war.[2]

While the People's Republic of China (PRC) has never publicly acknowledged an anti-access strategy, a 2000 U.S. National Defense University paper projected a consensus view that regional powers such as China would inevitably "develop anti-access strategies in response to U.S. dominance of the air and seas."[3] Yet, it was not until the DoD's *2005 Annual Report to Congress on The Military Power of The People's Republic of China* that U.S. analysts officially acknowledged China as placing an emphasis on anti-access strategies, designed to "deny entry into the theater of operations."[4] This emphasis reflects the continuing sensitivity of the Chinese

towards matters of sovereignty and territorial integrity. The overwhelming majority of China's historic military clashes have involved such border and sovereignty issues.[5] China today remains concerned about the vulnerability of her economically productive coastal areas to air and sea threats, and also fears that the U.S. would intervene to protect Taiwan should a Taiwanese declaration of independence trigger a Chinese military response.[6] China holds that Taiwan is Chinese territory and *denial* of Taiwan as a base for other powers to threaten the mainland or its sea lanes of communication is therefore a logical assertion of China's sovereignty.[7]

As a rationale for adopting an access denial strategy, the inviolability of China's territory and sovereignty cannot be overstated. Certain strands of classical Chinese culture and military philosophy support this argument. Military philosophers like Sun-Zi, Sun Bin, and Shang Yang as well as the Confucian tradition (*fei gong* or "non-offense") advocate a cautious attitude toward war but allow "righteous war".[8] Defense of sovereignty or territory is considered righteous, particularly when responsive vice provocative.[9] China's heritage as a geographically isolated, agriculturally based civilization has also focused Chinese approaches to warfare on defense of land (territory), as demonstrated in China's historical lack of interest in maritime empire, as well as in cultural artifacts like the Great Wall.[10] The "100 Years of Humiliation" ushered in by the Opium Wars and western exploitation of Chinese military weakness in the 19th Century, as well as Japanese occupation and atrocities during the 20th, engendered a defensive mindset towards foreign interventions that persists in modern China.

The concept of the inviolability of China's territory, therefore lends itself to the logic of defending it via an anti-access strategy. This logic is reinforced by China's perceptions of its own comparative weakness throughout the Cold War and various confrontations around its land and maritime periphery, including interventions in the Korean War and border conflicts with

India, the Soviet Union, and Vietnam. Beijing considered most of these to be strategically defensive in response to some violation of China's sovereignty and territorial integrity.[11]

China's best strategy for defending these core interests is rooted in the PLA's traditional strategic concept of "active defense" (*jiji fangyu*). Active defense guides counterattacks ***after*** hostilities begin (for example, once the enemy has attacked or invaded Chinese territory*).* It is semantically different from the traditional PLA principles of seizing the initiative, "gaining mastery before the enemy has struck" (*xian fa zhi ren*), or "gaining mastery after the enemy has struck" (*hou fa zhi ren), all* of which can be elements of active defense. As a guiding tenet, active defense also carries nuances of "conflict avoidance, strategic guile, and as a last resort, carefully picking the battlefield and the battle."[12] Mao once stated that "China will never make a preemptive attack" and yet "active defense is defense in an offensive posture."[13] In pre-conflict situations active defense emphasizes political caution and conflict avoidance, but once hostilities have begun it emphasizes offensive counterattacks.[14] *Once conflict begins*, active defense can be characterized as strategically defensive and tactically offensive.

This active defense concept is often misunderstood outside of its cultural context. It underlies U.S. concerns regarding China's developing force projection capabilities, as well as misperceptions of the preemptive nature of Chinese military doctrine and campaign planning.[15] In analyzing China's developing offensive-defensive doctrine and its basis in active defense, U.S. analysts tend to focus on China's "preemptive" approach. An example noted by U.S. defense analysts is that the *Science of Strategy* asserts defensive counterattacks need not passively await the enemy's military strike but could be militarily preemptive in response to political maneuvers "for the 'first shot' on the plane of politics must be differentiated from the 'first shot' on the plane of tactics" and that "If any country or organization violates the other

country's sovereignty or territorial integrity, the other side will have the right to 'fire the first shot' on the plane of tactics…"[16] These declarations are perceived by U.S. analysts as justifying preemptive offensives in response to political maneuvering. However, the Chinese perspective would emphasize the violation of Chinese sovereignty, for instance *if Taiwan declared independence*, as justifying a military response specifically against Taiwan, *but not necessitating attacks on its allies* regardless of their declared intentions to come to Taiwan's defense in such a scenario.

This is not to say that miscalculations could not occur, but rather that for PLAAF preemptive strikes on U.S. airfields, carrier groups and bases to be launched as an expression of active defense, they would have to be *preceded* by U.S. hostile action against China. This hostile action would have to violate China's sovereignty or territorial integrity. As a precedent, in the 1970s, Deng Xiaoping applied active defense to the PLAAF, stating that "active defense also contains an offensive element…The bombers of the air force are defensive weapons".[17] This is an acknowledgment that seizure of the initiative is crucial in modern air warfare, but *not* an argument for preemption outside the context of preexisting hostilities. This approach is therefore different from the western idea of preemption which includes the possibility of strategic preemption as part of the *initiation* of conflict. For instance, the *2002* and *2006 U.S. National Security Strategy* documents assert a justification for strategic preemption or even preventive war in dealing with emerging threats, in the absence of attacks on U.S. territory.[18] Attention to these nuances clarifies how active defense, when guiding modern doctrine and modern long-range capabilities predisposes the PLAAF to an anti-access approach.

The PLAAF's expanding role in active defense emerged gradually in concert with its transition from an air defense role to one with both offensive and defensive capabilities and

doctrine. Chinese President Jiang Zemin repeatedly asserted that future major military threats to China would come from enemies using long-range precision guided weapons to carry out raids and that sea and air would be the primary battlegrounds of the future. Therefore the air force would be the strategic service with a "decisive status and role in protecting national security and sovereignty".[19] The PLAAF has therefore developed modernized offensive capabilities and doctrine grounded in the tenet of active defense. As noted above, the increased range and inherent capability in this combination predisposes the PLAAF to an access denial strategy.

Evolution of Offensive-Defensive Doctrine

For much of its history the PLAAF was limited to homeland air defense roles. But the role that airpower played in the U.S. victory in the Gulf War had a significant impact on PLAAF theorists, driving recognition of weaknesses in capabilities and doctrine and highlighting China's vulnerability to modern air threats. Following the Central Military Commission's direction of the PLAAF in the early 1990s to prepare against air raids and support other components, the PLAAF began to shape its own campaign doctrine and weapons development programs.[20] New offensive capabilities and doctrine now balance the PLAAF's defensive tradition, and both enable anti-access options not previously available.

Since the 1990s, China has paid close attention to developments in airpower thought in other countries. In formulating its own offensive-defensive doctrine, the PLAAF has synthesized U.S. assessments of the Gulf War, the Kosovo campaign, and U.S. operations in Afghanistan and Iraq, building on the doctrine it has practiced since the days of Russian assistance and influence. It has also considered contemporary Russian discussions on enhancing the role of its air force with new offensive and defensive missions.[21] While U.S. doctrine may be too radical for the current capabilities and culture of the PLAAF, the exposure to these ideas has driven a

recognition of the air force as a major national capability to contain and win wars, yielding a significant PLAAF role in strategic deterrence and a desire for the capability to win high-technology local wars with airpower.[22] President Jiang Zemin asserted that "We must construct a powerful people's air force 'with Chinese characteristics', that is both offensive and defensive."[23]

In order to "construct an informationized force and win an informationized war," Chinese national strategy documents also established imperatives to accelerate PLAAF modernization, transform it from a homeland air defense type of air force to a type that combines both offense and defense, and develop modernized capabilities to defend China's security and interests.[24] The concept of "informationization" permeates PLA doctrine and emphasizes the holistic integration of digitally linked information, sensors, weapons and automated C2 systems via common networks.[25] In 2004, in accord with the Central Military Commission's new military strategy program the PLAAF formalized this approach in a new air force strategy (actually more operational doctrine than strategy) which "integrated air and space, with both attack and defense (*kong tian yiti, gong fang jianbei*)."[26]

This offensive-defensive doctrine enhances the PLAAF's ability to defend China's sovereignty and territorial integrity with modern offensive capabilities. That these same capabilities support an anti-access strategy is clearly supported by the PLAAF's campaign planning efforts. PLAAF anti-access capabilities are integrated in the "joint anti-air raid" campaign as well as the component specific "air offensive" campaign, "air defense" campaign, "airborne" campaign and "air blockade" campaign, all of which propose attacks on adversary bases and naval forces at the outset of operations.[27] In envisioning these campaigns, PLA military authors have stated that "the core of a strategy that combines offense and defense is

aerial offense."[28] They explicitly state adherence to the principle of "active defense" and taking the initiative, partially or mostly annihilating enemy capabilities at the very beginning of hostilities and "*at long range, before these can be thrown into operations*."[29] Air offensives are considered a primary operational form with which to achieve strategically defensive goals, specifically denying or disrupting access to forward bases and deployed capabilities.[30]

As noted above, these statements can be perceived as assertions of preemptive doctrine if analyzed outside their theoretical context of active defense. Within this context, the focus of PLAAF air campaign planning is on denying force projection and sustainment capabilities, once hostilities have begun. The joint air raid campaign stipulates that operations are to be carried out within (military regional) theaters, but also "to carry out assaults against enemy bases (or platforms) for takeoffs and launchings of air raid weapons."[31] To this end, PLA logistical planning for this campaign focuses on organizing conventional missile forces, long range or sea-based air defense missile forces, air force and naval aviation and Second Artillery Corps forces to "launch violent attacks against enemy airfields and aircraft carriers", seeking to destroy enemy capabilities *before they can be employed*. [32]

Even the air defense campaign envisions long range strike assets executing "determined *counterattacks* against enemy air force bases and naval air launch and cruise missile launch platforms" and that air defense operations will "take on the quality of offense within defense, defense within offense, and offense interwoven with defense."[33] These campaign plans state the requirement for offensive air defense capabilities to "attack such targets as the enemy's command and control, intelligence and reconnaissance systems, his naval bases, airfields, missile sites and ships." They also acknowledge that the scope of air defense has "transformed from passive to active and from homeland defense to defense outside the homeland".[34] Thus

campaign planning and doctrine apply anti-access approaches to increase the cost of violating China's sovereignty or territorial integrity.[35] For execution, they require modern capabilities.

Development of PLAAF Anti-Access Capabilities

In order to execute an access denial strategy, the PLAAF requires capabilities effectively designed to neutralize U.S. forces, bases and sustainment infrastructure already in the region. It must also be able to prevent follow-on forces from entering the region, extend its own defensive capabilities to regional entry points and ultimately convince the U.S and its allies that the cost of entry into the region will be prohibitive.[36] In practical terms, these capabilities include advanced and extended range air defense, air-to-air, and precision strike capabilities. They also include command and control (C2) and intelligence, surveillance and reconnaissance (ISR) capabilities, as well as force projection enablers such as aerial refueling, airlift and logistics capabilities. Full development and informationization of these capabilities coupled with dominance of the electromagnetic spectrum could enable the PLAAF, in conjunction with other arms of the PLA, to hold carrier strike groups at risk, deny or disrupt regional airfields, bases and logistics nodes, and deny airspace over or near Chinese territory or forces.

The PLAAF places great significance on deterring or denying the threat of aircraft penetrating China's territory and airspace, or seizing air dominance over PLA forces. Therefore a primary anti-access capability the PLAAF is pursuing is enhanced and extended range air defense. The HQ-9, SA-10, SA-20 and extended range (200km) SA-20 PMU2 surface-to-air missile (SAM) systems significantly enhance China's ability to deny the airspace around its periphery.[37] The PLA Navy has also deployed ships with HQ-9 and Russian SA-N-20 SAMs.[38]

Modernizing air-to-air capabilities also supplement upgrades to older aircraft, further enhancing the range and effectiveness of aerial access denial. Older J-7PG and J-7G aircraft

feature selectively improved electronics, radars and engines, but are still limited by inferior performance characteristics and an 850km combat radius. However, some J-8 variants like the J-8D, J-8F and J-8H are equipped for aerial refueling, extending their combat radius to 1,200km and enhancing aerial access denial options as far as the South China Sea. J-8F and J-8H models are also able to employ more advanced PL-12 active radar homing air-to-air missiles (AAMs).[39]

More modern multi-role fighters like the J-10/J-10A and J-10B also incorporate a 1,100km combat radius, advanced avionics, aerial refueling capability, some stealth design characteristics, and data link capabilities which allow sharing of information with the KJ series Airborne Warning and Control Systems (AWACS). J-10's can also employ a variety of upgraded AAMs like the PL-8 short range IR-guided AAM and the PL-12 noted above. SU-27SK/J-11/J-11A and J-11B air superiority fighters provide the PLAAF an extended beyond-visual-range (BVR) attack capability, particularly when employing the extended range (66km) R-27ER AAM. PLAAF J-11As, SU-30MKKs and PLA Navy SU-30MK2s can employ Russian R77E active radar homing AAMs comparable to the AIM-120/MICA/TC-2 in service with Taiwan's air force. SU-30MKKs can also be used to direct up to 16 aircraft of the same type via data link to engage enemy aircraft.[40]

While these more modern aircraft remain limited in number, they have already reversed the balance of air superiority with Taiwan. Indigenous production of these aircraft will eventually increase the expertise and capabilities of China's aviation industry.[41] However, the operational reach of these capabilities is still constrained by minimal aerial refueling training and a limited number of aerial refueling qualified pilots and refueling configured aircraft.[42]

Evolving PLAAF precision strike capabilities add another layer of anti-access competencies to deter, disrupt or deny regional bases, and naval surface and carrier operations.

These include upgraded aircraft which can employ modern precision ordnance. Older aircraft like the J-8G can employ the 70-130km range Kh-31P/YJ-91 anti-radiation missile (ARM), while the J-8F can employ LS-6 GPS/GLONASS-guided glide bombs. PLAAF J-10/J-10A, J-10S and J-11BS aircraft can employ extended range (100km+) KD-88 TV-guided missiles, as well as LS-500Js and LT-3 PAVEWAY III-class laser guided bombs (LGBs). JH-7As have significant long range strike capabilities (1,650km combat radius) and employ KD-88 TV guided missiles, KD-88GX ARM variants, Kh-31P/YJ-91 ARMs, YJ-83K sea skimming anti-ship missiles, LT-2 LGBs and unguided munitions. The PLAAF's Su-30MKK fighter bombers can also carry a wide array of precision munitions including Kh-31P/YJ-91 ARMs, the Kh-29T TV guided missile, the 115km range Kh-59ME TV guided standoff missile, the KAB-1500KR TV-guided "bunker buster" bomb, and the KAB-500KR TV-guided bomb. The range of the Su-30MKK can be extended to 5,200km by in-flight refueling though the PLAAF does not yet have a suitable tanker for this mission. The Su-30MKK's capabilities, particularly when employing the KAB-1500KR, make it a prime weapon for long range access denial attacks on hardened targets such as aircraft shelters and C2 bunkers at regional bases beyond China's periphery.[43]

The remainder of the PLAAF's long range strike capability resides with its H-6 variants such as the H-6H which can employ the 180km range KD/YJ-63 land attack cruise missile (LACM). The H-6M as well as the newer H-6K can also carry the CJ-10K air launched cruise missile (ALCM). This 1,500-2,500 km range ALCM can attack a variety of fixed targets with either conventional or nuclear payloads. These capabilities give the PLAAF a significant role in strategic deterrence as well as extended range access denial.[44] PLAAF capabilities are also complemented by evolving PLA Navy strike capabilities which allow both the PLAAF and PLA Navy to strike a variety of land and sea targets at extended range, potentially preventing

deployment or employment of forces from these targets.[45] However, while these capabilities represent significant progress for the PLAAF, China's aviation industry is still weak in the areas of aircraft engines, guidance and control systems and enabling technologies.[46] Also, the PLAAF's ability to logistically support and sustain force projection operations beyond its periphery, particularly in anti-access scenarios which might include sustained long-range strikes or the seizure of regional bases is limited.[47]

A holistic approach to integration of C2 and ISR has enhanced coordination and employment of access denial capabilities across the PLA. As noted above, the Chinese concept of "informationization," institutionalized in 2004, encompasses digital linkage of information, sensors, weapons and automated C2 systems via common networks while denying these capabilities to opponents.[48] In support of these efforts and to supplement older Y-8 variants like the Y-8J and Y-8T, the PLAAF is pursuing several types of airborne early warning (AEW) aircraft including the indigenously developed Y-8W/KJ-200 and the KJ-2000 AWACS.[49] Although plagued with unresolved mutual interference problems between its onboard electronic systems and currently limited in number, the KJ-2000 can share surveillance and tracking information via data link with J-10, Su-30MKK, Su-30 MK2 and J-11 fighters, allowing for joint ops with the Navy, and employment with the KJ-200 as a high/low team. The Y-8W/KJ-200 is expected to share information via data links with J-7G, J-8F, J-10, J-11B, JH-7A and H-6M/K aircraft, potentially enhancing coordination of long range escorted precision strikes by large packages of dissimilar aircraft. PLAAF ISR aircraft include older J-8FR, Tu-154M/D and Y-8 variants as well as a variety of ISR unmanned aerial vehicles (UAVs).[50] The focus of PLAAF AEW and ISR development has also been on increasing search range and situational awareness

of regional airspace and enabling surveillance and targeting support for other extended range anti-access capabilities.[51]

Informationization has also driven a PLAAF capability to deny access to the electromagnetic spectrum. By 2006, DoD assessed that "China's investments in advanced electronic warfare programs had given the PLAAF technological parity with or superiority over most potential adversaries."[52] Seizure of electromagnetic dominance via "integrated network electronic warfare" (*wangdian yitizhan*) is envisioned in the initial phases of any future campaigns. This approach is conceived by PLA theorists as electronic, computer network, and kinetic strikes to "disrupt and deny network information systems that support enemy war fighting and power projection capabilities"; in other words, *access denial*. The significance of such electromagnetic anti-access capabilities to the PLAAF is clearly demonstrated in campaign planning. To employ such capabilities effectively, PLAAF doctrine and training must integrate these and other anti-access capabilities noted above.[53]

Doctrinal Integration of Anti-Access Capabilities and Training

The PLAAF has made significant progress in integrating its anti-access capabilities in doctrine. PLAAF operational planning increasingly reflects doctrinal principles which integrate current weapon systems while anticipating the best ways to employ developing offensive-defensive capabilities in air campaigns. Three of these principles are clearly relevant to employing these capabilities in support of access denial strategies; (1) *Seize the initiative through offensive operations*; (2) *Concentrate force at the decisive points*; and (3) *Tight defense*.[54]

The first of these, "S*eize the initiative through offensive operations*," is similar to the familiar western principle of the "Offensive," but in the context of active defense conveys an awareness that offensive action is the only way to seize the initiative and gain momentum in

modern air campaigns. This will be difficult for PLAAF culture to assimilate as it has no tradition of aggressively employing airpower for offensive missions. Also, PLAAF pilots and commanders are not yet confident in their abilities to employ airpower in such a fashion.[55]

The second applicable principle "*Concentrate force at the decisive points*" conveys a preference for concentrating the most modern aircraft capabilities to conduct offensive operations against high value airborne assets in the struggle for air dominance or against priority surface targets, particularly anti-access targets as evidenced by PLAAF campaign plans.[56] Priority in air campaign planning is placed on destruction of enemy aerial force projection capabilities (AWACS, aerial refueling tankers, airlift and combat aircraft) in the air and on the ground. These air strikes would closely follow Second Artillery missile strikes or PLA Naval strikes and would occur in conjunction with electronic warfare (jamming) and computer network attacks (and potentially attacks from and against space-based infrastructure.)[57] *The Science of Campaigns* (2006) describes a potential scenario where the PLAAF takes the lead in attacking enemy air bases and aircraft carriers. Missiles, "anti-radiation UAVs," and electronic jamming attacks are employed against air bases and early warning radars, followed by air strikes on command and control centers, runways, parked aircraft, and fuel depots. Continuous missile and air strikes are then concentrated in time and space to "annihilate enemy air capabilities" and achieve air dominance over PRC territory and forces.[58]

A third principle of "*Tight defense*" focuses on ensuring there are no weak points in the defense and that all important sectors are protected by one means or another.[59] This principle supports the intent of the PLAAF's anti-access approach to defending China's sovereignty and territorial integrity. By performing its role in active defense along with the other branches of the

PLA, the PLAAF adds its own capabilities to the other layers of air, land, sea, and cyber-based anti-access capabilities presented by these other services.

The PLAAF has made slower progress in integrating its anti-access capabilities in training. The PLAAF and PLA Navy continue to emphasize training for attacks on aircraft carriers. PLAAF training now includes aerial combat training between dissimilar aircraft, long range offensive air missions, surface task force protection missions and live munitions delivery.[60] New semi-permanent opposition forces (known as BLUEFOR) employ foreign tactics and doctrine to train the PLAAF.[61] However, while the scope for pilot initiative has improved with more modern systems and somewhat less rigid training scenarios, air intercept training still relies heavily on ground control. Also, while some new BVR tactics and doctrine have been observed, this remains immature and limited.[62] Airborne infantry training (a PLAAF responsibility) is limited by airlift capacity and in-flight refueling training is still limited by the small number of aerial tankers and refueling configured combat aircraft.[63] When added to the limitations above, it is clear that PLAAF capabilities, doctrine and training must still evolve considerably in order to challenge U.S. power projection capabilities.

Implications for U.S. Power Projection

While the development of anti-access capabilities has not been uniform across the PLAAF, and continues to lag relative to U.S. power projection capabilities, impressive progress has been made over the last decade. On 16 September 2009, U.S. Defense Secretary Robert Gates acknowledged that China's "investments in cyber and anti-satellite warfare, anti-air and anti-ship weaponry, and ballistic missiles could threaten America's primary way to project power and help allies in the Pacific - particularly our forward bases and carrier strike groups."[64] The PLAAF can now contest local air dominance over the Taiwan Strait, creating new options

for Chinese coercive diplomacy.[65] The range of air refueling-capable Su-30MKKs deployed in the Nanjing and Guangzhou Military Regions (MRs) can already threaten U.S. forces in Okinawa, though not with the effect additional tankers and air refuelable aircraft could offer.[66] H-6 bombers can now employ air-launched land attack cruise missiles from within Chinese airspace against Okinawa, Japan and the Korean peninsula. Reported H-6 engine modifications could potentially give the H-6 a 3,000 km radius of action, allowing access denial strikes against Guam.[67] All of these capabilities will be increasingly integrated with other PLA service capabilities and China's space-based reconnaissance, positioning, and terrestrial over-the-horizon targeting capabilities to enhance anti-access options against U.S. power projection.[68]

If China proliferates these capabilities to regimes hostile to the U.S., it could challenge U.S. force projection capabilities worldwide. While these capabilities cannot yet *defeat* current U.S. capabilities, they are still significant. They represent incremental progress in narrowing the gap to eventually deny, disrupt, delay or neutralize U.S. forces, bases and sustainment infrastructure already in the region, and prevent follow-on forces from entering the region. They could eventually extend China's active defense options to regional entry points. Ultimately these PLAAF capabilities serve as elements of a modest but relentlessly improving deterrent to U.S. intervention in the region, by increasing the cost of such intervention to unacceptable levels. As these capabilities and doctrine mature, U.S. forces and bases in the region will be increasingly vulnerable to Chinese access denial capabilities, requiring further efforts to enhance survivability, redundancy and standoff capabilities in order to maintain the ability to project and sustain power in the Pacific.

Conclusion

PLAAF offensive and defensive doctrine and modernized capabilities are guided by the strategic tenet of active defense. They are therefore optimized for an anti-access strategy in defending China's sovereignty and territorial integrity, and in fact predispose the PLAAF towards such an approach. While China has never acknowledged this strategy, it has been increasingly integrated within doctrine and training as revealed above. Although this has contributed to concerns and misperceptions about Chinese intentions regarding their growing force projection capabilities and campaign planning, it is important to comprehend these capabilities and plans within their context of *active defense*. This is crucial to an understanding of the Chinese national sensitivity to matters of sovereignty and territorial integrity and could prevent miscalculations on both sides of the Pacific by placing Chinese actions in their cultural and strategic contexts. It also enables clarification of the specific situations in which PLAAF operations are likely to be preemptive or offensive, mitigating analytical biases towards "mirror-imaging" Chinese intentions when assessing PLA doctrine.

While still not on par with U.S. capabilities, the PLAAF has made impressive progress in its ability to hold U.S. forces and bases at risk and is narrowing the technological gap. Yet joint integration and training still lag behind and doctrine will need to evolve as new capabilities are assimilated. Given the vulnerability of U.S. bases and forces in the region, the PLAAF's expanding capabilities will present a steadily increasing challenge to U.S. force projection capabilities during the next several decades.

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47. Ibid., 38.
48. Lampton, *The Three Faces of Chinese Power*,42.
49. Tong, Hui, *Chinese Military Aviation.*
50. Ibid.
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52. Ibid., VIII.
53. Ibid., 14.
54. I have noted several contradictions (possibly a result of evolution in PLA thought over time) and inaccuracies in available English translations of Chinese Air Force Campaign Principles and have therefore undertaken my own translations and transliterations from the source documents below. Any errors of interpretation are entirely my own: Zhang Yanbing, "Air Force Campaign Principles,"*Chinese Air Force Encyclopedia*, Chinese Air Force Encyclopedia editorial committee, Qiao Qingchen, Director. Vols. 1-2, (Beijing: Aviation Industry Press, 2005), 95-96; Lin Hu, "Air Force Campaign," *Chinese Military Encyclopedia*, Eds. Song Shilun and Xiao Ke, Vol. 2 of 11 vols. (Beijing: Military Publishing House, 1997), 446; Yu Liming, et al., *The Science of Campaigns (2006)*, 334; Yang Xiaobo, et al, *Science of Joint Campaign Command*, Zhang Peigao, Chief Editor. (Beijing: Military Science Publishing House, December 2005), 282.
55. Ibid.
56. Ibid.
57. Ibid.
58. Yu Liming, et al., *The Science of Campaigns (2006)*, 347.
59. Additional interpretations from Zhang Yanbing, *Chinese Air Force Encyclopedia*, Lin Hu, *Chinese Military Encyclopedia*, Yu Liming, et al., *The Science of Campaigns (2006)*, 334; Yang Xiaobo, et al, *Science of Joint Campaign Command*, 282.
60. IHS, *Jane's World Air Forces*, 3-5.
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62. IHS, *Jane's World Air Forces*, 15.
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