Red Wings Ascendant

The Chinese Air Force Contribution to Antiaccess

PLAAF Su–27 Flanker is a multirole fighter-bomber

DOD (D. Myles Cullen)

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During the 1995–1996 Taiwan Strait crisis, the United States intervened by deploying two carrier groups in response to Chinese missile tests near major Taiwanese ports. These tests were a means of coercively influencing pro-independence elements during the Taiwan presidential election and were considered by China to be an "internal" matter. The U.S. action therefore triggered enormous nationalistic resentment, rooted largely in historical humiliations and infringements on Chinese sovereignty by foreign powers. They also fueled a determined drive to mitigate or prevent such infringements on Chinese sovereignty in the future.

The national security strategy of China is built upon the concepts of sovereignty and territorial integrity. In defending these core national interests, People's Liberation Army Air Force (PLAAF) capabilities, doctrine, and training have been developed to support a comprehensive antiaccess/area-denial strategy. While these antiaccess capabilities cannot yet effectively counter U.S. capabilities, they have contributed to mounting U.S. concerns over China's current military modernization efforts. These concerns also facilitate misperceptions about "preemptive" Chinese military doctrine. If not clarified, dangerous miscalculations on both sides of the Pacific are possible, particularly if tensions over Taiwan are renewed.

While the Chinese air force has modified doctrine and improved capabilities to deter U.S. intervention in a Taiwan scenario, it remains a force with limited striking power. Due to a lack of experience and training in offensive air operations and its adherence to the strategic concept of active defense (*jiji fangyu*), China's air force is also not prepared to launch preemptive attacks in the absence of preexisting hostilities.[1] But, as these capabilities and doctrine mature, U.S. forces and

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Chinese and Philippine officials gather prior to discussion about claims to disputed islands in South China Sea

bases in the region will become increasingly vulnerable to Chinese antiaccess capabilities, requiring further efforts to enhance survivability, redundancy, and standoff capabilities to maintain the ability to project and sustain power in the region. For this reason, it is imperative to understand Chinese actions in their cultural and strategic contexts.

While China has never officially acknowledged an antiaccess strategy, the Chinese concept of active defense as well as recently modernized PLAAF capabilities, doctrine, and campaign planning have predisposed the PLAAF toward this approach in its role of defending China's sovereignty and territorial integrity.[2] Yet the PLAAF still faces significant challenges. These include an inability to refit all units with cutting edge weapons systems, weaknesses in China's aviation industry, lagging development of power projection enablers, and deficits in training. Any assessment of the implications of these developments must first examine the formulation of China's access-denial strategy, as well as the PLAAF transition to an offensive and defensive doctrine, which predisposes it toward this strategy. What then remains is to demonstrate how developing PLAAF capabilities, doctrine, and training combine to support an access-denial strategy with acknowledged implications for U.S. power projection.

Formulation of Access-denial Strategy

China's most significant security concern is Taiwan. The U.S. deployment of two carrier groups to the region during the 1995–1996 Taiwan Strait crisis 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 land, sea, and air 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 People's Liberation Army's (PLA's) Academy of Military Science, pointed out that the very assembly and positioning of coalition forces constituted "first firing" and justified action to postpone or even deter actual war.[3]

While the People's Republic of China (PRC) has never publicly acknowledged an antiaccess 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."[4] Yet it was not until the Department of Defense (DOD) *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 antiaccess strategies, designed to "deny entry into the theater of operations."[5] This emphasis reflects the continuing sensitivity of the Chinese toward matters of sovereignty and territorial integrity. The overwhelming majority of China's historic military clashes have involved such border and sovereignty issues.[6] China today remains concerned about the vulnerability of its economically productive coastal areas to air and sea threats, and also fears that the United States would intervene to protect Taiwan should a Tai-

wanese declaration of independence trigger a Chinese military response.[7] China holds that Taiwan is Chinese territory and *denial* of Taiwan as a base for other powers to threaten the mainland or its sea lines of communication is therefore a logical assertion of China's sovereignty.[8]

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 such as Sun Tzu, 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."[9] Defense of sovereignty or territory is considered righteous, particularly when responsive instead of provocative.[10]

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 such as the Great Wall.[11] 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 century, have engendered a defensive mindset toward foreign interventions that persists in modern China. Thus, the logic of defending China's territory by deterring or denying foreign intervention (antiaccess) 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.[12]

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 subordinate 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 carries nuances of "conflict avoidance, strategic guile, and as a last resort, carefully picking the battlefield and the battle."[13] Mao once stated that "China will never make a preemptive attack" and yet "active defense is defense in an offensive posture."[14] In preconflict situations, active defense emphasizes political caution and conflict avoidance, but once hostilities have begun, it emphasizes offensive counterattacks.[15] *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.[16] 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 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."[17] 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 a true expression of active defense, they would have to be *preceded* by U.S. violation of China's sovereignty or territorial integrity (such as active military intervention in the scenario above). Ambiguities regarding the threshold such intervention would have to meet in order to trigger a Chinese counterattack have biased U.S. analysts toward worst-case scenarios that obscure the strategic intent of active defense. 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."[18] 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.[19]

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Chinese helicopters escort landing ships during joint land, sea, and air military exercise

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PLAAF JH–7 takes off during drill as part of China's efforts to operate from the Indian Ocean to the western Pacific in "active defense" of its territory and sovereignty

Attention to these nuances places Chinese campaign plans in their cultural and strategic contexts by highlighting the Chinese national sensitivity to matters of sovereignty and territorial integrity. It also clarifies how active defense, when guiding modern doctrine and modern long-range capabilities, predisposes the PLAAF to an antiaccess 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."[20] The PLAAF has thus developed modernized offensive capabilities and doctrine grounded in the tenet of active defense.

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 air force began to shape its own campaign doctrine and weapons development programs.[21] New offensive capabilities and doctrine now balance the PLAAF defensive tradition, and both enable antiaccess 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, Kosovo campaign, and U.S. operations in Afghanistan and Iraq, building on the doctrine that 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.[22] 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-tech local wars with airpower.[23] President Jiang Zemin asserted that "we must construct a powerful people's air force 'with Chinese characteristics,' that is both offensive and defensive."[24]

As part of this drive and in order to "construct an informationized force and win an informationized war," Chinese national security strategy forums 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.[25] The concept of "informationization" permeates PLA doctrine and emphasizes the holistic integration of digitally linked information, sensors, weapons, and automated command and control systems via common networks.[26] 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*)."[27]

This offensive-defensive doctrine enhances the PLAAF ability to defend China's sovereignty and territorial integrity with modern offensive capabilities. That these same capabilities support an antiaccess strategy is clearly supported by PLAAF campaign planning efforts. PLAAF antiaccess 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.[28] In envisioning these campaigns, PLA military authors have stated that "the core of a strategy that combines offense and defense is aerial offense."[29] 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*."[30] 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.[31]

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."[32] 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*.[33]

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."[34] 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."[35] Thus, campaign planning and doctrine apply antiaccess approaches to increase the cost of violating China's sovereignty or territorial integrity.[36] For execution, they require modern capabilities.

Development of Antiaccess Capabilities

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 United States and its allies that the cost of entry into the region will be prohibitive.[37] 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 (C^2) and intelligence, surveillance, and reconnaissance (ISR) capabilities, as well as force projection enablers such as aerial refueling, airlift, and logistic 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 logistic nodes, and deny airspace over or near Chinese territory or forces.

The PLAAF has chosen to deter or deny the threat of aircraft penetrating China's territory and airspace, or seizing air dominance over PLA forces, via advanced and extended range surface-to-air missiles (SAMs) and fighter aircraft. Modernizing air-to-air capabilities now complement advanced Russian and indigenous SAMs. Older aircraft feature selectively improved electronics, radar, and engines, and some variants are equipped for aerial refueling, extending their combat radius and enhancing aerial access-denial options as far as the South China Sea.[38] More modern multirole fighters also incorporate an extended combat radius, advanced avionics, aerial refueling capability, some stealth design characteristics, and data link capabilities that allow sharing of information with the KJ series Airborne Warning and Control Systems (AWACS). These can also employ a variety of upgraded air-to-air missiles for an extended beyond-visual-range (BVR) attack capability.[39]

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.[40] However, despite steadily growing numbers of aircraft with ever increasing ranges, 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.[41] If these limitations are overcome, the PLAAF's ability to hold U.S. force projection capabilities at risk at extended range would be greatly enhanced.

Evolving PLAAF precision-strike capabilities add another layer of antiaccess competencies to deter, disrupt, or deny regional bases, as well as naval surface and carrier operations. These include upgraded aircraft that can employ modern precision ordnance including anti-radiation missiles, air-launched land attack and antiship cruise missiles, and a variety of television, laser, and Global Positioning System/Global Navigation Satellite System–guided precision munitions. These last include "bunker buster" munitions that can be employed in long-range access-denial attacks on hardened targets such as aircraft shelters and command and control bunkers at regional bases beyond China's periphery (for instance, Kadena Air Base).[42] The remainder of the PLAAF's long-range strike capability resides with its H–6 bomber and cruise missile variants, which can attack various fixed targets (including Guam) with either conventional or nuclear payloads. These capabilities give the PLAAF a significant role in strategic deterrence as well as extended range access denial.[43] PLAAF capabilities are also complemented by evolving PLA Navy (PLAN) strike capabilities that allow both the PLAAF and PLAN to strike a variety of land and sea targets at extended range, potentially preventing deployment or employment of forces from these targets.[44] 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.[45] Also, PLAAF ability to logistically support and sustain force projection operations beyond its periphery, particularly in antiaccess scenarios that might include sustained long-range strikes or the seizure of regional bases, is limited.[46]

A holistic approach to integration of C^2 and ISR has enhanced coordination and employment of access-denial capabilities across the PLA. As noted above, informationization encompasses digital linkage of information, sensors, weapons, and automated C^2 systems via common networks while denying these capabilities to opponents.[47] The focus of PLAAF airborne early warning 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 antiaccess capabilities.[48]

Informationization has also driven a PLAAF capability to deny access to the electromagnetic spectrum. By 2006, the Department of Defense assessed that "China's investments in advanced electronic warfare programs had given the PLAAF technological parity with or superiority over most potential adversaries."[49] 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*.[50] The significance of such electromagnetic antiaccess capabilities to the PLAAF is clearly demonstrated in

campaign planning. To employ such capabilities effectively, PLAAF doctrine and training must integrate these and other antiaccess capabilities.

Doctrinal Integration

The PLAAF has made significant progress in integrating its antiaccess capabilities in doctrine. PLAAF operational planning increasingly reflects doctrinal principles that integrate current weapons 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*.[51]

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 the 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.[52]

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 antiaccess targets as evidenced by PLAAF campaign plans.[53] 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 airstrikes would closely follow Second Artillery missile strikes or PLAN strikes and would occur in conjunction with electronic warfare (jamming) and computer network attacks (and potentially attacks from and against space-based infrastructure).[54] *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 airstrikes on command and control centers, runways, parked aircraft, and fuel depots. Continuous missile and airstrikes are then concentrated in time and space to "annihilate enemy air capabilities" and achieve air dominance over PRC territory and forces.[55]

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.[56] This principle supports the intent of the PLAAF's antiaccess 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, space, and cyber-based antiaccess capabilities presented by these other services.

The PLAAF has made slower progress in integrating its antiaccess capabilities in training. The PLAAF and PLAN 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.[57] New, semi-permanent opposition forces (known as BLUEFOR) employ foreign tactics and doctrine to train the PLAAF.[58] 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, these remain immature and limited.[59] 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.[60] 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 antiaccess 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 September 16, 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."[61] The PLAAF can now contest local air dominance over the Taiwan Strait, creating new options for Chinese coercive diplomacy.[62] The range of air refueling–capable Su–30MKKs deployed in the Nanjing and Guangzhou Military Regions can already threaten U.S. forces in Okinawa, though not with the effect additional tankers and air refueled aircraft could offer.[63] 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-kilometer radius of action, allowing access-denial strikes against Guam.[64] 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 antiaccess options against U.S. power projection.[65]

If China shares these capabilities with hostile regimes, they could challenge U.S. force projection efforts 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.

PLAAF offensive and defensive doctrine and modernized capabilities are guided by the strategic tenet of active defense. They are therefore optimized for an antiaccess strategy in defending China's sovereignty and territorial integrity, and in fact predispose the PLAAF toward 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. **JFQ**

NOTES

[1] See the next section of this article for a discussion of how the PLA's tenet of Active Defense guides counterattacks *after* hostilities begin (for example, once the enemy has attacked or invaded Chinese territory) as opposed to a doctrine of preemptive attack. The sources of this data are cited in that section though analytical interpretations vary depending on the linguistic and military proficiency of the translator:

[2] A great number of official and academic documents discussing PLAAF doctrine, campaign planning, and training are available at the unclassified level in Mandarin Chinese, but have yet to be consistently translated into English or made widely available for analysis. I have referenced several of these below in notes 27, 29–36, and 52–57, in some cases translating, retranslating, or transliterating their contents myself and in collaboration with native Chinese speakers.

[3] John Wilson Lewis and Xue Litai, "The Quest for a Modern Air Force," in *Imagined Enemies: China Prepares for Uncertain War* (Stanford: Stanford University Press, 2006), 237.

[4] Sam Tangredi, *All Possible Wars? Toward a Consensus View of the Future Security Environment, 2001–2025* (Washington, DC: National Defense University Press, 2000), 41, 78–82.

[5] Department of Defense (DOD), *Annual Report to Congress: Military Power of the People's Republic of China 2005* (Washington, DC: Government Printing Office, 2005), 33.

[6] David M. Lampton, *The Three Faces of Chinese Power: Might, Money, and Minds* (Berkeley: University of California Press, 2008), 16.

[7] Ibid., 40–41.

[8] Ibid., 50.

[9] DOD, *Annual Report to Congress: Military Power of the People's Republic of China 2009* (Washington, DC: Government Printing Office, 2009), VII.

[10] Ge Dongsheng, *On National Security Strategy* (Beijing: Military Science Publishing House, 2006), 203.

[11] Ibid.

[12] DOD, *Annual Report, 2009*, 12.

[13] Lewis and Xue, 40.

[14] Ibid.

[15] Ibid.

[16] DOD, *Annual Report, 2009*, 12.

[17] Ibid.

[18] Lewis, 227.

[19] *The National Security Strategy of the United States* (Washington, DC: The White House, 2002), Section 5, and *The National Security Strategy of the United States* (Washington, DC: The White House, 2006), 12.

[20] He Weirong, "Military Thought on the Air Force," *Chinese Air Force Encyclopedia* (Beijing: Aviation Industry Press, 2005), 1–5.

[21] Lewis, 223–227.

[22] He, 1–5.

[23] Guo Jinxiao, "The Science of Air Force Strategy," *Chinese Military Encyclopedia* (Beijing: Military Science Publishing House, 2002), 311–312.

[24] Ge, 215.

[25] Ibid.

[26] Lampton, 42.

[27] Ji Fuxin, "The Science of Air Force Command," *Chinese Air Force Encyclopedia* (Beijing: Aviation Industry Press, 2005), 157–158.

[28] DOD, *Annual Report, 2009*, 13, and Ge, 236.

[29] Ge, 234.

[30] Ibid., 236.

[31] Guo, 311–312.

[32] Lu Wen, "Logistics Support of Anti-Air Raid Operations," in *Theater Campaign Logistics Support*, ed. Xu Guoxin (Beijing: National Defense University Press, 1997), 98.

[33] Ibid., 113.

[34] Yu Liming et al., *The Science of Campaigns (2006)* (Beijing: National Defense University Press, 2006), 602–605.

[35] Ge, 236.

[36] Ibid., 238.

[37] Tangredi, 79.

[38] Tong Hui, *Chinese Military Aviation, 1995–2009, Section 1: Fighters, 1–2*, available at <http://cnair.top81.cn/>.

[39] Ibid.

[40] DOD, *Annual Report, 2009*, VIII.

[41] Ibid.

[42] Tong.

[43] Ibid.

[44] Ibid.

[45] DOD, *Annual Report, 2009*, 37.

[46] Ibid., 38.

[47] Lampton, 42.

[48] DOD, *Annual Report, 2009*, 62.

[49] Ibid., VIII.

[50] Ibid., 14.

[51] 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* (Beijing: Aviation Industry Press, 2005), 95–96; Lin Hu, "Air Force Campaign," in *Chinese Military Encyclopedia*, vol. 2, ed. Song Shilun and Xiao Ke (Beijing: Military Publishing House, 1997), 446; Yu et al., 334; Yang Xiaobo et al., *Science of Joint Campaign Command* (Beijing: Military Science Publishing House, December 2005), 282.

[52] Ibid.

[53] Ibid.

[54] Ibid.

[55] Yu et al., 347.

[56] 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.

[57] IHS (Global) Limited, "World Air Forces, China," *Jane's World Air Forces*, (Singapore: IHS, July 2009), 3–5.

[58] DOD, *Annual Report, 2009*, 51.

[59] IHS, 15.

[60] DOD, *Annual Report, 2009*, VIII.

[61] Tony Cappaccio, "China's New Weapons May Threaten U.S. Bases, Ships, Gates Says," September 16, 2009, available at <www.bloomberg.com/apps/news?pid=20601080&sid=am6ExRzB1cjo>.

[62] DOD, *Annual Report, 2009*, VIII.

[63] IHS, 4.

[64] Ibid., 16.

[65] DOD, *Annual Report, 2009*, VII, 22–23.