Hudson Institute

JULY 2022

Defending Guam

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Cover: A military helicopter flies over the waters of Agana Bay in Hagatna, Guam, on Aug. 10, 2015. (Tiffany Tompkins-Condie/McClatchy DC/Tribune News Service via Getty Images)

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INTRODUCTION

By Rebeccah Heinrichs

Guam, "where America's day begins," constitutes an indispensable strategic hub for the United States. The largest of the Mariana Islands in the western Pacific, it allows the United States to successfully project power within the Indo-Pacific region and so makes credible US security commitments to key US allies located there. Guam is home to Andersen Air Force Base (AFB), from which F-22 Raptors and strategic bomber rotations project US power from the skies, and to the deep-water port Apra Harbor, which plays a critical role in US Navy missions aimed at keeping trade routes open. Thus, this US territory is essential to the security of the American citizenry.

Guam's great strategic value to the United States and its proximity to North Korea and the Peoples Republic of China (PRC) make it a prime target of missile attack by these US adversaries. Of particular concern, however, is the threat posed by possible Chinese long-range missile strikes, and so, to enable the successful projection of US power within the region and provide credible assurance to key allies, Guam's defenses must be strengthened. Due to its significance to US security and its status as a US territory, military officials have increased their emphases on the need to speed up the construction of an adequate defense. Then-Commander of US Pacific Command Admiral Davidson regularly connected Guam to the US homeland, stating to Congress, "Hawaii,

Photo: A Hospital Corpsman and Naval Aircrewman look out the starboard side door of an MH-60S Sea Hawk Helicopter while flying near Naval Base Guam. (US Navy photo by Mass Communication Specialist 3rd Class MacAdam Kane Weissman)

Guam, and our Pacific territories are part of our homeland and must be defended."[1]

The PRC seeks to supplant the United States as the world's preeminent power,[2] and one key to achieving this ambition is transforming the Indo-Pacific from a free and open region under the current US-led system into one that is Beijing-centric and Beijing controlled. China's accomplishing this would not only prevent the US from ensuring the safe commerce in international waters that is essential to the health of the US economy but would also compromise the credibility of US security commitments to critical regional allies. Thus, China's aims pose an unacceptable risk to American sovereignty and to the US ability to engage with sovereign nations freely and safely.

The likely flashpoint of a US-PRC military conflict is the PRC's attempt to conquer democratic Taiwan. Although the United States has neither formal diplomatic relations nor a security agreement with Taiwan, denial of PRC ambitions to push the United States out of the region is strongly tied to the security and self-determination of a democratic Taiwan. Therefore, ensuring Taiwan's self-rule has had strong bi-partisan support in Congress and across US administrations, as reflected in robust US weapons sales to Taiwan, military training assistance provided to Taiwan by the US, and meaningful symbolic political gestures of US support of and friendship with Taiwan.[3] Director of National Intelligence Avril Haines stated, "It's our view that (China is) working hard to effectively put themselves into a position in which their military is capable of taking Taiwan over our intervention" and that the threat to Taiwan between now and 2030 is "acute."[4]

To support its national aims, the PRC has invested in a modern military designed specifically to counter key US military assets and bases located within the Indo-Pacific region. Xi Jinping has directed the Peoples Liberation Army (PLA) to completely modernize all weapons systems and all capabilities across all military domains by 2027. Of special concern is the PLA's anti-access/area denial (A2/AD) strategic capability,[5] whose purpose is to enable the PRC "to dissuade, deter, or, if ordered, defeat third-party intervention during a large-scale, theater campaign such as a Taiwan contingency."[6]

In addition to the rapid development of the PLA's conventional weapons, it is investing heavily in its nuclear weapons force. On September 2021, Commander of US Strategic Command Admiral Charles Richard described the PRC as engaging in a "strategic breakout," i.e., "a rapid qualitative and quantitative expansion of military capabilities that enables a shift in strategy" necessitating "the DoD to make immediate and significant planning and/or capability shifts."[7] Recently, Admiral Richard also warned of the "cooperative aggression" posed by Russia and the PRC working in concert.[8]

If deterrence were to fail and the PRC were to attempt to take Taiwan by military force, Guam would constitute a critical forward location for US actions to defend it in collaboration with US allies.

Given Guam's strategic importance and the threat to its security that the PRC represents, the US has a clear and vital national interest and an obligation to ensure Guam's protection. Therefore, inspiring and contributing to public consideration of and debate about the importance of Guam's defense are essential, and this compilation of essays and the associated two-part panel discussions contribute to this endeavor. In them, scholars who have devoted research and analysis to difficult challenges facing policymakers and defense planners and who represent a wide range of knowledge, expertise, and diverse viewpoints address various aspects of the PRC challenge and suggest approaches to address Guam's vulnerability. These scholars agree on some key aspects of the threat the PRC poses and the consequent challenge facing the United States but at times emphasize varying aspects of the challenge and propose differing orders of priority in meeting these challenges.

The elements of my working thesis concerning Guam's defense are seven-fold.

One, this defense must cover 360 degrees and incorporate "depth." PLA threats to Guam will originate from air, sea, and land and come from all directions; therefore, Guam's defense must include an architecture extending to the sea and to other islands within the Mariana Island chain.

Two, this defensive architecture cannot be held to a "zero-leak" standard. The quantity of missiles the PLA now has renders a zero-leak requirement infeasible, making any attempt to adhere to this standard unnecessary. Instead, the aim should be to quickly build out Guam's 360-degree coverage and enable the integration of various sensors, thereby demonstrating US commitment to fight for and from Guam and so communicating to the Chinese that a quick victory over Guam is impossible.

Additionally, if the United States can intercept and render useless incoming weapons, it will have the ability to retaliate with a robust counter-offensive. One of the most promising strategies for achieving a high kill rate without attempting to adhere to a zero-leak standard is for military defenders to have a clear picture of the threat so as to mount an effective defense *and retaliate appropriately*. Missile Defense Agency (MDA) Director Vice Admiral Hill stated that his aim is integrating multiple data streams into a coherent picture for military commanders, the most challenging aspect of Guam's defense. Thus, the MDA has prioritized construction of an integrated missile defense command and control center on Guam.[9] However, it is imperative that this command center give commanders a full picture of the battlespace across domains and offer management of the fight beyond defense and across services and functions.

Three, while passive defenses including tactics intended to deceive an adversary and fortification of military infrastructure to sustain an attack are important, there is no substitute for a layered active defense. To achieve cost-effectiveness, some budget offices may be tempted to over-rely on passive defenses, but that would be a grave mistake. The US military must have the ability to blunt the impact of a fast PRC attack, and that means preventing missiles from hitting key targets.

Four, a distributed defensive architecture is crucial. Complicating the adversary's calculations about how it might subdue US forces on Guam is key to strengthening deterrence and successfully thwarting the enemy's attack if deterrence fails. Still, though Guam is the largest of the Mariana islands, it has an area of only 200 square miles. Less than half of it is controlled by the Department of Defense, and thus the number of locations for emplacement of military equipment, both offensive and defensive, that it can provide is limited. During an ongoing barrage of incoming fires, the requirement that defensive systems are mobile might not be operationally practical, even if theoretically desirable; from conversations with operators, the most important attribute required for defensive systems is persistency.

Five, time is not on our side, and immediate development and implementation of a Guam defense strategy is essential. Policymakers and defense planners must not permit bureaucratic inertia or micromanagement by such budget entities as the Cost Assessment and Program Evaluation (CAPE) office to determine the order and sequence of critical steps in construction of Guam's defenses. Instead, national policy must drive this strategy and budget.

Six, rapid, regular, and visible tests of Guam's offensive and defensive systems serve the important purpose of signaling to the PRC that the United States is willing and able to defend its territory and to follow through on its security commitments. There is no evidence that highly visible or frequent testing will "provoke" the PRC to attack. To the contrary, visible and realistic tests of offensive and defensive systems on land and at sea could persuade the PRC not to attack, since the presence and viability of these systems would weaken the PRC's assessment of its likelihood to succeed. The Pentagon has therefore outlined "campaigning" as one of its three aims for implementing its De-

fense Strategy.[10] Visible and frequent testing of the capabilities needed in a direct confrontation with the PRC under realistic scenarios is exactly the kind of campaigning required to persuade the PRC that now is not a good time to launch an attack.

Seven, policymakers should educate the American public on the integral role the US territory of Guam plays in the security of the United States and in the American way of life. A lack of support domestically to fight from and for Guam could convey a lack of political will on the part of US government officials. It is wise to make efforts publicly, in rhetoric (for example, Admiral Davidson's effort to describe Guam's defense as "Homeland Defense System Guam."[11]), and in other ways such as senior US official visits to Guam.

In conclusion, maintaining a free and open Indo-Pacific theater constitutes a vital US interest and a necessity for the credible provision of US assurances and commitments to key US allies in the region. These US security guarantees, backed by US resolve and military power, underpin the US-led order regionally and globally. Moreover, not only is Guam a key strategic hub and so vital to American security and prosperity, but it is also a US territory and home to US citizens. Guam's defense is therefore imperative. Fighting from and for Guam is challenging but eminently achievable, and its defenses must be strengthened *now* to dissuade the PRC from initiating aggressions against it in pursuit of one of its national priorities, the conquest of a democratic Taiwan. However, time is not on our side, and we must therefore move quickly.

Endnotes

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1. FIGHT FROM GUAM —DON'T JUST DEFEND IT

By Bryan Clark

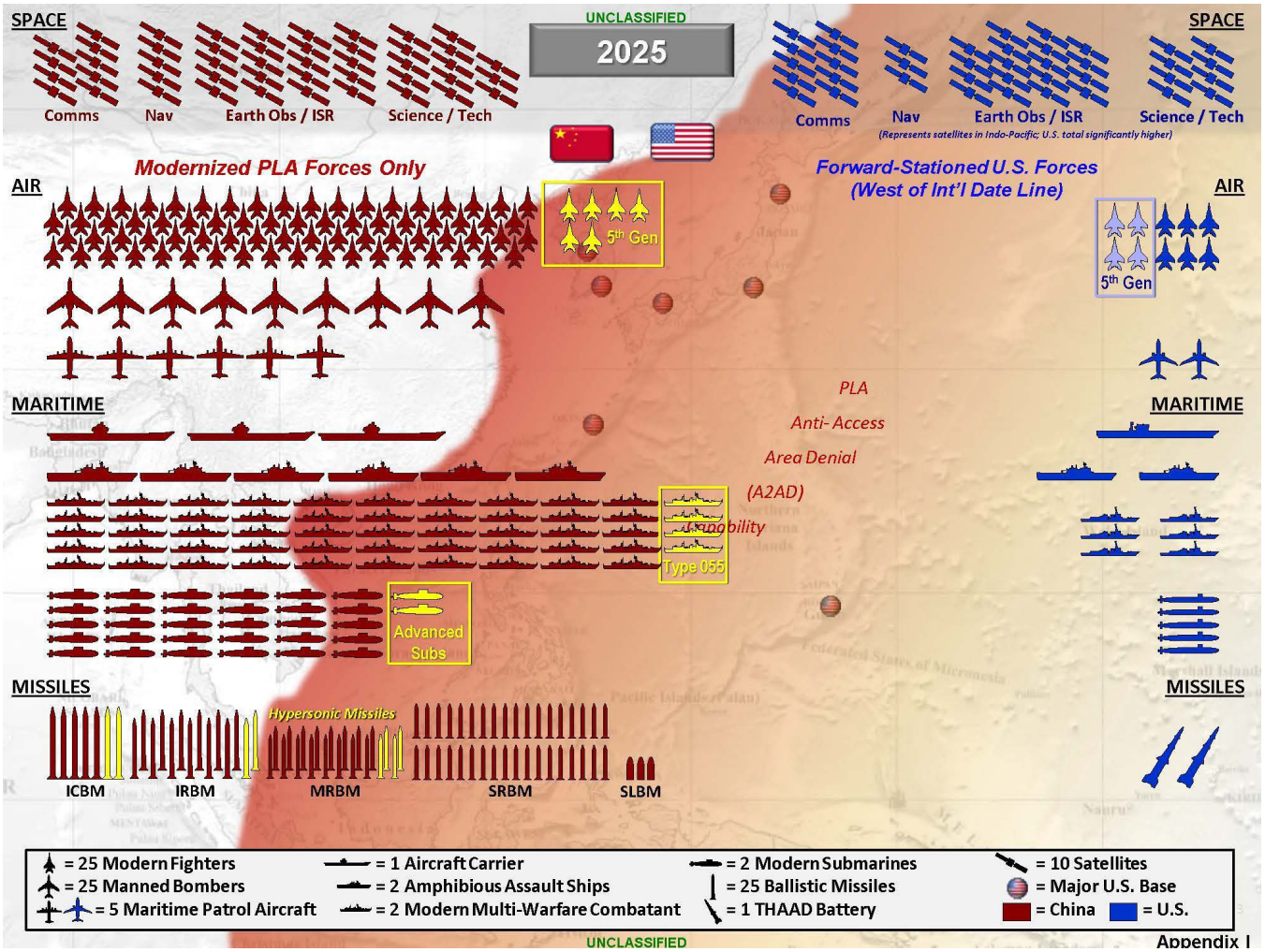
Guam represents the US military's most important logistics and support base in the Indo-Pacific region. Although Japan is home to dozens of US Navy ships, thousands of Marines, and hundreds of Air Force jets, the People's Republic of China (PRC) would during a war likely use air attacks to threaten and suppress the bases from which they operate. With its greater distance from China and position straddling the northern and southern regions of the western Pacific, Guam would be the gas station, repair shop, and command center for US naval and air forces during a confrontation with the People's Liberation Army (PLA).[1]

Recognizing Guam's importance to US war plans, the PLA has expanded its reach and capacity to threaten the island. As Figure 1 shows, the Department of Defense projects that in 2025 the PLA will dwarf US forces in the region day-to-day. This projection includes a growing number of sophisticated aircraft, ships, and missiles that are on par with their US counterparts.

The PRC's advantage in the western Pacific results in large part from its "home field" advantage and lack of global responsibilities. Unlike the United States, which is obliged to protect or support a network of allies, the PLA can focus its posture on the PRC's near

Photo: The submarine tender USS Emory S Land AS 39 provides support services to the Los Angeles-class fast attack submarines USS Topeka SSN 754, USS Tucson SSN 770, USS Buffalo SSN 715 and the Ohio-class guided-missile submarine USS Michigan SSGN 727, Polaris Point, Guam, 2012. (Smith Collection/Gado/Getty Images).

Figure 1: Comparison of US and PLA Forces in the Western Pacific[2]

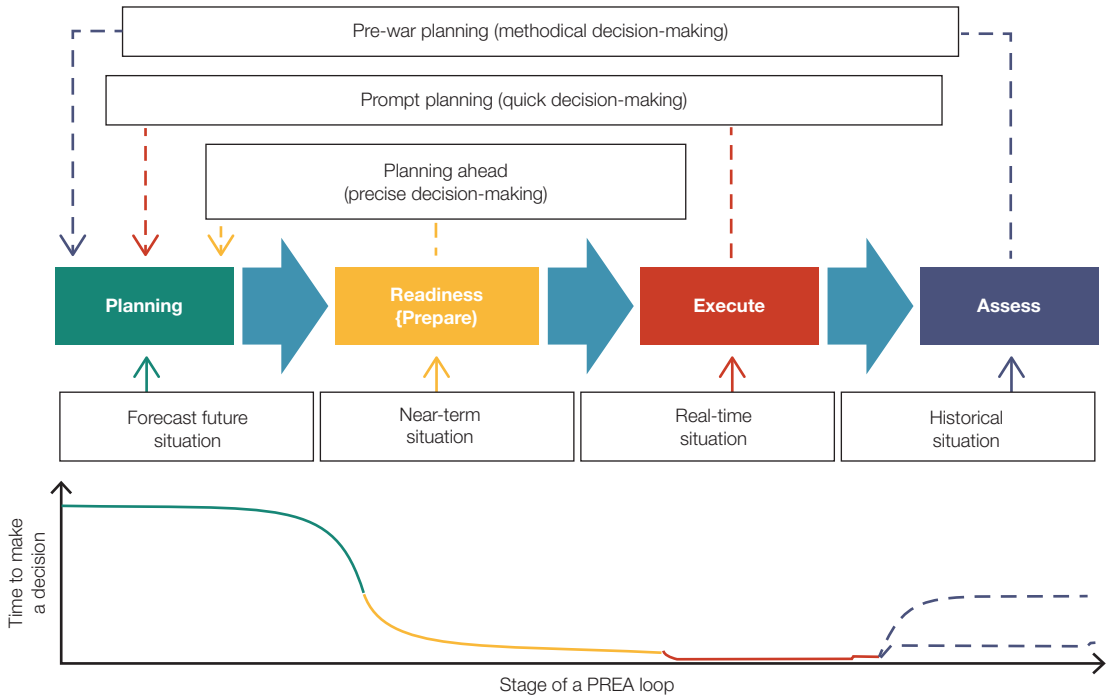


Source: Author.

abroad. It can project power overseas when leaders in Beijing see an opportunity, rather than whenever a partner experiences a disaster or attack. However, the PRC's freedom of action and home field advantage create disadvantages. For example, without allies that depend upon it militarily, the PRC is compelled to often rely on direct inducements or coercion, such as through the Belt and Road Initiative, to gain influence internationally.

More importantly for Guam, the PRC's home field advantage leads the PLA to adopt planning approaches that create opportunities that the US military can exploit operationally. As Figure 2 shows, the PLA builds its predominant planning process, the Planning-Readiness-Execute-Assess (PREA) cycle, around a set of feedback loops across three separate time horizons. The longest horizon is the "planning" phase, which

Figure 2: The PLA's PREA Cycle



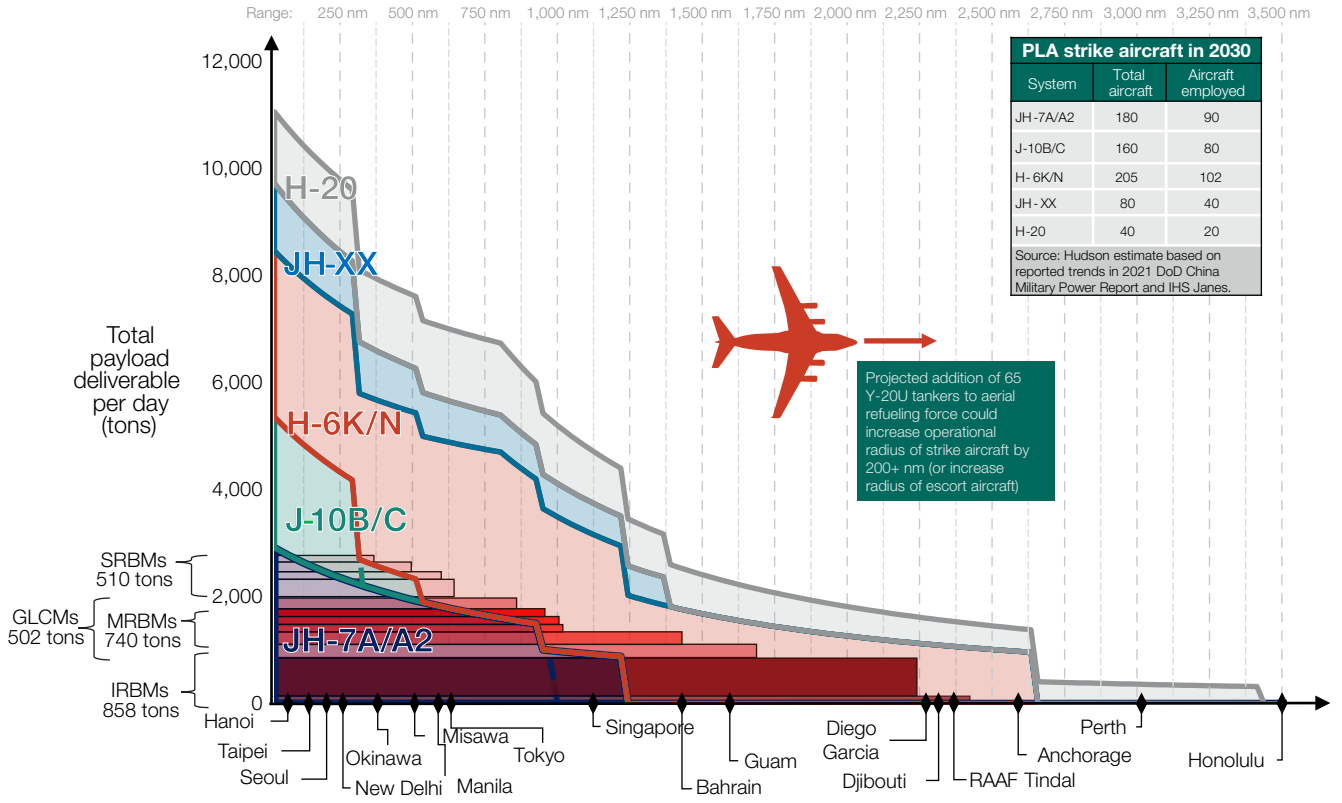
Source: Author.

is when the PLA methodically assembles capabilities and tactics under its concept of systems warfare, which targets perceived vulnerabilities of expected US forces and plans.[3] As a situation moves toward conflict, the PLA shifts to the "readiness" phase, in which it postures specific units and develops courses of action (COA) for expected operations. During a confrontation, the PLA moves into the "execute" phase, in which it implements COAs. The "assess" phase is when PLA analysts evaluate the effectiveness of plans in exercises or actual operations to inform the next generation of plans.[4]

The PREA planning model arguably emerges from China's home field advantage, which allows PRC leaders to drive the tempo and character of a conflict like an invasion of Taiwan. With US and allied forces limited in how they can intervene, the PLA can target its system and COA development against vulnerabilities of predicted US system of system configurations, operating schemes, and posture.

By relying on projections of US forces and operations, the PREA approach and system warfare concept create a potential vulnerability for the PLA. The PREA process may break down if US and allied militaries can introduce surprise into their pre-war activities or expand the range of alternative COAs available to commanders during a conflict. Faced with a widening set of US and allied options, the PLA would need to pursue more adaptable or numerous systems and plans in the planning phase, as well as more branches and sequels in the readiness phase. Ultimately, PLA leaders may need to give field commanders

Figure 3: Approximate PLA "throw weight" against Various Targets in the Western Pacific[5]



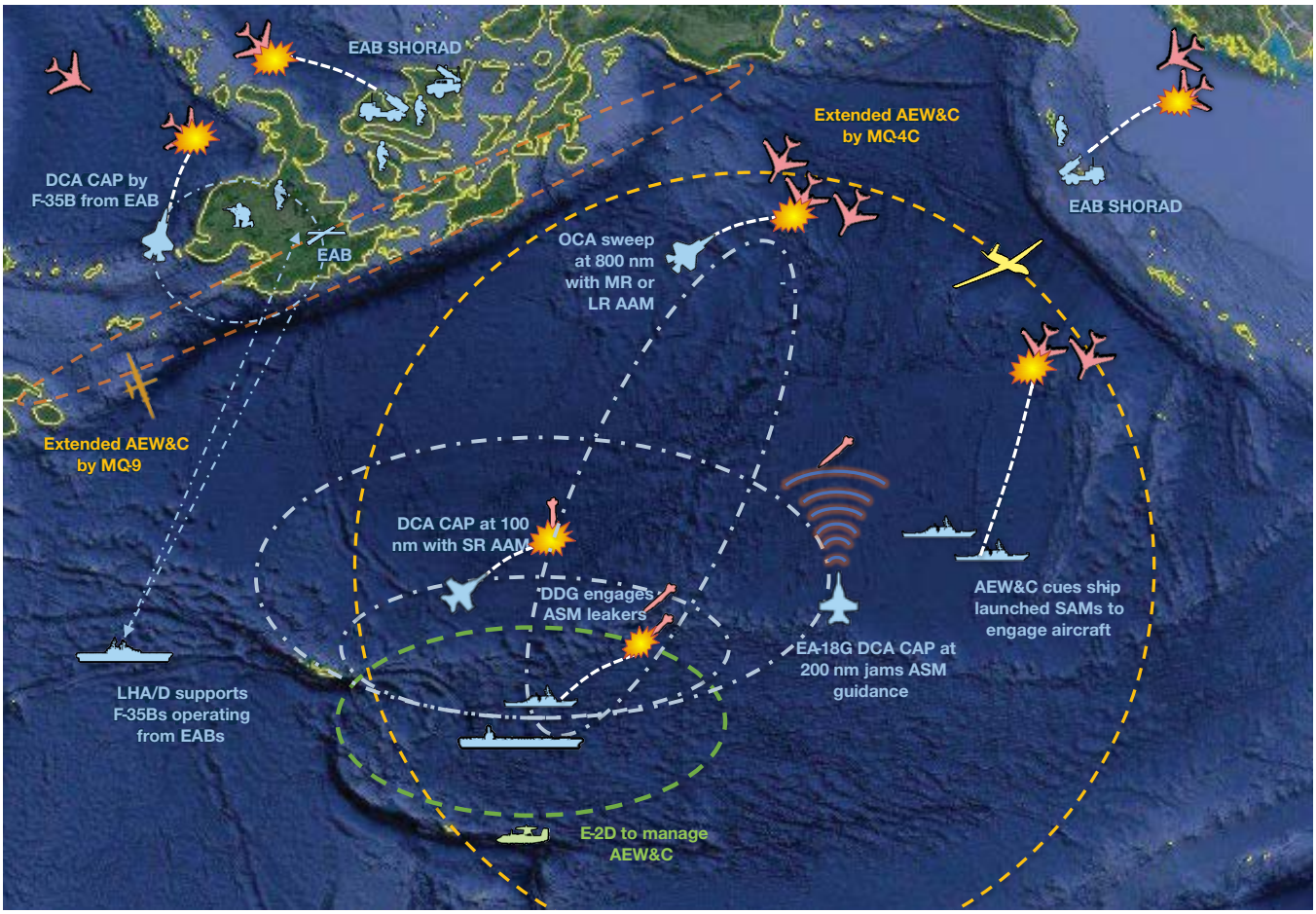
Source: Author.

more flexibility in the execution phase. These changes would introduce uncertainty in PLA leaders' minds regarding their likelihood of success and would help deter aggression.

The PRC's home field advantage and planning processes allow for a new approach to the defense of Guam. As Figure 2 shows, the number of PLA weapons that can reach Guam numbers in the thousands. Stopping all these missiles and bombs, even if some of the delivery aircraft could be destroyed on the ground or in the air, is infeasible. The common US metric of raid annihilation would therefore not be useful in representing how effective US defenses are performing.

Instead of focusing on negating or defeating PLA attacks against Guam, the US military should prioritize sustaining air operations from Guam. PLA plans are built around the expectation that it could eventually neutralize Guam, denying US forces the logistics and basing hub needed to sustain air and naval operations in defense of, for example, Taiwan. Keeping Guam in operation would undermine PLA plans and create uncertainty, requiring greater agility from PLA forces that may not be prepared to improvise under the PREA process. The US military's Joint Warfighting Concept (JWC) prioritizes efforts like this to improve the forces' adaptability and resilience under its approach of "expanded maneuver."[6]

Figure 4: A Distributed Air Defense Concept for Guam[8]



Source: Author..

Sustaining Guam's operations during wartime will require new approaches to defend the island and its bases. To counter the PLA's large number of bomber-launched cruise missiles, as shown in Figure 1, US forces will need to employ the Cold War approach of attacking "archers" before they can launch their "arrows."[7] To reduce the ability of PLA attacks to defeat US anti-air weapons, countermeasures, and sensors, Guam's defenses will need to be distributed to allow for more flexible postures and create threats to PLA air and missile attacks from multiple locations and axes. For example, as shown in Figure 3, naval, air, and ground forces on and around Guam could interdict PLA bombers and missiles as they approach Guam. Planned surface-to-air missiles, such as the Patriot PAC-3 and Terminal High Altitude Air Defense (THAAD) system, could complement those forces.

The layered, distributed defensive scheme of Figure 3 would be less predictable for PLA planning, and it would leverage forces already in theater for other missions to keep Guam in operation. The military may intend navy carrier strike groups (CSGs), marine littoral regiments (MLRs), and surface action groups (SAGs)

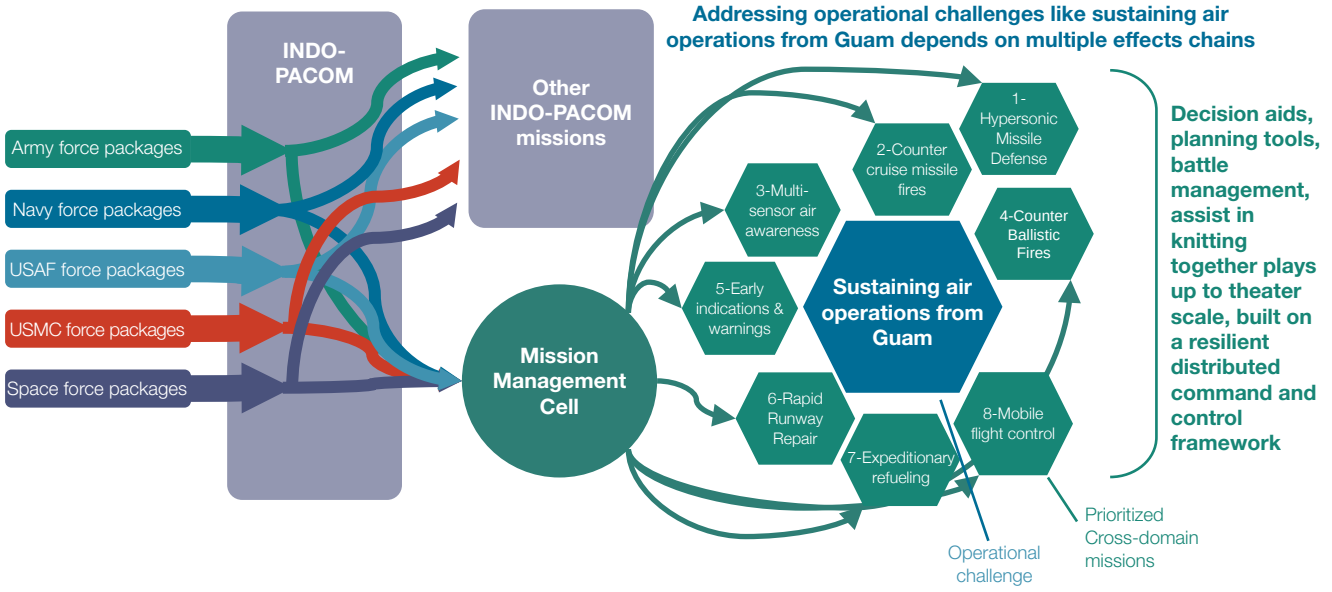
to engage PLA Navy (PLAN) ships and aircraft, but those missions may not emerge if the PLAN fleet remains close to home to protect an amphibious invasion of Taiwan. In that situation, US and allied naval forces could instead complement and sustain Guam's ability to support long-range strike operations against the PLA invasion.

Sustaining air and naval operations from Guam would require orchestrating the deployment and use of distributed surface-to-air missiles on and off the island, countermeasures such as electronic warfare jammers and decoys, and response capabilities such as runway repair teams, mobile air control centers, or portable fuel storage tankers. The military should exercise these multiple missions and their associated effect chains in advance of conflict to impose complexity on PLA planning. More importantly, however, the US should frequently change these capabilities and concepts during peacetime to create surprise and uncertainty for PLA leaders.

Figure 4 depicts a process for managing the assignment of forces and identification of missions associated with sustaining air operations from Guam, which shares many forces and missions with the operational challenge of sustaining naval operations from Guam. US Indo-Pacific Command (INDOPACOM) would execute the mission management process, both in wartime and during what the DOD describes as the "competition phase" before a conflict and what PLA planning characterizes as only a less combative period of the ongoing US-PRC confrontation. As the figure shows, the US would allocate a portion of the forces assigned to INDOPACOM to missions associated with resilient air operations from Guam.

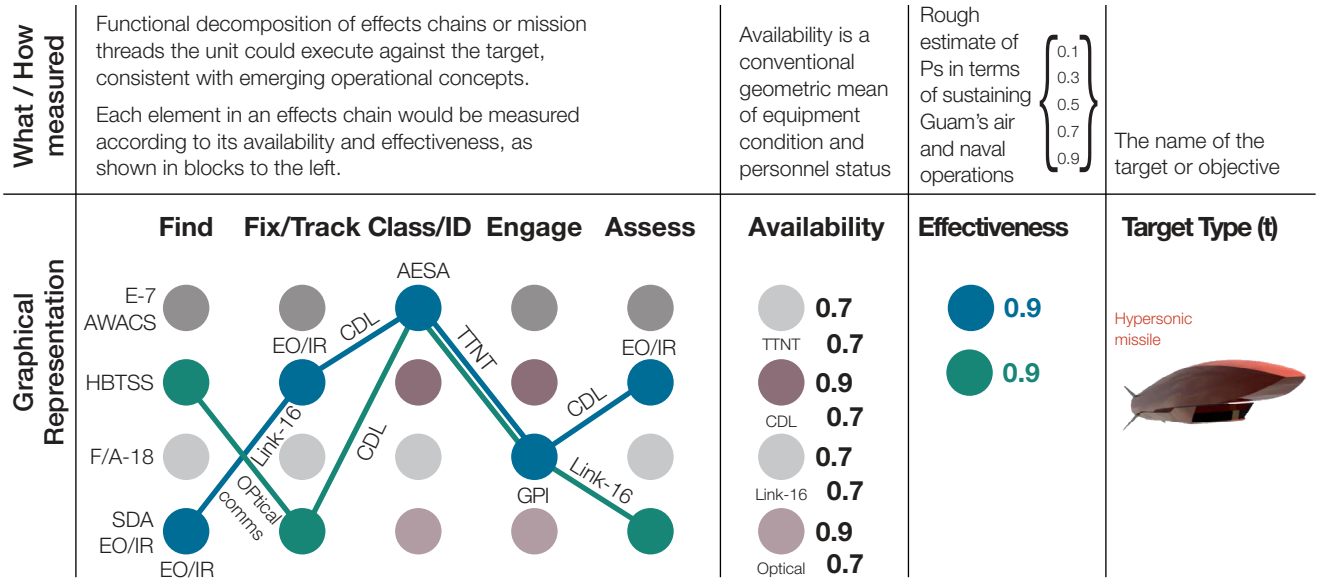
A wide range of missions—including but not limited to cruise, ballistic, and hypersonic missile defense operations—can facilitate sustaining air operations from Guam. Composing joint force packages to conduct these missions would be a key role for INDOPACOM, and a mission management cell, like that established

Figure 5: Mission Management Process for Sustaining Air Operations from Guam



Source: Author.

Figure 6: Hypersonic Missile Defense Effect Chains



Note: EO/IR=electro-optical/infrared sensor, CDL=Common Datalink, AESA=Active Electronically Scanned Array Radar, GPI=glide-phase intercept

Note: The probability of success of each effect chain is calculated based on the availability of its units and on the overall effectiveness of the effect chain. For simplicity, only two effect chains are shown here, but the associated units could be combined in multiple ways. Furthermore, other units that the INDOPACOM commander made available to JTF-China could be added or exchanged for these units to enable different effect chains. The best-performing effect chains would be chosen to address the operational challenge, in this case, sustaining air operations from Guam.

Source: Authors.

under a pilot project directed by the FY 2022 National Defense Authorization Act (NDAA), could lead the operation.[9] Under the process described in the pilot project, INDOPACOM would identify key operational challenges that need to be addressed for its plans to succeed, such as sustaining air operations from Guam. The mission management organization in INDOPACOM would identify how to address each operational challenge, and work with a mission manager in the Office of the Secretary of Defense to fill gaps in needed capabilities with new or modified systems.

Traditionally, DOD capability gap analyses build requirements for new systems by assessing projected capabilities in the context of a set of predicted future scenarios. The dependence of these analyses on forecasts of future US and adversary plans and capabilities limits their utility against peer opponents like the PRC that can employ a wide variety of potential threats, scenarios, tactics, and systems.[10]

Because undermining the confidence of PLA leaders in their plans is an objective of the 2022 US National Defense Strategy's (NDS) lines of effort for Campaigning and Integrated Deterrence, US forces should use diverse concepts and capabilities to conduct the missions associated with operational challenges like sustaining air operations from Guam.[11] Effect chains provide a

way to understand the variety of approaches available to conduct a mission, as Figure 5 shows for hypersonic missile defense.

The mission management cell would identify joint force compositions and basic operational concepts that could achieve acceptable performance using such decision-support tools as Adapting Cross-Domain Kill Chains (ACK) and Resilient Synchronized Planning and Assessment for the Contested Environment (RSPACE). Using modeling and simulation or simple computation, programs like ACK and RSPACE could assess all possible effect chains given the forces INDOPACOM would make available to the mission management cell.[12]

As Figure 5 shows for hypersonic missile defense, the mission management cell would calculate each potential effect chain's overall performance based on the availability of its elements and the effectiveness of the effect chain in supporting the objective of sustaining air and naval operations from Guam. The use of sustaining operations as the overall metric rather than defeating incoming missiles and aircraft would allow the mission management cell to identify effect chains that offer the best strategic value at the lowest cost. For example, an effect chain that employs mobile flight control stations to continue sorties after the primary command center is disabled may offer a potentially higher operational availability from Andersen Air Force Base in the face of hypersonic missile attack compared to adding another F/A-18 squadron to engage incoming missiles.

Because modeling and simulation-based tools like ACK or RSPACE could propose impractical effect chains, the most promising chains would be further assessed using live, virtual, and constructive (LVC) environments that would help reveal if the effect chain was unexecutable; violated rules of engagement or authorities; or required new tactics, techniques, and procedures (TTP). Mission management cells could then assess effect chains deemed effective and practical for their impact on future options by using ACK or RSPACE to determine if the resulting posture of potential losses could unacceptably reduce the forces' subsequent COAs.

The mission management process would also help commanders allocate forces that are relevant to more than one mission. For example, the F/A-18 squadron in the hypersonic missile defense effect chain shown in Figure 5 may be more effective against cruise missiles than hypersonic missiles. However, the F/A-18 squadron could also enable the only effect chain available that has a greater than 50 percent chance of defeating hypersonic missiles, prompting the mission management cell to recommend the F/A-18 squadron to defend against hypersonic missiles instead of cruise missiles.

After identifying the best effect chains for an operational challenge, the mission management cell would need to integrate the associated forces in technological, human, and operational dimensions. In the near term, the mission management cell would integrate effect chains by using largely manual processes in which operators configure and manage systems to ensure that they work together. In the mid-term of five to ten years from now, the DOD could implement solutions via Joint All-Domain Command and Control (JADC2) that enabled more automated approaches to integration that would require little or no operator involvement other than deploying software.[13]

The US military can no longer plan to defeat the PLA in a firepower duel over Taiwan. As a home team, the PRC can present a range of potential scenarios, threats, and postures to US forces. Any of these actions could overwhelm US defenses in a short confrontation or exhaust them in a protracted conflict. As suggested by the JWC and 2022 NDS, US forces will need to focus on undermining PLA confidence and exploiting decision-making advantages to gain an edge. Rather than attempting to create a shield over Guam that will inevitably fail, The US military should focus on sustaining Guam's air and naval operations to create complexity for the PLA and allow the DOD to build a more cost-effective portfolio of resilience-related investments for America's westernmost outpost.

Bryan Clark is a Hudson Institute senior fellow and the director of the Center for Defense Concepts and Technology. Before joining Hudson Institute, Bryan Clark was a senior fellow at the Center for Strategic and Budgetary Assessments (CSBA) where he led studies for the Department of Defense Office of Net Assessment, Office of the Secretary of Defense, and Defense Advanced Research Products Agency on new technologies and the future of warfare. Prior to joining CSBA in 2013, Mr. Clark was special assistant to the chief of naval operations and director of his Commander's Action Group, where he led development of Navy strategy and implemented new initiatives in electromagnetic spectrum operations, undersea warfare, expeditionary operations, and personnel and readiness management. Mr. Clark served in the Navy headquarters staff from 2004 to 2011, leading studies in the Assessment Division and participating in the 2006 and 2010 Quadrennial Defense Reviews. Prior to retiring from the Navy in 2008, Mr. Clark was an enlisted and officer submariner, serving in afloat and ashore submarine operational and training assignments, including tours as chief engineer and operations officer at the Navy's Nuclear Power Training Unit.

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2. DEFENSE OF GUAM: DON'T LET AN ASSET IN DETERRING A CHINESE INVASION OF TAIWAN BECOME A LIABILITY

By Patty-Jane Geller

The US territory of Guam is a strategic hub located along a string of islands enclosing the Philippine Sea.[1] Guam's location makes it an ideal storage site for fuel and arms, enabling it to support forward-deployed forces maintained in the region to deter and, should deterrence fail, respond to a Chinese invasion of Taiwan. Recognizing Guam's value to US security operations, China has invested in a vast regional missile arsenal increasingly capable of holding Guam at risk and, correspondingly, also increasingly rendering it a liability rather than an asset provided it is not protected by an advanced missile defense system. Unfortunately, despite repeated requests by multiple commanders of US Indo-Pacific Command (INDOPACOM) for a 360-degree, permanent missile defense system on Guam, support from Congress and the Department of Defense (DOD) has not reflected the urgency of the threat China poses. Fortunately, the fiscal year (FY) 2023 budget request would enable substantial progress on the defense of Guam, and the DOD and Congress must continue to prioritize ensuring that Guam has the proper

Photo: Taiwan's President Tsai Ing-wen waves to assembled guests from the deck of the 'Ming Chuan' frigate during a ceremony to commission two Perry-class guided missile frigates from the US into the Taiwan Navy, in the southern port of Kaohsiung on November 8, 2018. (Chris Stowers/AFP via Getty Images)

missile defenses to preserve its ability to host forces that contribute to deterrence of a Chinese invasion of Taiwan.

Importance of Guam to US Indo-Pacific Strategy

China has been pursuing a force posture in the Indo-Pacific designed to prevent or deny US forces from effectively operating within the range of its weapons and then eventually to project power beyond its immediate vicinity. Until recently, China's ability to project power beyond its coastline was limited but has incrementally advanced and now reaches beyond both the first and second island chains that surround the Chinese coastline. To not only project power beyond its coastlines but also gain control of shipping routes in Asia, China first built a military presence within the first island chain, along which Taiwan is located. Due to this location (among other factors), unifying with Taiwan remains a vital Chinese objective, the achievement of which could entail an outright military invasion.[2]

In the US effort to deter a Chinese invasion of Taiwan or fight and win a war with China should deterrence fail, Guam's role is critical for three reasons. First, the ability to forward deploy forces on the island of Guam contributes to deterrence of an attack on Taiwan. Deploying forces stationed in the United States or elsewhere around the world to the region would take time—possibly allowing the PLA to achieve a *fait accompli* conquest of Taiwan before a US military response could be deployed. For this reason, the United States has long prioritized the ability to forward deploy forces and project power to East Asian flashpoints. The ability to station military forces in the theater of conflict demonstrates to China that military aggression will be met with a timely US response. However, were Beijing to think that a US response would take weeks to materialize, it might be willing to assume greater risks and gamble that a US response would be too late. Thus, the ability to use Guam as a springboard into the rest of the region increases the credibility of US deterrence, and a Chinese military invasion of Taiwan becomes more difficult for China to contemplate when success is likelier to require defeating US forces in addition to Taiwanese forces.

Second, Guam is critical to conducting operations within the region. Andersen Air Force Base (AFB) on Guam hosts F-22 fighter jets and bomber task force rotations, enabling significant air-based power projection from the island. The Navy has access to Guam's deep water port at Apra Harbor, which would enable repair and supply of the Pacific fleet—including aircraft carriers—during a conflict with China.[3] The port also hosts attack submarines that can be armed with the sea-launched cruise missile-nuclear (SLCM-N) if procured, which would provide a critical capability for deterring limited nuclear attack in the region.[4] Guam is close enough to China to provide logistical support to warfighters forward-deployed along the first island chain (it holds significant ammunition and fuel storage capabilities) as well as long-range fires, like the Army's future Long Range Hypersonic Weapon program.[5] However, Guam is also sufficiently far from China to be out of range of China's vast arsenal of short range missiles, thus complicating a possible Chinese attempt to attack it.

Finally, the ability to project power from the second island chain signals to US allies and partners that the United States is committed to the region and so bolsters regional nations' confidence in US military assurances. While the United States has not explicitly committed to defend Taiwan, the best way to demonstrate its commitment to do so is through capabilities. As the US military continues developing the right capabilities to deter China, owning territory in the region is an asset that obviates the need seeking host-nation basing agreements.

The Need to Defend Guam Amid Growing Threats

Without an effective defense, Guam risks turning from an asset to a liability given China's increasing attack capabilities, including several able to target Guam. The People's Liberation Army

Rocket Force (PLARF) deploys around 900 medium- and intermediate-range missiles in the region, including the DF-26 and DF-21, both capable of striking Guam with precision.[6] China's arsenal now also includes cruise missiles that can strike Guam from sea-, air-, and land-based platforms. Moreover, most of these missiles are also nuclear capable. In 2021, to emphasize their improved ability to attack the island, the Chinese even released a propaganda video displaying bombers attacking Andersen AFB.[7] The United States currently deploys a Terminal High Altitude Area Defense (THAAD) battery on Guam and ballistic missile defense (BMD)-capable Aegis destroyers stationed off the shores of Guam, but these provide only marginal missile defense coverage. The THAAD battery was originally deployed to respond to the lower-end North Korean ballistic missile threat and is inadequate to pace the more sophisticated Chinese arsenal, and the Aegis destroyers need to be utilized for other naval missions rather than remain tied to the defense of one island.[8]

Due to Guam's critical role in deterring a Chinese invasion of Taiwan paired with the increasing threat posed by China, INDOPACOM has, since 2019, been requesting emplacement of a permanent 360-degree missile defense system on Guam by 2026. This would be capable of defending Guam against a missile strike from any vector.[9] Just last month, INDOPACOM Commander Admiral John Aquilino testified that defense of Guam is his top priority.[10] For two reasons, an advanced missile defense system on Guam would enable the United States to preserve the viability of Guam as a support base that would help deter a Chinese invasion of Taiwan.

First, missile defense would bolster deterrence of an attack on the island as it would convince China that an attack would fail—or that the probable cost of overcoming the missile defense system would outweigh the probable benefits of its success. Defeating an advanced missile defense system on Guam would require a more significant commitment of Chinese offensive forces than would otherwise be necessary and so would complicate China's planning, removing the option for a cheap shot and perhaps making Beijing think twice before launching an attack. Moreover, investing in advanced defense for Guam would signal to China that the United States views Guam as having high importance and that an attack would therefore likely provoke severe consequences.

Second, deployment of advanced missile defense would minimize the damage should deterrence fail. A strong missile defense system would not only help protect the lives of the 170,000 US citizens currently living on Guam but it would also aid in keeping the island's forces available during a fight. During a campaign in the Indo-Pacific, Guam would be a target, but missile defense would slow down the rate at which forces stationed on Guam would be lost relative to their replacement rate, forestalling the culmination of the war effort and providing US commanders more time to prevail over China.

If Guam is left vulnerable to Chinese missiles, the United States might be unable to exploit the benefits provided by the island's strategic location, which places it at risk of attack, or be compelled to pull back its forces from Guam, which analysts from the Pentagon's Cost Assessment and Program Evaluation (CAPE) office have advocated.[11] Yet, forgoing a defense of Guam and withdrawing forces to locations outside of China's missile range would diminish deterrence and, should war come, such retrenchment would make it more difficult to quickly and effectively counter an attack by China, thereby prolonging the war and making it more costly. Instead of withdrawing from Guam, the United States should instead commit to defending it and so ensure that this asset does not become a liability.

Guam Missile Defense: Making Up for Lost Time

Until the president's FY2023 budget request, funding for the defense of Guam did not reflect the urgency of the threat. Defense of Guam first appeared on INDOPACOM's unfunded priorities list for FY2020.[12] It was not until a year later that funding to

begin the project was first included in the Senate version of the National Defense Authorization Act for FY2021, after defense of Guam again appeared on INDOPACOM's unfunded priorities list.[13] Yet the final version of the NDAA that year removed funding for Guam defense and instead opted to merely study options for the defense architecture.[14] The project finally appeared in the president's budget request for FY2022 but at a level much smaller than needed. INDOPACOM requested $350 million for FY2022, but the president's budget request only included $118 million.[15] Then, Congress appropriated $192 million for FY2022, just over half of the initial INDOPACOM request.[16]

The delay in funding the defense of Guam was at least partly attributable to indecisiveness over the type of defense system to be deployed. Rather than procuring existing systems that could be deployed on Guam immediately, Congress and the DOD stalled development by instead taking three years to study both the need and the architecture for the proposed Guam defense system. Admiral Davidson has identified the next six years as a likely window for a Chinese invasion of Taiwan,[17] and, now that the window has opened, speed in bolstering Guam's defenses should be the priority. With respect to architecture development, the perfect should not become the enemy of the good.

Fortunately, this year's FY2023 budget request would enable substantial progress on Guam's defense. The request would allocate a total of $892 million for the effort, $539 million for the Missile Defense Agency (MDA) and $353 million in total for the Army and Navy components of the system.[18] According to Admiral Jon Hill, director of MDA, the request will continue architecture development but also begin procurement of components. The system will likely combine several radar systems with various interceptors, including the Standard Missile (SM)-3 Block IIA missile (the interceptor best suited for Chinese ballistic missiles like the DF-26), the SM-6 interceptor, and Army systems that can intercept cruise missiles.[19]

The DOD's plan for Guam defense is welcome and the budget request demonstrates important progress. Admiral Hill stated that he is confident the project can be completed by the goal date of 2026. However, China may not wait until then, and its threat to Taiwan and US interests in the region currently exists. Consequently, the DOD and Congress need to prioritize action that will speed up the process and offset the unavoidable delays that will almost certainly occur. Congress should therefore provide sufficient funding for Guam in its annual appropriations, and the MDA should utilize the proper authorities to procure and deploy components as rapidly as possible.

In the meantime, the DOD should seek to improve and build upon Guam's existing missile defense capacity now. One potential example is incorporating a reduced-status BMD-capable Ticonderoga-class cruiser with the Army's THAAD battery currently on island.[20] With its dedicated command and control capability, the cruiser would provide a core on which the DOD could build up onshore radars and interceptors and could eventually be replaced once Guam's final onshore defense infrastructure became operational. The goal would be to add missile defense capacity in the near term while incrementally building the more capable integrated defense system to be completed by 2026. If not a BMD-capable cruiser, DOD should explore other options to incrementally build out Guam's missile defenses. Having already been delayed for three years, the defense of Guam must reflect the urgency of the threat and incorporate both near-term and long-term plans to deliver adequate defense.

Conclusion

Fortunately, it appears that this administration and Congress have moved on from the debate as to whether Guam should be defended and have committed to funding an advanced missile defense system for this purpose. To make up for lost time, the United States must prioritize speed in implementing a defense system on Guam as soon as possible. Given the pace of the Chinese threat, Beijing's commitment to unify Taiwan, and the deferment that has delayed beginning the system's construction, there is no longer time to waste.

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Endnotes

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3. THE DETERRENT VALUE OF GUAM

By Matthew R. Costlow

In a sustained operation against China, Guam, as a large landmass under US control situated between Hawaii and Taiwan, would serve as an indispensable supply and logistics hub. But, for deterrence purposes, what matters is not what US officials think of Guam, what matters is how CCP officials view Guam. Under the 1979 Taiwan Relations Act, the United States has not explicitly committed itself to defend Taiwan should China attempt an invasion; should US officials, however, wish to deter such an attack, they must commit to not only understanding how the US could utilize Guam operationally, but also how its potential usefulness could play an even broader role of deterrence—i.e., discouraging a Chinese invasion of Taiwan in the first place.

Any effort to tailor deterrence signals so as to influence unique Chinese threat perceptions must begin with how China hopes to acquire Taiwan, which this paper's first section discusses. After recognizing China's likely strategy in acquiring Taiwan, the US can then modify its policy and force posture, in which Guam would play a key role, in ways that would best counter this CCP strategy—how to do so constitutes the subject of this paper's second section. Finally, the paper's third section discusses the view the CCP may currently have of Guam, possibly as a net US vulnerability rather than the net asset US officials perceive it to be. If true, deterrence could fail quickly,

Photo: US Army Task Force Talon members stand in formation during a change of command ceremony May 17, 2017, at Andersen Air Force Base. (US Air Force photo by Airman 1st Class Gerald R. Willis)

and fail in a manner deadly for the United States. Thus, the US must move to tailor its deterrence signals with respect to Guam and its role in a Chinese invasion of Taiwan, the conclusion presented below.

Deterring What Exactly?

In order for the US to strengthen its deterrence strategy toward China, it must narrow the strategy's focus to the specific type of invasion China is thought to most likely prefer conducting. While vague US threats of a military response to a Chinese invasion of Taiwan may be effective in some cases, tailoring specific deterrence threats to specific actions China might make would likely be far more effective. Given the CCP's stated existential need to incorporate Taiwan into the mainland's political structure, US officials should anticipate the CCP's manifesting a powerful confirmation bias, i.e., believing only the information it receives indicating that its invasion of Taiwan would succeed and thus discounting vaguely worded US threats. To combat this perception, US policy statements and visible military capabilities should clearly indicate, even to a biased and desperate CCP, that the United States has both the capability and the will to defeat the specific type of invasion China hopes to conduct, all at acceptable costs to itself. Guam would play a key role in the US capability to defend Taiwan and so also plays a key role in a deterrence strategy designed to discourage a Chinese invasion of Taiwan.

The US Department of Defense is reasonably certain it knows the type of invasion China would conduct if deterrence were to fail: "The PRC would attempt to delay and defeat intervention in an asymmetric, limited war of short duration." If this did not succeed, that is, "[i]n the event of a protracted conflict, the PLA might choose to escalate cyberspace, space, or nuclear activities in an attempt to end the conflict, or it might choose to fight to a stalemate and pursue a political settlement."[1] The key words in this assessment are *asymmetric*, *limited*, and *short duration*. Thus, key factors in a deterrence strategy aimed at a Chinese invasion of Taiwan would be to communicate that the US would not allow an asymmetric, limited action of short duration.

Several reasons underlie China's desire for a limited action. First, a protracted conflict would benefit the United States, providing more time for forces from the US homeland to mobilize to full strength and reach the islands of Hawaii, Guam, Japan, and, eventually, Taiwan. Additionally, the longer a conflict over Taiwan were to continue, the more likely the CCP would be to worry about internal unrest threatening its hold on power—whether due to unrest caused by a poor military performance against Taiwan, severity of economic sanctions, or some combination of these and other factors.

Guam's Contribution to a Deterrence Strategy

The more that the United States can visibly demonstrate to the CCP, through channels viewed as credible by the CCP, that Guam will be a key asset in countering China's preferred method of victory, there will be a greater the chance that deterrence will hold. Provided Taiwan and the United States were able to repulse an initial Chinese attack, the presence of US forces and facilities in Guam would enable a drawn-out conflict—precisely the sort of scenario the CCP would wish to avoid. Without Guam, CCP officials might have greater confidence that an initial setback could be overcome at acceptable cost; however, if Guam were operating fully, such a prospect would be less likely, for the reasons given below.

In a Taiwan-invasion scenario, significant ways that Guam strengthens a possible US deterrence strategy is by reducing the twin tyrannies of time and distance. Given Taiwan's geographic location and the vast stretches of ocean lying between the United States and Taiwan, any landmass capable of accommodating the significant numbers of military personnel and capabilities that Guam would be vital in a US defense of Taiwan. Since China appears to hope for victory over Taiwan in a conflict of "short duration," it is imperative that the United States

have a quickly deployable, large force capable of arriving in Taiwan in time to significantly impact the outcome of the invasion, should the US choose to intervene on Taiwan's behalf. Although US forces could conceivably arrive in Taiwan from Japan, Hawaii, Australia, or some combination thereof, injecting further uncertainty into China's planning calculations, those stationed in Guam could represent a formidable force within the second island chain, one whose deterrent effect would be difficult to replicate with military forces stationed in Hawaii, nearly 4,000 miles further away from Taiwan.

Another important, but little discussed, deterrence factor is that Guam's relative size can accommodate significant numbers of US military personnel and equipment – forcing China to commit to a larger invasion force to counter US forces. Not only does this dynamic strengthen deterrence and impose further logistical and financials costs on China's military, but the larger the invasion force China must employ, the greater the chance that the United States or allies will detect China's preparations, and perhaps at an earlier stage than might be the case for a smaller invasion force. As Russia's military buildup before its current invasion of Ukraine indicates, it is difficult to hide such large-scale military movements. The earlier Taiwan, the United States, and its allies know about these movements, the more time they will have to prepare.

Finally, US forces and facilities in Guam will help enable a more drawn-out conflict if Taiwan and the United States are able to deny the initial Chinese attack – precisely the sort of scenario the CCP wishes to avoid. Without Guam, CCP officials might have greater confidence that an initial setback could be overcome at acceptable costs; but, if Guam is operating fully, such a prospect might appear less likely. The possibility of a protracted conflict would appear to benefit the United States as it would provide more time for forces from the US homeland to mobilize to full strength and reach the islands of Hawaii, Guam, Japan, and eventually Taiwan. Additionally, the longer a conflict over Taiwan continues, the more the CCP will likely worry about internal unrest threatening its hold on power – whether that unrest is caused by a poor military performance against Taiwan, the severity of economic sanctions, or some combination of other factors.

Vulnerability vs. Deterrent

As much sense as it makes for US officials to label the assets in Guam as contributors to deterrence, only China will make that ultimate determination—the choice of whether or not it will be deterred from invading Taiwan. Concerning signs indicate that Chinese officials may not currently view Guam as do US officials. For instance, as stated in the 2021 annual US Department of Defense report on China's military, "The PRC's military modernization efforts have rapidly transformed the PLA's missile force. PLA writings frame logistics and power projection assets as potential vulnerabilities in modern warfare."[2] What is Guam if not a major hub for logistics and power projection? Given that China is simultaneously preparing for "deterring, delaying, or denying"[3] the United States from aiding Taiwan, a Guam that is vulnerable to PLA missile strikes may have the perverse effect of encouraging Chinese strikes on Guam. Whatever Chinese military and civilian officials' reservations, if any, concerning a strike on US territory could be easily dismissed if erudite PLA planners can promise a swift and easy victory by taking Guam out of the equation. Thus, a distributed and layered integrated air and missile defense (IAMD) system for Guam would yield the twin benefits of increasing the credibility of US deterrence threats and raising the threshold for attack.

Conclusion

One of the most important deterrence efforts US officials will undertake during the current decade is attempting to deter a determined China—with pronounced advantages in the local balance of military forces, geography, logistics, and perceived will—from invading the far smaller Taiwan, whose most powerful backer lies thousands of miles away across the Pacific Ocean. For deterrence to have the best chance to work under these conditions, US officials must closely examine Chinese

threat perceptions, particularly those concerning the role Guam plays in those perceptions, to better tailor US deterrence signals as credible counters to China's preferred theory of military victory. Guam can potentially contribute to this US deterrence effort by enabling a quick and sizable US reaction to an invasion, adding financial and logistical challenges to China's invasion plans, and, in the event of a prolonged conflict, facilitating larger US force flows from the homeland than would be the case otherwise. These deterrence contributions, however, could be for naught if China perceives Guam as being easily crippled with minimal missile strikes—making the need for an effective IAMD solution all the more pressing for the sake of deterrence. In summary, the defense of Guam enables the defense of Taiwan, and US deterrence efforts should reflect this truth accordingly.

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4. FORTIFYING AMERICA'S WESTERN PACIFIC TERRITORIES

By Timothy A. Walton

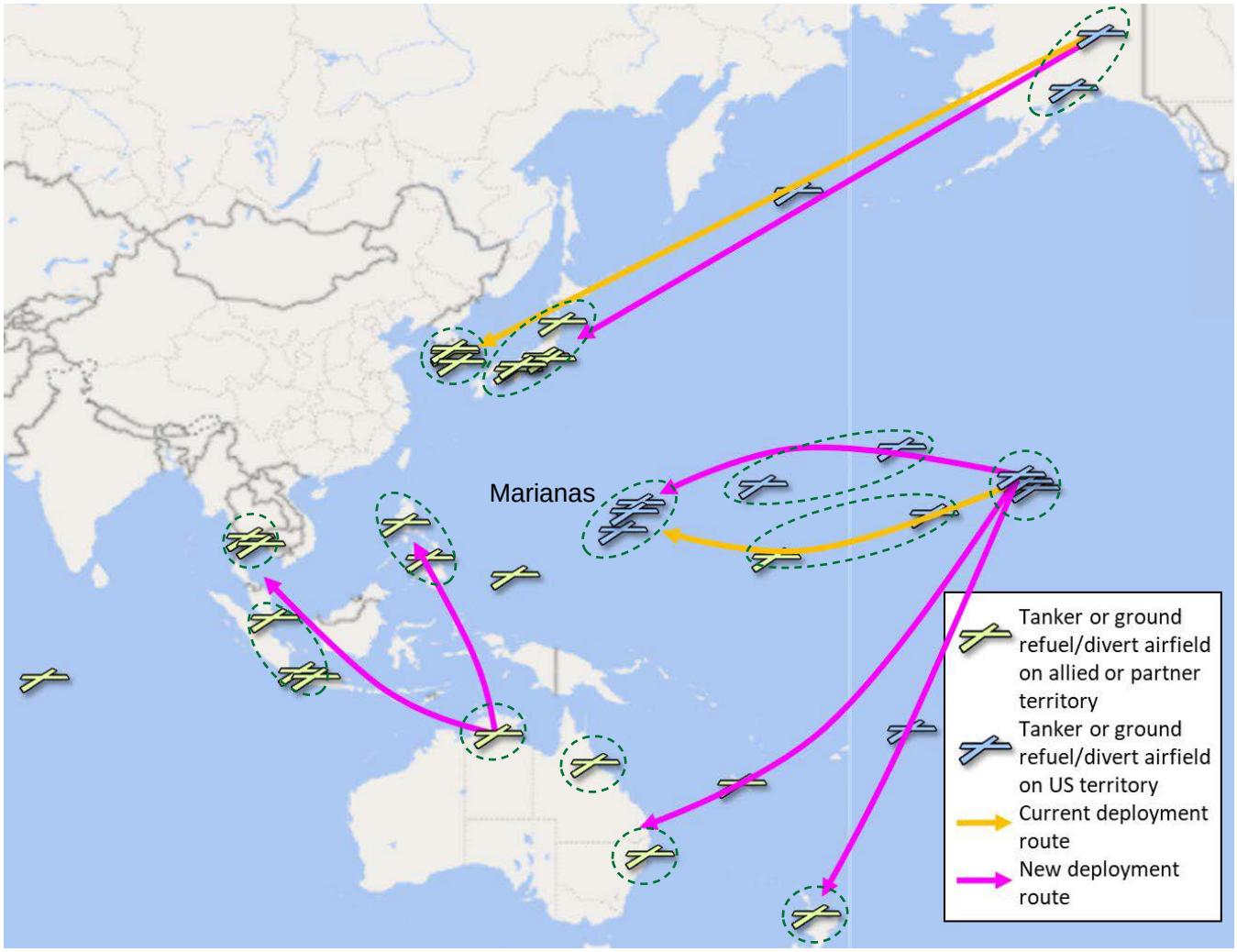
Facing an increasingly aggressive and powerful People's Republic of China (PRC), the United States Department of Defense (DOD) and congressional leaders have expressed interest in enhancing the US posture in the Indo-Pacific. No location has drawn more attention than the US territory of Guam, with heads of the US Indo-Pacific Command testifying that establishing a Guam Defense System is their top priority.[1] Rapidly fortifying Guam is essential and achievable and should be pursued in the context of improvements to the US posture throughout the Marianas, including in the Commonwealth of the Northern Mariana Islands (CNMI) and the broader Indo-Pacific.

Fighting for and from the Marianas

The United States has a responsibility to protect its citizens in the US territories of Guam and the CNMI from the prospect of Chinese attacks. In 2013, in response to North Korean missile threats against Guam, a US Army Terminal High Altitude Area Defense (THAAD) battery was deployed to the island.[2] More recently, however, the PRC has improved its strike capabilities and threatened to attack the island in the case of a conflict, with the Chinese Communist Party's (CCP) People's Liberation Army (PLA) going so far as to release a video depicting a bombard-

Photo: The Ashland LSD, a dock landing ship, sit in the newly refurbished Victor Wharf on Naval Base Guam on Aug. 5, 2015. (Tiffany Tompkins-Condie/McClatchy DC/Tribune News Service via Getty Images)

Figure 7: Notional Laydown of Potential Indo-Pacific Clusters of Tanker Airfields Supporting Redundant Deployment and Employment Paths

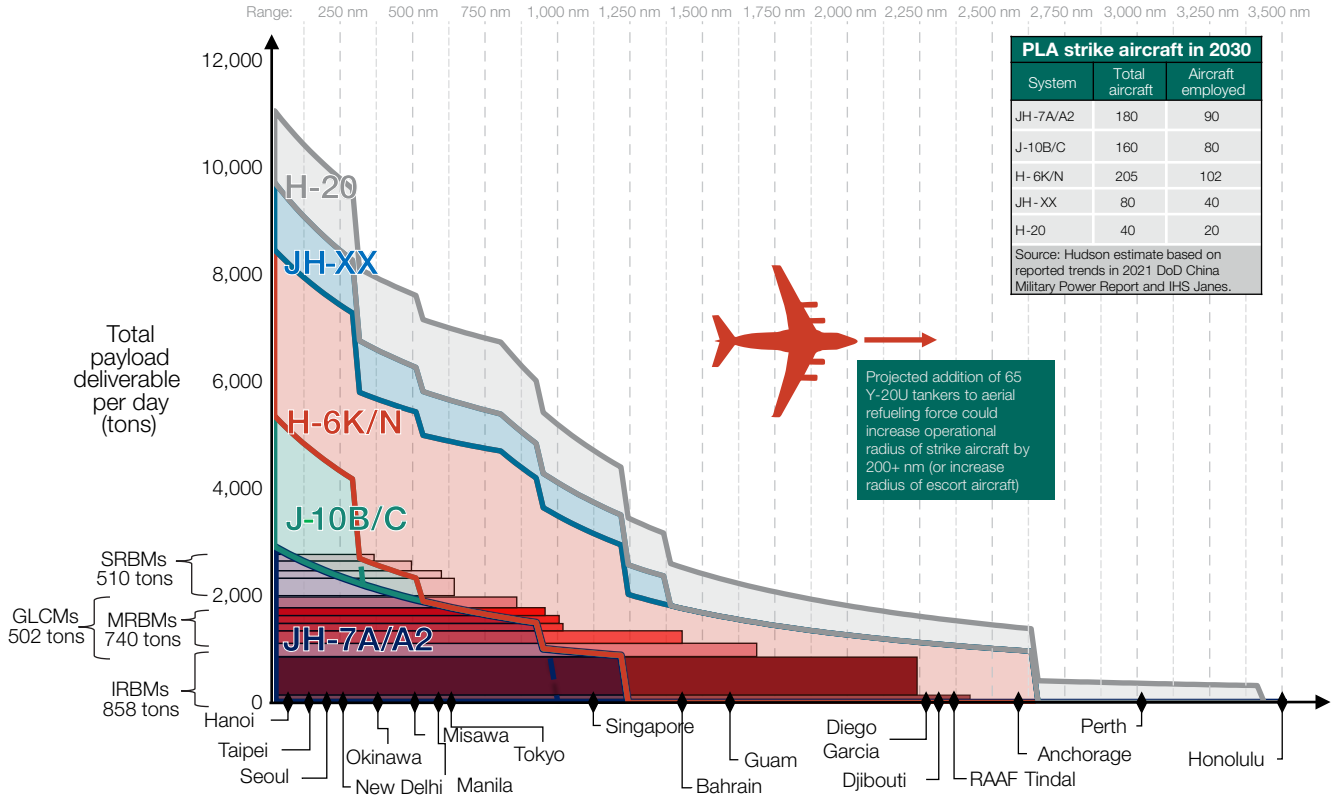


Source: Timothy A. Walton and Bryan Clark, *Resilient Aerial Refueling: Safeguarding the US Military's Global Reach* (Washington, DC: Hudson Institute, 2021), 45.

ment of Guam.[3] These threats build on earlier Chinese proposals to divide the Pacific into spheres of influence, in which China would control the western Pacific, and provocative Chinese posture moves and agreements in the South China Sea, Papua New Guinea, Kiribati, and the Solomon Islands.[4] New defenses in the Marianas are essential to enhance the security of US citizens.

The Marianas are also vital to the US and allied military posture in the region. The territories and their bases are "far enough from adversaries like China and North Korea to negate the threat from more numerous short-range missiles but close enough to support air and naval operations throughout the Philippine Sea and South and East China Seas."[5]

Figure 8: Projected 2030 PLA Strike Capacity vs. Range



Source: Bryan Clark and Timothy A. Walton, *Regaining the High Ground Against China: A Plan to Achieve US Naval Aviation Superiority This Decade* (Washington, DC: Hudson Institute, 2022), 9.

In the early twentieth century, numerous US military leaders recognized the "absolute necessity" of fortifying Guam.[6] However, for various political and military reasons, the United States failed to appropriately fortify Guam, the Philippines, Wake, the Aleutians, and other islands in the Pacific, which arguably encouraged Imperial Japan to think it could strike the US fleet at Pearl Harbor and sweep across the Pacific. The United States should avoid repeating the same mistake with China.

World War II also illuminated another lesson: establishing control over key islands and using them to project power is contingent on establishing control over (or denying an enemy control) of clusters of islands. No single place is likely capable of mounting a perfect defense or projecting all the forces necessary for a campaign. Accordingly, Indo-Pacific posture enhancements should aim to shift the US military's brittle posture to a more distributed one that leverages clusters of mutually supporting locations in US, allied, and partner territory located throughout the region at varying distances from threats. Figure 1 depicts a notional laydown of potential Indo-Pacific clusters of airfields (including the Marianas in the center) that could support US aerial refueling and in turn redundant deployment and employment paths.

Accordingly, defense investments should enhance not only the defenses of Guam, but also those of the CNMI, located just

thirty nautical miles to the north, as part of a unified Marianas cluster. A myopic focus on Guam to the exclusion of the CNMI not only leaves a portion of the Marianas' population undefended, but also seems odd to those in the region. As a comparison, it would be similar to solely discussing the defense of South Carolina while ignoring neighboring North Carolina. Other posture investments are necessary in other US states and territories, Compact of Free Association allies, and other countries throughout the region. Each site should not have the same level of defenses, but Defense of Guam initiatives should result in scalable and extensible capabilities that can be applied elsewhere.

Defenses in the Marianas are necessary to counter the sophisticated and sustained threats posed by the PLA. China can launch weapons from aircraft, surface launchers, naval and merchant ships, submarines, and perhaps even clandestine forces. Even without the hundreds of ballistic and hypersonic missiles that the PLA Rocket Force could fire against the Marianas (and that are on track to double in capacity by 2030, as shown in figure 2), PLA bombers may be capable of delivering hundreds of cruise missiles per day against the Marianas or other targets at that same distance from China.[7] Absent attrition, these threats could continue to deliver numerous fires over the course of a campaign.

An implication of the massive, sustained capacity of threats facing assets in the Second Island Chain, and to an even greater degree in the First Island Chain, is that tripwire defenses that would discourage adversaries' use of force or buy time for diplomacy or attack operations are no longer sufficient to mount a credible defense. Rather than stopping small numbers of missiles, defensive architectures need to be capable of defeating repeated salvos over protracted periods so that defended assets can sustain operations at appropriate levels. Essential to this new paradigm is ensuring that air and missile defense (AMD) assets themselves can remain in operation—even if this paradoxically comes at the cost of some performance, such as the level of protection provided to defended assets. In essence, DOD should not pursue a perfect defense, but a protracted one.

Consequently, investments in Guam and the CNMI should provide a robust defensive posture, but need not establish a perfect one. Instead, a resilient mix of passive and active defensive improvements can protect the local population and military assets and demonstrate to CCP leaders that the United States is capable of sustaining necessary multi-domain operations from the Marianas at the level needed in stressing campaigns—even if the PLA can get weapons through defenses and destroy assets and infrastructure.

Passive and Active Defenses

As DOD plans to fortify the Marianas and other locations, it should emphasize passive defenses to a much greater degree. Over the past few decades, DOD has largely assumed that infrastructure and forces would not come under attack, and if there was a modest risk of attack, air and missile defenses could provide near-perfect protection that obviated the need to spend money on passive defenses. Unfortunately, those assumptions are misaligned with the current and projected threat environments.

Numerous analyses show passive defenses have high payoffs in terms of raising the necessary salvo sizes of enemy forces and sustaining friendly operations.[8] Moving forward, DOD and Congress should rapidly enhance passive defenses such as greater distribution and dispersion; redundancy; hardening; camouflage, concealment, and deception (CCD) measures; and rapid reconstitution capabilities and forces.[9] Some of these measures will be considerably more expensive than previous construction projects that paid little or no attention to current or future threats.

Furthermore, there are opportunities for DOD to field a credible active defense architecture in the Marianas that complements passive defenses to help protect citizens and sustain necessary

operations.[10] To do so, DOD should focus on three key attributes as it refines and fields its proposed Guam Defense System.

First, the force should be lethal—capable of detecting and defeating different threats arrayed against it, such as sensors, unmanned aerial vehicles, bombs, and missiles of various kinds.

Second, and even more importantly, the architecture should be adaptable. An adaptable architecture could rapidly integrate current and emerging capabilities, such as passive and active sensors and kinetic and non-kinetic effectors. The ability to easily integrate new capabilities would enable a functionally disaggregated and distributed defense design that could continually pose new dilemmas to the PLA. This suggests the most important offering industry can provide DOD is not necessarily better sensors or effectors (although both are needed), but command and control systems and software that allow the force to innovate by integrating a diverse range of capabilities.

Third, the architecture should be resilient in the face of adversary action. Some elements of the architecture likely should be redundant, fixed systems on elevated features that provide sensors with a longer line of sight, and some other systems should be emplaced underground and hardened. To boost survivability, though, a significant portion of the architecture should be mobile or at least relocatable within tactically relevant periods of minutes, not hours or days. The adoption of extensive CCD capabilities and measures, including decoys, would complement this mobility or relocatability and greatly complicate enemy targeting. These measures may result in an architecture that has a lower level of performance in some metrics, such as in the number of leakers that get through, but it can result in a force that stays alive amid protracted enemy attacks and continues protecting defended assets and frustrating enemy operations.

Examining Concerns

As DOD and Congress consider funding options to defend the Marianas, they should review and address questions raised by some strategists and policymakers about the need for or the relative value of investments in the Marianas. The following examines four questions and offers reasons why investments in the defense of Marianas merit prioritization.

First, some question whether DOD should rely on a fixed set of bases in the Marianas that could be targeted or should instead rely more heavily on mobile forces. General George S. Patton once remarked, "Fixed fortifications are monuments to man's stupidity," and astute observers may question whether the proposed projects in the Marianas are bound to be overcome by an adversary. An alternative interpretation of Patton's quote and the present situation in the Marianas is not that locations should not be fortified, but that operational designs should not rely solely on static defenses like a Maginot Line, a Siegfried Line, or fixed Aegis Ashore deckhouses. Instead, DOD requires forces that can distribute and maneuver to gain the initiative throughout the theater, and bases and their defenses in the Marianas and elsewhere should enable the maneuver of forces and impose complexity on adversaries.[11]

Second, some question whether DOD should shift to fight from long ranges such as the Third Island Chain or continental United States and minimize investment in contested areas in the First or Second Island Chains. However, whether Indo-Pacific campaign plans emphasize Inside Forces (forces that operate forward, near an adversary) or Outside Forces (forces that operate from standoff, farther from an adversary), both will require support from the intermediate Second Island Chain. Consequently, doubling down on defenses in that area has great operational value, and it strategically signals our commitment to the defense of US territory and of US allies and partners.

Additionally, fighting solely from range is operationally impractical, as operating over long distances leads to a major drop in the effective number of forces that can be maintained forward and does not effectively leverage the major opportunities gained by operating from US territory and that of forward allies and partners.[12] Accordingly, it will be critical for DOD to maintain and

expand access throughout the region, including in the First and Second Island Chains.

A third question that has been raised is whether China would attack the Marianas given the escalatory risk of striking US territory. Although a Sino-American conflict could involve significant restraint in the level of vertical or horizontal escalation, it is reasonable to expect that US territory, including in the Marianas, could be attacked and in turn should be defended. The PRC's own initiatives to build thousands of kilometers of hardened underground tunnels and bunkers and to field dense air and missile defenses suggest a reciprocal expectation that the United States may attack China en masse.

A final concern is that military construction in the Marianas is too slow to make an impact in the 2020s or is so expensive that it would detract from other priorities. US defense and intelligence leaders have assessed that the CCP aims to achieve the military capability to invade Taiwan by 2027, if not sooner.[13] To deter this current and looming threat, DOD will need to accelerate its defense initiatives in the Marianas and throughout the region.

The Pacific Deterrence Initiative and nascent mission manager program in the Office of the Secretary of Defense's Strategic Capabilities Office provide two mechanisms for DOD and Congress to work with combatant commands. These mechanisms allow them to identify and quickly fund solutions to challenging operational problems, such as maintaining air operations throughout the Marianas. However, with some proposed construction projects expected to last the better part of a decade, DOD will need to commit to allocating necessary resources and adopt faster regulatory and budgetary approaches (some of which circumvent traditional planning and approval processes) to secure local support and to expeditiously conduct new military construction or repair existing infrastructure.

As DOD accelerates its timelines to address current and projected gaps, it should also take care not to rush into poor design choices. In particular, government officials and defense contractors may make choices that are suboptimal to meet compressed timelines, such as skipping the engineering necessary to make systems more mobile or not including decoys and deception measures. For example, a few years ago, the original proposal for Defense of Guam envisioned emplacing Aegis Ashore Deckhouses on the island. That brittle architecture may have quickly provided coverage, but it would have been vulnerable to attack and would have contributed to neither deterrence nor warfighting.[14] Since then, the paradigm seems to be shifting to pursue a more distributed and disaggregated architecture. As components of resilient architectures are matured and iteratively fielded over the next three to five years, DOD could take interim steps this year, such as deploying additional mobile or relocatable radars, containerized launchers, Patriot batteries, and detachments of fighters to protect the Marianas and critical assets in other areas.[15]

In terms of costs, construction in the Marianas is indeed more expensive than in many other places. For example, construction in Guam costs approximately 14 percent more than construction in Okinawa, Japan, and 27 percent more than construction in Pearl Harbor, Hawaii. Construction in Tinian in the CNMI is 11 percent more expensive than in Guam. However, the Marianas are positioned in an invaluable area that alternative investments are unlikely to match. Moreover, as DOD scales up construction in the area and contractors deploy more assets and gain relevant experience, the individual costs of projects will generally decrease. To further decrease costs, DOD should implement new, empirically informed construction procedures in areas with potential unexploded ordnance that allow local contractors with experience in the area to speed up projects.

Learning from the Past to Move Forward

For over a decade, US defense strategists have debated the importance of fortifying the Marianas. In the lead-up to World War II, similar debates about the ideal defense architecture for the Pacific, coupled with the restrictions of the Washing-

ton Treaty, led the Departments of the Army and Navy to repeatedly backpedal and vacillate on the scope and timing of installations and defenses in Guam and other locations—to disastrous effect.[16]

As DOD begins to shift from reflecting on the challenges of defense of the Marianas and other locations to acting, it has an opportunity to avoid the mistakes of its predecessors. With prudent investments in a resilient set of passive and active defenses and sustained leadership over the coming years, there is a major opportunity to field a new architecture in the Marianas that can serve as a fulcrum to advance our nation's approach to AMD more broadly and to help deter conflict.

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5. AN INTEGRATED AIR AND MISSILE DEFENSE FRAMEWORK FOR GUAM AND THE WESTERN PACIFIC

By Dr. Peppi DeBiaso

Shifting Balance of Power in the Asia-Pacific

The significant funding for Guam missile defense included in the Department of Defense's recent FY23 budget request reflects this US territory's growing importance to America's Asia-Pacific strategy, whose aim is to contest China's ambition to displace the United States in the region and so alter the balance of power there.

Guam's role within US strategy has evolved over the past decade. During much of the post-Cold War era, both the missile threat to the island and its significance to US defense strategy in the western Pacific were modest due to two interrelated factors: the absence of any large-scale, advanced, and multidimensional offensive missile threat to American forces in the region and a predominately benign assessment of the expansion of China's military.

However, within the 2010 timeframe, the region's security landscape began evolving. In January 2012, the updated *Strategic*

Photo: Military vehicles carrying DF-17 missiles participate in a military parade at Tiananmen Square in Beijing on October 1, 2019, to mark the 70th anniversary of the founding of the Peoples Republic of China. (Greg Baker/AFP via Getty Images)

Guidance issued by Secretary of Defense Leon Panetta in response to China's military rise stated that the US "will of necessity rebalance toward the Asia-Pacific region."[1] The revised strategy pointed out that "sophisticated adversaries" such as China are developing a range of capabilities—including ballistic missiles, cruise missiles, and advanced air defenses—"to counter our power projection capabilities." Accordingly, "the US military will invest as required to ensure its ability to operate effectively in anti-access and area-denial (A2/AD) environments."[2] Further underscoring the shifting military balance of power in the region, Secretary of Defense Ashton Carter cited the "return to great power competition" in Asia-Pacific, "where China is rising," in February 2016.[3] Both the Trump and Biden administrations' respective assessments of China reflect continuity in this regard. The 2018 National Defense Strategy (NDS) highlighted the reemergence of long-term, strategic competition with China seeking to reorder the Indo-Pacific region consistent with its authoritarian model, and the 2022 NDS goes even further, calling China the US's "most consequential strategic competitor and the pacing challenge for the Department [of Defense]."[4]

China's Regional Missile Strategy

Against this evolving geopolitical backdrop, China has made and continues to make substantial strides in building out its A2/AD posture to blunt the ability of the United States to operate in the region. For example, People's Liberation Army (PLA) writings, which present American power projection assets and enabling logistics infrastructure as potential vulnerabilities in any conflict within the region, acknowledge Guam as increasingly central to US military operations in the western Pacific. As a consequence, Beijing views its missile forces as playing a pivotal role in neutralizing US forward-deployed forces and so preventing Washington from rapidly intervening in a crisis or conflict involving China. In particular, China is expanding its missile arsenal so as to hold at risk a wide range of US bases and forces in the region, including both land- and sea-based fixed and mobile targets to disrupt and degrade the US's ability to project military power, sustain combat operations, and support alliance security commitments across the Indo-Pacific.

This expansion includes fielding growing numbers of medium-range ballistic missiles and intermediate-range ballistic missiles, including anti-ship ballistic missiles. The DF-26, which China itself has termed "Guam killer," is a road-mobile IRBM capable of precision strikes against land- and sea-based targets.[5] China is also continuing to deploy ground- and air-launched land attack cruise missiles and is developing several regional hypersonic glide vehicle (HGV) programs that potentially pose a 360-degree threat to Guam. The PLA's Rocket Force is also testing air-launched ballistic missiles (ALBMs) capable of significantly reducing the warning time American forces would have to respond to missile strikes and of expanding the number of "threat vectors" from which Guam and other targets in the region could be attacked.

The adjustments the United States has made within the region over the past half-decade provide perhaps the clearest measure of China's progress in altering the regional military balance through its missile-centric A2/AD strategy. Specifically, the US has shifted its forces and power projection center of gravity southward, with Guam increasingly encompassing the most significant capabilities within the region. Andersen Air Force Base located on Guam hosts B-52s, B-1s, and B-2s to support the continuous long-range bomber-presence mission in the western Pacific, and Naval Base Guam is home to Navy submarines. In addition to providing storage for substantial amounts of ammunition and fuel, Guam contains all-domain communication nodes for operations across the Pacific theater and serves as an air/surface/submarine training and a logistical staging platform for joint force operations.

Missile Defense Considerations

Now that Guam is well inside the missile threat rings of China's advanced precision offensive weapons, moving forward with solutions for improving island defense is clearly urgent. As the

offensive missile threat posed to it by China is multidimensional, so too must be its defense. It is not a ballistic missile defense (BMD), cruise missile defense (CMD), or hypersonic missile defense challenge, but is, rather, all of the above—*an integrated air and missile defense* (IAMD) challenge.

Missile defense systems for Guam should fulfill two essential strategic roles. The first is to inject uncertainty and doubt into both China's pre-war planning and planned execution of missile strikes in order to shape Beijing's deterrence calculus as it weighs the risks and costs of undertaking such a course of action. To achieve US deterrence objectives, Guam's defenses do not necessarily have to be large or perfect; even more limited defenses can undermine a potential adversary's confidence in its ability to achieve its political and military goals, and such active defenses would strengthen deterrence by adding a new and complicating prospect to China's calculations: The United States might defeat or otherwise blunt a limited missile attack—meaning China must bear the weight of the US response while having gained little.

The second role missile defense systems would play is ensuring US freedom of maneuver by limiting China's ability to use missile attacks to disrupt or degrade our regional military operations. To successfully fulfill this role, sufficiently in-depth defense of critical assets either on or staging through Guam would be required in order (1) to enable US conventional forces to "get underway" in support of its crisis or wartime campaign plan and (2) to reassure allies that the US will not be coerced into staying out of a potential regional conflict involving them.

At a general level, several attributes should inform the range of IAMD solutions to be considered. First, they should be composed so as to provide 360-degree coverage against a diverse set of missile threats capable of attacking Guam from multiple approaches. Second, they should be resilient so as to ensure graceful operational degradation. Increased emphasis on the fielding of interceptors, sensors, and command and control platforms widely distributed and disaggregated across Guam would enhance the overall survivability of the active defenses while also presenting a more difficult and uncertain targeting problem for the PLA. Third, the multidimensional character of the Chinese air and missile threat points toward an IAMD posture containing a mix of Army, Navy, and MDA active defense elements, as each brings relevant and requisite capabilities and programs for an effective IAMD.

Nearer term options for terminal and midcourse IAMD can be expected to leverage deployed and programmed Army and Navy components. Patriot (PAC-2/PAC-3) batteries, augmented by the THAAD battery that has been operating on Guam since 2013, can provide terminal defense against ballistic and cruise missiles. A need to scale up the initial defense for more effective protection can be achieved through additional THAAD (BMD) and Patriot (BMD/CMD) deployments. The Army's Iron Dome system (acquired from Israel) may offer an additional option in support of the CMD layer, although only two batteries exist. These land-based missile defense systems are in high demand elsewhere in the Indo-Pacific as well as outside the region, and so the DOD will have to prioritize allocation of these capabilities.

In addition to the Army's contribution, Navy Aegis ships deployed with the Seventh Fleet in the Pacific currently carry a mix of SM-2, SM-3, and SM-6 defensive interceptors. With the more advanced SM-3 IIA interceptor designed to counter longer range regional ballistic missiles in the mid-course phase of flight, these weapons are capable of engaging ballistic, cruise, and hypersonic missiles in the terminal phase. However, given the multi-mission role of the Aegis ships in the region, they may not be available to provide persistent air-and-missile defense of Guam, although they can be repositioned to do so in a crisis or conflict. If the United States is to move towards a more enduring active defense presence, the sea-based interceptors must be upgraded for land-based deployment. Regardless of the mix of capabilities or the phasing in of systems on Guam,

the architecture will eventually require a joint IAMD solution to weave together different MDA, Army, and Navy C2, battle management, and weapons systems into a truly "integrated" architecture. Importantly, this effort does appear to be moving forward within DOD.

It should also be noted that, as the US begins building out the IAMD architecture for Guam, it must not ignore passive defense measures that can serve as a complementary layer to the island's active defense systems. Measures to disperse, harden, camouflage, and conceal forces and assets can reduce the burden on active defenses while enhancing the overall resiliency of the Joint Force.

Looking to the future of an IAMD framework offering increased persistence in engaging current and emerging threats in midcourse requires the United States to build on ongoing modernization- and technology-development efforts to achieve a more comprehensive layered and integrated defense. This approach would likely be centered around the following major components:

- Identify solutions for a land-based variant of an SM-3 interceptor such as Aegis Ashore, but in a distributed basing mode capable of engaging on remote sensor data either from forward Aegis ships or smaller disaggregated radars on Guam.
- Complete the development and deployment of the Hypersonic and Ballistic Tracking Space Sensor (HBTSS), which would significantly improve the global detection and tracking of boosting ballistic and hypersonic missile threats.
- Sustain investment in development of advanced technology efforts such as the Glide Phase Intercept (GPI) program to provide a more effective defense against emerging regional hypersonic missile threats.

Finally, important to recognize is that the IAMD framework for Guam outlined above can provide deterrence and defense value to other regions facing A2/AD missile threats and so should not be seen as a "one-off" capability. The approach to integrated air and missile defense that is being developed for Guam is potentially "extensible" to Europe, the Middle East, and the US homeland.

Conclusion

In the past decade, the relatively greater challenges lying in the decade ahead have become apparent. China has surged missile capabilities in the Asia-Pacific region as part of its strategy to undermine United States advantages. It believes that its missile forces will enable it to cripple US power projection and weaken its alliances. Looking ahead, the need to provide defense of Guam cannot help but grow more compelling, both to deter attack and to allow the US to respond to military aggression. The United States should therefore take full advantage of its current capabilities and those under development to lay the foundation for a truly integrated air and missile defense architecture. Tailored to Guam, this can also be adapted for use in other regions to address the growing threat posed by the ongoing global proliferation of missiles.

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6. DEFENSE, DETERRENCE, AND THE ROLE OF GUAM

By Dr. Oriana Skylar Mastro

The rise of China presents the greatest challenge to US and allied security and interests since the Cold War. Over the past twenty years, the Chinese military has transformed itself, thanks to a 740% increase in defense budgets, from a peasant army into a first-class fighting force with modern equipment, and lots of it. As Chinese military capabilities have improved, so too has its aggressiveness in pushing for 'reunification' with Taiwan.[1] In 2020, Chinese aircraft incursions reached a new high of 380, entering Taiwanese airspace on 91 separate occasions.[2] Chinese incursions into Taiwan's air defense identification zone (ADIZ) continued to climb in 2021, with the all-time daily high occurring on October 4 when 56 Chinese military aircraft entered Taiwan's ADIZ.[3]

The United States has responded with a number of military efforts designed to enhance deterrence against China, including some based at Guam. From 2004 to 2020, the US Air Force maintained a 'continuous bomber presence' of strategic bombers at Andersen Air Force Base there. These constituted a high-

Photo: The Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) departs Naval Station Mariannas, Guam, after a four-day port visit February 25, 2009 off the coast of Guam. (Petty Officer 2nd Class Dusty Howell/US Navy via Getty Images)

ly visible signal of US resolve to defend allies and of the US's ability to impose great costs on potential adversaries. In 2021, the NDAA Pacific Deterrence Initiative was passed, sectioning off an initial $2.2 billion investment in the region's force posture to enhance basing, access, and engagement. The Pacific Deterrence Initiative set aside $1.183 billion for the procurement of Guam missile defenses and for research and development dedicated to developing additional defenses.[4]

Importance of Guam

Guam is strategically important for a number of reasons. First, the Chinese missile threat to US regional bases, especially those located in the first island chain, enhances the operational role of those bases sufficiently distant from China to partially mitigate the threat it poses, yet also close enough to be operationally impactful. Indeed, Guam has been described as the westernmost location from which the US can project power, manage logistics, and establish command and control.[5] In a Taiwan contingency, Guam would play an important role as a logistics hub and jumping-off point for combat forces headed toward the Taiwan Strait (though the US could probably maintain about half the sortie rate from Guam as that from Kadena).[6]

Second, base access is more reliable in Guam than in Asian host countries, since the Department of Defense controls about a third of the island's area[7] as part of its status as "unincorporated territory," meaning that the US controls it but it is not a part of the United States. The US currently has a naval base (Naval Base Guam[8]), air base (Andersen Air Force Base[9]), and the Marine Corps' Base Camp Blaz on Guam. Naval Base Guam[10] is also the home of commander Naval Forces Marianas; commander, Submarine Squadron FIFTEEN Coast Guard Sector Guam; and Naval Special Warfare Unit One. In addition, Guam is home to 28 other tenant commands, three Los Angeles class submarines, and dozens of units operating in support of US Pacific Command, the US Pacific Fleet, the Seventh Fleet, and the Fifth Fleet. Andersen Air Force Base's host wing is the 36th Wing. In fact, the US military plans to relocate thousands of personnel from Okinawa to Guam[11] following domestic political pressures in Japan to reduce the American troop presence there.[12] In addition to weapons platforms stationed on Guam, the US military also has plans to build $56 million in munitions storage magazines on the island to support operational readiness.[13]

Threats and Defense of Guam

While distance grants Guam greater protection than other US bases in the region, those in Japan for example, the Chinese do have the ability to target US forces on the island. The primary Chinese threat is from the DF-26, an IRBM that uses both nuclear and conventional warheads and has an estimated range of 1,900 to 2,500 miles (hence its nickname, "the Guam-Killer").[14] Cruise missiles (CJ-20s) launched from Chinese bombers (H-6Ks) constitute the secondary Chinese threat. Although the DF-26 is a much more powerful weapon, China's stockpile of cruise missiles is large.

The question of whether the US 'can defend' Guam is complex and rests largely on degree. The US has systems on island to protect against missile threats—a THAAD battery, for example. But US military commanders want much more of a guarantee that the US would be able to continue operations out of Guam even under Chinese missile attack, and a number of systems have been suggested to achieve a higher degree of defense: an Aegis Ashore capability for ballistic and hypersonic threats;[15] a Patriot cruise missile together with a high-frequency radar system based on Pulau; a constellation of space-based radars; and ground-based, long-range fires with ranges of more than 500 kilometers.[16] Congress has agreed to provide an additional $80 million for a defense architecture that will include Navy SM-3 and SM-6 missiles, the Patriot air-and-missile defense system, and THAAD, all connected through the Army's Integrated Battle Command System, a command-and control-system that connects sensors and shooters on the battlefield. The Aegis weapon system's fire control capability would also be used.[17]

Types of Deterrence and The Relative Effectiveness of Each

Given Guam's strategic importance and China's ability to threaten US bases on the island, what are the best pathways to deterrence? The first type of deterrence often attempted against China is *deterrence by punishment*, which seeks to prevent adversary attacks by employing the threat of severe penalties should the adversary do so.[18] I have written elsewhere about the difficulties of this approach with respect to China. My main concern is that, in many cases, the benefits of aggression are so high that counteracting them with the threat to enact a cost perceived to be credible is difficult.[19] In an attempt to apply deterrence by punishment, the US is signaling to the PRC that an attack on Guam would be considered an attack on the US homeland. Indeed, favored INDOPACOM language calls Guam and other US holdings in the Pacific, i.e., the Marshall Islands, the Northern Mariana Islands, and American Samoa, the US Pacific homeland. But convincing China of this will prove difficult since few Americans see it that way. Indeed, prominent outlets like Fox News and the Associated Press published articles in 2017 incorrectly suggesting that Guam's only inhabitants were several thousand US troops,[20] whereas, at that time, over 160,000 American-born citizens lived there.[21]

Strategies based on *deterrence by denial*, which seek to prevent or limit an adversary's aggressive actions by creating the perception that such actions will not succeed, tend to be the most effective against China. But, with respect to the defense of Guam, in particular its missile-defense vulnerabilities, convincing Beijing that an attack on Guam would not succeed may prove difficult. US countermeasures (including improved BMD, improved runway repair capabilities, hardening of base facilities, and dispersion of US aircraft to a broader range of existing or new air bases) could mitigate the threat if adopted in their entirety, but that is unlikely within the next five years.[22] Moreover, even should these measures be adopted, Guam would still not be completely protected against Chinese attack. Given their saturation ratios, some of the 300 Chinese IRBMs and thousands of ALCMs would be bound to get through. Indeed, as the US is having to move forces out of the first island chain, bases on Guam will become more crowded and so more vulnerable to Chinese missile attack.[23]

That leaves the last category of deterrence, which I believe is unappreciated and underutilized—*deterrence by resiliency*. Similar to deterrence by punishment, deterrence by resiliency is based primarily on shaping adversaries' perceptions of one's own capabilities. However, unlike deterrence by punishment, the goal is not to create fear of retaliation but rather to encourage the perception that disruptive events would have little effect on an adversary. Believing that attempts to impose costs will be of limited benefit, the would-be attacker is then less likely to pursue such a path.[24]

I use the term *resiliency* to refer to a state's ability to both absorb and deflect costs at a given level of violence. Resilience is thus about signalling to China that the benefits it would derive from a particular action would actually be less than it believes them to be. Improving defenses can enhance deterrence through this mechanism, but, given its limitations, other avenues—in particular, pursuing viable alternatives and creating redundancy—should also be pursued to ensure that an attack on Guam would not cripple a US war effort.

This call to arms is frustrating because Guam is supposed to be the US's viable alternative to bases within the first island chain. However, as long as the US is reliant on Guam to fight and win a war, China will ensure that it can effectively target the island, thus making messaging associated with Guam's defense key. The public expectation must shift from the criticality of defending Guam to the idea that, once in place and even under attack, planned defenses of Guam would ensure that the US could continue operations there to the degree necessary to, for example, maintain air superiority over the Taiwan Strait. Also, demonstrations of the effectiveness of countermeasures (assuming that these are indeed effective)—like runway repair—will go a long way. China knows some missiles will get through;

however, the idea of deterrence by resilience is to show that the attack will not have the operational or strategic impact that China would hope, thereby making it a less attractive alternative.

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7. WHERE AMERICA'S DEFENSE BEGINS: A TRIPARTITE SOLUTION TO DEFEND GUAM

By Blake Herzinger

The spot of land where America's day begins is a key link in its defenses, a fact recognized by America's most capable adversary. With piers for ships and submarines, airfields capable of supporting strategic bombers, and thousands of American military personnel who call it home, Guam is the westernmost outpost of US-based military power in the Indo-Pacific and thus both a US springboard into the region and redoubt, one previously protected by thousands of miles of ocean separating it and the nearest threat. Now, however, the People's Republic of China's deployment of a new suite of weapons has made Guam more vulnerable than at any time in living memory. Ensuring Guam's continued security is critical—not only because it is "key terrain" and "the region's most critical node" but, more importantly, because it is part of the United States and home to 168,000 Americans.[1] Even protected by a mixture of the most modern active defenses and time-tested passive ones, Guam will remain vulnerable if significant defense policy shifts do not meaningfully disperse rather than concentrate American forces in the Indo-Pacific.

The PRC's development of the ballistic missile designated DF-26, popularly known as "the Guam Killer," lends added weight to addressing the threat China poses. In the event of a major conflict between the United States and China, a strategically consistent

Photo: A US Air Force fire truck sprays water near plane hangars at Andersen Air Force base on August 17, 2017 in Yigo, Guam. (Justin Sullivan/Getty Images)

action for China would be to launch early, or even pre-emptive, strikes against major American force concentrations and bases using precision weapons. Therefore, after US bases in Japan, those located in Guam would almost certainly top the list of priority targets. Contemporary American strategy, or at least the prevailing winds within the American strategic community, favors exquisite tools capable of intercepting these weapons, but these face a daunting and likely insurmountable challenge if used in isolation. The flashy, headline-grabbing solution to ballistic missile attack is the decades-long quest for ballistic missile defense, which is rooted in the Cold War and is today embodied in several American systems, including the Navy's Aegis Ashore and the Army's Terminal High Altitude Area Defense (THAAD) system.

Aegis Ashore places the Navy's most cutting-edge radar, SPY-7, on land to provide radar surveillance capable of detecting ballistic missiles in flight, a command and control suite, and interceptor missiles capable of knocking incoming targets out of the sky.[2] The first public proposal for adding the system to Guam's defenses came in 2021 from the then-commander of the US Indo-Pacific Command, Admiral Phil Davidson, who added the $1.6 billion-system to his proposed $27 billion spend plan within the Pacific Deterrence Initiative (PDI).[3] However, in March 2022, the director of the Missile Defense Agency announced that Guam's defense architecture would opt for dispersed, networked systems rather than Aegis Ashore.[4]

In 2013, the Department of Defense deployed its THAAD capability to Guam, where it has since maintained a persistent presence.[5] One THAAD battery includes at least six mobile launchers carrying up to eight interceptors each, along with mobile operations centers and long-range radar. The aptly named Guam Defense System would integrate these systems into a network of sensors and shooters theoretically capable of preventing the world's most advanced intermediate range ballistic missiles from striking Guam. President Biden's fiscal year 2023 budget request fully funds this program to the tune of nearly $1 billion, with the project slated to be completed by 2026.[6]

Both systems are limited by the size of their magazines, however, placing the defender on the losing side of the cost-exchange ratio when facing a determined adversary having hundreds of ballistic missiles. Under a concentrated barrage, existing ballistic missile systems would be overwhelmed and defeated, a scenario that is a matter of "when" rather than "if." The Guam Defense System would also be entirely reliant on radars and key command and control nodes that are vulnerable to the same missiles—although dispersal of the systems could mitigate (but not outrightly solve) this issue to some degree.

Thus, even though active missile defense may be a piece of the solution, it should not be treated as a panacea or silver bullet, which is effectively what missile interception is, i.e., hitting a bullet with a bullet, an analogy that offers insight into the difficulty of this feat, especially at an extreme range, whether outside or inside Earth's atmosphere. Moreover, although interceptor missiles, sensors, and tactics have been developed and tested to some degree, their record against actual ballistic missiles is extremely limited. For example, THAAD's first and only successful operational use was in 2022.[7] Thus, the degree to which ballistic missile defense would be effective is unknown, as is that of the missiles it is designed to defeat. It is likely that the world will only find out exactly how it all works on the day that these tools are put to use in anger, thus creating a vital need for redundancy and resilience.

A less-exciting, often overlooked solution that deserves more attention than it gets is concrete—literally, thousands of tons of concrete. Reinforcing infrastructure to survive an attack rather than relying on Guam's ability to block and parry using missile defense should top any list of options to ensure Guam's viability as a forward wartime base. No boxer avoids taking a few shots to the face over the course of a match, let alone a career. The United States has too long been the unchallenged heavyweight, well insulated from its enemies by two oceans. However, a fight against a modern peer adversary would be a prizefight against an opponent capable of striking the Unit-

ed States not only at home but also at its far-flung outposts around the world, and passive, concrete defenses would reinforce this glass jaw.

Aircraft shelters, bunkers, and reinforced facilities provide resilience in a way that missile defenses cannot.[8] Brick buildings with drop ceilings and glass facades, long a mainstay of DOD construction, are befitting a peacetime military that comes to work each day to sit in cubicles and would offer little protection in the event of a conflict. But a concrete lobby pales in comparison to the US defense industry and its ecosystem of PowerPoint presentations and expensive solutions. Stated less pithily, Guam's status as a US territory makes significant investment in passive defenses less likely, because the territory lacks constituents to reward or entice with military construction funding. In contrast, Lockheed Martin's product page for the THAAD system trumpets the 18,000 jobs created by the system across 40 states.[9] Passive defense is by no means a new solution—many have written about its virtues as well as about the institutional resistance to its adoption—but it faces significant headwinds in today's legislative environment.[10]

Diversification is not the sole choice available among systems to defend Guam. One of the most important things the Department of Defense could do to defend Guam would be to make it only one among many possible targets rather than an irreplaceable key node among a handful of targets. Although suggesting defending Guam by relying upon it less seems somewhat counterintuitive, a fight against a peer presents extraordinary risks to a force lacking the foresight or the ability to distribute its assets. Unfortunately, this is not a short-term solution, and it is one that will require the kind of deft management and diplomacy seemingly absent from most corners of the US government, party notwithstanding. Close allies like Japan already host such large numbers of US forces that adding more would only recreate the problem at hand in Guam, while allies like the Philippines and Thailand have failed to feature in some of Washington's regional strategies in recent years. There is some awareness, in Washington and in the Pacific, that many relationships in the region have been on autopilot since the end of the Cold War. Although the United States maintains several key alliances in the Indo-Pacific, others are adrift or fraying, whether through mismanagement or outright neglect.

And the United States is facing a foe that, despite its belligerence toward its neighbors, is able to mobilize investment and singularity of message in ways unavailable to the United States. This situation manifests across the Indo-Pacific in multifarious ways as the PRC attempts to peel away America's allies and partners while at the same time building its own network of partners and military facilities. This approach bore fruit as recently as March of this year, when the Solomon Islands announced its intent to deepen its partnership with China, thereby prompting a flurry of statements and visits from Washington and Australia.[11] This announcement came only a few years after the Solomon Islands shifted its long-standing policy and cut diplomatic ties with Taiwan in favor of China. Cambodia, a former US defense partner in Southeast Asia, is widely rumored to have begun developing facilities to be used by China's military after bulldozing military facilities built for them by the US in 2019.[12] Relations with allies like Thailand and the Philippines have atrophied considerably, and the invaluable access the US might hope to receive from them in a potential future conflict with China might not be forthcoming.[13] Therein lies a wicked problem—the US needs to reduce its reliance on Guam, but the relationships that would enable that rebalance have been allowed to deteriorate to the point that they are no longer fit for purpose.

And trust cannot be surged. American efforts to rebuild overnight what was broken over twenty years are increasingly frantic, and the harder Washington tries, the more likely partners are to stay at arm's length. Few states in the region are interested in placing themselves fully within the camp of either the US or China because they depend on both for economic benefits and, to varying degrees, security. Partners not already hosting US

forces are unlikely to step forward to do so now because they would then incur punishment by the PRC, which interprets any increase in US forces as a threat to its national interests. Some states in the South Pacific have expressed interest in furthering defense partnerships with the United States, and the new AUKUS arrangement may yet lead to increased forward basing opportunities in Australia, but few other practical prospects are on the horizon. Encouraging, then, is that successive leaders in Washington have elected to invest in other US holdings in the Pacific such as Tinian and Wake Island.[14]

Defending Guam is not an easy prospect. Islands cannot maneuver, and key infrastructure cannot be effectively disguised or hidden, when even commercial satellite imagery offers surveillance capabilities that would be the envy of many governments. Continued commitment to active defenses like the Guam Defense System is useful, if executed in conjunction with passive measures like constructing hardened aircraft shelters and reinforcing key infrastructure.

The key element, however, will be a distributed force posture. In the near term, doubling down on investment in areas the US already controls will enable this, but care should be taken to repair and reinforce those alliance relationships that are Washington's most important force multiplier. Guam's continued viability as an operational hub will depend on effective implementation of this tripartite solution, as will the safety of its civilian population. While no miracle solution to the question of Guam's defense exists, these measures will give the place where America's day begins a fighting chance in a future conflict.

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The views expressed in this article are those of the author alone and do not represent those of his civilian employer, the US Navy, the Department of Defense, or the US government.

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Notes

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