Back to the Future

Integrated Air and Missile Defense in the Pacific

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> *One of the main lines of operation, one of our main objectives, is* IAMD [integrated air and missile defense], *and that is our ability to defend against missile arsenals. The three largest arsenals in the world are Russia,* PRC [People's Republic of China], *and North Korea, and a good portion of those missiles are pointed at us or our friends and allies. So, our ability to defend against intermediate range cruise missiles, as well as ballistic missiles, is paramount. And my role is the Area Air Defense Commander (AADC).*
>
> —Gen Lori "Law" Robinson

Since the end of the Cold War, the United States has enjoyed relatively uncontested access from which to stage and generate airpower worldwide. Coupled with the lack of a credible threat to airfields, access led the Air Force toward a model of air base operations that emphasized the use of main operating bases (MOB). These bases, fortified with substantial numbers of aircraft, had little concern for their vulnerability to high-end antiaccess, area-denial (A2/AD) attack simply because a credible threat did not exist. In Clausewitzian terms, these MOBs are centers of gravity—not only a source of strength for the United States and its allies but also a potential vulnerability subject

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to attack and exploitation by a savvy and capable adversary.[1] The A2/AD formula is straightforward and persistent throughout history: use all available means to gain control of an area while simultaneously denying the enemy the ability to do the same, primarily by preventing access and disrupting operations. Although the concept is ancient, in the last decade, new and emerging A2/AD tactics and technologies have allowed possible adversaries to challenge the US and coalition airpower advantage. In light of these increasingly capable A2/AD systems and tactics, today's security environment demands that we operate differently, particularly in the Pacific theater where distance and diversity rule supreme and where controlling an area while denying the same to the opponent is particularly difficult.

This article emphasizes the importance of IAMD in the Pacific theater to counter the threats highlighted by General Robinson (above), among others. First, it focuses on IAMD in joint doctrine, showcasing its relevant historical evolution. Second, the article articulates current IAMD initiatives in Pacific Air Forces (PACAF), meant to guarantee continued access and improve survivability in a contested environment. Finally, it examines the future of IAMD in PACAF. Ultimately, the article seeks to give the reader a solid understanding of the need for robust IAMD in the Pacific, demonstrate what PACAF is doing about it, and point the way ahead. Given the current security environment, the IAMD flight plan is particularly important for America's rebalance initiative; furthermore, it has a broader application in other geographic commands and operational theaters as an expression of airpower.

IAMD in Joint Doctrine and Its Historical Evolution

PACAF's IAMD strategy is rooted not only in the evolution and history of airpower but also in joint doctrine. Strategy begins with a well-defined desired end state, and we need only look to PACAF's strategy to see its end state, guided by Pacific Command: "[The] U.S. and its interests are protected from air, space, and cyberspace threats. Regional security cooperation is advanced by improvements to and ex-

pansion of allied and partner nation capabilities, interoperability, access and multi-lateral engagements. Access to the global commons and theater stability are ensured, aggression is deterred, and forces are ready and postured for contingency operations."[2] Thus, PACAF seeks to prepare itself for contingency operations, ensure stability and free access, deter aggression, and defend US interests. It desires to remain in "phase zero"—continued peace with the capability to project airpower as required. To synergize the staff toward this end state, the PACAF commander (COMPACAF) has directed work toward five lines of operation: (1) theater security cooperation; (2) power projection; (3) agile, flexible command and control (C2); (4) resilient Airmen; and (5) IAMD, the subject of this article. These five lines of operation do not function independently of each other but are mutually supportive and act in concert to attain the desired end state. For example, IAMD is built upon the foundation of theater security cooperation and agile, flexible, C2. Given the desired end state, then, what exactly is IAMD, and how does it enhance airpower in PACAF?

According to joint doctrine, IAMD is an "evolving approach that uses the counterair framework at the theater level."[3] It is defined as "the integration of capabilities and overlapping operations to defend the homeland and United States national interests, protect the joint force, and enable freedom of action by negating an adversary's ability to create adverse effects from their air and missile capabilities."[4] At its core, IAMD is the joint integration of offensive and defensive operations against air-breathing and missile threats, meant to counter an enemy's ability to degrade or disrupt our operations and projection of airpower in a contested environment. That is, (1) IAMD is evolving since it is driven by capabilities, which constantly change; (2) it is explicitly integrated and inherently joint, drawing upon the capabilities of each service to produce the desired effects; and (3) because it seeks to gain and maintain our access and the ability to operate, IAMD helps us counter A2/AD strategies. The latter is especially important in the Pacific, where unresolved conflicts and territorial disputes linger as potential hot spots for future conflict.

A robust IAMD strategy is essential if PACAF wishes to carry out the many missions under its purview. Its strategy for IAMD consists of a smart mix of active defense, passive defense, and attack operations built on a bedrock of theater security cooperation and agile, flexible C2. Active defense is "direct defensive action taken to destroy, nullify, or reduce the effectiveness of air and missile threats against friendly forces and assets."[5] Passive defense is "all measures, other than active AMD, taken to minimize the effectiveness of hostile air and missile threats against friendly forces and assets. These measures include detection, warning, camouflage, concealment, deception, dispersion," hardening, redundancy, dispersal/mobility, and recovery/reconstitution.[6] Attack operations are offensive action by the joint force against surface targets which contribute to the enemy's air and missile capability, which entails taking the fight to the enemy.[7] All of this is made possible through theater security cooperation and agile, flexible C2, which provide the framework and means to leverage capability and synchronize operations. Let us now delve briefly into the history of IAMD to demonstrate how PACAF has learned the importance of constant IAMD innovation, commitment, and evolution.

IAMD during World War II

Much of PACAF's IAMD strategy is based upon lessons learned from history. One of the early examples of evolving IAMD occurred during the Battle of Britain when the British effectively integrated offensive and defensive counterair tactics with a new technology—radio detection and ranging (radar)—to produce air defense.[8] This early example set the stage for C2 integration with air defenses. As the war progressed, Germany developed new technologies of its own to overcome Britain's air defenses—the first ballistic missile (V-1) and the first cruise missile (V-2). Although they arrived too late in the war to tip the balance in Germany's favor, these new systems had an immediate and lasting impact on the need for IAMD.[9]

IAMD during the Cold War

The United States produced many new weapons systems and developed a multipronged strategy to improve IAMD against the threat posed by the Soviet Union during the Cold War, including a combination of active, passive, and attack operations. These years saw missiles emerge as an airpower weapon of choice. Launched from the ground or aircraft, they offered unprecedented range, speed, payload, and accuracy. To counter this threat, nations produced even more missiles. The country with the most or best missiles ultimately gained a strategic advantage. Such was the case when visionary Air Force colonel (and future general) Bennie Schriever led the development and acquisition of the US nuclear intercontinental ballistic missile (ICBM) system arsenal from the mid-1950s to the early 1960s.[10] The fact that no viable technology existed to intercept ICBMs during this period gave the United States a tremendous strategic advantage, spurred further evolution in defense designs and IAMD, and, of course, prompted the USSR to do the same.

Active defense greatly evolved during the Cold War. From the 1950s through the early 1970s, the Air Force procured an array of tactical fighters, each optimized for a different portion of the defensive counter-air mission. For instance, the century-series fighters (F-100 to F-106) were primarily optimized for high-altitude air-to-air combat and designed to intercept strategic bombers. Additionally, in 1958 the secretary of defense assigned the mission of strategic active defense to the Army, which made IAMD a joint endeavor. To execute its new mission, that service researched missile systems like the Nike-Zeus to defend against USSR ICBMs.[11] Eventually, the Army fielded several versions of the Nike weapons system, along with the Hawk and Stinger missiles, to combat theater ballistic missiles and air-breathing threats.

The colossal challenge of active defense against ballistic missiles and high-altitude strategic bombers, coupled with the overwhelming weaponry available to the Soviets, led the United States to invest earnestly in its passive defense capabilities, including detection and warning, redun-

dancy, and hardening, among other measures meant to increase survivability. America enhanced its detection and warning capability by using space-based and terrestrial systems that supplied initial launch indications of Soviet ballistic missiles and bombers. Further, the nation improved redundancy—and therefore resiliency—of C2 systems by incorporating the Airborne Battlefield Command and Control Center and Minuteman ICBM's Emergency Rocket Communications System, thereby creating an alternate means to command and control forces during or after an attack. ICBM silos, aircraft hangars, and C2 nodes such as the North American Aerospace Defense Command were hardened and reinforced with concrete shelters or buried deep to prevent destruction during an attack.

Meanwhile, military personnel began to operationalize resiliency. Dispersion and mobility, two aspects of passive defense, helped create a more resilient force. US Army air defense crews across Europe maintained an alert posture that allowed them to shoot and disperse within minutes. US Air Force squadrons sat alert with their weapons loaded, fueled, and ready to rapidly launch prior to missile impact. A "Christmas tree" parking design expedited aircraft departures during mass takeoffs. Entire wings exercised minimum-interval takeoffs and aircraft dispersal to other bases to prepare for and ensure survival of their assets in case of attack.[12] In Europe, Tactical Air Command aircraft remained on alert, ready to fend off Soviet fighters and bombers. They also practiced robust camouflage, concealment, and deception exercises, incorporating those practices into their infrastructure.

Post–Cold War IAMD

As the Cold War came to an end, the United States began to operationalize its defense against air-breathing threats and short-to-medium-range missiles. This development led to highly capable defensive weapons such as the Patriot Missile System and Aegis Combat System—new technologies heading into the late 1980s and 1990s. By the time of the first Gulf War, our forces were primed to decisively over-

come and destroy a Soviet-style integrated air defense system (IADS) and to defend themselves against theater ballistic missiles. The first and second Gulf Wars against Iraq in 1991 and 2003 showcased effective coalition airpower specifically built and structured to defeat an otherwise capable Cold War–era IADS.

However effective we were, it is important to note that the first and second Gulf Wars against Iraq started 23 and 11 years ago, respectively. Meanwhile, potential opponents have steadily eroded the asymmetric technological advantages we enjoyed with an entirely new generation of highly capable fighters, double-digit surface-to-air missiles, and elite missile systems for their IADS. Their offensive arsenals include faster, more maneuverable cruise missiles; maneuvering ballistic missiles; and robust electronic warfare capabilities. While we have concentrated on the global war on terrorism, near-peers and would-be adversaries have continued to advance their A2/AD expertise.

History is crystal clear on the matter: endless variables and new capabilities spur constant IAMD innovation and evolution, and maintaining an advantage requires constant commitment. We cannot rely on past successes and dated technological advantages as we remain prepared to defend the Pacific. PACAF is committing itself to the task of innovating and evolving IAMD to realize strategic objectives, giving particular attention to the integration aspect of air and missile defense.

PACAF's Current IAMD Initiatives

Building robust IAMD architectures demands theater security cooperation with our allies in the Asia-Pacific. Additionally, agile, flexible C2 ties it all together and is the means by which the combined force air component commander (CFACC) / AADC executes mission command.[13] Because theater security cooperation and agile, flexible C2 are so closely intertwined with IAMD, let us dissect them first.

Theater Partnerships

Theater security cooperation—the relationship line of operation in PACAF—plays a key role in building and maintaining a robust IAMD. Naturally, IAMD planning must contain a combination of infrastructure, systems, and capabilities among nations, commands, services, and other actors. "Runways and relationships" and "places not bases," two catchphrases commonly heard around PACAF, capture PACAF's strategic narrative and reflect its theater security cooperation priorities. IAMD in the Pacific theater depends upon relationships built and nurtured in the name of shared interests and collective security—not only among countries but also among services, commands, and anyone else who has a stake in regional security.

Command and Control of IAMD

IAMD needs C2—agile, flexible C2 to be exact. In fact the "I" in "IAMD" is made possible by C2. Agile, flexible C2 bridges the gap between commander's intent and battlefield execution by providing the means to control at all echelons. In the spirit of mission command as articulated by Gen Martin Dempsey, chairman of the Joint Chiefs of Staff, agile, flexible C2 (conducted correctly) empowers battlefield commanders with a clear understanding of what needs to be done and the proper authority to do it.[14]

The effective use of the air and space operations center (AOC) is crucial to the effectiveness of the AADC. COMPACAF relies on the 613 AOC for all IAMD operations in-theater with the exception of the Korea theater of operations, a subunified command with its own AOC.[15] Over the last two decades, the AOC has evolved into a complete weapons system manned by dedicated, well-trained, full-time operators who attend formal initial training, obtain mission-focused unit qualifications, and accomplish annual evaluations. The modern AOC can turn a few paragraphs of a commander's guidance into a 3,000-sortie-per-day air tasking order (ATO) that synchronizes the spectrum of IAMD operations in time and space. AOC operators regularly participate

in a number of small- and large-scale real and virtual exercises to hone their skills; moreover, agile, flexible C2 intertwined with IAMD remains at the forefront of everyone's mind.

The theater AADC uses the 613 AOC to plan, coordinate, execute, and modify the area air defense plan. The deputy area air defense commander chairs the joint theater air and missile defense board, a process complementary to the ATO that recommends and executes changes to the defense design. During execution of the ATO and defense design, the AADC and the combat operations division's theater missile defense cell use a common operational picture and other devices to monitor execution of the plan and make real-time changes, ensuring accomplishment of the assigned missions. In the spirit of mission control, PACAF is studying ways to empower lower C2 echelons in the IAMD architecture by using such items as mission-type orders and such ideas as distributed control. The E-3 Airborne Warning and Control System and E-8 Joint Surveillance Target Attack Radar System platforms provide redundant layers of control. Further, other means can effectively distribute control to lower echelons, such as the empowered air component coordination element (ACCE) concept, which proved effective in Operation Enduring Freedom. An empowered ACCE has been delegated control authority by the CFACC for air assets within his or her operational area. When it comes to C2, PACAF is looking at all options to realize the world's most agile, flexible C2 architecture fully integrated with the world's most capable IAMD. In this light, it is easy to see that IAMD and agile, flexible C2 are intertwined, mutually supportive lines of operation, complementing and reinforcing each other toward PACAF's desired end state. Now, let us examine how PACAF is building resiliency in IAMD through active defense, passive defense, and attack operations.

Protecting the Tip of the Spear: Active Defense

Active defense is the most visible and apparent concept in IAMD strategy. The Pacific theater has placed cutting-edge missile defense technology

at forward stations, ready to defend the United States and its allies, partners, and friends. The US Navy's Seventh Fleet boasts Aegis ballistic missile defense system ships that regularly work with their counterparts in the Japan Maritime Self-Defense Force and the Republic of Korea Navy. Meanwhile, the US Army has stationed Patriot battalions in South Korea and on Okinawa. Additionally, complementing regional defense, a Terminal High Altitude Area Defense battery forward-deployed on Guam defends the US homeland, and AN/TPY-2 radars monitor North Korea, ready to track any ballistic missile launched toward our friends or our homeland. Although this forward array of assets is impressive, when broken down between the homeland defense mission and the regional defense mission, our resources quickly spread themselves thin. Additionally, ballistic missile defense is only half of our IAMD problem set; cruise missiles and remotely piloted vehicles constitute another growing threat.

Planning for the defensive counterair mission has evolved significantly in PACAF over the last several years. We have optimized our layered defense with a lethal combination of airborne aircraft, including fourth- and fifth-generation fighters, airborne early warning, jammers, and electronic warfare aircraft. Add to those the Aegis system, ground-based air defense, and short-ranged air defense to destroy an adversary's inbound air threats. By combining US assets with those of our allies and partners, we have optimized our defense design, preventing the waste of precious interceptors. The Pacific defended asset list has never been better, but active defense must be complemented by a passive defense designed to help us remain in the fight.

Changing the Calculus: Passive Defense

Similar to our highlighting of passive defense during the Cold War in response to the massive threat, the combination of missile quantity and proximity to US assets in the Pacific theater has driven the need for more complete passive defense planning. PACAF has made considerable progress in this area during the last few years, committing itself

to the Pacific Airpower Resiliency Plan by taking steps to further incorporate resiliency into IAMD infrastructure. Take for example the capability to rapidly repair damaged runways and restore them to an operational state. PACAF is also committed to exercises such as Cope Sumo that add resiliency.

Redundancy preserves combat power by duplicating elements, systems, and infrastructure critical to generating combat power in regions within reach of an opponent's air and missile threats. Because of both the importance and fragility of US air base fuel systems, PACAF is investing in expeditionary, redundant fuel systems at all planned air bases. These systems not only duplicate the fixed fuel systems but also, because they are moveable, support another tenet of passive defense—mobility. Both PACAF and the Air Force have significant experience using this type of fuel system to support the robust generation of combat sorties.

Hardening, a passive defense measure designed to mitigate or minimize the impact of enemy missile systems, safeguards a base's most important sortie-generation infrastructure not subject to protection by other means or so important that it must survive direct enemy strikes. PACAF/A7 partnered with the Air Force Civil Engineering Center to develop a full range of hardening solutions to counter enemy weapons systems, doing so via the Hardened Installation Protection for Persistent Operations (HIPPO) Joint Capabilities Technology Demonstration. Designed to protect critical, vulnerable assets through the most cost-effective application of hardening/resiliency methods (see the figure below), HIPPO developed new technology and materials that have proven effective against a variety of threats.

Figure. Hangar with HIPPO technology scheduled for construction at Andersen AFB, Guam. (From briefing, US Air Force Civil Engineering Command, subject: HIPPO JCTB, 10 September 2013.)

PACAF is implementing a dispersed basing strategy—pioneered in the Cold War but applicable today—to reduce the vulnerability of aircraft at bases within range of adversary missile systems. PACAF is investing significant resources into several forward locations. Furthermore, it is dusting off lessons learned from World War II and the Cold War to resurrect the ability to "flush-launch" (rapid engine start, taxi, and takeoff) alert aircraft upon receipt of warnings of tactical inbound missiles and continue to generate combat airpower despite missile attacks. Cope Sumo, PACAF's new resiliency exercise concept, is based upon the successful Salty Demo exercise held in Germany (US Air Forces in Europe) in 1985. Cope Sumo will test our ability to rapidly disperse, flush, and recover aircraft within the theater.

Recovery and reconstitution entail withstanding the impact of an enemy attack and then restoring sortie generation. Because of problems encountered in applying the other elements of passive defense (difficult to hide, harden, or replicate) to PACAF's airfields, reconstitution via airfield damage repair has come to the forefront. Again teaming with the Air Force Civil Engineering Center, PACAF/A7 has supported critical runway assessment and repair (CRATR), a combination of new technology materials and a streamlined 11-step process designed to repair as many as 120 airfield craters within 8 hours. Under the new process, Airmen clear debris from the surface of the flight line, cut a square hole around the damaged area with a specialized saw, and remove the remaining concrete. They then fill the hole with a high-strength concrete, followed by a rapid-set concrete cap. The repaired area is ready for use in as little time as 30 minutes. PACAF has programmed for CRATR at its MOBs to ensure the restoration of combat-sortie generation quickly despite enemy attacks.

The Best Defense Is a Good Offense: Attack Operations

Power projection is, and always will be, the bread and butter of the US Air Force. Only the United States can project airpower at the time and place of its choosing anywhere on the planet. Accordingly, attack operations—another important aspect of IAMD—are synonymous with offensive counterair or strike operations, whereby we destroy the enemy's systems first so he cannot use them against us. Eliminating threats before terminal defenses must engage seizes the initiative and alleviates the need to survive an air attack. If so directed, PACAF can contend with threats at the time and place of its choosing. Toward this end, it can leverage offensive counterair assets with global capability, inside or outside the theater, including fifth-generation fighters like the F-22 and F-35. PACAF's diverse, highly responsive, and extremely lethal attack operations translate into a huge IAMD advantage. The previously mentioned joint theater air and missile defense process integrates attack operations with active defense. It is centered on the ATO cycle, giving the AADC a blended means to coordinate offensive opera-

tions (joint force air component commander) with defensive-natured attack operations (AADC). By fusing both of these functions, COMPACAF truly integrates air and missile defense.

The Future of IAMD in PACAF

Because the Asia-Pacific is replete with challenges and potential threats to regional security, a robust IAMD is a strategic imperative. China, which is stockpiling ballistic missiles and air-breathing systems, has a tremendous inventory capable of reaching beyond the second island chains. Meanwhile, North Korea continues to progress in its ballistic missile program, realizing steady gains in range and accuracy while regularly testing missiles. Additionally, the constant competition for oil, fishing, and other resources continues to spur disputes over the ownership of these resources. Pacific Command does not want to be caught on the wrong side of the IAMD mismatch should tensions flare. Therefore, PACAF's IAMD strategy ensures a mismatch in our favor.

To thwart a threat, we must be aware of it. Therefore, PACAF has generated IAMD initiatives that enhance regional awareness and better sharing of information. For instance, it has set the goal of expanding its real-time, joint common operational picture and establishing persistent, joint data-link architectures. These pictures and shared data-link architectures will allow PACAF to constantly monitor activity in the area of responsibility, reducing the chance of surprise. With enhanced early warning and greater operational awareness, we are more likely to have our forces positioned and ready to deal with any threat.

In line with the publication *America's Air Force: A Call to the Future*, PACAF's IAMD strategy also calls for the development and fielding of new, game-changing technologies.[16] Rail guns, hypersonic missiles, and other cutting-edge technologies will give us an advantage for years to come and prove incredibly costly and difficult for our adversaries to overcome. Further, PACAF is looking at future requirements so that strategy drives the development of new capabilities.

To counter the proliferation of cruise missile, PACAF advocates renewed emphasis on and higher prioritization for specific defensive systems and persistent early warning systems—for example, an elevated and persistent cruise missile detection capability. Moreover, PACAF promotes prioritization of investment in short-range air defense capabilities as an affordable, in-depth IAMD solution. Systems like these add layers to our IAMD architecture, increasing resiliency, responsiveness, and lethality.

A robust IAMD architecture would not be possible without the cooperation of Japan, an important ally of the United States, in the name of collective security interests. Accordingly, PACAF also continues to lead ambitious and monumental IAMD endeavors with that country. The first is the establishment and execution of a bilateral area air defense plan with the Japan Self-Defense Forces that optimizes and incorporates highly capable in-theater resources available to the alliance. The second is a passive defense plan that will add resiliency and the ability to generate combat capability, even if we come under attack.

Finally, PACAF is improving IAMD expertise through training and education. Recently, it established the Pacific IAMD Center, which will reach initial operational capability by October 2015. The center will train theater joint and international IAMD professionals by using simulation tools and component subject-matter experts. It will coordinate IAMD exercises and training events to create balance for IAMD professionals across the theater, all the while engaging with allies and partners, ensuring them of our dedication to regional defense. These strategic initiatives are the way ahead. Without a doubt, PACAF is taking point on shoring up US and allied IAMD capability within the Asia-Pacific.

Conclusion

Viewing IAMD as its number-one priority, PACAF has learned from the lessons of history: IAMD is evolutionary, and we must remain committed in order to gain and maintain the strategic advantage. To

realize the desired end state, PACAF has established the IAMD line of operation committed to this task. It is strengthening theater relationships to add capability and share the burden of regional IAMD. Simultaneously, PACAF is fortifying the foundation of IAMD with agile, flexible C2. Finally, it is improving IAMD with active defense, passive defense, and attack operations through a series of current and future initiatives designed to improve capability and resiliency. Under PACAF's leadership, the United States, our allies, and our partners will continue to enjoy a robust IAMD capability in the Asia-Pacific for the foreseeable future, ensuring regional stability and the continued protection of US forces, allies, and vital security interests. ✪

Notes

1. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 331–34.
2. "End State," Pacific Air Forces Command Internal Webpage, accessed 13 November 2014, https://pacaf.eim.pacaf.af.mil/default.aspx.
3. Joint Publication 3-01, *Countering Air and Missile Threats*, 23 March 2012, I-1, http://www.dtic.mil/doctrine/new_pubs/jp3_01.pdf.
4. Ibid., GL-13.
5. Ibid., I-4.
6. Ibid.
7. Ibid., I-3.
8. The British used a network of radar stations termed "Chain Home" to provide early warning and scramble their fighters against the Germans' aircraft. This approach proved so effective that the British were eventually able to defeat the Luftwaffe.
9. During the war, these weapons accounted for about 24,000 British casualties, proving the feasibility of attacking the enemy from long range without risking either people or aircraft. In the long term, the introduction of missiles sparked an ongoing arms race and influenced the direction and advancement of modern IAMD.
10. Schriever's monumental success not only reflected the fruition of Billy Mitchell's ideas of producing strategic effects through airpower, but also forever changed airpower and tipped the balance of power in America's favor at a crucial time during the Cold War. For a better understanding of General Schriever's contribution to IAMD, see Neil Sheenan, *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon* (New York: Random House, 2009).
11. However, the Nike-Zeus antimissile system was an ambitious project for the time. In the end, the technology simply wasn't advanced enough to hit a bullet with a bullet.

12. Strategic Air Command devised another tactic—dispersal—that it used in the late 1950s and 1960s to complicate enemy planning. Dispersal divided large B-52 wings of 45 aircraft into smaller wings of 15 aircraft each and relocated them to other bases. Such tactics increased the number of targets confronting Soviet planners and reduced the time to get the alert force off the ground. Office of the Historian, Alert Operations and Strategic Air Command, 1957–1991, 4–5.

13. Gen Martin E. Dempsey, "Mission Command White Paper" (Washington, DC: Joint Chiefs of Staff, 3 April 2012), 3–6, http://www.dtic.mil/doctrine/concepts/white_papers/cjcs_wp_missioncommand.pdf.

14. Ibid.

15. The PACAF commander is the theater commander of Air Force forces (COMAFFOR), theater joint force air component commander (JFACC), and theater AADC. The commander of Seventh Air Force is the designated AADC for the Korean theater.

16. Headquarters US Air Force, *America's Air Force: A Call to the Future* (Washington, DC: Headquarters US Air Force, July 2014), http://airman.dodlive.mil/files/2014/07/AF_30_Year_Strategy_2.pdf.

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