

REPORT DOCUMENTATION PAGE					<i>Form Approved</i> OMB No. 0704-0188	
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.						
1. REPORT DATE (DD-MM-YYYY) 05-07-2021		2. REPORT TYPE Master of Military Studies (MMS) thesis			3. DATES COVERED (From - To) AY 2020-2021	
4. TITLE AND SUBTITLE Overseas United States Air Force Basing: Static Assets Topple the Stool				5a. CONTRACT NUMBER N/A		
				5b. GRANT NUMBER N/A		
				5c. PROGRAM ELEMENT NUMBER N/A		
6. AUTHOR(S) Nep, John S. (Major)				5d. PROJECT NUMBER N/A		
				5e. TASK NUMBER N/A		
				5f. WORK UNIT NUMBER N/A		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) USMC Command and Staff College Marine Corps University 2076 South Street Quantico, VA 22134-5068					8. PERFORMING ORGANIZATION REPORT NUMBER N/A	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A					10. SPONSOR/MONITOR'S ACRONYM(S)	
					11. SPONSOR/MONITOR'S REPORT NUMBER(S) N/A	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited.						
13. SUPPLEMENTARY NOTES						
14. ABSTRACT Traditional overseas basing immediately exposes United States Air Force (USAF) aircraft, personnel, and infrastructure to the contested environment marked by peer adversaries' long-range precision fires, endangering this three-legged "stool" of successful air operations. This vulnerable force posture threatens the survivability, resiliency, and effectiveness of the USAF in the reemerging era of great power competition. The status quo of stationing aircraft at overseas main operating bases jeopardizes the innate ability of the service to generate combat power at the time of its choosing by threatening the bedrock of the service's force projection - the air base. To improve survivability the USAF should realign overseas forces to the continental US and utilize a rotational, forward presence to maintain deterrence, assurance, and joint enabling missions. To bolster resiliency, the USAF should continue to develop adaptive basing concepts. Finally, to maintain effectiveness as both an inside and outside force, the USAF must operate dynamically to challenge an adversary's capacity to predict, locate, and target forces. The USAF must accelerate changes and return to its expeditionary narrative of global reach to ensure the static nature of basing and aircraft does not "topple the stool" before it gets a chance to fight.						
15. SUBJECT TERMS Distributed Operations; Agile Combat Employment; adaptive basing, overseas basing; main operating base, MOB						
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON USMC Command and Staff College	
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include area code) (703) 784-3330 (Admin Office)	
Unclass	Unclass	Unclass				

*United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068*

MASTER OF MILITARY STUDIES

Overseas United States Air Force Basing: Static Assets Topple the Stool

**SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES**

AUTHOR:
John S. Nep
Major, USAF

AY 2020-21

MMS Mentor Team and Oral Defense Committee Member: Dr. Paul D. Gelpi

Approved:  _____

Date: 26 April 2021

MMS Mentor Team and Oral Defense Committee Member: LtCol Brian McLean, USMC

Approved:  _____

Date: 26 April 2021

*United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068*

MASTER OF MILITARY STUDIES

Overseas United States Air Force Basing: Static Assets Topple the Stool

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

AUTHOR:

John S. Nep
Major, USAF

AY 2020-21

MMS Mentor Team and Oral Defense Committee Member: Dr. Paul D. Gelpi

Approved: _____

Date: _____

MMS Mentor Team and Oral Defense Committee Member: LtCol Brian McLean, USMC

Approved: _____

Date: _____

Executive Summary

Title: Overseas United States Air Force Basing: Static Assets Topple the Stool

Author: Major John S. Nep, United States Air Force

Thesis: The historical US basing strategy, emerging at the conclusion of the Cold War and reinforced by continual deployment over the last thirty years, established the USAF as a principal and reliable implement of national strategy.¹ Traditional overseas basing immediately exposes assets, personnel, and infrastructure to the contested environment marked by peer adversaries' long-range precision fires. This vulnerable force posture threatens the survivability, resiliency, and effectiveness of the USAF in the reemerging era of great power competition. Additionally, as the USAF continues evolving technologically – investing in high capability, low quantity airframes – the US cannot afford to continuously base these assets within advanced threat environments. The USAF's early 1990s vision of global reach, coupled with expeditionary projection has potential to bridge the gap between overseas infrastructure, force posture, and national objectives.

Discussion: The current USAF overseas basing posture and associated static force presence is a critical vulnerability that peer adversaries will exploit. In a future great power conflict, the USAF must expect and posture to fight in, thru, and out of an immediately contested environment to project and execute combat air power as both an inside and outside force. Historically, the USAF has fostered the narrative of a global force capable of striking anytime, anyplace. Post-Cold War, this narrative manifested itself as an expeditionary air force postured to respond to crises and conflict. However, since most of the service's tactical assets require forward basing to conduct deterrence, assurance, and joint enabling missions, it places them in the weapons engagement zone of potential enemies. Simultaneously, the current acquisition plan of the service, consisting of high-cost, low quantity aircraft, increases the impact of potential losses. While the USAF is currently reinvigorating adaptive basing concepts to mitigate threats to bases, it fails to account for permanently stationing forces at main operating bases overseas. This permanent, static presence threatens the bedrock of the Air Force's force projection, the air base.

Conclusion: The US cannot afford to statically place aircraft within advanced threat environments. The status quo of permanently stationing aircraft at overseas main operating bases jeopardizes the innate ability of the service to generate combat power at the time of its choosing. Instead, it faces a potential fait accompli of destruction on the ground. To improve survivability the USAF should realign overseas forces to the continental United States and utilize a rotational, forward presence to maintain deterrence, assurance, and joint enabling missions. To bolster resiliency, the USAF should continue to develop adaptive basing concepts through the improvement of force protection measures and the implementation of distributed operations. Finally, the USAF must maintain effectiveness as both an inside and outside force, operating dynamically to challenge an adversary's capacity to predict, locate, and target forces. The USAF must accelerate changes and return to the expeditionary nature of global reach or risk losing before it gets a chance to fight.

¹ Stacie L. Pettyjohn, *U.S. Global Defense Posture, 1783-2011* (Santa Monica, CA: RAND Corporation, 2012), 94, <https://www.rand.org/pubs/monographs/MG1244.html>; NDS, 7.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

QUOTATION FROM, ABSTRACTION FROM, OR REPRODUCTION OF ALL OR ANY PART OF THIS DOCUMENT IS PERMITTED PROVIDED PROPER ACKNOWLEDGEMENT IS MADE.

Illustrations

	Page
Figure 1. The Global Reach of Long-Range Bombers	35
Figure 2. Arc of Instability.....	35
Figure 3. China’s Regional Missile Threat	36
Figure 4. Russia’s Regional Missile Threat.....	36
Figure 5. Rotational Deployment Costs for F-16s from United States to Japan.....	37

Tables

	Page
Table 1. Pacific Air Forces Aircraft/Basing	38
Table 2. United States Air Forces in Europe-Air Forces Africa Aircraft/Basing.....	38
Table 3. USAF Strategic Bombers.....	38
Table 4. USAF Tactical Fighter Ranges	39

Table of Contents

	Page
EXECUTIVE SUMMARY	ii
DISCLAIMER	iii
LIST OF ILLUSTRATIONS	iv
LIST OF TABLES	iv
TABLE OF CONTENTS	v
PREFACE	vi
INTRODUCTION	1
THESIS	3
BACKGROUND	4
1990s	5
2000s	8
Enduring Strategic Basing Themes	11
SURVEY OF ADVERSARY THREATS	16
China	17
Russia	19
CURRENT BASING CONCEPTS	21
IMPACT OF TECHNOLOGY	25
COST ASSESSMENT OF OVERSEAS USAF BASING	29
CONCLUSION	33
APPENDIX A: FIGURES	35
APPENDIX B: TABLES	38
BIBLIOGRAPHY	40

Preface

This is a noteworthy period in the history of the US Air Force as we now face China and Russia who have the capability to limit our application of airpower – before it even gets off the ground. I chose to examine the topic of overseas Air Force bases and force projection due to the recent emphasis the service has placed on adaptive basing, agile combat employment, and other buzzword-worthy concepts. The US Marine Corps Command and Staff College also inundated us with the Expeditionary Advanced Base Operations (EABO) concept. The parallels between the Air Force basing and force projection concepts and EABO piqued my interest.

Finally, many of the Air Force’s senior leaders commissioned in the mid-to-late 1980s, just prior to the end of the Cold War. The transition from great power competition to regional conflict came during the formative years of their careers – shifting towards an expeditionary force. I wanted to examine the thematic nature of this transition and its potential influence on current Air Force efforts to shift back to great power competition. The research led me to believe the Air Force’s narrative always held the “right” answer, but external factors continually disrupted service efforts.

A huge thank you to my spouse, Rachel, and daughters, Virginia and Scarlett, for their understanding and patience during the many days, nights, and weekends I spent working on this project. Without your resilience I could not have completed it. A special thanks as well to Dr. Paul Gelpi. Your patience, understanding, and mentorship during the process was much appreciated. As one of the few airpower enthusiasts at the US Marine Corps Command and Staff College, your guidance was invaluable and refreshing. I think we are slowly realizing that uncontested airpower is not a birthright of the joint force. It is hard-fought and calculated. We must foster and protect it to ensure it is available anytime, anyplace.

Introduction

*“Air bases are a determining factor in the success of air operations. The two-legged stool of men and planes would topple over without this equally important third leg.”*²

-General Henry H. “Hap” Arnold, 1941

The United States (US) relies on its network of overseas military bases as the foundation for its influence abroad and to “achieve political and military objectives” in accordance with national strategy.³ As the world returns to great power competition, the People’s Republic of China and the Russian Federation hold many of these bases at risk in their attempt to “deny America access in times of crisis and to contest our ability to operate freely in critical commercial zones during peacetime.”⁴ The increasingly sophisticated anti-access/area denial (A2/AD) capabilities of these rising peer-adversaries underscores the vulnerabilities forward basing poses to critical national defense assets. The 2018 *Summary of the National Defense Strategy of the United States of America (NDS)* highlights the reality of such an environment on the military’s global force posture and emphasizes the necessity for change. It calls for a transition from “large, centralized, unhardened infrastructure to smaller, dispersed, resilient, adaptive basing that include[s] active and passive defenses...”⁵ This vision does not discount the value of overseas bases or advocate withdraw. However, the direction set forth by the *NDS* does consider the exposure of assets, personnel, and infrastructure to adversarial threats as a risk to the warfighting ability of the US.

² Henry H. Arnold, “The Air Forces and Military Engineers,” *The Military Engineer* XXXIII, no. 194 (December 1941), 548, quoted in Alan J. Vick, *Force Presentation in U.S. Air Force History and Airpower Narratives* (Santa Monica, CA: 2018), 45, https://www.rand.org/pubs/research_reports/RR2363.html.

³ Alan J. Vick, *Air Base Attacks and Defensive Counters: Historical Lessons and Future Challenges* (Santa Monica, CA: RAND Corporation, 2015), 2, https://www.rand.org/pubs/research_reports/RR968.html.

⁴ The White House, *National Security Strategy of the United States* (Washington DC: 2017), 27, <https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905-2.pdf>.

⁵ US Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington DC: 2018), 6, <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.

The current United States Air Force (USAF) overseas basing posture is a critical vulnerability that peer adversaries will exploit due to the USAF's reliance on bases to project combat power.⁶ The current USAF Chief of Staff (CSAF), General Charles Q. Brown, Jr., outlines an almost assured future of contested US airpower in his strategic approach booklet *Accelerate Change or Lose*. He notes that “competitors are posturing aggressively...using advanced weapons systems to directly confront and deny U.S. Air Force combat power...threatening our ability to generate air power...with the intent to deny our ability to project power globally.”⁷ As a result, “Overseas, our Airmen will have to fight to achieve localized air superiority to enable joint effects.”⁸ The USAF must expect and posture to fight in, thru, and out of an immediately contested environment beset with adversarial A2/AD systems. This assumes bases and corresponding assets within the environment survive attempts by China and Russia to neutralize them prior to mission launch.

For the joint force, the 2016 Joint Access and Maneuver in the Global Commons (JAM-GC) concept addresses force posture and projection with respect to a peer adversary's A2/AD environment. The JAM-GC concept informs “joint force operations so that the United States can maintain access to and maneuver through the global commons, project power, and defeat an adversary attempting to deny freedom of action to U.S. and allied forces.”⁹ According to the US Marine Corps, “JAM-GC uses the terms *inside* and *outside* forces relative to the threat posed by enemy long-range precision weapons to distinguish the character and qualities of the *inside* and

⁶ Vick, *Force Presentation in U.S. Air Force History and Airpower Narratives*, 45.

⁷ Charles Q. Brown, Jr., *Accelerate Change or Lose* (Washington DC: Department of the Air Force, 2020), 3, https://www.af.mil/Portals/1/documents/2020SAF/ACOL_booklet_FINAL_13_Nov_1006_WEB.pdf.

⁸ Brown, *Accelerate Change or Lose*, 3.

⁹ Michael E. Hutchens, et al., “Joint Concept for Access and Maneuver in the Global Commons: A New Joint Operational Concept,” *Joint Force Quarterly* 84 (1st Qtr 2017), 135, <https://ndupress.ndu.edu/Media/News/article/1038867/joint-concept-for-access-and-maneuver-in-the-global-commons-a-new-joint-operati/>.

outside forces.”¹⁰ Due to the range and coverage of China and Russia’s A2/AD systems in Asia and Europe, USAF overseas bases and their assigned forces are an inside force. However, these bases and their high-value aircraft, pose an issue for joint force concepts and objectives. While “*inside* forces are resilient, risk-worthy, redundant, and cost-informed...degrade gracefully, and avoid creating single points of failure,” air bases and aircraft hold completely opposite characteristics.¹¹ How then can the USAF remain survivable, resilient, and effective in the face of a peer adversary’s military capabilities? “The forces and operational concepts we need must be different.”¹²

Thesis

The historical US basing strategy, emerging at the conclusion of the Cold War and reinforced by continual deployment over the last thirty years, established the USAF as a principal and reliable implement of national strategy.¹³ Traditional overseas basing immediately exposes assets, personnel, and infrastructure to the contested environment marked by peer adversaries’ long-range precision fires. This vulnerable force posture threatens the survivability, resiliency, and effectiveness of the USAF in the reemerging era of great power competition. Additionally, as the USAF continues evolving technologically – investing in high capability, low quantity airframes – the US cannot afford to continuously base these assets within advanced threat environments. The USAF’s early 1990s vision of global reach, coupled with expeditionary projection has potential to bridge the gap between overseas infrastructure, force posture, and national objectives.

¹⁰ United States Marine Corps, *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment Version 1.1*. (Department of the Navy, 2018), 21, <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>.

¹¹ *EABO Handbook*, 31.

¹² Brown, *Accelerate Change or Lose*, 3.

¹³ Pettyjohn, *U.S. Global Defense Posture*, 94; NDS, 7.

Background

During the Cold War, the USAF developed a significant overseas basing network which assisted in power projection.¹⁴ At its height, the USAF had “forty-four major air bases located outside of the territorial limits of the United States in fifteen countries or territories overseas.”¹⁵ However, following the end of the Cold War in 1989 and the collapse of the Soviet Union in 1991, the US remained the world’s only superpower. The situation allowed the US to reap the domestic fiscal benefits of peace through military drawdowns.¹⁶ “In the ten-year period from 1986 to 1995, Air Force funding dropped 34 percent, active personnel strength declined 27 percent, and base installations fell 24 percent.”¹⁷ In Europe, the USAF’s basing shrank from twenty-seven to six active flying bases, forcing it to utilize remaining continental US (CONUS) and outside the continental US (OCONUS) bases as focal points for power projection.¹⁸ The reductions and base closures required the US to alter its force posture and strategy to continue meeting defense responsibilities. The strategic situation ushered the USAF into its current phase of expeditionary power projection.

¹⁴ Robert E. Harkavy, *Bases Abroad: The Global Foreign Military Presence* (Oxford: Oxford University Press, 1989), 74.

¹⁵ Harry R. Fletcher, *Air Force Bases Volume II: Air Bases Outside the United States of America* (Washington, DC: Center for Air Force History, 1993), v, https://media.defense.gov/2010/May/25/2001330286/-1/-1/0/af_bases_outside_the_us.pdf.

¹⁶ Hal Brands, “Choosing Primacy: U.S. Strategy and Global Order at the Dawn of the Post-Cold War Era,” *Texas National Security Review* 1, no. 2 (March 2018), 9, <http://hdl.handle.net/2152/63941>; Raphael S. Cohen, *Air Force Strategic Planning: Past, Present, and Future* (Santa Monica, CA: RAND Corporation, 2017), 24, https://www.rand.org/pubs/research_reports/RR1765.html.

¹⁷ Walter J. Boyne, *Beyond the Wild Blue: A History of the U.S. Air Force 1947-1997* (New York: St. Martin’s Press, 1997), 314, quoted in Michael Barzelay and Colin Campbell, *Preparing for the Future: Strategic Planning in the U.S. Air Force* (Washington, DC: Brookings Institution Press, 2003), 37, <https://ebookcentral.proquest.com/lib/usmcu-ebooks/reader.action?docID=3004411>.

¹⁸ Michael J. Lostumbo, et al., *Overseas Basing of U.S. Military Forces: An Assessment of Relative Costs and Strategic Benefit* (Santa Monica, CA: RAND, 2013), 8, https://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR201/RAND_RR201.pdf.

1990s

The 1990s represents a significant turning point in the force projection and basing strategy of the USAF, both conceptually and ideologically. It follows the shift from great power conflict to regional conflict and crises along narratives such as smaller, advanced, lethal, agile, ready, sustainable, and survivable. This transition, along with the 1990's rise of conventional airpower as “*the sword arm*” of the US, greatly influences the service's focus and provides historical perspective for understanding current force posture initiatives.¹⁹

Because the threat situation did not warrant an extensive overseas footprint, the US began transitioning to an expeditionary rather than static force, maintaining a “minimally acceptable level” of forces required for the passive strategic situation.²⁰ The 1990 *NSS* and 1991 *NSS* emphasized the US military's forward presence as integral to the defense of US and allied interests and core to conventional deterrence and assurance commitments.²¹ To achieve these strategic goals, the US sought a force which was “smaller, more global in their orientation, and having a degree of agility, readiness and sustainability...”²²

The USAF, realizing the need to adapt to this new strategic defense paradigm, articulated its relevancy for this expeditionary construct in the 1990 white paper entitled, *Global Reach – Global Power*. This document highlights the unique attributes of American airpower, “speed, range, flexibility, precision, and lethality,” echoing the evolving defense themes of the era.²³ It outlines the requirements for “increased emphasis on force projection capabilities – even more

¹⁹ Colin S. Grey, *Airpower for Strategic Effect* (Maxwell AFB, AL: Air University Press, 2012), 205.

²⁰ The White House, 1991 *NSS*, 31; Brands, “Choosing Primacy,” 15.

²¹ The White House, *National Security Strategy of the United States* (Washington DC: 1990), 25, <http://nssarchive.us/national-security-strategy-1990/>; The White House, *National Security Strategy of the United States* (Washington DC: 1991), 27, <http://nssarchive.us/national-security-strategy-1991/>.

²² The White House, 1990 *NSS*, 25.

²³ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power* (Washington, DC: Department of the Air Force, 1990), 1, https://www.airforcemag.com/PDF/DocumentFile/Documents/2008/GR-GP_060190.pdf.

flexible, rapidly responding, precise, lethal forces with global reach.”²⁴ Combining these with advancements in technology presented an Air Force capable of power projection across the globe from relatively limited locations.

In the early 1990s these key characteristics, principles, and concepts – almost ideals – envisioned American airpower as a force with “ubiquity.”²⁵ The omnipresence was through a force able to “deter, deliver a tailored response, or punch hard when required – over great distances – with quick response.”²⁶ This power projection capability envisioned long-range strike aircraft, enabled by aerial refueling, to hold the entire world at risk from specific operating locations (Figure 1). The same model of limited footprint and global force projection applies to tactical fighter, mobility, and aerial refueling aircraft as well.²⁷ A truly expeditionary air force can place national power, in the forms of deterrence, assurance, and action, rapidly anywhere in the world without reliance on significant overseas static basing.

Even as the US reduced its OCONUS basing and the USAF transitioned into a force to “project dominating power to any point on the globe in *hours*,” the US retained “significant forward presence to deter aggression and preserve regional stability.”²⁸ However, these static bases and permanently assigned forces, such as the remaining USAF bases in Europe and the handful scattered in the Pacific theater (principally Korea, Japan, Guam, and Diego Garcia – whose US lease expires in 2036), became expeditionary in character, able to deploy forces “wherever it might be needed.”²⁹

²⁴ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power*, 1.

²⁵ Phillip S. Meilinger, *10 Propositions Regarding Air Power* (Maxwell AFB, AL: Air Force History and Museums Program, 1995), 19.

²⁶ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power*, 8.

²⁷ Boyne, *Beyond the Wild Blue*, 284.

²⁸ Boyne, *Beyond the Wild Blue*, 284; Lostumbo, et al., 9.

²⁹ Lostumbo, et al., *Overseas Basing of U.S. Military Forces*, 9; Pettyjohn, *U.S. Global Defense Posture*, 84.

Operations Desert Shield (1990) and Desert Storm (1991) present the earliest and best examples of the USAF's expeditionary force-projection model and basing strategy. In these operations the USAF rapidly deployed assets from bases worldwide to first defend Saudi Arabia by deterring Iraqi aggression, and then supporting the liberation of Kuwait. The first tactical fighters to forward deploy, comprising forty-eight F-15C/Ds from Langley Air Force Base (AFB), Virginia, flew from their CONUS base to Saudi Arabia on August 8, 1990. Reportedly, "a little more than a day later the crews were standing combat alert."³⁰ Forces continued to flow into Saudi Arabia. The USAF had 398 fighters in country by September 11.³¹ By January 15, 1991, two days before Desert Storm began, "The Air Force had 1,133 aircraft in place..."³² Likewise, mobility aircraft, with their global reach, sustained buildup operations for Desert Storm, creating an "'aluminum bridge' of C-5s and C-141s..." flying in troops and equipment to sustain operations.³³

The USAF's projection capabilities relied heavily upon access to bases and overflight rights held by allies and partners as well as many dispersed regional bases acting as forward operating locations. These critical links augmented the responsiveness of US airpower, replacing the reduced US network of Cold War era bases. "The nonstop deployment by fighter and bomber aircraft along an 'Atlantic Bridge' to the Gulf required staging aerial tankers at numerous bases from Lajes Air Base in the Azores to Cairo West Airfield in Egypt."³⁴ Likewise, the employment of B-52s leveraged a network of basing options to facilitate force projection from CONUS and OCONUS locations. In total, sixty-six B-52s supported the operation; however, the closest

³⁰ Boyne, *Beyond the Wild Blue*, 293.

³¹ Boyne, *Beyond the Wild Blue*, 294.

³² Boyne, *Beyond the Wild Blue*, 298.

³³ Boyne, *Beyond the Wild Blue*, 294.

³⁴ Thomas Keaney and Eliot A. Cohen, *Gulf War Air Power Survey: Summary Report* (Washington, DC: US Department of Defense, 1993), 163, <https://media.defense.gov/2010/Sep/27/2001329816/-1/-1/0/AFD-100927-065.pdf>.

dedicated B-52 staging base was Diego Garcia in the Indian Ocean, approximately 3,000 miles from the conflict and hosting only twenty aircraft.³⁵ Despite its strategic location, well within the B-52's 8,800-mile range, the duration of the sorties numerically limited application of the weapon system.³⁶ To overcome this, the USAF staged aircraft and flew missions from Saudi Arabia, Spain, and Great Britain.³⁷ Varying access rights and staging for assets soon encompassed countries in Eastern Europe, Thailand and India, and the Middle East, demonstrating the necessity of basing options to facilitate worldwide operations.

Despite Desert Storm's demonstration of the post-Cold War USAF to project combat power to address regional conflict, two decades of continuous operations in US Central Command (USCENTCOM) affected the strategic vision for USAF overseas basing. Constant operations in a single combatant command led to the norming of operations from overseas expeditionary bases, "requiring a rotational base to support."³⁸

2000s

Following the attacks of September 11, 2001, the US viewed "asymmetric threats (such as A2/AD strategies, terrorism and insurgency) and catastrophic threats" posed by "rogue states or substate actors" as the greatest challenge."³⁹ To address these threats, the US realigned its global basing strategy through the 2004 *Global Defense Posture Review (GDPR)*. This realignment formed to effectively prosecute the Global War on Terror in Afghanistan and Iraq while remaining flexible to respond globally. While not completely dismissing traditional state actor threats, the *GDPR* transformed the overseas military footprint to focus on post-9/11 threats.

³⁵ Eliot A. Cohen, *Gulf War Air Power Survey: Volume V, A Statistical Compendium and Chronology* (Washington, DC: US Department of Defense, 1993), 22-25, <https://media.defense.gov/2010/Sep/27/2001329816/-1/-1/0/AFD-100927-065.pdf>.

³⁶ Keaney and Cohen, *Gulf War Air Power Survey: Summary Report*, 164.

³⁷ Keaney and Cohen, *Gulf War Air Power Survey: Summary Report*, 165.

³⁸ Vick, *Force Presentation in U.S. Air Force History and Airpower Narratives*, 39.

³⁹ Pettyjohn, 87; US Department of Defense, *Strengthening U.S. Global Defense Posture Report to Congress* (Washington DC: 2004), 6.

Due to the “uncertainty,” the US “needed to develop a flexible forward presence that would enable it to project power wherever threats might emerge.”⁴⁰ To achieve this, the *GDPR* utilized a “capabilities-based approach that addresses the full spectrum of feasible threats” to define the purpose and presence for overseas basing.⁴¹ Unfortunately for today’s great power competition, “capabilities-based planning focuses less on identifying specific adversaries and more on analyzing the types of capabilities likely to be needed in a set of less-well-defined possible future wars.”⁴² This positions forces to address all potential threats versus posturing against the most dangerous threat. To accomplish this approach, the *GDPR* stressed the “agility, flexibility, and speed” force concepts born in the 1990s while championing “advanced concepts like speed, stealth, reach, knowledge, precision, and lethality” as hallmarks of an effective, capable US military.⁴³

Despite the apparently singular focus of the *GDPR*, its emphasis on countering all threats had profound impact on the USAF’s basing concepts. The service’s 2004 strategy document, *Flight Plan*, reveals relevant basing concepts for today’s great power competition and associated A2/AD environments. It details “mobile basing” to “defeat the most potent of enemy anti-access and area-denial capabilities,” and a power projection concept of “Global Strike CONOPS...relying heavily on long-range systems...outranging the threat, initially deploying only those forces required to enable attack operations.”⁴⁴ The document also addresses operating

⁴⁰ Interview with Douglas Feith, July 8, 2011, in Pettyjohn, *U.S. Global Defense Posture*, 87.

⁴¹ Ryan Henry, “Transforming the U.S. Global Defense Posture,” *Naval War College Review* 59, no. 2 (Spring 2006), 21, <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=2102&context=nwc-review>.

⁴² Michael J. Mazarr, et al., *The U.S. Department of Defense’s Planning Process: Components and Challenges* (Santa Monica, CA: RAND, 2019), 14, https://www.rand.org/content/dam/rand/pubs/research_reports/RR2100/RR2173z2/RAND_RR2173z2.pdf.

⁴³ US Department of Defense, *Strengthening U.S. Global Defense Posture Report to Congress*, 6; Joseph Gerson, “U.S. Foreign Military Bases and Military Colonialism: Personal and Analytical Perspectives,” in Catherine Lutz, ed., *The Bases of Empire: The Global Struggle Against U.S. Military Posts* (New York: New York University Press, 2009), 63.

⁴⁴ Department of the Air Force, *The U.S. Air Force Transformation Flight Plan* (Washington DC: 2004), 10, 45,

“from austere, forward-deployed, and CONUS bases” as upcoming challenges and utilizing “[p]recision, long-range, quick-reaction air- and space-based strike platforms that can operate in an anti-access environment to facilitate early and rapid-response strike operations.”⁴⁵ However, due to the primacy of asymmetric threats and the absence of peer competition, the USAF positioned and postured to prosecute the nation’s objectives.⁴⁶

The priority of the US throughout the 2000s and 2010s was to defeat terrorism and confront the challenge of irregular warfare.⁴⁷ This meant posturing to project into the “arc of instability” stretching from the Middle East, through South Asia, and into the Asia-Pacific region” (Figure 2).⁴⁸ This region harbors the main areas of terrorism and associated instability as well as the rogue states of Iran and North Korea and the nations of Iraq and Afghanistan. The US saw these areas as the “breeding grounds for threats to our interests.”⁴⁹ The shift instituted a permanent rotational presence from the OCONUS and CONUS bases into the arc, necessitating the development of dedicated infrastructure to support. These bases provided “adaptability, presence and capability” through “a strategy of containment, protection and deterrence against regional adversaries.”⁵⁰ Irregular warfare and counter-terrorism operations hijacked the vision of *Flight Plan* for overseas basing and force projection.

The USAF bases in the Middle East, while originally expeditionary in nature and primarily reliant upon host-nation support, transitioned into quasi-permanent OCONUS USAF installations. They execute combat support functions using Air Expeditionary Wings (AEW) to

⁴⁵ Department of the Air Force, *Flight Plan*, 45

⁴⁶ Pettyjohn, *U.S. Global Defense Posture*, 90.

⁴⁷ US Department of Defense, *Quadrennial Defense Review Report* (Washington DC: 2006), 3; Department of the Air Force, *Air Force Roadmap: 2006-2025* (Washington DC: 2006), 12.

⁴⁸ Pettyjohn, *U.S. Global Defense Posture*, 90.

⁴⁹ US Department of Defense, *The National Military Strategy of the United States: A Strategy for Today; A Vision for Tomorrow* (Washington DC: 2004), 5, https://history.defense.gov/Portals/70/Documents/nss/nss2002.pdf?ver=oyVN99aEnrAWijAc_O5eiQ%3d%3d.

⁵⁰ Robert E. Webb, “Assessing the Emerging US Military Basing Posture in the Mideast” (master’s thesis, Air War College, 2010), 1, <https://apps.dtic.mil/sti/pdfs/AD1018532.pdf>.

host a rotational force of airmen and weapons systems which the USAF deploys to these locations for 90- to 365-day periods to “meet combatant commander demands for military capabilities.”⁵¹ On the one hand, the permanency of these bases eschews the vision of an agile, global strike force due to the reliance on close-in, developed basing. However, they also provide a positive example of utilizing an established base to project combat power without permanently assigning aircraft and families or having the requisite support infrastructure. Thus, even though all these Middle Eastern bases fall within Iranian ballistic and cruise missile range, assets and personnel are not statically based nor permanently at risk.⁵²

Enduring Strategic Basing Themes

Bases are normally categorized as main operating bases (MOB), forward operating sites (FOS), and cooperative security locations (CSL). MOBs consist of “permanently stationed combat forces and robust infrastructure,” FOSs involve “expandable ‘warm facilities’ maintained with a limited US military support presence” supporting rotational forces, and CSLs exist “with little or no permanent U.S. presence” providing “contingency access” to areas of conflict.⁵³ These definitions persist throughout current defense literature, doctrine, and commentary.

The security and defense literature from 2000 -on reveals a thematic overseas basing strategy focused on a realignment from Cold War-era basing in favor of flexibility and forward projection while simultaneously maintaining a global deterrence and assurance posture. It concentrates on regional threats within the narrative of global uncertainty following the collapse of the Soviet Union and later, the attacks of 9/11. The US sought to maintain presence in

⁵¹ Michael Sullivan, ed., *Force Providers Guide to the AEF, Version 1.0* (Randolph AFB, TX: Air Force Personnel Center), 7, <https://aefonline.afpc.randolph.af.mil/Education.aspx>; Department of the Air Force, *Annex 3-30 Command and Control: Organizing Air Force Forces* (last updated January 7, 2020), 28, https://www.doctrine.af.mil/Portals/61/documents/Annex_3-30/3-30-D35-C2--AF-Org-intro.pdf.

⁵² Missile Defense Project, “Missiles of Iran,” *Missile Threat*, Center for Strategic and International Studies, June 14, 2018, last modified July 16, 2020, <https://missilethreat.csis.org/country/iran/>.

⁵³ US Department of Defense, *Strengthening U.S. Global Defense Posture*, 10; Lutz, *The Bases of Empire*, 19.

historical areas to deter, assure, and retain access while building the capacity to project forces and to meet all potential threats, specifically the threat of terrorism. This dual-natured strategy and concentration on a relatively short-term threat has left USAF aircraft and basing vulnerable to peer adversaries' capabilities within the European and Asia-Pacific regions.

The early focus of this period was the assumption that the US would not “face a peer competitor in the near future” but at the same time maintaining the “possibility exists that a military competitor with a formidable resource base will emerge” in the Asia region.⁵⁴ As such, the US sought to disengage from traditional Cold War locations to prosecute the Global War on Terror through an expeditionary force posture but needed to preserve historical deterrence and assurance missions. The result was a national strategy attempting to, but never able to, disengage from Cold War locations.

The 2002 and 2006 *NSS* championed the enduring benefits of an overseas military presence – deterrence, assurance, and positioning to act decisively – while concurrently advocating for a transition away from Cold War-areas to confront the uncertainty of the global threat environment.⁵⁵ By 2010, the *NSS* dynamically evolved to not only include deterrence and assurance as part of the reason for overseas basing, but an added emphasis on military access and partnerships to fulfill these strategic missions.⁵⁶ Auspiciously, this document acknowledged the role of the US as the world's sole superpower and the roles and responsibilities that coincide perhaps as a realization historical overseas basing must exist even in a changed security environment.

⁵⁴ US Department of Defense, *Quadrennial Defense Review Report* (Washington DC: 2001), 4, <https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2001.pdf?ver=AFts7axkH2zWUH ncRd8y Ug%3d%3d>.

⁵⁵ The White House, *National Defense Strategy* (Washington DC: 2002), 29, https://history.defense.gov/Portals/70/Documents/nss/nss2002.pdf?ver=oyVN99aEnrAWijAc_O5eiQ%3d%3d; The White House, *National Security Strategy of the United States of America* (Washington DC: 2006), 43, <https://www.hsdl.org/?view&did=489257>.

⁵⁶ The White House, *National Security Strategy* (Washington DC: 2010), 41, <https://www.hsdl.org/?view&did=24251>.

Comparably, the 2001 and 2006 *Quadrennial Defense Review (QDR)* called for a reorientation of overseas military basing from Western Europe and Northeast Asia to a more flexible, global footprint. This era of defense strategy sought to focus on “critical areas of the world” and “making long overdue adjustments to U.S. basing by moving away from a static defense in obsolete Cold War garrisons, and placing emphasis on the ability to surge quickly to trouble spots across the globe.”⁵⁷ The 2004 *National Military Strategy (NMS)* and 2008 *National Defense Strategy (NDS)* espoused similar themes to modify global force posture. The *NMS* sought “adjustments in permanent and rotational presence...” to “improve the ability of regional forces to employ an expeditionary approach in response to regional and global contingencies.”⁵⁸ The *NDS* emphasized the uncertain strategic environment and advocated for a transition from “legacy base structures and forward-garrisoned forces to an expeditionary force....” and referenced a more integrated utilization of CONUS-based forces to prosecute the nation’s interests.⁵⁹

By the mid-2010s, the national security and defense establishments slowly began to realize the vulnerability of overseas bases to emerging adversaries. The 2012 *Defense Strategic Guidance (DSG)* highlighted the challenge of power projection in an A2/AD environment, emphasizing the importance of attaining, maintaining, and sustaining access against adversaries such as China who employ sophisticated weapons systems to deny the US the freedom of maneuver.⁶⁰ The 2014 *QDR* established the importance of resilience with respect to overseas

⁵⁷ US Department of Defense, 2001 *QDR*, 26; US Department of Defense, *Quadrennial Defense Review Report* (Washington DC: 2006), v, <https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2006.pdf?ver=2014-06-25-111017-150>.

⁵⁸ US Department of Defense, *The National Military Strategy of the United States: A Strategy for Today; A Vision for Tomorrow* (Washington DC: 2004), 25, <https://www.hsdl.org/?abstract&did=446695>.

⁵⁹ US Department of Defense, 2004 *NMS*, 16, 20.

⁶⁰ US Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington DC: 2012), 4, https://archive.defense.gov/news/defense_strategic_guidance.pdf.

bases, emphasizing the potential for “large-scale, coordinated attacks.”⁶¹ It explored the concept of distributed operations and contingency basing, going so far as to dictate the procurement of critical assets conducive to such concepts. It also emphasized power projection as key to national security; highlighting the readiness of CONUS forces, the capability of forces to rapidly respond globally – with air mobility, aerial refueling, and global strike as fundamental aspects.⁶²

Unfortunately for the future, the *QDR* assessed the overseas basing as secure. Considering this, the 2015 *NMS* measured the capabilities of the “forward deployed, rotational, and globally responsive forces” sufficient to act should deterrence fail and additionally reaffirmed the US rebalance to Asia in 2011. This rebalancing was a prelude to countering a rising China as a peer competitor. The *NMS* referred to the theater as “vital” and underscored the importance of access through alliances and partnerships.⁶³

Taking note of this strategic rebalance, the USAF’s 2015 *Future Operating Concept* foresaw, “Tailored forward presence from small, resilient bases, using dispersal, warning, active and passive defenses, rapid repair capabilities, and streamlined logistics...to enable the Air Force to project power rapidly, effectively, and efficiently.”⁶⁴ Likewise, the 2015 *Air Force Strategic Master Plan* regarded range and stand-off as ways to lessen threats to forward basing in addition to fewer long-term deployments, investments in agile employment and reduction of overseas forces “to the minimum required for sustained operations.”⁶⁵ Realizing the necessity of forward presence in key areas of the world, the USAF concluded, “Where we need to have the ability to

⁶¹ US Department of Defense, *Quadrennial Defense Review* (Washington DC: 2014), 38, https://archive.defense.gov/pubs/2014_quadrennial_defense_review.pdf.

⁶² US Department of Defense, 2014 *QDR*, 19, 36.

⁶³ US Department of Defense, 2014 *QDR*, 9.

⁶⁴ Department of the Air Force, *Future Operating Concepts* (Washington DC: 2015), 40, <https://www.af.mil/Portals/1/images/airpower/AFFOC.pdf>.

⁶⁵ Department of the Air Force, *USAF Strategic Master Plan* (Washington DC: 2015), 47.

‘stand in’ rapidly, we will employ light, agile, high-readiness forces with a small but resilient footprint that can deploy to the widest possible variety of austere locations.”⁶⁶

During the past thirty years the driving factor for overseas basing was the projection of forces into areas of instability and conflict, a focus on short-term threats by national strategy.⁶⁷ However, the long-term strategic factors corresponding to potential peer adversaries persistently echo throughout the USAF’s strategic documents. The service regularly cultivated ideas on “how the Air Force would structure itself and fight future conflicts.”⁶⁸

In the case of overseas basing, the USAF held a steady narrative relating to basing and force posture concepts drawing from the unique attributes of airpower – “speed, range, flexibility, precision, and lethality.”⁶⁹ It recognized that successful projection of combat power – as well as deterrence and assurance – relies on the air base. Even with the reduction of overseas MOBs and the increasing utilization of FOSs and expeditionary bases within conflict areas, the overseas presence of aircraft remains a necessity while their permanent basing continues to present an exploitable force posture. Thus, while peer adversaries in the reemerging era of great power competition threaten the survivability, resiliency, and effectiveness of the USAF, enduring strategic basing themes provide an awareness and starting point for the impetus to accelerate change or lose.

⁶⁶ Department of the Air Force, *USAF Strategic Master Plan*, 47.

⁶⁷ Constantine Samaras, et al., *Improvements to Air Force Strategic Basing Decisions* (Santa Monica, CA: RAND, 2016), 74, https://www.rand.org/pubs/research_reports/RR1297.html.

⁶⁸ Cohen, *Air Force Strategic Planning*, 3.

⁶⁹ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power*, 1.

Survey of Adversary Threats

Despite the transition of US global basing from conventional overseas MOBs to expeditionary locations and the shift to force projection versus static defense, the permanent USAF overseas presence poses a critical vulnerability for peer adversaries to exploit. China and Russia command increasingly sophisticated long-range precision fires (missile) systems and the strategic culture to utilize them.⁷⁰ These systems create an A2/AD or contested environment for airpower, both in the air and on the ground.⁷¹ While not omnipotent and unexploitable, these systems can range all the USAF's overseas bases and pose an immediate and significant threat to airfields and their combat power. Air bases, considered to be important targets, are consistently attacked in both large and small conflicts with approximately 22,616 aircraft lost on the ground between 1941 and 1999 and airfield attacks occurring in at least twenty-six conflicts between 1914 and 2015.⁷² Additionally, attacks utilizing missiles have “two inherent advantages: (1) short flight time (which minimizes warning) and (2) a high probability of penetrating defenses, particularly when launched in large waves.”⁷³ Should the US engage, or even have a potential role in conflict with a peer adversary, USAF bases will be attacked to reduce US airpower's ability to gain and maintain regional air superiority to counter adversarial actions.

Consider a Pearl Harbor-like attack on Kadena Air Base, Japan, by the Chinese. Instead of a steady stream of incoming enemy aircraft, it is a salvo of precision-guided missiles launched from China at the more than eighty aircraft on the ramp, the two runways, and supporting

⁷⁰ Missile Defense Project, “Missiles of China,” *Missile Threat*, Center for Strategic and International Studies, last modified July 16, 2020, <https://missilethreat.csis.org/country/china/>; Missile Defense Project, “Missiles of Russia,” *Missile Threat*, Center for Strategic and International Studies, June 14, 2018, last modified February 11, 2021, <https://missilethreat.csis.org/country/russia/>.

⁷¹ Patrick Mills, et al., *Building Agile Combat Support Competencies to Enable Evolving Adaptive Basing Concepts* (Santa Monica, CA: RAND Corporation, 2020), 1, https://www.rand.org/pubs/research_reports/RR4200.html.

⁷² Vick, *Air Base Attacks and Defensive Counters*, 5.

⁷³ Vick, *Air Base Attacks and Defensive Counters*, 20.

infrastructure.⁷⁴ A RAND study completed in 2015 suggested that a targeted attack by the Chinese on just the runway “might shut down operations at Kadena for 16-43 days,” significantly effecting the ability of the US to project airpower in the region.⁷⁵ This is especially relevant given that the USAF permanently stations a significant number of aircraft at these air bases (Table 1 and Table 2). These assigned aircraft represent a considerable portion of the USAF’s active-duty total aircraft inventory (TAI). For example, the fifty-three F-15C/Ds at Kadena represent approximately fifty-three percent of the active force’s TAI of F-15C/Ds while the two high-value asset E-3s make up approximately seventeen percent. While this paper does not dispute the necessity of basing aircraft overseas, the current threat environments of the Asia-Pacific and European regions are not conducive to static nature of force presence.

China

According to the US Department of Defense (DoD), “China has already achieved parity with – or even exceeded the United States” in the area of “land-based conventional ballistic and cruise missiles...”⁷⁶ It possesses numerically high and increasing capable land-based missiles. Its inventory includes “more than 1,250 ground-launched ballistic missiles (GLBMs) and ground-launched cruise missiles (GLCMs) with ranges between 500 and 5,500 kilometers.”⁷⁷ With these assets, China can range the entirety of the USAF’s regional MOBs in Japan, South Korea, and Guam from its own territory, placing aircraft at risk (Figure 3). Notionally, a Chinese DF-16, which is a road-mobile, short-range ballistic missile (SRBM), could strike Kadena in

⁷⁴ Kadena Air Base, “18th Operations Group Factsheet,” accessed February 28, 2021, <https://www.kadena.af.mil/Units/18th-Operations-Group/>.

⁷⁵ Eric Heginbotham, et al., *Chinese Attacks on U.S. Air Bases in Asia* (Santa Monica, CA: RAND, 2015), 2, https://www.rand.org/pubs/research_briefs/RB9858z2.htm.

⁷⁶ US Department of Defense, *Military and Security Developments Involving the People’s Republic of China: Annual Report to Congress* (Washington DC: 2020), 38, <https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>.

⁷⁷ US Department of Defense, *Military and Security Developments Involving the People’s Republic of China*, vii.

approximately four and a half minutes. A large attack of DF-16s would lessen any significant response or protection measures.

In 2015, China elevated its People's Liberation Army (PLA) Rocket Force (PLARF) to service level, equal with the Army, Navy, and Air Force. This reorganization emphasizes the PLARF's role as a "critical component of China's deterrence strategy and efforts to counter third-party intervention in regional conflict" through its ability to conduct precision strikes with GLBMs and GLCMs.⁷⁸ China's investment in the PLARF represents an efficient, seemingly fait accompli means to deter, deny, and disrupt US airpower in the region through an A2/AD environment as it pursues its national strategic goals.⁷⁹

China's enduring strategy since 1949 has been to "(1) restore and maintain territorial integrity and (2) prevent domination of the Asia-Pacific by another power."⁸⁰ These originate from the consistent interference of world powers in the affairs of China prior to the PRC's founding. The country's recent actions in the South China Sea, which it views as historic territory, as well as its continual focus on Taiwanese reunification attest to these strategic goals. To achieve its goals, China must prevent the US from attaining or retaining air superiority, as it "would pose a major threat to the defense of Chinese territory in the event of conflict involving both parties..."⁸¹

Considering its two enduring strategic goals, China's military strategy comprises the concept of "active defense," which justifies all offensive operations as defensive in nature,

⁷⁸ Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win* (Washington DC: 2019), 91, https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/China_Military_Power_FINAL_5MB_20190103.pdf.

⁷⁹ Vick, *Air Base Attacks and Defensive Counters*, 35.

⁸⁰ Andrew Scobell, et al., *China's Grand Strategy: Trends, Trajectories, and Long-Term Competition* (Santa Monica, CA: 2020), 11, https://www.rand.org/pubs/research_reports/RR2798.html.

⁸¹ Scobell, et al., *China's Grand Strategy*, 86,

including preemptive action.⁸² Thus, missile strikes against USAF bases in the region would be justifiable. Rather than challenge the US in the air, which would be costly due to the USAF's ability to gain and maintain air supremacy, China could simply destroy or degrade US airpower on the ground. While not assuming Chinese offensive action is a foregone conclusion, the USAF's failure to change its basing and force posture in the region presents the potential for costly loss in terms of assets, personnel, and time.

Russia

Russia's regional threat to USAF basing in Europe stems from the combination of its air, sea, and ground-based missiles. These include GLBMs, GLCMs, air-launched cruise missiles (ALCMs), and sea-launched land-attack cruise missiles (LACMs). Russia places a high priority on the development of its cruise missiles and associated systems, recently fielding the Kh-101 ALCM, the ISKANDER GLBM, and the KALIBR LACM through a nine-year modernization program.⁸³ The Swedish Defence Research Institute (FOI) assessed that in 2019 Russia "had more than 1,300 missiles available for initial stand-off strikes" in the European theater.⁸⁴ Russia additionally maintains a joint approach to warfare, integrating missiles throughout all three branches of its armed forces. This integration provides an asymmetric advantage for launch sites and ranges (Figure 4). Russia is not limited by territory to extend its A2/AD environment.

Russia views warfare primarily as defensive in nature. This concept is rooted in its history as the recipient of invasions, the resulting value it places on territorial and political

⁸² DIA, *China Military Power*, 23.

⁸³ Defense Intelligence Agency, *Russia Military Power: Building a Military to Support Great Power Aspirations* (Washington DC: 2017), 78, <https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Russia%20Military%20Power%20Report%202017.pdf?ver=2017-06-28-144235-937>.

⁸⁴ Fredrik Westerlund and Susanne Oxenstierna, eds., *Russian Military Capability in a Ten-Year Perspective – 2019* (Stockholm: Swedish Defence Research Agency, 2019), 36, <https://www.foi.se/rest-api/report/FOI-R--4758--SE>.

sovereignty, and its post-Cold War “struggle against the West’s efforts to dominate the world.”⁸⁵ To ensure its continued sovereignty, regional status and reaffirmation as a great power, Russia seeks to maintain influence in former Soviet states.⁸⁶ This allows Russia to maintain a buffer between the expansionist North Atlantic Treaty Organization (NATO) and European Union (EU), purchasing space for time.

Due to US military actions throughout the 1990s and 2000s, Russia recognizes the West’s technological superiority, especially in the realm of precision-guided weapons.⁸⁷ It also understands that the “American way of war” utilizes airpower to deny an enemy maneuver space while simultaneously projecting forces to seize the initiative.⁸⁸ To succeed, the Russian way of warfare seeks to act quickly and decisively to “resolve conflicts on terms favorable to Russia” before the West applies its military strength, especially airpower.⁸⁹ This conventional aspect falls within Russia’s “hybrid war” theory which fuses “a whole-of-government activity, up to and including the use of conventional military forces.”⁹⁰ Any attack by Russia “prioritizes reducing the enemy’s ability to prevent a swift and successful Russian operation. Prevailing in war is hard if the enemy dominates the air. Here, Russian stand-off strikes against land targets therefore include enemy air power infrastructure, such as airbases and radars.”⁹¹

⁸⁵ Mason Clark, *Russian Hybrid Warfare* (Washington DC: Institute for the Study of War, 2020), 16, <http://www.understandingwar.org/sites/default/files/Russian%20Hybrid%20Warfare%20ISW%20Report%202020.pdf>.

⁸⁶ Gerard Toal, *Near Abroad: Putin, the West and the Contest Over Ukraine and the Caucasus* (New York: Oxford University Press, 2017), quoted in Alexander Cooley, “Whose Rules, Whose Sphere? Russian Governance and Influence in Post-Soviet States,” *Carnegie Endowment for International Peace*, June 30, 2017, 1, https://carnegieendowment.org/files/6302017_AlexanderCooley_WhoseRules.pdf.

⁸⁷ Alexander D. Chekov, et al., “War of the Future: A View From Russia,” *Survival* 61, no. 6 (2019), 28, <https://doi.org/10.1080/00396338.2019.1688563>; DIA, *Russia Military Power*, 34.

⁸⁸ Vick, *Air Base Attacks and Defensive Counters*, 12.

⁸⁹ Andrew S. Bowen, *Russian Armed Forces: Military Doctrine and Strategy*, CRS In Focus IF1 1625 (Washington DC: Congressional Research Service, August 20, 2020), 1, <https://fas.org/sgp/crs/row/IF11625.pdf>.

⁹⁰ Clark, *Russian Hybrid Warfare*, 15.

⁹¹ Westerlund and Oxenstierna, eds., *Russian Military Capability*, 62.

Current Basing Concepts

The USAF never lost sight of the vulnerability of static air bases or the requirement to ensure the survivability of airpower projecting from these bases. However, the rapid rise of China and the reemergence of Russia, and their corresponding capabilities to degrade and destroy USAF aircraft and bases, places renewed emphasis on basing and force projection concepts. The USAF recently began advancing adaptive basing (AB), distributed operations, and agile combat employment (ACE) concepts to mitigate and counter these evolving threats.

The challenges to overseas basing and force projection are not easily resolved. While the nature of war – comprising the violent interaction of politics, humanity, uncertainty, and will – remains unchanging, its character continually evolves through aspects such as technology and doctrine.⁹² While the USAF took various actions in the past to address basing and projection, the current paradigm presents unique challenges. Not only do adversaries possess the capability to deny freedom of maneuver to US airpower through advanced A2/AD networks, but the increasingly rapid pace of warfare complicates the problem set.

The advancement and proliferation of technology (e.g., precision-guided munitions, hypersonic missiles, artificial intelligence, cyber, etc.) creates a farther reaching and more dynamic and complex threat environment. It distorts the line between inside and outside forces and the traditional factors of time and distance in determining safety and security. Likewise, the Chinese and Russians, through swift and deliberate active defense and hybrid warfare, seek to

⁹² Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 89; Department of the Air Force, *Air Force Doctrine Publication 1* (Washington DC: 2021), 1, https://www.doctrine.af.mil/Portals/61/documents/AFDP_1/AFDP-1.pdf; Christopher Mewett, “Understanding War’s Enduring Nature Alongside Its Changing Character,” *War on the Rocks*, January 21, 2014, quoted in Rosa Brooks, “By Other Means: Fighting Words,” *Foreign Policy*, February 4, 2014, <https://foreignpolicy.com/2014/02/04/fighting-words/>; US Army Maneuver Center of Excellence, “Maneuver Self Study Program,” last updated December 18, 2018, <https://www.benning.army.mil/MSSP/Nature%20and%20Character/#:~:text=War%20has%20an%20enduring%20nature%20that%20demonstrates%20four,nature%20in%20the%20opening%20chapter%20of%20On%20War.>

purchase time and maneuver space for their own forces by quickly neutralizing or delaying US airpower. Changes in the character of war, continually compressing the elements of time and space, presents a wicked problem for the USAF as it seeks to adapt overseas basing and force projection to both current and future environments.

In 2016, the USAF envisioned the operational environment of 2030, highlighting A2/AD as most threatening to air dominance. It emphasized the requirement to “deploy and operate forces in non-permissive environments” and viewed concepts such as adaptive basing as crucial air dominance enablers.⁹³ These concepts include mitigating attacks through active and passive defenses, recovery and reconstitution, sustainment, and enabling “stand-off and stand-in forces operating from range.”⁹⁴

AB is an “umbrella initiative” to incorporate all concepts associated with basing in an A2/AD environment.⁹⁵ There are a host of individual concepts within this paradigm. “AB is about the ability to avoid or survive attacks and to continue operating in theater despite them.”⁹⁶ It relies on a combination of traditional active and passive force protection measures such as missile defense and hardened aircraft shelters to address survivability and resiliency during and post-attack. It utilizes the dispersal of aircraft and supporting elements away from MOB to FOSs and CSLs to decrease vulnerability and increase agility, survivability, and resiliency.

AB is not new despite the recent impetus for development. In addition to the USAF’s strategic basing narrative of the 1990s-2010s, the Cold War provides several examples. The Swedish Air Force’s Bas 90 system (Air Base System 90) “dispersed fighters throughout its territory, making it difficult for Moscow to destroy all of its fleet on the ground in a surprise

⁹³ Department of the Air Force, *Air Superiority 2030 Flight Plan* (Washington DC: 2016), 5, <https://www.af.mil/Portals/1/documents/airpower/Air%20Superiority%202030%20Flight%20Plan.pdf>.

⁹⁴ Department of the Air Force, *Air Superiority 2030 Flight Plan*, 5.

⁹⁵ Mills, et al., *Building Agile Combat Support Competencies to Enable Evolving Adaptive Basing Concepts*, 1.

⁹⁶ Mills, et al., *Building Agile Combat Support Competencies to Enable Evolving Adaptive Basing Concepts*, 1.

attack.”⁹⁷ NATO practiced utilization of the West German Autobahn as emergency air bases in the event its MOBs were destroyed by the Soviets.⁹⁸ Additionally, the United States Air Forces in Europe (USAFE) employed the Collocated Operating Base program (COB) from the late 1960s to the 1980s to distribute aircraft across the European theater during wartime.

The USAF doctrinally defines the AB concept of ACE as the “proactive and reactive operational scheme of maneuver executed within threat timelines to increase survivability while generating combat power.”⁹⁹ Its framework includes airpower that is rapid, resilient, survivable, lethal, unpredictable, and applicable while synergizing personnel, coordination, risk, access, agile combat support, and pre-positioned material during operations. “ACE-resilient basing plans consist of main operating bases with significant passive and active defenses, a network of forward operating sites used for dispersal and short-term operations, and a series of additional landing sites used for refueling and reloading to complicate adversary targeting.”¹⁰⁰

The COB concept provides a practical AB example considering the USAF’s definition of ACE. COBs consisted of “both active and standby military airfields in various NATO countries...designed to provide the augmentation units with ‘Minimum Essential Facilities’” from which to conduct operations.¹⁰¹ The locations – spread across MOB, FOS, and CSL – and aircraft, which were flown in from CONUS, provided a “plausible deterrent force and a

⁹⁷ Garrett Reim, “How Sweden’s austere basing system influenced the Gripen,” *Flight Global*, July 15, 2020, <https://www.flightglobal.com/fixed-wing/how-swedens-austere-basing-system-influenced-the-gripen/139316.article>.

⁹⁸ Kyle Mizokami, “Watch A-10 Warthogs Landing on the German Autobahn During the Cold War,” *Popular Mechanics*, July 5, 2018, <https://www.popularmechanics.com/military/a22063161/warthogs-nato-jets-autobahn-cold-war/>.

⁹⁹ Department of the Air Force, *Annex 3-99 DAF Role in Joint All-Domain Operations (JADO): Protection* (Maxwell AFB, AL: October 8, 2020), 21, https://www.doctrine.af.mil/Portals/61/documents/Annex_3-99/Annex%203-99%20DAF%20role%20in%20JADO.pdf.

¹⁰⁰ Department of the Air Force, *Annex 3-99 DAF Role in Joint All-Domain Operations (JADO): Appendix B: Key Considerations for Agile Combat Employment (ACE)*, (Maxwell AFB, AL: October 8, 2020), https://www.doctrine.af.mil/Portals/61/documents/Annex_3-99/3-99-D10-JADO-AppendixB.pdf.

¹⁰¹ Donald E. Lewis, et al., *A Perspective on the USAFE Collocated Operating Base System* (Santa Monica, CA: RAND Corporation, 1986), v, <https://www.rand.org/pubs/notes/N2366.html>.

well-postured war-fighting capability” to the air component commander.¹⁰² By distributing the aircraft to over 70 preplanned locations, USAFE enhanced the survivability, resiliency, and effectiveness of its aircraft against Soviet forces.¹⁰³ It presented a targeting problem for the enemy, ensuring combat power survived initial attacks.

While AB does provide survivability concepts for force projection within an A2/AD environment, it does not satisfactorily address the continuous, static basing of aircraft at overseas MOBs. The permanent overseas force presence includes fighter, airborne air control, special operations, airlift, and air refueling aircraft. It includes aircrew, support personnel, and associated dependent families, all stationed in high-threat A2/AD environments. AB is important to reduce the adage of “big bases, big targets;” however, while addressing the symptom of MOBs, the USAF must address the cause, i.e., force presence and projection.¹⁰⁴ Just as the two-legged stool of men and planes would topple over without an air base, so would an air base without men and planes.¹⁰⁵

¹⁰² Lewis, et al., *A Perspective on the USAFE COB*, 2.

¹⁰³ Lewis, et al., *A Perspective on the USAFE COB*, 7.

¹⁰⁴ Valerie Insinna, “The US Air Force has unconventional plans to win a war in the Asia-Pacific,” *Defense News*, February 10, 2020, <https://www.defensenews.com/digital-show-dailies/singapore-airshow/2020/02/11/the-us-air-force-has-unconventional-plans-to-win-a-war-in-the-asia-pacific/>.

¹⁰⁵ Arnold, “The Air Forces and Military Engineers,” quoted in Vick, *Force Presentation in U.S. Air Force History and Airpower Narratives* 45.

Impact of Technology

Despite the USAF's consistent narrative of global strike and reach, it is limited by technology to project most of its combat power without the enabling of air refueling or hindered by human endurance factors. As a result, operations and basing generally take place within an adversary's weapons engagement zone (WEZ), compromising "one of airpower's greatest advantages: the ability to operate outside an adversary's reach."¹⁰⁶ This has been the accepted case due to the large disparity in numbers between tactical combat aircraft and long-range bombers.¹⁰⁷ While this mission-related disparity will exist well into the future, the overall numbers of aircraft will continue to decline due to the reliance on expensive technology such as fifth-generation aircraft, and presumably sixth-generation aircraft. As the quantity declines due to rising costs, the acceptance of basing them permanently within contested environments will also decline. A similar correlation and example exist for high-cost, low-quantity strategic aircraft such as the B-1, B-2, and B-52, which the USAF stations permanently within CONUS (Table 3).

While the USAF's strategic aircraft have suitable range and endurance to strike as an outside force, tactical combat aircraft do not have suitable range and endurance to operate effectively, requiring bases for persistent local and regional force presence (Table 4).¹⁰⁸ This persistent presence enables the nation's strategic goals of deterrence and assurance, presents ready forces for operational use by a combatant commander, and limits the exposure of enablers such as aerial refueling aircraft. Consequently, the USAF prefers "bases within 500 miles of operating areas" for its tactical aircraft, "although fighters can sustain operations from as far as

¹⁰⁶ John A. Shaud and Adam B. Lowther. "An Air Force Strategic Vision for 2020-2030." *Strategic Studies Quarterly* 5, no. 1 (Spring 2011), 26, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-05_Issue-1/Spring11.pdf.

¹⁰⁷ David A. Shlapak, et al., *A Global Access Strategy for the U.S. Air Force* (Santa Monica, CA: RAND, 2002), 97, https://www.rand.org/pubs/monograph_reports/MR1216.html.

¹⁰⁸ Shlapak, *A Global Access Strategy for the U.S. Air Force*, 97.

1500nm [1,725 miles].”¹⁰⁹ These bases often reciprocally lie within 500 miles of adversaries and consist of MOBs with permanently assigned aircraft.

Due to the types of missions these tactical aircraft conduct “(e.g. close air support, interdiction, air superiority, and suppression of enemy air defenses)” and the locations of the MOBs to friendly ground forces, the bases are extremely “valuable” and “vulnerable.”¹¹⁰ For example, Camp Humphreys in South Korea is the MOB for the 2nd Infantry Division and approximately seventy-five miles from the North Korean border. Kunsan Air Base, MOB to two squadrons of F-16s (about forty-eight aircraft), is roughly 150 miles away from the border, with only seventy-five miles separating the two MOBs. Meanwhile, approximately 300 miles separates them from China. The F-16 is a relatively inexpensive aircraft, costing \$18.8 million per aircraft in 1998 (\$30.4 million adjusted for inflation).¹¹¹ Imagine replacing these with the expensive F-35 fifth-generation fighters, which the service plans to do by the 2040s.

The high cost associated with advanced technology increases the threshold of risk and use of that technology. The higher the cost of an asset the less one is willing to casually risk it, such as an aircraft on a tarmac or in a hangar vulnerable to an adversary’s strike capability. This force protection issue is a primary reason the strategic bomber force remains permanently stationed at CONUS locations. Basing of the F-22 reveals a similar anecdote. Save for Alaska and Hawaii, all basing is CONUS for the \$110 to \$180 million aircraft (roughly \$134 to \$220 million adjusted for inflation).¹¹²

¹⁰⁹ Vick, *Air Base Attacks and Defensive Counters*, 64

¹¹⁰ Vick, *Air Base Attacks and Defensive Counters*, 64; Harkavy, 77.

¹¹¹ Department of the Air Force, “Fact Sheets: F-16 Fighting Falcon,” *US Air Force*, published September 23, 2015, <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104505/f-16-fighting-falcon/>.

¹¹² Mark Espiskopos, “Why Did America Stop Building F-22 Stealth Fighters?” *National Interest* (blog), January 14, 2021, <https://nationalinterest.org/blog/buzz/why-did-america-stop-building-f-22-stealth-fighters-176370>.

The USAF relies on the forward deployment and rotational presence of costly fifth-generation and strategic assets to augment legacy aircraft overseas. At approximately \$80 to \$108 million per aircraft, the F-35 is perhaps the “costliest weapons system in military history.”¹¹³ While the USAF plans to eventually expand the inventory to 1,763 aircraft, a 2011 study predicted a reduction in purchases partly due to the high cost of the aircraft.¹¹⁴ Currently, the USAF primarily stations F-35s at CONUS bases, however it has two squadrons at Eielson AFB in Alaska and is currently “bedding down” a squadron at RAF Lakenheath in the United Kingdom. If the long-term plan to replace the F-16 and A-10 with the F-35 continues, expanded OCONUS beddown is inevitable. However, force posture suggests the USAF displays reluctance to station expensive, limited assets overseas; demonstrated by stationing the F-35 at RAF Lakenheath – farther outside the Russian WEZ, limiting the F-22’s OCONUS basing to Alaska and Hawaii, and maintaining the strategic bomber force stateside.

Current force capabilities and generation mixture limit the USAF’s force projection and represent a disparity between assets and the acceptance of risk. Because the service relies upon a combination of legacy and fifth-generation aircraft for strategic and tactical missions, it chooses to utilize CONUS and OCONUS MOBs to project combat airpower. However, future force capabilities offer potential for longer-range, stealth, and endurance without the hindrance of overseas MOBs within an adversary’s WEZ.

¹¹³ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Program Acquisition Cost by Weapon System: US Department of Defense Fiscal Year 2020 Budget Request* (Washington DC: US Department of Defense, February 2020), 1-2, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Weapons.pdf; Lynn Haueter, “The F-35’s Trillion Dollar Cost – How Did It Happen?” *Real Clear Defense*, February 26, 2021, https://www.realcleardefense.com/articles/2021/02/26/the_f35s_trillion_dollar_cost_how_did_it_happen_661904.html; Espiskopos, “Why Did America Stop Building F-22 Stealth Fighters?”

¹¹⁴ *Program Acquisition Cost by Weapon System: FY2020*, 1-2; John Venable, “An Assessment of U.S. Military Power: U.S. Air Force,” *Heritage*, November 17, 2020, <https://www.heritage.org/2021-index-us-military-strength/assessment-us-military-power/us-air-force>; Shaud and Lowther, “An Air Force Strategic Vision for 2020-2030,” 27.

The future force offers enhancements for global strike and force projection capabilities. The B-2, a low-observable strategic bomber, can range 10,000 nautical miles with a single air refueling.¹¹⁵ From its MOB in Missouri it holds the entire world at risk. The upcoming B-21, a true fifth-generation bomber, will assume this role. Likewise, unmanned aircraft have significant range and endurance unencumbered by human factors.¹¹⁶ Another possibility to reduce the margin of risk through emerging technology is the USAF's Next Generation Air Dominance (NGAD) program. Revealed in 2019, NGAD's role is to develop key technologies for the sixth-generation air superiority aircraft as well as integrate artificial intelligence, manned, and unmanned concepts.¹¹⁷ NGAD offers the potential to reduce the limitations of range and endurance for the host of USAF platforms while breaking the cycle of the conventional, decades-long testing and acquisition process to produce airframes quickly and at lower cost.¹¹⁸

Until the USAF develops advanced technological capabilities and cost-effective production efforts for tactical combat aircraft, it will be forced to continue exposing expensive and numerically limited aircraft through OCONUS basing. Local and regional force presence is a requirement for national objectives. However, it can begin reducing the risk by limiting an aircraft's exposure time in an A2/AD environment.

¹¹⁵ Northrop Grumman, "B-2 Technical Details," accessed March 28, 2021, <https://www.northropgrumman.com/what-we-do/air/b-2-technical-details/>.

¹¹⁶ Department of the Air Force, "Fact Sheet: RQ-4 Global Hawk," *US Air Force*, published October 27, 2014, <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104516/rq-4-global-hawk/>; Department of the Air Force, "Fact Sheet: MQ-9 Reaper," *US Air Force*, published September 23, 2015, <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104470/mq-9-reaper/>.

¹¹⁷ John A. Tirpak, "Roper's NGAD Bombshell," *Air Force Magazine*, October 1, 2020, <https://www.airforcemag.com/article/ropers-ngad-bombshell/>.

¹¹⁸ Will Roper, *There is No Spoon: The New Digital Acquisition Reality* (Washington DC: Department of the Air Force, 2020), 16, <https://software.af.mil/wp-content/uploads/2020/10/There-Is-No-Spoon-Digital-Acquisition-7-Oct-2020-digital-version.pdf>.

Cost Assessment of Overseas USAF Basing

Mitigating the exposure of aircraft to threats includes assessing the costs of OCONUS MOBs against alternative approaches such as force realignment and projection. Basing aircraft outside an adversary's WEZ and utilizing a rotational force approach reduces many cost aspects associated with the permanency of large MOBs, such as personnel and support. Limiting the “permanent” unit presence overseas also removes the costs and risks to families, who often accompany servicemembers overseas. However, investment and sustainment costs remain for any potential “inside” bases, FOSs and CSLs, which host rotational combat power.

Basing costs vary across installations due to factors such as location, population size, mission or assigned aircraft. The total cost of basing differentiates between fixed costs such as infrastructure and variable costs dependent on base population (e.g. utilities, permanent change of station (PCS) costs, and housing allowances).¹¹⁹ Simply due to the personnel costs associated with location, OCONUS bases have a higher variable cost than CONUS bases.¹²⁰ Additionally, the fixed costs of USAF OCONUS bases are “about twice as high” than in CONUS due to more organic base infrastructure and associated support personnel.¹²¹

One factor of comparison is the cost associated with a base's normal operations at the macro or worldwide level. The DoD spent about four percent, or \$25 billion, of the defense budget on base operations support (BOS) in 2016.¹²² The USAF shared almost \$7.3 billion of this total.¹²³ BOS for the USAF currently includes personnel and infrastructure support services

¹¹⁹ Lostumbo, et al., *Overseas Basing of U.S. Military Forces*, 168.

¹²⁰ Patrick Mills, et al., *A Cost Analysis of the U.S. Air Force Overseas Posture* (Santa Monica, CA: RAND, 2013), 28, https://www.rand.org/pubs/research_reports/RR150.html.

¹²¹ Lostumbo, et al., *Overseas Basing of U.S. Military Forces*, 196, 201.

¹²² Congressional Budget Office, *The Cost of Supporting Military Bases* (Washington DC: Congress of the United States CBO, 2019), 2, <https://www.cbo.gov/publication/55849>.

¹²³ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Overview: Fiscal Year 2018 Budget Estimates* (Washington DC: Department of Defense, June 2017), 132, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_OM_Overview.pdf

such as utilities, fire and refuse, dynamic force employment, and some types of civilian administrative pay.¹²⁴ BOS essentially includes anything necessary to run a small city. The FY21 DoD budget requested just over \$27 billion with the USAF estimating almost \$7.5 billion dollars of that spread across seventy installations (fourteen overseas) – 4.8 percent of the USAF’s total budget request.¹²⁵ The FY19 and FY21 DoD budgets further reveal overseas total costs of \$23.3 and \$23.5 billion, respectively.¹²⁶ These relatively small increases in BOS and in the total overseas budget request represents the insignificance overseas bases have on the overall DoD and service budgets.

In 2013, RAND conducted a comprehensive cost analysis study of the USAF’s overseas posture to identify potential modifications to overseas presence. It concluded “the cost to maintain the current USAFE and PACAF [Pacific Air Forces] force structures and installations *overseas rather than in CONUS* represent about 2 percent of USAF TOA [Total Obligating Authority]” and signifies a negligible differentiation.¹²⁷ Only by fully closing an overseas MOB and realigning aircraft to CONUS would the USAF reap any significant annual cost savings and switching fully to a rotational force presence – “\$207 million for USAFE, and \$167 million for PACAF.”¹²⁸ Despite not reaping *significant* cost savings, both the base closure/force realignment and realignment-only options do *somewhat* reduce overall costs, even while maintaining a “permanent” rotational force presence in the same region (Figure 5). As a cost-savings measure, “merely realigning forces while keeping installations open is not sufficient to offset the cost of

¹²⁴ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Overview: Fiscal Year 2021 Budget Estimates* (Washington DC, Department of Defense, February 2020), 104, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_OM_Overview.pdf.

¹²⁵ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Overview: Fiscal Year 2021 Budget Estimates*, 98.

¹²⁶ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Operation and Maintenance Overview: Fiscal Year 2021 Budget Estimates*, 189.

¹²⁷ Mills, et al., *A Cost Analysis of the U.S. Air Force Overseas Posture*, 28

¹²⁸ Mills, et al., *A Cost Analysis of the U.S. Air Force Overseas Posture*, 26.

providing full presence through rotational deployments.”¹²⁹ However, the purely financial argument assumes asset survivability within a relatively benign threat environment. The cost of two squadrons of F-35s exceeds \$5.8 billion in aircraft alone, not to mention the lives of servicemembers and their families.

Closing overseas bases and utilizing a rotational force presence does have strategic consequences. OCONUS base closures limit options for rotational or forward deployment, jeopardizing the USAF’s global reach capabilities. Force projection requires access to facilities either owned by allies and partners or utilizing US regional bases. Perhaps most important, losing the permanent overseas presence poses a significant risk to the nation’s deterrence and assurance strategy. Overseas basing not only deters potential adversaries but “contributes to regional stability through capacity building and political influence...” enhancing “operational performance...interoperability...” and ensures a network of bases for US force projection.¹³⁰ It is difficult to place a price on strategic objectives.

The realignment of permanent aircraft basing outside an adversary’s WEZ in combination with OCONUS AB presents a long-term, cost-effective measure to counter the threats posed by peer adversaries while maintaining strategic objectives. Force protection issues remain a top concern and priority for combatant commanders. In 2020, the commander of US Indo-Pacific Command (USINDOPACOM) requested “\$4.68 billion in fiscal 2022 and \$22.69 billion over the following five years for the Pacific Deterrence Initiative [PDI]...” after acknowledging Guam is a target due to its critical defense role in the region.¹³¹ The funding will, among other things, “increase the rotational and forward presence...improve military and

¹²⁹ Lostumbo, et al., *Overseas Basing of U.S. Military Forces*, 233.

¹³⁰ Mills, et al., *A Cost Analysis of the U.S. Air Force Overseas Posture*, 29.

¹³¹ Brian W. Everstine, “Improving Guam’s Defenses is Top Priority for INDOPACOM,” *Air Force Magazine*, March 4, 2022, <https://www.airforcemag.com/improving-guams-defenses-is-top-priority-for-indopacom/>.

defense infrastructure...to enhance the responsiveness, survivability, and operational resilience...” of USINDOPACOM.¹³²

The range of costs to ensure the survivability of aircraft when threatened by a peer adversary’s long-range missile system vary. The AB concept presents currently undocumented costs associated with the “periodic movement of equipment and personnel” to FOSs and CSLs and training and manpower to distribute operations across a “network of integrated bases.”¹³³ The USAF can ensure survivability through the closure of overseas MOBs. This would protect aircraft, infrastructure, personnel, and families but present power projection issues. The service could also continue to develop mitigators, increasing defenses and implementing AB. The cost benefit analysis is inconclusive as costs in comparison to the full DoD budget are negligible. The best approach to maintain the advantages of permanent presence while ensuring survivability, resiliency, and effectiveness of the USAF against a peer adversary is through a combination of AB coupled with an expeditionary-style force projection.

¹³² *Indo-Pacific Deterrence Initiative*, HR 6613, 116th Cong. (March 23, 2020), 3, <https://www.congress.gov/116/bills/hr6613/BILLS-116hr6613ih.pdf>.

¹³³ Mills, et al., *Building Agile Combat Support Competencies to Enable Evolving Adaptive Basing Concepts*, x, 11.

Conclusion

*"I do believe if we ever went to conflict, we would be at risk for sitting static in certain locations."*¹³⁴

- General Charles Q. Brown, 2019

Traditional, static overseas basing exposes USAF assets to an A2/AD environment marked by peer adversaries' long-range precision fires. This force presentation model threatens the survivability, resiliency, and effectiveness of airpower in an era of great power competition. The US cannot afford to statically place aircraft within advanced threat environments. The status quo of permanently stationing aircraft at overseas MOBs jeopardizes the innate ability of the service to generate combat power at the time of its choosing. Instead, it faces a potential fait accompli of destruction on the ground.

To improve survivability the USAF should realign OCONUS-based forces to CONUS MOBs and utilize a rotational, forward presence to maintain deterrence, assurance, and joint enabling missions. This force realignment renders some cost-savings and immediately eliminates the constant exposure of aircraft to adversary threats by removing aircraft from the A2/AD WEZs. Realignment also removes dependent families, further reducing unnecessary risk. Rather than fully closing, creating potential access issues, the MOBs would transition to FOSs.

To bolster resiliency while in the A2/AD environment, the USAF should continue to develop adaptive basing concepts through the improvement of force protection measures and the implementation of distributed operations. Upon arrival from CONUS MOBs, an entire unit would not remain at the OCONUS FOSs during the length of their deployment. Elements of the force would disperse to other FOSs and CSLs to complicate an adversary's targeting, ensuring a dynamic versus static force posture within the WEZ.

¹³⁴ Charles Q. Brown, quoted in Wyatt Olson, "Pacific Air Forces commander stresses a more dispersed, expeditionary-style fleet," *Stars and Stripes*, September 4, 2019, <https://www.stripes.com/news/pacific/pacific-air-forces-commander-stresses-a-more-dispersed-expeditionary-style-fleet-1.597169>.

Finally, the USAF must maintain effectiveness as both an inside and outside force, able to continuously project power through global reach. A2/AD environments must not prohibit American airpower's "speed, range, flexibility, precision, and lethality."¹³⁵ To preserve its effectiveness, the USAF should couple OCONUS force realignment and adaptive basing with its dynamic force employment model of fluid and flexible deployments. Through dynamic force employment, the USAF can not only "provide proactive and scalable options for priority missions," but challenge an adversary's capacity to predict, locate, and target forces.¹³⁶ The marrying of concepts presents a paradigm of unpredictable, expeditionary forces originating from secure CONUS bases.

Overseas bases are the vital Air Force elements for projecting combat power in pursuit of national objectives. Equally important are the aircraft and personnel associated with these bases. Due to the nature of the threat environment in the reemerging era of great power competition, the static nature of basing and associated forces threatens to "topple the stool" of successful air operations.¹³⁷ The Air Force must accelerate changes by returning to its expeditionary narrative or risk losing before it gets a chance to fight.

¹³⁵ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power*, 1.

¹³⁶ US Department of Defense, *2018 NDS*, 7.

¹³⁷ Arnold, quoted in Vick, *Force Presentation in U.S. Air Force History and Airpower Narratives*, 45.

APPENDIX A

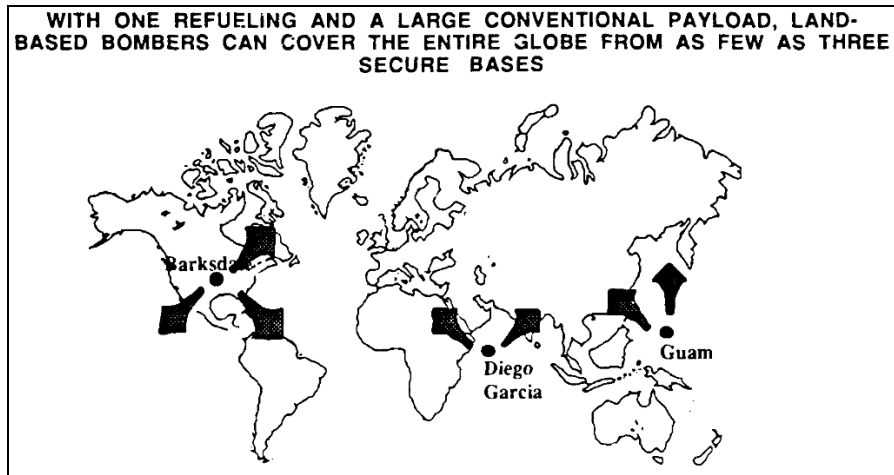


Figure 1: The Global Reach of Long-Range Bombers¹³⁸

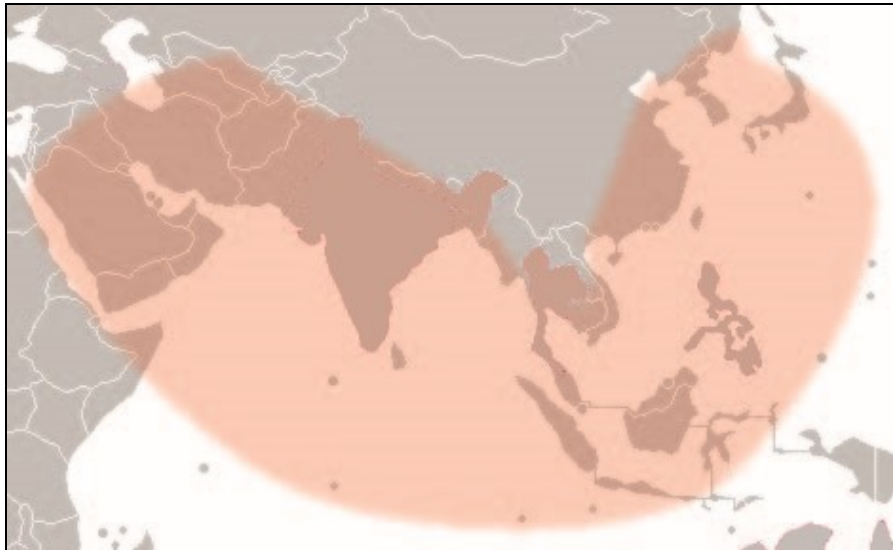


Figure 2: Arc of Instability¹³⁹

¹³⁸ Department of the Air Force, *The Air Force and U.S. National Strategy: Global Reach – Global Power*, 9.

¹³⁹ Pettyjohn, *U.S. Global Defense Posture*, 90.

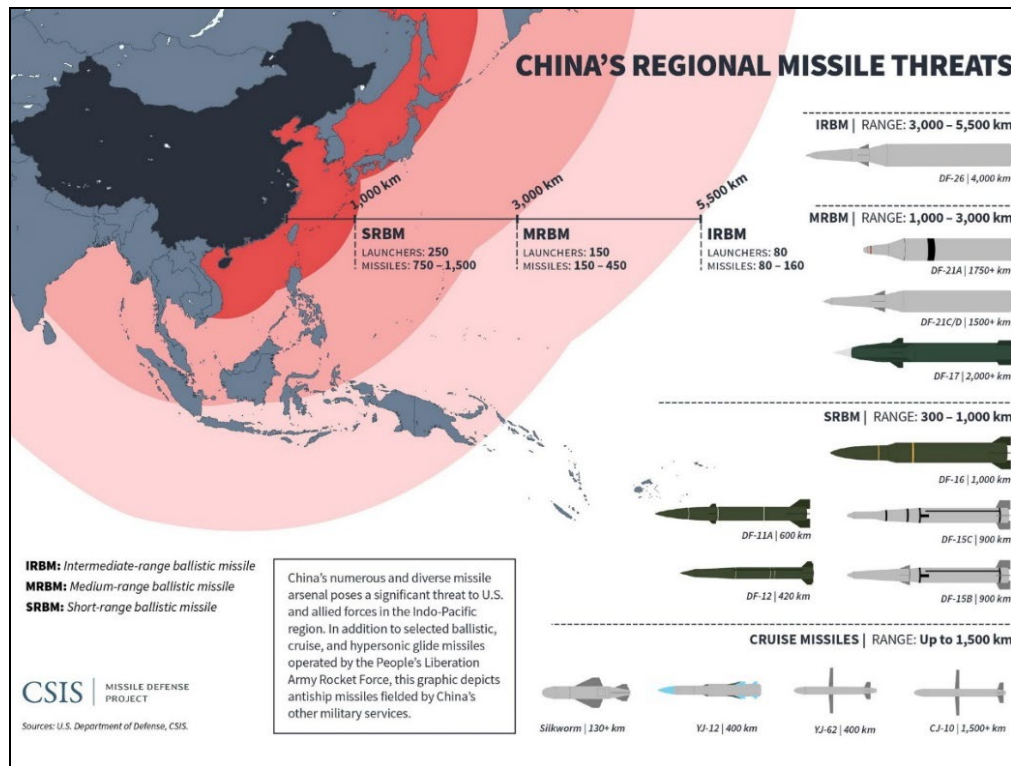


Figure 3: China Regional Missile Threat¹⁴⁰



Figure 4: Russia's Regional Missile Threat¹⁴¹

¹⁴⁰ Missile Defense Project, "Missiles of China," *Missile Threat*, Center for Strategic and International Studies, June 14, 2018, last modified July 16, 2020, <https://missilethreat.csis.org/country/china/>.

¹⁴¹ The Economist, "Putin's new model army: Russian military forces dazzle after a decade of reform," November 7, 2020, <https://www.economist.com/europe/2020/11/02/russian-military-forces-dazzle-after-a-decade-of-reform>.

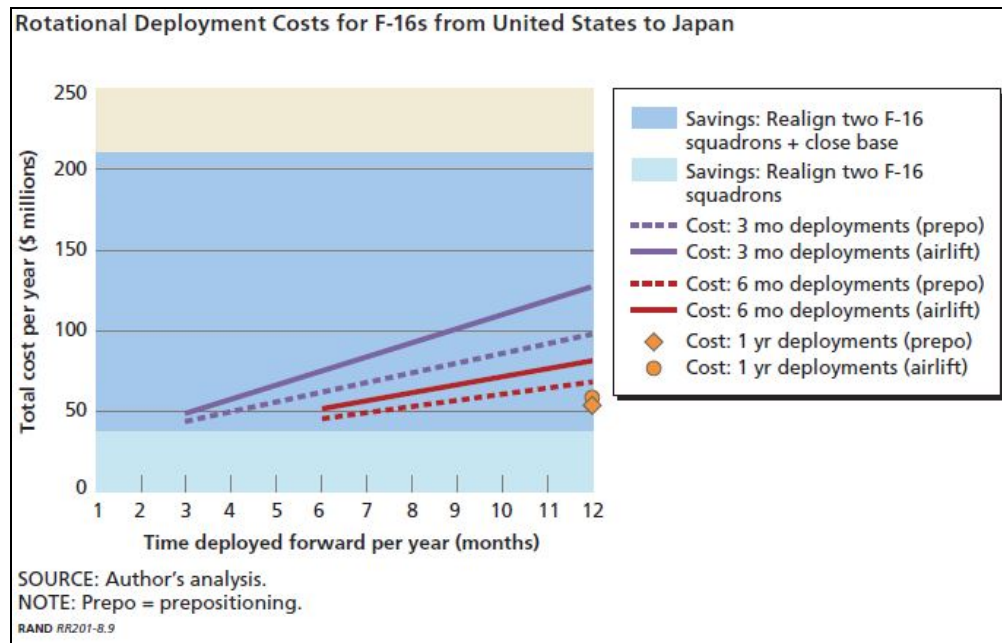


Figure 5: Rotational Deployment Costs for F-16s from United States to Japan¹⁴²

¹⁴² Lostumbo, et al., *Overseas Basing of U.S. Military Forces*, 223.

APPENDIX B

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON			
3rd Wing	JB Elmendorf-Richardson, Alaska	C-12, C-17, E-3, F-22A			
8th Fighter Wing (FW)	Kunsan AB, South Korea	F-16C/D			
15th Wing	JB Pearl Harbor-Hickam, Hawaii	C-17A, C-37A, C-40B, F-22A (AA), KC-135R (AA)			
18th Wing	Kadena AB, Japan	E-3B/C, F-15C/D, HH-60G, KC-135R			
35th FW	Misawa AB, Japan	F-16C/D			
36th Wing	Andersen AFB, Guam	Operational platform for rotating combat forces			
51st FW	Osan AB, South Korea	A-10C, F-16C/D			
354th FW	Elmson AFB, Alaska	F-16C/D			
374th Airlift Wing	Yokota AB, Japan	C-12J, C-130H, UH-1N			
607th Air Operations Center (AOC)	Osan AB, South Korea	Plan and direct air operations			
611th AOC	JB Elmendorf-Richardson, Alaska	Plan and direct air operations			
613th AOC	JB Pearl Harbor-Hickam, Hawaii	Plan and direct air operations			
673rd Air Base Wing	JB Elmendorf-Richardson, Alaska	Joint base facilities support			
Regional Support Center	JB Elmendorf-Richardson, Alaska	Remote facility operations, communications, engineering			
PACAF AIRCRAFT BY TYPE					
A-10C	24	E-3B	3	F-22A	47
C-12F	2	E-3C	1	HH-60G	9
C-12J	3	F-15C	49	KC-135R	11
C-130J	14	F-15D	4	UH-1	4
C-17A	9	F-16C	121		
C-37A	1	F-16D	12		

Source: TAI as of Sept. 30, 2019.

Source: TAI as of Sept. 30, 2019.

Table 1: Pacific Air Forces Aircraft/Basing¹⁴³

MAJOR UNITS	LOCATION	AIRCRAFT/MISSION/WEAPON			
31st Fighter Wing (FW)	Aviano AB, Italy	F-16C/D, HH-60G			
39th Air Base Wing	Incirlik AB, Turkey	Operational location for deployed U.S. and NATO forces			
48th FW	RAF Lakenheath, U.K.	F-15C/D, F-15E, HH-60G			
52nd FW	Spangdahlem AB, Germany	F-16C/D			
86th Airlift Wing	Ramstein AB, Germany	C-21, C-37A, C-40B, C-130J			
100th Air Refueling Wing	RAF Mildenhall, U.K.	CV-22, KC-135R, MC-130J, RC-135V/W			
435th Air Ground Operations Wing	Ramstein AB, Germany	Battlefield airmen support and operations			
501st Combat Support Wing	RAF Alconbury, U.K.	Facilitates support for seven geographically separated units			
603rd Air Operations Center	Ramstein AB, Germany	Plan and direct air operations			
USAFE-AFA AIRCRAFT BY TYPE					
C-130J	14	F-15D	2	HH-60G	5
C-21A	5	F-15E	55	KC-135R	13
C-37A	3	F-16C	75	KC-135T	2
F-15C	19	F-16D	4		

Source: TAI as of Sept. 30, 2019.

Source: TAI as of Sept. 30, 2019.

Table 2: United States Air Forces in Europe-Air Forces Africa Aircraft/Basing¹⁴⁴

AFGS AIRCRAFT BY TYPE	
B-1B	60
B-2A	19
B-52H	56

Table 3: USAF Strategic Bombers¹⁴⁵

¹⁴³ Air Force Association, "Air Force & Space Force Almanac," *Air Force Magazine* (June 2020), 75, <https://www.airforcemag.com/PDF/MagazineArchive/Magazine%20Documents%202016%20May%202016%20F0516installations.pdf>.

¹⁴⁴ Air Force Association, "Air Force & Space Force Almanac 2020," 76.

¹⁴⁵ Air Force Association, "Air Force & Space Force Almanac 2020," 68.

Aircraft	Approximate Combat Radius / Radius of Operations (miles est.)
A-10	800
F-15	1,150
F-16	575
F-35	679
F-22	470

Table 4: USAF Tactical Fighter Ranges¹⁴⁶

State/Country	Base
Italy	Aviano Air Base
Alaska	Eielson AFB
South Korea	Kunsan Air Base
Japan	Misawa Air Base
South Korea	Osan Air Base
Germany	Spangdahlem Air Base

Table 5: Current F-16 and A-10 OCONUS Bases¹⁴⁷

¹⁴⁶ *Jane's All the World's Aircraft: Development & Production*, last updated 24 August 2020, Jane's Information Group, <https://customer.janes.com/janes/home>; Air Force Association, "F-22 Raptor," *Air Force Magazine*, August 2016, 80, <https://www.airforcemag.com/PDF/MagazineArchive/Magazine%20Documents/2016/August%202016/0816classics.pdf>; Department of the Air Force, "Fact Sheets: A-10C Thunderbolt II," *US Air Force*, published September 22, 2015, <https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104490/a-10c-thunderbolt-ii/>.

¹⁴⁷ Ronald G. McGarvey, et al., *Assessment of Beddown Alternatives for the F-35* (Santa Monica, CA: RAND, 2013), 70, https://www.rand.org/pubs/research_reports/RR124.html.

BIBLIOGRAPHY

- Air Force Association. "Air Force & Space Force Almanac 2020." *Air Force Magazine*. June 2020. <https://www.airforcemag.com/PDF/MagazineArchive/Magazine%20Documents%2F2016%2FMay%202016%2F0516installations.pdf>.
- Air Force Association. "F-22 Raptor." *Air Force Magazine* (August 2016): 80. <https://www.airforcemag.com/PDF/MagazineArchive/Magazine%20Documents/2016/August%202016/0816classics.pdf>.
- Arnold, Henry H. "The Air Force and Military Engineers." *The Military Engineer* XXXII, no. 194 (December 1941).
- Barzelay, Michael, and Colin Campbell, *Preparing for the Future: Strategic Planning in the U.S. Air Force*. Washington, DC: Brookings Institution Press, 2003.
- Bowen, Andrew S. *Russian Armed Forces: Military Doctrine and Strategy*. CRS In Focus IF11625. Washington DC: Congressional Research Service, August 20, 2020. <https://fas.org/sgp/crs/row/IF11625.pdf>.
- Boyne, Walter J. *Beyond the Wild Blue: A History of the U.S. Air Force 1947-1997*. New York: St. Martin's Press, 1997.
- Brands, Hal. "Choosing Primacy: U.S. Strategy and Global Order at the Dawn of the Post-Cold War Era." *Texas National Security Review* 1, no. 2 (March 2018): 8-33. <http://hdl.handle.net/2152/63941>.
- Brooks, Rosa. "By Other Means: Fighting Words." *Foreign Policy*. February 4, 2014. <https://foreignpolicy.com/2014/02/04/fighting-words/>.
- Brown, Charles Q., Jr. *Accelerate Change or Lose*. Washington DC: Department of the Air Force, 2020. https://www.af.mil/Portals/1/documents/2020SAF/ACOL_booklet_FINAL_13_Nov_1006_WEB.pdf.
- Chekov, Alexander D., Anna V. Makarycheva, Anastasia M. Solomentseva, Maxim A. Suchkov & Andrey A. Sushentsov. "War of the Future: A View from Russia." *Survival* 61 no. 6 (2019): 25-48. <https://doi.org/10.1080/00396338.2019.1688563>.
- Clark, Mason. *Russian Hybrid Warfare*. Washington DC: Institute for the Study of War, 2020. <http://www.understandingwar.org/sites/default/files/Russian%20Hybrid%20Warfare%20ISW%20Report%202020.pdf>.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1984.

- Cohen, Eliot A. *Gulf War Air Power Survey: Volume V, A Statistical Compendium and Chronology*. Washington, DC: Department of Defense, 1993.
<https://media.defense.gov/2010/Sep/27/2001329816/-1/-1/0/AFD-100927-065.pdf>.
- Cohen, Raphael S. *Air Force Strategic Planning: Past, Present, and Future*. Santa Monica, CA: RAND Corporation, 2017. https://www.rand.org/pubs/research_reports/RR1765.html.
- Cooley, Alexander. “Whose Rules, Whose Sphere? Russian Governance and Influence in Post-Soviet States.” *Carnegie Endowment for International Peace*, June 30, 2017.
https://carnegieendowment.org/files/6302017_AlexanderCooley_WhoseRules.pdf.
- Congressional Budget Office. *The Cost of Supporting Military Bases*. Washington DC: Congress of the United States CBO, 2019. <https://www.cbo.gov/publication/55849>.
- Defense Intelligence Agency. *China Military Power: Modernizing a Force to Fight and Win*. Washington DC: 2019.
https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/China_Military_Power_FINAL_5MB_20190103.pdf.
- Defense Intelligence Agency. *Russia Military Power: Building a Military to Support Great Power Aspirations*. Washington DC: 2017.
<https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Russia%20Military%20Power%20Report%202017.pdf?ver=2017-06-28-144235-937>.
- Department of the Air Force. *Air Force Doctrine Publication I*. Washington DC: 2021.
https://www.doctrine.af.mil/Portals/61/documents/AFDP_1/AFDP-1.pdf.
- Department of the Air Force. *Air Force Roadmap: 2006-2025*. Washington DC: 2006.
- Department of the Air Force. *Air Superiority 2030 Flight Plan*. Washington DC: 2016.
<https://www.af.mil/Portals/1/documents/airpower/Air%20Superiority%202030%20Flight%20Plan.pdf>.
- Department of the Air Force. *Annex 3-30 Command and Control: Organizing Air Force Forces*. Last updated January 7, 2020. https://www.doctrine.af.mil/Portals/61/documents/Annex_3-30/3-30-D35-C2--AF-Org-intro.pdf.
- Department of the Air Force. *Annex 3-99 DAF Role in Joint All-Domain Operations (JADO): Appendix B: Key Considerations for Agile Combat Employment (ACE)*. Maxwell AFB, AL: October 8, 2020. https://www.doctrine.af.mil/Portals/61/documents/Annex_3-99/3-99-D10-JADO-AppendixB.pdf.
- Department of the Air Force. *Annex 3-99 DAF Role in Joint All-Domain Operations (JADO): Protection*. Maxwell AFB, AL: October 8, 2020.
https://www.doctrine.af.mil/Portals/61/documents/Annex_3-99/Annex%203-99%20DAF%20role%20in%20JADO.pdf.

- Department of the Air Force. *Future Operating Concepts*. Washington DC: 2015.
<https://www.af.mil/Portals/1/images/airpower/AFFOC.pdf>.
- Department of the Air Force. *The Air Force and U.S. National Strategy: Global Reach – Global Power*. Washington, DC: 1990.
https://www.airforcemag.com/PDF/DocumentFile/Documents/2008/GR-GP_060190.pdf.
- Department of the Air Force. *The U.S. Air Force Transformation Flight Plan*. Washington DC: 2004.
- Department of the Air Force. *USAF Strategic Master Plan*. Washington DC: 2015.
https://www.af.mil/Portals/1/documents/Force%20Management/Strategic_Master_Plan.pdf?timestamp=1434024300378.
- Everstine, Brian W. “Improving Guam’s Defenses is Top Priority for INDOPACOM.” *Air Force Magazine*. March 4, 2022. <https://www.airforcemag.com/improving-guams-defenses-is-top-priority-for-indopacom/>.
- Fletcher, Harry R. *Air Force Bases Volume II: Air Bases Outside the United States of America*. Washington DC: Center for Air Force History, 1993. https://media.defense.gov/2010/May/25/2001330286/-1/-1/0/af_bases_outside_the_us.pdf.
- Gerson, Joseph. “U.S. Foreign Military Bases and Military Colonialism: Personal and Analytical Perspectives.” In Catherine Lutz, ed. *The Bases of Empire: The Global Struggle Against U.S. Military Posts*. New York: New York University Press, 2009.
- Grey, Colin S. *Airpower for Strategic Effect*. Maxwell AFB, AL: Air University Press, 2012.
- Halliday, John. *Tactical Dispersal of Fighter Aircraft: Risk, Uncertainty, and Policy Recommendations*. Santa Monica, CA: RAND Corporation, 1987.
<https://www.rand.org/pubs/notes/N2443.html>.
- Harkavy, Robert E. *Bases Abroad: The Global Foreign Military Presence*. Oxford: Oxford University Press, 1989.
- Heginbotham, Eric, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Tao Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, David R. Frelinger, Burgess Laird, Kyle Brady, and Lyle J. Morris. *Chinese Attacks on U.S. Air Bases in Asia: An Assessment of Relative Capabilities, 1996–2017*. Santa Monica, CA: RAND Corporation, 2015. https://www.rand.org/pubs/research_briefs/RB9858z2.html.
- Henry, Ryan. “Transforming the U.S. Global Defense Posture.” *Naval War College Review* 59, no. 2 (Spring 2006): 18-28, <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=2102&context=nwc-review>.

- Hutchens, Michael E., William D. Dries, Jason C. Perdew, Vincent D. Bryant, and Kerry E. Moores. "Joint Concept for Access and Maneuver in the Global Commons: A New Joint Operational Concept." *Joint Force Quarterly* 84 (1st Qtr 2017): 134-139.
<https://ndupress.ndu.edu/Media/News/article/1038867/joint-concept-for-access-and-maneuver-in-the-global-commons-a-new-joint-operati/>.
- Insinna, Valerie. "The US Air Force has unconventional plans to win a war in the Asia-Pacific." *Defense News*. February 10, 2020. <https://www.defensenews.com/digital-show-dailies/singapore-airshow/2020/02/11/the-us-air-force-has-unconventional-plans-to-win-a-war-in-the-asia-pacific/>.
- Jane's All the World's Aircraft: Development & Production*. Last updated 24 August 2020. Jane's Information Group. <https://customer.janes.com/janes/home>.
- Keaney, Thomas, and Eliot A. Cohen. *Gulf War Air Power Survey: Summary Report*. Washington, DC: Department of Defense, 1993.
<https://media.defense.gov/2010/Sep/27/2001329816/-1/-1/0/AFD-100927-065.pdf>
- Lewis, Donald E., Bruce W. Don, Robert M. Paulson, and Willis H. Ware. *A Perspective on the USAFE Collocated Operating Base System*. Santa Monica, CA: RAND Corporation, 1986. <https://www.rand.org/pubs/notes/N2366.html>.
- Lostumbo, Michael J., Michael J. McNerney, Eric Peltz, Derek Eaton, David R. Frelinger, Victoria A. Greenfield, John Halliday, Patrick Mills, Bruce R. Nardulli, Stacie L. Pettyjohn, Jerry M. Sollinger, Stephen M. Worman, *Overseas Basing of U.S. Military Forces: An Assessment of Relative Costs and Strategic Benefit*. Santa Monica, CA: RAND, 2013. https://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR201/RAND_RR201.pdf.
- Lutz, Catherine, ed. *The Bases of Empire: The Global Struggle Against U.S. Military Posts*. New York: New York University Press, 2009.
- Mazarr, Michael J., Katharina Ley Best, Burgess Laird, Eric V. Larson, Michael E. Linick, and Dan Madden. *The U.S. Department of Defense's Planning Process: Components and Challenges*. Santa Monica, CA: RAND, 2019.
https://www.rand.org/content/dam/rand/pubs/research_reports/RR2100/RR2173z2/RAND_RR2173z2.pdf.
- McGarvey, Ronald G., James H. Bigelow, Gary J. Briggs, Peter Buryk, Raymond E. Conley, John G. Drew, Perry Shameem Firoz, Julie Kim, Lance Menthe, Craig Moore, William W. Taylor, and William A. Williams. *Assessment of Beddown Alternatives for the F-35*. Santa Monica, CA: RAND, 2013.
https://www.rand.org/pubs/research_reports/RR124.html.
- Meilinger, Phillip S. *10 Propositions Regarding Air Power*. Maxwell AFB, AL: Air Force History and Museums Program, 1995.

- Mills, Patrick, Adam Grissom, Jennifer Kavanagh, Leila Mahnad, and Stephen M. Worman. *A Cost Analysis of the U.S. Air Force Overseas Posture*. Santa Monica, CA: RAND, 2013. https://www.rand.org/pubs/research_reports/RR150.html.
- Mills, Patrick, James A. Leftwich, John G. Drew, Daniel P. Felten, Josh Girardini, John P. Godges, Michael J. Lostumbo, Anu Narayanan, Kristin van Abel, Jonathan William Welburn, and Anna Jean Wirth. *Building Agile Combat Support Competencies to Enable Evolving Adaptive Basing Concepts*. Santa Monica, CA: RAND, 2020. https://www.rand.org/pubs/research_reports/RR4200.html.
- Missile Defense Project. "Missiles of China," *Missile Threat*. Center for Strategic and International Studies. June 14, 2018. Last modified July 16, 2020. <https://missilethreat.csis.org/country/china/>.
- Missile Defense Project. "Missiles of Iran." *Missile Threat*. Center for Strategic and International Studies. June 14, 2018. Last modified July 16, 2020. <https://missilethreat.csis.org/country/iran/>.
- Missile Defense Project. "Missiles of Russia." *Missile Threat*. Center for Strategic and International Studies. June 14, 2018. Last modified February 11, 2021. <https://missilethreat.csis.org/country/russia/>.
- Mizokami, Kyle. "Watch A-10 Warhogs Landing on the German Autobahn During the Cold War." *Popular Mechanics*. July 5, 2018. <https://www.flightglobal.com/fixed-wing/how-swedens-austere-basing-system-influenced-the-gripen/139316.article>.
- Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer. *Operation and Maintenance Overview: Fiscal Year 2018 Budget Estimates*. Washington DC: Department of Defense, June 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_OM_Overview.pdf.
- Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer. *Program Acquisition Cost by Weapon System: US Department of Defense Fiscal Year 2020 Budget Request*. Washington DC: US Department of Defense, February 2020. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Weapons.pdf.
- Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer. *Program Acquisition Cost by Weapon System: US Department of Defense Fiscal Year 2021 Budget Request* (Washington DC: US Department of Defense, February 2020. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Weapons.pdf.
- Pettyjohn, Stacie L. *U.S. Global Defense Posture, 1783-2011*. Santa Monica, CA: RAND Corporation, 2012. <https://www.rand.org/pubs/monographs/MG1244.html>.

- Reim, Garrett. "How Sweden's austere basing system influenced the Gripen." *Flight Global*. July 15, 2020. <https://www.flightglobal.com/fixed-wing/how-swedens-austere-basing-system-influenced-the-gripen/139316.article>.
- Roper, Will. *There is No Spoon: The New Digital Acquisition Reality*. Washington DC: Department of the Air Force, 2020. <https://software.af.mil/wp-content/uploads/2020/10/There-Is-No-Spoon-Digital-Acquisition-7-Oct-2020-digital-version.pdf>.
- Samaras, Constantine, Rachel Costello, Paul DeLuca, Stephen J. Guerra, Kenneth Kuhn, Anu Narayanan, Michael Nixon, Stacie L. Pettyjohn, Nolan Sweeney, Joseph Vesely, and Lane F. Burgette, *Improvements to Air Force Strategic Basing Decisions*. Santa Monica, CA: RAND, 2016. https://www.rand.org/pubs/research_reports/RR1297.html.
- Scobell, Andrew, Edmund J. Burke, Cortez A. Cooper III, Sale Lilly, Chad J. R. Ohlandt, Eric Warner, and J.D. Williams, *China's Grand Strategy: Trends, Trajectories, and Long-Term Competition*. Santa Monica, CA: RAND Corporation, 2020. https://www.rand.org/pubs/research_reports/RR2798.html.
- Shaud, John A., and Adam B. Lowther. "An Air Force Strategic Vision for 2020-2030." *Strategic Studies Quarterly* 5, no. 1 (Spring 2011): 8–31. https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-05_Issue-1/Spring11.pdf.
- Shlapak, David A., John Stillion, Olga Olikier, and Tanya Charlick-Paley, *A Global Access Strategy for the U.S. Air Force*. Santa Monica, CA: RAND, 2002. https://www.rand.org/pubs/monograph_reports/MR1216.html.
- Sullivan, Michael, ed. *Force Providers Guide to the AEF, Version 1.0*. Randolph AFB, TX: Air Force Personnel Center. <https://aefonline.afpc.randolph.af.mil/Education.aspx>.
- The White House. *A National Security Strategy for a Global Age*. Washington DC: 2000. <https://history.defense.gov/Portals/70/Documents/nss/nss2000.pdf?ver=vuu1vGIkFVV1HusDPL21Aw%3d%3d>.
- The White House. *National Defense Strategy*. Washington DC: 2002. https://history.defense.gov/Portals/70/Documents/nss/nss2002.pdf?ver=oyVN99aEnrAWijAc_O5eiQ%3d%3d.
- The White House. *National Security Strategy*. Washington DC: 2010. <https://www.hsdl.org/?view&did=24251>.
- The White House. *National Security Strategy of the United States*. Washington DC: 1990. <http://nssarchive.us/national-security-strategy-1990/>.

- The White House. *National Security Strategy of the United States*. Washington DC: 1991.
<http://nssarchive.us/national-security-strategy-1991/>.
- The White House. *National Security Strategy of the United States of America*. Washington DC: 2006. <https://www.hsdl.org/?view&did=489257>.
- The White House. *National Security Strategy of the United States of America*. Washington, DC: 2017. <https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905-2.pdf>.
- Toal, Gerard. *Near Abroad: Putin, the West and the Contest Over Ukraine and the Caucasus*. New York: Oxford University Press, 2017.
- Tirpak, John A. "The Expeditionary Air Force Takes Shape." *Air Force Magazine*. June 1, 1997.
<https://www.airforcemag.com/article/0697exped/>.
- United States Congress. House. *Indo-Pacific Deterrence Initiative*. HR 6613. 116th Cong. March 23, 2020. <https://www.congress.gov/116/bills/hr6613/BILLS-116hr6613ih.pdf>.
- United States Department of Defense. *Military and Security Developments Involving the People's Republic of China: Annual Report to Congress*. Washington DC: 2020.
<https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>.
- United States Department of Defense. *Quadrennial Defense Review Report*. Washington DC: Department of Defense, 2001. <https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2001.pdf?ver=AFts7axkH2zWUHncRd8y Ug%3d%3d>.
- United States Department of Defense. *Quadrennial Defense Review Report*. Washington DC: 2006. <https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2006.pdf?ver=2014-06-25-111017-150>.
- United States Department of Defense. *Quadrennial Defense Review*. Washington DC: 2014.
https://archive.defense.gov/pubs/2014_quadrennial_defense_review.pdf.
- United States Department of Defense. *Strengthening U.S. Global Defense Posture Report to Congress*. Washington DC: 2004.
- United States Department of Defense. *Summary of the 2018 National Defense Strategy of the United States of America*. Washington, DC: Department of Defense, 2018.
<https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.
- United States Department of Defense. *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*. Washington DC: 2012.
https://archive.defense.gov/news/defense_strategic_guidance.pdf.

- United States Department of Defense. *The National Military Strategy of the United States: A Strategy for Today; A Vision for Tomorrow*. Washington DC: 2004.
<https://www.hsdl.org/?abstract&did=446695>.
- United States Marine Corps. *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment Version 1.1*. Department of the Navy, 2018. <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>.
- Venable, John. “An Assessment of U.S. Military Power: U.S. Air Force,” *Heritage*. November 17, 2020. <https://www.heritage.org/2021-index-us-military-strength/assessment-us-military-power/us-air-force>.
- Vick, Alan J. *Air Base Attacks and Defensive Counters: Historical Lessons and Future Challenges*. Santa Monica, CA: RAND Corporation, 2015.
https://www.rand.org/pubs/research_reports/RR968.html.
- Vick, Alan J. *Force Presentation in U.S. Air Force History and Airpower Narratives*. Santa Monica, CA: RAND, 2018. https://www.rand.org/pubs/research_reports/RR2363.html.
- Webb, Robert E. “Assessing the Emerging US Military Basing Posture in the Mideast.” Master’s thesis, Air War College, 2010. Defense Technical Information Center.
<https://apps.dtic.mil/sti/pdfs/AD1018532.pdf>.
- Westerlund, Fredrik, and Susanne Oxenstierna, eds. *Russian Military Capability in a Ten-Year Perspective – 2019*. Stockholm: Swedish Defence Research Agency, 2019.
<https://www.foi.se/rest-api/report/FOI-R--4758--SE>.