



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**THE CARRIER STRIKE GROUP: EXAMINING
APPROACHES TO FORWARD PRESENCE**

by

Christopher H. Elliott

September 2016

Thesis Advisor:
Second Reader:

Daniel Moran
James Russell

Approved for public release. Distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, 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 this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE September 2016	3. REPORT TYPE AND DATES COVERED Master's thesis Sep 2015 – Sep 2016	
4. TITLE AND SUBTITLE THE CARRIER STRIKE GROUP: EXAMINING APPROACHES TO FORWARD PRESENCE			5. FUNDING NUMBERS	
6. AUTHOR(S) Christopher H. Elliott				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB number ____N/A____.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) With carriers reduced to their lowest number since 1942, maintaining forward presence in regions of U.S. national interest has proven difficult. The current carrier operating concept has resulted in unprecedented deployment lengths, shorter home-cycles and increasing strain on crew members and their families. By examining the Carrier Strike Group (CSG) deployment models and the various techniques for optimizing forward presence, a more efficient approach may be developed. This thesis answers the following question: How will the carrier's ability to protect U.S. national interests through a global strategy centered on forward presence and flexible response be accomplished in the future? The goal is to maximize forward presence based on current and forecast ship-building budgets and resources by identifying the CSG's utility and role in forward presence while assessing various techniques. The predicted carrier force structure of 11 is assumed while determining which technique or combination of techniques produces the appropriate level of forward presence and crisis response to deter current and future global threats. A combined approach incorporating a proportional crew swap concept with the potential to increase overseas-based CSGs will offer more options to policy-makers and leadership and increased flexibility in employing the CSG in pursuit of U.S. national interests.				
14. SUBJECT TERMS Carrier Strike Group, CSG, carrier, forward presence, extended deployments, overseas-basing, crew rotation, crew swap, Optimized-Fleet Response Plan			15. NUMBER OF PAGES 71	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

**THE CARRIER STRIKE GROUP: EXAMINING APPROACHES TO FORWARD
PRESENCE**

Christopher H. Elliott
Lieutenant Commander, United States Navy
B.S., Christopher Newport University, 2004

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(STRATEGIC STUDIES)**

from the

**NAVAL POSTGRADUATE SCHOOL
September 2016**

Approved by: Daniel Moran, Ph.D.
Thesis Advisor

James Russell, Ph.D.
Second Reader

Mohammed Hafez, Ph.D.
Chair, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

With carriers reduced to their lowest number since 1942, maintaining forward presence in regions of U.S. national interest has proven difficult. The current carrier operating concept has resulted in unprecedented deployment lengths, shorter home-cycles and increasing strain on crew members and their families. By examining the Carrier Strike Group (CSG) deployment models and the various techniques for optimizing forward presence, a more efficient approach may be developed. This thesis answers the following question: How will the carrier's ability to protect U.S. national interests through a global strategy centered on forward presence and flexible response be accomplished in the future? The goal is to maximize forward presence based on current and forecast ship-building budgets and resources by identifying the CSG's utility and role in forward presence while assessing various techniques. The predicted carrier force structure of 11 is assumed while determining which technique or combination of techniques produces the appropriate level of forward presence and crisis response to deter current and future global threats. A combined approach incorporating a proportional crew swap concept with the potential to increase overseas-based CSGs will offer more options to policy-makers and leadership and increased flexibility in employing the CSG in pursuit of U.S. national interests.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	LITERATURE REVIEW	2
1.	Why Forward Presence?	2
2.	The Role of the Carrier Strike Group.....	3
3.	The FRP and O-FRP	4
B.	TECHNIQUES FOR INCREASING FORWARD PRESENCE	5
1.	Increasing Frequency and Duration of Deployments.....	6
2.	Increased Forward Basing of Carriers	7
3.	Crew Rotation	9
C.	POTENTIAL EXPLANATIONS AND HYPOTHESES	11
D.	RESEARCH DESIGN	12
II.	THE UTILITY OF THE CARRIER STRIKE GROUP	13
A.	STRATEGIC VALUE	13
1.	Territorial Sovereignty	13
2.	Flexibility	14
3.	Freedom of Movement.....	15
B.	OPPOSING VIEWPOINT.....	16
C.	CARRIER CYCLES AND OPERATIONAL AVAILABILITY	18
1.	Maintenance Phase	19
2.	Training Phase	19
3.	Impact of Lengthening the Operating Cycle	20
III.	RETHINKING FORWARD PRESENCE	23
A.	EXTENDING CARRIER DEPLOYMENTS.....	24
1.	Balancing OPTEMPO and PERSTEMPO	24
2.	Impact on Retention Rates	25
3.	Proposing a Solution	26
B.	OVERSEAS BASING OF CARRIERS	27
1.	Overseas Basing Risks	27
2.	Overseas Basing Costs	31
3.	Benefits of Overseas Basing	33
IV.	CREW ROTATION	39
A.	TRADITIONAL SINGLE-CREW CONCEPT	40
1.	Benefits of the Single-Crew Concept.....	40
2.	Challenges Associated with the Single-Crew Concept	41

B.	ASSESSING CREW ROTATION	41
1.	Sea Swap Experiments	42
2.	Challenges Associated with Crew Rotation.....	43
C.	APPLICATION TO THE CARRIER.....	45
1.	Effect on Maintenance.....	45
2.	Developing a Framework	46
3.	Managing the Carrier Fleet	47
4.	A Carrier Crew Swap.....	47
V.	CONCLUSION.....	49
	LIST OF REFERENCES.....	55
	INITIAL DISTRIBUTION LIST.....	59

LIST OF ACRONYMS AND ABBREVIATIONS

A2AD	Anti-Access Area Denial
AEW	Airborne Early Warning
AOR	Area of Responsibility
ARG	Amphibious Readiness Group
CBO	Congressional Budget Office
CNA	Center for Naval Analyses
COMPTUEX	Composite Training Unit Exercise
CSG	Carrier Strike Group
CSIS	Center for Strategic and International Studies
CVW	Carrier Air Wing
DDG	Guided-Missile Destroyer
FDNF	Foreign Deployed Naval Force
FRP	Fleet Response Plan
GFMAP	Global Force Management Allocation Plan
JTFX	Joint Task Force Exercise
LCS	Littoral Combat Ship
MEU	Marine Expeditionary Unit
O-FRP	Optimized Fleet Response Plan
OPTEMPO	Operational Tempo
PERSTEMPO	Personnel Tempo
RCOH	Refueling and Complex Overhaul
SSBN	Ballistic-Missile Submarine
USAF	United States Air Force

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

The challenges facing the carrier strike group today are immense. As tensions continue to increase in the Middle East and the Asia-Pacific, the United States Navy's presence through the deployment of carrier strike groups has increased despite budget cuts and at the expense of over-stressed crews and over-worked ships. In maintaining global presence with a reduced carrier fleet, carrier strike group (CSG) deployments have increased from 6 to 8 months, with some reaching periods of up to 10 months at sea.

Extended deployments have increased unexpected maintenance costs and have overextended crews, straining military families. By examining alternatives to extended CSG deployments, while still meeting forward presence and operational contingency demands, this thesis addresses the main question: How will the carrier's ability to protect U.S. national interests through a global strategy centered on forward presence and flexible response be accomplished more efficiently in the future? This thesis argues that, by examining current and previous CSG deployment models and proposed techniques for maximizing forward presence, a more efficient approach can be developed to optimize CSG presence while maintaining consistent deployment lengths.

As a result of decommissioning the 50-year-old USS *Enterprise* prior to commissioning the new *Ford* class super carrier, the current fleet consists of 10 carriers—the lowest number of carriers since 1942.¹ Employing 10 CSGs under a deployment model designed for 11 has resulted in lengthier deployments to maintain the previously achieved level of forward presence. The “do more with less” mentality has resulted in a vicious, inefficient cycle of maintenance delays, which has extended deployment cycles causing further scheduling delays. This cascading scheduling effect has caused the Middle East to incur a three-month gap in carrier coverage for the first time since 2007, and a similar four-month gap in the Asia-Pacific.² Maintaining forward

¹ “U.S. Navy Active Ship Force Levels, 1938–1944,” Naval History and Heritage Command, January 2016, 13, <http://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html>.

² Christina Wong, “Navy Anticipates More Carrier Gaps in Middle East and Asia Pacific,” Thehill.com, November 2015, <http://thehill.com/policy/defense/259078-navy-anticipates-more-carrier-gaps-in-middle-east-and-asia-pacific>.

presence in both the U.S. 5th and 7th Fleet areas of responsibility (AOR) has proven untenable under a U.S. policy intended for 11 carriers. While the carrier operating concept is based on a budget predicting an 11 carrier force structure through 2039, any reduction in forces below the expected level will result in a reduced level of presence and potential gaps in areas of sustained forward presence.³

While reductions in the carrier fleet may be temporary, they highlight the current problem facing the CSG—how to manage the CSG’s present and future force structure while still providing the appropriate level of forward presence to effectively deter aggression and respond to crisis on a global scale. Because the carrier demonstrates U.S. military might and holds a place at the core of our maritime strategy, its decreasing global presence represents uncharted territory in the history of the U.S. carrier-based Navy. Now, more than ever, it is necessary to examine the CSG’s employment strategies to determine how to achieve forward presence in an increasingly turbulent future.

A. LITERATURE REVIEW

1. Why Forward Presence?

In determining the Navy’s role in “forward presence,” the term itself invites ambiguity and misinterpretation.⁴ The word “forward” emphasizes the deployment of forces to regions of interest to U.S. national security and foreign policy. However, “presence” offers the notion of a presence that should be continuous and highly visible that also may unnecessarily place limits on the flexibility and effectiveness of the naval forces employed. The Navy struggles not only to define forward presence, but also to achieve it.⁵

Despite the difficulty in defining the role, the Navy asserts that forward presence offers several operational advantages. Naval power-projection provided by carrier forces

³ Ronald O’Rourke, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, 1, CRS: April 5, 2016, <https://www.fas.org/sfp/crs/weapons/RS20643.pdf>.

⁴ Daniel Goure, “The Tyranny of Foreign Presence,” *Naval War College Review*, Summer 2016, Proquest DOI: 60141111, 16.

⁵ Ibid.

offers the unique combination of sea control and strike capabilities.⁶ The ability of a naval force to transform into an alternative basing platform that is less vulnerable to enemy attack than fixed land bases is a critical advantage only offered by carrier naval forces. While the Navy's ability to demonstrate forward presence is unique among the armed services, its claim in shaping the international environment is difficult to support with evidence but also difficult to dismiss entirely.⁷ Regardless of the difficulties associated with assessing the impact of a forward-deployed Navy, its presence in war and peacetime has undeniably shaped the present force structure.⁸ In effectively allocating the CSG force structure to accomplish the mission of forward deployment, the role of the CSG and the approaches to carrier employment must be examined to offer further insight into how a future model may more efficiently allocate resources to maintain U.S. dominance in the maritime domain.

2. The Role of the Carrier Strike Group

The challenges facing the carrier fleet in the post-Cold War world have expanded beyond the single, strategic objective of the containment of communism. Since the Cold War, America's continual expansion of its international aims while attempting to maintain a concurrent strategic presence in multiple theaters and competing areas of interest has challenged the carrier-operating concept's ability to deliver forward presence.⁹ A strategy involving goal-oriented presence offers an alternative to the extended deployment focus that has become the preferred option in attempting to maximize forward presence with fewer assets. The 21st century of carrier warfare required a new operating concept known as the Fleet Response Plan (FRP) that would be unlike anything experienced by the fleet of the past and would involve a new operating

⁶ Sam J. Tangredi, "The Rise and Fall of Naval Forward Presence," *U.S. Naval Institute Proceedings*, May 2000, 31–2, <http://connection.ebscohost.com/c/articles/3162796/fall-rise-naval-forward-presence>.

⁷ Ibid.

⁸ Ibid., 28–33.

⁹ Daniel Moran, "Forward Engagement Requirements for U.S. Naval Forces: New Analytical Approaches," Washington, DC: Deputy Chief of Naval Operations, 1997, 3–5.

approach that would require more efficient resource management—essentially doing more with less.¹⁰

The U.S. Navy claims that forward presence of the CSG has enabled the United States to maintain power projection in defending U.S. strategic and national interests on a global scale.¹¹ Although the claim that the U.S. Navy’s forward presence shapes the international environment furthering U.S. national interests is difficult to support with empirical data, the political role of an aircraft carrier in demonstrating “resolve and commitment” cannot be dismissed.¹² In pursuing political or national interests, a competing view argues that “justifying forward presence in terms of the ability to shape the international environment raises questions of how relevant the current force structure is to that purpose.”¹³ In examining the current model, literature on the FRP and current Optimized Fleet Response Plan will be examined to offer potential solutions to maximizing forward presence with the forecasted force structure.

3. The FRP and O-FRP

In evaluating CSG employment strategies, the FRP and the updated Optimized-Fleet Response Plan (O-FRP) should be further examined to offer guidance in adapting new techniques that may streamline carrier employment across the fleet. The previous FRP required constant schedule adjustment to ensure forces were ready for deployment. Additional adjustments were required to ensure the FRP met the life-expectancy of CSG platforms and in maintaining a surge capability. The implementation of the O-FRP attempted to address the planning difficulties of the FRP by realigning staffs, ships, and air wings to CSGs at the beginning of their 36-month training and readiness cycle.¹⁴ In

¹⁰ Benjamin S. Lambeth, *American Carrier Air Power at the Dawn of a New Century*, Santa Monica, CA: RAND, 2005, 59–61.

¹¹ Jay L. Johnson, “Forward Presence Essential to American Interests,” U.S. Navy, Last modified August 17, 2009, 274, http://www.navy.mil/navydata/nav_legacy.asp?id.

¹² Goure, “The Tyranny of Foreign Presence,” 16–17.

¹³ *Ibid.*, 17.

¹⁴ Bruce Lindsey and Heather Quilenderino, “Operationalizing Optimized Fleet Response Plan—SITREP #1,” USNI: March 2016, <https://blog.usni.org/2016/03/05/operationalizing-optimized-fleet-response-plan-sitrep-1>.

doing so, the goal of the O-FRP is to “create a framework for predictable deployment cycles with aligned and stabilized manning, stable and predictable maintenance plans, and ready forces fully trained to the high end level of the war-fighting spectrum.”¹⁵ In determining how the O-FRP plans to achieve this overall goal, the details concerning the plan must be further examined.

The Navy began to phase in the O-FRP in 2014 with the Eisenhower Carrier Strike Group being the first to implement the Navy’s latest strategy for force generation.¹⁶ The plan developed by Admiral Bill Gourtney, Fleet Forces at the time of inception claiming that “deployments of 8 months out of 36 provide almost the same forward presence as that provided by deployments of 7 months out of 32.”¹⁷ The O-FRP claims to provide almost the same level of forward presence and force generation as the previous FRP model at a reduction of the cost although this is yet to be proven by the Eisenhower Carrier Strike Group. The Eisenhower CSG will determine if the OFRP strategy can be translated into success at the operational and tactical level upon its mid-2016 deployment.¹⁸

As the Navy adheres to a stricter schedule designed to reduce maintenance lag and limit the stresses on crews deployed for increasingly longer periods, gaps in coverage will become more common. In addressing future concerns relating to the inefficient and unpredictable employment model of the FRP and in reducing the proposed 8 month deployment schedule of the O-FRP, potential solutions to the problem will be further examined to offer techniques that may allow for a more balanced approach.

B. TECHNIQUES FOR INCREASING FORWARD PRESENCE

To maximize forward presence with current resources there are three proposed techniques that will be further examined to include: extending carrier deployments,

¹⁵ Lindsey and Quilenderino, “Operationalizing Optimized Fleet Response Plan.”

¹⁶ Congressional Budget Office (CBO), *Preserving the Navy’s Forward Presence with a Smaller Fleet*, March 2015, 11, <https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/49989-ForwardPresence-2.pdf>.

¹⁷ Ibid.

¹⁸ Lindsey and Quilenderino, “Operationalizing Optimized Fleet Response Plan.”

basing more ships and crews overseas, and assigning multiple crews to a single carrier operating from an overseas port or U.S.-based port.¹⁹

1. Increasing Frequency and Duration of Deployments

The first technique that has been used in maintaining or increasing forward presence is to extend carrier deployments although there are both advantages and disadvantages to doing so. The main advantage to extending deployments relates to the ease of which it is accomplished, with the perceived result being only additional maintenance time following deployment.²⁰ Beyond the ease of scheduling however, the results of an increase in deployment length are felt by both the crew and ship with both experiencing increased stresses that adversely affect maintenance cycles and the operational tempo for the entire fleet as a result of the snowballing effect of a simple schedule change.

One of the main concerns as a result of increases or extensions in deployment length is the effect it may have on crewmember retention rates. The 2014 Navy Retention Study determined one of the recommendations would be to “measurably reduce Operational Tempo,” which stresses the need for a strategy that weighs the current and forecast force demands with “the availability of an increasingly scarce (and decreasing) numbers of ships.”²¹ Further evidence found that a majority—62.7 percent of enlisted and 75.5 percent of officers—were found to strongly disagree with the O-FRP’s current claim that deployments will be capped at 8 months. This distrust represented in the study may continue to adversely affect retention rates especially if the current O-FRP exceeds the 8 month proposed deployment cap.²²

Another disadvantage of longer deployments is the increase in maintenance periods and the associated costs. According to a model that mathematically determines ship service life developed by the Center for Naval Analyses (CNA), “the effects of

¹⁹ Ibid.

²⁰ CBO, *Preserving the Navy’s Forward Presence*, 10.

²¹ U.S. Navy. *2014 Navy Retention Study*. Washington, DC: Department of Defense, September 2014, 35, <http://www.military.com/PDF/2014-Navy-Retention-Study-Report-Full.pdf>.

²² Ibid., 23.

deferring ship depot maintenance, which causes the material condition to decline and leads to a consequent drop in a ship's military value."²³ Deferred maintenance was also found to result in increased failures and reduced overall structural integrity ultimately reducing a ship's operational capability.²⁴ As deployments increase and continue to exceed current deployment and maintenance schedules, crews and ships are suffering the consequences. A second method may reduce lengthy deployments offering a technique that provides the most forward presence of those offered although the associated challenges to implementation must be further addressed.

2. Increased Forward Basing of Carriers

According to the literature, overseas or forward-basing of CSGs offers several advantages to forward presence over U.S.-based deployers.²⁵ The main benefit of the overseas-basing of CSGs is in their increased capacity to provide forward presence offering triple the coverage of the same asset based state-side. While overseas basing increases the Navy's presence overseas, there are several factors to be further considered in applying this approach.²⁶

There are several challenges to forward deploying more ships and crews overseas to include: building the capacity to operate overseas, adapting to rotational schedules and procedures, and maintaining the security of the forward deployed fleet overseas.²⁷ In building capacity to operate overseas the major obstacle is obtaining permission from host governments to base U.S. forces. Even once established, basing agreements can change due to periodic renegotiations resulting in ships being forced to rebase and absorbing the associated cost of being forced to do so.²⁸

²³ Center for Naval Analysis (CNA), *2012 Year in Review*, 27-28, https://www.cna.org/CNA_files/PDF/CMM-2013-U-004103-Final.pdf.

²⁴ *Ibid.*, 28.

²⁵ CBO, *Preserving the Navy's Forward Presence*, 12.

²⁶ *Ibid.*

²⁷ *Ibid.*, 2.

²⁸ *Ibid.*, 12.

An example of the difficulties associated with obtaining host country permission can be seen in Australia's rejection of the recommendation by the Center for Strategic and International Studies (CSIS) to base a U.S. carrier at HMAS Stirling, in Perth.²⁹ CSIS carefully weighed force posture options for PACOM based on four criteria to include: geostrategic security, operational force structure and management, affordability, and ease of execution. Despite the difficulty associated with obtaining permission from a host country as a forward deployed naval base, the CSIS study offers a potential model for evaluating overseas carrier basing options. While these criteria were used to determine potential basing options for the PACOM AOR, they may also prove to be useful in determining force posture options globally.³⁰

An additional challenge to overseas basing is the cost associated with investing in overseas infrastructure to include the exorbitant cost of establishing the requisite support facilities to maintain a nuclear powered aircraft carrier.³¹ For example, a port that is not nuclear carrier capable can cost anywhere from \$1 billion to convert Mayport, Florida to \$6.5 billion to convert Guam.³² Additional expenses from higher fuel and maintenance costs result in an estimated 20 percent greater operating cost for a Japan-based carrier than a carrier home ported in the U.S.³³ The cost over time, however, certainly seems justified based on getting three times the forward presence from a single CSG.³⁴ Another important consideration is the amount of cost that is offset by agreements made with the host country. Japan, for example, provides substantial support to U.S. bases, which offers a further incentive to basing there.³⁵ The decision to base a CSG overseas cannot be made solely on financial costs and must also weigh the potential security concerns of a particular region.

²⁹ Center for Strategic and International Studies (CSIS), *U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment*, Washington DC: CSIS, 2012, 74, http://csis.org/files/publication/120814_FINAL_PACOM_optimized.pdf.

³⁰ Ibid.

³¹ CBO, *Preserving the Navy's Forward Presence*, 12.

³² CSIS, *U.S. Force Posture Strategy*, 74.

³³ CBO, *Preserving the Navy's Forward Presence*, 12.

³⁴ Ibid.

³⁵ Ibid., 13.

Overseas-based CSGs offer constant presence in regions of global security concern where critical long-term presence may exceed the duration offered by a U.S. based CSG. Overseas-based forces also offer legitimacy through regional shaping policies by extending commitments to host nations and regions that may further contribute to partnerships and maritime coalition efforts. Forward deployed naval forces play critical roles in peacetime or crisis; however there are challenges to overseas deployment. Their ability to effectively conduct operations demonstrating their forward presence is dependent upon the CSG's ability to ensure security in the littorals and overseas deployed basing locations. Security challenges to overseas basing are increasing as a result of the proliferation of asymmetric and anti-access capabilities. In overcoming challenges related to forward presence and foreign deployed naval forces (FDNF), the threats must be maintained at an appropriate level and not be at the expense of maintaining control of the broader maritime environment.³⁶

3. Crew Rotation

Literature regarding the third technique that may increase forward presence includes the rotation of crews among a single carrier. The concept of rotating crews is nothing new to the Navy, with ballistic submarines being assigned two crews since the early 1960s.³⁷ Regardless of ship class, the result of rotating crews is the same—an increase in forward presence. When maintenance time is shared by alternating crews among a single ship, it is able to provide more forward presence than is possible with a single crew. While the concept of crew swaps when applied to the CSG presents unique logistical challenges especially when conducting a crew-swap overseas, it presents an option for further consideration that offers a substantial increase in forward presence. Another model for further consideration in its application for carriers is the 3.2.1 concept used by littoral combat ships in which three U.S.-based crews operate two ships where one of the two ships is constantly deployed.³⁸ The costs and benefits associated with such

³⁶ Goure, "The Tyranny of Forward Presence," 22.

³⁷ CBO, *Preserving the Navy's Forward Presence*, 14.

³⁸ *Ibid.*, 14–15.

a strategy must be further assessed and the scale considered when applying such a strategy to the ability to conduct carrier crew swaps.

The advantages of the crew swap concept results in more crews per ship that inevitably provides more forward presence than is possible through the standard one ship one crew construct. Swapping crews was proven through the Sea Swap concept by the guided missile destroyer (DDG) platform through three experiments conducted between 2002 and 2006 by PACOM and Fleet Forces Command concluding that rotating crews provides an increased forward presence with minimal adverse effects.³⁹ The main impact to the crews in the study was the increased effort and coordination required in ensuring a good turnover took place, which may simply require increased oversight by leadership.⁴⁰

The results of the Sea Swap experiments when multiple crews swapped overseas were found to have a 27 percent improvement over conventional deployers.⁴¹ The rotationally crewed ships remained deployed for a full 18 months and therefore did not encounter any gaps or extensions that typically occur as a result of a relief ship arriving late. An unforeseen advantage was found among allied and friendly navies that enjoyed the familiarity of working with the same ship despite the fact that the crews had changed. The crews also appreciated the consistency and predictability offered by the set deployment length of the crew-swap model, which eliminated the possibility of being extended beyond six months.⁴² An additional advantage was a reduction in maintenance costs incurred as a result of lengthy transits overseas although due to the post deployment decommissioning of the ships assessed, the study did not factor in the extensive maintenance that may have been necessary to get these ships deployable again.

Despite the challenges associated with applying the crew swap concept to a carrier crew and air wing, the Sea Swap experiment and 3.2.1 concept are worth further

³⁹ Congressional Budget Office (CBO), *Crew Rotation in the Navy: The Long-Term Effect on Forward Presence*, 2007, 5, <http://www.cbo.gov/publication/19283>.

⁴⁰ Ibid., 8.

⁴¹ Ibid., 7.

⁴² Ibid., 9.

investigating as an option for a potential carrier-based crew swap model.⁴³ The crew-swap model has proven to be effective for both the ballistic missile submarine (SSBN), DDG and littoral combat ship (LCS) platforms in increasing forward presence while reducing maintenance costs and crew fatigue.⁴⁴ While the logistical hurdles and additional manpower associated with executing an overseas crew swap of a carrier may outweigh the benefits, the increase in forward presence of a crew-swap model offers an option to fill critical gaps when necessary despite the costs, and warrants further analysis in its application to U.S. and overseas-based carriers.

C. POTENTIAL EXPLANATIONS AND HYPOTHESES

This thesis contains three hypotheses. The first is: Through assessing the current and previous model for carrier fleet employment, a more efficient model can be developed focusing on addressing the increasing demand for the CSG to meet global commitments with the appropriate employment strategy based on a realistic defense budget.

The second hypothesis determines that extending the current deployment length has adverse consequences on ships and crews, stretching resources to the point that operational capabilities are degraded, resulting in a reduction in forward presence. Extending a ship while on deployment will be found to have numerous adverse consequences that must be fully considered based on a careful cost-benefit analysis to determine the long term effects on the carrier fleet before the decision is made to extend a CSG.

The third hypothesis is that an approach combining U.S.-based ships (limited to 6-month deployments) while increasing overseas basing options, with the option to incorporate a carrier based crew rotation model, will increase forward presence of the current OFRP. In the continued struggle over limited resources, lengthier deployments will be proven to be ineffective in meeting long term strategic and operational objectives. A more realistic approach to carrier presence, combined with a more efficient

⁴³ CBO, *Crew Rotation in the Navy*, 8.

⁴⁴ *Ibid.*, 12.

management of existing resources, is a demonstrably more desirable option to the proposed alternatives.

D. RESEARCH DESIGN

The plan of action for conducting research involves assessing the current OFRP compared to an extended deployment model and examining the proposed techniques for increasing forward presence including the option to establish additional overseas-based CSGs and the potential to implement a carrier crew swap concept. Each approach uses the current 11 carrier model that is based on shipbuilding budget projections and ship life-cycles through 2039.⁴⁵ The first approach would lengthen deployments from 7 (current OFRP) to 10 months in each 36 month operating cycle. The deployment cycle of all ships based overseas would remain unchanged in this approach. The second approach attempts to limit U.S. based ships to 6 month deployments offering the option to increase overseas-based CSGs and to incorporate a carrier crew-swap concept in an attempt to equal the forward presence provided by a 10 month U.S.-based deployer.

With the inability to assess the impact that a reduced forward presence will have on U.S. foreign policy, maintaining forward presence is critical to maintaining U.S. and global security. Maximizing forward presence through the effective management of limited resources will require an assessment of the techniques offered by the literature in increasing forward presence and crisis response in order to determine the validity of the techniques and approaches to effectively employ the CSG in meeting current and future challenges on a global scale.

⁴⁵ Congressional Budget Office (CBO), *An Analysis of the Navy's Fiscal Year 2016 Shipbuilding Plan*, October 2015, 5, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/50926-Shipbuilding_OneCol-2.pdf.

II. THE UTILITY OF THE CARRIER STRIKE GROUP

To critically assess the various methods that propose to further expand the forward presence of the CSG, it is essential to understand the utility that contributes to its overall strategic value. According to the naval analyst Norman Palomar, the “survival of the aircraft carrier...can be attributed to...territorial independence, flexibility of striking power, (and) mobility.”⁴⁶ By examining these attributes through evidence provided by historical case studies, a better understanding of the carrier’s unique role in forward presence may offer a more efficient method of employment in the future.

A. STRATEGIC VALUE

1. Territorial Sovereignty

The carrier’s ability to continually prove its worth is largely attributed to its territorial sovereignty. This territorial independence was described by a Navy official making the assertion: “With an aircraft carrier, you get 4.5 acres of Americana with no diplomatic restrictions on when and what you can fly.”⁴⁷ In 1996 during Operation Desert Strike, an official comment described the United States Air Force (USAF) as having been “castrated” due to their inability to launch strike fighters from Saudi Arabia and Turkey due to political restrictions imposed by the host countries.⁴⁸

Despite the carriers obvious advantage stemming from its inherent sovereignty, when defense spending is constrained the aircraft carrier becomes a target of opportunity—mainly by the air force. As a competitor, the carrier is viewed as a threat due to its high cost and its evolving mission often overlapping with roles once solely provided by the air force. Its ability to operate independently of land based forces and without political limitations has caused even its toughest critics to acknowledge the

⁴⁶ Ben Ho Wan Beng, “The Combat Utility of the U.S. Fleet Aircraft Carrier in the Post-War Period,” *Journal of Military and Strategic Studies* 16, no. 4 (2016): 70, <http://jmss.org/jmss/index.php/jmss/article/view/640/pdf>.

⁴⁷ Christopher J. Bowie, *The Anti-Access Threat and Theater Air Bases* (Washington, DC: Center for Strategic and Budgetary Assessments, 2002), 3, <http://csbaonline.org/wp-content/uploads/2011/03/2002.09.24-Anti-Access-Threat-Theater-Air-Bases.pdf>.

⁴⁸ Ibid.

CSG's unique advantages.⁴⁹ The vulnerability of fixed air bases strengthens the argument for carriers as highlighted by a USN naval officer in his assertion; "I can tell you where each of our carriers are...but given a few moments at Base Ops, I can give you the coordinates of every Air Force Runway...worldwide."⁵⁰

CSGs, immune from territorial vulnerabilities have been able to contribute substantially to wars in South-west Asia since the turn of the millennium. As a result of a lack of air bases during Operation Enduring Freedom, carrier aircraft substituted for the lack of land based air-power. As a result, from October 2001 until March 2002, six CSGs flew 4,900 sorties, equal to roughly 75 percent of the 7,500 total air strikes against Afghanistan.⁵¹ The extreme range and difficulty in establishing bases in the Persian Gulf resulted in a significantly smaller contribution than the more flexible and mobile CSG that has demonstrated the ability to respond first to any crisis or contingency.⁵²

2. Flexibility

The carrier's ability to offer a wide range of missions as a result of the variety of aircraft it is able to employ enhances its flexibility and responsiveness.⁵³ A carrier air wing (CVW) typically consists of a mix of 44 F/A 18 Hornet/Super Hornets, five EA-18 Growler electronic warfare aircraft, four Hawkeye airborne early-warning (AEW) platforms, and around 20 MH-60 Seahawk helicopters. A testament to the carrier as a versatile mobile launch platform is evident in the Enterprise's impressive 50 years of service in which 43 different models of aircraft operated from its deck.⁵⁴

⁴⁹ Ho, "The combat utility," 70-1.

⁵⁰ James Paulsen, *Is the Days of the Aircraft Carrier Over?* (AU/ACSC/217/1998-04) (Maxwell AFB, AL: Air Command and Staff College, 1998), 20, <https://fas.org/man/dod-101/sys/ship/docs/98-217.pdf>.

⁵¹ Benjamin S. Lambeth, *American Carrier Air Power at the Dawn of a New Century* (Santa Monica, California: RAND, 2005), 20.

⁵² Ho, "The combat utility," 74.

⁵³ Rebecca Maksel, "The Future of Aircraft Carriers," *Air & Space*, January 15, 2015, airspacemag.com/daily-planet/future-aircraft-carriers-180953905.

⁵⁴ Ibid.

The efficiency and flexibility of the carrier is also demonstrated in roles other than strike warfare as seen in the U.S. intervention in former Yugoslavia.⁵⁵ Air power played several important roles other than air strikes to include close air support, search and rescue, enforcement of the no-fly-zone and in the NATO-led Operation Deliberate Force.⁵⁶ The carrier has proven to be a flexible and efficient option for response to national level crisis and contingencies, although combined with its territorial independence and flexibility—its mobility is another advantage that allows for its increased presence and response.

3. Freedom of Movement

With the ability to immediately respond to a crisis, the freedom of movement offered by a carrier is impressive. In response to a deployment order, a CSG can cover almost 1,000 nautical miles in a 24-hour period.⁵⁷ Evidence of such mobility was demonstrated by the *Eisenhower* and *Independence* battle groups during the 1990 Gulf crisis transiting from the Mediterranean and Indian Oceans with both battle groups within target range of Iraqi forces within 48 hours of receiving orders to respond. As assessed by General Norman Schwarzkopf, “the Navy was the first military force to respond...and...was also the first airpower on the scene. Both of these deterred, indeed, I believe stopped Iraq from marching into Saudi Arabia.”⁵⁸ The carriers would be the only assets available in theater to respond should hostilities have broken out between Iraq and Saudi Arabia for the first three weeks, which is the length of time it would take for land-based aircraft to arrive in theater and be operational. Additionally, carrier aircraft would also provide air cover to land-based air forces arriving in theater, ensuring their safe deployment to Saudi Arabia.⁵⁹ The limitations of land based air power during the Gulf War were supplemented by the joint contributions of the carriers through “their access,

⁵⁵ Andrew Dorman, Mike Lawrence Smith, and Matthew Uttley, *The Changing Face of Maritime Power* (New York: St. Martin’s Press, 1999), 116–18.

⁵⁶ Ibid.

⁵⁷ Paulsen, *Is the Day of the Aircraft Carrier Over?*, 21.

⁵⁸ Ho, “The Combat Utility,” 75.

⁵⁹ Ibid.

mobility, independence of host nation support and the breadth of military capabilities...particularly naval aviation.”⁶⁰

The carrier’s mobile advantage was also proven during Operation Deliberate Force and Allied Force when land based aircraft in Italy were grounded by poor visibility at the airfield. The on-station U.S. carriers, however, were not impacted as they were able to simply avoid the weather by moving to an area not encumbered with fog enabling them to continue the air campaign. Speed is also an advantage of the carrier, allowing it to avoid enemy detection as illustrated by the *Eisenhower* CSG in 1991. In preparation for an exercise, the *Eisenhower* CSG steamed 7,000 nm from the Persian Gulf to the Norwegian Sea at an average speed of 30 knots. Consequently, the CSG was able to make an early advance on British air bases to their surprise as they did not anticipate the carrier’s ability to achieve or sustain such high speeds. Limited in its mobility only during replenishment periods, the carrier has the ability to respond to hotspots while being largely uncontested in most regions of the world. Despite the carrier’s proven utility, an alternative explanation relating to the carrier’s success must also be considered.⁶¹

B. OPPOSING VIEWPOINT

Although the survival of the aircraft carrier can be attributed to its proven utility as demonstrated through its impressive accomplishments, its deployment to relatively low threat areas are argued to have contributed to it being unopposed in previous conflicts. During the initial response during first Gulf War, there was hesitation involving the decision to deploy carriers to the Persian Gulf based on the perceived threat posed by Iraq’s sea-denial capabilities. Despite the initial threat assessment, carriers were deployed to the region an hour after the start of the Iraqi invasion and were immediately ready for combat and sustainment operations upon arrival to the AOR. The assessment of the Iraqi

⁶⁰ Dorman et al., *The Changing Face of Maritime Power*, 120–1.

⁶¹ Ho, “The Combat Utility,” 77–78.

threat, however, proved to be inconsistent with Iraqi capabilities revealing a much weaker Iraqi missile threat than previously anticipated.⁶²

Maritime forces, with a substantial contribution by carrier aviation were found to have “a critical role in stabilizing the initial situation, securing command of the sea, protecting the movement...of the heavier land-based ground and air forces, and then contributing to the war ashore.”⁶³ The mobility and flexibility of the CSG set the stage for the land and ground forces success during the war, while continuing to provide support throughout the campaign demonstrating the overall value of the CSG to the outcome of the war.

Another critique of the U.S. carrier’s success in war relates to operations during Operation Enduring Freedom in Afghanistan. The argument proposes that the success of carrier air forces against the Taliban regime was again due to the apparent lack of opposition. With Afghanistan not possessing a Navy due to its geography, lacking an air force and a limited surface-to-air capability they did not present a formidable threat to carrier aircraft. A further argument finds the successes attributed to aerial tanking as being due to the benign environment, which would have been impossible in more contested airspace.⁶⁴

To be fair, operating in low threat airspace does offer advantages to aerial refueling and strike platforms, however, it does not guarantee success. The success of carrier aviation beyond the maritime environment proved that U.S. carrier air power is capable of carrying out sustained air strikes against targets well beyond the maritime environment with the ability to reach hundreds of miles inland. This case offers yet another example of the CSG’s ability to remain flexible in meeting new requirements when no other service has the ability to undertake them in the first place let alone succeed in doing so. With the Air Force fighter missions requiring a 15-hour transit to Afghanistan, their contributions were mainly limited to tanking carrier strike assets. As a

⁶² Dorman et al., *The Changing Face of Maritime Power*, 111–12.

⁶³ Ibid., 113.

⁶⁴ Ho, “The Combat Utility,” 82.

result, the Navy was able to deliver sustainable strike power over distances never achieved prior, dismissing criticism of carrier aviation as being limited in its power projection.⁶⁵

The carrier, with its unique ability to maintain territorial independence, unmatched strike flexibility, and freedom of movement has proven to be a resilient and formidable platform capable of assuring allies and deterring adversaries. Through assessing the carrier's forward presence role in relation to its attributes, while examining considerations related to carrier cycles that affect operational availability a more efficient employment methodology will ensure it remains a viable asset into the future.⁶⁶

C. CARRIER CYCLES AND OPERATIONAL AVAILABILITY

With the length of each cycle and overall model of carrier employment changing several times over the past few decades, examining the considerations associated with each cycle will help in identifying a more balanced approach to providing forward presence. To fully assess the impact of lengthening future deployments or extending CSGs currently deployed, the complex maintenance and training cycles that take place before a CSG deploys must be further understood. In order to balance the maintenance and training cycles, Navy planners must manage the deployment of CSGs to provide an appropriate level of forward presence, in maintaining reserve carriers to respond to emerging threats and crisis, and in maintaining each carrier to meet operational demands. To balance the various phases of the cycle in achieving an appropriate level of forward presence, each of these challenges must be managed throughout the maintenance, training, and sustainment phases.⁶⁷

⁶⁵ Lambeth, *American Carrier Air Power*, 99–101.

⁶⁶ Norman Polmar, *Aircraft Carriers: A Graphic History of Carrier Aviation and Its Influence on World Events* (Garden City, NY: Doubleday, 1969), vii.

⁶⁷ Roland Yardley et al., *Increasing Aircraft Carrier Forward Presence: Changing the Length of the Maintenance Cycle* (Santa Monica CA: RAND, 2008), 2, http://www.rand.org/content/dam/rand/pubs/monographs/2008/RAND_MG706.pdf.

1. Maintenance Phase

Due to the complex nature of carrier operations to include the extensive requirements associated with operating the ship, the integration of the air wing as well as the accompanying ships of the CSG, managing the maintenance and training cycles has proven difficult. The maintenance phase is centered on specific tasks such as midlife refueling and complex overhaul (RCOH), which must be performed at certain times to ensure a carrier reaches its operational life expectancy of 50 years. With the maintenance phase critical to ensuring carriers reach life expectancy goals, extended or increased deployments could deplete reactor fuel sooner shortening service life reducing the size of the fleet and consequently U.S. forward presence.⁶⁸ The result of extended deployments has been an increase in maintenance delays as seen by the first 3 carriers to implement the O-FRP compressing the training phase even further and decreasing operational capacity and as a result reducing overall employability.⁶⁹

2. Training Phase

The training phase of the carrier cycle is intense and demands that those tasked with the safe operation of the ship and air wing be allocated sufficient time for both to achieve their prerequisite readiness levels prior to entering the sustainment phase. To understand planning considerations regarding the overall carrier cycle, the relationship between cycle length and training phase is structured to deliver assets ready to be forward deployed or respond to crisis in a surge capacity.

The training phase starts during the maintenance phase with basic training, ensuring the carrier crew can safely operate the ship, is watch station qualified, and is able to support equipment and system testing. A carrier certified to this degree may be tasked with operations associated with their level of training, attaining Maritime Security Surge (MSS) status in which they can be ready to surge within 90 days. Following being certified as MSS, a ship is deemed Major Combat Operations-Surge capable (MCO-S)

⁶⁸ Yardley et al., *Increasing Aircraft Carrier Forward Presence*, 3–4.

⁶⁹ U.S. Government Accountability Office (GAO), *Military Readiness: Progress and Challenges in Implementing the Navy's Optimized Fleet* (GAO-16-466R) (Washington, DC: GAO, May 2, 2016), 2, <https://news.usni.org/2016/05/03/document-gao-report-on-u-s-navy-optimized-fleet-response-plan>.

after completing a Composite Training Unit Exercise (COMPTUEX) in which it can be made deployable in 30 days. Once complete with a Joint Task Force Exercise (JTFX), typically 3 months after basic training, a ship is deemed Major Combat Operations-Ready (MCO-R) and now fully certified for forward deployment. This level of readiness is sustained for 12 months to include deployment.⁷⁰ This already compressed training schedule may be further condensed due to extending maintenance availabilities and overruns making it difficult to achieve operational training goals.⁷¹ The impact of extended maintenance availabilities and overruns was evident as the *Eisenhower* extended from 14 to 23 months requiring the *Truman* to complete back-to-back deployments to fill the gap in meeting operational demands. Such delays have ripple effects that impact the entire optimized carrier schedule.⁷²

3. Impact of Lengthening the Operating Cycle

Increasing the length of the operating cycle over time has had several effects on forward presence as the employment model has adapted by increasing deployment lengths. As cycle length increases the proportion of time a carrier is deemed deployable increases as a result of a reduction in the amount of time spent in maintenance. Typically with one deployment per cycle, the proportion of time actually deployed decreases as cycle length increases.⁷³

Reducing deployment length however, may translate into an increased availability in responding to crisis and contingencies. The reduction of the carrier fleet combined with increasing cycle length from 24 months under the FRP to 36 months under the O-FRP will continue to challenge the Navy in meeting forward presence demands. As tensions throughout the world continue to increase, developing and managing an efficient carrier cycle will directly affect our ability to project power and influence through

⁷⁰ Yardley et al., *Increasing Aircraft Carrier Forward Presence*, 9–11.

⁷¹ GAO, *Military Readiness*, 15.

⁷² *Ibid.*, 16.

⁷³ Yardley et al., *Increasing Aircraft Carrier Forward Presence*, 12.

forward presence while maintaining a global response to crisis and contingencies.⁷⁴ The challenge becomes how to balance the management of assets to meet both the desired level of forward presence while maintaining the ability to respond to crisis and contingencies of national interest.

To maximize forward presence with current resources there are several proposed techniques to further examine, including: extending carrier deployments, basing more ships and crews overseas, and assigning multiple crews to a single carrier operating from an overseas port or U.S.-based port. Through applying these techniques to a goal-oriented and targeted-readiness strategic outlook toward forward presence, a more efficient method of fleet management may be developed.⁷⁵ The proposed techniques are not necessarily intended to be applied individually as a single solution, but simply offer methods to develop a more efficient management approach as an alternative or to be integrated as a means of improving the existing employment model. In providing a more consistent forward presence, each technique will be further assessed to determine the advantages and potential challenges associated with integrating the proposed methods to offer a more efficient employment strategy for the carrier fleet.

⁷⁴ Ibid., 11–12.

⁷⁵ Ibid.

THIS PAGE INTENTIONALLY LEFT BLANK

III. RETHINKING FORWARD PRESENCE

With the carrier force budgeted to remain at 11 through 2039, a shift in focus to presence with a purpose rather than simply marking time offers a better use of available resources by limiting deployment length while increasing the sustainment or surge period and therefore the ability to respond to international crisis and contingencies. Admiral Vern Clark described goal-oriented presence in his remarks as CNO, “I would rather muster two strike groups for three months and do something really significant internationally than just go over and hang out for six months.”⁷⁶ Goal-oriented presence combined with a targeted readiness approach offers a more prudent use of resources, although it relies on commanders to assume a level of risk associated with accepting adequate readiness levels in responding to crisis with the potential to have less than optimal readiness.⁷⁷

Targeted readiness involves reducing readiness levels in less-critical mission areas while maintaining critical mission areas such as Strike and Carrier Air Support at peak readiness levels.⁷⁸ As indicated by a fleet-wide message, “in many instances, absent indications of imminent danger or war, intermediate levels of readiness are not only acceptable but a prudent use of resources.”⁷⁹ Targeted readiness offers an alternative to the peak levels of readiness that were prerequisites for a CSG deployment during the Cold War. Maintaining crews at adequate readiness levels while reducing deployments to 6 months will allow for increased funding during the sustainment phase increasing the CSG’s response to international crisis and contingencies in moving toward a more goal-oriented approach to forward presence.⁸⁰

⁷⁶ Lambeth, *American Carrier Air Power*, 62.

⁷⁷ Ibid., 62–3.

⁷⁸ Ibid.

⁷⁹ U.S. Fleet Forces Command and Commander, U.S. Pacific Fleet, “Coordinated Fleetwide Message on FRP from the Commander,” April 24, 2004.

⁸⁰ Lambeth, *American Carrier Air Power*, 20.

A. EXTENDING CARRIER DEPLOYMENTS

As the Navy attempts to get the most out of its resources, policies governing deployment duration and quality of life have evolved to meet forward presence demands. To understand the difficulty facing Navy leadership and policy-makers the constraints governing the employment of a CSG must be further understood. The Navy Personnel Tempo Operations (PERSTEMPO) Program establishes procedures in an effort to manage how much time a Sailor is deployed. The goal of the program is to balance operational requirements with quality of life considerations for individual Sailors.⁸¹ This goal is often difficult to achieve as deployments increase in length and PERSTEMPO guidance is revised to accommodate the increasing length often at the expense of a Sailors quality of life.

1. Balancing OPTEMPO and PERSTEMPO

The Navy Operational Tempo (OPTEMPO) Program establishes the necessary procedures to manage the frequency and duration of deployments while balancing a ship's maintenance, material readiness and training to meet operational requirements. In meeting current global force management presence demands, the Navy has established deployment lengths of 8 months in length increasing from the 6 month limit set by the program during the Cold War.⁸²

Since 1985, the Navy has attempted to address concerns relating to PERSTEMPO by reducing the stress on Sailors and ships by attempting to limit excessive deployments. While this approach was effective in managing the operating model at the time, a more precise management model took shape in 2000, establishing limits relating to the time Sailors could be deployed while compensating personnel who exceeded the limit.⁸³ Despite this compensation, the events of September 11, 2001 required the waiver of

⁸¹ Chief of Naval Personnel (CNO), *Navy Personnel and Operating Tempo Program* (OPNAVINST 3000.13D) (Washington, DC: Department of the Navy, 2014), 2–3, <https://doni.daps.dla.mil/Directives/03000%20Naval%20Operations%20and%20Readiness/03-00%20General%20Operations%20and%20Readiness%20Support/3000.13D.pdf>.

⁸² Ibid.

⁸³ Ibid., 3.

certain PERSTEMPO management provisions to include suspending compensation for those individuals exceeding the high-deployment threshold of 220 days.⁸⁴

While a state of national emergency being declared by the President of the United States violates OPTEMPO and PERSTEMPO restrictions, in this instance it was due to operational necessity. In the absence of crisis however, OPTEMPO and PERSTEMPO should be used mainly to assess the condition of the force to influence force management and readiness practices while effectively managing stress on the fleet.⁸⁵ As PERSTEMPO guidance has allowed an increase in the acceptable duration a unit may be away from home port, quality of life for Sailors and families has been adversely affected.⁸⁶ As a CRS report highlighted the long term impact of increasing OPTEMP “Over time, the continual wear on personnel and their families may result in difficulties retaining and recruiting high quality volunteers.”⁸⁷ According to this, the policies that establish the activity rate of a unit and the amount of time a service member is engaged in such activity away from homeport have a direct impact on the retention of our Sailors. Establishing a balance between operational and personnel limitations regarding a unit’s time away from homeport will require a model that ensures future resource recommendations are made considering a short and long-term risk analysis to global force management.⁸⁸

2. Impact on Retention Rates

The Navy has increasingly used the technique of increasing the length and frequency of deployments to quickly boost forward presence. While necessary in times of crisis, this practice has been relied upon heavily since 2007 as indicated by data reflecting that nearly half of all aircraft carrier deployments lasted 7 months or more from 2007 to

⁸⁴ 10 U.S.C. § 991: U.S. Code - Section 991: “Management of Deployments of Members and Measurement and Data Collection of Unit Operating and Personnel Tempo.” <http://codes.lp.findlaw.com/uscode/10/A/II/50/991>.

⁸⁵ CNO, *Navy Personnel*, 4.

⁸⁶ Yardley et al., *Increasing Aircraft Carrier Forward Presence*, 11, 17–18.

⁸⁷ Michael C. Ryan, *OPTEMPO and PERSTEMPO: Are U.S. Forces doing Too Much?* (Washington DC: Congressional Research Service, 1998), <http://congressionalresearch.com/98-41/document.php>.

⁸⁸ CNO, *Navy Personnel*, 4.

2013. Of these, a majority of those deployments over 7 months were unscheduled with Sailors being told of the extension while at sea.⁸⁹

The unpredictable nature of deployment schedules was cited as the primary concern for Sailors up for reenlistment in a study assessing reenlistment post-1986. Additionally, it determined that more frequent deployments have an influence over the decision to reenlist reducing reenlistment rates by 1.9 percentage points. Although longer deployments were not found to be a clear indicator of a decline in reenlistment, as extended deployments become routine they are more likely to adversely affect reenlistment rates.⁹⁰

3. Proposing a Solution

Developing a solution to curb declining reenlistment rates is difficult, although compensating Sailors through allowances and offering competitive salaries may help offset the burden of lengthy deployments. Through offering a combined incentive that ensures “high-deployment” allowances are maintained for deployment periods that exceed 6 months while offering salaries that exceed those offered by the civilian sector Sailors may be persuaded to stay Navy despite the occasional lengthy deployment.⁹¹ An alternative to the extended deployment option, which may increase forward presence while lessening the manpower impacts that result from continual lengthy deployments, involves increasing the posture of overseas-based CSGs. An examination of the potential to increase the overseas-basing of carriers and the application of a crew rotation concept may propose a solution to the extended carrier deployment that has increasingly become the norm.

⁸⁹ CBO, *Preserving the Navy's Forward Presence*, 11.

⁹⁰ Heidi L.W. Golding and Henry S. Griffis, *How Has PERSTEMPO's Effect on Reenlistments Changed Since 1986 Navy Policy?* (Alexandria, VA: CAN, 2004), 1, https://www.cna.org/CNA_files/PDF/D0008863.A2.pdf.

⁹¹ Golding and Griffis, *How has PERSTEMPO's Effect*, 1, 19.

B. OVERSEAS BASING OF CARRIERS

Forward-homeporting or overseas posturing of ships and even strike groups is nothing new for the Navy and has proven to be one of the most effective ways of maximizing forward presence in regions identified as being of interest to our national security. While the Navy's primary forward-homeport location for a CSG has been Japan, a number of other ships have been successfully homeported to other forward locations more recently to include: Italy, Spain, Guam, Diego Garcia, and Bahrain. The Navy has forward-homeported a CSG to Japan since the early 1970s with it representing the largest concentration of naval forces based overseas.⁹² With the benefits of homeporting ships overseas resulting in a threefold increase when compared to an asset based state-side, the challenges associated with overseas-basing need to be further addressed in an attempt to mitigate and manage the risks and limitations associated with deploying a CSG overseas.⁹³

1. Overseas Basing Risks

There are several risks to consider in determining the feasibility of basing a CSG from an overseas location to include both political and operational risks. The strategic benefits of forward presence do not come without a certain degree of risk. The first of which includes the political risks that stem from agreements made with the host nation. These may include restrictions that may be imposed on U.S. naval forces by a host nation limiting the scope of naval operations afforded to overseas based assets. Consequently, these restrictions may reduce the operational flexibility of naval forces in carrying out their full range of missions and as a result limit the range of options available to U.S. policymakers.⁹⁴ To fully evaluate the risks associated with overseas-basing, the political

⁹² Ronald O'Rourke, *Navy Ship Deployments: New Approaches – Background and Issues for Congress* (CRS Report no. RS21338) (Washington, DC: Congressional Research Service, November 15, 2004), 3, <http://fas.org/man/crs/RS21338.pdf>, 3.

⁹³ CBO, *Preserving the Navy's Forward Presence*, 12.

⁹⁴ Michael J. Lostumbo et al., *Overseas Basing of U.S. Military Forces: An Assessment of Relative Costs and Strategic Benefits* (Santa Monica, CA: RAND, 2013), xxiii, http://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR201/RAND_RR201.sum.pdf.

and operational risks as well as the associated costs must be identified in order to mitigate the risks while attempting to reduce the costs.

a. Political Risks

As political risks are magnified in times of crisis they have the potential to outweigh the forward presence benefits of basing additional CSGs overseas. For example, basing agreements made with host nations may inhibit the ability to respond to a crisis or contingency in another region due to the perception of the host nation and regional partners seeing such an action as a reduction in U.S. assurance.⁹⁵ In contrast, there is always the potential for eviction due to host nation policy changes, which can adversely affect U.S. forward presence and alter fleet wide schedules impacting the overall carrier deployment model.⁹⁶

With it difficult to predict the behavior and attitudes of host countries, there will always be political uncertainties associated with the decision to base forces overseas. These unpredictable risks are often difficult to manage although they can be mitigated to a certain degree by U.S. influence and the ability to exert power in a particular region.⁹⁷ In addition to its influence in foreign politics, transferring a CSG from a U.S. home port to an overseas location could also have a negative impact on U.S. domestic politics impacting the local economy. The economic impact to an area that was once supported by CSG Sailors, spending their pay on local goods and services could be devastating. In addition, the impact to ship maintenance facilities that base their entire existence on the CSG's maintenance schedule could also be at risk.⁹⁸ These economic effects translate into domestic political concerns for the constituents of the areas most affected by the CSGs departure.

Although the foreign and domestic political risks associated with CSG basing considerations will remain, they can be managed by striking a balance between U.S. and

⁹⁵ O'Rourke, *Navy Ship Deployments*, 3.

⁹⁶ Ibid.

⁹⁷ Sam J. Tangredi, *Anti-access Warfare: Countering A2/AD Strategies* (Annapolis, MD: Naval Institute Press, 2013), 49.

⁹⁸ Ibid.

overseas basing. In addition, diversifying overseas locations to build relationships and assurances in multiple countries in politically sensitive regions will help mitigate the risk of access being denied during crisis or contingencies.

b. Operational Risks

The recent introduction of long-range precision-guided weapons has placed forces and bases that were once beyond reach, now within weapons range of China with North Korea and Iran not far behind, investing in similar capabilities. 90 percent of U.S. air bases in Northeast Asia to include the CSG based in Yokosuka, Japan are well within the envelope of China's current ballistic missile threat.⁹⁹ With China's DF-21, nicknamed the "carrier killer," having a range of 15,000 km, the missile pushes the CSG beyond its effective strike range arguably diminishing its strategic importance in the region.¹⁰⁰ The Congress commissioned National Defense Panel in 1997 highlighted this concern stating, "precision strikes, weapons of mass destruction, and cruise and ballistic missiles all present threats to our forward presence, particularly as standoff-ranges increase."¹⁰¹

Overseas basing increases forward presence and as a result the threat level for an asset not only to operations but also due to additional force protection threat that results from being based overseas. U.S. military installations overseas will always be vulnerable to terrorist attack, although arguably U.S. military installations based on American soil also face a similar asymmetric threat. The threat of attack remains low, however for an underway CSG as one author illustrated the point by making the inference that it would be easier to drive a delivery truck containing weapons of mass destruction to the Pentagon than to deliver the same package to a carrier in the middle of the open ocean.¹⁰² A pier side carrier however, demonstrates similar vulnerabilities in comparison to land based installations although CSGs maintain one distinct advantage—the ability to get underway if the threat level increases. A carrier air wing similarly, when not embarked on

⁹⁹ Lostumbo et al., *Overseas Basing of Military Forces*, xxiv.

¹⁰⁰ Harry Kazianis, "The A2AD Hit List," *Diplomat*, April 20, 2013, <http://thediplomat.com/2013/04/the-a2ad-hit-list/>.

¹⁰¹ Bowie, *The Anti-Access Threat*, 1.

¹⁰² Paulsen, *Is the Day of the Aircraft Carrier Over?*, 24.

the carrier and conducting flight operations from an overseas host nation airfield, exhibits similar vulnerabilities as well as operational limitations typically only experienced by aircraft based from overseas airfields.¹⁰³

Such operational restrictions imposed by a host nation may include the denial of overflight and even the denial to take off by U.S. aircraft. A case evident of both was experienced during the U.S. response to Iraqi troop movements during Operation Desert Strike II in late 1996. As a result of U.S. land-based aircraft being denied overflight by Syria and Turkey and land-based aircraft in Saudi Arabia being denied political clearance to take-off in support of Desert Strike II, the *ENTERPRISE* CSG operating in the Adriatic Sea was called upon by the National Command Authority (NCA) to respond to support the *CARL VINSON* CSG in the Arabian Gulf. This case highlights the CSG's value as a flexible, mobile, territorial independent force capable of responding to the NCA when land-based air forces are either stuck on deck or denied overflight, neither of which prohibits the operational freedom enjoyed by the CSG.¹⁰⁴

In addition to these threats, the increased prevalence of space-based surveillance systems that enhance imagery, communication, and positional accuracy will continue to increase the vulnerability of our forward deployed forces.¹⁰⁵ The advent of such threats also stresses the importance of periodically reassessing our overseas force posture and the level of forward presence in regions with increasing threat levels.¹⁰⁶ Since Anti-Access/Area-Denial (A2AD) weapons systems and enhanced satellite surveillance continue to pose a threat to overseas bases and ports, the ability to mitigate the impact of regional threats is critical although to do so the costs relating to overseas basing must be further examined.

¹⁰³ Reuven Leopold, "Sea-Based Aviation and the Next U.S. Aircraft Carrier Design: The CVX," MIT Center for International Studies, January 1998, 4-5, http://web.mit.edu/ssp/publications/working_papers/OP-1998.pdf.

¹⁰⁴ Ibid.

¹⁰⁵ Bowie, *The Anti-Access Threat*, 2.

¹⁰⁶ Lostumbo et al., *Overseas Basing*, xxiv.

2. Overseas Basing Costs

The financial cost associated with establishing or improving existing facilities and infrastructure must be determined when considering future overseas posture changes. First, the condition of existing facilities needs to be determined to assess whether further investment is necessary and cost effective.¹⁰⁷ In addition to the current condition of prospective basing options, the renovation and modernization of existing facilities to accommodate a CSG would have to factor in the additional costs of operating a ship overseas to include: additional sea pay due to an increase in deployment status; increased fuel prices; as well as greater maintenance costs.¹⁰⁸

a. Fixed and Variable Costs

In addition to operational costs, the cost of operating overseas bases to include the fixed and variable recurring costs also factor into force posturing decisions. The fixed costs of operating an overseas base ranges from \$50 million to \$200 million annually, dependent upon service and region while recurring adjustable costs are based on the size of the base.¹⁰⁹ Based on these determinations, the RAND study on overseas basing found that the fixed costs of operating a base overseas are no higher than facilities based state-side (with the exception of Air Force bases), although the recurring variable costs were found to be higher among bases in more developed regions to include Europe and the Asia–Pacific. The recurring variable costs were found to be higher in these regions due to the higher standard of living resulting in increased allowances associated with the “cost of living, permanent-change-of-station move costs, and the need to provide schools more comprehensively.”¹¹⁰ The range of cost per individual based overseas varied from \$10,000 to almost \$40,000 annually based on service and location, dependent ratios, the local cost of living, and type of housing available. To manage the associated cost of

¹⁰⁷ Lostumbo et al., *Overseas Basing*, xxv.

¹⁰⁸ CBO, *Preserving the Navy’s Forward Presence*, 12.

¹⁰⁹ Lostumbo et al., *Overseas Basing*, xxv.

¹¹⁰ Ibid.

overseas posturing, methods to reduce the operational and basing costs must be further assessed.

b. Cost Reduction Methods

To reduce the associated costs with overseas basing there are two proposed methods, centralizing overseas bases and establishing presence through a rotational basis. While centralizing overseas bases offers a reduction in overall cost, the strategic advantages offered by the continuous presence of an overseas based CSG should not be overlooked. The flexibility offered by an overseas based CSG in its ability to quickly establish itself as a mobile airfield in the desired region offers a presence that rivals the distributed force structure offered by multiple U.S. overseas air bases. Regarding the second cost-cutting approach, despite the benefits that a rotational presence offers, it is the wrong approach to establishing CSG presence in a region for a number of reasons.

As the pressure to reduce permanent forces stationed overseas continues to increase, rotational presence is seen as the cost-saving and more efficient alternative despite its inability to deliver on either of these claims. The savings that result from the realignment of permanent forces from a base does not offset the cost of providing full presence through rotational deployments while keeping the base open. With net savings dependent upon the ability to move equipment for prepositioning, moving the requisite equipment it takes to support a CSG into and out of theater on a rotational basis would require resources exceeding those necessary to keep the base open continuously.

If the rotating presence model is further applied to overseas bases, especially in Japan where the United States only forward based CSG is homeported, it may initiate false perceptions concerning U.S. commitment to our strongest ally in the region.¹¹¹ While rotational presence was offered as a means to cut costs and increase presence to support the U.S. “pivot” to the Asia-Pacific, the military resources referred to as “key elements we’ve historically needed in this part of the world for crisis response,”¹¹² by

¹¹¹ Yoichi Kato and Asahi Shimbun, “Reexamining Japan in Global Context: The U.S. military presence in Japan in the context of the rebalance to the Asia-Pacific.” Suntory Foundation Research Project, Accessed August 30, 2016, 1–2, http://www.suntory.com/sfnd/jgc/forum/006/pdf/006_kato_en.pdf.

¹¹² Ibid.

Admiral Locklear, as CNO testifying before Congress addressing the rotational presence requirement in the Asia-Pacific. He goes on to conclude that these key elements “have not been available to the level that I would consider acceptable risk,”¹¹³ Establishing the permanent presence of a CSG in regions of national interest demonstrates U.S. commitment and builds trust and credibility among regional states while deterring adversaries.¹¹⁴ With the associated risks and costs having been addressed, the advantages must be examined to fully assess the overall value of overseas force posturing.

3. Benefits of Overseas Basing

Historically the Navy has based a small proportion of its fleet outside the continental United States. Basing or posturing of naval forces overseas increases opportunities for forward engagement offering more options, both political and military in response to threats and crisis in regions of U.S. interest. With forward-deployed naval forces uniquely skilled in the mission of forward engagement, their permanent basing overseas magnifies their overall presence in a region.¹¹⁵ The significance of the Navy to this purpose is evident in the Navy’s proposed force structure.¹¹⁶ The Navy is planning to increase its number of battle force ships based overseas from 29 to 44 ships by the end of 2024. The intention to increase overseas posture demonstrates the Navy’s value in providing political assurance in carrying out U.S. defense strategy.¹¹⁷

The Department of Defense strategic guidance stresses the need to constantly reassess its capabilities and make adjustments in order to ensure success in its core mission areas.¹¹⁸ These capabilities enabled by overseas presence include, “improving operational responsiveness to contingencies, deterring adversaries and assuring allies, and

¹¹³ Kato and Shimbun, “Reexamining Japan,” 3.

¹¹⁴ Ibid.

¹¹⁵ Moran, “Forward Engagement Requirements,” 7.

¹¹⁶ Ibid., 4–5.

¹¹⁷ CBO, *Preserving the Navy’s Forward Presence*, 13.

¹¹⁸ Department of Defense (DOD), *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012, 4, http://archive.defense.gov/news/Defense_Strategic_Guidance.pdf.

facilitating security cooperation with partner militaries.”¹¹⁹ An examination of each of these benefits or capabilities must also be considered in order to assess the enduring need for overseas presence in making current and future overseas posture recommendations.

a. *Response to Crisis and Contingencies*

The strategic benefit of increased contingency responsiveness of an overseas-based CSG lies in its increased flexibility to respond in times of crisis. With a U.S. strategy focused on the global security environment and ensuring capabilities and posture decisions are in alignment with this strategy, the broad maritime presence of a CSG will enable a flexible and rapid response to crisis offering protection of U.S. interests and allies.¹²⁰ The degree of flexibility offered by a CSG operating from an overseas base exceeds that of an overseas airbase, which may be restricted in a crisis by the host nation. These restrictions may include limiting overflight clearance or airfield operations to include the number of landings allowed—these restrictions however, do not apply to a CSG’s air wing in international waters.

A CSG based overseas also offers diversity to its global presence allowing for a range of alternatives to be leveraged in ensuring operational effectiveness is maintained in the event overseas based airfields become restricted in a crisis. Maritime forces with the ability to provide air support complement ground forces in regions of growing concern. Overseas-basing allows the U.S. to maintain a broadly distributed maritime presence enabling the rapid response of critical capabilities when necessary.¹²¹ Not only does a flexible and rapid response enable overseas-based forces to more effectively respond in times of crisis, this level of presence and response also serves as a deterrent to adversaries in the region while assuring our allies.

¹¹⁹ Lostumbo et al., *Overseas Basing*, 20.

¹²⁰ Ibid., 21.

¹²¹ Ibid., 20–21.

b. Deterrence

The permanent presence of U.S. forces in a region demonstrates a level of commitment to the security of an area that furthers U.S. national interests in a particular region beyond that of a typical deployed force.¹²² Credible deterrence as defined in the Priorities for 21st Century Defense, “results from both the capabilities to deny an aggressor the prospect of achieving his objectives and from the complementary capability to impose unacceptable costs on the aggressor.”¹²³ Overseas posturing contributes to deterrence, although not all overseas bases and forward capabilities offer the same level of deterrence. The extent to which forces in a region are able to provide relevant capabilities increases their credibility in a region through their ability to provide stability, protect U.S. interests, and protect the global commons.

The permanent presence offered by an overseas-based CSG in its ability to project power throughout the maritime domain and beyond, gives it a deterrent value unique among the armed services and even in the Navy. In the maritime domain, the ability to challenge A2AD claims by states such as China and Iran will be accomplished through the persistent presence and power projection offered by an overseas-based CSG.¹²⁴ In its deterrence role, the benefit of permanent overseas presence offers assurance to our allies furthering U.S. influence in shaping the strategic environment.¹²⁵

c. Assuring Allies and Partners

Assuring allies through constant military presence in a region influences the strategic decision-making of both allies and adversaries. The absence of such assurance would result in different strategic choices by the dominate powers in a region that may perceive a lack of presence to be a lack of interest by the U.S., consequently altering the regional balance of power.¹²⁶ An alliance strengthened through the permanent presence

¹²² Ibid., 21.

¹²³ DOD, *Sustaining U.S. Global Leadership*, 4.

¹²⁴ Ibid.

¹²⁵ Lostumbo et al., *Overseas Basing*, 21.

¹²⁶ Ibid.

of U.S. forces helps maintain the balance of power by increasing the combined military strength of the alliance and in turn the ability to deter aggression among regional adversaries.¹²⁷ While an increase in presence, especially permanent presence overseas may increase the CSG and fleets vulnerability, one can argue that the absence of presence or worse—the withdrawal of permanent overseas forces threatens U.S. security by losing the strategic influence necessary to maintain allies and prevent adversaries and aggressors from advancing their interest and position in a particular region.¹²⁸ With the physical presence of a CSG in an ally’s territory being a critical factor in fostering alliances and building influence in regions of interest, the deterrent value offered by an overseas based CSG cannot be overstated.

The ability to respond quickly with certain capabilities contributes to the level of deterrence a force projects in a region. CSGs, Amphibious Readiness Groups (ARGs)/Marine Expeditionary Units (MEUs) offer a combination of rapid response and core capabilities that enable U.S. presence in unstable regions through combat aircraft and amphibious assault. Overseas based forces further expand the deterrent posture in a region through their influence within the international system. The alliances achieved through assuring allies and partners further legitimize the U.S. use of force in a region therefore contributing to both its deterrent and assurance value.¹²⁹

d. Regional Security Cooperation

Overseas basing of U.S. forces allows for additional opportunities to interact with foreign militaries beyond those offered by temporary deployments. These opportunities allow for increased cultural awareness not only by military personnel but also by their accompanying military family members. The cultural benefits that result from the interaction with forces and families residing overseas with allies and partners are accomplished to a great extent by the overseas basing of forces. For U.S. forces to advance U.S. interests and influence through building and maintaining international

¹²⁷ John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2014), 156.

¹²⁸ CBO, *Preserving the Navy’s Forward Presence*, 4.

¹²⁹ Robert O. Keohane 1941- *Neorealism and Its Critics* (New York: Columbia University Press, 1986), 100.

coalitions, an understanding of the customs and traditions of all coalition partners is helpful. While the cost of basing forces overseas is considerably higher than U.S. based forces, the increase in the frequency and scale of security cooperation activities contributes to regional security and furthers U.S. influence that would not otherwise be possible. Security cooperation constitutes only a marginal cost of overseas based forces with these activities being combined with basic unit training contributing to overall readiness.¹³⁰

While overseas basing is beneficial to security cooperation among smaller regional partners it has the most benefit when applied to security cooperation efforts with more advanced militaries. By strengthening relationships between individuals and units among the more advanced military partners in Europe and the Asia-Pacific, interoperability is enhanced in the region while bilateral and multilateral training capabilities are also increased.¹³¹ This ability to combine security cooperation activities with core training requirements results in an increase in interoperability among partner nations that would not occur otherwise. The cost argument states that “while the incremental costs of security cooperation activities are lower with U.S. forces based overseas, the savings are not close to sufficient to offset the higher costs of basing forces overseas.”¹³²

Since the greatest level of security cooperation results from the multinational training opportunities that are available through maintaining overseas bases in Europe and the Pacific, increasing or at the very least maintaining overseas bases is critical to maintaining security cooperation. An increase in overseas basing of CSGs would allow for increased flexibility, enhancing regional activity and as result security cooperation. The relationships and professionalism that develop through frequent interactions between overseas based forces and regional allies and partners is enhanced by the continuous presence offered by an overseas based CSG. Replacing overseas-based forces with U.S.-based deployers may threaten regional relationships and the current level of experience

¹³⁰ Lostumbo et al., *Overseas Basing*, 22.

¹³¹ Ibid., 21.

¹³² Ibid., 22.

that enables security cooperation and provides balance to regions of interest to U.S. and allied forces.¹³³

With the costs and risks of overseas basing identified, possible solutions may be offered to mitigate risk and reduce costs to appropriate levels in determining the scale of overseas-based presence required to balance threats and allies in regions of interest to U.S. national security. To further assess overseas force posture, the 4 main benefits of an overseas based CSG include: the increased responsiveness to crisis and contingencies, the ability to deter adversaries while assuring allies and the stabilizing influence offered through security cooperation in the region.

Based on these advantages while minimizing costs and mitigating risks, the continued presence of overseas based forces gives the United States a strategic advantage in places where aggression would be considered a potential threat to U.S. security interests and our allies. While increasing the number of overseas-based CSGs offers a method to increasing forward presence and consequently influence in a region, an additional approach involving crew rotation must be further evaluated to determine its utility when applied to the CSG operating concept.

¹³³ Lostumbo et al., *Overseas Basing*, 22–3.

IV. CREW ROTATION

With the advantages of basing more ships and crews overseas identified, crew rotation not only makes overseas basing possible, but extends the presence of ships permanently on-station through the crew swap concept. The ability to deploy ships for an extended period of time only pulling in to port for required maintenance, port calls for the crew and to conduct turnover is only possible through crew rotation. As mentioned previously, crew rotation is a proven method of increasing forward presence by alternating crews among a shared naval platform. Proven among the SSBN, LCS, DDG, and Mine Warfare platforms to increase forward presence while reducing maintenance costs and crew fatigue—crew rotation may offer a viable approach to increasing the forward presence of the carrier and air wing while reducing overall cost.¹³⁴ In assessing the potential application of crew rotation for the CSG, the benefits and challenges to implementation must be further assessed.

The overall purpose of crew rotation is to increase the duration a ship spends operating overseas in its forward presence role. As the Navy's shipbuilding budget continues to be the target of increasing budget constraints, a reduction in the size of the fleet will require more presence from fewer assets.¹³⁵ Consequently, a smaller shipbuilding budget would prevent the Navy from expanding its presence during a prolonged crisis beyond current forward presence levels.¹³⁶ While an approach involving a multiple-crew concept offers additional forward presence, the exact amount of added presence depends on the method of crew rotation. Based on a CBO analysis, a dual or multi-crewed construct was found to provide between 1.4 and 1.8 times the presence of the traditional single-crew concept.¹³⁷ To assess the impact of crew rotation on the forward presence of the carrier, the benefits and limitations of the traditional single-crew concept must be further assessed.

¹³⁴ CBO, *Crew Rotation in the Navy*, 12.

¹³⁵ CBO, *Preserving the Navy's Forward Presence*, 4.

¹³⁶ Ibid.

¹³⁷ Ibid., 14

A. TRADITIONAL SINGLE-CREW CONCEPT

Aside from the overseas-based CSG in Yokosuka, Japan, the Navy's standard crew concept for carriers involves one crew operating one ship from a U.S.-based port. Under the current O-FRP, the overall cycle length is set at 36 months, of which 35 weeks are spent deployed, just shy of 9 months. The remainder of the cycle is spent in maintenance, training, and sustainment.¹³⁸ There are several factors that affect the amount of time a ship actually spends forward deployed to include: deployment length, ship transit speed, duration of port calls, crew training proficiency, maintenance requirements, and the ability to maintain readiness levels of surge capable forces. The end result being a U.S.-based ship will spend only 20 percent of its time deployed in the AOR. As a result, it takes 6 ships to maintain a continuous forward presence to a region over a period of 2 years.¹³⁹

1. Benefits of the Single-Crew Concept

As most carriers are based on either the East or West Coasts of the United States, they spend a considerable amount of time transiting to their overseas area of operation, time which could be better utilized for forward presence by incorporating crew rotation. While transits to an area of operations do extend deployment length and the associated costs of doing so, they are of benefit to the crew and the overseas economies in which the port visits take place.¹⁴⁰

One of the few perks of a naval deployment involves the opportunity to visit an overseas "liberty port."¹⁴¹ Since the average first-tour Sailor has never had the opportunity to experience another culture and all the sights, sounds, and tastes that go along with a port call, these rare opportunities are typically remembered as the highlight of deployment. In addition, the benefit that 5,000 Sailors and Marines eager to spend

¹³⁸ CBO, *Preserving the Navy's Forward Presence*, 9.

¹³⁹ Ronald O'Rourke, *FORCE STRUCTURE: Navy Needs to Fully Evaluate Options and Provide Standard Guidance for Implementing Surface Ship Rotational Crewing*, (Washington, DC: GAO, November 2004), 7, <http://www.gao.gov/assets/250/244711.pdf>.

¹⁴⁰ CBO, *Crew Rotation in the Navy*, 5.

¹⁴¹ *Ibid.*

their hard earned sea-pay have on the local economy is another important benefit of a traditionally deployed CSG. To include port visits, it may take a Navy ship between three and six weeks to arrive in an area of operations although; this may be reduced by increasing speed and minimizing stops en route as necessary when responding to a crisis or contingency.¹⁴² Despite the benefits of the standard CSG deployment that are mainly attributed to the unique ability of naval forces to conduct port visits, assessing the benefits of rotating crews will highlight some of the limitations of the standard CSG deployment model.

2. Challenges Associated with the Single-Crew Concept

The traditional single-crew concept under the O-FRP was developed with the intention of enabling the carrier fleet to remain flexible to the changing demand for carrier presence.¹⁴³ To achieve a desired level of forward presence, schedulers must balance maintenance, training, deployment, and sustainment with the increasing demands from the COCOMs for additional carrier presence. This is accomplished by attempting to meet the 6+1 goal of having at least six carriers deployable within 30 days and an additional carrier able to deploy within 90 days. The challenges associated with scheduling a single-crew carrier are increasing as the carrier fleet decreases and tensions throughout the world continue to escalate. Crew rotation offers an additional tool that must be further examined in its potential to give schedulers and planners the necessary flexibility to develop a more comprehensive carrier operating concept.¹⁴⁴

B. ASSESSING CREW ROTATION

Rotational crewing has several advantages over traditional deployments with the main benefit being an increase in forward presence while maintaining consistent deployment lengths. As a result of a ship remaining overseas in an AOR, crews are able to be swapped out consistently at set intervals as they are not subject to delays typically encountered as a result of a relief ship's late arrival. Under a standard deployment model,

¹⁴² Ibid.

¹⁴³ Yardley et al, *Increasing Aircraft Carrier Forward Presence*, 12–3.

¹⁴⁴ Ibid.

the delay of a relief carrier to an area where maintaining forward presence is a requirement results in the on-station ship being extended until the relief ship arrives. This typically has a trickle-down effect that impacts the schedule of the entire carrier fleet.¹⁴⁵

1. Sea Swap Experiments

The success of crew rotation is evident in the Navy's Sea Swap experiments that was conducted among DDGs from 2002–2006. These experiments aimed to keep a destroyer forward deployed longer through swapping crews on a set six month schedule.¹⁴⁶ The Sea Swap concept offers an option to reduce the amount of time spent transiting by deployed ships. The concept involves deploying ships for 12 to 24 months while rotating crews every 6 months.¹⁴⁷ The relief crew transits to a host nation port by aircraft where the two crews conduct a turnover to include a familiarization of the area and ship before their departure. The crew returning to the United States would assume duty on the relief crew's ship, ultimately swapping ships in the end.¹⁴⁸

The results of the Sea Swap experiments were mainly positive, citing the reduction in maintenance costs associated with eliminating lengthy transits and the resulting increase in forward presence as the main benefits. Other advantages included a ships ability to remain deployed continuously for up to 24 months. There were, however, a few negative side effects. First of all, while crew morale and readiness were found to be the same compared to other ships, retention rates were actually found to be lower on Sea Swap ships. This was supported by a CNA study that surveyed Sea Swap participants finding, "crew members participating in the experiment who were surveyed viewed the concept negatively and indicated they would be less likely to stay in the Navy if all deployments were conducted this way."¹⁴⁹ This negative view is likely attributed to the high turnover rate and lack of ownership among crews for the Sea Swap ships. Crew

¹⁴⁵ CBO, *Crew Rotation in the Navy*, 8.

¹⁴⁶ *Ibid.*, 5.

¹⁴⁷ *Ibid.*

¹⁴⁸ CRS, *Navy Ship Deployments*, 4.

¹⁴⁹ *Ibid.*

ownership of their vessel is engrained in the Navy's culture and history creating a strong connection between a ship and its crew.¹⁵⁰

A single crew typically lives, trains, and maintains a single ship and as a result develops a tremendous sense of pride and ownership for her, which may be absent among multi-crewed ships. This lack of ownership may translate into reduced maintenance efficiency. An example of this can be seen when a repair is required close to the turnover period. A crew expecting to be relieved soon may put off a repair in order for it to be accomplished by the relief crew. Conversely, the single-crew model gives the crew no option whether to complete the job or not forcibly creating ownership among the crew.¹⁵¹ The negative effects relating to a reduction in the retention rate due to a lack of ownership could potentially be mitigated through an increased level of effort by Navy leadership to ensure the requisite level of coordination takes place to allow for a smooth turnover between crews instilling a sense of ownership among multiple crews for the same ship.¹⁵²

2. Challenges Associated with Crew Rotation

There are additional challenges to the multiple-crew concept, including considerations for different training procedures and additional maintenance requirements. Transitioning from single to a multiple crewing option involves additional personnel and therefore updated training programs. Incorporating a multiple-crew concept would involve additional trainers and recruitment specialists. The associated maintenance and repair costs would also increase, with service life decreasing as a result of lengthy operating periods with minimal maintenance.¹⁵³

As a result of extended deployments, the carrier's nuclear power plant and hull would also wear out sooner, altering the ships fixed service life and retiring ships sooner

¹⁵⁰ CBO, *Preserving the Navy's Forward Presence*, 14.

¹⁵¹ Ibid.

¹⁵² CBO, *Crew Rotation in the Navy*, 8.

¹⁵³ CBO, *Preserving the Navy's Forward Presence*, 16.

than expected affecting shipbuilding plans.¹⁵⁴ To better accommodate the required increase in personnel, support services, and maintenance programs, several adjustments would need to be made to the existing single carrier support structure. First, maintenance periods would need to be shorter and more intense. The challenge associated with achieving the required support personnel to provide training, recruitment, and maintenance for multiple-crews increases with the size of ship. Despite the challenges, the aircraft carrier being the most expensive ship in the fleet may benefit from the advantages and efficiency of rotating crews.¹⁵⁵

In summary, the Navy declared Sea Swap a success in terms of “ship days on station, total costs, ship maintenance and material condition, and crew re-enlistment rates during deployment.”¹⁵⁶ Navy officials also determined the Sea Swap experiments to be the most effective among ships with, “high demand but low numbers.”¹⁵⁷ Additionally, the experiments were found to be even more beneficial when a particular class of ship is scheduled to retire due to maintenance costs following the deployment cycle not being a concern. With the Ford class scheduled to replace the aging Nimitz fleet with one hull being built every 5 years through 2044, the benefits discovered by Sea Swap relating to reduced maintenance among ships scheduled for decommissioning could be applied to each Nimitz class carrier as they are retired.¹⁵⁸ The Navy concluded from the Sea Swap experiments that more can be gained from its high-demand and high-cost ships by rotating crews among them rather than building more ships to meet increasing demands. As the need for the forward presence of these ships increases, the Navy should consider incorporating a crew rotation model as a tool to increasing forward presence among the carrier fleet.¹⁵⁹

¹⁵⁴ CBO, *Preserving the Navy’s Forward Presence*, 14.

¹⁵⁵ *Ibid.*, 14–16.

¹⁵⁶ CRS, *Navy Ship Deployments*, 4.

¹⁵⁷ CBO, *Crew Rotation in the Navy*, 9.

¹⁵⁸ O’Rourke, *FORCE STRUCTURE: Navy Needs to Evaluate Options*, 10.

¹⁵⁹ CBO, *Crew Rotation in the Navy*, 9.

C. APPLICATION TO THE CARRIER

As a result of the successes of crew rotation, the Navy has expressed that applying Sea Swap on a fleet wide basis may help in reducing the size of the fleet while managing presence concerns.¹⁶⁰ While the benefits of Sea Swap are clear, the framework to include measurable objectives, goals, and outcomes is still in development. Once developed, this framework would then have to be revised to assess the viability of various rotational crewing options on the carrier. An example of an effective framework for crew rotation can be seen among the SSBN community that includes detailed policies and procedures for accurately turning over a ship's condition with measures built in for accountability. Without such a framework and a lack of detailed guidance, the Navy will be unable to effectively transition a ship between rotating crews, especially as the complexity of such procedures increases with crew and ship size. Additionally a cost-effective analysis must be conducted to assess the potential impact of carrier crew rotation on crew morale, operational requirements, and ship maintenance.¹⁶¹

1. Effect on Maintenance

The effect of rotational crewing on carrier ship maintenance is another important consideration that must be further examined. Ensuring carriers are able to remain deployed for 12 to 24 months will require a strategy that incorporates the best maintenance practices from the combined lessons learned of previous crew rotation trials conducted on various platforms. As crew rotation is still an evolving process, its implementation has been focused mainly on proving its feasibility, which has allowed for a variety of maintenance approaches in an attempt to prove the crew rotation concept on each individual platform.¹⁶²

The main challenge of operating a ship continuously for up to 24 months is achieving the operational capability achieved under a system in which maintenance periods occurred previously every 6 months. Based on a CNA assessment, a ship's

¹⁶⁰ CBO, *Crew Rotation in the Navy*, 9.

¹⁶¹ CRS, *Navy Ship Deployments*, 4–5.

¹⁶² Ibid.

condition at the conclusion of the Sea Swap experiments was assessed to be “comparable” to another ship that had recently returned from a standard 6 month deployment. Upon closer investigation of Navy inspection data, however, a GAO report found the Sea Swap ship to have more deficiencies and worse inspection ratings when compared to the 6-month deployer. As a result, the study concluded that if the Navy intended to make crew rotation a standard practice it “should review the maintenance process and assess maintenance responsibilities, relationships, and costs.”¹⁶³ Additional evidence of the need for further analysis was demonstrated by the rotational crewing experiences of coastal patrol ships that did not receive more focused maintenance, which could have adversely affected the ships operational capability. Without effective maintenance strategies that address these concerns, the Navy risks not being able to maintain ships at the required readiness levels that enables crew rotation to benefit ships and Sailors.¹⁶⁴

2. Developing a Framework

Once an analytical framework has been established by conducting a thorough cost benefit analysis, an approach involving the rotation of carrier crews can be implemented and further tested in its ability to provide forward presence at a reduced or acceptable cost. One such approach was introduced in which a carrier would be allocated 125 percent of its required crew of which 25 percent would rotate at 2 and ¼ month intervals. The Navy further agreed that applying some basis of the Sea Swap concept throughout the fleet would allow the fleet to be reduced from 290 to 375 ships down to a range of 260 to 325 ships.¹⁶⁵ Since U.S. Navy officials are asserting that to fully meet the presence demands requested by the regional COCOMs, the fleet will have to be expanded to 450 ships, investigating a solution involving the rotation of crews among high-demand platforms is critical to effectively managing the Global Force Management Allocation Plan (GFMAP).

¹⁶³ O’Rourke, *FORCE STRUCTURE: Navy Needs to Evaluate Options*, 5.

¹⁶⁴ Ibid.

¹⁶⁵ Ibid., 4.

3. Managing the Carrier Fleet

The process by which decisions are made regarding how to best employ a finite number of resources among competing COCOM interests, referred to as the GFMAP has resulted in lengthening the deployment of critical assets to include carriers.¹⁶⁶ To manage this increasing demand for the forward presence of carriers and better distribute limited resources through the GFMAP, crew rotation offers a potential solution to help manage the Navy's approach to forward presence fleet-wide.¹⁶⁷ While rotational crew models have proven effective in keeping a ship forward deployed for extended periods, the logistical challenges encountered when moving large crews overseas combined with training difficulties have proved difficult to overcome. Training difficulties result from slight platform configuration differences that are not all represented accurately among the available ship simulators. In order for crew rotation to offer a viable solution to overseas presence these limitations would need to be addressed. A solution targeting base-line configuration training on simulators state-side while rotating only a proportion of the crew would alleviate large logistical challenges and offer a solution targeted at managing limited assets to improve the carrier's forward presence.¹⁶⁸ An example of crew rotation among carriers was conducted with success during the swap of three different carriers by rotating only a portion of a core crew among the various ships.

4. A Carrier Crew Swap

The crew swap technique, while not as common among CSGs, is not a foreign concept. The *Reagan*, *Washington*, and *Roosevelt* successfully executed a 3 carrier hull swap that involved more than 9,000 Sailors in safely repositioning crews and ships while conducting forward presence and forward engagement missions throughout their transit to their ultimate destination. The plan transitioned a core crew of 1,400 Sailors nicknamed the "Three President's Crew" between three hulls while successfully transferring Sailors among 3 different homeports—Yokosuka, San Diego, and Norfolk—

¹⁶⁶ O'Rourke, *FORCE STRUCTURE: Navy Needs to Evaluate Options*, 4.

¹⁶⁷ Ibid.

¹⁶⁸ O'Rourke, *Navy Force Structure and Shipbuilding Plans*, 34-5.

resulting in more than half of the Sailors ending up at their assigned homeports at the completion of the transit. While the 3-way hull and crew swap was focused mainly on repositioning ships and crews to their newly assigned homeports and overseas duty-stations, it also resulted in forward engagement opportunities for the *Reagan* as she transited around South America and for the remaining ships to continue with their assigned maintenance and deployment phases.¹⁶⁹ The result of such efficient planning and resource management offers an option that will ultimately result in an increase in forward presence through careful planning and resource management. Only through assessing the various approaches as demonstrated throughout this thesis, can a more efficient carrier employment concept be developed to maximize resources in achieving the desirable level of forward presence.

¹⁶⁹ Gidget Fuentes, "Carrier Hull Swap Ends with Return of Last of 'The Three President's Crew,'" USNI News, January 16, 2016, <https://news.usni.org/2016/01/16/carrier-hull-swap-ends-with-return-of-last-of-the-three-presidents-crew>.

V. CONCLUSION

The Navy's ability to project forward presence relies on formulating a U.S. strategy that links the appropriate size and force structure with demands from regional COCOMs and policy makers. As the demand and force structure of the Navy and carrier fleet changed dramatically from the post-Cold War, the carrier employment model has adapted mainly by scheduling lengthier deployments or extending current deployments. Such a reactionary model lacks the planning necessary to allow for a more comprehensive approach that matches a strategy centered on forward presence and crisis response with available resources. The only consistency in developing such a model is the changing nature of conflict and the certainty that the Navy and CSG will continue to play a predominant role in shaping the future of warfare through its forward presence.

The combined utility of the carrier and air wing allow for unmatched power projection. The CSG's strategic value is defined by its attributes. These attributes to include territorial sovereignty, flexibility, and freedom of movement enable it to employ capabilities that make it a unique strike platform immune from the limitations and vulnerabilities of land-based strike fighter bases. Capabilities that give it its power projection also give the CSG its deterrent value in which its mere presence is enough to influence an adversary's decision-making. Its stabilizing effect is also attributed to its flexibility in adapting to carry out a variety of missions other than strike and its mobility in responding to crisis and contingencies. Through a distinctive set of attributes and capabilities, the CSG is an ideal forward presence platform with a proven ability to adapt quickly while remaining strategically positioned and ready to counter emerging threats. Despite the advantages offered by the carrier, examining carrier employment cycles revealed a model that relied on extending deployments to fill presence gaps mainly due to maintenance cycle delays. Extended deployments were also found to increase maintenance costs and potentially reduce life expectancy goals. An alternative approach proposes reducing deployment length through the more efficient allocation and management of resources while incorporating two main techniques to increasing forward presence.

To achieve the increasing demand for forward presence, extending deployments only offers a temporary solution that ultimately results in gaps in overseas coverage. Reducing deployments, however, was found to increase a CSG's ability to respond to crisis or contingencies due to an increased sustainment period. While this doesn't always translate into an immediate increase in forward presence, it allows U.S. forces the ability to maintain the highest level of readiness (MCO-R) longer during the sustainment phase offering a more targeted approach to forward presence. By rethinking forward presence, an alternative focused more on presence with a purpose rather than marking time offers a better use of constrained resources. Combining a more prudent use of resources with a strategy focused on increasing overseas carrier basing locations while implementing a carrier crew rotation concept gives planners and policy makers more options and flexibility in employing a CSG.

The most measurable benefit of overseas-basing is the 3 fold increase in forward presence when compared to CSG based stateside.¹⁷⁰ An increase in forward presence, however, does not come without associated challenges to include risks and costs which must be assessed and mitigated through conducting a cost-benefit analysis in assessing potential basing locations. The measurable variables to include the costs associated with operating a carrier overseas far exceed those of operating U.S. homeported carriers even when comparing the cost of homeported vs. overseas presence. A model for assessing the viability of overseas carrier basing locations similar to the CSIS study that assessed HMAS Perth as a potential U.S. carrier homeport must be utilized. The CSIS study offers a model to be emulated when weighing force posture options based on criteria identified as essential to the success of overseas forces based in a particular region.

The benefits of an overseas based CSG are immeasurable. Since the advantages of overseas-basing also include intangible benefits such as increased cultural awareness of both foreign and U.S. armed forces as well as the cultural exchanges of accompanying family members, a cost-benefit analysis may overlook the benefit of certain latent variables. For example, although it is difficult to quantify the deterrent value of overseas

¹⁷⁰ O'Rourke, *Navy Ship Deployments*, 12.

based forces, it must be considered in the analysis. While it seems apparent that the CSG's role in deterring adversaries and assuring allies is demonstrated mainly through its overseas-based commitment, this may be difficult to support through empirical analysis. Despite this, it is difficult to disprove that overseas-basing combined with the increased forward presence of a CSG gives the U.S. more influence in shaping the international environment, in turn furthering U.S. interests in a specific AOR. Regardless of these difficulties, the latent variables relating to overseas presence of a CSG offer advantages that collectively contribute to U.S. strategic influence, which although may be difficult to discern through analysis must be considered and factored into the decision-making process. As overseas-based CSGs offers an option for policy-makers and military leadership to increase forward presence, a rotational crew concept offers an approach to complement overseas-based forces in allowing for the maximum potential forward presence to be gained through a combined approach.

Crew rotation concepts to include Sea Swap are used by overseas forces successfully although the carrier has yet to benefit from a CSG focused crew swap model. As crew rotation continues to evolve in its application to larger platforms to include carriers, the benefits will become more apparent. While a comprehensive cost-benefit analysis is difficult to conduct with respect to overseas-basing, an analysis involving crew rotation in its application to the carrier is yet to be conducted. Such analysis must be conducted based on a model derived from the lessons learned from the experiences gained from other platforms. Since it is difficult to fully develop a crew swap model for the carrier based on the lessons learned from smaller platforms with fewer Sailors and therefore fewer logistical concerns, a proportional crew swap model may offer a testable solution to assess the merits of the concept when applied to the carrier.

To develop a framework to consistently manage the rotational crewing among carriers, guidance and proven practices must be incorporated from platforms that have demonstrated success with crew rotation to include the SSBN and DDG platforms. Only through developing and utilizing the lessons learned from existing crew rotation models and experiments will the Navy be able to avoid previous mistakes in applying an effective crew swap framework to the carrier. Once a framework is developed, its

application to the carrier can be tested on a proportional level to see if it achieves the measurable goals and operational objectives established by the framework's guidance. Through only rotating a certain percentage of the crew for a set duration, logistical challenges will be alleviated while reducing deployment duration experienced by the individual crewmembers. Additional oversight and accountability of the carrier crew swap concept will be required to ensure a culture of ownership is maintained among crews in order to effectively manage crew morale, operational capacity, and maintenance costs. A solution may be found in increasing carrier manning above 100 percent allowing for the additional crew to rotate aboard at set intervals, however in order to be successful, streamlining home-port simulator training among the varying platform configurations will need to be incorporated into the model. Addressing this training requirement will ensure the requisite level of knowledge and training is maintained among crews prior to rotating aboard. In addition to training, the maintenance cycle under a proportional crewing model will require a carrier to remain at seas for extended periods that may require a revised maintenance strategy that balances extending ship deployments while not degrading overall ship life. Achieving such a balance is important to ensure crew rotation is getting maximum return on investment for its forward presence.

A combined approach allowing for the increase in overseas presence and crew rotation offers policy-makers and leadership to include the national command authority more options and therefore increased flexibility in applying the Navy's role in forward presence to maintain and pursue U.S. national interests. However, more planning and foresight is necessary if we are going to meet forward presence demands with current and forecast ship-building budgets and resource constraints while attempting to limit deployments to a more reasonable 6 month duration. Limiting deployments through effective planning and resource management offers the ability to meet and possibly exceed current forward presence levels.

By thoroughly examining all possible options to maximizing forward presence of the carrier fleet, the Navy can rebalance budgets, operational capabilities, and the overall deployment process in ensuring it takes care of its most valuable asset—its people. An emphasis on planning instead of the tendency to react with a quick fix involving a

deployment extension is needed to avoid critical gaps in overseas presence. Designing a fleet wide architecture that incorporates proven approaches allows for the combined strengths of each to collectively manage forward presence concerns. In doing so, each platform and CSG will expand its forward presence role through adapting its capabilities to meet and exceed operational requirements further refining the fleet employment concept resulting in its continued evolutionary progress.

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

- Baer, George W. *One Hundred Years of Sea Power: The U.S. Navy, 1890–1990*. Stanford, CA: Stanford University Press, 1994.
- Bowie, Christopher J. *The Anti-Access Threat and Theater Air Base*. Washington, DC: Center for Strategic and Budgetary Assessments, 2002. <http://csbaonline.org/wp-content/uploads/2011/03/2002.09.24-Anti-Access-Threat-Theater-Air-Bases.pdf>.
- Center for Naval Analyses. *2012 Year in Review*. Alexandria, VA: CNA, 2012. https://www.cna.org/CNA_files/PDF/CMM-2013-U-004103-Final.pdf.
- Center for Strategic and International Studies. *U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment*. Washington, DC: CSIS, 2012. http://csis.org/files/publication/120814_FINAL_PACOM_optimized.pdf.
- Chief of Naval Personnel. *Navy Personnel and Operating Tempo Program*. OPNAVINST 3000.13D. Washington, DC: Department of the Navy, 2014. <https://doni.daps.dla.mil/Directives/03000%20Naval%20Operations%20and%20Readiness/03-00%20General%20Operations%20and%20Readiness%20Support/3000.13D.pdf>.
- Congressional Budget Office. *An Analysis of the Navy’s Fiscal Year 2016 Shipbuilding Plan*. October 2015. https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/50926-Shipbuilding_OneCol-2.pdf.
- . *Crew Rotation in the Navy: The Long-Term Effect on Forward Presence*. 2007. <https://www.cbo.gov/publication/19283>.
- . *Preserving the Navy’s Forward Presence with a Smaller Fleet*. March 2015. <https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/49989-ForwardPresence-2.pdf>.
- Department of Defense. *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*. January 2012. http://archive.defense.gov/news/Defense_Strategic_Guidance.pdf.
- Dorman, Andrew, Mike Lawrence Smith, and Matthew Uttley. *The Changing Face of Maritime Power* (New York: St. Martin’s Press, 1999).
- Fuentes, Gidget. “Carrier Hull Swap Ends with Return of Last of ‘The Three President’s Crew’” USNI News, January 16, 2016. <https://news.usni.org/2016/01/16/carrier-hull-swap-ends-with-return-of-last-of-the-three-presidents-crew>.

- Golding, Heidi L.W. and Henry S. Griffis. *How Has PERSTEMPO's Effect on Reenlistments Changed Since the 1986 Navy Policy?* Alexandria, VA: CNA, 2004. https://www.cna.org/CNA_files/PDF/D0008863.A2.pdf.
- Goure, Daniel, "The Tyranny of Foreign Presence." *Naval War College Review*. Summer 2016. ProQuest. DOI: 60141111.
- Ho, Ben Wan Beng. "The combat utility of the U.S. fleet aircraft carrier in the post-war period." *Journal of Military and Strategic Studies*, 16, no. 4 (2016): 67–105. <http://jmss.org/jmss/index.php/jmss/article/view/640/pdf>.
- Johnson, Jay L. and Charles C. Krulak. "Forward Presence Essential to American Interests." U.S. Navy. Last modified August 17, 2009. <http://www.navy.mil/navydata/policy/fromsea/fwdpresn.html>.
- Kato, Yoichi and Asahi Shimbun. "Reexamining Japan in Global Context: The U.S. military presence in Japan in the context of the rebalance to the Asia-Pacific." Suntory Foundation. Accessed August 30, 2016. http://www.suntory.com/sfnd/jgc/forum/006/pdf/006_kato_en.pdf.
- Kazianis, Harry. "The A2AD Hit List," *Diplomat*. April 20, 2013. <http://thediplomat.com/2013/04/the-a2ad-hit-list/>.
- Keohane, Robert O. 1941- *Neorealism and Its Critics*. New York: Columbia University Press, 1986.
- Lambeth, Benjamin S. *American Carrier Air Power at the Dawn of a New Century*. Santa Monica, CA: RAND, 2005.
- Leopold, Reuven. "Sea-Based Aviation and the Next U.S. Aircraft Carrier Design: The CVX." MIT Center for International Studies. January 1998. http://web.mit.edu/ssp/publications/working_papers/OP-1998.pdf.
- Lindsey, Bruce and Heather Quilenderino. "Operationalizing Optimized Fleet Response Plan– SITREP #1." USNI. March 2016. <https://blog.usni.org/2016/03/05/operationalizing-optimized-fleet-response-plan-sitrep-1>.
- Lostumbo, Michael J., Michale J. McNerney, Eric Peltz, Derek Eaton, David R. Frelinger, Victoria A. Greenfield, John Halliday, Patrick Mills, Bruce R. Nardulli, Staci L. Pettyjohn, Jerry M. Sollinger, and Stephen M. Worman. *Overseas Basing of U.S. Military Forces: An Assessment of Relative Costs and Strategic Benefits*. Santa Monica, CA: RAND, 2013. http://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR201/RAND_RR201.sum.pdf.

- Maksel, Rebecca "The Future of Aircraft Carriers." *Air & Space*. January 15, 2015. airspacemag.com/daily-planet/future-aircraft-carriers-180953905.
- Mearsheimer, John J. *The Tragedy of Great Power Politics*. New York: W.W. Norton & Company, 2014.
- Moran, Daniel. "Forward Engagement Requirements for U.S. Naval Forces: New Analytical Approaches." Washington, DC: Deputy Chief of Naval Operations, 1997.
- Naval History and Heritage Command. "U.S. Navy Active Ship Force Levels, 1938–1944." January 13, 2016. <http://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html>.
- O'Rourke, Ronald. *FORCE STRUCTURE: Navy Needs to Fully Evaluate Options and Provide Standard Guidance for Implementing Surface Ship Rotational Crewing*. GAO: November 2004. <http://www.gao.gov/assets/250/244711.pdf>.
- . *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*. (CRS Report no. RL32655). Washington DC: Congressional Research Service, May 27, 2016, <https://www.fas.org/sgp/crs/weapons/RL32665.pdf>.
- . *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress* (CRS Report no. RS20643). Washington DC: Congressional Research Service. April 5, 2016. <https://www.fas.org/sgp/crs/weapons/RS20643.pdf>.
- . *Navy Ship Deployments: New Approaches –Background and Issues for Congress* (CRS Report no. RS21338). Washington, DC: Congressional Research Service. November 15, 2004. <http://fas.org/man/crs/RS21338.pdf>.
- Paulsen, James. *Is the Days of the Aircraft Carrier Over?* (AU/ACSC/217/1998-04). Maxwell AFB, AL: Air Command and Staff College, 1998. <https://fas.org/man/dod-101/sys/ship/docs/98-217.pdf>.
- Polmar, Norman. *Aircraft Carriers: A Graphic History of Carrier Aviation and Its Influence on World Events*. (Garden City, NY: Doubleday, 1969.
- Ryan, Michael C. *OPTEMPO and PERSTEMPO: Are U.S. Forces doing Too Much?* Washington, DC: Congressional Research Service. 1998. <http://congressionalresearch.com/98-41/document.php>.
- Tangredi, Sam J. *Anti-access Warfare: Countering A2/AD Strategies*. Annapolis, MD: Naval Institute Press, 2013.

- . “The Rise and Fall of Naval Forward Presence.” *U.S. Naval Institute Proceedings*, Vol. 126, No 5 (May 2000).
<http://connection.ebscohost.com/c/articles/3162796/fall-rise-naval-forward-presence>.
- U.S. Forces Command and Commander, U.S. Pacific Fleet. “Coordinated Fleetwide Message on FRP from the Commander.” April 24, 2004.
http://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=200&ct=4.
- U.S. Government Accountability Office. *Military Readiness: Progress and Challenges in Implementing the Navy’s Optimized Fleet* (GAO-16-466R). Washington DC: May 2, 2016. <https://news.usni.org/2016/05/03/document-gao-report-on-u-s-navy-optimized-fleet-response-plan>.
- U.S. Navy. *2014 Navy Retention Study*. Washington, DC: Department of Defense, September 2014. <http://www.military.com/PDF/2014-Navy-Retention-Study-Report-Full.pdf>.
- Yardley, Roland, James Kallimani, John Schank, and Clifford Grammich. *Increasing Aircraft Carrier Forward Presence: Changing the Length of the Maintenance Cycle*. Santa Monica, CA: RAND: 2008.
http://www.rand.org/content/dam/rand/pubs/monographs/2008/RAND_MG706.pdf.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California