THE ARMY'S ROLE IN THE AIR/SEA BATTLE CONCEPT: A WORLD WAR II PACIFIC THEATER CASE STUDY

A Monograph

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With the end of the Iraq War and drawdown in Afghanistan, the United States (U.S.) is shifting strategic focus to the Pacific Ocean and countries therein. Reliant on its carrier fleet and air power for power projection, the U.S. envisions a future combat environment where a belligerent nation attempts to prevent these forces from success, through anti-access and area-denial strategies. This concept is formulated into the Air/Sea Battle concept, which relies on U.S. technological advantages to ensure access. The strategy does not adequately address the logistical needs of the joint services, nor does it account for increasing lethality in ballistic anti-ship missile technology. Improved capabilities in anti-ship ballistic missiles increase the range from which a carrier group can safely operate, placing greater importance on ground based aircraft and bases. The U.S. Army's role in Air/Land Battle is to establish and defend numerous Pacific bases and support naval/air forces, prior to decisive action.

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ABSTRACT

THE ARMY'S ROLE IN THE AIR/SEA BATTLE: A WORLD WAR II PACIFIC THEATER CASE STUDY, by Major John Gervais, 55 pages.

With the end of the Iraq War and drawdown in Afghanistan, the United States (U.S.) is shifting strategic focus to the Pacific Ocean and countries therein. Reliant on its carrier fleet and air power for power projection, the U.S. envisions a future combat environment where a belligerent nation attempts to prevent these forces from success, through anti-access and area-denial strategies. This concept is formulated into the Air/Sea Battle concept, which relies on U.S. technological advantages to ensure access. The strategy does not adequately address the logistical needs of the joint services, nor does it account for increasing lethality in ballistic anti-ship missile technology. Improved capabilities in anti-ship ballistic missiles increase the range from which a carrier group can safely operate, placing greater importance on ground based aircraft and bases. The U.S. Army's role in Air/Land Battle is to establish and defend numerous Pacific bases and support naval/air forces, prior to decisive action.

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ACRONYMS

SWPA	Southwest Pacific Area
JOAC	Joint Operational Access Concept
JCS	Joint Chiefs of Staff
USC	U.S. Code
WWII	World War II

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INTRODUCTION

In January 2012, the Department of Defense released an updated Defense Strategic Guidance, shifting United States (U.S.) military priority to the Asia-Pacific Theater. This policy requires the ability for the military to operate effectively in an Anti-Access/Area-Denial environment, spawning the development of the Joint Operational Access Concept (JOAC).[1] A key tenet of the JOAC concept is the theory of Air/Sea Battle, which, "focuses on ensuring that joint forces will possess the ability to project force as required to preserve and defend U.S. interests well into the future."[2] Air/Sea Battle implies the U.S. Air Force and Navy operating in a non-permissive environment, far from U.S. territorial waters and airspace, necessitating forward bases for resupply. Under Title 10 of the U.S. Code (USC), the Army holds primary responsibility for logistical support to the joint services.[3] This requirement mandates that the U.S. Army secure and operate logistical bases in the Asia-Pacific as well as associated sea lines of communication (LOCs).

The U.S. Navy and Air Force developed the concept of Air/Sea Battle with a focus on the tactical aspects of maintaining access to a contested region. However, developers placed little emphasis on the basing requirements for sustained operations. Instead, JOAC suggested a variety of basing options to counter the loss of a central logistical base.[4] This assumption indicated a

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[1]Secretary of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington, DC: Department of Defense, January 2012), U.S. Department of Defense, http://www.defense.gov/news/defense_strategic_guidance.pdf (accessed 3 May 2013), 5.

[2]Chairman, Joint Chiefs of Staff (JCS), *Joint Operational Access Concept (JOAC)* (Washington, DC: U.S. Department of Defense, 17 January 2012), 4.

[3]U.S. Congress, House, Committee on Armed Services, Title 10, United States Code Armed Services, 113th Cong., 1st sess., July 2011, U.S. Government Printing Office, http://www.gpo.gov/fdsys/pkg/CPRT-112HPRT67344/pdf/CPRT-112HPRT67344.pdf (accessed 27 April 2013), part 153.

[4]Chairman, JCS, *JOAC*, 20.

belief that enemy area-denial efforts would focus on decisive battle with U.S. combat power, rather than attack strategic targets that support the Air/Sea Battle. Even though the Air/Sea Battle was a temporary operation to maintain access into a theater, it placed little emphasis on the need for strategic bases as staging sites for support and possible follow-on land operations. The JOAC conducted research on securing logistical bases and sea LOCs, but the research was of a limited nature and did not assign or recommend an organization to fill the role. This study sought to determine the role of secure operating bases as part of Air/Sea Battle, with emphasis on the Pacific Theater, as this was the focus of debate concerning the concept. The U.S. Army role in Air/Sea Battle is the development and security of log bases, infrastructure and LOCs in the Pacific joint logistics area.

The purpose of this study was to determine the operational impacts of secure operating bases in the Pacific using the World War II (WWII) Pacific Campaign as a case study. The WWII Pacific Campaign accurately reflected the area-denial environment in which U.S. air and naval forces would operate in the event of hostilities. The failure of U.S. ground forces to maintain possession of strategic Pacific island bases, resulted in four years of amphibious operations to gain the operational reach, operational tempo and flexibility to defeat Japan. While technology has advanced since WWII and the means of denying these bases no longer solely rests with an enemy ground force, the overarching need to secure these bases and LOCs remained.

The significance of this study is paramount as it demonstrates proper integration of the Army into the Air/Sea Battle theory. Since the Army has U.S. Title 10, USC logistical support responsibility to the joint force, incorporation of this role into the Air/Sea Battle plan is vital. The results of this study may be used by operational planners to demonstrate that secure operating bases increase options for the Joint Force Commander when implementing Air/Sea Battle.

DEFINITION OF TERMS

Terminologies used are in keeping with current U.S. military doctrine. Where possible doctrinal definitions are used. However, in many cases for the purposes of this study, doctrine did not adequately reflect the evolving concept of the Air/Sea Battle. Key definitions listed below are a point of reference to clarify terms used throughout the study.

Air/Sea Battle: The integration of air, land, naval, space, and cyberspace forces to provide combatant commanders the capabilities needed to deter and if necessary, defeat an adversary employing sophisticated anti-access/area-denial capabilities. This also includes the logistical support necessary to sustain operations short of decisive battle.[5]

Anti-access Operations: Enemy actions and capabilities, usually long-range, designed to prevent an opposing force from entering an operational area. These include the following: submarines, anti-ship missiles and terrorist attacks.[6]

Area-Denial: Enemy actions and capabilities designed not to keep an opposing force out, but to limit its freedom of action within the operational area. These include the following: enemy naval surface ships, enemy naval and land based aircraft, enemy ground forces, ballistic/cruise missiles and weapons of mass destruction.[7]

As the focus of the study, area-denial is a significant threat to the Air/Sea Battle concept in the Pacific. Air/Sea Battle seeks to achieve decisive action against enemy defenses and either seize the initiative, or prevent the enemy from maintaining or gaining advantages. It assumes a rapid outcome to hostilities; however, history demonstrates that most conflicts in the Pacific Theater are prolonged. Additionally, the nation that controls key Pacific bases and their

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[5]Chairman, JCS, *JOAC*, 4.

[6]Ibid., 9.

[7]Ibid., 10.

associated sea LOCs gains ultimate victory. Although the U.S. is a Pacific nation, the logistical routes of potential adversaries are considerably shorter. For example, the distances from San Francisco to Guam, a major U.S. Pacific base is 5,565 nautical miles (nm) and Guam is 1,130 nm from the next closest base at Okinawa[8]. Effectively, this vast area is the joint logistics area, requiring defense. Maintaining secure bases increases operational reach, tempo and flexibility. The WWII Pacific Campaign is an effective model of logistical basing and support, which the Pacific Air/Sea Battle concept can mirror.

This study investigates operational reach, tempo and flexibility as a function of Pacific basing during WWII. Secure logistical bases serve to support the joint force by providing key components to the Air/Sea Battle concept. When the number of secure bases increases then operational reach increases. When the number of secure bases increases then the operational tempo increases. When the number of secure bases increases then operational flexibility increases. The increases in operational reach, tempo and flexibility are necessary for the Air/Sea Battle concept to function properly.

Simple quantitative comparison of WWII Pacific basing is inadequate to support or refute the study's hypotheses. A more comprehensive understanding is gained with a broader study of Pacific logistics plan. To investigate the aforementioned hypotheses, during the WWII Pacific Campaign, what was the operational logistics plan? During the WWII Pacific Campaign, how many log bases existed during the WWII Pacific Campaign? How did basing during the WWII Pacific Campaign impact joint operations? Who/what, organization was responsible for operational logistics during the WWII Pacific Campaign? How did basing during the WWII Pacific Campaign extend operational reach? How did basing increase operational tempo during

[8]Jon van Tol, Mark Gunzinger, Andrew F. Krepinevich, and Jim Thomas, "Airsea Battle: A Point-of-Departure," Center for Strategic and Budgetary Assessments Study, Washington, DC, 18 May 2010, 12.

the WWII Pacific Campaign? How did basing increase operational flexibility during the WWII Pacific Campaign?

The changing nature of partnerships and regional alignments in the Pacific does not guarantee that current U.S. basing operations will remain constant, nor do all basing options available in WWII exist today. Still, the WWII Pacific Campaign case study serves as a model for Air/Sea Battle basing. It is unknown if current U.S. Army force structure will be shifted adequately to secure all necessary bases in the Pacific, given competing global requirements.

The delimitations used by the researcher in this study were determined to focus the Air/Sea Battle concept to the Pacific Theater. This omission of other theaters was intentional to comply with Presidential guidance shifting priority to Asia. Other case studies of prior wars in other theaters may demonstrate the secure basing concept being critical to Air/Sea Battle, but this paper does not address other regions or conflicts. A second delimitation is the joint services Title 10, USC requirement for self-logistical support. The Army has primary logistical support obligations that are independent of service branch responsibility for certain internal aspects of support. However, since theater support ultimately would flow through Army Title 10, USC support, the joint services effectively meet their obligations. Hence, this paper does not discuss the issue.

This study included the following assumptions: the U.S. government will continue to support the strategic alignment to the Pacific; the Army will maintain its Title 10, USC logistics responsibility and will not cede this role to the theater combatant commander; and Air/Sea Battle theory will continue to be the predominant concept of maintaining access to opposed territory and enemy containment.

LITERATURE REVIEW

The study is arranged in three areas. First, the Air/Sea Battle concept is explored and its need for operational reach, tempo and flexibility for proper employment. Using this information,

a case study is conducted, with evidence presented to support the assertion. Historical evidence is then compared to the current Air/Sea Battle concept. Concluding the study, historical evidence suggests ways to improve the current Air/Sea Battle concept.

This study presents the rationale for conducting research on the assertion that the U.S. Army's role in Air/Sea Battle is the development and security of log bases, infrastructure, and LOCs in the joint logistics area. Its purpose is to demonstrate the necessity of integrating the U.S. Army into the concept. The Air/Sea Battle concept encompasses the joint forces acting in concert against the full range of enemy denial assets. These include naval and air conventional forces, ballistic and cruise missiles as well as asymmetric threats, such as cyber warfare. Air/Sea Battle doctrine's beginnings lie in the post-Soviet collapse, as U.S. planners struggled to cope with new military realities of force projection and entry-denial. Naval and Air Force planners envisioned an operational environment in which enemy forces would prevent use of necessary infrastructure to prevent employment of heavy U.S forces. The Army, as the projection branch, rather than an initial strike force, was largely absent from Air/Sea Battle concept development. History demonstrates that omitting ground forces is a flawed concept.

The battlefield certainty, which dominated military thought for four and a half decades, came to an abrupt end in 1990 with the collapse of the Soviet Union. Potential conflict locations were now global and U.S. planners understood that the ability to project combat power into contested regions was the principal challenge for future wars. For this reason, in the early 1990s, U.S. military leaders began formulation of a theory to prevent any potential enemy from denying U.S. force projection.[9] Building on this initial framework, in 1997 U.S. Secretary of Defense William Cohen initiated the National Defense Panel to develop a comprehensive framework for

[9]Andrew Krepinevich, Barry Watts, and Robert Work, "Meeting the Anti-Access and Area-Denial Challenge," Center for Strategic and Budgetary Assessments Study, Washington, DC, 20 May 2003, ii.

U.S. military operations in the post-Soviet era. The concept of enemy anti-access was a featured point in the panel's recommendations, advocating a "radical alternation in the way we project combat power," and warning that future adversaries would, "deny us access to key regions and facilities."[10] The Air/Sea Battle concept became pseudo-doctrine of the U.S. in 2012, with the publication of the *Joint Operational Access Concept*. According to Richard Bitzinger, the tenets of the theory are to destroy the enemy's intelligence gathering capabilities, conduct an anti-missile campaign, and conduct follow-up operations such as a "distant blockade."[11] The absence of Army integration into the concept, reliance on decisive battle, the absence of sustained operations concepts that require extended LOCs, and the idea of "distant blockade," are eerily similar to the ill-conceived pre-WWII, *War Plan Orange*, with its obsolete Mahanian naval theory.

Three key factors serve to determine the success or failure of a given military endeavor. These are: operational reach, operational tempo and operational flexibility. History repeatedly shows that when a military loses one or all of these, culmination soon follows. For example, one need only look at the Japanese Port Moresby invasion force on Rabaul during WWII. As allied forces seized territory around the island, Japanese forces suffered reduced capability to strike decisively over distance. Moreover, they lost the initiative and ability to project combat power throughout the region even though a sizeable force remained there until the end of the war. The neutralization was part of the allied plan, Operation Cartwheel, which the Allied staff modified in

[10]Honorable William S. Cohen, Report of the National Defense Panel, *Transforming Defense National Security in the 21st Century* (Arlington, VA: National Defense Panel, December 1997), 12, 33.

[11]Richard A. Bitzinger and Michael Raska, "The AirSea Battle Debate and the Future of Conflict in East Asia," RSIS Policy Brief, S. Rajaratnam School of International Studies, Nanyang Technical University, Singapore, February 2013, 4.

August 1943 to eliminate Japanese operational tempo, reach and flexibility.[12] These factors remain key to modern operations and are rarely achieved in a single decisive action.

U.S. Joint Publication (JP) 3-0, *Joint Operations*, defines operational reach as, "the distance and duration across which a joint force can successfully employ its military capabilities."[13] However, this definition suggests decisive operations. Allan Gropman defines reach as, "the distance over which military power can be concentrated and employed decisively."[14] He further elaborates that decisiveness is not merely the ability to strike at a given point and place, rather the ability to mass force, exploit a struck blow and do it decisively.[15] For the purposes here, operational reach emphasizes the ability to employ military force over distance and extended duration.

U.S. joint doctrine does not define operational flexibility, instead placing it in the category of an operating precept.[16] This is misleading since flexibility is more than a simple directive that drives planning. In his book, *In Pursuit of Military Excellence,* Shimon Naveh, asserts that, "Operational flexibility is attained through planning and implementation which strive to harmonize the available resources and forces with the theatre conditions in a manner which permits the accomplishment of the operational aim despite the opposition."[17] While flexibility

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[12]Maurice Matloff, U.S. Army Center of Military History, Publication 1-4, *Strategic Planning for Coalition Warfare 1943-1944* (Washington, DC: U.S. Army Center of Military History, 1959), 206-207.

[13]Chairman, Joint Chiefs of Staff (JCS), Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Joint Chiefs of Staff, 11 August 2011), III-28.

[14]Alan Gropman, ed., *The Big "L" American Logistics in World War II,* 1st ed. (Washington DC: National Defense University Press, 1997), 195.

[15]Ibid.

[16]Chairman, JCS, JP 3-0, I-3.

[17]Shimon Naveh, *In Pursuit of Military Excellence,* ed . Gabriel Gorodetsky (London, UK: Frank Cass Publishers, 1997), 137.

does focus on synchronization, it also generates options. In his book, *Operational Logistics: The Art and Science of Sustaining Military Operations*, Dr. Moshe Kress stresses that operational flexibility increases the number of operational alternatives and thereby reduces the, "number and severity of operational constraints."[18] For this study of Air/Sea Battle, operational flexibility is this increase in alternatives in conjunction with harmonization of available forces.

JP 3-0, *Joint Operations*, references operational tempo several times, but the term is never strictly defined. Dr. Gary Bjorge, defines operational tempo as the, "rate of military action."[19] He further expounds this definition by stressing that the military force that is able to maintain the highest operational tempo will maintain the initiative and force the enemy to react. This forces the enemy to respond, which subsequently reduces his opportunities and chances of gaining the initiative.[20] Operational tempo is defined here as the rate of military action that allows a military to seize and maintain the initiative.

Increases in operational reach, tempo and flexibility are necessary for the Air/Sea Battle concept to function properly. Possessing forward land bases in a given theater is the only way to ensure each of these criteria. However, since the Navy and Air Force were the primary developers of the Air/Sea Battle concept, less importance is placed on land bases in the proximity of potential adversaries. While the JOAC dedicates two pages describing the need for basing options and admitting that land bases are needed to sustain the battle logistically, the emphasis is on sea-basing to reduce reliance on partnered nations.

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[18]Moshe Kress, *Operational Logistics: The Art and Science of Sustaining Military Operations* (Norwell, MA: Kluwer Academic Publishers, 2002). 167.

[19]Gary Bjorge, Leavenworth Paper No. 22, *Moving the Enemy : Operational Art in the Chinese PLA's Huai Hai Campaign* (Fort Leavenworth, KS : Combat Studies Institute Press, 2003), 173.

[20]Ibid.

This idea dates back to the initial formulation of the Air/Sea Battle concept. In 2002, Undersecretary of Defense Paul Wolfowitz stated that, "We must, therefore, reduce our dependence on predictable and vulnerable base structures by exploiting a number of technologies."[21] Thus, the JOAC decreased land basing priority, and increased focus on expeditionary forces, supported with technologically advanced weapons platforms, attacking directly from the point of debarkation with sea basing logistical support.[22] Put another way, Air/Sea Battle accepted an extreme logistical tail, since the Air Force could refuel mid-air and the Navy had sea-basing capability. There existed a dichotomy between the intent of the JOAC basing options and the implementation of theater logistics support.

The current Pacific Theater serves as a good example of assessing the Air/Sea Battle Concept and independent research focuses on this theater. When the number of secure bases increased then operational reach increased. The idea of increasing bases to increase operational reach was not a new concept. As Dr. Kurt Campbell stated in an article for *Foreign Affairs* in 2003, military planners were preparing to shift forces from concentrated bases in Europe to smaller bases in the Pacific, which could be reinforced in the event of hostilities.[23] Indeed, The Center for Strategic and International Studies stated in an August 2012 report, that the U.S. increasing the number of bases in the Southeast Asian area would not require a significant military presence, would decrease the time to react to a threat and free the U.S. from the "tyranny of distance."[24] The U.S. Army is currently developing a sister concept to meet the intent of the

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[21]Krepinevich, et al., ii.

[22]Chairman, JCS, *JOAC*, 19.

[23]Kurt M. Campbell and Celeste Johnson Ward, "New Battle Stations," *Foreign Affairs* 82 (September/October 2003): 2.

[24]Michael J. Green, Gregory T. Kiley, and Nicholas F. Szechenyi, *U.S. Force Posture Strategy in the Asia Pacific Region : An Independent Assessment* (Washington, DC: Center for Strategic and International Studies, August 2012), 19.

JOAC and correct the omissions from the Air/Sea Battle concept to extend operational reach. For example, the March 2012 joint Army/Marine initial concept outline, "Gaining and Maintaining Access: An Army-Marine Corps Concept," establishes the ground force role to expand airfields and ports to allow accessibility to naval and air force assets.[25] As many austere bases are likely to initially be of limited value to the Air/Sea Battle concept, improving and expanding these bases increases operational reach.

When the number of secure bases increases then the operational tempo increases. As defined, operational tempo drives the initiative. Dr. Milan Vego states that an offensive can prevent culmination by maintaining a high operational tempo, however this requires prompt reinforcement of reserves to exploit success.[26] Increased bases in the Pacific meet this requirement. Modern examples demonstrate that increased numbers of forward bases increase operational tempo. For instance, prior to Operation Desert Storm many staff planners believed in the need for an operational pause to rearm and refuel, prior to pressing the attack on the Iraqi Republican Guard.[27] This went contrary to the guidance of General (GEN) Frederick M. Franks, Commander VII Corps during operation Desert Shield/Desert Storm, that ground forces would not take an operational pause.[28] Because of this order, Lieutenant General (LTG) William G.

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[25]Lieutenant General Keith C. Walker, U.S. Army and Lieutenant General Richard P. Mills, U.S. Marine Corps,"Gaining and Maintaining Access: An Army-Marine Corps Concept," U.S. Army Capabilities Integration Center and U.S. Marine Corps Combat Development Command, 21 March 2012, http://www.defenseinnovationmarketplace.mil/resources/Army%20Marine%20Corp%20Gaining%20and%20Maintaining%20Access.pdf (accessed 24 May 2013), 11.

[26]Milan N. Vego, *Joint Operational Warfare Theory and Practice,* 2nd ed. (Washington, DC: Government Printing Office, 2010), 90.

[27]Steve E. Dietrich and Richard M. Swain, "'Lucky War': Third Army in Desert Storm," *The Journal of Military History* 60, no. 3 (July 1996): 588, JSTOR, http://www.jstor.org/stable/2944564?origin=crossref 146 (accessed 11 May 2013).

[28]Ibid., 226.

Pagonis, Operation Desert Storm's chief logistical planner, developed a series of forward deployed logistic bases from which the attack could continue without culmination, thus increasing the operational tempo and ultimately leading to the success of the operation.[29] Additional Pacific bases would serve the same purpose in Air/Sea Battle.

When the number of secure bases increases then operational flexibility increases. In March 2012, the Congressional Research Service released a report outlining how increased bases in the Pacific Theater would increase flexibility.[30] The report indicated that the current U.S. basing scheme concentrated forces in a few locations in Korea/Japan and advocated shifting to multiple smaller bases throughout the region to gain operational flexibility.[31] This idea was in keeping with current naval views in support of the JOAC. The Navy advocated sea-basing to logistically support the Air/Sea Battle, but this idea required prepositioned supplies and shipping, otherwise sea-LOCs are excessive. Naval planners understood this and advocated pre-positioning in this manner to increase flexibility, shortening sea-basing resupply efforts.[32] Increasing bases also is in keeping with joint logistics doctrine, since established supply depots in multiple partnering nations decreased the possibility of a critical host nation constraint due to political disagreement.[33]

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[29]Dietrich and Swain, 141.

[30]Mark E. Manyin, Stephen Daggett, Ben Dolven, Susan V. Lawrence, Michael F. Martin, Ronald O. Rourke, and Bruce Vaughn, Congressional Research Service Report for Congress, *Pivot to the Pacific? The Obama Administration's Rebalancing Toward Asia* (Washington, DC: Library of Congress, 28 March 2012), 15.

[31]Ibid.

[32]Admiral Vern Clark, U.S. Navy, "Sea Power 21: Projecting Decisive Joint Capabilities," *Proceedings* 128, no. 10 (October 2002): 11.

[33]Chairman, Joint Chiefs of Staff (JCS), Joint Publication (JP) 4-0, *Joint Logistics* (Washington, DC: Joint Chiefs of Staff, 18 July 2008), V-2.

METHODOLOGY

The primary purpose of this study was to test the research questions that relate to the Army's role in Air/Sea Battle. The methodology employed to test the research is presented in this section. Each hypothesis was tested against empirical evidence of the selected case.

This study used logistical basing in the WWII Pacific Theater, from 1942-1945 as the studied case example. While regional political circumstances have changed over the past 65 years, the geography remains constant. Studying logistical basing in this region served as an excellent example of the issues that faced U.S. operational planners in implementing the JOAC. Pacific Air/Sea Battle is strikingly similar to the allied Pacific campaign. Data is collected using the research questions previously outlined.

The first research question is: during the WWII Pacific Campaign, what was the operational logistics plan? The purpose of this question was to establish the logistical framework of the allied Pacific Campaign, determine the extent of sea-LOCs and explain how the operational logistics plan affected allied combat planning efforts. The expected answer is that operational logistics was the driving factor affecting allied decisions to invade certain areas. Moreover, planners could not continue the offensive without logistical bases.

The second research question is: during the WWII Pacific Campaign, how many log bases existed? The purpose of this question was to determine the number of logistical bases in 1942 and determine the extent to which the logistical bases increased by 1945. The expected answer was that there was a significant increase in operational bases from 1942 to 1945. This data allowed for interpretation of other research questions.

The third research question is: how did basing during the WWII Pacific Campaign impact joint operations? The purpose of this question is to determine the logistics relationship between the Army and Navy in the Pacific Theater. This research allows for a comparison of interactions and planning priorities between the services. The expected answer is that initially, each service

had issues interacting in a joint fashion, but ultimately concluded logistical basing was imperative to the success of future combat operations.

The fourth research question is: what service was responsible for operational logistics during the WWII Pacific Campaign? The purpose of this question was to determine the logistical responsibilities between the Army and Navy. This allowed for a future comparison of the Army's current Title 10, USC joint logistics responsibilities. The expected answer is that each service initially had responsibility for its logistical requirements, but later shared responsibility as the war progressed.

The fifth research question is: how did basing during the WWII Pacific Campaign extend operational reach? The purpose of this question is to determine how basing allowed the joint force to concentrate massed combat power on Japanese strongholds over distance. Comparing this to territory seized for specific logistical purposes would either support or rebut the hypothesis. The expected answer is that as the number of logistical bases increased, the operational reach greatly increased.

The sixth research question is: how did basing during the WWII Pacific Campaign increase operational tempo? The purpose of this question was to determine if increasing the number of logistical bases increased the joint force's ability to gain and maintain the initiative. Additionally, did this increase in operational tempo force Japan to react imprudently to allied advances? The expected answer is that increased logistical bases considerably increased operational tempo.

The seventh research question is: how did basing during the WWII Pacific Campaign increase operational flexibility? The purpose of this question is to determine if increasing the number of logistical bases increased the options available to the allied force, with regard to where to launch offensive operations. In addition, it is to determine if increased U.S. logistical bases increased Japanese logistical constraints. The expected answer is that increased logistical bases

increased operational flexibility, gaining more opportunities to allied forces, while concurrently reducing Japanese options.

Evidence gathered during the research, focused on the WWII Pacific Theater. However, the questions are directly applicable today to the Air/Sea Battle concept. The relationship between WWII and formulation of a modern theory of war at first seems vague and perhaps remote. Time has passed, but geography and tenants of operational art applied to the Pacific have not changed.

THE U.S PACIFIC CAMPAIGN (1941-1945) A CASE STUDY

From 1941 to 1945, U.S. Pacific forces fought a campaign to gain the operational reach necessary to directly attack the Japanese home islands. On 7 December 1941, Japanese naval forces attacked the U.S. Pacific Fleet at Pearl Harbor, plunging the U.S. into direct military conflict. The devastation of the U.S. Pacific Fleet prevented the initiation of the Rainbow 5 War Plan, forcing U.S. planners to consider alternatives.[34] Simultaneous with this attack, the Japanese launched offensive operations against allied bases on Wake Island, the Solomon Chain, New Guinea, and the Philippines. These captured territories gained Japan the initiative and allowed them the ability to dominate the Pacific, since allied supply lines were perilously long, stretching back to Hawaii. What followed was a nearly four-year conflict to seize islands to acquire the necessary bases to gain the operational reach, flexibility and tempo to defeat the Japanese Empire.

The Japanese offensive in 1941 forced the allies onto the defensive. The attack on Pearl Harbor, the Japanese capture of Guam on 10 December and seizing of Wake Island on 23 December severely crippled the U.S. ability to operate in the Pacific.[35] The opening months of

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[34]Louis Morton, U.S. Army Center of Military History, Publication 5-1, *Strategy and Command: The First Two Years* (Washington, DC: U.S. Army Center for Military History, 1962), 143.

[35]Ibid., 134, 199.

1942, saw hurried efforts to maintain the strategic sea-lanes to Australia and other allied possessions. As the defensive phase continued, the U.S. economy shifted to war production and stockpiles of supplies began to flow into the Pacific Theater.

Most of 1942 saw continued allied defensive measures with limited offensive operations. allied territories such as Midway and New Guinea were reinforced and additional bases established to secure the sea-LOCs to Australia.[36] However, the Japanese advance toward Australia continued with the capture of Rabaul in January and Northern New Guinea that spring.[37] On 4 May, Japanese forces seized Tulagi and began building an air base to support the Port Moresby operation and although the Japanese invasion force was defeated at the Battle of the Coral Sea, Japanese bases in the Solomon chain threatened Australia.[38] To defeat this threat, allied planners chose the Island of Guadalcanal as the first offensive action. Although the Guadalcanal operation was offensive, it was for defensive purposes.[39] In the Northern Pacific, U.S. forces seized Adak Island in the Aleutian chain, threatening the Japanese base at Kiska.[40] The end of 1942 saw the allies poised to seize the entirety of Guadalcanal, the Japanese offensive stopped in the Central Pacific at the battle of Midway and Adak Island in U.S. possession. The allies now had advanced bases in the South West Pacific Area (SWPA) sector, giving them the operational reach necessary to begin offensive operations.

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[36]Duncan S. Ballantine, *U.S. Naval Logistics in the Second World War* (Princeton, NJ: Princeton University Press, 1947), 42.

[37]Gropman, 303.

[38]Morton, 217.

[39]William L. McGee, *Amphibious Operations in WWII, Volume II. The Solomons Campaigns 1942-1943*, 1st ed. (Santa Barbara, CA: BMC Publications, 2002), 12.

[40]Morton, 527.

In 1943, the year began with Japanese evacuation from Guadalcanal and additional U.S. airstrips established to facilitate future operations.[41] U.S. planners now shifted focus to New Georgia in the Solomon chain. The capture of the island would have a dual purpose. First, it would provide a large airfield to extend allied operational reach. Second, it would decrease Japanese operational flexibility when conducted simultaneously with operations in New Guinea, under GEN MacArthur, Commander U.S. Forces in the SWPA.[42] U.S. forces were now on the offensive, seizing bases to expand operational capability. The operations succeeded and by November 1943 the Solomon chain was in allied possession. In the Central Pacific, U.S. forces seized Tarawa in November 1943 providing an advanced naval base for subsequent operations against the Marshall Islands.[43] In the Northern Pacific, Japanese forces withdrew, leaving the Aleutian chain in American control.

As 1944 dawned, the operational tempo of allied operations increased. Central Pacific Operations yielded the fall of Saipan in June, with Tinian and Guam falling a month later.[44] In the SWPA, allied forces invaded the Philippines and gained additional advanced bases throughout the remainder of 1944.[45] By this phase in the war, planners considered future offensive operations from the Aleutians unacceptable and they played no major role in the remainder of the conflict.[46]

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[41]McGee, 306.

[42]Ibid., 304.

[43]Morton, 572.

[44]Philip A. Crowl, U.S. Army Center for Military History, Publication 5-7-1, *Campaign in the Marianas* (Washington, DC: U.S. Army Center of Military History, 1960), 265, 301, 436.

[45]M. Hamlin Cannon, U.S. Army Center of Military History, Publication 5-9-1, *Leyte: The Return to the Phillipines* (Washington, DC: U.S. Army Center of Military History, 1954), 60.

[46]Morton, 533.

As 1944 ended, the allies were striking daily from a variety of air bases and the Japanese military was increasingly desperate.

The final year of the war, 1945, saw Japanese resistance in the Philippines draw to a close after the Luzon operation and Guam began serving as the major allied staging base. Focus now shifted on the invasion of Okinawa. In January, GEN MacArthur took command of all theater ground forces, while Admiral (ADM) Chester Nimitz commanded the supporting naval effort.[47] In February, U.S. forces invaded Iwo Jima setting conditions for the Okinawa invasion. Only a month later, Okinawa was firmly in U.S. possession with forces preparing for the invasion of Japan proper.

The slow start to operations up the Solomons and little offensive operations in the Central Pacific Area increased rapidly from 1943 onward. While it is true that logistic flow increased throughout the war, this cannot solely account for the acceleration of operations. The seizing of advanced bases enabled allied forces to increase operational tempo, flexibility and reach.

During the WWII Pacific Campaign what was the operational logistics plan? Dr. Duncan Ballantine stated in his book, *U.S. Naval Logistics in the Second World War*, that Pacific Theater bases needed to be flexible in nature and serve purposes of fueling stations, anchorages, air bases, troop staging, maintenance and supply.[48] Most islands in the Central Pacific Theater were small and unsuitable to establishing staging areas. Consequently, island campaigns in this region focused on supplying naval task forces. In the SWPA, islands were larger, allowing greater staging of U.S. ground forces. The overarching plan in the Pacific Theater was to seize advanced bases to serve as naval anchorages, air bases and finally staging/marshalling areas for allied ground forces.

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[47]Matloff, 536.

[48]Ballantine, 42-43.

From 1941-1942, U.S. operations were defensive. In the Central Pacific, in January 1942, allied forces established a base on New Caledonia and the Navy reinforced Samoa with additional Marines to protect the southern supply line.[49] The offensive on Guadalcanal, although offensive tactically, was operationally defensive; preventing Japanese harassment of allied shipping to Australia. Nonetheless, these operations secured key allied air and naval bases. Allied forces now had bases from which to conduct joint operations, without the vast distances separating the Solomons and Australia.

The period 1943-1944 saw the U.S. seize bases that provided logistical support capability in preparation for the culminating attack on Japan. The elimination of enemy forces on Guadalcanal presented logistical planners with a supply depot, from which to mass forces and equipment for subsequent operations in the Solomons. Demonstrating increased operational tempo from the possession of an advanced base, in late 1943, U.S. forces seized both New Georgia, with its critical airfields and Bougainville, ending the Solomon campaign. At this point, SWPA planners paused to determine the next area in which U.S. forces should advance. In the Central Pacific Area, ADM Nimitz's forces seized Makin and Tarawa, providing secure anchorages and resupply points, allowing for follow-on operations in the Marshalls. U.S. planners now had the operational reach and flexibility to increase the tempo to maintain the initiative and keep Japan on the defensive.

The period between 1944 and 1945 saw the U.S. engaged in activities to develop air, naval and ground bases to serve as staging areas for the invasion of the Japanese mainland. The capture of Saipan allowed B-29 bombing raids on Japanese cities, which affected critical war production. Iwo Jima served as a base of operations not only to land damaged aircraft, but also to base shorter ranged fighter escorts. Guam served as a ground force launching point for Okinawa,

[49]Morton, 177.

with its comparatively large land mass and anchorage. After the fall of Okinawa, U.S. forces had the capability to disrupt enemy activities on the Japanese mainland with naval and air forces, while continuing the buildup of ground forces and supplies through an increasing number of advanced bases. The theater logistics plan was complete with increasing numbers of bases allowing for the projection of combat power toward Japan.

During the WWII Pacific Campaign, what kinds of log bases existed? Logistic bases in the Pacific Theater during WWII served multiple functions from the onset of operations. Pacific basing was wide ranging, from large bases capable of supporting Army divisions and thousands of aircraft, to remote listening posts and submarine refueling bases on austere islands. Research focused on the major operating bases that had the most impact on joint operations, since analysis of minor bases is beyond the scope of this study. Joint planners assigned a primary mission to each island, reflecting joint service needs. Captured bases ranged in mission from an isolated seaplane base for reconnaissance operations, to full staging areas for amphibious invasion. Advanced bases served as air/naval fueling stations, protected anchorages, airfields, training areas, and staging areas for supplies/troops points.[50]

Fueling stations were among the first bases established. In the initial phases of the war, these refueling bases were critical to maintaining the open sea-lane to Australia. For instance, less than a month after the Pearl Harbor attack, ADM Ernest J. King, Commander U.S. Pacific Naval Forces, directed the construction of a ship-fueling base at Bora Bora.[51] Refueling bases also had tactical significance, such as the base at Majuro Atoll in the Marshall Chain. This base provided

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[50]Ballantine, 43.

[51]The Navy Department Library, *Building the Navy's Bases in World War II, History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946,* vol. I (Washington, DC: U.S. Government Printing Office, 1946), Naval History and Heritage Command, http://www.history.navy.mil/library/online/buildbaseswwii/bbwwiicontents.htm, (accessed 5 June 2013), 191.

up to 5,000 gallons per hour of aviation fuel for fighters and medium bombers.[52] Larger bases certainly provided fuel as well as other services than these small, specialized fueling bases, but they increased operational reach and flexibility.

Protected anchorages allowed allied naval forces secure areas in which to shelter from storm, make repairs, rearm and recuperate their crews. One of the first actions in the SWPA sector in 1942 was the establishment of the U.S. Pacific Fleet primary anchorage at Nourea, New Caledonia, with the ability to conduct major repairs on all capital ships.[53] The anchorage at Guam was sufficient to harbor a full third of the Pacific Fleet, greatly shortening the distances for repairs.[54] Reduced distances for ship repair and safety from Pacific storms decreased transition time at sea and increased allied operational tempo.

Air bases served numerous purposes in the campaign. Since Pacific Theater operations were amphibious in nature and given the limited number of aircraft carriers, especially in the initial phases of the war, land based aircraft effectively served as support artillery. An example of this is Henderson Field on Guadalcanal. On 7 August, Marines landed on Guadalcanal, had seized the 3,600-foot runway by 1600 and by 12 August, the airfield was ready to provide air support in dry weather.[55] The airfield continued to come under Japanese attack since this air base was the only one in U.S. possession; however, U.S. aircraft operated daily from its facilities. Most air

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[52]Commander in Chief, U.S. Pacific Fleet and Pacific Ocean Areas (CINCPAC & CINCPOA), "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," Headquarters of the Commander in Chief, United States Pacific Fleet and Pacific Ocean Areas, 26 July 1945, 85-87.

[53]Commander in Chief, U.S. Pacific Fleet and Pacific Ocean Areas (CINCPAC & CINCPOA), "Base Facilities Summary, Advance Bases, South Pacific Area, 30 June 1945," Headquarters of the Commander in Chief, United States Pacific Fleet and Pacific Ocean Areas, 6 August 1945, 41, 47.

[54]The Navy Department Library, fwd.

[55]McGee, 27, 70.

bases in the Central Pacific Area were small due to land availability. Even so, these atoll airbases served as, "unsinkable carriers," supporting combat operations. So crucial to the Marshalls Campaign were the air bases that the operation was delayed, and instead the capture of Nauru, Makin and Tarawa in the Gilbert chain, became the first offensive operations in the Central Pacific.[56] As the war progressed, air bases became the primary means at striking directly at Japan. Although heavily fortified, the island of Saipan was a key hub in the allied war effort. Its proximity to Tokyo and Manila, 1,270 miles and 1,640 miles respectively, placed Japanese cities well within the range of the B-29 bomber.[57] The mutually supporting nature of larger airstrips increased operational flexibility.

American troops entered into the Pacific Theater fresh from initial stateside training. Given the vast areas of the Pacific, it was nearly impossible to recreate realistic battle conditions. Units already in theater often had months between operations and the joint services recognized a need for training facilities. Though these bases were small in number, they provided a dividend in preventing combat skills from perishing. An example of this is Eniwetok Atoll. Commissioned as a naval advanced anchorage and training base, this island served as a fleet anti-aircraft training center.[58] No doubt, this training saved many lives during the Japanese Kamikaze attacks of 1944-1945.

To mass troops at levels necessary to conduct offensive operations, it was necessary to have islands with landmasses capable of supporting multiple divisions. Additionally, supply depots were required to maintain the operational initiative. Once bases with supporting efforts,

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[56]Phillip A. Crowl and Edmund G. Love, U.S. Army Center of Military History, Publication 5-6-1, *Seizure of the Gilberts and Marshalls* (Washington, DC: U.S. Army Center of Military History, 1955), 22.

[57]Crowl, 1.

[58]CINCPAC & CINCPOA, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," 74.

such as air bases and anchorages were prepared to assume mission, planners chose islands that would serve as supply/troop depots. Guam was over 200 square miles in area and although much of it was unusable mountainous terrain, it remained the largest island in the Marianas chain.[59] This and its proximity to Japan made it the most logical choice for troop and supply staging. After capture, Guam served as the primary staging area for the invasion of Okinawa, serving as an advanced base for 162,465 U.S. troops.[60] Guam also served as the holding point for the operational reserve for the Okinawa operations.[61] Okinawa was to serve as the troop staging area and casualty treatment area for the planned invasion of Kyushu. The base complex was immense, with a troop capacity of 285,524, a hospital bed capacity of 15,108 and 10,085 acres devoted to ammunition storage.[62] With the U.S. ability to stage troops in such close proximity to Kyushu, the ability to rush operational reserves from Guam to the front and the ability of air assets to strike Japanese targets, multiple bases gave the U.S. the operational reach, tempo and flexibility to launch Operation Olympic.

How did basing impact joint operations during the WWII Pacific Campaign? From 1942 onward, basing operations were joint in nature. One may argue that naval refueling bases served only that service component, but that disregards their role of logistical support to ground forces during the conflict. The Joint Chiefs of Staff (JCS) clearly understood that in the Pacific Theater, much more so than in Europe, the services relied on mutual interdependence for operational

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[59]Crowl, 30.

[60]CINCPAC & CINCPOA, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," 200.

[61]Roy E. Appleman, James M. Burns, Russell A. Gugeler, and John Stevens. U.S. Army Center of Military History, Publication 5-11-1, *Okinawa: The Last Battle* (Washington, DC: U.S. Army Center of Military History, 1948), 38.

[62]Ibid., 229-230.

success. The recognition of service interdependence was the driving force in choosing island bases.

As American planners began to gain situational awareness of events in the Pacific in 1942, formulation of plans soon followed. The JCS plan to secure Australia and the sea-lanes took form in the order of 6 March, where it directed construction of bases at Tongatabu and Efate.[63] Tongatabu was to serve as a protected anchorage, while Efate was to serve as an air base for ground aircraft for protection of Fiji and New Caledonia.[64] This early demonstration of mutual support between the services continued throughout the war.

Basing again affected joint operations during the Guadalcanal invasion. Despite inter-service rivalries and the associated personality differences between their field commanders, each understood inter-service dependence. This is evident in ADM Nimitz's action when he dispatched five Marine air squadrons to support the Solomon operations, while concurrently requesting B-17 support from the Army.[65] Since Marine short-range fighters required naval transport and since B-17s could not operate from carriers, air bases were required.[66] Though this is a minor example of joint operations, it served as an early instance that would remain the operational norm.

A later war example of basing affecting joint operations is the command on the Island of Tinian. U.S. forces seized Tinian to serve as a B-29 air base and a naval anchorage.[67] Although the Navy commanded this sector, it nonetheless placed Brigadier General F. von H. Kimble in

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[63]Ballantine, 72.

[64]Ibid.

[65]John Miller, Jr., U.S. Army Center of Military History, Publication 5-3, *Guadalcanal: The First Offensive* (Washington, DC: U.S. Army Center of Military History, 1949), 27.

[66]Ibid., 28.

[67]CINCPAC & CINCPOA, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," 174.

command of island operations, with naval officers as key advisors on his staff.[68] The assignment of an Army commander with Navy supporting officers demonstrated the evolution of joint base establishment from 1942-1944. Both the Navy base and air base on Tinian were important to the war effort, but the priority was the air base, thus placing the Army in a better position to coordinate construction and operations. This joint approach to basing allowed for more rapid construction of bases and increased operational tempo.

Who/what organization was responsible for operational logistics during the WWII Pacific Campaign? In 1942, the Army operated on a centralized system of provisioning ground forces for combat operations, while the Navy operated from a series of bases from which it could refit the fleet; ultimately developing fleet resupply at sea.[69] The independence of the services had advantages, since each service understood its own operational needs and could better predict shortfalls. However, in a theater that was already secondary to Europe, service logistical independence was wasteful of resources. Each service independently constructed airfields, hospitals, storage facilities and in general created an overabundance of support where none was required.[70] On 7 March 1943, the JCS endorsed the "Basic Logistical Plan of Command Areas Involving Joint Army and Navy Operations," which stipulated that joint commanders had, "full responsibility for logistical services within their areas," reducing duplication of effort.[71] Further, the order mandated single agency procurement of items common to both services, joint coordination/prioritization of supply transport needs and managing port operations, among

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[68]CINCPAC & CINCPOA, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," 174.

[69]Robert W. Coakley and Richard M. Leighton, U.S. Army Center of Military History Publication 1-6, *Global Logistics and Strategy: 1943-1945* (Washington, DC: U.S. Army Center of Military History, 1969), 422-423.

[70]Ibid., 421.

[71]Ibid., 427.

others.[72] While this order did not fully address the logistical rivalry between the services, it placed responsibility for base operations under a single commander.

The Joint Priority List mandated in the "Basic Logistical Plan of Command Areas Involving Joint Army and Navy Operations," was difficult to implement. The services and joint commanders had competing priorities and sought to benefit their own areas, even to the detriment of the theater strategy. As late as August 1943, joint commanders chose to move troops from California to their Area of Operations on their allocated ships, independent of the Joint Priority List and the Navy often operated independently of national priorities.[73] The disregard for the list forced the JCS to enact a centralized process of transportation from Washington, stripping joint commanders of direct logistical responsibility from the west coast to the Pacific Theater and by 1944; the process was working well in support of ongoing operations.[74] This system of equipping and transporting troops/equipment is similar to the contemporary joint logistical environment.

How did basing during the WWII Pacific Campaign extend operational reach? Operational reach in the Pacific Theater greatly increased as the number of operational bases increased. Operational reach was the distance and duration across which a joint force can successfully employ its military capabilities.[75] While a naval task force during WWII could travel several thousand miles without refueling, it lacked the ability to defend itself adequately, since it had a fighter compliment of only 36 aircraft in the 1934 Yorktown Class and slightly increased

[72]Coakley and Leighton, 428.

[73]Ibid., 432.

[74]Ibid., 432-433.

[75]Chairman, JCS, JP 3-0, I-3.

capability (38 fighters) in the 1942 Essex Class.[76] This relatively small number of aircraft required mutual support from ground based Army aircraft. Therefore, the ability of a carrier task force to strike deep into enemy territory does not constitute operational reach. Since air superiority was necessary prior to launching an amphibious invasion, the range of aircraft was important. When one examines the range of the B-24 of 2,850 miles, basing in 1942 allowed operations as far north as Guam in SWPA and as far west as Wake Island in the Central Pacific Area.[77] However, the range of the P-40, the predominant U.S. fighter of 1942, was only 750 miles, allowing it to operate within less than half the range of the bomber force and not providing adequate protection for carrier task forces.[78]

[76]Naval Historical Center, "Essex Class (CV 9-13, 16-18, 20 & 31), Fiscal Years 1941 (#s 9-18), 1942 (# 20) and 1943 (# 31)," Naval History and Heritage Command, 9 June 2006, http://www.history.navy.mil/photos/usnshtp/cv/cv9cl.htm (accessed 5 May 2012); and Naval Historical Center, "Ranger, Yorktown & Wasp Class Aircraft Carriers, (CV 4-8), Fiscal Years 1930, 1934, 1936 & 1939," Naval History and Heritage Command, http://www.history.navy.mil/photos/usnshtp/cv/cv5-7cl.htm (accessed 5 May 2013).

[77]The Official Web Site of Hill Air Force Base, "B-24D 'LIBERATOR,'" U.S. Air Force, 26 September 2007, http://www.hill.af.mil/library/factsheets/factsheet.asp?id=5653 (accessed 5 May 2013), see figure 1.

[78]The Official Web Site of Hill Air Force Base, "P-40 'WARHAWK,'" U.S. Air Force, 27 September 2007, http://www.hill.af.mil/library/factsheets/factsheet.asp?id=5655 (accessed 5 May 2013), see figure 1.

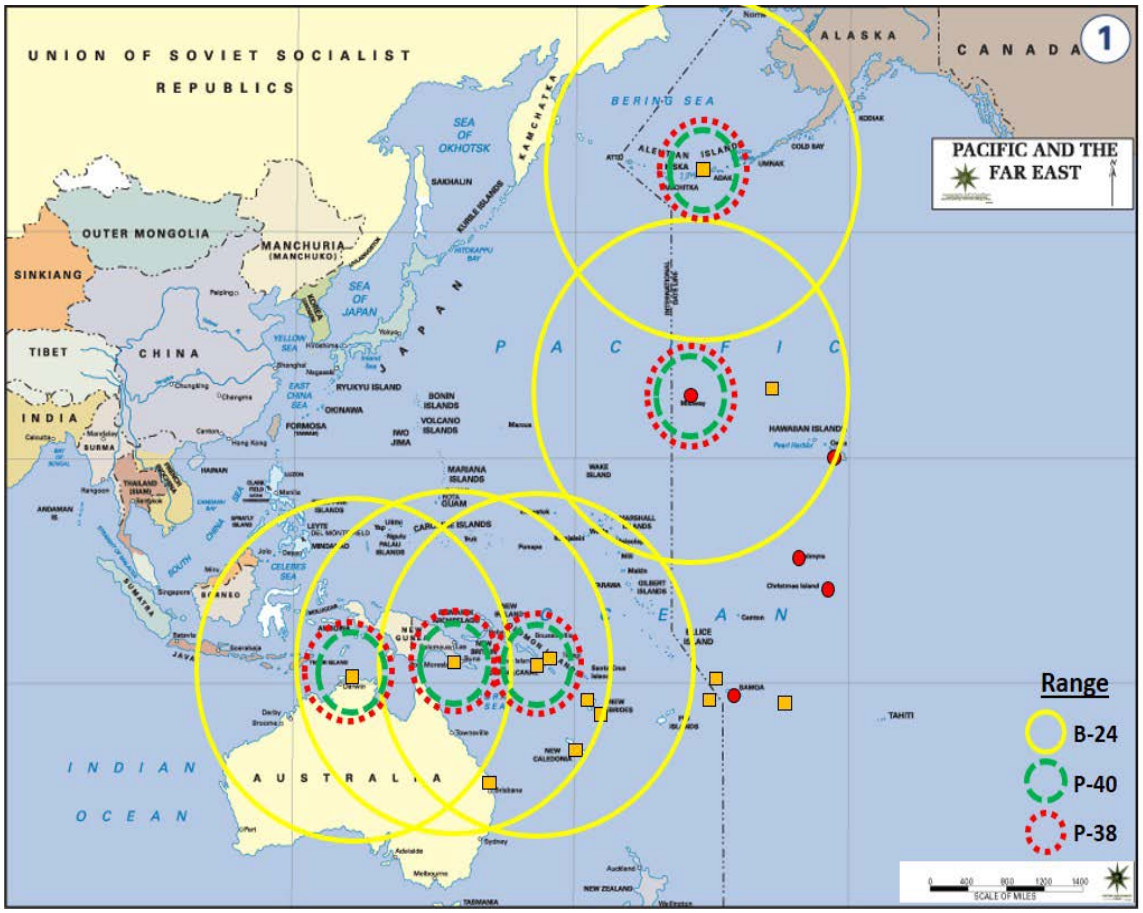

Figure 1. 1942 Pacific Bases and Operational Range of Aircraft

Source: United States Military Academy Department of History, "Pacific and Far East Map, World War II," United States Military Academy West Point, http://www.westpoint.edu/history/SiteAssets/SitePages/World War II Pacific/WWIIAsia01.gif (accessed 2 June 2013). *Smaller bases omitted for clarity. Bases depicted primary purposes were for strike capability as opposed to refueling or aircraft staging.

By 1944, U.S. forces had seized key island bases at Saipan, Tinian and Palau, providing operational reach for joint operations against the Philippines and Japan proper, since land based aircraft could protect naval and ground forces, allowing for the capture of additional bases closer

to Japan.[79] In turn, advanced bases in the Philippines supported operations against Iwo Jima and Okinawa.

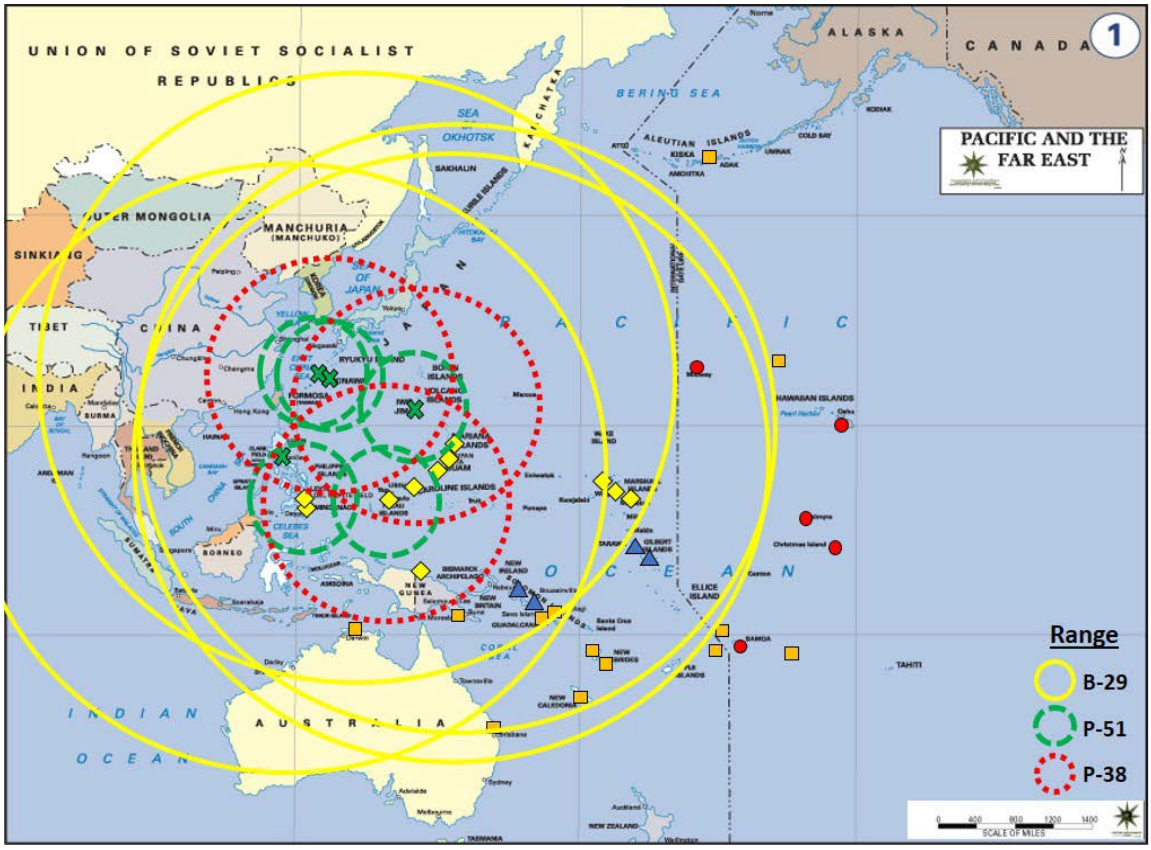

Figure 2. 1944 Pacific Bases and Operational Range of Aircraft

Source: United States Military Academy Department of History, "Pacific and Far East Map, World War II," United States Military Academy West Point, http://www.westpoint.edu/history/SiteAssets/SitePages/World War II Pacific/WWIIAsia01.gif (accessed 2 June 2013).

While gains in technology, such as the extreme range of the B-29, drop tanks and more fuel-efficient engines certainly played a part in increasing the joint force ability to increase operational reach, this point should not be overemphasized. When one compares the operational range of the

[79]See figure 2.

P-40 to the P-51, the difference is only 250 miles.[80] It was the joint force and its ability to seize island bases, construct naval/air stations and stockpile supplies that allowed for increased operational reach in the Pacific Theater.

How did basing during the WWII Pacific Campaign increase operational tempo? Operational tempo in the Pacific increased considerably with the increase in advanced logistical bases. In 1941, after losing Guam, the Philippines, and Wake Island, the U.S. had only five bases in the Pacific, centered mainly near Hawaii and the South Pacific. By 1942, the U.S. established an additional 13 bases to protect the supply line to Australia. In 1943, U.S. forces established four logistical bases; two in the northern Solomons and two in the Central Pacific at Tarawa and Makin. The year 1944 saw the establishment of 11 additional bases in the Marshall Island chain, Saipan, Tinian, Guam, Ulithi, Palau, New Guinea and the Philippines. These bases provided the support needed for the 1945 seizure of and establishment of bases at the four locations of Luzon, Iwo Jima, Ie Shima and Okinawa.[81]

[80]The Official Web Site of Hill Air Force Base, "P-51D 'MUSTANG,'" U.S Air Force, 27 September 2007, http://www.hill.af.mil/library/factsheets/factsheet.asp?id=5667 (accessed 5 May 2013).

[81]See figure 3.

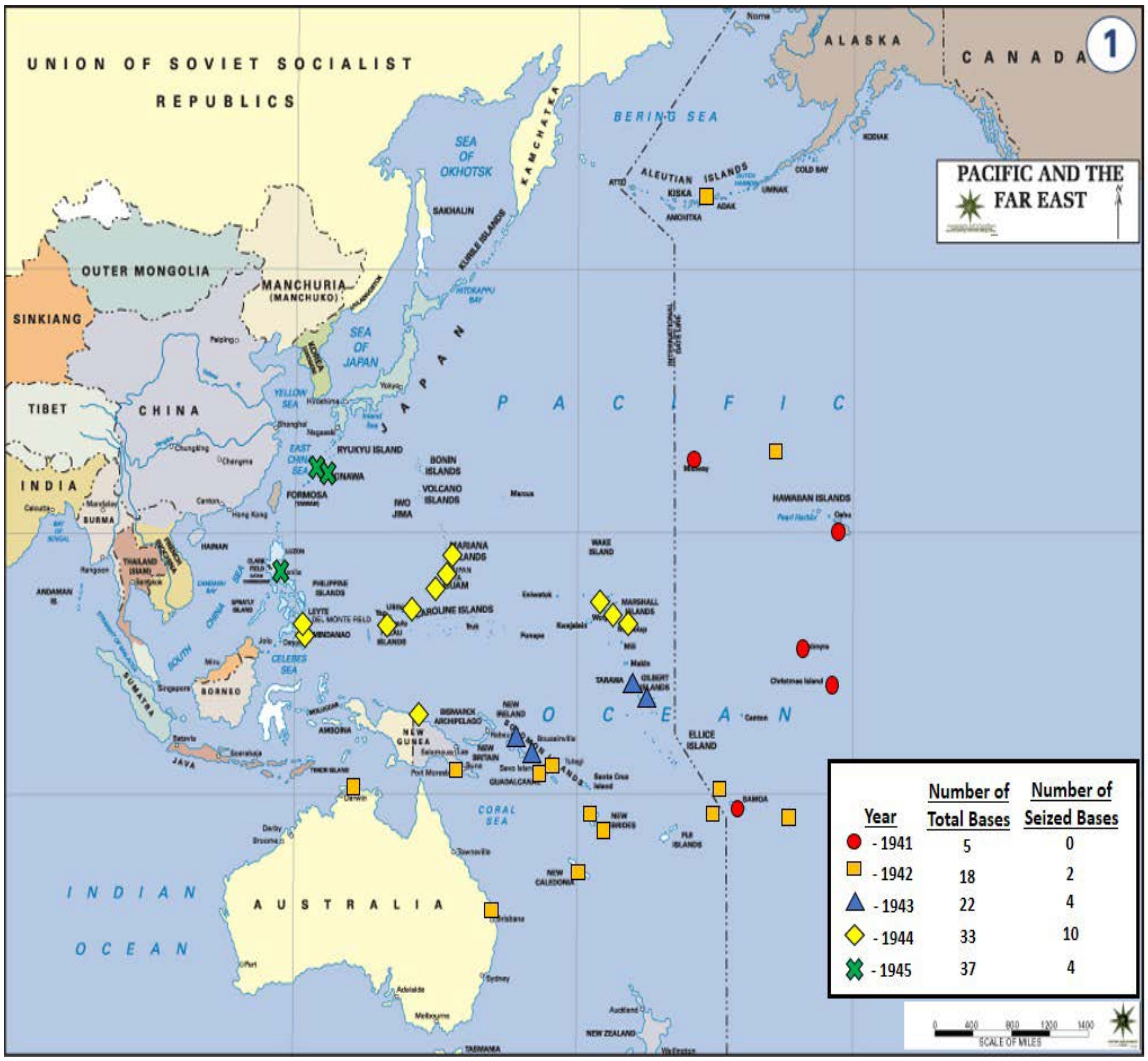

Figure 3. Secure Bases Established Each Year

Source: United States Military Academy Department of History, "Pacific and Far East Map, World War II," United States Military Academy West Point, http://www.westpoint.edu/history/SiteAssets/SitePages/World War II Pacific/WWIIAsia01.gif (accessed 2 June 2013).

The evidence appears to show that establishment of bases in 1942 exceeded that of 1943. While this is true, only two of these 1942 bases were contested while the other bases served to either protect the southern sea-lanes or protect Australia from invasion. With that assessment and since established bases in 1943 were opposed occupations, 1943 exceeded the number of bases established and demonstrated U.S. capability to increase operational tempo. The other deviation

in the data occurs between the number of bases established in 1944 and 1945. While U.S. forces constructed 10 bases in 1944, they only built four in 1945. This is due mainly to the reduced need for additional bases. U.S. forces could easily range Japan from territories captured in 1944 and those captured territories provided ample areas from which to mass forces. Consequently, there was little gain in operations against anything but the Japanese home islands.

U.S. planners not only considered the number of bases, but the operational impact a particular base had on the overall campaign. The Central Pacific Area is a good example of this. Planners sought bases that provided areas to mass forces for subsequent offensive operations. In the Central Pacific Area, this was difficult since most islands were coral atolls and provided little area for build-up of combat power. Larger islands, such as Guam and Tinian provided the area required to develop land, air and sea combat power. In May 1944, the combined capacity of Eniwetok and Dalap was 167 bombers and 390 fighters.[82] Approximately two months later, these bases supported operations against Saipan, Guam and Tinian, yielding much larger staging areas for troops, ships and airfields, from which to directly strike Japan with overwhelming force.[83] Data analysis presents evidence that advanced bases allowed the build-up of the logistical systems to enable acceleration of operations.

[82]CINCPAC & CINCPOA, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945," 73.

[83]See figure 3.

Table 1. Central Pacific Basing

Island	Established	Main Mission	Minor Naval Repair	Major Naval Repair	Minor Naval Refueling	Major Naval Refueling	Fighter Capacity	Bomber Capacity	Heaviest Aircraft for Runway
Canton	October, 1941	Airbase (Refueling)			X		N/A	100	B-29
Christmas	August, 1941	Airbase (Refueling)			X		N/A	15	B-29
Johnston	August, 1941	Airbase (Refueling)			X		250	175	B-29
Palmyra	August, 1941	Airbase (Refueling)			X		40	30	B-24
Midway	August, 1941	Airbase/Submarine Base	X		X		100	40	B-29
French Frigate Shoals	January, 1942	Airbase (Seaplane)					18	N/A	Fighters (Bombers in Emergency)
Betio (Tarawa)	November, 1943	Airbase (Refueling)			X		80	40	B-29
Makin	November, 1943	Airbase (Emergency)					0	0	B-24
Kwajalein	February, 1944	Anchorage	x				120	117	B-29
Eniwetok	May, 1944	Anchorage/Training	X		X		310	50	B-29
Dalap	May, 1944	Airbase (Refueling)	X		x		80	30	B-17
Saipan	June, 1944	Airbase (Bomber)	X			X	348	199	B-29
Guam	July, 1944	Anchorage (Fleet Base)/Troop Staging		X		X	1550	394	B-29
Tinian	July, 1944	Airbase (Bomber)					2500	597	B-29
Ulithi	September, 1944	Airbase (Refueling/Carrier Aircraft Replacement)			X		138	0	Fighters
Paulau	September, 1944	Airbase (Offensive)	X			X	280	140	B-29
Iwo Jima	March, 1945	Airbase /Emergency Bomber Landing					700	206	B-29
Ie Shima	May, 1945	Airbase (Bomber)					500 (est.)	No Data	B-24
Okinawa	June, 1945	Airbase/Anchorage (Fleet Base)/Troop Staging		X		X	425	No Data	B-29

Source: Created by author using data from Commander in Chief, U.S. Pacific Fleet and Pacific Ocean Areas, "Base Facilities Summary, Advance Bases, Central Pacific Area, 30 June 1945. " Headquarters of the Commander in Chief,, United States Pacific Fleet and Pacific Ocean Areas, 26 July 1945; and Commander in Chief, U.S. Pacific Fleet and Pacific Ocean Areas, "Base Facilities Summary, Advance Bases, South Pacific Area, 30 June 1945. " Headquarters of the Commander in Chief,, United States Pacific Fleet and Pacific Ocean Areas, 6 August 1945.

These advanced bases allowed U.S. forces to conduct strategic bombing against Japan, mass forces and rapidly accelerate the advance on Japan. Within one year of seizing advanced bases near Japan, Okinawa was in U.S. possession, showing a dramatic increase of operational tempo from 1942. This is due to the increased number of U.S. advanced bases allowing an increase in operational tempo.

How did basing during the WWII Pacific Campaign increase operational flexibility? Operational flexibility increased as the number of operational bases increased. There are numerous examples of increase operational flexibility as the U.S. gained additional advanced bases. The operations in the Marshalls in early 1944 gave ADM Nimitz the ability to increase the advance into the Marianna's Chain, while still neutralizing the Japanese stronghold at Truk.[84] At the same time, GEN Douglas MacArthur argued against the JCS about the capture of Luzon versus invading Formosa to conduct operations against Japanese forces on mainland China.[85] While the JCS eventually decided against the Formosa option, mainly due to better supporting capability to subsequent operations, it demonstrates increased options to U.S. planners at a time when Japanese options reduced.[86]

As one views operations in mid-1942, planners had much fewer options. The establishment of bases on New Guinea, New Caledonia and Bougainville, allowed U.S. planners the option of directly attacking Rabaul or neutralizing it with air power. The invasion of Rabaul would no doubt have been costly, but would have dealt a severe military/political blow to the regimented Japanese government, perhaps allowing for an earlier cessation of hostilities.

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[84]Crowl and Love, 373-374.

[85]Coakley and Leighton, 566.

[86]Ibid.

The initial Pacific operation, the invasion of Guadalcanal, was an operational necessity. Planners could not logistically support operations against New Guinea, nor could bases to the east adequately range/supply invasion forces further west or north. Japanese bases on Guadalcanal threatened Australia and protected invasion forces. Therefore, by default Guadalcanal became the first offensive base seizure in the WWII Pacific Theater. This option was far from ideal and given other options, planners would have rather fought in conditions that were more favorable. Still, this operation cemented U.S. presence in the Solomon Island chain, and allowed for subsequent operations. The contested capture of Guadalcanal and the remainder of the Solomon chain directly led to the increased operational flexibility, culminating in the numerous invasion options open to the planners of Operation Olympic.

ANALYSIS

Data collected in this study supports all hypotheses. After the failure of *War Plan Orange* to maintain pacific bases, the U.S. conducted a series of operations to capture island bases to strike Japan. The speed, options and range increased exponentially in a "snow-ball" fashion as the number of land bases increased. The analysis of the findings follows.

Hypothesis one states that when the number of WWII secure Pacific bases increases, U.S. operational reach increases. The evidence shows that naval forces were unable to adequately defend themselves against masses of land based Japanese fighters with their limited fighter compliment. Further, land based aircraft, despite increases in technology/range, were unable to support amphibious operations and protect the force without advanced bases. Only after seizing multiple island bases, with multiple purposes, was the joint force able to bring overwhelming force against Japan. This evidence supported the hypothesis that increased numbers of secure bases increased operational reach.

Hypothesis two states that when the number of secure bases increases then the operational tempo increases. The evidence supports the claim that increases in the numbers of

bases increases the operational tempo. While in 1941-1942, the U.S. had 18 advanced bases, all but two of these were in the South Pacific or Australia proper, designed to protect the U.S.-Australian sea-lanes. 1943-1944 resulted in the capture of 14 major bases, allowing the U.S. to conduct offensive operations against islands closer to Japan and Japan proper. In 1945, the number of bases decreased since there was ample operational reach, and operational tempo continued to accelerate as supplies arrived from the U.S. The evidence supported the hypothesis that increased numbers of secure bases increased operational tempo.

Hypothesis three states that as the number of secure bases increases, the operational flexibility increases. The evidence supports this statement. In 1942, JCS planners ordered the invasion of Guadalcanal for lack of better alternatives, even though the logistical bases at Efate and Espirito Santo were prohibitively far to support amphibious operations. Upon establishment of Guadalcanal and Tulagi, U.S. forces had a secure base from which to resupply subsequent amphibious operations. In the Central Pacific, operations against Tarawa and Makin allowed ADM Nimitz greater options against objectives in the Marshalls. In turn, these gains allowed more options in the invasions of Tinian, Guam and Saipan. In perhaps the best example of flexibility, the JCS chose to capture Luzon for political as well as military reasons, allowing greater flexibility to the invasion of Okinawa and the planned invasion of Japan. The evidence supported the hypothesis that increased numbers of secure bases increased operational flexibility.

SUMMARY

The purpose of this study was to determine the U.S. Army role in the Air/Sea Battle strategy. The case study applies the Air/Sea Battle to the Pacific Theater. The current U.S. "Pacific Pivot" strategy is recognized as a new endeavor, unique to the realities of the 21st century. Evidence presented in this study demonstrates this holds little merit, as the U.S. conducted a "Pacific Pivot," from 1941-1945. Key to the campaign's success was the establishment of secure bases for refueling, air support, troop build-up and supply depots. Despite

the Pacific consisting of vast stretches of ocean, land bases are necessary for sustained ground, naval and air operations. As the land component, it is the Army's responsibility to establish and secure logistical bases, LOCs and develop infrastructure to support joint operations.

Findings of the analysis of the research demonstrate a direct correlation among the variables of operational flexibility, tempo and flexibility as functions of logistical basing. Take the Solomons Campaign. As previously stated, the Guadalcanal campaign was an operationally defensive necessity to protect Australia. This minimal flexibility meant only a single operational course of action was developed. The initial invasion of Guadalcanal produced heavy casualties, since only limited ground based aircraft could support the invasion. This meant that U.S. tactical commanders would advance much more slowly. Slow tactical advance translated into slow operational advance, thereby limiting operational tempo. Even with the construction of Henderson Field, the U.S. still lacked the necessary air bases to adequately support subsequent offensive operations. This limited operational reach slowed the operational tempo. This was demonstrated in figure 2, where only two advanced bases were seized to support operations. This sluggish process mandated heavy U.S. casualties, since carrier-based aircraft could not provide the level of aviation support needed and the lack of anchorages made naval engagement prohibitive.

In contrast, by 1944, operational tempo, reach and flexibility made the U.S. advance unstoppable. The simultaneous northwest drives, both in the Central Pacific Area and the SWPA, allowed for mutually supporting operations. As demonstrated in figure 2, fighter aircraft from as far away as Iwo Jima could support operations against the Japanese home islands. This tactical support to ground troops translated to increased operational tempo. Captured islands and their bases generated more options for commanders, such as the possibility of seizing Formosa. These options were open, since large islands increased operational reach for U.S. heavy bombers, which prevented Japanese industry from manufacturing war materials. The establishment of greater

numbers of advanced bases allowed the interdependence of operational reach, tempo and flexibility to accelerate the end of the war.

This study took a broad view of the U.S. Pacific Campaign in WWII. The vast amounts of data required a macro view of the theater and thus possible oversights in the Central Pacific Area and the SWPA. The study also focused on the availability of anchorages, troop build-up areas, and airfield capacity. The study did not use data reflecting exact numbers of aircraft, troops or ships actually occupying a given base. The exact numbers of ground-based aircraft versus carrier-based aircraft is not reflected, since exact ratios are unique to a specific battle. Macro-analysis of carrier versus ground-based aircraft is beyond the scope of this study and would have produced poor averaged data. Nonetheless, the exact numbers of carrier aircraft in support of ground operations possibly skews data, particularly in the Central Pacific Area.

The Navy and Air Force developed the Air/Sea Battle concept largely without Army input into its role as part of the joint force. Air/Sea Battle operates on key assumptions. First, that the aircraft carrier will continue the invincibility it has enjoyed since the end of WWII. Second, that Navy and Air Force actions will be decisive with technology allowing penetration of enemy systems. Third, that the belligerent will not unilaterally seize key ground bases, or will not have allies who could act in proxy. It is strange that the both the Navy and Air Force would develop a strategy that relies on decisive tactical actions, that in itself is not operationally decisive. U.S. planners must understand that war against an enemy that possesses the military capability to require an Air/Sea Battle strategy has the capability to prevent U.S. forces from achieving a short-term decisive result. This necessitates the Army to establish bases to support sustained operations.

U.S. carrier fleets currently operate in a limited war environment. No nation challenges the power of the carrier fleet, simply because it lacks the ability to strike it or does not accept the consequences of an attack. If world events necessitate the implementation of the Air/Sea Battle concept, the nature of operations will change. For example, in applying the study to the current

Pacific environment, the Chinese recently developed the DF-21D ballistic anti-ship missile, with a range of 1,500 kilometers or 932 miles.[87] The range of the primary strike aircraft, the F-18 Super Hornet is 1,252.4 miles with only two AIM-9 missiles.[88] This gives the F-18 a combat radius of 626 miles. Additional bomb loads will reduce this range further. The Navy has two options for conducting the Air/Sea Battle. It can assume great risk and move its carriers within the range of "carrier-killer" missiles, or conduct in-flight refueling. Carrier based tankers do not provide the fuel in capacity needed to support decisive operations over time and the Navy prefers to utilize Air Force tankers for large operations.[89] This requires the Air Force to have an advanced base from which to conduct operations. While the primary Air Force fueler, the KC-135 can draw on its refueling bladders to increase range, the stated range of a fully loaded (150,000 pounds) KC-135 is 1,500 miles (2,419 kilometers), giving the KC-135 a combat radius of 750 miles.[90]

A possible scenario in the Air/Sea Battle concept is a situation in the Formosa Strait. An assumption of this scenario is that the U.S. would deploy two carrier task forces to the area. The enemy would deny the carriers the ability to move in close to the shore via the aforementioned anti-ship missiles. This places the carriers at the extreme of the missile's range, at approximately 932 miles. Skeptics point to the anti-missile systems and tactics the fleet employs. While there is no doubt the these systems reduce risk and the outstanding U.S. Navy sailors know their trade,

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[87]IHS Janes, "China - Strategic Weapons Systems," Command and General Staff College, Combined Arms Research Library, https://janes.ihs.com.lumen.cgsccarl.com/CustomPages/Janes/DisplayPage.aspx?DocType=Reference&ItemId=+++1303170&Pubabbrev=CAN (accessed 5 June 2013).

[88]Official Website of the United States Navy, "F-18 Hornet Strike Fighter," Department of the Navy, 26 May 2009, http://www.navy.mil/navydata/fact_display.asp?cid=1100&tid=1200&ct=1 (accessed 2 June 2013).

[89]Christopher Bolkcom, Congressional Research Service Report for Congress, *Air Force Aerial Refueling* (Washington, DC: Library of Congress, 20 March 2007), 5–10.

[90]Official United States Air Force Website, "KC-135 Stratotanker," U.S .Air Force, 2013, http://www.af.mil/information/factsheets/factsheet.asp?fsID=110 (accessed 3 June 2013).

the simple fact is missiles fired in volley stand a high probability of at least some getting through defenses. Since the combat radius of the F-18 is only 626 miles, the aircraft require in-flight refueling. External fuel tanks would increase the range; however, these fuel tanks take the place of bombs. Given the distances involved, this reduces the effectiveness of each sortie. For this example, assume that the air tankers are stationed in Guam and Japan. The KC-135 can refuel the aircraft, even though its combat radius is 750 miles, through in-flight refueling. This is acceptable, since the KC-135 refueling operations would occur outside of the enemy air defenses. F-18s implementing the Air/Sea Battle concept would require at least one in-flight refueling and have to conduct this operation as it approached the strait.[91] While land based Surface to Air Missiles would not be able to range at that distance, naval vessels and enemy fighter aircraft pose a risk to the vulnerable tanker aircraft. With the advent of new "carrier-killer" missiles, U.S. aircraft carriers lack the operational reach necessary to decisively strike in this scenario. Additionally, the current fleet carrier, the Nimitz Class, possesses a strike capability of only 48 F-18 aircraft.[92] This is only 10 strike aircraft more than the Essex Class carrier of WWII. Many of these aircraft would fill a fighter role, defend the carrier and escort the air tankers, reducing operational flexibility. Finally, the long flight distances involved and the refueling efforts, with slow flight speeds, decrease the operational tempo, giving the enemy the initiative.

[91]See figure 5.

[92]Official Website of the United States Navy, "The Carrier Air Wing," Department of the Navy, http://www.navy.mil/navydata/ships/carriers/powerhouse/airwing.asp (accessed 3 June 2013).

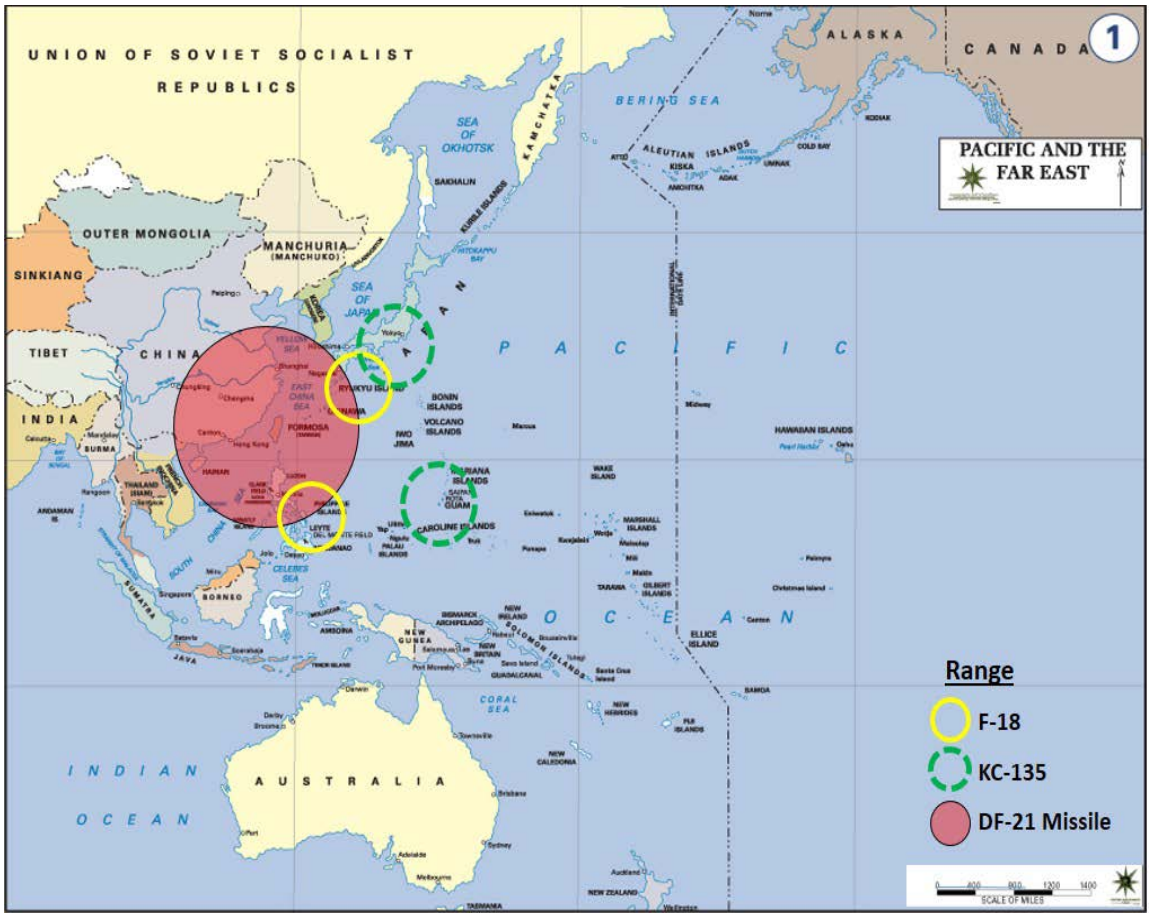

Figure 4. U.S. Aircraft Carrier Area Denial from DF-21 Missile

Source: United States Military Academy Department of History, "Pacific and Far East Map, World War II," United States Military Academy West Point, http://www.westpoint.edu/history/SiteAssets/SitePages/World War II Pacific/WWIIAsia01.gif (accessed 2 June 2013).

Taking lessons from the WWII Pacific Campaign, the same scenario is examined with advanced bases in Luzon and Okinawa. While these bases are well within surface-to-surface missile range, they are markedly closer to the Formosa Strait than U.S. aircraft carriers can operate with less risk. F-18s stationed in Luzon can easily range Formosa and with external fuel tanks could reach the Asia mainland. The same holds true for aircraft in Okinawa. Aircraft would require in-flight refueling, but a U.S. Air Defense Artillery screen would reduce risk from both enemy fighters and ballistic missiles. The reduced distances between Luzon and the Asia

mainland would increase operational reach, allowing U.S. to strike targets much further inland.[93] In turn, this increases operational flexibility, allowing for increased targeting options. Finally, the shorter flight times increase the number of tactical sorties, which translate into increased operational tempo.

Land bases in Luzon and Okinawa are subject to missile attack, air attack and enemy special operations forces attacks, among others. That said, a strong ground based force could mount a determined resistance to prevent closure of critical airfields. Patriot missile batteries could shield not only the advanced base, but also provide protection for naval assets. Large staging areas close to the target area would allow U.S. ground forces to mass, thus increasing options for the National Command Authority. While each of the examples are polar opposite ends of Air/Sea Battle, they demonstrate that increased bases increase operational flexibility, tempo and reach. In practice, Air/Sea Battle necessitates joint force cooperation.

[93]See figure 6.

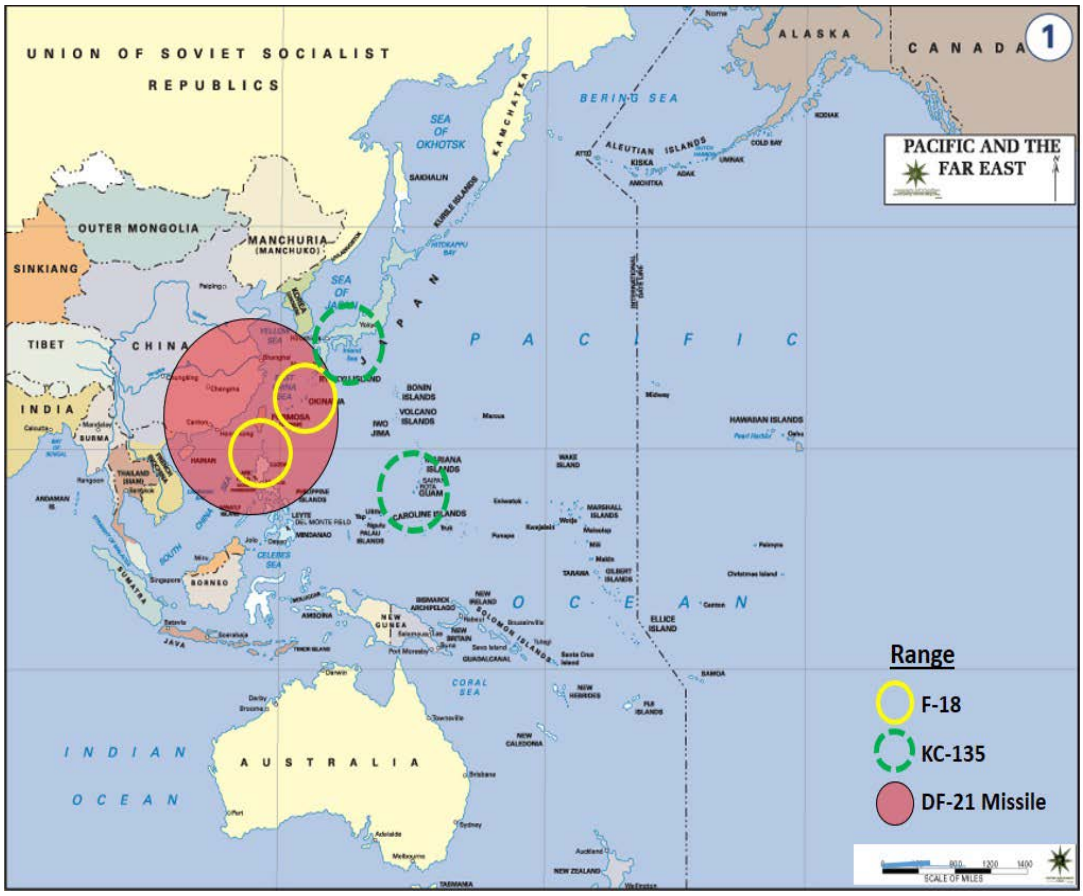

Figure 5. Area Denial of U.S. Aircraft Carrier Mitigated with Secure Land Bases

Source: United States Military Academy Department of History, "Pacific and Far East Map, World War II," United States Military Academy West Point, http://www.westpoint.edu/history/SiteAssets/SitePages/World War II Pacific/WWIIAsia01.gif (accessed 2 June 2013).

The Navy is currently refurbishing WWII advanced bases around the Pacific. While bases such as Tinian provide increased operational tempo and flexibility, they are not close enough to mainland Asia to provide the operational reach to accomplish the objectives of the Air/Sea Battle. Garrisons must secure these advanced bases and logistical practices established to support operations. It is not enough to simply build or repair a runway. No Pacific nation currently has the capability to project power, but Air/Sea Battle is a long-term strategy and is not decisive in its current state. As the ground component command, the Army should assume the

role of establishing and defending land bases as its part in the Air/Sea Battle concept. With U.S. ground forces securing, supporting and protecting advanced bases, the possibility of decisive operations replaces the Air/Sea Battle idea of a "distant blockade." In 1941, U.S. planners implemented a plan similar to Air/Sea Battle in *War Plan Orange*, leaving U.S. Army units to defend until the U.S. Navy relieved the beleaguered forces. The result of not garrisoning secure Pacific bases and establishing a joint relationship before the war was a bloody struggle to recapture islands, costing thousands of American lives. They Army's role in the Air/Sea Battle concept is clear. It must serve to secure bases and conduct its Title 10, USC function of supporting the joint force. Let the joint force learn from the WWII Pacific Campaign and not repeat the mistakes.

Future research on this topic should including studying the Central Pacific Theater and the Southwest Pacific Theater individually. This study was broad, so an in-depth assessment of each command would give greater insight into increased operational reach, flexibility and tempo. Additionally, a study of the Navy refurbishment of WWII Pacific aircraft runways and how the Navy envisions these bases supporting operations, logistics plans and protection measures would increase understanding of Air/Sea Battle. This study would allow Army planners to better inculcate themselves into the Air/Sea Battle concept.

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