Setting the Theater: US Sustainment Operations in the Pacific during World War II

A Monograph

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To meet high logistical demands over the vast distances in the Pacific theater, sustainment operations must be joint, sequential, and in depth to simultaneously secure, then improve, key logistics nodes while maintaining steady coordinated sustainment distribution operations. This is done through the joint seizure of key logistical nodes, followed by ground engineering developments to facilities and infrastructure that support combat and shaping operations while maintaining a carefully timed distribution system through maritime and air routes.
The United States has been involved in the Pacific for over a century, and the need to understand the geography and tyranny of distance is only one characteristic of the theater. Understanding the importance of posturing and setting the theater for deterrence, successful defense, and sustainment is even more crucial. The positioning of U.S. military forces and capabilities around the world reinforces an international order and permits rapid response to emerging threats.

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Abstract

Setting the Theater: US Sustainment Operations in the Pacific during World War II. By LTC Jason A. Berdou, United States Army, 49 pages.

In order to maintain momentum during any campaign in the Pacific theater, the huge demand and volume for requirements must overcome the vast travel times and distances that necessitate an operational approach to synchronize sustainment in depth through joint sequential operations to secure and develop key nodes while maintaining steady lines of communications. This is done through the joint defense and seizure of key logistical locations followed by mixed ground, sea, and air engineering developments to critical infrastructure facilitating support to combat operations throughout the theater by a carefully timed distribution system. The United States has been involved in the Pacific for over a century, and the need to understand the geography and tyranny of distance is only one characteristic of the theater. Understanding the importance of posturing and setting the theater for deterrence, successful defense, and sustainment is even more crucial. The positioning of US military forces and capabilities around the world reinforces an international order and permits rapid response to emerging threats.

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I would personally like to thank Dr. Thomas Bruscino for his assistance on this monograph and guiding me in the right direction.

After personally standing on the USS. Arizona Memorial at Pearl Harbor, Hawaii and witnessing the "black tears," seven decades of oil slowly escaping from the famous battleship's fuel tanks, it is hard not to feel an overwhelming respect for the sacrifices made by service members who fought and died in the Pacific during World War II. Four significant life events nourished my passion for the Pacific region and provided the motivation for this monograph topic.

The first, while on a staff ride, was the opportunity to listen to two veterans who were present during the Pearl Harbor attack on 7 December 1941.

Second, I commanded in Korea (2004 to 2006) and finished a three-year assignment with the 8th Theater Sustainment Command (8TSC), United States Army Pacific (USARPAC) at Fort Shafter, Hawaii (2012-2015). I am grateful to have been part of an unbelievable sustainment planning team, working with members from adjacent Service Component Commands and United States Pacific Command (USPACOM) on Oahu as well as Sub-Unified Commands across the Pacific in Korea and Japan. Special thanks are due to my former commanders, Lieutenant General Stephen R. Lyons, Major General Edward F. Dorman III, and to an incredible boss and friend, Lieutenant Colonel Todd J. Allison, and Chief Warrant Officer (CW4) Justin Trenary. Our time together in the Commander's Initiative Group (CIG) during the Pacific Theater Sustainment ROC drill in 2014 was one of the most enjoyable and memorable work events in which I participated while assigned in paradise.

The third key event was my experience while serving on Joint Task Force (JTF) 505 for a Humanitarian Assistance and Disaster Relief operation in support of the Philippines just after Super Typhoon Haiyan in 2013. The JTF received a letter of gratitude from an older Filipino gentleman who holds a Ph.D. and lives in Tacloban, one of the cities hit hardest by the typhoon. He was also in Leyte when General Douglas MacArthur returned to the Philippines in 1944 and stated that 2013 was the second time that he was grateful to the United States of America for its actions there. I was moved by the way he signed the letter: "Forever your friend, and little brown brother."

The fourth and most personal reason for my Pacific passion is my son, Cody James, born at Tripler Hospital on Oahu. Words cannot begin to describe my time in Hawaii with my wife, Brandy, enjoying the sunsets spanning across the ocean, and making a life and a family together. Thank you, Brandy, for your unquestionable and faithful support to me during this year at SAMS. I cannot fully express my gratitude for your support of my service to this great nation. I promise that it will continue to be an adventure and journey.

Acronyms

ADP	Army Doctrinal Publication
BuDocks	Bureau of Yards and Docks
CBs	Construction Battalions
CINCPOA	Commander-in-Chief, Pacific Ocean Area
CPOA	Central Pacific Ocean Area
JCS	Joint Chiefs of Staff
JP	Joint Publication
JTF	Joint Task Force
LST	Landing Ships, Tank
POA	Pacific Ocean Area
SOPA	South Pacific Areas
SWPA	Southwest Pacific Area
TSCP	Theater Security Cooperation Program
USARPAC	United States Army Pacific
USASOS	United States Army Service of Supply
USPACOM	United States Pacific Command

Figures

Introduction

The Pacific is vast; there is more than eight thousand miles between Hollywood, California and Bollywood, India. Unfortunately, the space between those bookends is rife with security issues due to territorial disputes, increased military capabilities, illegal trafficking, violent extremist groups supporting sub-state criminal activity, and increasing cyber-attacks with little dissuasion. These challenges highlight the significant role played by US ground forces, including the Army, the Marines, and US Special Operations Forces, as they conduct persistent shaping activities in the area. Ground forces perform key engagements executing strategic guidance underneath United States Pacific Command (USPACOM). All their operations and actions require logistics to support these efforts and ultimately to help the United States achieve its strategic aims. In order to maintain momentum during any campaign in the Pacific theater, the huge demand and volume for requirements must overcome the vast travel times and distances that necessitate an operational approach to synchronize sustainment in depth through joint sequential operations and secure and develop key nodes while maintaining steady lines of communications. This is done through the joint defense and seizure of key logistical locations followed by mixed ground, sea, and air engineering developments to critical infrastructure facilitating support to combat operations throughout the theater by a carefully timed distribution system.

Operational art, as defined in Joint Publication (JP) 3-0, *Joint Operations*, is the use of creative thinking by commanders and staffs to design strategies and campaigns and to organize major operations by employing military forces.[1] It requires a broad vision, anticipation, and an ability to plan, execute, and assess the operating environment. Army Doctrinal Publication (ADP) 3-0, *Unified Land Operations*, defines operational art as the pursuit of strategic objectives, in part

[1] Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 11 August 2011), 2-8.

or in whole, through the arrangement of tactical actions in space, time, and purpose.[2] The National Military Strategy, published in June 2015, states that US military forces and capabilities postured around the world reinforce an international order and calls for positioning forces to respond to threats rapidly should they emerge.[3] Sustainment calculations, when conducted appropriately, yield realistic expectations of feasibility and risks. Threats could pose a greater danger by giving an enemy time to gain a relative advantage if the theater lacks specific friendly capabilities to defend US interests.

The aim in the Pacific is to ensure a stable environment, mostly free of conflict, and to foster continued economic growth. The United States has been involved in the Pacific for over a century, and the need to understand the geography and tyranny of distance is only one characteristic of the theater. Understanding the importance of posturing and setting the theater for successful defense and sustainment is an even more crucial aspect. Resourcing, timing, and risk are considerations in an overarching equation.

The tyranny of distance across the Pacific remains unchanged, presenting enormous logistical hurdles because the ocean is no smaller than it was during the Chinese dynasties or World War II. "Studying the past is no sure guide to predicting the future."[4] However, there is something to learn from studying unfolding events in the Pacific during World War II, as they offer important lessons as to how to set the theater logistically for future sustainment activities. Although there were struggles during the island-hopping campaign, by late 1944 and 1945 the United States had significantly improved its conduct of joint sustainment. Initially it lacked ample

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[2] Army Doctrine Publication (ADP) 3-0: *Unified Land Operations* (Washington, DC: Government Printing Office, 2011), 9.

[3] The National Military Strategy (NMS) of the United States of America 2015 (Washington, DC: US Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 2015).

[4] John Lewis Gaddis, *The Landscape of History* (Oxford: Oxford University Press, 2002), 11.

shipping assets, advanced bases and infrastructure, and sufficiently coordinated joint logistics.[5] Both Admiral Ernest J. King and General Douglas MacArthur's stout personalities fought for resource allocation to the Pacific as well as within it.[6] Although improvements took place over time, the system was far from perfect. A historical view asserts to interpret the past for the purposes of the present with a view to managing the future.[7] This translates into setting the theater to create a tremendous deterrence and, ideally, avoid war altogether.

Several classical theorists, such as Carl von Clausewitz and Baron Antoine-Henri Jomini, discussed getting service members and their equipment to the right place at the right time. The sustainment of those forces over time is critical in order to achieve tactical and operational objectives. Jomini, who concentrated on logistics and constant care of defense forces, stated, "Logistics is the art of moving armies."[8] It comprises the order and details of movements, bases, and the relation between supply depots.[9] "Strategy is the art of making war upon the map, and comprehends the whole theater of operations; the art of posting troops upon the battlefield, logistics comprises the means and arrangement which work out the plans of strategy and tactics."[10] This theory as applied to the maritime domain in the Pacific highlights the importance of naval engagements and the use of islands for staging and sustainment bases during World War II. The array of forces in the Pacific required continuous resupply for tactical forces to achieve

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[5] Alan L. Gropman, *The BIG "L": American Logistics in World War II* (Washington, DC: National Defense University Press, 1997), 309.

[6] Ibid, 337.

[7] Gaddis, *The Landscape of History*, 11: "To accumulate experience is not to endorse its automatic application, for part of historical consciousness is the ability to see differences as well as similarities, to understand that generalizations do not always hold in particular circumstances."

[8] Antoine H. Jomini, *The Art of War* (London: Greenhill Books; California: Presidio Press, 1992), 69.

[9] Ibid.

[10] Ibid.

operational campaign and strategic objectives. Military leaders like Admiral King also discussed the insufficiency of simply moving and supporting forces on a map:

> Whatever else it is, so far as the United States is concerned, it is a war of logistics. The ways and means to supply and support our forces in all parts of the world—including the Army, of course—have presented problems nothing short of colossal, and have required the most careful and intricate planning. The profound effect of logistic problems is described elsewhere in this report, but to all who do not have to traverse them, the tremendous distances, particularly those in the Pacific, are not likely to have full significance. It is no easy matter in a global war to have the right materials in the right place at the right times in the right quantities.[11]

Carl von Clausewitz also implicitly stresses principles of logistics in *On War*, when he refers to "the numerous tentacles that prefer to suck nourishment from busy coastal areas…. This will indicate the general influence that questions of supply can exert on the form and direction of operations, as well as the choice of a theater of war and the lines of communication."[12] The war against Japan fits Clausewitz's definition: "War is an extension of politics by other means; a duel on a larger scale; an act to compel our enemy to do our will and render him powerless."[13] When major powers are in conflict, logistics are essential to support strategy, although Clausewitz did not state this explicitly.

Lieutenant General (Retired) Robert T. Dail discusses logistics in terms of elasticity.[14] Just as military economics (like business economics) has demand curves, logistics exhibits a certain elasticity; at individually dispersed ground tactical levels on dispersed islands up to an operational level, there is less elasticity for logistics.[15] It is at the tactical end of the supply pipe

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[11] Office of the Chief of Naval Operations, US Navy at War 1941–1945, *Official Reports to the Secretary of the Navy, by Fleet Admiral Ernest J. King, Commander in Chief, US Fleet and Chief of Naval Operations* (Washington, DC: US Navy Department, 1946), 36.

[12] Carl von Clausewitz, *On War*, edited and translated by Michel Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 338.

[13] Ibid 75.

[14] Robert Dail, *Does the US Army Really Understand Operational War? A Logistics Perspective* (Fort Leavenworth, KS: School of Advanced Military Studies, 1988), 4.

[15] Ibid.

that equipment and consumables are used, expended, consumed, damaged, destroyed, or lost. Consumables and expendables need replenishment and require a certain measurement of stocking levels to ensure that service members have the items they need to maintain operational momentum. It is important to ensure that those furthest forward are able to effectively fight and win on behalf of the nation's strategic objectives.

Current doctrine ADP 4-0, *Sustainment*, states that planning indirectly focuses on the threat but more specifically directs its efforts toward sustaining friendly forces as a whole so that units can achieve their desired end states unencumbered by logistics.[16] Operational reach is paramount to ensure that tactical actions avoid culmination and can span the distance and duration across which a unit seeks to successfully employ military capabilities.[17] How does a military extend its reach? The military can extend operations and activities by projecting force capabilities and by using pre-positioned sustainment stocks and equipment forward while building storage depots and supply stocks. Similarly, in World War II, the importance of securing forward bases and small islands across the Pacific became more important as lines of communication were extended and stretched for each of the services.

Henry Eccles describes the terms of logistics from international, national, civilian, and military perspectives. Logistics is the process of planning and executing the provisions of supplies and services to establish staging, positioning, and a theater set that enable the achievement of strategic objectives.[18] This is the structure of facilities, services, materials, and

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[16] Army Doctrine Publication (ADP) *4-0: Sustainment* (Washington, DC: Government Printing Office, 2012), 11.

[17] Ibid.

[18] Henry E. Eccles, *Logistics in the National Defense* (Harrisburg, PA: Stackpole, 1959), 45. International logistics provides support of military forces and civilian economies at the international level; national logistics support a nation's military forces, its operations, its own economy, and civilians; civilian logistics supports the civilian domestic economy; military logistics is purely to support military means and resources for operations.

men. Distribution of resources becomes more complex as distances stretch further and the means to distribute through transportation assets become scarcer. In the Pacific, the US Army depended on the Navy and merchant marines to distribute massive amounts of supplies across a vast area.

It is difficult if not impossible to contemplate strategic success in the Pacific theater without a formidable navy, a competent ground component, and air power to support both sea and ground forces to retake islands as bases for sustainment and future offensive operations. Julian S. Corbett in *Some Principles of Maritime Strategy* argued that a navy could not win a war by itself; it is equally certain that the US Army and US Marine Corps, operating in a maritime domain, could not achieve their tactical and operational objectives without the navy.[19] During the latter part of World War II, the United States began improving its service component coordination. The unprecedented demand and volume for requirements, the vast travel times and distances, and the synchronization of sustainment in depth across the Pacific Theater necessitate a joint sequential approach to operational art by securing areas and building capabilities in order to maintain momentum to defeat the Japanese.

This monograph, chronologically divided into three sections, blends theorist, historical context, and current Joint and Army doctrine. The first section, "Prewar Pacific," describes the logistics infrastructure, routes, bases, and sustainment operations that existed in the Pacific at that time, up to the bombing of Pearl Harbor. It opens by describing how the United States expanded across the Pacific theater, positioned from east to west in the Philippines, Guam, and Hawaii, and stretched its operational reach, leaving clear security gaps. Prior to World War I, the Japanese empire emerged out of isolationism and expanded into the Pacific theater by gaining islands and colonial territories (thereby fueling a growing rivalry due to conflicting US interests); it then developed its military capabilities in the interwar period. The United States identified Japan as a threat and began the development of War Plan Orange; however, it could not fully protect the

[19] Julian S. Corbett, *Some Principles of Maritime Strategy* (Dover Publications, Dover, Ed Edition, 2010), 19.

aforementioned US stations in the Pacific with the right capabilities due to financial limitations and insufficient congressional appropriations for defense spending that left the United States vulnerable.

The second section, “Rebuilding the Theater,” covers the industrial and sustainment challenges as well as the development of an intricate logistics network. Significant arguments and personality conflicts surfaced between service components as theaters commanders fought the enemy and each other for crucial resources during 1942–1943. The simultaneity of the ramping up of US industrial capacity and the buildup in Australia, a massive logistical effort, gained momentum but then slowed as the decision to concentrate first on the war in Europe signified a shift in priorities. The tactical objectives during multiple land and sea battles beginning in August 1942 around Guadalcanal demonstrated the importance of operational art and stimulated the first of many amphibious Allied thrusts toward defeating Japan.

Finally, the last section discusses the rebuilt theater and improved developments over time through a Joint Working Board for the continuous sustainment of forces and operations (1944–1945). The United States executed deep and close sustainment operations and provided security across long sea lines of communication while stockpiles grew to support the next large assault. This section directs the reader to focus on the initial decisive, shaping, and sustaining activities to support ground forces, which overcame complex logistical distribution challenges with limited resources. Ultimately, United States forces were successfully manned, equipped, and supplied across vast areas in the Pacific theater, but they faced noteworthy trials in achieving this goal.

Section 1: Prewar Pacific

Layers of complex relationships and activities built over time provide background and explain why hostilities spread to the Pacific during World War II. The US and Japan gained territories around the turn of the century, and Japan's growing appetite for resources clashed with the United States' national interests. Both nations expanded into the Pacific and supported national interests abroad, creating a powder key ready to explode. Decisions made by leaders from both nations increased tensions, and the two countries' military innovations throughout the interwar period set the stage for miscalculation, outright disagreement, and war. The US developments on war plans started as early as 1906 but were refined over the following four decades as Japan became a more serious threat. Estimates of Japan's offensive capacities were strikingly accurate, but their mobilization took place on a much quicker timeline than expected, leaving the US surprised by the Pearl Harbor attacks.

Rivalry in the Pacific

Alfred Thayer Mahan left his fingerprints on both US and foreign navies and energized the development of a strong maritime force. In 1890, Mahan published *The Influence of Sea Power upon History, 1660–1773*; he later wrote *The Influence of Sea Power upon the French Revolution and Empire, 1793–1812*.[20] He argued that controlling the seas with a big navy can enable prosperity, commerce, imperialism, and a more aggressive competition for world trade, which also requires a strong merchant marine capability to transport goods. Additionally, through the dominance of the maritime environment and the protection of sea lines of communication to its colonies, a nation can also support forces that have moved forward to protect its land-based investments abroad.

[20] Peter Paret, Gordon Alexander Craig, and Felix Gilbert, *Makers of Modern Strategy* (Princeton, NJ: Princeton University Press, 1986), 449.

Colonialism and imperialism provided the foundation for extending both US and Japanese national interests. Mahan stated that sea power influences the course of history and the prosperity of nations through two principles: (1) command of the sea through naval superiority and (2) the fact that a combination of maritime commerce, overseas possessions, and privileged access to foreign markets produces national wealth and greatness.[21] He advocated for the US to use Hawaii and the Philippines as stepping stones to a great prize, the Asian markets. In a supporting role, he explained, the navy protects lines of communication and potentially settles conflicts erupting from economic rivalry, and it ensures access to foreign markets for surplus goods and resources.[22]

With American forces in the Philippines, the United States required distant coaling stations far from the western shores of San Francisco to sustain its navies as well as land forces. The lines of movement by which a military body is kept in living connection with the national power entail having the means to continue operations; just as an army uses roads to resupply its units, sea lines of communication, ports, and bases replenish the necessary supplies for ships traveling further than what their hulls can carry.[23] Food, ammunition, and most importantly, fuel are the essential commodities for an effective maritime strategy. Without forward sustainment activities and elastically stretching operational reach, theater operations will be constrained.

By the turn of the century, the United States had positioned military forces on Hawaii, Guam, Wake Island, Midway, Samoa, and the Philippines, setting the stage for future clashes with Japan.

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[21] Millett, *For the Common Defense*, 246, The United States had a battleship navy and would impose significant sea power, controlling the seas and lines of communication through its strong navy.

[22] Paret, Craig, and Gilbert, *Makers of Modern Strategy*, 465.

[23] Ibid, 460.

As Japan emerged from isolationism in the nineteenth century, it began trading with the outside world, including China, Korea, Britain, and the Dutch. Japan was not blind to Western

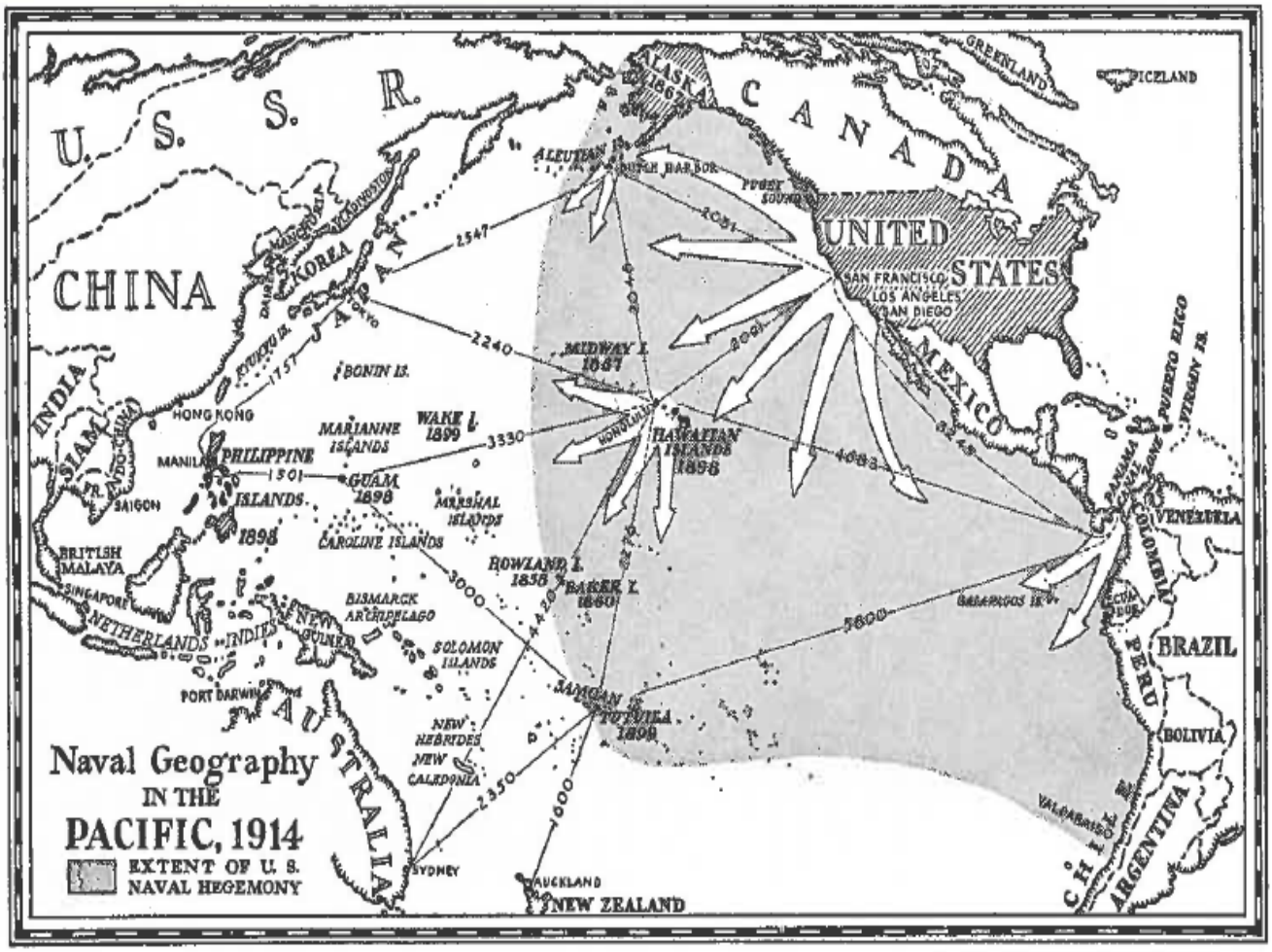

Figure 1: Naval Geography in the Pacific, 1914
Edward S. Miller, *War Plan Orange* (Annapolis, MD: Naval Institute Press, 1991), 45.

naval technological advances; it had contact with the Dutch even during isolation. “But when the black ships [as foreign vessels were called] showed up on their shores, especially US Commodore Matthew Perry's fleet in 1853, to ask (or demand) that Japan open its ports to trade and restocking of ships from other countries, it was a huge shock to many citizens just how advanced the technology was, especially in shipbuilding and weaponry.”[24] Japan decided to rapidly develop its

[24] Makiko Itoh, “Why Did Japan End Its Isolation and Modernize in the 19th Century?” *Slate*, December 31, 2013, Accessed October 9, 2015

military technology to convince greater powers that they were equals. Japan wanted to avoid ending up like China, overpowered and split up among various Western colonial powers.[25]

Japan had a growing appetite for resources that were unavailable on the mainland of Honshu. After World War I, Japan benefited by gaining German colonies, which included the Marianas, the Marshalls, and the Carolines.[26] These island chains were on the direct US route to the Philippines, and their control by Japan altered the strategic picture, requiring changes in American plans for a possible future war with Japan.[27] The search for resources such as rubber, oil, coal, and iron caused the Japanese to realize that expansion was necessary if they wanted to continue to rise as a great nation. War Plan Orange, discussed later in this monograph, was almost prophetic in this regard. The empire depended on foreign resources but wanted to be more independent.

Japan gained significant military experience, learned lessons, and gained territory during its conflicts prior to World War II. Its army's triumphs against superior forces in the Sino-Japanese War of 1894–1895 and the Russo-Japanese War of 1904–1905 gave commanders confidence that their "fighting spirit" could ensure victory anywhere.[28] In 1931 and 1937, Japan invaded Manchuria and China, respectively, thereby gaining a foothold in Asia. Ironically, the

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http://www.slate.com/blogs/quora/2013/12/31/japan_s_19th_century_modernization_why_did_the_country_end_its_isolation.html.

[25] Makiko Itoh, "Why Did Japan End Its Isolation and Modernize in the 19th Century?" *Slate*, December 31, 2013, Accessed October 9, 2015 http://www.slate.com/blogs/quora/2013/12/31/japan_s_19th_century_modernization_why_did_the_country_end_its_isolation.html.

[26] Ronald H. Spector, *Eagle Against the Sun* (New York: Free Press, 1985), 55.

[27] Ibid. The "Orange Plan" for war with Japan was one of a number of contingency war plans developed by the United States before World War I; they were often referred to as the "color plans" because each hypothetical enemy was assigned a color.

[28] Spector, *Eagle Against the Sun*, 37. Despite the militarism and bellicosity of its leaders, the Japanese army was un-prepared for modern war, especially for the type of modern warfare it was going to fight against the United States.

majority of Japan's resources came from the Allies, but Japan would soon be on a warpath to invade British, Dutch, and US colonies in Southeast Asia. When Japan moved into the French colonies of Indo-China in summer 1941, the United States responded by placing an embargo on Japan that denied it critical resources and would choke the country within a little more than a year.

War Plan Orange

US Army War College students studied the possibility of a two-theater war shortly after World War I, based on what nations could potentially challenge US interests at that time.[29] War plans were developed and given specific colors to designate a region or country as the belligerent. War Plan Orange was designated for Japan, and other colors were given to potential adversaries, including Great Britain. Although US or "blue" forces would never end up having to use War Plan Red against the British, the notion of fighting a two-front war simultaneously in the Atlantic and Pacific was practiced during war games.[30] "The college exercised War Plan Red, Red-Orange, or Orange every year, and in this way the seeds for the Rainbow Plans were planted. The prominence of War Plan Orange recognized the very real threat that Japan posed to the Philippines and US interests in the Pacific."[31] These war games were foretelling in that the Army would soon be defeated in the Philippines and naval clashes between Hawaii and Asia would ensue. Edward Miller, in *War Plan Orange*, The US Strategy to Defeat Japan, 1897–1945, states:

> If the causes of war appeared ambiguous at times, the probable situation at the outbreak seemed clear. Japan could mobilize swiftly and secretly. It would choose to attack at an advantageous moment when it considered the United States unready and the US Navy relatively weak. Mahan predicted it would strike unscrupulously without bothering to declare war, as it had done to the Russians at Port Arthur. They sometimes supposed a

[29] Michael R. Matheny, *Carrying the War to the Enemy* (Norman: University of Oklahoma Press, 2011) 66.

[30] Ibid, 67.

[31] Ibid.

> warning period ranging from two to forty days, but for the most part, they expected a sudden thunderbolt as the opening blow.[32]

Planners predicted a three-phase contest with Japan. During Phase I, Japan would attack lightly defended outposts to ensure its access to oil and other natural resources. The US Navy's attempt to prevent takeovers would fail; the United States would then focus on mobilization and deal with quick strikes and short raids reaching as far north as the Aleutian Islands in Alaska with the capabilities it currently possessed.[33] In Phase II, the US Navy would engage in small battles to reoccupy and take Japanese islands in the central Pacific. Advance naval and air bases would be established, and securing supply lines would be critical in the efforts to erode Japan's forces dispersed throughout the Pacific. Japan, or the "orange forces," would expend its combat power and resources to resist the "blue forces" maneuvering westward, but would lose battles of attrition. In Phase III, Japan's fatal stubbornness would lead to its capitulation. "American forces would advance northward through islands paralleling the coast of Asia to establish new bases for economic warfare. They would choke off all of Japan's imports and ravage its industries and cities by air bombardment until it sued for peace, even though its proud army stood intact in the home islands and in China."[34]

Initially, distance would be Japan's ally in dominating the western Pacific; US outposts in Manila and Guam were vulnerable. The Philippines and Guam are roughly 1500 miles from Japan, much closer than the 3,500 miles from Hawaii to Tokyo.[35] This made Hawaii a difficult location to occupy, but Japan could attack Pearl Harbor and the US Pacific Fleet. The most dangerous security problem in the eastern Pacific was Pearl Harbor's vulnerability to a raid,

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[32] Miller, *War Plan Orange*, 27.

[33] Ibid, 4.

[34] Ibid, 4.

[35] Ibid, 32.

especially an initial surprise blow. Conversely, it would be difficult for the US to hold onto the Philippines even with additional naval forces traveling 14,000 miles through the Panama Canal to the Pacific theater.[36]

Existing Structure

In the nineteenth century, the United States stumbled upon its venture into imperialism by developing in the west. It constructed the Panama Canal, purchased Alaska, occupied Midway, and acquired the right to build naval bases at Pearl Harbor, Hawaii, and Pago Pago, Samoa.[37] The great distances between sparsely capable islands increased the complexity of operational reach and logistical challenges, epitomizing the difficulties in the Pacific theater.

US developments after World War I were slow. For the US to wage war effectively in a modern context during the 1940s would depend on its strategic deployment mobility, manpower mobilization and training, raw materials and resources, industrial capacity, and scientific knowledge.[38] One of the key functions for operations to succeed was a logistics plan to support training, smaller operations, or a full-blown war with Japan. The United States was poorly prepared to achieve its strategic objectives until the proper means were allocated, constructed, and sufficient levels of stocks provided to stop the Japanese. In 1939, the United States Army amounted to only 174,000 men, just over three divisions and far below full strength, and it was scattered over 130 posts across the country.[39] This was a stark contrast with the roughly eight-million-man army that the US would muster by the end of World War II. Accomplishing training

[36] Miller, Miller, *War Plan Orange*, 32.

[37] Millett and Maslowski, *For the Common Defense*, 236–37.

[38] *Logistics in World War II: Final Report of the Army Service Force* (Washington, DC: Center for Military History, 1993), 1.

[39] Ibid.

was difficult due to transportation asset shortfalls. Additionally, there were virtually no specialized service troops to provide support to combat units.

Small bases across the Pacific, developed from 1920 to 1940, provided little sustainment support but also had minimal requirements. Settled outposts possessed tiny garrisons of personnel who rotated through tours of duty, and supplying these bases did not present significant logistics or shipping challenges. Troops relied mostly on the local populations and resources for goods and services. Shipments from the United States were relatively small.[40] In 1940, increased appropriations finally made it possible for the US to begin building up strength and defenses at all overseas bases, but production was still slow; modern material did not begin to arrive in Hawaii and the Philippines until 1941.[41] Closer to Hawaii, the US also occupied a number of small islands in the Leeward Chain of atolls, Johnston Island southwest of Hawaii, and southern atolls such as Palmyra and Canton; these islands were unsuitable for naval bases, but they constituted a 4,500-mile line for aircraft and smaller vessels.[42] "The central atolls, especially Midway, were intrinsically the most valuable, as sentinels of Pearl Harbor and support points for a Blue offensive."[43]

Plans to Develop Structure

Building better facilities would require the creation of a giant organization. "Seabees" would bring US military industrial power in the form of tarmac, cement, steel girders, electrical wiring, glass, bulldozers, and lighting equipment. In December 1937, Roosevelt appointed Admiral Ben Moreell as the Chief of the Bureau of Yards and Docks (BuDocks) and as chief civil

[40] *Logistics in World War II: Final Report of the Army Service Force*, 8.

[41] Ibid, 9.

[42] Miller, *War Plan Orange*, 65.

[43] Ibid, 49; "blue" referred to US forces in the colored plans.

engineer of the Navy.[44] He planned the defensive construction in the Pacific and provided critical thinking on what requirements would exist to conduct a counteroffensive if the Japanese attacked. After Pearl Harbor, Moreell recommended the creation of Construction Battalions or CBs (thus "Seabees") that would possess expertise from the building trades.

Japan understood that the United States had immense industrial potential; however, the organizational structure and logistics backbone did not exist until motivations were invigorated by Japanese and German activities. "Logistics is the bridge between the national economy and combat forces, and logistics thus operates as 'military economics' in the fullest sense of the word."[45] Logistics also provides the physical means for exercising organized force over other nations.[46] The War Department had proposed to Congress in 1937 an expenditure to make industrial preparations for the purpose of weapons production updates, but the request was rejected.[47]

Only after the shocking outbreak of war in Europe in September 1939 did the United States truly grip the need to prepare for war. Two years before the European war began, the US had appropriated only $50 million for defense: $20 million for armaments and equipment and $30 million for war reserves.[48] "In May 1940 President Roosevelt ordered a large majority of the US fleet to relocate to Pearl Harbor to deter Japan from moving against European colonies in South East Asia.[49] In terms of logistics, the US was resourcing the Pacific theater with industrial capacity to equip its forces, train them for readiness, and establish a posture for operations,

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[44] Paul M. Kennedy, *Engineers of Victory* (New York: Random House, 2013), 329.

[45] Eccles, *Logistics in the National Defense*, 17.

[46] Ibid, 22.

[47] *Logistics in World War II: Final Report of the Army Service Force*, 2.

[48] Ibid.

[49] Miller, *War Plan Orange*, 51.

actions, and activities around the globe to help in deterring war or to give the US a better position of relative advantage. The CINCPOA feared that the US would lose the Philippines if not properly resourced.

The United States was (and still is) rich with resources, scientific capabilities, and manpower. The timing and synchronization of the political will harnessed the nation's capabilities, giving the US the means to respond to the calamities occurring across the Pacific and Atlantic Oceans. Industrial Mobilization Plans published in 1939 emphasized the need for government controls on the economy.[50] Procurement of commodities and the manufacture of vehicles, weapons, and munitions finally gained traction in the 1940s to supply major operations, but it would take several years and additional funding to achieve the needed levels. "During the three years from spring 1940 to spring 1943 the US Army, facing first the possibility then the actuality of participation in the war, developed a logistical system that its leaders believed best adapted to this new environment."[51] In order to set the theater for successful sustainment in the Pacific in the coming years, the US would have to calculate the mobilization and training for its forces, taking into account industrial capabilities, geography, and economics.

Factories began to construct the assembly lines to provide materiel for Allies. There were negative aspects of high demands such as manufacturing priorities that established the quantity of materiel to be shipped resulting in safety and quality deficiencies. Mass production affected every aspect of the Army's logistics and supply systems but positively extended the Army's capacity for resupply. "By employing a myriads of ships, trucks and other transport, performing miracles

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[50] *Logistics in World War II: Final Report of the Army Service Force*, 4. The Army and Navy Munitions Board gave attention to the facilities available for the output of finished munitions. It devised an elaborate allocation plan for assigning industrial facilities among the various procuring agencies, hoping thereby to prevent the disruptive degree of competition that characterized 1917 procurement. The plan was also intended to give some experience to manufacturers in the production of war materiel.

[51] Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy, 1940–1943* (Washington, DC: Center of Military History, US Army, 1995), 13.

in port rehabilitation, stocking supplies in depth on a huge scale, and copying the managerial techniques of American big business, the US Army was able to achieve a continuity and volume of supply—and therefore sustained offensive power—that our enemies could not match."[52] Setting the theater required the capabilities of industrial enterprise partners to support military operations and the Allies operating across the ocean. The avalanche of men, equipment, and supplies would come. How would logistics support its delivery to the right places?

Planning and approval for naval construction projects were executed through the Shore Station Development Board. This board's purpose was to design shore station programs that could be continuously revised. The board included representation from the Chief of Naval Operations, the Director of Shore Establishment, Director of War Plans Division, OpNav, and the Bureau of Yards and Docks (BuDocks).[53] As early as summer 1939, planners were studying options for standardized, prefabricated base components, as well as for equipment that could be rapidly transported and assembled; specifications for standardized barracks, warehouses, aircraft hangars, ammunition magazines, floating dry docks, pontoons, portable power plants, and fresh water distilleries were designed.[54]

Pearl Harbor

On December 7, 1941, "a day that will live in infamy," carrier-launched fighters and bombers from the Imperial Japanese Navy attacked the US Pacific Fleet stationed at Pearl Harbor, Hawaii. Japanese military leaders believed that destroying US naval forces would give them the necessary time and space to occupy other Pacific areas and build up combat power and

[52] Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy, 1940–1943*, 14.

[53] Eccles, *Logistics in the National Defense*, 241.

[54] Ibid.

defenses before the United States could reconstitute its military capabilities for a counterattack.[55] The flow of troops, equipment, and supplies from the United States to the Philippines was cut off. Vessels in transit to the Philippines were directed to return to the nearest US port or proceed directly to Australia.

This section of the paper has provided the background and the larger global context, dating back to the nineteenth century, for the emerging contest between the Axis and Allied powers in the Pacific theater. The events that followed World War I resulted in multiple nations clashing over Pacific islands and over acquisition of resources that were in the interest of each country national priorities and future economic stability. Clausewitz describes war as a living abstract entity born out of failed diplomacy and political contention. He stated, "War is an extension of politics by other means; a duel on a larger scale; an act of force to compel our enemy to do our will and render him powerless."[56] The United States had a clear military policy stance that conflicted with Japan's expansion of its empire. When Japan violated this position, the results were cause for the US to impose an embargo that left the Japanese empire with few alternatives other than to attack, as part of a longer-term strategy to gain space and time to survive.

[55] John Miller Jr., *Guadalcanal: The First Offensive, United States Army in World War II* (Washington, DC: Government Printing Office, 1949), 3.

[56]Clausewitz, *On War*, 75.

Section 2: Rebuilding the Theater (1942–1943)

Henry Eccles in *Logistics in the National Defense* discusses strategy and logistics. First, he notes that physical constraints limit logistics capabilities and encircle the scope and timing of strategic plans. A nation can produce only so much goods in a limited amount of time; additionally, it can transport materiel and supplies only with the means that the nation currently possesses until more assets are constructed, which also takes more time. Second, in terms of manpower, there is a relationship between the present arrangement of forces and capabilities, the assessment as to where they are required, the rate of mobilization over time, and the deployment of those forces to support future operations. There is a complex trinity and interrelation between strategy, logistics, and the operational and tactical considerations related to an enemy threat. The selection of the sites for overseas bases and the timing of their buildup represents a fusion of strategic and logistics considerations, including the efficient use of limited capabilities and resources.[57]

After the stunning attack on Oahu, the War Department decided on 30 December 1941 to send a logistics task force to Bora Bora.[58] Joint Task Force (JTF) Bobcat had the mission of establishing and defending a fueling station servicing ships from the West Coast or coming through the Panama Canal en-route to Australia. The Army was responsible for defending the garrison and supplying subsistence ashore; the Navy was responsible for moving the task force overseas and provided shore construction at its destination.[59] The initial deployment moved sixty days' worth of general-level maintenance and 120 days of rations and gasoline. Ships were loaded hastily and in disorganized fashion; eight hundred tons of heavy tractors, bulldozer parts, and pontoons added to the difficulty of offloading cargo quickly. "Ships could not be unloaded

[57] Eccles, *Logistics in the National Defense*, 32.

[58] Leighton and Coakley, *Global Logistics and Strategy*, 179.

[59] Ibid.

without the floating equipment and the floating equipment could not be assembled without unloading."[60] Several weeks went by as the first cranes unloaded poorly marked boxes, crates, floating pontoons and barges onto the beach that stretched over a mile before smoother operations could ensue. This JTF Bobcat vignette is only one example of how the early joint ventures demonstrated a logistical crisis that the US would slowly overcome to successfully sustain operations in the Pacific.

Japanese Expansion

By February 1942, the allies were confounded by the multi-prong Japanese attacks against the Dutch East Indies, Malaya, Burma, Hong Kong, and the US fleet and its bases at Pearl Harbor, Guam, and in the Philippines. On one occasion, Japan bombed Darwin, Australia and threatened to land there.[61] Denial of airfields to the enemy became extremely important. "From the Sunday morning attack on Pearl Harbor (December 7, 1941) until the naval victory in the Battle of Midway (June 4–5, 1942), the United States saw its armed forces in the Pacific reel from one defeat to another as the Japanese conducted an Asian version of the Blitzkrieg and seized every one of their planned objectives at minimal cost and almost exactly according to schedule."[62] How would US and Allied strategy approach the challenge of pushing the Japanese out of their recently gained territories? "The major problem involved in defeating Japan proved to be less a matter of choosing the correct strategy than breaking the logistical bottlenecks—devising the means of getting critical items, whether amphibious craft, cargo ships, fighter planes, engineer battalions, or transport aircraft—to the right portions of the battlefronts on time and in sufficient numbers."[63]

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[60] Leighton and Coakley, *Global Logistics and Strategy*, 182.

[61] James R. Masterson, *US Army Transportation in the Southwest Pacific Area, 1941–1947* (Washington, DC: Transportation Unit, Historical Division, US Army, 1949), ii.

[62] Millett and Maslowski, *For the Common Defense*, 374.

[63] Spector, *Eagle Against the Sun*, xiii.

Before the attack on Pearl Harbor and during the first three months of 1942, every effort was made to strengthen Philippine defenses through US forces in Australia and the Dutch East Indies. “Supply operations controlled by United States Army Forces Far East (USAFFE) in 1941 affected the course of the war chiefly in two ways: (1) the accumulation of materiel in the Philippines enabled the forces at Bataan and Corregidor to prolong their resistance, and (2) certain troops and materiel en route to the Philippines on 07 December 1941 were diverted to form the nucleus of the US forces in Australia.”[64] By mid-March, the ability to bring supplies to Bataan and Corregidor had been lost. Japan controlled air and sea routes by blocking the passage between Mindanao and the Visayas into Manila Bay.[65] The situation was dismal and General Douglas MacArthur was ordered to leave the Philippines under the cover of night before the Japanese entered Manila.

By March 30, 1942, the Joint Chiefs of Staff (JCS) split the Pacific into two main areas and received final approval from the president. First, the Pacific Ocean Area (POA) was commanded by Admiral Chester W. Nimitz and was further subdivided into the North, Central, and South Pacific Areas (SOPA), as shown in Figure 2 on the next page. Nimitz would directly control the north and central areas, but SOPA, with headquarters in Auckland, New Zealand, would be commanded first by Vice Admiral Robert L. Ghormley and later by Admiral William F. Halsey Jr., who succeeded Ghormley in October 1942.[66] Meanwhile, MacArthur relocated to Melbourne, Australia to set up the Southwest Pacific Area (SWPA) headquarters and took control of US and Allied forces.

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[64] Masterson, *US Army Transportation in the Southwest Pacific Area*, 3.

[65] Louis Morton, *Strategy and Command* (Washington, DC: Office of the Chief of Military History, Dept. of the Army, 1962), 193.

[66] Morton, *Strategy and Command*, 249.

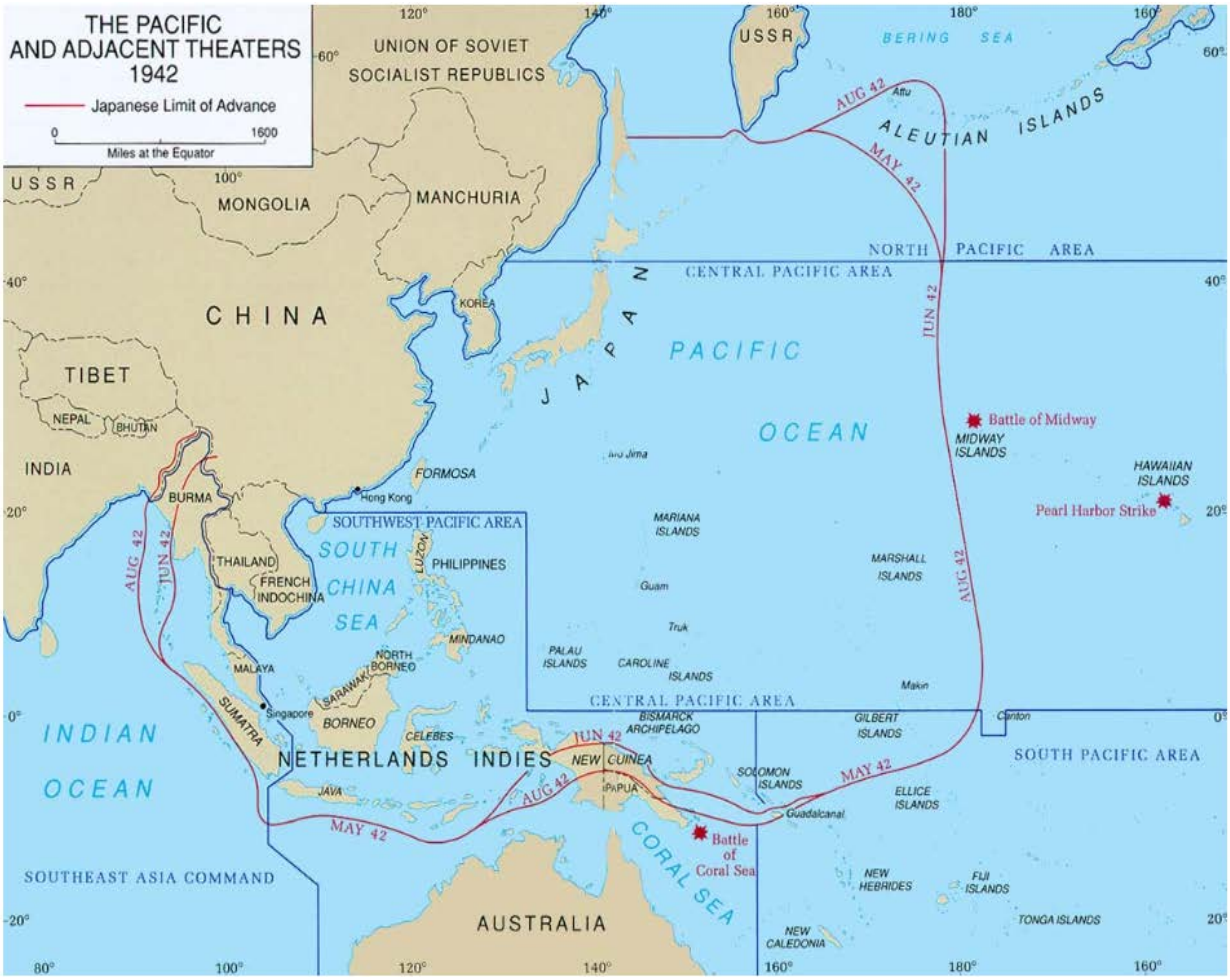

Figure 2: Pacific theater of operations
Clayton R. Newell, "The Pacific and Adjacent Theaters 1942," in *The US Army Campaigns of World War II* (Washington, DC: Center for Military History, 2003), 12–13.

South East Asia Command would receive combined US–U.K. strategic direction and the U.K. would give the bulk of direction to Burma and India. China received direction from Chiang Kai-Shek but was dependent upon Allied support with assistance from Lieutenant General Joseph Stilwell. In every part of the Pacific theater where Allied service components found themselves, they were forced to work together and depend on each other using their complementary sustainment capabilities.

The tyranny of distance complicated the war for both the US and Japan. Both nations attempted to overcome the logistical challenges created by the vast Pacific distances while engaging each other in combat at sea, on land, and in the air. Each side exploited opportunities

and took advantage of enemy weaknesses enhanced by time and distance. For the United States, defending Australia was paramount; it proved to be the initial critical strategic point that would support future operations. Service component sustainment requirements for battles around Guadalcanal necessitated a joint approach to provide support for all service members in the area. Gaining logistical nodes to build up combat power with sufficient standoff distance away from enemy bombers made operations less difficult. The United States also had to protect the sea lines of communication that provided the lifeblood of sustainment. As for offensive actions, attacking Japanese vulnerabilities—namely, its military capabilities (including carriers) and sea lines of communication—to diminish Japan's ability to fight became a major aim.

After the successes at Coral Sea and Midway in May and June 1942 came immense pressure from Washington to exploit these successes. "On June 24, 1942 an impatient King directed Nimitz to prepare to capture Tulagi and adjacent positions."[67] The US used a lily-pad approach on the islands and required basing to extend its operational reach. Basing stretched US military capabilities and enabled expanding or contracting support for operations.[68] Admiral Nimitz and General MacArthur used a multi-prong basing approach from Fiji, Tonga, New Caledonia, New Zealand, and Espiritu Santo to attack Tulagi and Guadalcanal. These islands rested on the edge of Japanese-controlled areas in the Pacific and threatened Allied efforts. The Solomon Islands provided the first opportunity on land to prevent encroachment toward Australia and blunt the Japanese expansion. The environment included a lack of real industrial targets, dense impenetrable jungles, humid conditions, and seasonal monsoons that slowed Allied and enemy armies. Conducting amphibious and sustainment operations in this harsh tactical environment was extremely challenging.

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[67] Richard B. Frank, *Guadalcanal: The Definitive Account of the Landmark Battle* (New York, Penguin Group, 1992), 33.

[68] Army Doctrine Reference Publication (ADRP) 3-0: *Unified Land Operations* (Washington, DC: Government Printing Office, 2012), 4-1.

On August 7, 1942, the US achieved a strategic and tactical surprise during the first phase of Guadalcanal, Operation Watchtower, when eleven thousand Marines successfully moved from ships to enemy beaches. Amphibious operations add a distinct complexity to military operations, and the Marines understood that the first items they would need as they came ashore from seagoing vessels, such as ammunition, would be the last items loaded. They immediately gained the initiative and push inland to seize the critical airfield, renaming it as Henderson Airfield.

The US Navy learned valuable lessons while engaging the Japanese. Admiral Richmond K. Turner was defeated near Savo Island on August 8–9 and had to retreat. Isolated Marines left on Guadalcanal had with them only the items taken ashore with them and enemy supplies that they had captured. For the next four months, Guadalcanal and the waters around it would be the scene of the bitterest naval fighting during the Pacific War, which severely threatened logistical resupply movements.[69]

While offensive operations were occurring on Guadalcanal, General MacArthur's efforts to strengthen defenses around Port Moresby and Milne Bay on Papua were essential in supporting Allied counteroffensives in New Guinea.[70] By October 1942, shipping resources and supply facilities strained to the limits could barely support the forces arriving. *The Reports of General MacArthur: Campaigns in the Pacific, volume 1* states, "Docks for handling ships, roads for distribution of supplies to depots, and buildings for hospitals and the protection of materiel against the heat and torrential rains were inadequate at Port Moresby, almost non-existent at Milne Bay, and entirely lacking in forward areas. These facilities had to be developed at the same time that the troops were moved into position."[71]

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[69] Combinedfleet.com, "Guadalcanal Campaign/Nihon Kaigun," last modified 2015, Accessed March 24, 2016.http://combinedfleet.com/battles/Guadalcanal_Campaign#Savo_Island.

[70] Center for Military History, *The Reports of General MacArthur: The Campaigns of MacArthur in the Pacific, volume 1* (Washington, DC: Center for Military History, 1994), 72.

[71] Center for Military History, *The Reports of General MacArthur: The Campaigns of MacArthur in the Pacific, volume 1* (Washington, DC: Center for Military History, 1994), 73.

By February 1943, US joint forces successfully halted Japanese expansion in the Pacific in most of the Solomons and on Papua to set the conditions for future offensive operations. Land and naval victories reversed the momentum gained by elements from the Japanese Eighth Fleet and Seventeenth Army, but it required joint coalition capabilities to go from the sea to enemy-controlled islands. Operations during 1942 and 1943 would begin to set the theater for successful tactical actions and, over time, would ultimately lead to defeating Japan.

Plans Used from War Plan Orange and Rainbow 5

Section one of this monograph introduced War Plan Orange's phases, the anticipated Japanese movements, and how the US would respond. The sudden, aggressive, unanticipated Japanese attacks forced the US and the Allies to withdraw from the Philippines and surrounding areas. Prewar strategists had anticipated a war consisting of three phases steered by geography; Japan's offensive during Phase I lasted six months and held true until their significant defeat at Midway.[72] War Plan Orange did not have detailed plans for an army storming through the Solomon Islands as General MacArthur swept through the SWPA to regain the Philippines.

The Orange Plan was based on the assumption that the United States would be engaged in a war with Japan alone. With the outbreak of war in Europe in 1939, this assumption was no longer valid. US and British forces would try to defend Hong Kong, the Philippines, Malaya, and Singapore against a Japanese attack. The main principle was to hold on to the Philippines, if possible, and to gain control over the islands and waters of the central Pacific west of Hawaii.[73] The situation changed when the Japanese expanded out farther into the Pacific than anticipated and because there was a two-front war.

[72] Miller, *War Plan Orange*, 334.

[73] Philip A. Crowl, *Campaign in the Marianas* (Washington, DC: Center of Military History, US Army, 2011). 3.

Phase II started with the assault on Guadalcanal and the strengthening of defenses on Papua, stopping Japan's expansion across the Pacific. Additionally, the victories in the spring 1942 at Midway and in the Battle of the Coral Sea guaranteed that sea lines would hold. Port Moresby was reinforced and Milne Bay would prove invaluable for the air support of future convoys rounding the southern tip of Papua.[74] Setting the theater by securing critical nodes ensured continued support at specific locations. At the end of February 1943, General MacArthur reported, "Allied forces control Australia, Papua, Southeast Solomons, Fijis, and the land and sea areas south of the Buna, and Goodenough Island. Advanced air domes are along the line Darwin, Port Moresby, Buna, Guadalcanal, and these with further development will support initial operations toward Bismarck."[75] Phase III would not start until the Philippines were recaptured and aerial bombardments could take place from China and other islands within range of Honshu.

Rebuilding Structure

It is important to discuss building a framework when setting the theater. There are three major requirements; sometimes the three must be implemented sequentially due to physical limitations, whereas in other instances, due to operation tempo, they can occur simultaneously. First, the framework must include an organizational and command structure to help in prioritizing, arranging, and coordinating the movement of men and items. Second, it requires a distribution network and lines of communication made up of routes, modes, and nodes to support forces. The third key component is the physical infrastructure at ports, including the size of ships and aircraft that can offload there as well as supporting materiel handling equipment (MHE) that helps to increase throughput for further inland distribution to the tactical user. These three elements complete a circuit to help bring military operations and sustainment to forces in the most efficient and timely manner possible. It is especially important for joint sustainment forces

[74] *Reports of General MacArthur*, 105.

[75] Ibid.

to communicate and coordinate massive logistical efforts and priorities that are supporting tens-of-thousands, if not hundreds-of-thousands, of service members operating in the Pacific region. Benjamin King, Richard C. Biggs, and Eric R. Criner in *Spearhead of Logistics: A History of the United States Army Transportation Corps* state:

> Of all the theaters in World War II, the Pacific was the one in which US forces needed a workable joint logistical organization. Army ground and air forces, Marine and Navy forces constantly operated jointly in tactical operations where coordination was a prerequisite for mission success. However, fundamental differences in Army and Navy approaches precluded effective integration of logistical support and adversely affected the support structure of both SWPA, which were Army-oriented, and Pacific Ocean Areas, which were Navy-oriented. JCS directives required both commands to observe the principle of unity of command under which responsibilities for the entire command were the same as if the forces were all Army or all Navy.[76]

When discussing the process challenges of prioritizing and synchronizing movements, it is difficult to determine the two service components as they operated in overlapping areas with dependent relationships. The existence of the Central and South Pacific Ocean Areas, commanded by naval admirals, and the South West Pacific Areas, commanded by General MacArthur under the Army component, fostered duplicative wasteful capabilities. "Separate supply lines for two theaters and two services inevitably caused waste and duplication of effort in an area where facilities and resources were scarce."[77] Logisticians agreed that a unified supply and transportation system was desperately needed, but it was difficult to combine the two very different systems. The centralized army system supported ground forces ashore while the navy's decentralized system supported the fleet with mobile logistical bases from the rear.[78]

With regard to physical challenges, the war in the Pacific differed from that in the European and Mediterranean theaters. First, the distances from the West Coast to the islands were

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[76] Benjamin King, Richard C. Biggs, and Eric R. Criner, *Spearhead of Logistics: A History of the United States Army Transportation Corps* (Fort Eustis, VA: US Army Transportation Center, 1994), 263.

[77] Leighton and Coakley, *Global Logistics and Strategy*, 391.

[78] King, Biggs, and Criner, *Spearhead of Logistics*, 263.

almost three times as great. Second, "movement over these distances within the Pacific theaters depended almost entirely on water transport, not on overland facilities as in Europe and Africa."[79]

The length of time between the point when a requirement is identified to its arrival at the desired destination, called logistics lead time, varied considerably among the different support levels.[80] The arrival of the first US troops in Australia would substantiate the critical importance of pushing continued sustainment to forces.[81] The lag between requisition and execution was so great that supply policies could not adjust rapidly to tactical changes. All strategic operational resupply operations occurred on the ocean's edges, and there were few inland waterways, highways, or railways to push supplies further forward. In the SWPA region harsh jungles made it especially difficult to resupply tactical units. Resupply happened mainly from large and small ships. Areas that were fought on land by soldiers and marines in the Pacific were mostly near beaches and in difficult jungle terrain not far from ocean shores.[82]

To overcome these process and physical challenges, logistical success during World War II depended on the ability to move hundreds of thousands of tons of supplies and commodities into underdeveloped ports and shores in the opening years of the conflict. Facilities were extremely poor and port operations were disorganized. The ports and infrastructure in Australia fared better than other areas of the Pacific but were inadequately equipped to offload items and move them to final destination points. In Australia, "Ships and small craft were old and worn; highways were mostly unpaved, and trucks were few and battered; railways had four gauges, and most of the stock of locomotives and cars were obsolete. These facilities, more or less archaic in

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[79] Leighton and Coakley, *Global Logistics and Strategy*, 390.

[80] Moshe Kress, *Operational Logistics* (Boston: Kluwer Academic Publishers, 2002), 129.

[81] Masterson, *US Army Transportation in the Southwest Pacific Area*, vi.

[82] Ibid, viii.

1939, had been strained and depleted by more than two years of war when the Americans arrived."[83] Between January and March 1942, US port operations were designated at Darwin, Townsville, Brisbane, Melbourne, Adelaide, Cairns, and Sydney.[84]

Airfields in Australia were in the early stages of development. Transportation facilities throughout the theater needed assistance from the US, which possessed better construction equipment and material.[85] Delivering these supplies entailed using scarce shipping space. In order to ship as much weight as possible and avoid "cubing out," a term used to describe the maximum volume that a ship could carry, equipment – vehicles, trucks, and planes – was placed in crates unassembled, to be assembled upon arrival in the Pacific. Additionally, with regard to "liquid logistics," tankers were in high demand to move diesel and gasoline from the United States and the Persian Gulf to the theater in order to fuel combat and construction equipment. The Navy arranged to escort as many vessels as possible to protect sea lines of communication.

New Guinea had no railways, ports were primitive and underdeveloped, and there were only a few miles of highway. It took a massive effort to move men and supplies to different islands in an unorderly fashion; once islands were relatively secured, stocks could be built up to support future operations. "The highest shipping priorities were placed on munitions, airplanes, airplane parts, weapons and their spare parts, medical supplies, signal equipment, and motor vehicles."[86]

BuDocks had arranged its approach to advance base construction for the eventual transoceanic offensive with four basic formats: the LION, the CUB, the OAK, and the ACORN.[87]

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[83] Masterson, *US Army Transportation in the Southwest Pacific Area*, vii.

[84] Ibid, 57.

[85] King, Biggs, and Criner, *Spearhead of Logistics*. 264.

[86] King, Biggs, and Criner, *Spearhead of Logistics*, 2.

[87] Eccles, *Logistics in the National Defense*, 243, LION was the largest package, consisting of major ship repair including floating dry docks; CUB was a smaller version with

LION and CUB were bases designated for naval repair; OAK and ACORN were nodes designed to support airfields with operations and aviation maintenance. An intricate web of ports and nodes would soon be used to support efforts to stop Japanese expansion and take the offensive. The selection of ports and the distances between them helped to set the theater for future operations.

Another important contribution to the supply chain would be the shipyards that constructed the vessels to transport the mountains of materiel, supplies, and men across the ocean. Liberty and Victory transports as well as the Landing Ships, Tank (LSTs) would become essential in supporting beach landings and service members on various islands. During this period, US shipbuilding exploded; one of the greatest concentrations of wartime construction was in the San Francisco bay area, with fourteen major shipyards producing merchant vessels.[88] In 1942, modular construction at Kaiser's shipyards and through a six-company conglomerate could assemble a 10,000-ton Liberty ship in ten days with a newly trained workforce that included women and minorities.[89] Some production sites put aside financial caution in order to speed up construction. Tankers and fleet oilers would move petroleum for the US Army and Navy. One of the companies in California, Marineship Corporation of Bechtel McCone Construction, could build a 22,800-ton tanker (with six million gallons of capacity) in just over ninety days.[90]

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limited ship repair capabilities; OAK was a major airfield package complete with operations and aviation maintenance facilities; ACORN was a smaller airfield package.

[88] Millett and Maslowski, *For the Common Defense*, 392.

[89] U-S-history.com, "Rosie the Riveter," last modified 2015, Accessed November 14, 2015. http://www.u-s-history.com/pages/h1656.html. With American men enlisting, the workforce quickly diminished and women fulfilled a crucial role. The nation's all-out effort to support the war included over six million female and minority workers who helped to build ships, tanks, bombs, and planes.

[90] Millett and Maslowski, *For the Common Defense*, 393. The shipping crisis required an unprecedented American effort to increase production of merchantmen and tankers, and in 1943 the United States tripled its carrying capacity in deadweight tonnage from three million to nine million.

Support for Advances

In March 1943, the Army and Navy jointly issued the Basic Logistical Plan for Command Areas Involving Joint Army and Navy Operations in order to steer logistical organizations and systems. This plan allowed theater commanders like General MacArthur to decide the best way to support their own joint forces.[91]

Steps to move from island to island were formed with the solid establishment of bases in Papua and the southeast Solomons. The creation of seaports and airfields created the necessary foothold to move toward the next objective. Current Joint and Army doctrine both discuss basing as a key element of operational art; in this case, it permitted operations to project or support efforts and use an evolving military facility to sustain both US and Allied efforts.[92]

As supply lines from the United States and Australia were secured, Allied planning for a counteroffensive to reduce Japan's stronghold at Rabaul could begin. After the capture of Buna in Papua, Australian forces attacked and seized Salamaua and Lae while US amphibian forces enveloped the Huon Peninsula, New Guinea.[93] Bougainville, Arawe, Cape Gloucester, as well as Tarawa in the Central Pacific area would soon be taken over the last few weeks of 1943. Nimitz and MacArthur were close to retaking Guam and the Philippines back from Japanese control and setting forces in place for an eventual attack on Japan.

Both General Douglas MacArthur and Vice Admiral William F. Halsey cooperated in a series of attacks in New Guinea and the central Solomons during the fall and winter of 1943. They attempted to bypass large Japanese forces to conserve men and material while cutting the enemy off from their own sustainment. Harry A. Gaily in *Bougainville 1943–1945, the Forgotten*

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[91] King, Biggs, and Criner, *Spearhead of Logistics*, 263.

[92] ADP 3-0: *Unified Land Operations*, 4-6.

[93] *Reports of General MacArthur, volume 1*, 120-–22. Salamua and Lae possessed airfields used for bombing missions on New Britain, and controlling the Huon Peninsula removed threats from the Vitiaz Straits in strategic waters.

Campaign states that Bougainville with its six airfields could not be bypassed.[94] The Marines and the US Army's 37th Division would seize Bougainville and expand the airfields to strike Rabaul. "By the spring of 1944 the tide had turned against the Japanese everywhere. MacArthur had even given up plans for the invasion of New Britain since Rabaul was no longer a viable air or sea base."[95] Allied planes launched from carriers and land bases had all but destroyed Japanese capabilities on New Britain.

Rebuilding the theater as discussed in this section highlighted the United States's lack of preparedness to deter and immediately halt Japanese expansion. As a result, the Japanese continued pushing outward, seizing critical territory and pushing the United States and the Allies out of the Philippines, Guam, and other parts of Southeast Asia. After the attacks on Pearl Harbor, the strategy developed to stop the Japanese required setting the theater and conditions with the means to defeat the enemy. The US used portions of War Plan Orange in developing its strategy but needed to overcome the enormous logistical challenges involved, initially facing a shortage of transportation distribution resources, appropriate facilities, organizational control of priorities, and combat equipment. Eventually a mountain of men, equipment, and supplies were flowing into theater for support but was extremely unorganized.

[94] Harry A. Gailey, *Bougainville, 1943–1945, The Forgotten Campaign* (Lexington: University Press of Kentucky, 1991), 2.

[95] Ibid, 3.

Section 3: Expanding the Theater for Continued Sustainment (1944–1945)

Two simultaneous advances continued across the Pacific. With the Japanese defeated in New Georgia, Bougainville, Cape Gloucester, and Tarawa, and with Allied forces on New Guinea at Salamaua and Lae, the US's continual momentum in both the Central Pacific Ocean Area (CPOA) and SWPA used joint approaches from the sea to land confounded the Japanese and made it difficult to identify the main effort.

General MacArthur advanced northwest in the SWPA along the New Guinea coast, isolating the Japanese where possible, and captured new staging areas to launch the next offensive operation. A land-based bomber line would successively move westward following the occupation of new ports and airfields. Sustainment forces would move rapidly into areas once they were secured and would begin building stocks for further movement to recapture the Philippines and orient toward Japan.

Admiral Nimitz in the CPOA used Hawaii, and Tarawa as staging bases for westward assaults that seized the Marshall Islands, Marianas, and Caroline Islands, took Iwo Jima, and eventually attacked Okinawa. Both approaches postured forces and set the theater to enable the commencement of strategic bombing on the Japanese main islands.

Relations between the services were so delicate that the Joint Chiefs set no clear priority for either's advance across the Pacific. The British conveyed a concern about the drive and suggested that the US halt MacArthur's approach. Both General George C. Marshall and Admiral Ernest J. King argued that the drives were mutually supporting; the British responded that they were also competing for resources.[96]

Current doctrine presents the importance of joint planning, and Joint Publication (JP 5-0), *Joint Operation Planning*, states that it "consists of planning activities associated with joint

[96] Robert A. Doughty, *Military Operations since 1871* (Lexington, MA: D.C. Heath, 1996). 824.

military operations by combatant commanders and their subordinate joint force commanders (JFCs) in response to contingencies and crises. It transforms national strategic objectives into activities by development of operational products that include planning for the mobilization, deployment, employment, sustainment, redeployment, and demobilization of joint forces."[97] The application of operational art and operational design further reduces uncertainty and adequately orders complex problems to allow for more detailed planning.

Plans for Advances

The Japanese were expecting to fight a major, decisive naval battle in the central Pacific. Enemy forces perceived a dilemma, however, as US land-based bombers also posed a threat approaching their southern flank. With both commanders advancing toward Japan and achieving operational victories, the empire was stunned. Mao Tse-Tung stated, "Freedom of action is the very life of an army and, once it is lost, the army is close to defeat or destruction."[98] Because the Allies set the theater and were approaching from two directions, the Japanese could not determine where the Allied main effort was coming from.

Before larger amphibious attacks were launched, basing with enough space for staging purposes and a harbor with sufficient size to accommodate a striking force were desirable but not always available. The Admiralty Islands and Bismarck Archipelago met General MacArthur's requirements for his bounding movements to conduct amphibious assaults from the southeast coast of New Guinea to its northwest corner. MacArthur's risky but successful moves bypassed Japanese forces and gained the attention of the Joint Chiefs in Washington, who offered further support to strike the Japanese stronghold at Hollandia. Three critical airfields were surrounded by

[97] Joint Publication 5-0, *Joint Operation Planning* (Washington, DC: Government Printing Office, 2011), ix.

[98] Mao Tse-Tung, *Selected Writings of Mao Tse-Tung* (Fort Leavenworth, KS: US Combat Studies Institute), 235–36.

roughly 11,000 Japanese, but few of them were combat troops.[99] Additionally, the capture of Hollandia would isolate 40,000 more enemy troops.[100] Hollandia was the primary Japanese rear supply base in New Guinea and served as a major transshipment point for unloading and transferring personnel and cargo from large transports to smaller coastal vessels.[101] In April 1944, Allied forces invaded and seized Hollandia; in May and June they took both Wakde and Biak, which possessed airfields that could reach the Philippines.[102]

This defeat in western New Guinea left the Japanese in an extremely vulnerable position in the southwest Pacific. MacArthur's forces were positioned only 600 miles below Mindanao, the Japanese Seventeenth Army in the Solomons and Eighteenth Army in New Guinea had been destroyed or paralyzed, and more than 250,000 Japanese soldiers were withering on the vine, cut off from sustainment.[103]

In the CPOA, Admiral Nimitz staged forces to attack Kwajalein, the Marianas (Saipan, Guam), the Carolinas (Truk), Iwo Jima, Okinawa, and eventually Japan. One of the first objectives in 1944 was to seize the Kwajalein Atoll in the Marshall Islands. It covers a thirty-nautical-mile area containing several small but usable islands: Kwajalein Island, Roi, and Namur. The atoll had two airfields, a small pier, and several warehouses already in use by the Japanese. The attack would be a joint Navy-Army affair. Once the atoll was relatively secure, there were two shipping priorities: first, prefabricated portable buildings, mostly kitchens; second, materials for building more warehouses, shops, and hangars.[104]

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[99] Doughty, *Military Operations since 1871*, 824.

[100] Ibid.

[101] *Reports of General MacArthur, volume 1*, 145.

[102] Doughty, *Military Operations since 1871*, 825.

[103] *Reports of General MacArthur, volume 1*, 165.

[104] Karl Christian Dod, *The Corps of Engineers* (Washington, DC: Office of the Chief of Military History, US Army, 1966). 478–79.

Materiel Structures

The problem of shipping resources had diminished by 1944, and now the main logistical challenge was to move supplies from ships onto shores that required floating piers due to the lack of deep-water ports. At one point in 1944, over 140 ships were waiting to be unloaded at Milne Bay.[105] The progress of shipping improved with the surge of constructing vessels in 1942 and 1943, but the construction of bases and port improvements at key locations in the SWPA still did not provide adequate capacity to handle incoming shipments. "Under these circumstances, with storage space ashore limited or almost non-existent, the natural tendency in the theater was to use Liberty ships as floating warehouses and meet the most urgent requirements by means of selective discharge."[106] Building throughput capacity or storage capabilities took time.

The war in the Pacific was an engineer's nightmare; while naval, air, and amphibious combat elements fought the enemy, engineers would fight time and the lack of sufficient equipment to improve existing infrastructure or build the capability at a given location.[107] The shortage of engineer units sometimes resulted in combat forces being used for construction and labor duty. Few trained specialists were available, and the augmenting service members worked virtually around the clock to meet impossible schedules.

The engineers and logisticians from multiple services worked together, demonstrating the joint approach emphasized by the thesis of this monograph. In order to maintain momentum in the Pacific, manage demand for the volume of men and materiel needed, and overcome the vast

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[105] Brigadier General Harry Van Wyk, quoted in D. Clayton James, *The Years of MacArthur* (Boston: Houghton Mifflin, 1985). 353.

[106] Chester Wardlow, Joseph Bykofsky and Harold Larson, *The Transportation Corps* (Washington, DC: Center of Military History, US Army, 2003), 443.

[107] Spector, *Eagle Against the Sun*, 299. Engineer units were brought in late and usually without the heavy construction equipment needed to finish a project on time. Throughout the entire war period in the Pacific, there was a shortage of engineer units and other technical support services.

travel times and distances it necessitated an operational approach that synchronized sustainment in depth. US Navy vessels transported steel matting, bulldozers, cranes, and materials for US Army engineers to extend runways for B-29 bombers and build storage facilities for sustainment commodities used by all services, illustrating the joint approach and complementary capabilities used to reinforce and prop up one another. Seabees remodeled and repaired Japanese piers, resurfaced roads with coral and sand, built causeways between islands on atolls, and also assisted constructing airfields.[108]

The construction statistics achieved by the engineers and Seabees were gargantuan. Paul Kennedy in *Engineers of Victory* states, "In the Pacific alone, these artificers of victory built 111 major airstrips and 441 piers, tanks for the storage of 100 million gallons of gasoline, housing for 1.5 million men and hospitals for 70,000 patients."[109] The efforts of these engineers as well as other US Army Services of Supply (USASOS) elements would stage key headquarters across twenty-two ports. Each port, designated by a number or letter (Table 1), was tasked with the challenge of untangling the mass of commodities flowing over the shores into second-class ports.

As soon as the Japanese were defeated on the eastern end of the Huon Peninsula Base F, located at Finschhafen was established. Milne Bay, Base A, was replaced by Finschhafen as the largest supply depot that supported the area. Direct shipments from the US started to flow to the newly established foothold in New Guinea and 25 to 35 percent more tons went through Finschhafen than all Australian bases combined. It never had the buildings, the infrastructure, or the equipment that would normally be required for such a mission.[110]

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[108] Karl Christian Dod, *The Corps of Engineers* (Washington, DC: Office of the Chief of Military History, US Army, 1966). 485.

[109] Paul M. Kennedy, *Engineers of Victory* (New York: Random House, 2013), 330–31.

[110] Alvin P. Stauffer, *The Quartermaster Corps* (Washington, DC: Office of the Chief of Military History, Dept. of the Army, 2004), 88.

Due to the poor underwater beach hydrology and a gradual slope where the water met the beach, supply stocks could not be stored close to emplaced floating docks, which would have made trans-loading items more efficient. Rather, supplies were stored further inland and required considerable transportation assets to haul them to and from the waterfront.

Moving fuel further inland to airfields was cumbersome and required the limited number of transport trucks that were available to traverse difficult, unimproved roads. Units established "drum-fill plants" that packaged bulk fuel discharged from tankers for shipment. Empty drums would be returned for refilling and used multiple times.[111] Adequate petroleum supply hinged more on the availability of 55-gallon drums than cargo space aboard vessels shipping them from Australia and other locations. The shortage was intensified by the loss of twenty to thirty percent due to rough handling, the entrance of dirt or water if exposed to the weather and rusting.[112] High octane motor fuel was susceptible to gum deposits and rotation of stocks was strictly enforced to ensure the issue of usable supplies; if fuel was over six months old it could not be issued until samples were properly tested and deemed satisfactory for use.[113]

[111] Wardlow, Bykofsky, and Larson, *The Transportation Corps*, 507.

[112] Alvin P. Stauffer, *The Quartermaster Corps* (Washington, DC: Office of the Chief of Military History, Dept. of the Army, 2004). 218-19.

[113] Ibid, 219.

Designation	Location	Dates
1	Darwin	5 Jan 42 – 9 Jul 44
2	Townsville	5 Jan 42 – 20 Jun 45
3	Brisbane	5 Jan 42 – 20 Jun 45
4	Melbourne	5 Jan 42 – 1 Jun 44
5	Cairns	7 Sep 43 – 7 Sep 44
6	Perth	3 Mar 42 – 10 Jan 43
7	Sydney	15 Mar 42 – 30 Nov 46
A	Milne Bay	20 Aug 42 – 25 Jul 45
D	Port Moresby	6 Jun 42 – 7 Sep 45
E	Lae	19 Sep 43 – 7 Sep 45
F	Finschhafen	15 Nov 43 – 30 Apr 46
G	Hollandia	7 Jun 44 – 25 Jan 46
H	Biak	20 Aug 44 – 06 Jul 44
K	Tacloban	25 Dec 44 –
X	Manila	13 Feb 45 –

Figure 3: Table of United States Army Service of Supply Headquarters Locations, 1942–1946
James R. Masterson, *US Army Transportation in the Southwest Pacific Area, 1941–1947* (Washington, DC: Transportation Unit, Historical Division, US Army, 1949), 57.

Support for Advances

One of the most significant sustainment achievements of the Pacific war was the ability for US ships in the fleet to constantly remain at sea with only certain individual ships returning to shore for repairs. The vast navy comprised of supply ships could sustain the fleet across colossal distances in the central Pacific without having to return to resupply.[114] The Third or Fifth Fleet

[114] Doughty, *Military Operations since 1871*, 820.

could remain at sea; no other nation could match this capability during World War II. By summer 1944, three support squadrons containing thirteen large fleet oilers, innumerable stores and ammunition ships, as well as smaller repair barges and tugs carried 127,571 troops to islands more than 1,000 miles from the Marshall Islands.[115]

Admiral Nimitz's forces bypassed Truk, invaded the Marianas (Saipan, Tinian, and Guam), and tightened the Allied ring encircling Japan's inner zone of defense. General MacArthur's conduct along the New Guinea axis yielded large stretches of enemy holdings and kept Allied losses in the SWPA relatively low. He followed four basic principles of war—surprise, mass, economy, and the objective as an "end"—and exploited gains in territory with limited resources.[116]

Although this monograph does not cover the details of the US capture of the Philippines, Iwo Jima, and Okinawa, the complexity of sustaining operational momentum and forces in the Pacific during 1944 and 1945 improved over time. The capture of each of these locations varied depending on the enemy situation, geographical conditions, and sustainment requirements. The bounding maneuvers by both General MacArthur and Admiral Nimitz required expanding logistics operations once areas were relatively secure in order to support the service members and ensure that they had enough ammunition, fuel, food, and water to continue to defeat the enemy.

The conclusion of the monograph recaps lessons learned from sustainment operations in the Pacific during World War II, influences on today's military operations, the importance of posturing forces or capabilities appropriately, setting the theater for the successful conduct of activities, and potential implications for current planners.

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[115] Doughty, *Military Operations since 1871*, 821.

[116] *Reports of General MacArthur, volume 1*, 165.

Conclusion

Setting the theater, sequentially defeating the enemy, and moving and posturing forces toward the main islands of Kyushu and Honshu enabled the Allies to secure airfields within sufficiently close range to begin the strategic bombing of Japan. In fall 1943, a new capability entered the strategic picture in the Pacific war: the B-29 long-range bomber. Taking off from the Philippines, Okinawa, and the Mariana Islands, B-29s firebombed key cities and capabilities in Japan. On August 6 and 9, 1945, atomic bombs were dropped on Hiroshima and Nagasaki, leading to Japan's unconditional surrender.

To summarize this monograph, the first section, on the prewar Pacific, described the logistics infrastructure, routes, bases, and sustainment operations that existed in the Pacific prior to the bombing of Pearl Harbor. It described how the United States expanded across the Pacific theater, positioned from east to west in the Hawaii, Guam, and the Philippines, and stretched its operational reach, leaving clear security gaps.

The section on rebuilding the theater described the United States's lack of preparedness to deter and immediately halt Japanese expansion after Pearl Harbor. As a result, the Japanese seized territory and pushed the United States and the Allies out of parts of Southeast Asia. The strategy developed to stop the Japanese required setting the theater and conditions with the means to defeat the enemy. The US used portions of War Plan Orange in developing its strategy but still needed to overcome enormous logistical challenges, including a shortage of distribution resources, facilities, organizational control of priorities, and combat equipment. Eventually, a mountain of men, equipment, and supplies was flowing into the theater to provide support, but this massive inflow was extremely unorganized.

Once the Japanese were halted and sea lines of communication were secure, Allied forces could continue expanding the theater for continued sustainment and operational momentum. At times, they could use the existing infrastructure (which the Japanese had improved in some

places), but more often, the enormous amount of men and materiel arriving in the theater required improvements to avert logjams and congestion.

In both history and contemporary settings, a comprehensive understanding of the tyranny of distance is crucial to planning sustainment of land forces. A majority of the Pacific force posture at forward locations and bases must be aligned with US allies. Today, the ground force posture in the region should represent an economy of force to support various joint exercises and Theater Security Cooperation Programs (TSCP) as part of the Global Combatant Command's (GCC) Theater Campaign Plan (TCP). In the Pacific, our ability to rapidly generate and sustain land forces presents a different kind of challenge for military planners. The regional logistics architecture assists a joint force commander by providing freedom of action, operational reach, and the campaign continuity required to accomplish objectives. The design consists of a sustainment network that combines forward-positioned sustainment forces, stocks, pre-positioned materiel, responsive logistics information networks, multinational agreements, commercial outsourcing, and a coordinating headquarters. An existing logistics architecture is a critical principle because "logistics must happen first or maneuver cannot occur."[117]

What insights can we draw for future wars with regard to sustainment and setting the theater for successful operations? Sustainment capabilities contribute to three national defense functions at the strategic level, which directly affect the ability to achieve desired end states in the desired time frame.[118] The first is force generation, which builds and maintains military strength over time. Second, force projection provides the ability to respond rapidly with military strength in a crisis to protect national interests or to defend allies and treaty partners. The third leg is supporting combat operations, which happens during war. At this point, our main interest is in the

[117] Comments from GEN Brooks, CDR USARPAC, in a briefing from the Commander, 8th Theater Sustainment Command, July 10, 2013.

[118] Alan L. Gropman, *The BIG "L": American Logistics in World War II* (Washington, DC: National Defense University Press, 1997), 259–60.

first two functions, since they must be established during peacetime in order to be available in a timely matter should war break out. A nation continuously sets a specific theater by assessing and adjusting to requirements or threats. To do this, the following activities must be executed: (1) defense forces must conduct training and improve their craft as members retire and new recruits replace them; (2) equipment must be properly maintained, updated, or replaced as new technology emerges so as to maintain relative superiority or (at a minimum) parity; and (3) sustainment reserve stocks must be rotated, since quality degrades over time.

Certain implications can be applied. When people think of the military requirements in the Pacific Ocean, they think of vast blue water, navies, and a powerful air force to gain and maintain air superiority. Phase zero operations, or the operations that occur before transition to war, are crucial in shaping potential desired outcomes. Joint Publication (JP) 5-0 states, "Shape (Phase 0) is the joint and multinational operations—inclusive of normal and routine military activities—and various interagency activities [that] are performed to dissuade or deter potential adversaries and to assure or solidify relationships with friends and allies."[119]

Challenges that existed in what was formerly known as Commander-in-Chief, Pacific Ocean Area (CINCPOA), now known as USPACOM, are similar to logistical hurdles elsewhere, but this geographic area of responsibility is more economically, politically, socially, and militarily complex than most. It includes 36 countries, 52 percent of the earth's surface, and 60 percent of the earth's population.[120] Economically, it contains the world's three largest economies and generates over half of the world's gross domestic product.[121] Two-thirds of the world's oil

[119] Joint Publication (JP) 5-0: *Joint Planning* (Washington, DC: Government Printing Office, 11 August 2011), xxiii.

[120] Benjamin Bennett, *Integrating Landpower in the Indo-Asia-Pacific through 2020: Analysis of a Theater Army Campaign Design* (Institute of Land Warfare, AUSA), 2.

[121] Ibid.

and one-third of its shipping travel through the region.[122] These are prominent elements in the operating environment today. Diplomatic obstacles exacerbated by historical relationships and "bad blood" still linger in the region. Units and service members from United States Pacific Command engage with regional partners and countries in exchanges through a Theater Security Cooperation Program (TSCP). Most of the defense chiefs from countries spanning the Pacific are army generals, and these key engagements and training activities occur on land.

Beginning in 2013, United States Army Pacific (USARPAC), with direction from General Vincent K. Brooks, embarked on an effort to engage partners through pre-existing regional yearly exercises, called "Pacific Pathways." Although these training events and security cooperation engagements help to build partner capacity, they are dwarfed in size by the struggles faced in World War II. An onlooker at Pacific Pathways can see operational art, witness strategic communication, and envision parallel logistical challenges. The Army deploys small units linking multiple standing annual exercises to provide a forward presence where there are no bases. Pacific Pathways, designed with operational art at the forefront, is a direct response to the Pentagon's 2012 Defense Strategic Guidance to rebalance toward the Asia-Pacific region.[123] It postures the US Army forward by traversing the Pacific, an area that is now of great importance to national interests. The tremendous economic growth and strategic potential of the Pacific region exerts a gravitational pull on other nations' enhanced investments in the region. However, two great powers, China and the United States, are in competition there, and stability is key for continued economic growth.

Tensions linger or perhaps are even escalating in the Pacific between China and the United States. Although the two countries are trading partners and their economies have a

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[122] Samuel J. Locklear, "Locklear on US Pacific Posture," 5 March 2013; World Bank: GDP Ranking, 16 December 2014, data.worldbank.org

[123] Wyatt Olsen, "Pacific Pathways: Army Prepares New Tack for Deploying Forces in Pacific," *Stars and Stripes*, May 1, 2014.

symbiotic connection, China's activities in the region and its military growth have some Asian countries and US mutual defense partners concerned. China now ranks second in the world in military spending, making it a potential future threat as disagreements arise and strategies clash. This complicates US–China relations significantly. There are some parallels between Japan's historical position and contemporary China in terms of their buildup of military capabilities on island platforms in the Pacific and their desire to control areas rich with natural resources.

Dr. David Lai, a research professor of Asian security at the Strategic Studies Institute, US Army War College, relates the two countries' strategies today to the game of Go-Bong from the Chinese perspective, or chess from a Western perspective.[124] We cannot know whether a direct military conflict will arise between the two countries, but the US and its allies are not taking chances. Operational art is executed today through security cooperation and exercise engagement with Asian partners. Pacific Pathways places the chess pieces on the Pacific playing board, arranging tactical actions with clear benefits to achieve strategic goals and giving the United States an advantage.

Regional exercises as well as other multilateral events in response to Human Assistance, Disaster Relief (HADR) efforts help allied partners to work together, becoming more familiar with each other's operating systems and true capabilities and thus continuing to set the theater. If a manmade crisis does occur, the US and its allies, thanks to these efforts, will be better postured with a relative advantage.

[124] David Lai, *The United States and China in Power Transition* (Carlisle, PA: Strategic Studies Institute, US Army War College, 2011).

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