

# The US Strategic Logistics Plan in the CBI Theater and its Contemporary Significance

A Monograph

by

MAJ Bruce U. Roett Jr.  
United States Army



School of Advanced Military Studies  
United States Army Command and General Staff College  
Fort Leavenworth, Kansas

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Name of Candidate: MAJ Bruce Underwood Roett Jr.

Monograph Title: The US Strategic Logistics Plan in the CBI Theater and its Contemporary Significance

Approved by:

\_\_\_\_\_, Monograph Director  
Anthony E. Carlson, PhD

\_\_\_\_\_, Seminar Leader  
Dyrald J. Cross, COL

\_\_\_\_\_, Director, School of Advanced Military Studies  
Henry A. Arnold III, COL

Accepted this 10<sup>th</sup> day of May 2016 by:

\_\_\_\_\_, Director, Graduate Degree Programs  
Robert F. Baumann, PhD

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## **Abstract**

The US Strategic Logistics Plan in the CBI Theater and its Contemporary Significance, Major Bruce Underwood Roett Jr., 48 pages.

During WWII, US military operations in China began to evolve from small financial contributions and volunteer fighter pilots in 1937, to formal lend-lease aid and a military mission in 1941, and into an Allied CBI Theater in 1942. As the third priority to the Allies, the CBI Theater lagged behind Europe and the Pacific, receiving resources, attention, and US ground forces in the lowest priority. Consequently, US policy and military strategy in China shifted towards an economy of force effort to provide lend-lease aid to keep China in the war and establish a potential basing area for an invasion of Japan. Subsequently, the US strategic logistics plan contended with a number of obstacles at the political and operational levels. In the twenty-first century, the United States has participated in conflicts involving states fighting civil wars or revolutions, simultaneously battling external sub-state actors, and negotiating with international state actors intervening in their domestic affairs. Similar to US actions in the CBI Theater, the United States intervenes in these conflicts as part of a coalition providing military advisors, air power, weapons, and equipment. The strategic logistics plan of the CBI Theater, therefore, has contemporary significance such as identifying inherent challenges, available solutions, opportunities, and risks that can inform present-day policy, military strategy, and operational planning.

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## Acronyms

|         |                                     |
|---------|-------------------------------------|
| ADRP    | Army Doctrine Reference Publication |
| ALOC    | Air Line of Communication           |
| AMC     | Army Materiel Command               |
| AMMISCA | American Military Mission to China  |
| APOD    | Airport of Debarkation              |
| APOE    | Airport of Embarkation              |
| AVG     | American Volunteer Group            |
| CBI     | China Burma India                   |
| DLA     | Defense Logistics Agency            |
| FMS     | Foreign Military Sales              |
| GLOC    | Ground Line of Communication        |
| GM      | General Motors Corporation          |
| ISB     | Intermediate Staging Base           |
| LOC     | Line of Communication               |
| NATO    | North Atlantic Treaty Organization  |
| SLOC    | Sea Line of Communication           |
| SME     | Subject Matter Expert               |
| SOS     | Services of Supply                  |
| SPOD    | Seaport of Debarkation              |
| SPOE    | Seaport of Embarkation              |
| UAV     | Unmanned Aerial Vehicle             |
| WWI     | World War I                         |
| WWII    | World War II                        |

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## Introduction

Amateurs talk about tactics, but professionals study logistics.

—General Robert H. Barrow, 1980

Prior to the US entry into World War II (WWII), the United States supported China out of a political aim to shield East Asia against Japanese expansionism. Though determined to maintain the status quo, the United States pledged only limited ways and means, such as small financial contributions and narrow diplomatic pressure. During the interwar period, Japan had sought to build a colonial empire across East Asia once its industrialization reached full capacity even though World War I (WWI) treaty agreements convinced the international community that China was safe from Japanese invasion. The world expected that if left alone, China could establish a strong central government and unify national interests. Unfortunately, the global economic crisis of the 1930s ended that optimism. Devastated world markets left Japan no choice but to adopt an aggressive political stance bent on recovering recent economic losses. Hostile foreign policy replaced preexisting neutral, or at best, passive regard for opportunities in China.<sup>1</sup> Control of China's Manchuria province, rich in resources such as iron and coal, and abundant in markets, became a primary political end for Japan. Japan also needed more territory, in addition to resources, to provide it with adequate means to prepare for an industry-backed war.<sup>2</sup>

On 18 September 1931, Japan occupied Manchuria on the false premise that China was the antagonist.<sup>3</sup> The United States, under the Republican administration of pacifist Herbert Hoover, remained unwilling to check Japan's expansionism. World powers also exercised restraint, but US Secretary of State Henry Stimson issued a proclamation that Japan's seizure of Manchuria was illegal and the United

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<sup>1</sup> Charles F. Romanus and Riley Sunderland, *Stillwell's Mission to China* (Washington, DC: Government Printing Office, 1952), 4.

<sup>2</sup> *Ibid.*, 4.

<sup>3</sup> *Ibid.*, 4.

States refused to recognize new border claims.<sup>4</sup> On 7 January 1932, Stimson sent a note to both Japan and China outlining that “the American Government deems it to be its duty to notify both the Imperial Japanese Government and the Government of the Chinese Republic that it cannot admit the legality of any situation de facto nor does it intend to recognize any treaty or agreement entered into between those governments, or agents thereof, which may impair the treaty rights of the United States or its citizens in China.”<sup>5</sup> Stimson’s declaration intensified the tension between the United States and Japan, but it did not impose economic or military sanctions. Frustrated with empty world threats, China implemented a national boycott against Japan, which undermined Japanese markets. In response, on 28 January 1932, Japan executed an amphibious military strike into Shanghai that China surprisingly defeated.<sup>6</sup> International condemnation forced Japan to withdraw.

Between 1932 and 1937, China grew more nationalistic, improved its finances, and expanded its manufacturing sector. The Nationalist Government of the Republic of China held power with the Kuomintang Party’s Generalissimo Chiang Kai-shek at the helm. Chiang demonstrated excellent leadership as he assimilated one warlord after the other into his Kuomintang party and ultimately won over a majority of the Chinese population.<sup>7</sup> Though China appeared stable, Chiang continued to fight a civil war against Chinese Communists and their small army, which had retreated to northwest China. Meanwhile, Japan increased its force buildup in Manchuria, conducted numerous military exercises along its new border with China, and executed rehearsal expeditionary landings all along China’s coastline.<sup>8</sup> Scant resources inhibited Chiang from executing any decisive action against either the Communists or the Japanese despite mounting domestic pressure to counter Japanese hostility. In December 1936, a Chinese

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<sup>4</sup> Romanus and Sunderland, *Stillwell’s Mission to China*, 4.

<sup>5</sup> Reginald G. Bassett, *Democracy and Foreign Policy* (London: Routledge, 1968), 75.

<sup>6</sup> Romanus and Sunderland, *Stillwell’s Mission to China*, 4.

<sup>7</sup> *Ibid.*, 5.

<sup>8</sup> *Ibid.*, 5.

group, led by Marshal Chang Hsueh-Liang, kidnapped Chiang and held him for a few days.<sup>9</sup> During his captivity, Chiang's kidnappers demanded the unification of the Kuomintang and Chinese Communists against Japan. Chiang acquiesced to his kidnappers, securing his release and simultaneously addressing his two main threats. Thereafter, Chiang focused his attention squarely on Japan, significantly less distracted by China's civil war.

On 8 July 1937, Japan commenced a broader war by attacking a Chinese garrison near Peiping (Peking).<sup>10</sup> By this time, Chiang's army was only marginally effective due to a modest increase in military capability over the past decade. Throughout the 1930s, China had secured military assistance from Germany, Italy, and Russia that led to thirty functional and loyal army divisions at Chiang's disposal. Requests to the United States for military aid in the form of equipment and training never occurred. In October 1938, Chiang's thirty divisions failed to stop Japan's advance, during which, it captured the cities of Canton (Guangzhou) and Hankow. The Japanese military's subsequent tactical pause allowed China time to build a one-hundred-mile buffer between Japanese and Chinese forces, which was established through the creation of obstacles along rivers and mountain passes, and the destruction of bridges and roads.<sup>11</sup> A stalemate ensued, as Japanese forces could not overcome the buffer and two Chinese offensives failed.

Chiang immediately sought assistance from Great Britain, the Soviet Union, France, and the United States. Japan requested help from Germany and Italy. In September 1939, the European war began, which ended the possibility of any foreign aid to China or Japan with the exception of that which the United States would agree to provide. At this time, the reelection of President Franklin Delano Roosevelt increased the likelihood of US intervention, even as the United States still preferred not to meddle in the Sino-Japanese war. There was a sincere US interest in helping China, but assistance

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<sup>9</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 5.

<sup>10</sup> *Ibid.*, 5.

<sup>11</sup> *Ibid.*, 6.

priorities went to Great Britain and the Soviet Union.<sup>12</sup> While Great Britain and France became the nucleus of a group of nations that the world would call the Allies, the Soviet Union and the United States later joined as major nations after their entrance into WWII.<sup>13</sup> Anticipating the eventual formation of this Allied coalition, China was hopeful of its own inclusion. China also expected Great Britain, France, and the Soviet Union to consider its requests since war in Europe and the Germany-Japan axis threatened European colonial holdings in Asia and the Soviet Union's eastern flank. With a Japanese puppet regime installed in Nanking by March 1940, Chiang reached out to the United States and energetically reminded Roosevelt of China's dire political situation.

In June 1940, Chinese Minister of Foreign Affairs, T.V. Soong, visited Washington, DC, which marked the beginning of American-focused aid requests from China. Informal appeals occurred as early as 1937 when retired US Army officer Claire Chennault protested, on China's behalf, for aid in the form of air power.<sup>14</sup> In addition, the United States had already sent China ninety-five million dollars in three different credits. Some of these payments procured one-hundred P40 fighter aircraft for Chennault, who was now an officer in the Chinese Air Force after winning Chiang's confidence.<sup>15</sup> Nonetheless, China's political situation deteriorated in September 1940 when Japan occupied French Indochina, closing the Yunnan-Indochina railroad and effectively leaving a single ground route as China's only remaining contact with the outside world.<sup>16</sup> This lone ground line of communication (GLOC), the Burma Road, soon became the focal point for operational strategy and logistics considerations in the theater. In January 1941, Chiang's predicament worsened after his national army clashed with the Chinese Communist 4th Army, jeopardizing China's Unified Front, which was the alliance between Chinese Nationalists and

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<sup>12</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 8.

<sup>13</sup> *Ibid.*, 6.

<sup>14</sup> *Ibid.*, 12.

<sup>15</sup> *Ibid.*, 7-10.

<sup>16</sup> *Ibid.*, 8.

Communists.<sup>17</sup> Recognizing just how dire the situation was, Roosevelt authorized lend-lease aid to China on 11 March 1941 and subsequently initiated an organized and deliberate effort to keep China in the war against Japan.<sup>18</sup>

#### Contemporary Significance of the China Burma India (CBI) Theater Logistics Plan

The US strategic logistics plan in the CBI Theater during WWII attempted to fulfill the political exigencies of delivering sufficient military supply and transportation support to keep China in the war. The logistics plan needed to establish a military equipment distribution apparatus without any reimbursement mechanism. Once the United States launched this lend-lease program, planners had to disperse adequate supplies to China without handicapping US war preparations or undermining lend-lease arrangements with higher priority efforts in Europe. More critical than the aspect of securing Chinese lend-lease was, the task of sending it to China. Delivered supply tonnage in China signified the United States' commitment to Chiang. Therefore, to maintain political awareness, Roosevelt required a monthly delivered tonnage briefing. At the operational level, the logistics plan had to overcome obstacles of theft, graft, and expenditure along all lines of communication (LOC) and guarantee that Chinese divisions used the war materiel against Japan instead of stockpiling it safely away for future use against the Chinese Communist Army, led by Mao Zedong.<sup>19</sup> The logistics plan also struggled to balance competing demands for equipment between army land and air component commanders at the operational level. Politically and operationally, the logistics plan also contended for resources as the third priority theater.<sup>20</sup>

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<sup>17</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 8.

<sup>18</sup> *Ibid.*, 14.

<sup>19</sup> *Ibid.*, 10.

<sup>20</sup> Richard Leighton and Robert W. Coakley, *Global Logistics and Strategy: 1940-1943* (Washington, DC: Government Printing Office, 1955), 525-526.

Today, the United States attempts to resolve conflicts across the globe by employing coercion or brute force.<sup>21</sup> Reduced congressional defense spending, American aversion to deploying troops for limited aims, and competing national interests all preclude brute force until a conflict emerges that presents an unbearable threat to the United States. Brute force works for conflicts at the state level, but the majority of twenty first-century conflicts involve states in the midst of civil war or revolution simultaneously fighting external sub-state actors and contending with multiple meddlesome international state actors. Since these conflicts do not pose existential threats, the United States attempts to avoid a brute force strategy and instead hopes to achieve a successful coercive strategy that levies demands upon the state in conflict, the threatening sub-state actors, and the international state spoilers. That said, the United States must back these demands with credible threats advertised through costly signaling.<sup>22</sup> This signaling refers to economic, diplomatic, and military threats. The military threat includes advisory help, weapons and equipment sales, military training, and brute force. The United States also prefers to issue this military threat under the auspice of a coalition. The likelihood is very high in the twenty first-century that the United States, as part of a coalition, such as the North Atlantic Treaty Organization (NATO) in Eastern Europe or partnering with Iraq to fight Daesh, may provide military advisors, air power, weapons, and equipment to a state fighting domestic and foreign adversaries. Consequently, the CBI Theater logistics plan is significant to contemporary operational planners because it provides insights that can inform current policy, military strategy, and operational planning.

### The Evolution of Military Logistics Leading up to WWII

National leaders and military commanders have long understood the magnitude of logistics in war, though the actual term only first appeared in 1862 when Antoine Jomini described logistics as the art

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<sup>21</sup> Phil Haun, *Coercion, Survival, and War: Why Weak States Resist the United States* (Redwood City, CA: Stanford University Press, 2015), 3.

<sup>22</sup> *Ibid.*, 5.

of moving armies.<sup>23</sup> By contrast, the Prussian theorist Carl von Clausewitz discounted logistics as simply the maintenance of the fighting forces and unassociated with the art of war.<sup>24</sup> In 1866, adhering more to Jomini's definition, the Prussian Army revolutionized military logistics. Capitalizing on the revolutionary advancements of railroads and telegraphs, the Prussian Army replaced the longstanding baggage trains with unit tails.<sup>25</sup> In terms of supply and transportation, the sheer size of logistics required for the enormous armies of the late nineteenth- and early twentieth-centuries necessitated these unit tails. During WWI, French and British strategic artillery ammunition consumption in an average month more than doubled that of the total four-year expenditure of the Union Army in the American Civil War. Tactically, the 1916 Battle of the Somme saw British artillery ammunition expend 1,200 times what the Union Army fired in 1863 at the Battle of Gettysburg.<sup>26</sup>

The enormous WWI supply depots that logisticians positioned near stalemated trench lines relied on strategic transportation to deliver them to the seldom-moving frontline. The obstacles for a force achieving a breakthrough in WWI presented just as much vulnerability to the attacker as the defender since the attacker had to consider its own breakthrough force's tail. These tactical level logistics difficulties foreshadowed WWII strategic level logistics challenges, given the scale of movement and maneuver characteristic of that war with its multiple theaters of operation. An enormous supply depot just behind the frontline evolved into multiple supply stockpiles stretched across multiple LOCs throughout the depth and across the breadth of each theater. Strategic transportation of supply and personnel to the frontline transformed into strategic, operational, and tactical level transportation of supply and personnel not only forward, but also laterally, rearward, and inter-theater. During WWII, numerous transoceanic

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<sup>23</sup> Henri Antoine Jomini, *The Art of War*, trans. G.H. Mendell & W.P. Craighill (Philadelphia, PA: J.B. Lippencott & Co., 1862), 13.

<sup>24</sup> Carl von Clausewitz, *On War*, ed. and trans. Peter Paret and Michael Howard (Princeton: Princeton University Press, 1976), 128-129.

<sup>25</sup> Leighton and Coakley, *Global Logistics*, 5.

<sup>26</sup> *Ibid.*, 4-5.

LOCs replaced the single GLOC running from a French port to the front line, which was evident in WWI. The advent of air forces, advancement of munitions, and introduction of the combustion engine all strained logistics efforts. Advances in military technology demanded additional logistician skill-sets beyond warehousing and caravanning. Most importantly, this revolution in warfare and accompanying logistics requirements prior to WWII required two logistics enablers. First, logistics demanded a military industrial base to sustain the war effort. Second, military logistics required an infusion of civilian subject matter experts (SME) to overcome a broad range of new technical military activities. Military logistics in WWII embodied more than just a supporting arm to a broadening military. It came to exist instead, as a sub-set of the national economy, evidenced by the innumerable defense contractors that exist today.<sup>27</sup>

#### The CBI Theater in the Allied Context of WWII

On 20 August 1941, US entry into WWII seemed increasingly likely.<sup>28</sup> Roosevelt dispatched the American Military Mission to China (AMMISCA) under the command of Brigadier General John Magruder. Roosevelt recognized that while his administration had already committed to Allied lend-lease programs across the globe, he needed to consider US rearmament in preparation for military endeavors in Europe, the Pacific, and Africa under existing military operation plans. Therefore, he tasked Magruder with synchronizing aid to China within the broader US lend-lease program and in concert with his own rearmament initiatives. AMMISCA would advise and assist Soong on military aid since his lack of military expertise caused inordinate requests for aid from China, which lacked the resources to transport it and the technical knowledge to use it. Roosevelt also envisioned AMMISCA could overcome China's historic waste of foreign aid, supply Chennault's command of volunteer pilots in the Chinese Air Force named the American Volunteer Group (AVG), and serve as an initial or enduring command and control

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<sup>27</sup> Alan Gropman, ed., *The Big 'L': American Logistics in World War II* (Washington, DC: National Defense University, 1997), xiv.

<sup>28</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 29.

node of US logistics assuming the United States would enter the war.<sup>29</sup> As AMMISCA executed its directive heading into December of 1941, useful lend-lease equipment balanced against Allied needs was flowing toward China intended to equip a modern Chinese air force, establish an effective GLOC into China, and arm thirty divisions.<sup>30</sup>

On 7 December 1941, Japan attacked Pearl Harbor, pulling the United States into WWII. On 22 December 1941, Allied leaders convened in Washington, DC at the Arcadia Conference to discuss strategy, an element of which was formalizing a wartime relationship with China. Events such as the Tulsa Incident, in which British forces confiscated Chinese lend-lease equipment from the cargo ship *Tulsa* in Rangoon, Burma, demonstrated the need for a unified command.<sup>31</sup> Accordingly, a key decision out of the Arcadia Conference was to activate the American, British, Dutch, and Australian Command (ABDACOM), which the Allies assigned British General Archibald Wavell to command. The conference also appointed Chiang as the Supreme Allied Commander of China in Chungking and assigned to him an American general officer as his chief of staff.<sup>32</sup> Together, these decisions would prevent any future incidents similar to Tulsa. At Arcadia, US Secretary of War Stimson recognized the need to establish a military theater in China, Burma, and India, given it would help keep China in the war and secure a base for future operations against Japan.<sup>33</sup> Conversely, US Army Chief of Staff General George Marshall believed the United States needed to provide air power in support of Chinese forces but neither establish a formal theater of operations nor incur those associated resource costs. Marshall's initial appointee as Chiang's chief of staff, Lieutenant General Hugh Drum, repeatedly tried to reconcile this difference in strategy between Stimson and Marshall since he could not build an operational approach based on

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<sup>29</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 28.

<sup>30</sup> *Ibid.*, 48-49.

<sup>31</sup> *Ibid.*, 57.

<sup>32</sup> *Ibid.*, 62.

<sup>33</sup> *Ibid.*, 64.

conflicting national objectives. Unfortunately, Drum's persistence in seeking concrete national guidance cost him his assignment as the senior US general in China.

Instead, General Marshall selected Lieutenant General Joseph Stilwell as Chiang's chief of staff. Stilwell immediately built a staff similar to that of a corps headquarters in anticipation of a future need to command and control large forces. He then deployed with his staff as the US Task Force in China. In the meantime, Japan was threatening to seize Burma and Russia's fate seemed in peril. US leaders identified the critical requirement to increase logistical throughput into China, to best support China's resistance against Japan. Accordingly, Marshall tasked Stilwell with building what planners would call the Ledo and Imphal Roads, to connect India to China through non-threatened areas of Burma. Stimson also desired an air line of communication (ALOC) over those roads to increase logistical deliveries. Pilots named this ALOC "the Hump" for its treacherous altitude and twisting air corridor through the Himalayan Mountains, which stretched from Sadiya, Burma to Kunming, China. Stimson ordered the Tenth Air Force to India to assist in Hump operations. Finally, Marshall directed Brigadier General Raymond Wheeler to assume command of Services of Supply (SOS) into China.<sup>34</sup>

Marshall's initial conception of merely providing air power to China transformed into a significant combined arms effort to improve China's LOC network, which necessitated the commitment of a sizable number of logistics organizations. Marshall now agreed with Stimson and established the CBI Theater that included additional lend-lease allocation, the construction of new GLOCs, the reassignment of a numbered air force to establish an ALOC, and the assignment of SOS responsibility to China. The CBI Theater still lagged behind those of Africa, Europe, and the Pacific in priority and accordingly received resources, attention, and US ground forces in the lowest precedence. In essence, the main effort in the CBI Theater, from the US political and strategic military perspectives, was now the provision of lend-lease aid, for without an accompanying military force, lend-lease aid simply resembled diplomatic encouragement rather than military support. The United States recognized that while this half-hearted

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<sup>34</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 76-77.

approach may not be sufficient to avert China's collapse, it was a prudent risk of resources aimed at keeping China in the war and preserving a potential base for operations against Japan once the Allies were adequately prepared to do so.<sup>35</sup>

The US strategic logistics plan in the CBI Theater had to address two overlapping obstacles. At the political level, the plan focused on incorporating Chinese lend-lease aid into the global supply network and delivering enough tonnage of supplies to reassure Chiang of the US commitment. At the operational level, the plan sought to balance the provision of supplies to meet the demands of Stilwell's land operations and Chennault's air operations against stockpiling enough materiel for the anticipated land invasion of Japan. Inherent in the plan was the ever-present need to prevent or offset theft, graft, and expenditure of supplies throughout the network while also ensuring that China used the supplies against Japan and not the Chinese Communists.<sup>36</sup>

### **Lend-Lease Aid**

The US strategic logistics plan needed to satisfy the political exigencies of the United States, Great Britain, the Soviet Union, and China. Strategy contended with distributing adequate lend-lease aid to China without undercutting similar efforts to Great Britain and other strategic partners, or handicapping US rearmament initiatives. The distribution of supplies and transportation between US forces and its allies became the underlying fulcrum of the strategic logistics plan.

Before lend-lease aid, the United States sold military equipment and provided foreign aid to its allies mostly in the form of aircraft, tanks, ground weapons, and ammunition. The United States struggled in this effort due to the inherent challenges of manufacturing goods according to foreign specifications in US factories designed to mass-produce US standard equipment. Directing a number of factories to build British equipment could have impeded the United States' ability to reach full potential for American

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<sup>35</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 71.

<sup>36</sup> Leighton and Coakley, *Global Logistics*, 526-527, 549-550.

standards of stocks. In June 1940, the United States had exhausted its existing equipment supplies because of foreign sales and the need to equip units at US military training posts. As a result, US industry needed to meet the increasing demands of both foreign allies and the US military. US policy planners tried to dictate a fair dual-standard for types and quantities of production to the military industrial complex, but confusion reigned about the appropriate division of these production numbers. Roosevelt finally resolved the issue by assigning an equal 50% production rate to both US and foreign standards.<sup>37</sup>

Roosevelt settled aircraft and tank production quotas but did not address ground weapons and ammunition manufactures. The British used different caliber weapons from rifles to artillery pieces. A month-long debate ended after they agreed to purchase American weapons with the promise of increasing future British weapons production. Despite this agreement, however, Stimson understood that the United States' requirements for war materiel would only increase over time, thus preventing any opportunity to produce British weapons. He decided, therefore, that US industry would thenceforth only generate weapons based on American standards.<sup>38</sup> Though Great Britain viewed this decision as harmful to their own national war effort, Stimson's decision that all production conform to American military standards ultimately consolidated the supply program. This was important to the US logistics plan for two reasons. Military equipment sales and future lend-lease programs gained more clarity on type of supply produced and timelines of production. This afforded more time to devise the best division of supplies between the United States and its allies. Additionally, single-tracking American production enabled maximum output.<sup>39</sup> The United States also found ways to juggle support to both China and Great Britain, allaying British dissatisfaction with Stimson's American standard production command. In 1940, American production of aircraft had not yet reached full capacity. In order to satisfy Chennault's immediate need for aircraft to outfit his AVG, US Army planners modified lend-lease distribution by diverting one-hundred

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<sup>37</sup> Leighton and Coakley, *Global Logistics*, 37.

<sup>38</sup> *Ibid.*, 39.

<sup>39</sup> *Ibid.*, 39.

P-40s under British contract to China in exchange for future replacements.<sup>40</sup> This flexibility in allocation and ability to appease coalition partners in a net zero production situation is a clear advantage in a strategic logistics plan.

As factories prepared for increased production, foreign capability to pay for equipment orders began to diminish. US allies' bank accounts drained as they continued to purchase American equipment in addition to financing resource acquisition across the globe for their war efforts. In mid-1940, China could only spend by borrowing from the United States.<sup>41</sup> In December 1940, Great Britain was already liable for 2.7 billion dollars' worth of equipment on order and were in the midst of ordering another 6.5 billion dollars' worth. The British treasury, though, could only pay for half of this combined sum.<sup>42</sup> Roosevelt recognized he could not abandon his allies by refusing to sell equipment without payment but also needed to convince Congress of the same sentiment. He consequently concocted his metaphor of loaning a firehose to a neighbor so that they could put out their house fire before it could threaten your own house, as well as his famous slogan that the United States would be the arsenal of democracy.<sup>43</sup> On 11 March 1941, the Lend-Lease Act passed after a two-month battle in Washington, DC. The political tool of lend-lease aid became the responsibility of the US Army and an element of the US strategic logistics plan.

While US Army planners did not prioritize Chinese needs and requests in the original lend-lease act, they quickly realized that China needed more than Chennault's request of one-hundred P40s. On 6 May 1941, Soong locked in an immediate lend-lease package worth 45.1 million dollars earmarked for construction and transportation materials as well as a transfer of 300 trucks.<sup>44</sup> He then proposed a 567

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<sup>40</sup> Leighton and Coakley, *Global Logistics*, 40-41.

<sup>41</sup> *Ibid.*, 44.

<sup>42</sup> *Ibid.*, 44.

<sup>43</sup> *Ibid.*, 44-45.

<sup>44</sup> *Ibid.*, 85.

million dollar request for supplies only, overlooking the cost of delivering the supplies to China. After review, the War Department estimated Soong's request to amount to 1,064,000,000 dollars, inclusive of delivery costs.<sup>45</sup> In addition to evaluating the exorbitant request, US Army planners realized that no formal sea LOC (SLOC) into the CBI Theater existed and that the Burma Road via the Port of Rangoon was the only GLOC open into China at that time. Transportation lead-times and bottlenecks alone would limit the lend-lease package's impact to the Chinese war effort before even considering delays in production or transfers to other lend-lease benefactors. Relying on multiple first-hand accounts from US Army officers previously stationed in China, US Army planners had little confidence in China's aptitude to request the right supplies at a reasonable quantity and its ability to know what to do with the supplies once they arrived. In July 1941, US Army planners moved ahead with a congressionally-approved 200 million dollar order for China and attempted to find a suitable position for it within the British lend-lease program by balancing each nation's demands against existing stocks, availability of transportation, and varying production timelines.<sup>46</sup>

Soong used this 200 million dollar lend-lease request on 1,000 airplanes for the Chinese Air Force, ground munitions for thirty divisions, supplies for improving Burma's transportation infrastructure, and equipment to create ammunition production factories in China.<sup>47</sup> US Army planners delegated the task of procuring ammunition factory equipment to civilian industry. Civilian industrialists assembled packages of the requisite materials and equipment needed to establish the factories while the military coordinated the packages' timely and efficient shipment to China. The planners next focused their efforts on Soong's first three points. 1,000 aircraft necessitated creating ALOCs from the United States to China. The accompanying logistical package required fuel, aircraft ammunition, repair parts, and maintainers that all had to be funneled into the lend-lease pipeline. Aircraft-natured requests also chipped

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<sup>45</sup> Leighton and Coakley, *Global Logistics*, 86.

<sup>46</sup> *Ibid.*, 86.

<sup>47</sup> *Ibid.*, 86.

away at Great Britain's lend-lease request. The War Department coordinated with Roosevelt's administrative assistant to China, Dr. Laughlin Currie, who convinced the British to release 144 Vultee P-48s and sixty-six Lockheed and Douglas bombers. He also commandeered 125 outdated P-43s from an American factory lot.<sup>48</sup> A combination of domestic diplomatic statesmanship, a concerted civilian-military enterprise to persuade Great Britain in trading old aircraft now for a promise of new aircraft later, and factoring in the logistics tail of this soon-to-be 1,000 aircraft fleet, all pointed towards the best hope of realizing immediate Chinese success against Japan.

As promising as China's Air Force was in 1941, Soong's desire for thirty divisions seemed problematic. US Army planners grappled less with estimating the straightforward requirements of a Chinese Army division, which paled in comparison to a US Army division, and more with the variety in standard for weapons and munitions. This posed a significant obstacle similar to British aid planning. In April 1941, the War Department worked with the State Department, with the help of Currie, to secure an agreement with Canada for their factories to produce the Chinese standard 7.62-millimeter ammunition and weapons. This illustrated a powerful example of the need to reach out to regional partners and their industrial complexes in order to maximize or diversify war effort manufacturing.

In seeking to improve Burma's transportation infrastructure, US Army planners took inventory of the route between the Port of Rangoon in Burma and Kunming, China. The route began with an inadequate Burmese railroad running from Rangoon to Lashio and ended with a transfer between train to truck or beast of burden. The deficient Burma Road then ran between Lashio and Kunming. Soong wanted to develop existing infrastructure by building a railroad running parallel to the Burma Road and a new ground route between British India and Yunnan Province, China.<sup>49</sup> US Army planners ruled out the new highway but programmed resources, including engineering units, into the lend-lease pipeline for the Burma Road improvement and parallel railroad construction. This initiative involved securing

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<sup>48</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 20.

<sup>49</sup> Leighton and Coakley, *Global Logistics*, 86.

construction permission from Burma through Great Britain and requesting engineer unit equipment and personnel from the War Department. Most importantly, developing transportation infrastructure within the CBI Theater increased the need for logistics supervision of an anticipated LOC network expansion, though planners did not expect its completion until late 1942.<sup>50</sup>

Beyond nesting China's lend-lease requests beneath Great Britain's and under the prioritization of the United States' rearmament, US Army planners started receiving additional requests for aid. In April 1941, the United States began providing formal aid to Latin American countries even though the United States had been providing similar assistance prior to the Lend-Lease Act of 1941.<sup>51</sup> Under hemisphere defense plans, lend-lease to Latin America remained small compared to Great Britain or China and low-priority production delayed delivery until mid-1942. On 21 August 1941, the Netherlands solicited ammunition and ground weapons for the defense of the Dutch East Indies, warning of an imminent Japanese incursion. Roosevelt approved the transfer of equipment from stocks intended for a US expedition into Iceland as part of hemisphere defense plans.<sup>52</sup>

Finally, on 1 October 1941, the Soviet Union finalized lend-lease aid from the United States after two months of deliberation. The First Moscow Protocol dispatched aid to the Soviet Union from both the United States and Great Britain though the majority of tangible assistance came from the United States. Roosevelt authorized one billion dollars to the Soviet Union, second in size only to Great Britain.<sup>53</sup> The War Department had to start from scratch in allocating planned capabilities and resources against new lend-lease requirements. Stubborn Soviet insistence on selecting their own SPODs coupled with immature SLOCs to the Soviet Union further exacerbated this strategic reordering of logistics priorities. Despite the US intent to remain neutral by shipping aid on boats owned by the benefactor and not including

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<sup>50</sup> Leighton and Coakley, *Global Logistics*, 86.

<sup>51</sup> *Ibid.*, 88-89.

<sup>52</sup> *Ibid.*, 88.

<sup>53</sup> *Ibid.*, 102.

accompanying technical assistance, US Army planners identified a need to attach support packages to lend-lease shipments. These support packages made the most sense for China because of US fears of fraud, waste, and abuse. Therefore, the War Department needed a mechanism that could oversee the maintenance and proper use of aid, maximize flow through LOCs, and evaluate lend-lease requests at the source.

The War Department realized that Magruder's AMMISCA was already in China fulfilling some of these demands, most importantly synchronizing lend-lease aid. The War Department subsequently entrusted Magruder with maximizing transportation through the LOCs. Magruder determined that the link between Rangoon and Chungking begged the most attention, so he dispatched two task forces to focus on the Burma Road and the new Yunnan-Burma Railway.<sup>54</sup> While Magruder understood that the infrastructure repair and construction necessitated the inclusion of civilian SMEs to AMMISCA, he did not grasp to what extent until he arrived in China. In October 1941, Magruder arranged for the emplacement of a robust network of repair shops, supply points, and small factories near and along the LOCs. He also coordinated for General Motors Corporation (GM) to manage many of these repair points.<sup>55</sup> Once Magruder felt comfortable with LOC development, he turned his attention to controlling the rate of distribution into the pipeline from Rangoon in concert with the Chinese's ability to receive, stage, and integrate lend-lease aid into their war effort. Magruder was trying to eliminate LOC bottlenecks where the likelihood of theft, graft, or loss exponentially increased.

In June 1942, the Axis won several victories in the Mediterranean Theater of Operations, triggering an Allied crisis response that forced the War Department to move most of the 10th Air Force's bombers and transports from the CBI Theater to Egypt.<sup>56</sup> Chiang immediately complained to Roosevelt about this loss of air force assets. Already upset over dwindling lend-lease numbers since 1941, Chiang

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<sup>54</sup> Leighton and Coakley, *Global Logistics*, 109.

<sup>55</sup> *Ibid.*, 109.

<sup>56</sup> *Ibid.*, 538.

questioned the United States' commitment to China. Chiang thus demanded three conditions by August of 1942 or threatened to remove China from the war. Included among them was a demand to increase his lend-lease delivery quota to 5,000 tons per month into Kunming. US leaders recognized the importance of addressing Chiang's mandate but could not immediately meet his delivery requests due to ongoing preparations in Europe, which required the bulk of Allied transportation assets. As a measure aimed at keeping Chiang in the war until additional shipping assets were available for reassignment to the Hump, Roosevelt decided to raise Chinese lend-lease to 8,000 tons per month by the end of 1942 and 10,000 tons per month by early 1943.<sup>57</sup> Not until the 1943 Casablanca Conference, did Roosevelt finally agree to work towards satisfying Chiang's 1942 lend-lease delivery quota request by improving the Hump's efficiency to 4,000 tons per month.<sup>58</sup>

Lend-lease to China underwent multiple fluctuations from 1941 to 1945. Political leaders looked to logisticians to craft a strategic logistics plan revolving around lend-lease that would satisfy Chiang to the point of not only siding with the Allies, but encouraging him to conduct offensive operations against Japan. The strategic logistics plan contended with external pulls from British and Soviet lend-lease request changes, but also internal challenges of stoppages throughout the CBI Theater's LOC network. A large part of the problem was that the War Department dedicated much of the lend-lease to improving LOC infrastructure, which was critical to increasing lend-lease tonnage delivered over time. Unfortunately, competing Allied strategies in the CBI Theater, as well as conflicting approaches between the two senior Army officers, vexed the efficient and organized flow of the right lend-lease, at the right time, at the right place, and in the right quantity.

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<sup>57</sup> Leighton and Coakley, *Global Logistics*, 543.

<sup>58</sup> *Ibid.*, 539.

## Tonnage

Beyond managing the lend-lease operation, the US strategic logistics plan needed to deliver enough tonnage of supplies to China to reassure Chiang of the US commitment to the CBI Theater. In December 1941, Japan attacked Pearl Harbor and drew the United States into WWII. While the United States' formal declaration of war did not alter the lend-lease program's basis of allocation already underway in China, it did force the United States to formalize its war plan and decide on whether to deploy ground forces in the CBI Theater. After two months of deliberation, Great Britain and the Soviet Union influenced the United States to focus on the European theater, blocking any large deployment of ground forces to China. Great Britain based their argument on the premise that British, Indian, and Chinese ground forces could handle Japanese forces for the time being.<sup>59</sup> Nevertheless, the United States viewed China as the lynchpin in the defense of the Pacific. Most importantly, the United States believed China was key terrain for an eventual offensive against Japan, which would allow for the buildup of ground combat power to defeat the Japanese Army and provide air bases for a massive air campaign against mainland Japan.<sup>60</sup>

Despite the fact that the United States appointed Chiang as the Supreme Allied Commander of the CBI Theater, activated AMMISCA to bolster Chinese lend-lease, and assigned Stilwell as Chiang's chief of staff, Chiang was still skeptical of US commitment. Chiang's skepticism resulted from the fact that the United States deployed no US ground forces into the CBI Theater, which was the allies' third priority theater. Policy shaping in China and the US ability to work with Chiang revolved around controlling and expediting the supply line into China.<sup>61</sup> Lend-lease supply tonnage delivered to China became the benchmark for US commitment to Chiang and became a significant monthly reportable item to Roosevelt.

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<sup>59</sup> Leighton and Coakley, *Global Logistics*, 525.

<sup>60</sup> *Ibid.*, 525-526.

<sup>61</sup> *Ibid.*, 526.

While lend-lease itself demonstrated US resolve, the delivery of supplies was the step most likely to impress Chiang. During 1941, the United States delivered 70,000 tons of lend-lease aid to China.<sup>62</sup> Beginning immediately after Pearl Harbor, in December 1941, the United States appropriated 50,000 tons of supplies per month over the subsequent year for distribution in China.<sup>63</sup> The strategic logistics plan hinged on the successful transportation of these 50,000 tons of supplies per month. Since October 1941, Marshall had tasked Magruder with improving the LOC infrastructure from Rangoon to Chungking in line with establishing the CBI Theater. AMMISCA oversaw Chinese lend-lease requests and succeeded in facilitating more responsible ordering such as requisitions for rations and repair parts instead of useless blankets. However, AMMISCA underperformed in terms of alleviating the bottlenecks in Rangoon and Lashio. Cargo ships downloaded supplies in Rangoon faster than the network could transport them by rail to Lashio. Railcars then released goods in Lashio quicker than the network could load and move by motor or beast transport to Kunming.

In February 1942, Rangoon fell to Japan, severing the Burma-China supply route. Fortunately, for US Army planners, the attack on Pearl Harbor two months prior froze all shipments originating from the United States for a month, leaving ample time to redirect shipments destined for Rangoon to India.<sup>64</sup> AMMISCA also managed to evacuate some supplies out of Rangoon to India. Wheeler, who was still working as Stilwell's SOS chief, designated Karachi as the new seaport of debarkation (SPOD). A limited rail line then ran across India to Ledo near the Burma border. Initially, Wheeler recognized that no road network existed and only a modest airlift based out of Sadiya, India, near Ledo could transport supplies to Myitkyina, Burma, for further shipment to Kunming via the Burma Road.<sup>65</sup> Understanding the importance of reestablishing a GLOC, Wheeler envisioned the eventual construction of roads from

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<sup>62</sup> Leighton and Coakley, *Global Logistics*, 526.

<sup>63</sup> *Ibid.*, 527.

<sup>64</sup> *Ibid.*, 527-528.

<sup>65</sup> *Ibid.*, 528.

Imphal, India, to Mandalay, Burma, and from Ledo to Myitkyina. In May 1942, Japan defeated British and Chinese forces in North Burma and captured the airfield in Myitkyina. The only remaining LOC for lend-lease was now the ALOC over the Hump. The US strategic logistics plan now balanced the fulfillment of Roosevelt's

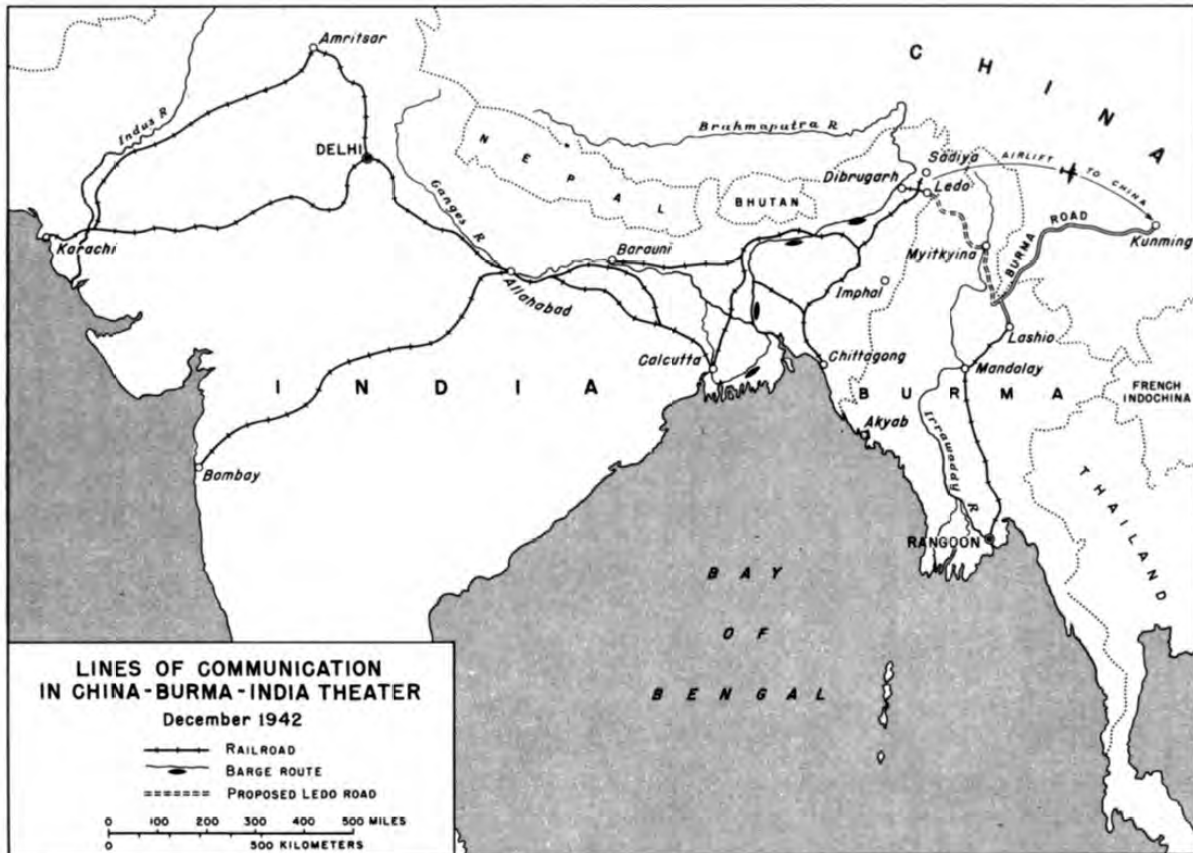


Figure 1. Map of Lines of Communication in CBI Theater, December 1942

Source: Richard Leighton and Robert W. Coakley, *Global Logistics and Strategy: 1940-1943* (Washington, DC: Government Printing Office, 1955), 529.

lend-lease tonnage promise to Chiang entirely over the Hump with the competing demand of reopening a GLOC into China.

Prior to May 1942, when the Allies retained an airbase in Myitkyina, the War Department coordinated with American civilian airlines for the transfer of thirty-five commercial transports to the CBI

Theater to achieve a fleet of one-hundred aircraft by December 1942.<sup>66</sup> However, transport aircraft were in high demand and Great Britain and the Soviet Union insisted on their share, in addition to these thirty-five intended for China. Additionally, as transport aircraft arrived in the CBI Theater, Wheeler diverted a portion of them to support Middle East SOS operations.<sup>67</sup> Furthermore, aerial distribution of supplies within a military transportation network was a new concept without standing planning estimates, standard operating procedures, or experienced personnel. In July 1942, the nine transport aircraft operating the Hump ALOC contended with deficient runways and maintenance facilities, non-existent repair part programs, and a lack of any formalized SOS method of resupply. Roosevelt's lend-lease allocation of 50,000 tons per month never received transportation sufficient to move more than 1,600 tons per month. Logisticians struggled to meet this target until the end of 1942 and Chennault committed the bulk of these shipments towards his AVG operations.<sup>68</sup>

In May 1942, as delivery of Chinese lend-lease from Sadiya to Kunming slowed to a trickle, supplies piled up at American seaports of embarkation (SPOE) awaiting transoceanic shipment. Chiang's representative in the United States, Soong, consistently failed to factor in shipment costs for lend-lease. Indeed, Soong only secured 10,000 tons' worth of monthly shipping space for the 50,000 tons of lend-lease he would receive.<sup>69</sup> By the end of April 1942, a backlog of 500,000 tons of Chinese lend-lease awaited shipment in the United States expecting only 10,000-ton disbursements per month indefinitely.<sup>70</sup> The War Department accordingly sought to reduce the Chinese lend-lease program and absorb the majority of supplies awaiting shipment in the United States. Soong opposed this initiative and countered with a new 7,500-ton lend-lease appropriation, calling this demand a contingency to the release of

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<sup>66</sup> Leighton and Coakley, *Global Logistics*, 528.

<sup>67</sup> Leighton and Coakley, *Global Logistics*, 530.

<sup>68</sup> *Ibid.*, 530.

<sup>69</sup> *Ibid.*, 530.

<sup>70</sup> *Ibid.*, 531.

Chinese allocated lend-lease back to the United States.<sup>71</sup> SOS in India were concurrently relaying to the War Department that they could ship 1,200 tons over the Hump monthly, though they only managed eighty-tons in May and 106 tons in June.<sup>72</sup> Additionally, a backlog of 52,000 tons existed in Karachi awaiting rail shipment to Sadiya.<sup>73</sup> SOS estimates of shipment capabilities and current backlogs, coupled with the impending monsoon season, convinced the War Department to compel Soong to accept a monthly allocation of 3,500 tons. By July 1942, the logistics pipeline from the United States to India was full and especially overloaded at US SPOEs. The logistics plan now shifted to completing the last leg of the LOC from India to the Chinese Army.

In May 1942, Stilwell understood his primary objective was to keep China in the war. After witnessing the fall of Rangoon and North Burma, he reframed his mission as a logistics and supply mission.<sup>74</sup> Opening SLOCs into Chinese ports was untenable without control of the South China Sea. Reestablishing a GLOC along the Burma Road was unfeasible without conducting a major overland campaign into Burma. Resurrecting an SPOD and GLOC in Rangoon was hopeless without executing a major amphibious operation along the Burmese coast.<sup>75</sup> Stilwell possessed no navy nor marine force. He also recognized that the War Department would only provide enough resources to keep China in the war. The month of May's paltry eighty-ton delivery resigned Roosevelt and Chiang to concede that limited Hump capacity would have to be enough to keep China in the war given there were simply no other options.<sup>76</sup>

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<sup>71</sup> Ibid., 531.

<sup>72</sup> Leighton and Coakley, *Global Logistics*, 532.

<sup>73</sup> Ibid., 532.

<sup>74</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 73-75.

<sup>75</sup> LeR. Lutes, *Logistics in World War II: Final Report of the Army Services Forces* (Washington, DC: Service, Supply, and Procurement Division, 1947), 46.

<sup>76</sup> Leighton and Coakley, *Global Logistics*, 532-535.

Nevertheless, Stilwell decided that restoring North Burma GLOCs that reached back to mature India SPODs would diminish the need for retaking Rangoon, Myitkyina, or Chinese ports.<sup>77</sup> To accomplish this task, he first prevented the British seizure of Chinese lend-lease stockpiles in India for their use in the Middle East. He instead extended the India GLOC to Ramgarh where he established a training center for Chinese troops that escaped the Japanese Burma offensive.<sup>78</sup> In addition to outfitting two Chinese divisions at the base, Stilwell created a supply hub for his force that could support each division's corresponding logistics tail with future offensive operations in mind. This was critical since any Ledo Road improvements would require combat forces to ensure force protection. Additionally, this region was one of the most pestilential areas in the world, carrying the risks of malaria, dysentery, and typhus.<sup>79</sup> Possessing a logistics hub near the front line enabled the forward flow of health improvement supplies and the rearward flow of combat or health casualties. Just three months earlier, in February 1942, Magruder reported to Stilwell that the conditions on the ground in China were deplorable and the outlook for the Chinese war effort looked grim.<sup>80</sup> Stilwell had since organized two Chinese divisions and made good on Roosevelt's lend-lease promise by directly impacting the Chinese Army in India. This is an important point in that an American general maintained political ends without changing his means, simply by adjusting the location of his ways.

After adjusting his Indian GLOC's terminus to Ramgarh, Stilwell then focused on his LOC between Assam, Burma and Calcutta, India, which connected to his Karachi SPOD. Specifically, Stilwell and Wheeler sought to improve the Bengal-Assam Railroad operated by the Indian Civil Service and the Brahmaputra barge line operated by several British commercial companies.<sup>81</sup> They knew that the development of airfields in Assam and the logistics package required to keep the Hump moving, required

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<sup>77</sup> Lutes, *Logistics in World War II*, 46.

<sup>78</sup> Leighton and Coakley, *Global Logistics*, 532-533.

<sup>79</sup> Lutes, *Logistics in World War II*, 46.

<sup>80</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 80.

<sup>81</sup> Lutes, *Logistics in World War II*, 46-47.

an incredible amount of supplies and equipment tonnage. Before the end of the war, the SOS in the CBI Theater would enhance the port of Calcutta as security in the Bay of Bengal increased, expand the Bengal-Assam Railroad with operational and maintenance personnel, and build pipelines from Calcutta to Assam.<sup>82</sup>

Once Stilwell attained a grasp of his logistics and LOC capabilities, he began planning his offensive operation. He envisioned a ground heavy operation to liberate Burma and open a Chinese GLOC. This conflicted with his counterpart Chennault's wishes to execute a heavy air operation against Japanese forces. While Marshall and the Joint Chiefs supported Stilwell, Chennault appealed to the President and Currie since his plan required fewer resources and promised greater results.<sup>83</sup>

In January 1943, the Allies convened at the Casablanca Conference to discuss future maneuver strategy. All present fully understood that any CBI Theater maneuver plan depended solely on the corresponding logistics network. In the CBI Theater, logistics drove operations instead of operations driving logistics. Stilwell argued for ground operations across all of Burma, named Operation Anakim, which Chiang supported. Roosevelt supported Stilwell, but Marshall was cautious to back Anakim since it required an additional commitment of US ground forces. Churchill and Wavell were interested in Anakim only if the United States would support the operation logistically with additional shipping convoys and lend-lease in excess of approved amounts.<sup>84</sup> Finally, Chennault sold his air campaign plan more as a substitute to Anakim than as a supporting operation.

The Casablanca Conference ended with the agreement that Anakim would occur in early 1943, that the CBI Theater would support Chennault's air plan until then, and that the CBI Theater SOS would transfer some logistical support to Great Britain in anticipation of Anakim. Specifically, out of the 113 additional sea convoys Great Britain requested, the United States agreed to twenty. The War Department

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<sup>82</sup> Lutes, *Logistics in World War II*, 47.

<sup>83</sup> Leighton and Coakley, *Global Logistics*, 543.

<sup>84</sup> *Ibid.*, 542-546.

redirected those twenty ships full of lend-lease aid from the Middle East and Australia to the CBI Theater.<sup>85</sup> At Currie's urging, Roosevelt also ordered the War Department to prioritize Chennault's needs over Stilwell's, and to continue reassuring Chiang of the United States' dedication to China.

In March 1943, General Hap Arnold, the Army Air Force Commanding General, flew to China and visited Chennault to inform him that the Hump's transport wing would increase from sixty-two to 137 planes and monthly shipments over the Hump would increase from 1,500 to 4,000 tons.<sup>86</sup> Stilwell returned to his headquarters confident that Anakim would come to fruition in the next year. The War Department even tasked Wheeler with studying the feasibility and effects on the logistics network of basing 100,000 or 500,000 US soldiers in the CBI Theater.<sup>87</sup> However, in April 1943, the same parties met at the Trident Conference in Washington, DC and scrapped Anakim in favor of an air war and limited ground operations.<sup>88</sup> The perturbed Stilwell returned to his limited planning of extending the Ledo Road. The inability of the Allies to apportion any significance to the CBI Theater was a product of a powerlessness to establish and secure a robust logistics LOC network. Network bottlenecks, overall inefficiencies, and delays offset the War Department's efforts to throw enough lend-lease and support at the CBI Theater to make it a decisive theater.

### **Stilwell versus Chennault**

In May 1942, the struggle between Stilwell and Chennault reached a climax. Stilwell wrested as much tonnage away from Chennault to outfit his Chinese ground forces as he could, while Chennault battled for his share of logistics support to keep his meager air force in the air and bombing Japanese targets. Chiang then received whatever tonnage remained. This situation created a strategic clash all of its

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<sup>85</sup> Leighton and Coakley, *Global Logistics*, 544.

<sup>86</sup> *Ibid.*, 543.

<sup>87</sup> *Ibid.*, 546.

<sup>88</sup> *Ibid.*, 547.

own.<sup>89</sup> Strategic logistics planners recognized that Stilwell was the ranking American commander in the CBI Theater and accordingly received highest priority for support. Unfortunately, this was contrary to Roosevelt's intent, as he had sided with Chennault in favor of an effective air offensive against Japan in lieu of a bloody and slow ground assault.<sup>90</sup> Despite Marshall's preference for a ground campaign, Currie and Chennault convinced Roosevelt and Marshall to award the bulk of tonnage delivery to Chennault's air effort.<sup>91</sup> The planners simply assigned priorities incorrectly due to a lack of understanding of the strategic intent. Future conferences soon rectified this misunderstanding.

In May 1943, Roosevelt settled the dispute at the Trident Conference in Washington, DC. Since Great Britain did not fully support Anakim, Roosevelt cancelled the ground operation in favor of Chennault's air campaign. Roosevelt consequently assigned all priorities of logistics to support Chennault.<sup>92</sup> At the time, no GLOCs extended into China from US logistics bases and construction of the Ledo Road was progressing slowly. The Hump remained the only open ALOC to deliver lend-lease and other supplies to China. In May 1943, the Hump operated at approximately 3,000 tons per month despite a target of 4,000 tons.<sup>93</sup> Prior to the Trident Conference, Roosevelt demanded that between 1,500 and 2,500 tons of that monthly shipment go to Chennault.<sup>94</sup> The remainder went to Stilwell and Chiang. After the Trident Conference, Roosevelt ordered that the Hump must achieve a July target of 7,000 tons and a September target of 10,000 tons. Starting in July, Roosevelt allocated the preponderance of these resources to Chennault. This shift in priority to the air campaign meant that Chennault would receive the

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<sup>89</sup> John D. Plating, "Keeping China in the War: The Trans-Himalayan "Hump" Airlift and Sino-US Strategy in World War II," PhD diss. (Ohio State University, 2007), 13.

<sup>90</sup> Leighton and Coakley, *Global Logistics*, 542.

<sup>91</sup> Plating, "Keeping China in the War," 13.

<sup>92</sup> Leighton and Coakley, *Global Logistics*, 547.

<sup>93</sup> Barbara W. Tuchman, *Stilwell and the American Experience in China, 1911-45* (New York, NY: Macmillan Company, 1970), 358.

<sup>94</sup> *Ibid.*, 360.

first 4,700 tons and the last 300 tons of the total shipment. Roosevelt wanted the remaining 2,000 tons to support all other purposes, including ground forces.<sup>95</sup> Of that 2,000 tons, only 500 went directly towards Stilwell's Yoke Force, comprised of Chinese Army divisions stationed in China.<sup>96</sup>

Trident dramatically shifted logistics planning priorities. Previously, Stilwell's estimate of required monthly tonnage to his Yoke Force in China amounted to 4,300 tons for three consecutive months followed by 3,500 tons per month thereafter.<sup>97</sup> He based this estimate on two factors. First, his calculations reflected the need to prepare the Yoke Force for a major ground offensive into Burma before Trident. 4,300 tons per month for three months would achieve this condition. Second, Stilwell planned to outfit thirty Chinese divisions within his Yoke Force. After combining his Yoke Force and X-Ray Force, which consisted of Chinese divisions located in India and Burma, into a single unit, he hoped to turn his attention to constructing thirty additional divisions in 1944 and another thirty divisions in 1945. Ultimately, Stilwell envisioned a one-hundred division Chinese Army.<sup>98</sup> Trident now relegated Yoke Force to a priority of only 500 tons per month. Stilwell now needed twenty-six months' worth of Hump tonnage to outfit and train his Yoke Force to maneuver against Japan within China and defend airbases. Furthermore, Stilwell now needed seven years to equip and train each of his additional groups of thirty divisions and overall more than fifteen years to reach his desired end state of a one-hundred division strong Chinese Army.<sup>99</sup>

Trident adjusted logistics priorities in accordance with Chennault's desired air campaign but the logistics infrastructure was too immature to support his key tasks. In May 1943, approximately 133

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<sup>95</sup> Tuchman, *Stilwell*, 372.

<sup>96</sup> *Ibid.*, 372.

<sup>97</sup> *Ibid.*, 344.

<sup>98</sup> *Ibid.*, 344.

<sup>99</sup> *Ibid.*, 344.

transport airplanes operated over the Hump.<sup>100</sup> Chennault recognized that to deliver his allocated 5,000 tons per month, he required 304 airplanes, 275 men in flight crews, 3,400 men in ground crews, and five airfields large enough to support fifty transports at both ends of the Hump.<sup>101</sup> This midstride reassignment of construction personnel and equipment away from the Ledo Road to airfields in China, exacerbated Hump logistics delivery schedules and threatened to undercut the President's tonnage priorities. Although during Trident Roosevelt ordered the preponderance of logistics resources go to Chennault, he also warned that reopening the GLOC into China was critical to any future operations against Japan that were based out of China.<sup>102</sup> Roosevelt inadvertently kick-started a major air operation that in his own words depended heavily on a GLOC that he diverted resources away from. Logistics planners attempted to address this contradiction, but between March and August of 1943, the Ledo Road expanded by only a paltry three miles.<sup>103</sup>

In logistics' attempts to improve the Hump's capacity without any supplemental GLOC, the question arose of whether the expenditure of resources was worth the attained result. Supplies, equipment, and specialized personnel first had to travel 12,000 miles by boat from the United States to India's west coast. Trains then moved them 1,500 miles to Calcutta where they then transferred to the Bengal-Assam Railway with a terminal destination of the Sadiya airfields.<sup>104</sup> Transport aircraft then consumed one gallon of fuel for every gallon delivered. Once over the Hump, the shipment was then dispersed into smaller shipments that either road or river transport pushed another several hundred miles away from Kunming to Chennault's various airbases.<sup>105</sup> Chennault required eighteen tons of supplies to attack

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<sup>100</sup> Leighton and Coakley, *Global Logistics*, 543.

<sup>101</sup> Tuchman, *Stilwell*, 313.

<sup>102</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 354.

<sup>103</sup> *Ibid.*, 348.

<sup>104</sup> Tuchman, *Stilwell*, 308-309.

<sup>105</sup> *Ibid.*, 309.

Japanese targets with one ton of bombs.<sup>106</sup> Hump aircraft maintained an operational readiness rate between sixty and seventy percent. Additionally, crews cancelled flights regularly due to weather, and his force lost ten percent of its aircraft and crew each month.<sup>107</sup> The strategic logistics plan accounted for these expected losses, decreases and increases to scheduled deliveries, and overhead consumption rates. Army logistics also adapted to the new concept of aerial re-supply and concocted standard operating procedures on an ad hoc basis.

Stilwell had argued that effective air operations based out of China required an initial seizure of land with a considerable land force. He did not oppose an air campaign in 1943 and understood its eventual decisiveness for conducting offensive operations against Japan, but he favored ground operations to facilitate Roosevelt's aim of keeping China in the war. As the senior American commander in the CBI Theater, Stilwell aligned his logistics priorities to his ends. Stilwell believed that an air force providing air coverage for a non-existent ground force had no value.<sup>108</sup> By contrast, Chennault expected quick and decisive results with a modest investment for his air campaign. However, he overlooked the negative impact of depriving ground units of the majority of resources and undermined the ground force's ability to defend his own airbases. More attune to the civilian and political undertones of China than the military operational environment, Chennault did not recognize that an adequate GLOC into China was a precursor to any air force infrastructure buildup.

In July 1943, after Chennault began air attacks against Japanese shipping, Japan attacked Chennault's air bases, forcing him to abandon two airfields. By the end of the fall, Chennault was retreating and barely able to defend the Hump airbase in Kunming.<sup>109</sup> The realignment of logistics priorities in May 1943, following the Trident Conference, emphasized the strategic logistics plan and

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<sup>106</sup> Tuchman, *Stilwell*, 309.

<sup>107</sup> *Ibid.*, 309.

<sup>108</sup> *Ibid.*, 368.

<sup>109</sup> D.D. Rooney, *Stilwell* (New York, NY: Ballantine Books, 1971), 82.

forced its supported commander to bridge the created shortfalls. The logistics plan assisted Stilwell as conditions permitted, including empowering him to use local Indian contractors to offset his X-Ray Force supply drain.<sup>110</sup> He also assigned the rearward transportation priority over the Hump to Yoke Force soldiers in China. This afforded Stilwell an opportunity to train Yoke Force soldiers at Ramgarh and employ them as part of X-Ray Force.<sup>111</sup> Wheeler even reassigned construction equipment and engineer companies from his regional SOS to Ramgarh to assist in the Ledo Road expansion. These assets compensated for the construction units that moved from Ramgarh to Kunming in support of the production of Chennault's new airfields.<sup>112</sup> The strategic logistics plan endeavored to support Chennault as per the Presidential directive while at the same time ensuring that the CBI Theater sustained Stilwell's operations.

### **Efficiency of the LOC Network**

In addition to settling operational commanders' rival requests for supplies and transportation, the logistics plan accounted for simultaneously supporting operations in the CBI Theater while stockpiling requisite materiel for a future land invasion of Japan. This aspect of the logistics design sought to overcome three challenges. First, the plan combatted theft and graft of supplies throughout the network. Second, planners accounted for the expenditure of resources that sustained the LOC network itself. Third, the logistics structure needed to ensure that China used the delivered supplies against Japan instead of stashing them for their future fight against the Chinese Communist Party.

Theft of supplies was common during WWII. Opportunity was the primary cause of this drain on the supply system and occurred most frequently at locations where large amounts of supplies awaited transportation. In most cases, these unprotected stockpiles remained for weeks in plain view of

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<sup>110</sup> Leighton and Coakley, *Global Logistics*, 547.

<sup>111</sup> Tuchman, *Stilwell*, 327.

<sup>112</sup> Rooney, *Stilwell*, 83.

impoverished populations. It should have been no surprise to logistics planners that lend-lease, military supplies, and construction equipment bound for China would disappear throughout the system. In July 1942, for example, 52,000 tons of lend-lease remained in India awaiting onward movement to China.<sup>113</sup> After the Burma Road closed and the Hump was the only open LOC into China, stockpiles

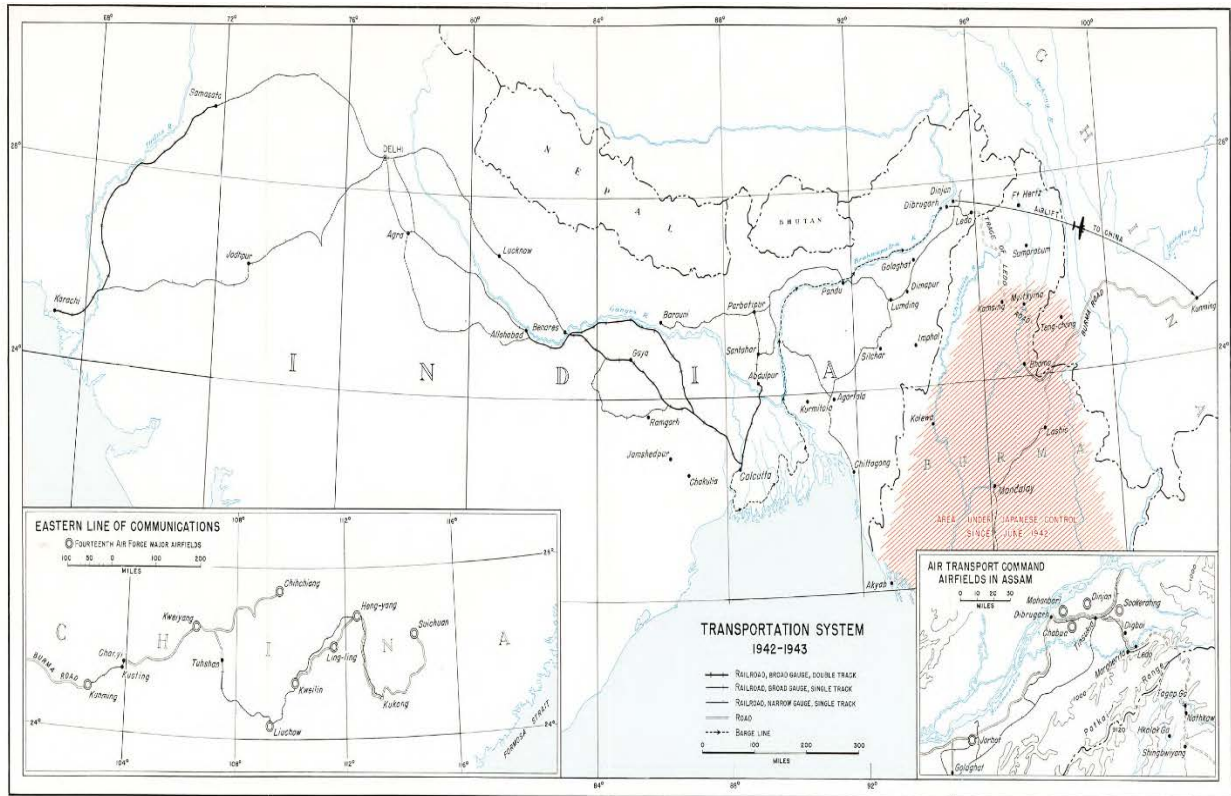


Figure 2. Map of the Transportation System in CBI Theater, 1942-1943

Source: Charles F. Romanus and Riley Sunderland, *Stillwell's Mission to China* (Washington, DC: Government Printing Office, 1952), inside back cover.

like this one in Calcutta were common at each node along the LOC into Kunming and beyond. This LOC existed as the best hope for China to defeat Japan and became the decisive point of action for the US effort in the CBI Theater. It was also the last route by which any type of aid could reach a starving population and economy. Accordingly, speculators, traders, and black marketers emerged at every stockpile location and along each route. They confiscated shipments, coerced truck drivers to work for

<sup>113</sup> Leighton and Coakley, *Global Logistics*, 532.

them, and purchased loads for a mere fraction of their worth.<sup>114</sup> In many cases, the single LOC institutionalized corruption under the auspices of Chinese and Burmese government agencies and created a political battleground that Chiang was unable to resolve. Innumerable sums of supplies vanished into the countryside for individual profit.<sup>115</sup>

Local nationals were not the only parties stealing from the supply line. Chennault's AVG of pilots in Kunming, as well as Red Cross employees and ex-patriot workers, all participated in alleged theft of lend-lease aid and stockpiles intended for the ground invasion of Japan. By the end of 1944, the US Army's Criminal Investigation Command reported over four-million dollars' worth of supplies had been stolen. The primary suspects were US Army personnel and the Red Cross.<sup>116</sup> Theft of military supplies, embezzlement of profits from gasoline, and illegal sales of military equipment were all common charges in these investigations. Theft was rife at the SPODs in India, supply nodes throughout the system, along routes, and even at the final destination.

In order to combat theft, Roosevelt commissioned David Arnstein to study the LOC network between Burma and China, including the Burma Road. While his report concerned the LOC network at the end of 1942, it still illuminated conditions that presumably persisted with LOCs running from India to the Ledo Road and over the Hump. First, Arnstein identified a massive amount of graft in the network. Specifically, he discovered sixteen Chinese agencies that oversaw the LOC. Chiang's government overstaffed these agencies with inexperienced employees and unqualified family members of high-level political leaders. Second, he observed no movement control teams or mechanism to track, expedite, or record shipments. Third, Arnstein recorded that drivers overloaded their trucks, drove them recklessly, and traveled in convoys of fifteen to twenty-five trucks. These large convoys presented problems when one truck would break down or authorities stopped it to check paperwork since if one truck halted, the

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<sup>114</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 44.

<sup>115</sup> *Ibid.*, 45.

<sup>116</sup> Tuchman, *Stilwell*, 377.

entire convoy halted.<sup>117</sup> Upon its inception, AMMISCA and Magruder worked tirelessly to solve these inefficiencies. However, logistics planners could never assume that Chiang's management initiatives completely solved the majority of these shortfalls along the LOC, especially not on routes between Kunming and Chinese Army bases near the frontline.

Graft also occurred due to the competition for business between government and private truck driving companies. As government truck drivers continued to experience the inefficiency of the LOC delaying delivery times and exposing truckloads to theft, speculators in Rangoon began purchasing trucks and establishing their own private truck companies. These speculators attracted one truck driver after another and persuaded an incredible number of government truck drivers to abandon their cheap government contracts and work as freelancers. The appeal existed in the fact that the driver could operate a speculator-owned truck, loaded with speculator-purchased supplies, and sell those supplies at bazaars in Kunming for three times their value.<sup>118</sup> Subsequently, GLOC capacity decreased as government truck drivers abandoned their contracts to make more money working for speculators. GLOC stockpile levels also diminished as speculators stole lend-lease aid and military equipment. Senior logistics planners detected no issues since supplies were leaving Rangoon and arriving in Kunming. They sadly had little awareness that those supplies would never end up in a military warehouse for the invasion of Japan or a Chinese Army depot.

Exacerbating AMMISCA's challenge in dealing with graft was that Burma's and Great Britain's subversion along the LOC, also intensified AMMISCA's challenges in confronting graft. AMMISCA never established a cooperative transit agreement between Burma and China. Wartime circumstances dictated that Chinese lend-lease travel through Burma since Japan had seized China's coast. China possessed no SPOD and, therefore, had to rely on SPODs in India and Burma. Accordingly, China had to pay a transit tax to Burma for the use of the Port of Rangoon and then again for crossing the Burma-China

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<sup>117</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 45.

<sup>118</sup> *Ibid.*, 45-46.

border.<sup>119</sup> Not only was this a financial burden for a Chinese government in severe debt after more than ten years of external and internal conflict, but the tax processing added time to the lend-lease delivery schedules. At the end of 1941, Great Britain convinced Burma to abort any transit tax for Chinese lend-lease and war aid, establishing the same agreements with India after Burma fell. Furthermore, logistics planners dealt with subversion at the national level. As discussed, Great Britain was not interested in China gaining ground access to India and discouraged the construction of the Ledo Road despite its completion being a key task of Roosevelt.<sup>120</sup> Planners worked through a lack of cooperation from Great Britain in providing logistical assistance to the Ledo Road effort. Great Britain requested resources away from the Ledo Road through the SOS. British political attaches took their time to secure Burmese permission to build the road. In so doing, they created obstacles in securing critical local national contractors for construction assistance. These were all unforeseen obstacles from an ally that logistics planners had to overcome to achieve their President's task of completing the Ledo Road.

Besides theft and graft, the logistics plan accounted for the associated expenditure of resources in a resource-constrained environment. Prior to Burma's fall, thirty-nine percent of any ground shipment along the Burma Road consisted of spare parts and gasoline exclusively for the transportation asset moving that delivery. Shipments needed to depart SPODs in Burma and India with 14,000 tons just to ensure the delivery of 5,000 tons of goods to Kunming.<sup>121</sup> Logistics planners not only had to plan for sustainability packages among each delivery but also had to inject the LOC network with enough support packages, dispersed at different locations, to provide back-up sustainment if the instrument of delivery exhausted the direct support asset or was lost due to theft or graft.

After building in mechanisms to mitigate theft and graft, and limit LOC supply expenditure, logistics planners postured to provide appropriate combinations of supplies and equipment to support

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<sup>119</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 46.

<sup>120</sup> Tuchman, *Stillwell*, 342.

<sup>121</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 45.

Chennault's air force, Stilwell's ground force, and build a stockpile for the planned invasion of Japan. Focusing on building a stash of weapons, ammunition, and spare parts for ground and air forces capable of invading Japan, planners struggled with the low delivery capacity of the LOC network. In January 1945, after the completion of the Ledo Road, ground deliveries of supplies to Kunming still only neared twenty-five percent of a load, similar to Burma Road numbers.<sup>122</sup> Once the Ledo Road opened, the Hump focused less on the heavier artillery ammunition and ground vehicle spare parts, and more on fuel, ammunition, and aircraft spare parts. Since air operations took place daily leading up to the planned invasion of Japan, aircrews understandably increased their sorties and bombing tonnage totals since quantities of both were now more readily available. Logistics planners dealt with dispatching planners forward to the airbases to ensure rates of aircraft and fuel consumption remained steady in the face of increased supply. They aimed to build the stockpile of goods intended for air operations against mainland Japan in the near future.

Beyond limiting Chennault's aircrews for the sake of building stocks in China, planners needed to deal with Chiang and his warlords. From the outset of American aid provision, Chiang always requested the most modern of weapons and equipment through Soong in the form of lend-lease requests. However, China's Army possessed obsolete equipment. Chinese Nationalists fought against the Chinese Communists and the Japanese whose armies likewise possessed antiquated equipment. Additionally, an influx of modern equipment to outdated Chinese Army stocks would cause an unneeded interoperability strain on China's logistics infrastructure. Therefore, planners found Chiang's request for state-of-the-art weapons odd. American representatives responsible for the CBI Theater concluded that Chiang was posturing for a position of advantage over his Communist enemies at the conclusion of WWII.<sup>123</sup> Additionally, with an abundance of military warlords in lieu of any centralized military command, planners found it difficult to create any one super-warehouse near Chungking or Kunming. As soon as

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<sup>122</sup> Romanus and Sunderland, *Stillwell's Mission to China*, 45.

<sup>123</sup> *Ibid.*, 48.

supplies reached substantial levels, Chiang's operatives would issue them out to those warlords. Planners assumed the warlords would transfer receipted supplies to their own individual Army division warehouses in preparation for the anticipated invasion of Japan. However, the warlords used the increased stockpile to expand their control and increase their influence to other areas, never expecting to use their soldiers or equipment against Japan.<sup>124</sup> Chiang and his operatives intended to keep delivered supplies for post-war purposes as opposed to using them against Japan for two reasons. First, Chiang's approval for the distribution of equipment to different warlords strengthened his Nationalist alliance against the Chinese Communists. Second, additional American resources enhanced an individual warlord's power and any expenditure of those assets undercut those gains.

Planners struggled to build mechanisms into the logistics plan to ensure Chiang dedicated foreign support and supplies to operations against Japan. They believed political points of leverage were the best option to this end. Accordingly, Stilwell argued vehemently, often to Marshall and Roosevelt, that the United States needed to establish some sort of forcing function tied to lend-lease deliveries to their use against Japan.<sup>125</sup> Roosevelt and his staff deemed these requests too aggressive towards Chiang and dismissed them. Yet, in February 1944, as Chiang and his staff sensed the war was drawing down, Chiang's authorities finally and explicitly requested lend-lease aid to fight the Communists.<sup>126</sup> Chiang supported this request with the claim that the Chinese Communist Party was purchasing weapons from the Japanese puppet regimes in North China.<sup>127</sup> At this point, even Currie admitted to Roosevelt that he underestimated Chiang and his ultimate intent to defeat the Communists before Japan.<sup>128</sup> Nevertheless, logistics planners worked tirelessly to deliver adequate supplies and equipment to Chiang despite the

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<sup>124</sup> Rooney, *Stilwell*, 80.

<sup>125</sup> Leighton and Coakley, *Global Logistics*, 541.

<sup>126</sup> George M. Elsey, *Roosevelt and China: The White House Story* (Wilmington, DE: Glazier, 1979), 31.

<sup>127</sup> *Ibid.*, 32.

<sup>128</sup> Tuchman, *Stilwell*, 319.

political obstacles of lend-lease apportionment and tonnage promises to China. They devised a strategy in spite of resource disputes between Stilwell and Chennault to overcome obstacles of theft, graft, and expenditure along the LOC. However, no final feature of the plan included a failsafe to ensure what trickle of intended lend-lease arrived in Kunming and Chungking, would be used by China against Japan.

### **Conclusion**

In the twenty-first century, the United States has participated in conflicts involving states fighting civil wars or revolutions, simultaneously battling external non-state actors and negotiating with international state actors intervening in their domestic affairs. Similar to US actions in the CBI Theater, the United States intervenes in these conflicts as part of a coalition providing military advisors, air power, weapons, and equipment. Therefore, the strategic logistics plan of the CBI Theater has contemporary significance such as identifying inherent challenges, available solutions, opportunities, and risks that can inform present-day policy, military strategy, and operational planning. Overall, the strategic logistics plan in the CBI Theater demonstrated the indispensable need to establish, secure, and develop multiple and viable LOCs, with US military logistics representatives located throughout the network reaching back to a robust industrial base.

First, the logistics plan in the CBI Theater demonstrated the importance of a strong, flexible, and redundant military industrial base with a robust client-provider relationship. The strategic logistics plan prioritized support to three different theaters and various Allied nations while avoiding handicapping US mobilization, training, and outfitting tasks. The plan also had to overcome initial losses from Pearl Harbor and anticipate future supply and equipment losses to allow the appropriate lead-time for replacement or replenishment. Today, the Defense Logistics Agency (DLA), Army Materiel Command (AMC), and the military in general, must forge close ties with the US civilian industrial complex and recommend the proper number of suitable and reliable defense contracts. Army Doctrine Reference Publication (ADRP) 4-0 states, “DLA is the focal point for the industrial base,” and is the Secretary of Defense’s authority for

most classes of supply and medical materiel.<sup>129</sup> These relationships should provide the US Army with an ability to influence an increase in production of military equipment and supplies, varying in national standards, in the event of an emergency situation. These partnerships, coupled with the capacity to draw from domestic and foreign production bases, empower the US Army to conduct unified land operations in austere environments with coalition allies. ADRP 4-0 also explains, “AMC equips and sustains the Army, providing strategic impact at operational speed.”<sup>130</sup> Due to an economically interconnected world, AMC and DLA must ensure that firms in the industrial base assign priority to military mobilization initiatives despite inclinations to maintain profitability and reject US military manufacturing requests in favor of more lucrative foreign orders.

The number of major US defense contractors has decreased over the past quarter century. Defense analysts believe that US defense spending will fall to 540 billion dollars in 2018, a 180 billion dollar drop since 2011, which directly reduces the number of defense contracts.<sup>131</sup> As China and Russia continue to increase their defense spending, US defense contractors will look for more opportunities abroad or face bankruptcy. The US military is becoming a less prominent customer of US industry as companies shy away from complicated defense contracts, seeking more rewarding and straightforward foreign customers.<sup>132</sup> Industry rivalry, invention, and interest in defense products are waning. Improved relationships between the military and industry, as was the case during WWII, would facilitate three important developments. First, a strong link to industry would encourage information sharing. The military could save money on research and development by placing greater emphasis on commercial off-the-shelf products while industry could glean better insight into what the military desires from an

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<sup>129</sup> Army Doctrine Reference Publication (ADRP) 4-0, *Sustainment* (Washington, DC: Government Printing Office, 2012), 2-2.

<sup>130</sup> *Ibid.*, 2-5.

<sup>131</sup> Nate Turkin, “Analysis: Declining US Military Spending Pressures Defence Contractors,” *IHS Jane’s 360* (September 2014), accessed February 4, 2015, <http://www.janes.com/article/43346/analysis-declining-us-military-spending-pressures-defence-contractors>.

<sup>132</sup> *Ibid.*

equipment and supply perspective. Second, a durable bond between industry and the military could lead to a habitual quality assurance consulting service in which the military receives a multitude of opinions on materiel feasibility while industry leverages its expertise and receives additional income. Finally, a solid association between the two reveals what strategic materiel ideas the military is contemplating in the future. The military benefits by sharing its long-term vision because industry is empowered to begin developing desired solutions to satisfy future needs. Industry profits by anticipating what its military customer will order in the next twenty-five years so they can set research and production glide paths to develop, test, and sell those ideas. An interconnectedness between US industry and the military, as existed in the CBI Theater, is key.

A strong relationship between the military and civilian industrial complex also enables acts of goodwill in times of emergency. Should the military need an influx of civilian types of equipment that logisticians can quickly retrofit for military use, civilian companies would be more inclined to assist based on mutually beneficial relationships. This was clear when American airline companies donated transport aircraft to augment the Hump's capability. Military planners and civilians understood that manufacturing the same number of aircraft would have taken months. This military-civilian industry partnership also facilitates an opportunity to infuse civilian SMEs into a strategic logistics plan's LOC network, supply depots, or front lines. Emerging technology makes this interface invaluable. Similar to the SOS's use of GM along the GLOC and civilian airline representatives assisting with the Hump, the US military can collaborate with civilian SMEs to advance futuristic concepts like aerial resupply by unmanned aerial vehicles (UAV) or to solve how a logistics plan extends the culmination, operational reach, and freedom of movement in the cyber and space domains.

Additionally, the US military must strike the appropriate balance of securing domestic and foreign defense contracts. Domestic contracts should focus on emerging technology and systems specific to the cyber and space domains that, if manufactured abroad, could pose a vulnerability or threat to US military technological advantages. Foreign contracts should concentrate on common user logistics items such as gasoline, food, office equipment, and electricity generation similar to Stilwell's facility of such

needs in India, the SOS's establishment of transportation factories along GLOCs, and the building of ammunition factories in China. When demand surpasses supply, the United States must adeptly outsource military equipment manufactures to regional partners, as was the case with transferring ammunition contracts to factories in Canada.

The US military must standardize its military equipment across coalition partners whenever possible. While a coalition diverse in weapon systems and capabilities is paramount, the need to streamline the requisite consumable resources for those weapon systems and equipment capabilities is just as important. This standardization is especially evident in the alliance between the United States, Great Britain, Canada, Australia, and New Zealand. NATO members, current and aspiring, should seize the initiative to align their weapon system and equipment resource consumption standards. During WWII, this uniformity provided clarity in production numbers and accuracy in delivery timelines. The economy of force effort and streamline of request types also maximized potential industry output. This standardization of equipment and supplies also builds flexibility into any logistics plan when planners can rearrange defense contracts among coalition partners to address expedited needs. Swapping of British and Chinese aircraft contracts and the agreement of coalition partners to transfer outdated military equipment to each other was critical in the CBI Theater.

The United States needs to maintain a mechanism like lend-lease appropriation to make the US military industrial complex and its foreign industry partnerships available to coalition partners and states in conflict the United States endeavors to assist. Foreign Military Sales (FMS) sells military equipment to countries in need identified by the Department of State and executed by the Department of Defense with funds from either the United States or the supported country. While this initiative achieves many of the goals of Roosevelt's lend-lease act, less technological support such as food and expendable supplies is still required by these countries to realize the United States' full potential as an arsenal of democracy. Whether the United States Agency for International Development, the United Nations, non-governmental organizations or international governmental organizations provide this type of basic aid to sustain a foreign military force, the military must create some sort of clearing house or command to oversee these

activities. This staff can prioritize shipments to these countries, manage access to the foreign military through SPODs and airports of debarkation (APOD), and coordinate transportation into the country. This would alleviate any confusion over redundant and unnecessary aid, organize expedient delivery of supplies, and provide accurate manifests of equipment and supplies to the host country ahead of time so they can maximize use of the aid.

Beyond the robust military industrial complex, the strategic logistics plan needs to develop a vigorous LOC network to enable movement of equipment, supplies, and personnel. The CBI Theater evidenced the need to acquire foreign country permission well in advance to cultivate the LOC network, as was the case in Burma. Chinese lend-lease sitting on piers in New York City while awaiting transoceanic shipment for months, revealed the need to forward stage stocks intended for the US military like Army Prepositioned Stocks, but also host nation prepositioned stocks. These host nation prepositioned stocks should locate near US allies, allocate equally across the combatant commands, and exist on land, afloat, and prepared for airdrop. When SPODs and APODs are too few to allow for the significant delivery of items into a country as was the situation when Japan seized China's coastline, logistics planners must identify, plan, and resource potential intermediate staging bases (ISB) near supported countries. Transoceanic shipments can arrive at these bases straight from the factory in bulk, logisticians can reconfigure them into combat loads, and transporters can deliver the less cumbersome and mission ready package to the supported country. Additionally, in response to the misused lend-lease aid on the part of China and the Soviet Union, military SMEs or trainers can accompany these combat configured loads to serve as support packages, providing training, maintenance oversight, and technical assistance. This would aid benefactors, especially those that could potentially use the supply inefficiently or ineffectively against their enemy, ultimately wasting the aid.

The ability to secure stockpiles along LOCs, at nodes, and at end destination became evident in the CBI Theater. Protecting supplies and equipment from speculators, traders, and black marketers reduces fraud, waste, and abuse of government property and prevents the rise of corrupt organizations using conflicts to fund their own personal fortunes. This corruption occurred during the Sarajevo siege,

Operation Enduring Freedom, and Operation Iraqi Freedom to name a few. Logistics planners must recognize that corruption and black-market types of organization are not only stealing resources away from the war effort but are also undermining the supported nation's ability to provide its own support as in the case of Chinese truck drivers abandoning government contracts to work as profiteers.

Multiple and viable LOCs are critical to the logistics plan as well. The proximity of theater SPODs and APODs to the tactical LOC network requires a proper balance of speed and security based off the threat. Secondary and tertiary SPODs and APODs, and ISBs are also critical to compensate for the closure of ports due to enemy seizure, as was the case in Burma with Japan. Stilwell's use of Ramgarh as a supply base supporting LOC network improvements is a great example of concurrently facilitating the training of a foreign force while also improving LOC infrastructure. Ramgarh also illuminates the potential to work towards political ends of training a foreign army when logistics infrastructure precludes the ability to deploy into the supported nation. Stilwell moved China's army where he could support the training and sustainment of that force. The rearward transportation of army personnel for training purposes, as well as the use of local contractors to offset the loss of construction capability, were important features to any plan that Stilwell demonstrated in the CBI Theater.

The logistics plan in the CBI Theater required 14,000 tons to move 5,000 tons of supply. Planners also needed to compensate for overhead and long lead times. Patience and confidence are also important to prevent any imprudent reactions to delayed or expedited deliveries along the LOC that could lead to catastrophic results with the overall delivery timeline. The US military must continue to execute Training With Industry assignments for logistics officers to learn from corporations like Walmart to understand supply and demand principles and appreciate the fragility of any supply distribution system. Roosevelt's appointment of Arnstein to study the LOC and identify inefficiencies is a great example of a function built into a strategic logistics plan. Requesting an independent commission that has industry experience in the field can provide valuable recommendations for improvement to a LOC network. The completion of an independent report also relieves any tension between the military and supported nation that may arise

based on criticisms from the report of host nation incompetence or inefficiency, as was the case with Arnstein's feedback that Chiang's agencies were inefficient and undermined by nepotism.

Besides LOC infrastructure, US military representation throughout the network is a key component of a successful strategic logistics plan. AMMISCA was a great historical example. AMMISCA synchronized lend-lease requests from China with US military requirements, interfaced with Chinese officials like Soong, and enabled ex-patriot forces like Chennault's pilots and host nation rebels. AMMISCA endeavored to prevent fraud, waste, and abuse throughout the network by installing repair shops along routes, providing supply points as rest areas, and standing up small factories along the LOC to fabricate simple repair parts for transportation assets. These elements, coupled with a command and control responsibility with SOS, improved the network's capacity and capability. AMMISCA's introduction of SMEs such as GM only amplified this capacity and capability. AMMISCA is an important example of a small contingent of planners, many of which are logisticians, that can deploy early and fast to create a small, yet highly effective planning hub. This initial mission command node can be absorbed by the parent headquarters upon arrival into theater, as was the case with Stilwell. The organization can endure in a capacity similar to a smaller Army Service Component Command for small contingency operations, or it can continue under its original mandate to provide recommendations and information to the senior supported military command, the Department of Defense, and the President's staff.

AMMISCA is a compelling historical example of an independent organization in a theater of war that can achieve strategic results. Confusion reigned in the CBI Theater because planners were unsure as to whether to support the senior commander or the political favorite. Roosevelt did not grasp that sustained air operations depended on the capture of ground assets first. Furthermore, Roosevelt was unaware of secondary effects to ground force development timelines caused by his resource reprioritization. After Trident, Stilwell needed twenty-six months to build his Yoke Force, seven years to field sixty divisions, and fifteen years to achieve his ultimate one-hundred division army. Chennault needed one gallon of gasoline consumed for every one gallon delivered, eighteen tons of supplies for every ton of bombs dropped, and a sixty to seventy percent operational readiness rate of equipment and

aircraft. Roosevelt may have altered his guidance if he knew his directive would force Stilwell to take fifteen instead of three years to achieve his end state and that Chennault's promised end state was unattainable. An independent AMMISCA, instead of being absorbed into Stilwell's staff, may have been able to communicate that point to Roosevelt.

AMMISCA is also a great example of an organization that could have recognized divergent aims in coalition partners, such as Great Britain's disinclination to strengthen China's Army or LOC network. Delays in gaining tax relief for shipments in Burma, a deliberate sluggishness in providing host nation contract support for construction of the Ledo Road, and ABDACOM requesting resources away from the CBI Theater were some of the obstacles created by a coalition partner. An external command to Stilwell's, SOS, or ABDACOM, could have anticipated these acts of logistics interference and solved them. Logistics planners can also rely on this external staff similar to AMMISCA to develop forcing functions that ensure the supported country uses the supplies or aid delivered against the intended threat. Stilwell recognized this need for Chiang since he believed Chiang was stockpiling supplies for his future fight against communism with no intent of fighting the Japanese.

The United States possesses the only military in the world capable of sustainable global reach because of its strong and all-encompassing logistics tail. US military logisticians must continue to hone their sustainment planning to preserve this advantage. Studying the strategic logistics plan in the CBI Theater provides insights such as the need for a strong military industrial base with a robust client-provider relationship. Planners should also include partners such as United States Agency for International Development, United Nations aid agencies, and FMS in this client-provider system to name a few. Additionally, an integrated, secure, and supervised global LOC network built on durable foreign relationships is paramount. Finally, ensuring that logistics planners receive opportunities for broadening assignments such as Training With Industry, foreign staff college attendance, and strategic fellowships is important to keep the Logistics Corps adaptive and responsive. A planner's education in logistics is never complete. True professionals must be willing to study historical campaigns, to glean timeless insights, which they will undoubtedly apply to future operations.

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