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CONDUCTING THE DOOLITTLE RAID: A SUCCESS STORY IN JOINT MILITARY OPERATION

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CONDUCTING THE DOOLITTLE RAID:
A SUCCESS STORY IN JOINT MILITARY OPERATIONS

A Master Thesis

Submitted to the Faculty

of

American Public University

by

Matthew Ryan Prescott

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Arts

May 2017

American Public University

Charles Town, WV
DEDICATION

On this 75th Anniversary of the Doolittle Raid, this thesis is dedicated to Dick Cole. At age 101, he is the last of eighty Raiders still alive to carry on the memory of an operation that few individuals thought possible. As Lt. Col Doolittle’s co-pilot, Dick Cole was at the tip of the spear in leading a tactical mission that had strategic effects for the United States in the Second World War.
ABSTRACT OF THE THESIS

CONDUCTING THE DOOLITTLE RAID:
A SUCCESS STORY IN JOINT MILITARY OPERATIONS

by

Matthew Ryan Prescott

American Public University System, July 1, 2007

Charles Town, West Virginia

Dr. Jon Mikolashek, Thesis Professor

The following thesis describes the joint coordination and planning required for the 18 April 1942 Doolittle Raid to be successful. Without the unity of effort and coordination required to plan, train for and conduct the raid from both the United States Navy and Army, the successful execution of the raid would not have been possible. This study examines the requirements from both the Army and Navy to execute the raid, who thought of the idea to launch twin engine bombers off an aircraft carrier to attack Japan, what was the overall risk associated with conducting this raid and what coordination was required between the State Department, Chinese Leaders and military attaché’s to ensure the Raiders were allowed to land their aircraft in China once the raid was complete? Ultimately this thesis discusses how the Doolittle Raid helped shape a joint culture through the efforts of interservice leaders that were able to put biases aside in order to accomplish the mission for the greater good of the country; this is just one, of the many valuable attributes coming out of the one of the most successful raids in U.S. history.
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Chapter I.
Introduction

In early 1942, the Allied Forces strategic and operational outlook for the war in the pacific in World War II was looking very bleak. The Japanese Imperial Forces had successfully bombed Pearl Harbor, forcing the United States into the war with grievous loses in men, weapons and resources. The Japanese exploited their success by capturing Guam, Wake Island, Hong Kong, and vast parts of Indo-China, Malaya and Indonesia. Major areas of the Philippines were under control of Imperial forces and both Singapore and the remaining US bases in the Philippines would surrender to the Japanese within the coming months. The remainder of the Dutch East Indies, New Guinea, the Solomon Islands and the territorial waters surrounding them marked the next objectives for Japanese Imperial Forces. From December 1941-April 1942, the Japanese expanded their empire and accomplished nearly every objective without a single military defeat. The Allied Forces consisting of the United States, Great Britain, Australia, New Zealand and the Netherlands were on the ropes and needed a victory in order to prove not only to the coalition but also to their citizens within their home countries that they could defeat Japan.

On 18 April 1942, while still over 400 miles away from their planned takeoff point, Vice Admiral William Halsey, commander of Task Force 16, made the command decision to launch sixteen B-25 medium bombers they were tasked with escorting 450 miles off the eastern coast of Japan in order to bomb military and economic targets on Japan’s mainland. Months of planning, coordination, training and modifications to the aircraft finally came to its culminating point when a Japanese picket ship compromised Task Force 16’s location and reported that United States Navy aircraft carriers were cruising towards Japan. With risk to the Task Force in mind, Halsey commanded Captain (Capt.) Marc A. Mitscher, commander of the USS Hornet, and Lieutenant
Colonel (Lt. Col.) James H. Doolittle, commander of the eighty Raiders that operated the sixteen B-25s, to initiate the sequence to launch the Army Air Force bombers to bomb Japan.

Risk to mission accomplishment was now severe for two reasons, one, at this time the United States Navy only had four aircraft carriers operating in the Pacific Theater and two of them were participating in this operation. Now that the fleet was compromised, Japanese land based aircraft had the range to search for, find and attack Task Force 16 along with the Japanese Imperial Navy that immediately began to pursue the task force. Two, although the B-25s were in range to bomb Japan, they were not in range to land at the designated airfields in China once the raid was complete. Risk to the fleet versus the bombers being within range to these airfields overmatched Halsey’s decision and it was determined that adding five five-gallon fuel cans to the bombers would mitigate some risk to the bombers and allow them to at least range the Chinese coastline where the Raiders could hopefully evade capture and link up with Chinese partisans that could help them reach their original rendezvous points.¹ Thus began an epic journey for the eighty Doolittle Raiders in what Vice Admiral Halsey deemed “one of the most courageous deeds in all military history.”²

Throughout the twentieth century, few military operations have equaled the strategic impacts that the 18 April 1942, Tokyo Raid achieved. Commonly referred to as the “Doolittle Raid,” because of the operation’s leader, Lt. Col. Doolittle, this raid exemplifies the audacity, surprise, and initiative needed by the Allies in order to thwart Japanese successes in the Pacific Theater. During a time of immense interservice rivalry between the United States Army and Navy, the Doolittle Raid is one of the most successful joint operations in American History; and no other raid in American History has had the strategic impact the Doolittle Raid had on both

American opinion or against an adversary. Without the unity of effort and joint coordination required to plan, train for and conduct the raid from both the Navy and Army, the successful execution of the raid would not have been possible.

This thesis paper focuses on the joint coordination required for the Doolittle Raid to be successful. Without this coordination and planning between rival services, the Tokyo Raid would not have been successful and would not have been able to happen in such a short period. Who thought of the idea to launch twin engine bombers off a naval aircraft carrier to attack Japan? Why was the B-25 Mitchel the most appropriate aircraft to conduct the mission versus other available aircraft? What was the overall risk associated with the operation? Who was Lt. Col. James Doolittle and why did General Arnold chose him to lead the raid. What coordination was required between the State Department, military attaché’s and with Chinese Leaders to ensure the Raiders were allowed to land their aircraft in China once the raid was complete? What training was required between the Army and Navy and how were interservice rivalries put aside in order to make this operation successful? Throughout this thesis paper, these questions will be answered ultimately proving that without this detailed planning, coordination and training; the raid would not have taken place.
Chapter II.
Literature Review

The Doolittle Raid has gone done in United States history as one of the most famous and successful raids enabling a needed tactical victory against the Japanese that subsequently had strategic effects in raising American spirits during a time when Japan seemed unbeatable. This relatively small raid helped change the course of the war in the Pacific and demonstrated many of the principles of war that leader’s desire today. In Clayton Chun’s analysis of the Doolittle Raid he states, “The April 18, 1942 attack on Tokyo and surrounding areas used joint military forces; involved relatively few resources; was organized and executed in a phenomenally short period of time; achieved surprise; allowed commanders to accept risk; forced innovative planning; and the results had a significant strategic effect.”\(^3\) Army twin engine aircraft had never flown off a U.S. Navy aircraft carrier before. Innovative planning, joint coordination and quickly modifying the aircraft were required to allow this operation to be accomplished within the time allotted. Interservice rivalries were set aside in order to make this operation successful and the raid demonstrates one of the first times within World War II that the joint services worked together to accomplish an objective. Liaison officers from each service, intensive training and secrecy were integral to the success of this operation.

Following the war’s successful conclusion, three authors stand out in a large community of World War II historians and authors that have written accounts of the Doolittle Raid, these authors are Clayton K. S. Chun, Carroll V. Glines and Duane Schultz. Well respected within the historical community, these authors have published numerous books and articles on aviation topics outside of the Doolittle Raid. When viewing their published sources on the raid, their perspectives are similar in some aspects but also differ on the strategic, operational and tactical

aftermath and the overall value of the raid for both the Americans and Japanese. Their distinctive writings will be valuable within my own research and help answer several of the questions I have within my research problem.

As part of Osprey’s Publishing Campaign series, Dr. Clayton K. S. Chun wrote a very detailed account of the Doolittle Raid. Within the book, he describes all aspects of the raid but spends the majority of the book describing the actions that took place after Task Force 16.2 left San Francisco. His book *The Doolittle Raid 1942: America’s First Strike back at Japan*[^4] does a fantastic job describing the most dynamic portions of the raid but due to the intent of the book, Dr. Chun does not cover any new distinguishing information from previous sources on the raid. The book is primarily designed to cover only the broader aspects of the raid to maintain the reader’s interests and provide a short narrative. Within this book, he covers the planning of the raid, capabilities of both the American force and opposing force and lastly, describes the execution of the raid. When reviewing his bibliography, Dr. Chun uses many of the same sources I will use in my final research paper.

Carroll V. Glines is arguably the foremost expert on the Doolittle Raid and has written over twenty books about aviation. He has personally interviewed nearly ever participate of the Doolittle Raid. He wrote two books about the raid and a biography on Jimmy Doolittle. Lastly, he assisted Jimmy Doolittle in writing his autobiography. He is one of five non-participates of the raid, inducted as an Honorary Doolittle Raider due to his diligence and historical work on the subject. Nearly every source I have within my bibliography has Carroll V. Glines as one of the references used. His book *The Doolittle Raid: America’s daring first strike against Japan*[^5]

describes the difficulties and innovation required to make the raid successful. Prior to this event, no American aviation unit had ever bombed an enemy capital city although the principles of the raid were founded within American air war theory and past air theorists. The Army and Navy had not previously collaborated in a joint air sea operation and few officers were convinced a fully loaded B-25B medium bomber could take off from an aircraft carrier deck. Lastly, Glines writes on the tight timeline and coordination required to allow the air crews to successfully fly and land in China since there was no way of returning back to the carrier.

In the book, *I Could Never be So Lucky Again: An Autobiography*, Carroll Glines had the distinct pleasure of coauthoring with Jimmy Doolittle his autobiography. After years of his family urging him to write his autobiography, Doolittle at the age of 95 finally wrote his untapped story of what it was like being one of America’s first aviation pioneers and his miraculous stories during the Second World War. The Tokyo Raid is just one aspect of this book that covers one of the most dynamic times in military and aviation history. Although this book is entertaining from start to finish, it is important to keep in perspective that Doolittle was ninety-five when he wrote his autobiography and although the sources he used are consistent with most sources written about the Tokyo Raid, there are several points that needed to be revised by Glines to ensure the information was accurate before publishing.

In Duane Schultz’s book *The Doolittle Raid*, he argues the sixteen aircraft and eighty crew members that participated in the Doolittle Raid had such a psychological effect on Japanese political decision makers and military leaders that they immediately rushed into planning further eastern expansion of the empire in order to strengthen the defense of the country. During an

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8 Carroll V. Glines, *The Doolittle Raid: America’s Daring First Strike Against Japan*, xi.
Army-Navy Conference on 20 April, Admiral Yamamoto, the planner and commander of the Pearl Harbor attack, was so distraught over the successful American bombing raid, he demanded Japan seize Midway Island to increase Japan’s eastern defenses and was so passionate about the operation that he threatened to resign his post if not approved. With the Tokyo Raid causing so much embarrassment to the Japanese Military, the joint staff agreed to this proposal once operations were complete in the Solomon Islands and New Guinea.9

Doolittle wrote that the purpose of the raid “was to bomb the industrial centers of Japan, to interfere with war production and to lead to the withdrawal of at least some Japanese forces from the Pacific theater to defend Japan against future attack.”10 The raid accomplished all these goals and one measure of effectiveness that Schultz writes about in his book is the additional Japanese fighter squadrons that were tasked with homeland defense instead of participating in the offensive operations currently going on within the Solomon’s campaign. Within his book, he writes primarily about the actions during the raid and the tragic aftermath for both the raiders and the Chinese upon conclusion of the raid. He also describes the planning for the operation, the required modifications needed for the B-25s in order for them to successfully take off from the USS *Hornet* and the secrecy involved in the mission to ensure the details were not exposed.

In my opinion, the best recently published book written on the Doolittle Raid is *Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor*,11 published in 2015 and written by James Scott. Although the main points and analysis are no different from Chun, Schultz or Glines, Scott’s book is the only reference I have found that blends and narrates the overall strategic and tactical situation from the perspective of both the Japanese and the United

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10 Ibid., 54.
States. Each chapter crisscrosses between Japanese and American key events, characters and actions throughout the planning, coordination, training for, executing the raid and the aftermath of the raid between bringing the Raiders home and the catastrophic retribution on Chinese civilians after the completion of the raid. Scott uses a vast amount of excellent primary and secondary sources pulling a tremendous amount of information from Naval, Air Force, Army and State Department and the Doolittle Association’s historical records, which I also have found helpful in researching my specific topic of the Doolittle Raid.

Major Ted Lawson and his book *Thirty Seconds Over Tokyo*,[^12] has become an iconic source for any student interested in the Doolittle Raid. Published in 1943, this is one of the first accounts written and published about the Doolittle Raid by one of the men who piloted one of the B-25s. Later made into a Hollywood blockbuster, *Thirty Seconds Over Tokyo* describes the selection process for pilots and crews, training required to conduct the raid and the first-hand account of what it was like to fly over Japan in 1942. Once the raid was complete, the aviators still needed to land their aircraft at designated locations in China and then, through the efforts of the State Department and other military leaders, get back to the United States. Lawson describes his journey from the beginning of his aviation career through his return trip back to the United States after the successful completion of the raid.

Two sources less well known than Lawson’s account of the raid are *First Over Japan: An Autobiography of a Doolittle Raider*,[^13] by Colonel (USAF, Ret) Jack Sims and *Navigating from Shangri-La: Cincinnati’s Doolittle Raider at War*,[^14] by Kevin McHugh. Colonel Sims

participated in the Doolittle Raid as a young Lieutenant (Lt.) and co-pilot for Major John Hilger’s fourteenth aircraft. Hilger was Doolittle’s executive officer for the Tokyo Raid and in Sims autobiography he shares an interesting, and behind closed door perspective into the planning and execution of the raid. While Hilger performed his executive officer duties, Sims ensured the bomber crew and aircraft remained serviceable and well trained in order to execute all tasks within the scope of the mission. Kevin McHugh was not a member of the Doolittle Raid, but is a journalist from Cincinnati and wrote a biographical account of Lt. Thomas Griffin’s actions throughout the raid. Griffin was a navigator in the ninth aircraft and had success bombing one of Tokyo’s truck and tank factories. In this rare account, McHugh describes Griffin’s account in analyzing the route and targets to bomb in Tokyo, the difficulties of being a navigator for the operation, his opinion of Doolittle as a leader and his perspective of the Japanese integrated air defense of Tokyo as the ninth bomber to fly through Tokyo; an opinion that is drastically different than the first three planes to bomb Tokyo.

The renown naval historian Samuel Eliot Morison believed the Doolittle Raid had such an impact within the shifting of the tide in the war against Japan that in his book series *History of United States Naval Operations in World War II: Volume III, The Rising Sun in the Pacific 1931-April 1942*, he points out that the bold action of the U.S. Navy and Army during the Tokyo Raid was an inflection point where the Japanese Navy lost the initiative within the Central Pacific Theater. For the purposes of my research paper, I reference this source to discuss the conditions that existed within the U.S. Military during the aftermath of Pearl Harbor, the Philippines and Wake Island. Up until the Doolittle Raid, the United States and her allies knew

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nothing but defeat; but the accomplishment of the Doolittle raid was a spark that enabled Americans to believe they could defeat the Japanese.

Lastly, in order to keep the story of the Doolittle Raid active within military history some of the contemporary aviation historians and U.S. Air Force officers that have written well respected accounts on Jimmy Doolittle and the Tokyo Raid are Paola E. Coletta, Andrew P. Stohlman, Lt. Col. Burch, Major Fogelman and Captain Tate. In 2015, Coletta published an essay entitled, “Launching the Doolittle Raid on Japan,” in the Pacific Historical Review.16 There are numerous writings on the Doolittle Raid from the U.S. Air Force perspective but this essay covers the raid from the perspective of the Navy from the inception of the planning until the fleet withdrew once the sixteen B-25s took off from the USS Hornet. The raid was not just a top secret mission for the Army Air Corps; the U.S. Navy took a huge risk using half of their available aircraft carriers to execute this mission. Failure could have proved devastating for continued naval efforts in the Pacific and stopping Japanese expansion efforts at the battles of the Coral Sea and Midway Island.

Andrew Stohlman’s master’s thesis on the raid entitled, “The Doolittle Raid in History and Memory,”17 describes how the Doolittle Raid is remembered in the military today as one of the greatest raids and contributions to the victory over the Japanese in World War II. The thesis describes that even if only one bomb dropped on Japan on 18 April 1942, the raid would still be considered successful and a much needed victory. After the raid and throughout the many decades that have passed the author goes into great detail on how the raiders themselves as well as the U.S. Air Force have keep this legendary raid within a popular spotlight. He achieves this by

17 Andrew P. Stohlman, “The Doolittle Raid in History and Memory” (master’s thesis, University of Nebraska at Lincoln, 1999).
describing and listing the numerous books, articles and movies that have portrayed the Doolittle Raid in some capacity.

In September 1971, the U.S. Air Force Historical Research Center along with the following three Air Force officers, Lt. Col. Burch, Major Fogelman and Captain Tate, conducted an interview with retired General Jimmy Doolittle to discuss, aviation history, his role in the Tokyo Raid and subsequent leadership positions within the service during World War II. The Air Force officers, who interview Doolittle, know first-hand what it is like to fly the most modern aircraft to their limits and they ask him questions that drive valuable lessons learned about the raid and the joint coordination required in order to make the raid successful; these lessons can still be applied today within leadership studies, military operations and aviation.

Throughout my research of the Doolittle Raid, the Doolittle Association and Library located at the University of Texas at Dallas has been tremendous in providing primary source material from their records department. They maintain the largest collection of material covering General James Doolittle and the Doolittle Raid. From their records, I gathered the operations order authorizing the Doolittle Raid, Jimmy Doolittle’s after action review he submitted to General Hap Arnold after completion of the raid, Rear Admiral Hank Miller’s journal entries from training the Doolittle Raiders at Eglin AFB and onboard the USS *Hornet* and Captain Stephen Jurika’s reminiscences of the mission as the Navy’s intelligence and cultural advisor to the Doolittle Raiders. This information is invaluable in helping me scope my thesis paper.

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19 *Doolittle Raiders Association Records*, History of Aviation Collection, Special Collections and Archives Division, Eugene McDermott Library, The University of Texas at Dallas.
The raid to bomb Japan in April 1942, commonly referred to as “The Doolittle Raid” was an operation few people anticipated taking place in such a timely manner and due to the raid’s success numerous books, articles and movies were made about this daring operation. The Doolittle Raid is the first joint operation conducted using both U.S. Army aircraft and Navy ships to bomb various targets in Japan; even more miraculous, the raid was conducted just four months after the successful Japanese attack on Pearl Harbor when morale in the U.S. was extremely low. In today’s contemporary military operating environment it is rare for military services to operate independently from other services. Operations in Afghanistan, the Balkans, Iraq and Liberia taught the different branches of the military that each service brings its own strengths, weaknesses and unique capabilities and conducting operations independently puts a service at risk due to capabilities not inherit within that organization. The Doolittle Raid helped shape this joint culture through the efforts of leaders that were able to put biases aside in order to accomplish the mission for the greater good of the country; this is just one, of the many valuable attributes coming out of the one of the most successful raids in U.S. history.
Chapter III.
Planning the Doolittle Raid

There is no confirmed single person responsible for coming up with the idea of launching Army Air Corps medium bombers off a United States Navy aircraft carrier specifically for bombing Japan. The idea, design and concept converged at the strategic, operational and tactical levels of planning. After the Pearl Harbor disaster on 7 December 1941, President Roosevelt was obsessed with striking a retaliatory blow back at the Japanese. In every meeting with his service chiefs the question of how and when can we bomb Japan was brought up by the President. For months, the topic of bombing Japan and regaining the initiative was foremost in the mind of every military plans officer in Washington DC. During the latter part of December 1941 through the first weeks of January 1942, British and America leaders with their military counterparts conducted the Arcadia Conference in Washington DC. The Allied strategy for 1942 was the main talking point discussed at this conference.

It is widely believed the genesis of bombing Japan via army aircraft from US Navy aircraft carriers came from this conference due to Admiral King’s recommendation that three US Navy aircraft carriers deliver Army aircraft to the North African theater. General Arnold, commander of the US Army Air Forces (AAF), was intrigued at this idea and immediately assumed the initial aircraft assigned to the North African theater would need the capability to takeoff from the aircraft carrier rather than being off-loaded. Jimmy Doolittle, who at this time held the rank of lieutenant colonel (Lt. Col.) and worked on the Army Air Staff in Washington DC as the Director of Operational Requirements, was tasked by General Arnold to begin

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independent research on what current AAF bombers were capable of taking off from a U.S. Navy aircraft carrier with the intent on bombing Japan.\textsuperscript{22}

At nearly the same time Captain (Capt.) Francis S. Low and Capt. Donald Duncan, both Navy planners on Admiral King’s staff, developed the operational concept to use AAF medium bombers aboard USS \textit{Hornet} to strike Japan. Through their own independent research, they assessed only the B-25 could safely takeoff from a carrier fully loaded with men, fuel and bombs.\textsuperscript{23} In order for this raid to be successful modifications to the aircraft, particularly increased fuel tanks, were required for the aircraft to successfully takeoff from \textit{Hornet} well outside of Japanese land based aircraft range. Once Low and Duncan back briefed Admiral King on this concept and gained approval to begin further planning efforts with the AAF, General Arnold excitedly agreed.\textsuperscript{24} Since this would be a joint operation, both the Navy and Army were assigned distinct duties and responsibilities to ensure the raid would be coordinated and planned for appropriately. Arnold assigned Lt. Col. Doolittle as the lead Army planner for the raid likewise; King assigned Duncan as the Navy’s lead planner and overall coordinator for the operation. Their combined planning efforts led to the development, coordination and successful execution of the Doolittle Raid.

Capt. Donald Bradley Duncan, born in Michigan on 1 September 1896, attended the US Naval Academy graduating in 1917. After his mandatory initial three years as a surface warfare officer, Duncan was accepted into the Navy’s flight training program earning his naval aviator wings in 1921. Duncan was a rising star in the Navy and attended both the naval postgraduate school and Harvard University where he earned a master’s of science degree. Prior to the

\textsuperscript{22} James H. Doolittle and Carroll V. Glines, I Could Never be so Lucky Again (New York: Bantam Books, 1991), 236.  
\textsuperscript{23} Ibid., 235.  
\textsuperscript{24} Ibid., 235-236.
Second World War, Duncan commanded both shore bases and naval vessels as well as serving in multiple different jobs within the Navy’s Bureau of Aeronautics. After commanding the USS Long Island, the first merchant ship converted into an aircraft carrier escort, Admiral King reassigned Duncan as his air operations officer on the Navy Staff. Although Donald Duncan retired as a full admiral in 1957, having a very successful career in the Navy where he commanded units and shore bases ranging from single vessels to a fleet task force, he is arguable best remembered as the Navy’s lead planner for the Doolittle Raid.

Duncan became an active planner for the raid in January 1942 after Capt. Francis Low, Duncan’s first line supervisor and Admiral King’s operations officer, tasked him with researching what AAF aircraft had both the performance measures to takeoff from an aircraft carrier and the range to reach the Japanese coastline well outside of three hundred miles from the carrier.25 Within three days, Duncan and his staff provided Admiral King a full briefing on not only what aircraft they recommended for such a mission but also the current availability of aircraft carriers, the practicability of such an operation, the weather patterns of this area during early spring and potential targets the bombers could strike once over Japan.26 Ultimately Duncan recommended to Admiral King that such a mission was feasible but due to the vulnerability of the aircraft carrier carrying the army bombers on top of her flight deck, he recommended two aircraft carriers be assigned to the operation. The bomber Capt. Duncan recommended to King was the B-25 solely based off its wingspan, bombing payload and range once it left the carrier.

With Admiral King believing both the analysis and plan was sound, he scheduled an appointment with General (Gen.) Hap Arnold to gather his thoughts and get concurrence on the potential joint operation. After hearing the plan, Gen. Arnold enthusiastically concurred on the

26 Ibid., 64-65.
joint venture, assigning Lt. Col. Doolittle as the lead Army planner for the operation. Meanwhile, Capt. Duncan and the Navy still had to answer two questions; one, could a B-25 land on a U.S. naval aircraft carrier and two, could a fully combat loaded B-25 takeoff from an aircraft carrier.

After reviewing the characteristics of the B-25 airframe, it was immediately determined the bomber could not land on a naval aircraft carrier. The B-25 had a wingspan of 67.6 feet, short enough to land on a carrier but due to the structural weakness of its undercarriage, in the event an installed tail hook effectively grasped one of the multiple catch wires on the carrier deck, the tail section of the B-25 would break apart under the strain of the sudden stop caused by the catch wire; this is one of the main reasons undercarriages are stronger on naval aircraft in order to withstand the sudden stop of landing on an aircraft carrier. With landing options now even more limited, Duncan had to now determine if a B-25 could takeoff from an aircraft carrier.

On the evening of 31 January 1942, Capt. Mitscher, commander of the newest aircraft carrier in the U.S. Navy, the USS *Hornet*, approached Norfolk Naval Harbor after the successful completion of the ships shakedown cruise. A shakedown cruise is the first time a newly commissioned naval vessel goes out to sea for the main purpose of testing and stressing the ship’s systems, infrastructure and engines ensuring both the ship and her assigned crew are ready to conduct combat operations. As the USS *Hornet* approached Norfolk Harbor, her crew grew excited with high expectations that each sailor would be granted shore leave after their month long shakedown cruise. Much to the surprise of both the crew and officers of *Hornet*, no order for shore leave was granted. That same evening, Capt. Duncan notified Mitscher that he required the USS *Hornet* for an immediate special task and during the afternoon of 1 February, Capt. Duncan came aboard to discuss the requirements of this task with Capt. Mitscher. Immediately getting to the point of his visit, Duncan stated the purpose of his visit was to confirm if fifteen B-
25s could be loaded along the flight deck of the Hornet; after some calculations with Mitscher’s executive officer, Commander George Henderson, Mitscher confirmed it could be done.27 “Good,” stated Duncan, who immediately said that in the morning three B-25s would be loaded aboard the Hornet to confirm if a B-25 could take off from a Navy aircraft carrier.28

In parallel with Capt. Duncan’s planning, Gen. Arnold’s staff ordered three B-25s “with the best combat crews available,” to report to Norfolk Naval Air Station no later than 20 January and stand by for further instructions.29 As the air crews stood by, they practiced short takeoffs using the mockup carrier flight decks available at the naval air station to simulate the distances required to takeoff from an aircraft carrier. Prior to loading aboard the Hornet, Arnold’s staff coordinated that the first B-25 would only be loaded with a full tank of gas, the second B-25 would carry a medium load and the last B-25 would be fully loaded minus any ordnance.

At 0530 on 2 February, as the USS Hornet made preparations to steam out of the Norfolk Harbor after less than 48 hours in port, to the surprise of her crew, the ships crane lifted two B-25 bombers on to the deck of the carrier. The intended third B-25 sustained an engine burnout while practicing short takeoffs the day prior, resulting in only two of the B-25s taking part in the carrier experiment. Upon Mitscher’s orders, naval personnel positioned the fully loaded B-25 at the rear of the flight deck while the second B-25, carrying only a full tank of gas, was placed in the middle of the deck representative of the first of fifteen B-25 positions along the flight deck.

Prior to steaming out of the Norfolk Harbor at 9:15am, Lieutenants John Fitzgerald Jr. and James McCarthy, two army aviators with more than four hundred hours flying B-25s came aboard the Hornet. After several hours traveling east, Hornet prepared for flight operations with

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28 Ibid.
Lt. Fitzgerald first up. As a B-25 test pilot at Wright Field, Ohio, Fitzgerald was a perfect choice for this assignment; but due to the uncertainty of the event, when a communications officer aboard the Hornet wished Fitzgerald good luck, his only response was, “If we go into the water, don’t run over us.”

Around 12:55pm, Fitzgerald’s B-25 raced down the flight deck taking off with plenty of room to spare. Lt. McCarthy successfully took off next, achieving an even faster takeoff in just 275 feet, and since neither bomber could return to Hornet to land, the bombers raced back to the naval air station. With Duncan and Mitscher both satisfied that fully loaded B-25s could takeoff from an aircraft carrier and with rumors rampant amongst the crew of the Hornet as to the purpose of this experiment, Hornet returned to port in order for the crew to gain rest and retraining prior to embarking on their first combat voyage. Duncan immediately returned to Washington to finish the planning and coordination to execute the Tokyo Raid.

The mission statement for the Doolittle Raid was to conduct a bombing raid over Japan against as many military objectives within the limits of feasibility in order to destroy military objectives, lower the morale of the Japanese people and assist the morale of the American people. With this in mind, Capt. Duncan and his staff got to work organizing and coordinating all the necessary requirements needed for the Navy to conduct their portion of the operation. Lt. Col. Doolittle immediately transitioned into modifying twenty-four B-25B bombers that would be used throughout both the training and execution of the operation as well as select and train the airmen that would participate in the operation. Lastly, Hap Arnold and the State Department started the initial coordination’s with American attaché’s in China to set the necessary conditions for the operation.

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31 Ibid., 67.
32 Doolittle Raiders Association Records, General Historical Background of the Raid, Box 1-Folder 1, Series XI: Background and History of the Doolittle Raid (1942-1990), 1, History of Aviation Collection, Special Collections and Archives Division, Eugene McDermott Library, The University of Texas at Dallas.
for the Raiders once they landed in China; this last task would prove the most complex due to various military, geographic and political considerations constraining the United States.

Some constraints Capt. Duncan immediately identified while planning the raid was the lack of up-to-date information on military targets in Japan and in many cases the information they did have was inaccurate; one reason for this was that many Japanese private homes during this time period were converted into manufacturing sub-shops for military parts and it was extremely difficult to confirm what was a military objective versus a private residence. Other constraints was the estimation that upwards of six hundred first line Japanese fighter planes with a robust integrated air defense artillery umbrella would be defending Tokyo and the surrounding northern and southern Japanese home islands. Due to the nature of the mission and the distance required to travel by the B-25s, there would be no fighter escort to combat the integrated air defense system and the navigators and pilots would have to rely on dead-reckoning in order to reach their target areas and the landing strips in China.

To mitigate some of these constraints to the mission, the Navy Task Force and Army aviators would rely on surprise, distance and bomber dispersion. The Navy planned to stay well outside the range of Japanese land based reconnaissance aircraft to decrease the risk of the task force being compromised. Since a bombing raid on the Japanese home islands had not been attempted by the United States, a limited visibility raid had the potential to catch the Japan’s air defenses completely off guard; additionally, since Japan believed the home islands were not in danger of attack, the raid had the potential to cause mass panic and lower the morale amongst the civilian population. To hide the true number of bomber aircraft attacking Japan, there would not be any formation flying, allowing each B-25 to bomb a different military target amongst the five

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33 Doolittle Raiders Association Records, General Historical Background of the Raid, Box 1-Folder 1, Series XI: Background and History of the Doolittle Raid (1942-1990), 2-3.
selected Japanese cities. Other anticipated advantages for the Raiders was the intelligence that Japan had a very poor firefighting defensive system; if the bombers could target areas where infrastructure was primarily wooden construction, there was high potential that incendiary bombs would spread wide fires throughout the cities increasing the overall damage of the raid even more.\footnote{Doolittle Raiders Association Records, General Historical Background of the Raid, Box 1-Folder 1, Series XI: Background and History of the Doolittle Raid (1942-1990), 1-2.} Lastly, since the raid was given top priority from the AAF, the resources needed to instill the Raiders and bombers were prepared for the raid were made available from various military units and installations as well as civilian aviation repair and manufacturing facilities. With Doolittle’s intense attention to detail and knowledge on aeronautical engineering, he knew exactly what was required in order to give the selected B-25s the modifications they required to increase their range, speed and overall performance during the raid. Aircraft modifications were Doolittle’s first priority; simultaneously, the Army sent out the appropriate tasking orders to gather enough volunteers to participate in the Tokyo Raid.

On 15 January 1942, Duncan assessed four different courses of action the AAF could feasibly use to execute the bombing of Japan.\footnote{Ibid., 4.} The first was for the Raiders to bomb five different Japanese cities in order to destroy more military targets throughout the country, cause a wider panic throughout the country and feint that the bombing mission was larger in scale then in actually was. The second tasked each individual bomber with bombing a different city in Japan, intending to achieve the same effects as the first course of action but spreading the number of bombers out even farther than just five cities. For the third course of action, all bombers would concentrate on bombing Tokyo at night and the lead bomber would takeoff three hours before the rest of the group, bomb Tokyo around dusk with incendiary bombs and allow these fires to provide a visual reference for the remaining Raiders to bomb the same areas of Tokyo. In each
course of action, the time of day for when to bomb Japan was extensively analyzed with each timeframe having different pros and cons. If the Raiders bombed Japan at night, this would provide the best protection for the bomber crews but bombing accuracy would be minimized with the potential to hit a civilian target as likely as a military target. Bombing during the day would provide the greatest visibility and accuracy for the bombers to hit their intended military targets but would place the bomber crews at more risk with the Japanese integrated air defense system easily able to see and target the bombers.

Coming up with the targets to bomb once the aircraft were over Japan, proved the easiest portion of the raid to plan. By far the most difficult portion of the raid to plan and coordinate was what the bombers would do after they bombed Japan. For this portion of the plan, they came up with three distinct courses of action. The bombers could either land in China, the Soviet Union or fly back towards the Navy Task Force; once they were in vicinity of the task force, the Raiders would ditch their aircraft and get picked up by the Navy. The China and Soviet Union options required coordination from the U.S. State Department and Duncan relinquished this portion of the planning to the Army because they had the ultimate responsibility of getting the bomber crews back home after the raid’s completion.36 The Soviet Union was the optimal landing location due to the countries proximity to Japan, ditching the B-25s in the ocean was the most dangerous due to the risk associated with the Navy staying within range of the bombers rather than escape back east as soon as the bombers took off from the USS *Hornet*.

Contingency plans were also analyzed in the event the naval task force was compromised while enroute to Japan prior to reaching the designated departure point for the B-25s. Ultimately, only three feasible courses of action were developed and remained options throughout the

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execution of the raid. If the naval task force were in range of Japan when compromised, but not necessarily in range of the designated landing locations, the bombing raid would still be executed with the Raiders expected to try their best to make it to designated or alternate landing areas. If compromised and not in range of Japan, but in range of Midway Island, the bombers would takeoff and fly to Midway, allowing the naval task force to immediately withdrawal back east; if not in range of Midway, the last option was to push the B-25s off the flight deck, allowing fighter aircraft to quickly be prepared and launched for defense of the fleet and the task force would withdrawal back east away from Japan.

After several weeks of continued analysis and coordination between the Army and Navy, both services approved the plan and issued out the appropriate tasks to finalize the preparations. The Navy agreed to bring Lt. Col. Doolittle and his Raiders no closer than four hundred miles from the Japanese coast in order to bomb military objectives in the five cities of Tokyo, Kobe, Yokohama, Nagoya and Osaka. The bombing mission would occur at night, with the first aircraft taking off three hours prior the other Raiders in order to arrive over Tokyo at dusk and use incendiary bombs to set fires over the target areas for the follow on bombers to observe and guide their bombing runs. Although the Soviet Union provided the closet airfields for the bombers to land once the raid was complete, the Soviet Union would not allow the Raiders to land within their country due to a nonaggression pact the Soviet Union maintained with Japan. With the Soviets volatile and dire situation with the German Army during the winter and spring of 1942, Joseph Stalin did not want to provoke any potential conflicts with Japan.

With China remaining the only feasible landing area for the Doolittle Raiders, bombing Japan at night would allow the B-25s to reach China, where five designated airfields were organized for them to land at during the early morning. Once on the ground, Chinese volunteers
with American advisors would fuel the aircraft with stockpiled fuel and prepare the aircraft for their final destination at Chungking, China. Once at Chungking, they would stand by for further orders and their B-25s would be turned over to the U.S. Tenth Air Force to assist with the defense of the China-Burma-India Theater under the command of Lieutenant General Stillwell.

Although Capt. Low originally only envisioned one aircraft carrier used during the Tokyo Raid, to minimize risk to the USS *Hornet* and her supporting surface warfare and auxiliary ships, once Duncan took over as lead planner for the operation, he assigned two aircraft carriers to the raid. Since *Hornet* could only conduct limited flight operations with the vast majority of her flight deck used to carry the sixteen B-25s, a second aircraft carrier could maintain a combat air patrol to protect the task force from air threats, as well as provide reconnaissance and early warning from adversaries. Although assigning two aircraft carriers ultimately provided more combat power towards the operation and minimized operational risk, it left the U.S. Navy with only two carriers in the Pacific to conduct all the other requirements the Navy had within the theater of operations. Since the Tokyo Raid was one of the Navy’s top priorities in the theater, Admiral King approved the use of two aircraft carriers for the operation.
Chapter IV.  
Getting the Navy Ready

Leading up to the Pearl Harbor attack and throughout the spring of 1942, Japanese naval strength exceeded the US, particularly in aircraft carriers. In December 1942, the Japanese had eleven aircraft carriers (six large and five small) and one escort carrier compared to only eight by the US. To make matters worse for the US during this period, only three of these carriers were operational in the Pacific with the remaining used for either training or required in the Atlantic. Due to the devastating blow caused to the US Navy’s battleship fleet in the Pearl Harbor attack, the aircraft carrier and submarine became the only legitimate naval vessels that could hold a defensive line in the Pacific against the Japanese.  

With the aircraft carrier’s operational reach and much faster speed than the battleship, these few ships quickly became America’s new capital ship. The USS Yorktown, ordered back into the Pacific Theater after the Pearl Harbor attack, reached San Diego by late December but on 11 January 1942, the US was again down to only three operational carriers in the Pacific with the USS Saratoga heavily damaged after receiving a torpedo from a Japanese submarine. Saratoga would not return to active service until June 1942. With U.S. offensive actions in the Pacific so limited and with little room for error with so few aircraft carriers, naval strategy focused on raids and defensive operations that would avoid allied defeat until the Navy’s newly designed vessels entered service in 1943.

With these constraints in mind, the USS Hornet was chosen for the Doolittle Raid for two reasons: one, was her immediate availability versus several other aircraft carriers committed to other missions and two, the trust Admiral King had in Capt. Marc Mitscher’s ability to safely get

the Army bombers to the takeoff point and return safely back to port. With many of the battleship commanders sidelined with damaged ships from the Pearl Harbor attack, senior aviation officers gained command opportunities that might otherwise have gone to the traditional battleship admirals. With a perception within the Navy that only aviators had the resident knowledge to command carrier task forces, it was an easy choice for Admirals like King, Nimitz and Halsey to select aggressive offensive minded naval aviators to lead these formations.

Prior to the Doolittle Raid, Vice Admiral Halsey commanded the carriers and conducted disruption air raids on Japanese positions in the Gilbert, Marshall, Marcus and Wake Island. These raids, often conducted with only a single carrier and its compliment of defensive auxiliary ships, struck quickly then withdrew in order to minimize the risk of counterattack from Japanese land based aircraft. Although these raids maintained a perception that the American fighting spirit remained, these raids did little damage to Japanese positions and did not cause the Japanese to change their strategy of gaining more territory and resources in the western and southern Pacific. However, Japanese leaders like Admiral Yamamoto, the commander in chief of the Japanese Combined Fleet, were fully cognizant of these carrier raids and that the U.S. Pacific Fleet posed the only real threat to the Japanese reaching their strategic endstate in the Pacific. They actively began to hunt the remaining American Carriers and pursue a plan that would ultimately destroy the U.S. Pacific Fleet in a decisive battle.

As Capt. Duncan and other Navy planners contemplated the resources needed to conduct the Tokyo Raid and multiple constraints quickly became evident for why not to conduct the raid. The aircraft carrier was now the new backbone of the U.S. Navy and Halsey’s carriers were in

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high demand. A carrier task force, of either one or two carriers, required an abundance of other auxiliary ships to provide fuel, anti-aircraft protection, anti-submarine protection and screening vessels to defeat any enemy surface ships. With so few capital ships and the early loss of the Saratoga, planners were anxious about placing “too many eggs in one basket” for the multiple missions the Navy needed to conduct in order to sustain American Pacific bases and operations in the theater.42 One main issue with independent carrier operations is the requirement for the fleet to maintain both command of the sea and the air, and the US learned quickly in its early amphibious operations, that this was a difficult task against Japan’s Imperial Navy, who was proficient at air, surface and sub-surface attacks. With a distance over eight thousand miles from Pearl Harbor to Tokyo, the risk to the fleet by conducting the Tokyo Raid was enormous; but the concept provided the best chance for the military to adhere to President Roosevelt’s demand of striking back appropriating against the Japanese after the Pearl Harbor attack.

With only the USS Lexington, Enterprise and Yorktown available to conduct combat operations against the Japanese from January through March 1942, the Hornet was desperately needed in the Pacific. After her successful shakedown cruise throughout the month of January, culminating with the successful B-25 launching experiment, Hornet spent the next three weeks in port getting minor adjustments corrected on her mechanical equipment. The ship had surprisingly only a few “bugs” to correct for a new ship and to the excitement of her crew and officers, Hornet received orders to depart from Norfolk to the Pacific Theater on 4 March.43 Hornet and her compliment of auxiliary ships, including the cruisers Vincennes and Nashville, the fleet oiler Cimarron and several destroyers departed Norfolk’s wintery coast taking a southern route through the Panama Canal, reaching San Diego Naval Harbor on 20 March. Prior

to reaching port, *Hornet*'s Air Group 8, her compliment of aircraft that helped protect and provide *Hornet* her lethal offensive punch, departed for San Diego’s Naval Air Station to receive new upgraded aircraft like the F4F-4s and the brand new Douglas SBD-3 Dauntless dive-bomber, often considered “one of the greatest carrier planes of all time.”

With conditions set for the Navy to transport the Army bombers to their departure point for the successful bombing of Japan, the remaining coordination’s required the Army to train the air crews and modify the B-25s so they could successfully accomplish their mission.

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Chapter V.
Getting the Army Ready

In early March 1942, one hundred forty men from the 17th Bombardment Group assembled in a large operations office at Eglin Field near Pensacola, Florida anxious to learn the details of the secret mission they volunteered for several days earlier. Within this operations office stood enough pilots, navigators, bombardiers, engineers and gunners to operate twenty-four B-25B medium bombers and each volunteer was eager to make a difference in the war against the Japanese and Germans. Three months had passed since the Japanese attacked Pearl Harbor and after a series of Japanese victories in the Pacific, the US and the other allied nations were on the ropes. The Japanese successfully invaded the Philippine Islands, Dutch East Indies, Wake Island, Guam and Singapore. In conjunction with these occupations, a major American, British and Dutch naval fleet was soundly defeated in the Java Sea. British, Dutch and American strategic strongholds in Central and the Southwest Pacific were now in the hands of a very capable and determined Japanese Military. There was little to be excited about and it did not seem the United States was in any position to strike back at the Japanese in the near future.

Then a short stocky man wearing an aviator’s leather jacket with the silver oak leaf rank of Lieutenant Colonel walked into the operations office and the room went silent as the men fell into the position of attention. For many individuals, they immediately recognized this aviation pioneer by the hundreds of newspaper pictures they had seen of him while growing up as a child. For others not recognizing his face, they became instantly aware when he stated, “My name’s Doolittle;” and with no further introductions required, James Doolittle instantly got to the point by stating, “He was in command of the mission they had volunteered for and that it would be the most dangerous undertaking of their lives.”45 At this point, the men were not provided any

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additional information about the mission but Doolittle offered each of them the opportunity to 
decline the mission with no administrative punishment held against them. All one hundred and 
foury crew members remained bound and determined to conduct whatever mission the legendary 
Jimmy Doolittle would lead. Although no questions were answered that day, every service 
member knew two things for certain, this mission was important and because Doolittle was in 
charge of it, they would succeed in whatever it was they were asked to do.  

James Harold Doolittle was born in December 1896 in California and was the only child 
of Rosa Shepard and Frank Henry Doolittle. Several years after Jimmy’s birth, the family 
moved to Nome, Alaska where Frank attempted success as a gold prospector but primarily 
earned his income through his carpentry skill. Under the sparse community of Nome, Alaska 
and under the supervision of his father, Jimmy learned to work with his hands which fostered 
future technical skills and a lifelong mastering of attention to detail. Life in this frontier 
community was rough on Doolittle who was smaller than his peers. Bullying remained a 
constant struggle while in Alaska and he quickly learned to defend himself by aggressively 
overmatching bullies with a quick onslaught of punches. Courage and the thrill of competition 
remained a theme throughout Jimmy’s life; throughout his adolescence, he participated in boxing 
and gymnastics which developed above average balance and coordination.  

In 1908, Doolittle and his mother moved back to California and by 1912, he was 
competing in and winning amateur boxing tournaments while also continuing with gymnastics. 
Upon graduation from high school, his engineering ambitions drove him to attend the University 
of California-School of Mines, where he also competed in both sports. While a student, Doolittle 
met Josephine Daniels. They had little in common and grew up with completely different 

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backgrounds but soon began to date and were married on Christmas Eve 1917. After completing three years towards an engineering degree, war drums rang in Europe and Doolittle felt the patriotic duty to enlist in the Army to serve his country in the First World War. Having a strong desire to become an aviator due to his interests in the technical and mechanical arts, he entered the army as a “flying cadet” within the Army Signal Corps and started training at Rockwell Field in San Diego graduating as a qualified pilot in March 1918.

Since the age of thirteen, aviation sparked an interest in Jimmy beginning with the first aviation show he saw near Los Angeles. The races featured some of the brightest aviation stars in the world where they displayed their flying skill and the latest technology in aviation design. Jimmy read every source he could find on the latest designs in aircraft manufacturing and one particular article in the magazine *Popular Mechanics* featured a story on building your own glider. Jimmy persuaded his mother to buy him the material needed to construct a glider and once completed, he attempted his first flight with disappointing results. His dogged determination and multiple adjustments were never enough to gain any sustained altitude in his glider but his passion to fly aircraft only grew from these multiple failures.

Once accepted into the pilot training program, it did not take long for Doolittle to become one of the best pilots within the Army Air Corps. After only seven hours of flying tandem with an instructor, Jimmy was competent enough that his instructor authorized his first solo flight. After graduating from flight school in March 1918, he was commissioned as a Second Lieutenant, but to his disappointment was not sent to Europe to fight in the First World War. Due to Doolittle being one of the most skilled pilots in the Army, he was assigned to numerous technical and advanced flying schools; when not in flying schools, he was normally assigned as an instructor pilot to help train the newest pilots in the Army. These experiences gave Jimmy

increased flight hours in nearly every type of military aircraft allowing Doolittle to perfect his expertise as an Army aviator. His “perfected flying skills” and reputation quickly spread and he made numerous positive impressions on future significant aviation leaders like Ira Eaker, Carl “Tooey” Spaatz and one of his original commanders, Henry “Hap” Arnold. These impressions and relationships would serve Doolittle well in the US Army’s next upcoming war.

These experiences also allowed Jimmy to represent the US Army in international flying competitions, break distance records and pioneer new aviation technologies. James Doolittle was the first aviator to fly the entire width of the United States in less than 24hrs, conduct the first blind takeoff and landing while flying strictly on instruments, perform the first outside loop in the history of aviation, break numerous international speed records and win multiple trophies in international flying competitions. With Doolittle representing the United States Army so well while becoming a technical expert in aviation, he was awarded a scholarship to study aviation engineering at the Massachusetts Institute of Technology (MIT) in 1923 and within two years was awarded one of the first doctor of science degrees in aeronautical sciences.

Throughout 1930-1940, Doolittle’s mentor, and later, good friend Hap Arnold assisted his career in the Army Air Corps. Arnold, first met Doolittle, while commanding Rockwell Field where Jimmy was assigned there as an instructor pilot. For positive reasons, but also for the occasional misconduct, Doolittle often found himself talking with Hap Arnold about aviation theory, best practices and the latest in aviation designs. In 1930, Doolittle left active Army service to work for the Shell Oil Company within their aviation technology department. While working for Shell, he remained in the Army Reserves serving as a Major; obligations within the reserves allowed him to maintain his currency by flying the latest aviation equipment the Army

49 Lt. Col. Benjamin W. Bishop, Jimmy Doolittle: The Commander behind the Legend, 10.
50 Ibid., 14.
Air Corps fielded. As war drums rang once again in Europe for the second time in Doolittle’s life, his patriotic duty compelled him to request acceptance back into the Army active duty force. In August 1939, Doolittle visited his mentor Hap Arnold, now the Chief of Air Corps, and offered his services in any capacity that Arnold felt he could contribute to the Army Air Corps. It took almost a full year to authorize the move but in July 1940, he became the first officer in the Army Air Corps to be recalled back to active service.

For the remainder of 1940 through 1941, newly promoted Lt. Col. Doolittle worked projects for the Army Air Corps such as evaluating the effectiveness of aircraft production, making recommendations on pilot instrument changes and assisting the Army with the transition of their standard 91-octane aviation fuel with the newly improved 100-octane fuel, a change that provided the Allied Air Forces with a marked advantage over the Axis Powers.

After the Pearl Harbor attack, Hap Arnold called Doolittle instructing him to get to Washington DC because he wanted him to work directly on his staff. For the next several months, Doolittle completed projects for Arnold such as evaluating the potential of the B-26 medium bomber due to its bad reputation as a pilot killer. After several days of flying the aircraft by himself and with other pilot trainees, Doolittle reported the aircraft was fine but the pilot training program required adjustments; within a week, pilots began regaining their confidence in the B-26 and the aircraft would go on to make a significant contribution within the Allied war effort. By 17 January 1942, Doolittle was back in General Arnold’s office where he was about to be assigned a mission that would change his life; “Jim, what airplane have we got that will get off in five hundred feet with a two-thousand pound bomb and fly two thousand

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52 Ibid., 41-42.
miles, Arnold asked?" Doolittle confessed he did not know but that he would find out and report back as quickly as he could; the next day it was determined the only aircraft available that could takeoff from an aircraft carrier with the desired bomb load was the B-25 medium bomber.

In 1942, the Army had three medium bombers available to attempt a bombing mission on Japan, the B-23, B-25 and B-26. The B-25B proved the aircraft of choice for three reasons, wingspan, range and payload. The B-25 “Mitchell” medium bomber was a plane of firsts for the US Army Air Corps; it was the first plane to sink an enemy submarine, first dual engine aircraft to takeoff from an aircraft carrier, the first warplane armed with a 75mm cannon and it was the first bomber to see action on every front in World War II. Throughout its 48 months of continuous production, the B-25 is the most produced twin-engine medium bomber of World War II and except for the P-38, was the most produced twin-engine combat aircraft of the war.

On 11 March 1939, the US Army Air Corps issued Proposal No. 39-640 requesting from the numerous American aircraft manufactures, the development of a new medium bomber. During the mid-1930s, the term medium bomber and the characteristics for such an aircraft were still immature, but new foreign aircraft developments and potential threats coming from Europe solidified the War Department’s requirement for such an aircraft. Within the Army’s proposal, they requested an aircraft capable of bombing tactical objectives such as rail yards and harbors from an altitude of 8,000 to 14,000 feet, it also specified the Army required a bomber with a combat range of 2,000 miles, while carrying a bomb load of 3,000 pounds and able to travel at a maximum speed in excess of 300 miles per hour.

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56 Ibid., 22.
57 Ibid.
Due to numerous reasons such as small work forces, the inability for manufactures to develop such an advanced aircraft design and the large factory space required to construct such a large aircraft, only four aircraft designers actually submitted aircraft proposals to the Army Air Corps. The Martin B-26, North American B-25, Douglas B-23 and the Stearman P-23 were the four aircraft designs analyzed and considered by the Army with only the B-25 and B-26 receiving serious consideration and awarded large aircraft contracts. On 20 September 1939, just nineteen days after Germany invaded Poland, the Army Air Corps approved a contract for North American to produce 184 B-25s; the same month, the Army also awarded a contract to Martin for the production of 201 B-26 bombers.

Although both bombers had exceptional combat records throughout the Second World War, the B-26 was considerably more expensive to produce and maintain mainly due to its advanced technical characteristics. By the time of the Pearl Harbor attack, nearly twenty-seven months after the contracts were awarded, North American delivered 130 B-25s to the Air Corps versus Martin, who were only able to deliver a little over fifty. The first two and half years of the B-26 Marauders lifespan was rough, making the aircraft the Air Corps problem child due to excessive production costs, high accident rates and frequent broke downs. The aircraft cost fifty percent more than the B-25 and was originally equal to the cost of a B-17 strategic bomber. The Air Corps placed trust in the B-26 due to its innovative design which allowed the aircraft to reach speeds of 323 miles per hour with a combat range of 1,150 miles. It was also the first Army aircraft designed with self-sealing fuel tanks and a power operated turret fielding two .50 caliber machine guns, designs that became standard on future aircraft in World War II.

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59 Ibid., 25.
60 Ibid., 24.
61 Ibid. 25.
performance measures were corrected, the B-26 went on to become the most used medium bomber in the European Theater with extensive use in the North African and Mediterranean campaigns; adjustments to the aircraft later proved worthwhile with the B-26 having the lowest combat loss rate of any other American combat aircraft in World War II.\textsuperscript{62}

The B-25 on the other hand, showed promise from the beginning of its procurement and fielding, and although it was not as fast or powerful as the B-26, its easy field maintenance and repair features made it an ideal aircraft to operate in austere environments making it particularly useable in the Pacific Theater where resources were often sparse and conditions were rough for sustaining aircraft.\textsuperscript{63} Unlike Martin, the North American Aircraft Company did not try to push the envelope when designing their medium bomber, proving highly desirable to the Army Air Corps that wanted aircraft easy to produce, maintain and train the enormous amount of newly enlisted aviation candidates.\textsuperscript{64} The B-25 flew a normal combat range of 1,350 miles, equaling a combat radius of 685 miles, with a max speed of 315 miles per hour while operating a standard five person crew and carrying a bomb payload of 3,000 pounds.\textsuperscript{65} As the US became more vested in the war, few planes gained greater loyalty and love from its crew and maintenance operators than the B-25; pilot visibility was outstanding, the aircraft was easy to fly, even on one engine, it could take a lot of punishment and still bring the crew home and the versatility of the aircraft allowed it to accomplish a variety of different missions for the joint force.

As the most produced medium bomber of the war, the B-25 was an extremely forgiving aircraft, which increased the confidence level of many newly commissioned pilots with some

\textsuperscript{63} Ibid., 24.
\textsuperscript{65} N.L. Avery, \textit{B-25 Mitchell: The Magnificent Medium}, 196.
deploying to the Pacific or European Theaters with less than 500 hours in the aircraft. The B-25 was not only loved by the crews who flew the aircraft but also by the fighter pilots who escorted the B-25 on bombing missions. Unlike with the B-24 or B-17, escorting fighters typically did not have to throttle down when escorting the B-25 due to the bomber flying a normal combat speed of 245 miles allowing the bomber to outrun even a Japanese Zero as long as it did not have a substantial altitude advantage and if spotted at a great enough distance; an advantage that would provide the Doolittle Raiders with a marked advantage over the Japanese integrated air defense during the Raiders bombing mission.

With the B-23, B-25 and B-26 the only other aircraft researched by Army and Navy planners for the Tokyo Raid, both accessed only the B-25 had a short enough wingspan to takeoff from an American aircraft carrier. With this constraint, the B-25 was the only feasible option for the joint force to use in bombing Japan. In June 1942, Doolittle wrote in his after action review, that the B-23 could have participated in the bombing raid, but due to its longer wingspan, fewer aircraft with an overall smaller bomb payload would have participated in the raid due to the aircraft all required to stack on the left side of the aircraft carrier so their wings didn’t strike the carrier island as they took off. The B-26 was not a feasible choice due to its lack of range and the speed and takeoff distance required for the aircraft to takeoff.

The Army selected the B-25B for the Tokyo Raid on 15 January 1942, the B-25 documenting that it’s defensive capability, maneuverability, bomb load, formation flying ability, range, and pilot visibility makes the aircraft an excellent choice for the bombing of Tokyo.

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67 Ibid., 288.
70 *Doolittle Raiders Association Records*, General Historical Background of the Raid, Box 1-Folder 1, Series XI: Background and History of the Doolittle Raid (1942-1990): 34.
expected of each piece of military equipment, modifications and improvements are made when required, and by early 1942, the B-25 was on its third model variation. The differences to the B-25B model versus the B-25A, were primarily defensive in nature, with four .50 caliber machine guns added to the aircraft via a top and bottom dual machine gun electrical turret adding 2,200 pounds to the weight of the aircraft. With the added defensive protection, the singular tail mounted .50 caliber machine gun and rear armor plating were removed under the assumption the additional revolving turrets could effectively defend the rear of the aircraft. The additional weight caused by the two electrical turrets, decreased the B-25B slightly in max speed, range and its flight altitude ceiling.

Within Gen. Hap Arnold’s guidance and mission order for the Tokyo Raid, he required eighteen B-25Bs, capable of flying 2,400 miles, with a bomb payload of 2,000 pounds; in order to achieve this, substantial modifications were required to get the B-25s ready to takeoff from an aircraft carrier, bomb Japan and still have the range to reach friendly airfields in China. These modifications included reducing weight, increasing its fuel capacity and removing any unnecessary features from the aircraft. Most of the modifications were made at the Mid-Continent Airlines airplane manufacturer in Minneapolis, Minnesota with specific mission requirements and oversight made by Jimmy Doolittle. The remainder of the modifications took place during the train up for the mission at Eglin Air Base in Florida and lastly at McClellan Field in Sacramento, California prior to the B-25s being loaded abroad the USS Hornet.72

In order to give the Raiders plenty of redundancy, twenty-four B-25Bs were prepared with the appropriate modifications for the mission. In order to decrease the weight of the aircraft, one of the features removed was the Norden bombsite due to both operational security

72 Ted W. Lawson, Thirty Seconds Over Tokyo, 31.
reasons and the fact the Doolittle Raid was designed as a low-level mission where the Norden bombsite would add no value to the accuracy of the bombing. To reduce further weight, the lower turret housing two .50 caliber machine guns was removed reducing the aircraft by 450 pounds. The fact that the raid would be conducted at an altitude between 1,000 and 1,500 feet mitigated the risk for not having a lower turret because an attack from enemy fighters on the bottom of the aircraft was unlikely.

The loss of the lower or belly turret was not missed by any of the air crewmen during the train up or execution of the Doolittle Raid with the electrical lower turret often considered one of the least desirable features on the B-25 with the gunner required to aim the revolving gun through a mirror that often caused airsickness and vertigo. Harold Maul, a gunner and crewman aboard a B-25 in the Pacific Theater shared his opinion of the lower turret by stating the turret and gunner’s optic was, “the worst thing ever designed and was the stupidest bit of equipment. My God, the operator is sitting in one place getting a reverse image through a mirror. He couldn’t hit a thing. It slowed the damn plane down, and we weren’t getting belly attacks anyway.” Quick to approve the removal of the lower turret for an each fuel tank, Doolittle famously remarked, “A man could learn to play the violin good enough to play in Carnegie Hall before he could learn to fire that thing.” Later in the war, designers ultimately removed the lower turret in favor of tail dual mounted .50 caliber machine guns in B-25H model.

To provide the B-25s the range required to bomb Japan and then reach Chinese held airfields, Mid-Continental Airlines airplane manufacturer in Minneapolis, Minnesota installed three additional fuel tanks within the aircraft. The Material Division of the Army Air Forces

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74 Ibid., 291.
75 Carroll V. Glines, *The Doolittle Raid: America’s Daring First Strike Against Japan*, 33.
designed the extra fuel tanks and supervised their installment by the Mid-Continental workers.\textsuperscript{76} The twenty-four aircraft from the 17\textsuperscript{th} Bomb Group arrived in Minneapolis by groups of two or three aircraft on 10 February 1942, and by 28 February, all aircraft were complete with their modifications; Mid-Continents mechanics working around the clock in three shifts in order to finish the modifications within the suspense date the War Department gave the manufacturer.\textsuperscript{77}

The first tank was a 225 gallon bullet and leak-proof rubber tank manufactured by the United States Rubber Company in Mishawaka, Indiana. Throughout the training of the raid, the Raiders had considerable difficulties with this additional gas tank due to leaks in the connections as well as difficulties fully inflating the rubber tank to the max fuel capacity. Putting air pressure in the tank reduced the wrinkles in the rubber tank and allowed the tank to be filled to the desired 225-gallon capacity. Mid-Continent placed this tank in the bomb bay while still allowing the required space to carry four 500 pound bombs. With the bomb bay area condensed to carry the additional fuel tank, the McQuay Company manufactured extension shackles within the bomb bay to allow the Raiders to carry and release their payload at the desired time.

The crawl way above the bomb bay, located midsection of the aircraft, is where Mid-Continental installed the second auxiliary fuel tank, capable of carrying 160 additional gallons of fuel and manufactured by the U.S. Rubber Company. As fuel was consumed in this tank, air pressure sucked both the fuel and vapors out of the tank allowing the rubber tank to collapse once empty, allowing the crawl space in the middle of the aircraft to once again be used by the aircrew. Leaks within the seams of this rubber tank caused considerable problems for the aircrews as well until heavier rubber material was developed to minimize this problem.

\textsuperscript{77} N.L. Avery, \textit{B-25 Mitchell: The Magnificent Medium}, 90.
With the lower gun turret removed, this additional space allowed for the installation of a third sixty-gallon auxiliary fuel tank measuring two feet by two feet by two feet. This auxiliary tank proved the most reliable and efficient design with a filler outlet neck allowing any crew member to manually refill the tank while in flight with five gallon fuel cans. Ten additional five-gallon fuel cans were carried in the rear compartment of each aircraft where the radio operator normally sat. As each fuel can was emptied into the sixty-gallon auxiliary tank, a crewman would punch holes in the metal cans to ensure they sank in the water after being thrown out of the aircraft. Doolittle mandated this because he did not want fuel cans floating in the ocean where Japanese picket boats could retrieve them and confirm his bombers approached Japan from the east.

An organic B-25B had a total of 646 gallons of fuel via two fuel tanks located in the wings of the aircraft. With modifications complete, Doolittle now had twenty-four aircraft that held 1,141 gallons of fuel, of which only 1,100 gallons were available after takeoff due to an average consumption rate of forty gallons for aircraft pre-flight warmups and takeoff. Although mission requirements stated the B-25s needed a range of 2,400 miles, extensive trial and error tests on speed and RPM rates, adjustments to the aircrafts carburetors and testing the aircraft at various altitudes proved the best the Raiders could expect was a range of 2,250 miles. The cruising course calculations the Raiders generally followed throughout the mission required an aircraft speed between 160 to 170 miles per hour at an altitude no higher than 1,200 feet, within these parameters, the fuel consumption rate was approximately eighty gallons an hour. At six pounds per gallon, doubling the B-25s fuel had an adverse effect of adding an additional 3,000 pounds to the aircraft so more modifications were required to lighten the weight of the aircraft.

79 N.L. Avery, B-25 Mitchell: The Magnificent Medium, 90.
80 Ibid.
With the increase in fuel and vapors within the aircraft, engineers removed the aircraft pyrotechnics in order to reduce the risk of fire hazards; removing this hardware also had an advantage of slightly reducing the weight of the aircraft. In order to maintain a signaling capability once the aircraft were over friendly Chinese airfields, two conventional parachute landing flares were installed in the rear of the aircraft. The rear gunner activated these flares by pulling a lanyard which dropped and activated the flares after they descended approximately six feet. To maintain security while in flight and decrease aircraft weight even further, Doolittle ordered the raid conducted under radio silence and removed the 230-pound liaison radios as well as each planes interphones, wiring and cords that allowed the planes to transmit information to one another.81 In order to allow the Raiders to communicate throughout their train up for the bombing raid and during their cross-country flight to California, the radio equipment was not removed until the Raiders reached McClellan Field in Sacramento, about a week prior to the execution of the raid.

In order to document, confirm target hits and review footage from training flights and the actual bombing raid, the lead B-25 in each flight were equipped with electronic picture cameras able to take sixty pictures ever one-half second; mounted at the extreme tail of the aircraft, these cameras were turned on either by the pilot or automatically after the first bomb was released.82 The other ten planes all carried 16mm movie cameras mounted and turned on the same way as the lead aircrafts. Doolittle wrote in his after action review that the cameras installed on the aircraft operated perfectly but unfortunately because all but one B-25 crash landed once the

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mission was complete, only the photographs from Lt. Elroy’s aircraft, were recovered and brought back to the United States for development.83

Within Gen. Hap Arnold’s special mission order for the raid, he wanted each aircraft to carry 2,000 pounds of bombs consisting of two five hundred pound high explosive bombs and around 1,000 pounds of incendiary bombs.84 Due the urban terrain and low level altitudes the aircraft would be bombing from, the Army Air Corps did not have adequate bombs or fuses for this type of bombing mission. In cooperation with the Army Logistics Chief, the Army Ordnance Department developed powerful new demolition bombs by mixing fifty percent T.N.T with 50 percent amatol and set the fuses to explode eleven seconds after immediate release from the aircraft. The eleven-second fuse was designed to allow the bomb to punch through the hardened urban structures the Raiders targeted, leaving plenty of time for the bomb to reach the bottom floor before exploding. Additionally, in conjunction with the Chemical Warfare Service, the Ordnance Department, developed special 500 pound incendiary bombs that when dropped, released 128 incendiary bomblets intended to cause uncontrollable fires that firefighting services within Japan would not be able to extinguish before large areas of the city received damage.

Throughout both the train up and execution of the Doolittle Raid, many of the .30 and .50 caliber machine guns designed to provide the B-25s with their protective fire power often did not fire properly due to faulty parts and ammunition jams. At this point in the war, the U.S. in general was lacking in .30 and .50 caliber ammunition and due to this shortage, the gunners only fired their machine guns in limited quantity. Some of their guns either did not fire at all or only fired in short bursts before jamming, causing frustrations and a lack of confidence in their equipment to not only the gunners but also the entire aircrews who were dependent on the

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84 Ibid., 2.
defensive firepower of these machine guns. Mr. W.C. Olsen, an armaments specialist within the Army Air Force at Wright Field, Ohio, supervised the needed corrections to the machine guns by either replacing parts of smoothing down existing parts to make them fit better. He also helped train the gunners on proper firing techniques, ammunition clearance procedures and on preventative maintenance requirements of their machine guns. Along with the special bombs designed for the raid, each .50 caliber machine gun employed a special load of 800 rounds with a consistent mix of one tracer round, two armor piercing rounds and three explosive bullets. The goal behind this composition allowed the gunner to see where his shots were landing, while the armor piercing bullets caused holes in the enemy aircraft allowing the explosive bullets to destroy the aircraft threatening the B-25. This ammunition mix proved successful with no fewer than three enemy aircraft shot down over the skies of Japan.

The last three modifications installed on the B-25s were out of precaution more than necessity. By mid-January 1942, the joint force still did not know what country the Raiders would ultimately land at so Doolittle ordered Mid-Continent to install de-icers and anti-icers on the engines of all aircraft. Although this modification slightly reduced the performance of the aircraft, the risk of not having this enabler in the event the Raiders came across a winter storm during the execution of the mission was unacceptable. The second modification took place while the Raiders were training in Eglin. When firing the dual mounted .50 caliber machine gun turrets close to the fuselage, due to the muzzle velocity and stress the large machine guns placed on the aircraft’s structure, gunners observed the B-25s soft skin fracture with some rivets actually popping off the aircraft. To modify this structural flaw, engineers installed steel blast plates around the revolving top turret negated this problem any further.

Capt. Ross Greening detailed as the gunnery and bombing officer for the operation, designed the third and final modification to the B-25s, famously going down as one of the most creative ruses in World War II aviation history. Since many of gunners still experienced problems with their .50 caliber machines guns and electrical top turrets, Greening ordered each aircrew to cut holes in the bombers tail, large enough to fit two large black wooden poles to replicate rear machines guns to scare off any pursuing enemy aircraft. As far as Doolittle and the other Raiders were concerned, this ruse worked during execution with no B-25 attacked from the rear; instead, Japanese fighters attacked laterally providing the gunners with a better sight picture of the approaching aircraft.

Now that the vast amount of modifications were complete, the Doolittle Raiders could now begin their intensive training program to prepare them for the specific tasks they were to complete during the execution of the raid. The modified B-25s now provided the joint force the capability to successfully bomb Japan outside the range of land based aircraft, greatly reducing the overall risk of the mission for the U.S. Navy. The larger fuel tanks also increased the survivability of the B-25 air crews as they now had the sufficient range to safely reach the airfields held by our Chinese allies. For the Army and Navy, the training and continued coordination within the upcoming month was integral to the success of the operation and there was little time for delays to the operation due to the Japanese continuing to capitalize on their gains and American service members in the Philippines reducing in strength and morale.

To successfully conduct the Doolittle Raid, the twenty-four air crews selected to train for the raid had to learn how to fly the B-25B in less than a month to the limits of the aircraft’s capability while becoming proficient in all the tasks specified to accomplish the mission. Their

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aircraft once loaded with a crew of five men, 2,000 pounds of bombs and topped off with 1,141 gallons of fuel weighed on average 31,000 pounds. Their fully loaded aircraft would need to takeoff from a carrier deck no longer than 460 feet. To build proficiency and confidence amongst the air crews in short takeoffs, Hap Arnold’s Army Air Corps office requested to the Navy’s Bureau of Aeronautics “that a Naval aviator, experienced in the art of taking heavily loaded airplanes off from the deck of a carrier, be available at Eglin Field, Valparaiso, Florida, from March 1 to March 15, for the purpose of instructing Army pilots in this art.” Capt. Duncan selected the experienced naval aviator Lieutenant (Lt.) Henry L. Miller to be Lt. Col. Doolittle’s liaison officer for the operation.

Born on 18 July 1912 and spending the first 17 years of his life in Fairbanks, Alaska, Harry Miller entered the U.S. Naval Academy graduating in 1934. As a newly commissioned naval officer, he spent his first three years in the Navy as a surface warfare officer aboard the USS Texas before transferring into naval aviation, where he spent the next 34 years of his naval career. As Lt. Miller gained more and more flight experience in a peacetime Navy, he was reassigned to Pensacola, Florida in November 1940 as a flight instructor, where he trained naval aviation cadets in the basic and advanced skills required to become a successful pilot in the U.S. Navy. With this experience, in February 1942, Lt. Miller received orders to proceed to Eglin Field, Florida from 1 to 15 March, to train Army pilots on aircraft carrier takeoff procedures. The Navy provided Lt. Miller an old SBU Corsair training biplane for the 50 mile commute to and from Pensacola and Eglin. The only additional information he received was the characteristics and performance records of the B-25B and a planning assumption from Capt.

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Duncan that a B-25, weighing 31,000 pounds, required a minimum of 350 feet with a 40 knot head wind to successfully takeoff from a Navy aircraft carrier.91

Arriving to Eglin Air Field on 1 March, Lt. Miller reported into the airfield’s headquarters building; and since Lt. Col. Doolittle and his executive officer, Major (Maj.) Jack Hilger, were not present, Miller met Captains Edward York and David Jones who were both assigned to the special project. Both Army officers were curious about the naval officer and asked why he was there. Lt. Miller told them he was there to teach them carrier takeoffs. Amazed at this unexpected response due to the officers being bomber pilots, their next question was if Miller had ever flown a B-25? “No, in fact I’ve never even seen one,” stated Miller.92 York and Jones quickly remedied that by driving Miller to the flight line where they climbed into one of the B-25s assigned to the mission. After a quick orientation of the aircraft, the aviators throttled up the aircraft, took off and flew over the airfield several times with Miller in the co-pilot seat. While in flight, Miller observed the necessary procedures for taking off and flying the aircraft, providing him a good feel for the aircraft. He listened to both York and Jones discuss the required 110 to 140 miles per hour speed and average 1400 foot distance necessary for a B-25 to takeoff. Miller told the airmen they would have to half the speed requirements and discussed how a ships speed into the wind would allow for a shorter takeoff distance; with both Army airmen very skeptical a B-25 could takeoff at such a slow speed, Miller instructed the officers on the plane settings required to takeoff at this speed.

Still skeptical but willing to try, Capt. Jones sitting in the pilot’s seat with Miller in the co-pilots seat, listened to Miller’s instructions while taxiing the aircraft. With the B-25 set at the

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right aircraft configurations based off Miller’s instructions, Jones was able to fully takeoff at sixty-five miles per hour. Capt. York believing the air speed indicator must have been broken stated that was impossible, with Miller quickly saying, “Okay, come on back and we’ll land and try it again.” York next climbed into the pilot’s seat, took all instructions from Miller and was able to takeoff at a speed of seventy miles per hour. With the two Army Airmen convinced in Miller’s methodology for taking off at slower speeds, over the next few days Miller perfected the right settings needed to take a B-25 off a runway surface of less than 500 feet. With Lt. Miller confident he could train all the Raiders on the proper procedures needed to take a 31,100 pound aircraft with 2,000 pounds of bomb off a naval aircraft carrier, he was ready to begin training all twenty-four aircrews and meet the remaining leaders of the special project.

Miller met Doolittle on 3 March and commonalities allowed both men to instantly bond and form a lifelong friendship. Both men spent considerable time during their adolescents in Alaska, were instructor pilots for their respective services and were collegiate level boxers within their weight categories. Throughout the entire train up of the Tokyo Raid, Lt. Col. Doolittle gave the flexibility and latitude for Lt. Miller and Maj. Hilger to create the training plan that allowed the Doolittle Raiders to successfully conduct their assigned mission; ultimately, Doolittle allowed both men to make the final recommendations for the sixteen pilots who would actually execute the raid.

Since the 140 volunteers came from four different squadrons, Doolittle believed it was essential for each five-person bomber crew to be organized as quickly as possible so each bomber crew could bond, go through growing pains, learn each member’s strengths and weaknesses and become one cohesive team. Typically, during this time, Army Air Corps

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bomber units did not routinely have aircrew continuity and during any mission a crew could be built around five different airmen with each having their distinct specialty. Doolittle knew in order to form the team quickly, each aircrew needed to be the same from day one with only minor adjustments occurring if required during the training period.

The training plan developed was designed to provide only the essential requirements the Raiders needed to accomplish their mission with each aircrew receiving a minimum of fifty-five flight hours in their aircraft. The initial six hours were designed for the crews to become familiar with the surrounding training areas and ranges, their instruments and the automatic flight control equipment since each plane had undergone modifications prior to arriving at Eglin. Each pilot and copilot would conduct a minimum of ten short takeoffs with Lt. Miller with four conducted with a light planeload, four with the bomber weighing 28,000 pounds and at least two with a fully loaded 31,000 pound B-25.

Originally designed as a fifteen-day training period to lower operational security risks, weather burdened Miller and Hilger’s training plan and from 2-23 March, eight training days had to be scratched due to poor weather at Eglin. Since Miller received his orders from both Lt. Col. Doolittle and Capt. Duncan, it was not a problem extending Miller’s orders in order to complete his assigned training duties. Far from prying eyes, the Raiders practiced at one of the many auxiliary airstrips at Eglin known as Hurlburt Field where several of the airstrips were painted with yellow lines so pilots could practice holding their left wheel on the line throughout their takeoff run; by maintaining their wheel on the yellow line, pilots knew they were traveling

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95 James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 87.
straight, allowing increased speed faster and a quicker takeoff. Flags were posted at fifty feet increments from 250 feet to 700 feet to ensure each aircrew knew if the takeoff was successful.97

Miller’s training plan allowed all pilots to get considerable time in the cockpit practicing takeoffs, and pilots only increased their aircraft weight when they were proficient at taking off in less than 500 feet. Miller was meticulous, took his job seriously and kept records on each pilot and aircraft.98 In order to maximize pilot experience and aircraft observers, Miller set up a system where two pilots were stationary on the airfield observing takeoff with one pilot at 250 feet and the other pilot at the actual takeoff distance, each having a stop watch to record the time it took for the observed pilot to reach these distances. During all takeoffs, one man stood behind the pilot to record the air speed at takeoff. Once the pilot landed, normally the pilot and all observers conducted a short huddle to discuss their observations such as what the pilot did well or improvements he needed to make prior to the next takeoff. As the senior trainer, Lt. Miller watched every pilot takeoff at least once but also relied on Capt. Jones and Capt. Gray as secondary flight instructors due to their high performance record during the training. All three instructors gave constructive criticism to each pilot and kept accurate pilot performance records so they could rank order the top sixteen pilots and recommend to Lt. Col. Doolittle who was best qualified to conduct the operation.

The B-25 settings proven to work best prior to takeoff were the following procedures:99

A) Flaps down full to 45 degrees

B) Aircraft Tail Stabilizer set at 3/4s

C) Both pilot and copilot feet firmly on the brakes

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D) Copilot opened the throttle and manifold pressure to 44 inches

E) Front/Nose wheel straight

F) Left Wheel on white identification line

G) Pilot firmly holds yoke to keep aircraft nose wheel straight

Once a pilot brought his RPMs to near max and was given the green light to begin his takeoff approach, he followed the following procedures:

A) Holding the yoke firmly, release brakes to begin initial movement

B) After approximately 75 feet the pilot pulls the yoke back 3/4s allowing the nose to rise up slowly until the tail is about two feet off the deck

C) This position is held until the aircraft speed allows the B-25 to takeoff or until the plane flies off the aircraft carrier

D) Immediately upon successful takeoff, the pilot rolled the stabilizer forward and due to the need for keeping both hands on the yoke to control the aircraft, the copilot reset the flaps to normal, brought up the landing gear and increased speed and altitude.

Due to the stress these settings and procedures placed on the aircraft while conducting short takeoffs, there were multiple training days where only one or two planes were used during training; the pilots scheduled to train during these days, would simply form a round robin rotation and when not flying would observe the pilot currently in the pilot’s seat. In Lt. Miller’s after action report on training the Doolittle Raiders, he observed all pilots, with few exceptions, caught on and adjusted their takeoff techniques quickly but overwhelming Lt. Col.

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101 Ibid., 3.
Doolittle, Capt. Gray and Capt. Jones performed the best during the training.\textsuperscript{102} When training Doolittle on short takeoff procedures, Miller recorded that even a seasoned aviator such as Doolittle found the Navy’s brand of flying initially difficult and it took four attempts for Doolittle to master the short takeoff technique.\textsuperscript{103} However, Lt. Miller found that constant practice and in some cases, retraining was necessary because after a few days off from flying, pilots, from lack of muscle memory, were prone to switching back to their U.S. Army conventional takeoff procedures. This would unfortunately reoccur during the actual day of execution where several Doolittle Raiders had very close calls taking off from the USS *Hornet* giving an unfavorable impression on the Army aviators from the Naval aviators observing the takeoffs.\textsuperscript{104}

During the middle of March while the bulk of the B-25 crews were training for the raid, Capt. David Jones, who was assigned as the raid’s intelligence officer, and several other assigned navigators and bombardiers traveled to Washington DC. Their job was to select the high value targets the Doolittle Raiders would bomb during the raid. Lt. Tom Griffin, the navigator for the ninth aircraft, recalls the group spent several days with Army Intelligence specialists pouring over classified maps and target areas selecting the necessary photos, charts and maps they would need to successfully navigate to the target areas and then to landing fields in China.\textsuperscript{105} As the group returned to Eglin, after they crated and shipped their targeting and navigational material to

\textsuperscript{103} Theodore Taylor, *The Magnificent Mitscher*, 115.
\textsuperscript{104} *Doolittle Raiders Association Records*, The Reminisces of Captain Stephen Jurkia Jr. –USN, Ret. (1979): 477, Box 1-Folder 12, Series XI: Background and History of the Doolittle Raid (1942-1990), History of Aviation Collection, Special Collections and Archives Division, Eugene McDermott Library, University of Texas at Dallas.
\textsuperscript{105} Kevin C. McHugh, “Navigating from Shangri-La: Cincinnati’s Doolittle Raider at War,” 10.
California, they remained “very closemouthed” about their absence to the other Raiders to ensure operational security for the mission remained intact.\textsuperscript{106}

Designed to be a limited visibility, low level (1500 feet) bombing mission, the Doolittle Raid maximized surprise and minimized the risk for both the bombers and US Navy.\textsuperscript{107} Based on the training plan that both Lt. Miller and Maj. Hilger created, when not practicing short takeoffs, aircrews spent about fifteen hours practicing daytime and nighttime bombing runs on both ground targets and oil slicks in the Gulf of Mexico and another fifteen hours practicing crew defensive procedures against attacking pursuit planes. Lastly, Doolittle wanted each crew to take advantage of the Gulf of Mexico proximity and ordered them to practice overwater and celestial navigation making numerous overwater flights to Houston, Texas and Fort Myer, Florida accumulating another fifteen flight hours for each of the aircrews. These overwater flights proved the best training events to replicate the actual mission conditions the Raiders would face both enroute to Japan, and towards China, once the bombing mission was complete. Throughout the training month, it was not uncommon for aircrews to train from 7 a.m. until 10 p.m. at night; leaving Pilot Ted Lawson to record in his famous book, \textit{Thirty Second Over Tokyo} that crews practiced so much limited visibility flying, he and other aircrews were convinced the mission would take place at night.\textsuperscript{108}

Although there was limited ammunition and time to train assigned gunners, they still needed to become proficient at aerial gunnery since the B-25Bs bottom armor plating and defensive guns were removed to decrease the aircraft’s weight.\textsuperscript{109} Since the gunners could not practice gunnery on a live moving target, Doolittle coordinated with some of the fighter

\textsuperscript{106} Ibid.
\textsuperscript{107} Clayton K S Chun, \textit{The Doolittle Raid 1942: America’s First Strike back at Japan}, 32.
\textsuperscript{108} Ted W. Lawson, \textit{Thirty Seconds Over Tokyo}, 24
\textsuperscript{109} James H. Doolittle and Carroll V. Glines, \textit{I Could Never be so Lucky Again}, 246.
squadrons assigned at Eglin to conduct simulated attacks on the B-25s. During these simulated attacks, gunners practiced moving their stationary and revolving machine gun turrets, sighting the aircraft correctly and squeezing the trigger when they believed they had the correct sight aperture to hit the aircraft.\textsuperscript{110} Two methods of live machine gun training proving useful to the gunners were firing at oil slicks placed within the Gulf of Mexico and shooting at flying kites while onboard the USS \textit{Hornet}. These gunnery sessions, designed to allow the gunners to gage distance and timing for hitting targets while the aircraft flew low and at high speeds, helped add confidence to the gunners and the aircrew that in the event Japanese fighters attacked them, they would at least know how to properly sight and shot at the enemy aircraft.

Outside of short takeoff training, the most important training aspect was low level bombing. If the Raiders could not effectively bomb the targets they were assigned from low levels, the value of the bombing mission would be minimal. With the removal of the Norden bombsight for both operational security reasons and the fact this sight was not an effective instrument at low levels, a new bombsight was required for the raid. Once again, Capt. Greening’s ingenuity and creative thinking made him a valuable member of the Doolittle Raid team; he designed with the help of Staff Sergeant Edwin Bain a much simpler design made of scrap aluminum that resembled a ruler with two sight apertures at the front and rear. Dubbed the “Mark Twain” and costing approximately .25 cents, he designed a replacement bombsight that proved extremely easy to use and effective at low bombing.\textsuperscript{111} Unlike the extensive training required to use the Norden bombsight, Ted Lawson stated the Mark Twain “was as simple as pointing a rifle at the object to be bombed and letting the bomb go when you had a bead.”\textsuperscript{112}

\textsuperscript{110} Duane Schultz, \textit{The Doolittle Raid}, 65.
\textsuperscript{111} Ibid., 66.
\textsuperscript{112} James Scott, \textit{Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor}, 92-93.
Bombing practice involved the Raiders using primarily dummy bombs filled with sand on ground targets around Eglin’s multiple ranges or pre-planned oil slicks in the Gulf of Mexico. To simulate the unknown daylight conditions during the actual bombing run, Doolittle demanded crews practice their fast low level bombing approaches at night, during limited visibility and midday around the small cities surrounding Eglin, causing numerous complaints from local citizens, of the noise caused from the Raider’s practice runs at all hours of the day. 113 With the Raiders using 500 pound bombs for this mission, crews deliberated on the best altitude to use when bombing to prevent bomb fragments and exploding target debris from harming the undercarriage of the aircraft. To mitigate some of this anxiety, during training at Eglin, crews dropped one live one hundred pound high explosive bomb, allowing them to see, feel and hear the effects of dropping a bomb at such low altitude. With only sixty-four bombs dropped during the raid in such a dispersed area, none of the Raiders, nor the decision makers that authorized the raid, believed the bombing would cause great devastation to the cities targeted in Japan; regardless, the training the Raiders conducted at Eglin was incredibly useful and many of the bombardiers registered some very good and accurate hits on Japanese infrastructure. 114

With fuel consumption a major concern for army planners during this operation, especially if the bombers had to takeoff earlier than expected, extra measures were observed throughout the training comparing and contrasting what aircraft speeds, RPM rates and altitudes provided the best fuel mileage for the Raiders. As the Raiders moved into the last part of their training, gas consumption was the primary focus and the crews conducted countless flights to confirm they had the right settings on their carburetors for the cruising speed and altitude they

113 James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 94.
considered was most appropriate for the mission.\textsuperscript{115} Finally, at the end of March, the twenty-four aircrews conducted their final exam with a no-notice early morning flight taking them to Fort Myers, Florida, then across the Gulf of Mexico to Houston and then back to Eglin where they conducted an after action review on how well their B-25 and crew preformed their tasks.\textsuperscript{116}

Throughout this entire training period, Doolittle ensured the twenty-four air crews kept their bombers in tip-top shape and they checked their lifesaving equipment and instruments almost daily to ensure they remained serviceable.\textsuperscript{117} Each crew member learned the duties and responsibilities of the crew members next to them; co-pilots were ready if needed to takeoff and fly the aircraft, navigators were versed in bombardier requirements and each crew member knew how to operate the nearest machine gun next to their position. They flew their bombers at maximum capacity and every pilot knew what their aircraft could and could not do. Prior to loading their aircraft aboard \textit{Hornet}, Doolittle’s aircrews were confident they could successfully accomplish their mission because of the tough and realistic training they had just endured.

To ensure the air crews were familiar with U.S. Naval procedures, flight deck operations and protocol, Lt. Miller used downtime periods to teach the Raiders important customs and courtesies of the Navy. Since the majority of the Raiders were not familiar with the Navy nor had ever been on board a naval vessel, they appeared eager to learn this information in order to not cause disrespect to their sister service rival. As the airman walked up the gangplank leading up to the USS \textit{Hornet}, Miller was proud of the way the Raiders responded to his training and respected the Navy’s tradition of saluting the National Ensign followed by the Officer of the Deck, while formally reporting for duty and asking permission to come aboard the Ship.\textsuperscript{118}

\textsuperscript{115} Ted W. Lawson, \textit{Thirty Seconds Over Tokyo}, 29.
\textsuperscript{116} Ibid.
\textsuperscript{117} Ted W. Lawson, \textit{Thirty Seconds Over Tokyo}, 24.
\textsuperscript{118} Carroll V. Glines, \textit{The Doolittle Raid: America’s Daring First Strike Against Japan}, 45.
Chapter VI.
Coordination’s with China

From February through April, coordination’s with the Chinese government and Lieutenant General (Lt. Gen.) Joseph Stillwell, the Chief of Staff to the Chinese leader Chiang Kai-shek and Commander of United States Forces in the China-Burma-India (CBI) Theater, was vague and indirect.\textsuperscript{119} The lack of trust with some of the Chinese leaders, stemming from a notoriously “leaky” government and plagued with corruption and self-interests amongst the various Chinese groups, caused considerable difficulties with getting timely and accurate information to American leaders both in and out of the country.\textsuperscript{120} With these compounding constraints, the Army took the lead in coordination’s with China by relying on the American Military Mission to China (AMMISCA) to deliver information to Chinese leaders to improve existing airfields and arrange the necessary resources to receive the aircrews after successfully bombing of Japan. Unfortunately, because of the minimal information given to the AMMISCA, there was little urgency to achieve these tasks and unbeknownst to Doolittle and his men, the airfields were not prepared to receive the Raiders and the Chinese in the local area were unaware of the inbound American aircraft.\textsuperscript{121}

Throughout the planning and execution of the Tokyo Raid, coordination’s in China remained by far Lt. Col. Doolittle’s biggest challenge and the readiness of the airfields remained the biggest unknown for the Raiders. During the initial planning phase of the Raid, Doolittle assessed that several airfields around the Chuchow area were reasonable locations for the

\textsuperscript{121} Duane Schultz, \textit{The Doolittle Raid}, 78-79.
aircrews to reach and land at once they reached China; at these airfields, Doolittle recommended to Hap Arnold that 20,000 gallons of 100-octane fuel and 600 gallons of lubricant oil be staged at each airfield, estimating this supply was sufficient to refuel the B-25s allowing them to reach Chungking, their final destination. Additionally, Doolittle recommended Colonel (Col.) Claire Chennault, the Chinese Air Task Force Commander, famously known as the Flying Tigers, provide liaison teams to help establish the airfields and refuel the aircraft. As Doolittle left Washington DC to begin training the B-25 crews, he relied on Arnold to finish the coordination’s with China to ensure the airfields were ready to receive the Raiders once they reached China.

Prior to leaving for China on 11 February 1942, to take over the CBI Command, Gen. Arnold provided Lt. Gen. Stillwell minimal operational details about the “first special aviation project,” in order for Stillwell to get approval from Chiang Kia-shek so the B-25s could land in China. To sweeten the deal for Chiang Kia-shek, once these aircraft reached their final destination of Chungking, China, they would be assigned to the Tenth Air Force to conduct operations in the CBI Theater. Without knowing the date or direction the bombers were traveling, Stillwell was tasked with preparing five Chinese airfields at Chuchow, Kweilin, Kian, Lishui and Yushan and receive these bombers for follow on operations. Lastly, and still with next to no knowledge of the raid, he was tasked with supplying each airfield with 30,000 gallons of 100-octane fuel, 500 gallons of 120-grade lubricating oil, signal flares, radio beacons and English-speaking personnel to help with the refueling of the aircraft.

With the Japanese extremely active in Eastern Asia during this period, it took Lt. Gen. Stillwell twenty-three days to reach China, finally arriving in Chungking on 4 March. Upon

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122 James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 63.
123 Ibid., 63-64.
124 Carroll V. Glines, The Doolittle Raid: America’s Daring First Strike Against Japan, 46.
arriving in the CBI Theater, Stillwell spent the first two weeks in March organizing the defense of Burma to prevent this valuable area from falling into the hands of the Japanese. Arnold unaware of Stillwell’s travel constraints and other priorities in Burma grew anxious with not receiving any status reports about the coordination’s in China and sent several urgent telegrams unanswered by Stillwell. Stillwell finally arrived back in Chungking on 17 March and received his first telegram from Arnold on 18 March stating, “Reference special air project discussed with you before departure, time getting short for spotting gas at agreed points.”

Stillwell repeatedly requested more information on the true purpose for the fuel and airfields; he also recommended Chinese gasoline be used to ease the burden on logistical assets shipping these items from India.

It was at this point that communication between AMMISCA and the AAF broke down resulting in increased risk easily mitigated by better coordination and communication between the two headquarters. Within Arnold’s memorandum officially authorizing the B-25 special project in early April, he assigned 1st Lt. Harry Howze, working with both the AAF Air Service  

126 Carroll V. Glines, The Doolittle Raid: America’s Daring First Strike Against Japan, 46.
127 Ibid.
Command and the Standard Oil Company, to make arrangements for transporting the fuel and oil requirements to China; additionally within the same memo, Col. Chenault was tasked with assigning English speaking workers to secure the supplies once they arrived at the airfields and assist the B-25 crews with refueling their aircraft in order to quickly takeoff and fly to Chungking. With responsibility now falling on the Air Service Command to transport the requested resources to the five Chinese airfields, both Stillwell and Bissell, became less interested with this portion of the Doolittle Raid.

To make matters worse resulting in more tension between Chiang Kai-shek and U.S. leaders, Arnold specified to Stillwell that, “care must be exercised to see that the Chinese are advised just in time as any information given to the Chinese may be expected to fall into Japanese hands and a premature notification would be fatal to the project.” In an effort to mislead the Chinese, AMMISCA representatives were instructed to inform Chinese officials only when the aircraft were inbound to China but that the B-25s were coming from the south, not the east, for the purposes of the staging the aircraft in China for future raids on Japan.

On 2 April, Chiang, with Col. Chennault present, were given more details about the mission and told to have fuel and food ready at five airfields in order to receive at least twenty-five bombers around the middle of April. Assuming heavy bombers were being used for this mission, the Chinese advised that only the Chuchow and Kweilin airfields were suitable for heavy bombers and if the other airfields were required, they would need to be surveyed by an American official. Fearing repercussions from the Japanese, Chiang requested a delay in the mission.

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129 Patrick Clancey, “Halsey-Doolittle Raid, April 1942,” (Hyper War Foundation, 1942), Microfilm, p. 3.
130 Duane Schultz, The Doolittle Raid, 81.
131 Ibid.
132 Ibid.
mission until May, so he could place the necessary forces and resources around the Chuchow area, to defend against the eventual Japanese attacks.\textsuperscript{135} By this time, the major moving pieces of the Tokyo Raid were already well under way and Arnold informed Stillwell that it was impossible to alter any portions of the plan to bomb Japan.

On 10 April and again on 14 April, Stillwell conveyed to Arnold that Chiang requested a delay for the bombers arrival and recommended rather than bombing Japan, the bombers stationed in Chuchow, should instead bomb Japanese targets in Burma; Arnold, knowing the date of the Tokyo Raid was getting closer stated, “On April 20\textsuperscript{th}, special project will arrive at destination, for variation without notice you must however be prepared.”\textsuperscript{136} Predicting political fallout occurring due to Chiang’s discomfort with the mission, Gen. George Marshall, the U.S. Army Chief of Staff, took the reins in communicating between Stillwell and Chiang. He informed both leaders on 16 April that, “The project is now so far advanced that it is impossible to recall… I want personally to express to you my deep regret that this matter was not brought to your attention in detail, at its inception.”\textsuperscript{137} Marshall’s last cable prior to the execution of the raid was on 18 April, and since it listed operational details of the mission, it was for Stillwell’s eyes only due to the secrecy of the mission. The cable read,

Desire that there be no repeat no publicity of any kind connected with the special bombing mission. It is our purpose to maintain an atmosphere of complete mystery including origin, nationality, destination and results of this type of effort. So far as public information is concerned you are directed to deny all knowledge of the incident and of any connection therewith. You are directed also to make earnest request upon the Generalissimo to observe this policy and to cooperate with you in the effort. As quickly as you obtain any definitive information of this affair, either through survivors or otherwise, you are directed to render a report by urgent message to be the War Department.\textsuperscript{138}

\textsuperscript{135} The Army Air Forces in World War II, Edited by Wesley F. Craven and James L. Cate, Vol 1, Plans and Early Operations: January 1939 to August 1942, 440.
\textsuperscript{136} James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 108.
\textsuperscript{137} Ibid., 170.
\textsuperscript{138} Ibid., 171.
Leading up to the Doolittle Raid during the first half of April, the Air Service Command gallantly attempted to supply the designated eastern China airfields with the requested resources. They allocated several C-39 and DC-3 aircraft to facilitate the air movement of supplies. On 3 April, a C-39 plane carrying radio beacons, repair parts, fuel, food and landing strip flares attempted to supply the planned airfields but could not complete the mission due to bad weather, requiring the aircraft to turn around mid-flight. During this period in the war, the majority of Allied aircraft flying in the CBI Theater was not capable of flying effectively at night.\(^{139}\) With the long distances between Chungking and the eastern airfields, when pilots visibly saw poor weather inbound, this was generally criteria to abort the mission. Throughout the first half of April, numerous supply missions took place, but due to unusually bad weather, and unbeknownst to both Stillwell and the Raiders, these planes were never able to provide the required quantity of supplies to the airfields.\(^{140}\) The last attempt to supply the airfields was on 18 April, with a DC-3 carrying four English speaking Chinese radio operators, assigned to liaison at a different airfield, but after reaching the first airfield in Kweilin, low cloud cover throughout the mountainous region prevented the pilots from landing and once again, the mission was canceled due to poor visibility around the airfields.\(^{141}\) With a clear communication breakdown between the messages sent to and from the Air Service Command, Stillwell and Washington, indications portrayed that this portion of the Doolittle Raid went as planned with the necessary supplies and personnel assigned to each of the airfields ready to receive the Raiders.\(^{142}\)


\(^{142}\) Ibid., 167.
Around 15 March 1942, Capt. Duncan finalized the planning and tasking orders for the naval resources required to execute a bombing raid on Tokyo sometime during the middle of April. His last requirements mandated he back brief all the key naval leaders in the Pacific Theater that would provide the resources for the mission as well as Lt. Col. Doolittle. After receiving final approval from both Admiral King and General Arnold to begin the necessary movement to execute the plan, on 16 March, Duncan briefed Doolittle on the operation. Duncan handed him documentation covering the weather annex for the mission, the route the naval task force would use to reach the templated takeoff site for his bombers and the method for getting the bombers on the USS *Hornet*. Although Doolittle was familiar with the general concept of the Tokyo Raid, this was the first time he became aware of the finer details of the mission, especially how the Navy was incorporated into the plan. Doolittle read the plan over once, did not ask any questions, then looked at Duncan and replied, “That’s fine,” which was also the exact response Capt. Mitscher gave Duncan on 4 March, when he became aware of the plan to bomb Tokyo.\(^{143}\)

Several days later, Duncan arrived in Pearl Harbor to brief both Admiral Nimitz and Vice Admiral Halsey on the operation. As tactfully as he could, Duncan briefed that this operation was not a proposal but rather an approved mission these gentlemen would execute within the next few weeks.\(^{144}\) Nimitz and Halsey had few questions and understood their portion of the operation, believing the overall plan was feasible and confirming they would make all the necessary coordination’s within their authority to get ready for the operation. Once this meeting was complete, Duncan boarded the USS *Enterprise*, to discuss the operation more with both

\(^{144}\) Ibid., 68-69.
Halsey and his operations officer, Capt. Miles Browning. Feeling confident Halsey and his leaders could finalize the remaining Pearl Harbor coordination’s, Duncan handed over the appropriate tasking orders to Browning and traveled back to Washington DC, to let King know that coordination’s with Pearl Harbor were complete.145

As the Raiders entered the last week in March, they received little warning their training was complete and it was time to depart for the west coast; at 3 a.m. on 24 March, each aircrew received orders to fly to March Field, California near Los Angles. This two day flight, stopping overnight in San Antonio, Texas, proved another great opportunity to replicate the mission conditions the crews would fly during the actual operation. Aircrews flew as low as practical, to test gas consumption and RPM rates while traveling across the country.146 Once all crews were accounted for at March Field, the next morning they departed for McClellan Field near Sacramento, California in order to receive their final upgrades and modifications to their aircraft. Doolittle met the aircrews as they arrived at McClellan and instructed each pilot to “make absolutely certain that his plane is in perfect shape…. They have good mechanics here. They’ll take care of anything that’s wrong with your ships. I want you to instruct them to repair the smallest thing that might be wrong.”147 Although the vast majority of the civilian workers that supported the Doolittle Raid did a fantastic job getting the aircraft ready for the mission, there were several occasions where their actions caused headaches and increased risk for the aircrews.

At McClellan, Doolittle tasked the base flight engineers and mechanics with replacing each B-25 with two new propellers, install the sixty gallon gas tank if an aircraft did not have their modified fuel tank and replace all the upper gun turret hydraulic values, dash board fuses

146 Ted W. Lawson, Thirty Seconds Over Tokyo, 30.
147 Ibid., 31.
and instrument panel lights. Additionally, their leak-prove bomb bay fuel tanks received new outer covers, their aircrafts two hundred and thirty pound liaison radios were removed and their traditional Plexiglas windows were replaced with glass windows. Doolittle “emphasized that under no circumstances were the carburetors on the engines to be touched, because they had been specially tuned at Eglin and were adjusted just as we wanted them.”  

Crews were instructed to report directly to Doolittle, Capt. York or Maj. Hilger if any unauthorized tampering was done to their aircraft. Problems immediately arose with the civilian mechanics reworking several of the B-25s modified running systems back to the original settings the North America Aviation Company considered for optimal performance, leading to several arguments from both the crew members and Lt. Col. Doolittle. When these mechanics still disregarded Doolittle’s guidance and performed unauthorized “tinkering” to the B-25s, a crew member was always required to be present on their aircraft to prevent any further tampering. The damage unfortunately had already been done to several B-25’s with some carburetors completely replaced unknowingly to the crews; these unauthorized changes caused many B-25s to have decreased range during the actual execution of the raid, and one aircraft was forced to divert to Russia after confirming they did not have the range to reach the Chinese coastline. 

Although the base engineers and mechanics understood the B-25 modifications were required in a timely manner, Doolittle was not satisfied with their leisurely pace towards getting the B-25s operational forcing a call to Gen. Arnold in an effort to increase their scope of work. The telephone call to Arnold greatly increased the workers speed to finish the B-25s and by 31

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150 Ibid.
152 Ibid., 253.
March, the final modifications were complete allowing the Raiders to fly to Alameda Naval Air Station near San Francisco, California on 1 April.

Days prior to the group departing for Alameda, Arnold ordered Doolittle to attend a 30 March final coordination meeting with Vice Admiral Halsey, Capt. Browning and Capt. Duncan in San Francisco. During this three hour meeting, Duncan back briefed Doolittle on all naval aspects of the mission, allowing both Halsey and Doolittle to work out any final contingencies they believed were required during the western voyage to Japan. Halsey summed up the meeting by stating, “We would carry Jimmy within four hundred miles of Tokyo, if we could sneak in that close; but if we were discovered sooner, we would have to launch him anyway, provided he was in reach of either Tokyo or Midway.” 153 Doolittle told Halsey, the plan suited him fine, and they ended the meeting by shaking hands. 154 Doolittle next telephoned Maj. Hilger, still at McClellan with the other Raiders, and instructed him to finish whatever remaining modifications were still required in order to get the B-25s to Alameda no later than the afternoon of 1 April.

With many of the Raiders concerned about the modifications their aircraft received at McClellan, Doolittle ordered each pilot to give their aircraft “a good test hop,” while flying from McClellan to Alameda, and directed each crew to fly their aircraft at least an hour prior to landing at the Naval Air Station to confirm their B-25 was running smoothly. 155 As each B-25 landed at Alameda, Doolittle and Capt. York greeted each crew on the flight line and asked them how their aircraft was running and if there were any issues. Fully knowing Hornet could only take sixteen aircraft, if any pilot responded their aircraft was not running optimally, Doolittle instructed them to take their aircraft into the adjacent hanger. If the pilot stated the aircraft had no issues, Navy personnel took possession of the aircraft, drained out the majority of the fuel and

153 Carroll V. Glines, The Doolittle Raid: America’s Daring First Strike Against Japan, 43-44.
154 Ibid., 44.
towed the aircraft alongside *Hornet’s* wharf, where a large crane lifted the B-25 seamlessly up to her flight deck. While still at McClellan, Doolittle, Hilger and Miller had already determined which sixteen crews would participate in the raid but for operational security reasons, Doolittle decided to take all the volunteers on board in order to have redundant crews and prevent any non-mission personnel from leaking any information about the raid. By 2:45 p.m. on 1 April, all bombers were lashed securely on *Hornet* and with nothing else to load, a harbor pilot, with the assistance of four tugboats, moved *Hornet* from the loading pier to Berth Nine, where the *Hornet* would rest until she departed early the next morning.156 Around 7:00 the same evening, much to the surprise and delight of the Army crews, Doolittle authorized their last shore leave after a detailed security brief; he ordered all the Raiders to be back on board *Hornet* no later than 6:00 a.m. the next morning or they would miss “the adventure of a lifetime.”157

On 2 April 1942, the USS *Hornet* departed San Francisco with sixteen B-25B medium bombers latched to her flight deck; although conditions were foggy around the bay that morning, onlookers were quite intrigued by the sight of twin engine aircraft sitting on the flight deck of America’s newest aircraft carrier. The plan called for *Hornet* with a compliment of two cruisers, four destroyers and one fleet oiler, known as Task Force 16.2 and commanded by Capt. Mitscher, to rendezvous with Vice Admiral Halsey and his separate naval task force northwest of Hawaii. Ordered by Admiral Nimitz to link up with Task Force 16.2 in order to provide the combat power needed to successfully conduct the raid on Japan and then return back to Pearl Harbor, Halsey’s array of combat and auxiliary ships, known as Task Force 16.1, centered on the aircraft carrier USS *Enterprise* and mirrored the exact number and types of vessels as Mitscher’s. Once the rendezvous was complete, the group of vessels formed Task Force 16 and *Enterprise’s*

main task was to provide combat air patrols over the entire task force in order to protect, provide early warning and destroy targets that could potentially threaten the task force. Two submarines, tasked to patrol off the waters of Japan and Midway Island, supported the task force and were ordered to destroy Japanese ships operating in the area and report on weather conditions that could affect the execution of the raid.\textsuperscript{158}

Both Task Forces conducted a successful link up and converged to make Task Force 16 on 13 April. Throughout the voyage, the weather and sea conditions were poor making flight operations, visibility and refueling difficult under the rough conditions. The Army service members aboard \textit{Hornet} numbered seventy officers and one hundred thirty enlisted members. Only eighty of these service members, operating the sixteen B-25s, would participate in the raid with the remainder providing maintenance to the aircraft and redundant crews in the event planned crew members needed replacement. With no way to keep the B-25s out of the weather elements since they were latched on the flight deck, it was imperative to keep the engines clean and as dry as possible from the salty water that could negatively affect the machines.

Doolittle’s Raiders spent the weeks aboard the USS \textit{Hornet} continuing their intensive training regime that would ensure once they had successfully taken off, they would have the best chance for mission success and survival. Up until this point in the Raider’s training, the majority of the Raiders were not aware of the target areas they would bomb; in fact, it wasn’t until after the task force was well past the US coastline that they even found out they were bombing Japan. Capt. David Jones, assigned as the intelligence officer for the raid, briefed the crews on the selected targets they would bomb on the island of Honshu. As the Raider’s studied the numerous photographs of the targeted areas slated as their primary and alternate targets, Lieutenant Commander (Lt. Cdr) Stephen Jurika, a former naval attaché in Japan from 1939-1941, provided

\textsuperscript{158} Clayton K S Chun, \textit{The Doolittle Raid 1942: America’s First Strike back at Japan}, 21-22.
the Raiders known air defense artillery positions, Japanese military airfields and key geographic features close to their assigned targets to allow better reference points on their bombing runs. He also provided classes on Chinese customs and courtesies, language training and evasion techniques in the event the Raiders did not make it to their designated airfields in China.

Additionally, with each crew member knowing the difficulties of both celestial and over the water navigation due to the lack of landmarks, the *Hornet*’s navigator Commander Frank Akers, gave the Raiders several lectures on aerial navigation over the ocean. These lectures were valuable because each B-25 had to rely on either dead reckoning or celestial navigation to reach their desired bombing and landing locations. Regrettably for many of these navigators, these lectures were only half listened to because many crew members believed if they could just get off the carrier they would be fine. Lt. Nielsen, a navigator on aircraft six, plainly stated in an interview after the war that, “We figured there was only a 50-50 chance we would get off the *Hornet*. If we got off, there was a 50-50 chance we’d get shot down over Japan. And, if we got that far, there was a 50-50 chance we’d make it to China. And if we got to China, there was a 50-50 chance we’d be captured. We figured the odds were really stacked against us.”

Lt. Sims, who was Maj. Hilger’s co-pilot, frankly admitted in his autobiography that, “Getting the hell off the carrier with such a short takeoff, was every body’s primary concern. Unfortunately our bravado and inattentiveness did not paint a professional appearance to the naval personnel who were just trying to help us, leading to a perception from Admiral Mitscher all the way down to the naval enlisted men that we were unprofessional.” In reality, Sims believed the Raider’s casual attitudes while onboard the *Hornet* was an attempt to hide the anxiety of the upcoming mission; their lackluster attitude was meant to play off this fear in front

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of their sister service rival. There was a perception amongst many of the officers and enlisted personnel onboard *Hornet* that their inter service rivals were lazy. Lt. Cdr Jurika willingly admitted the Raider’s conducted no organized drill, no physical fitness, slept the majority of the day, only went to the mess when they were starving, came in late to meetings and training events, stayed up all night gambling and consumed alcohol while onboard the ship. The *Hornet’s* aviation mechanics shared Jurika’s opinion of Doolittle’s men and “were disgusted that the sergeants and corporals seemed to know nothing about the mechanical structure of their planes and left all repairs to the navy; while the Army slept and played, the Navy worked.”

The B-25s, latched to the flight deck of *Hornet*, unable to avoid the poor weather elements, did require daily loving care. Subject to constant vibrations, gale-force winds and rains, that due to the salt water could cause corrosion if not dried, forced the crew members and navy personnel to work constantly on the aircraft. Due to the vibrations and constant swaying back and forth from the carrier traversing the ocean, the deck lashings were inspected daily. From Lt. Sims observation, “it was a constant never ending battle against environmental elements and the crews had to stay on top of it or the consequences for mission success or failure were at stake.” While conducting daily preventative maintenance, the crews and Navy personnel identified failed brake plugs, the aircraft’s hydraulic fluid leaked often, batteries were constantly running down requiring replacing or recharging and spark plugs fouled; without exception, the Army personnel felt *Hornet’s* maintenance personnel were a great help to mission

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accomplishment during the entire voyage. Another pivotal example of the Navy putting aside their rival differences to help during a time of need resides when one of the B-25’s engine continued to malfunction while attempting to start the aircraft. Doolittle was convinced the aircraft needed to be thrown overboard but Navy mechanics took the engine off the aircraft, brought it below to the maintenance bay and within twenty-four hours fixed the engine and reinstalled it back on the aircraft; the next morning the pilot turned over the engine and it started right up, working flawlessly throughout the remainder of the mission. In a great display of ingenuity, it was determined the engine only needed another washer, and although they did not have this type of washer available on the ship, the mechanics were able to fabricate an exact replica from their shop stock, Doolittle was so pleased, he thanked every mechanic for their tremendous assistance in keeping the aircraft serviceable.

On 16 April, as Task Force 16 traveled in the unfriendly waters between Midway and Japan, the B-25s were spotted for takeoff with the planes pushed as far to the rear as possible in order to provide the lead B-25 with as much deck-space as possible for takeoff, amounting to just 467 feet. On 17 April, the planes were armed, fueled, engines were tested, survival equipment was loaded onboard and crews conducted their final conditions check on their aircraft. Time was getting closer for mission execution and as 17 April concluded, Task Force 16 was only 1,000 miles away from Japan; by 4:00 p.m. the next day the goal was to be only 500 miles away from Japan and prepping to launch Lt. Col. Doolittle’s aircraft to pave the way for the fifteen other Raiders following him three hours later.

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165 Ibid.
166 Lisle A. Rose, The Ship that Held the Line: The U.S.S. Hornet and the First Year of the Pacific War, 61.
167 Ibid.
Plans quickly changed at 3:10 a.m. on 18 April, when Enterprise’s radar disclosed two unknown surface vessels at a distance of 21,000 yards. Lookouts confirmed surface lights along the same radar bearing several minutes later, forcing Vice Admiral Halsey to bring the task force to general quarters. Turning the task force north to avoid the vessels, by 4:15, radar no longer had contact with the unknown surface craft, and they returned to a westerly heading. Flight operations began on Enterprise at 5:08 with the launching of search aircraft to provide reconnaissance to the task force. By 7:15, a search plane dropped a message on Enterprise’s flight deck stating at 5:58, he spotted an enemy patrol vessel and believed he was spotted.169 The task force visually confirmed an enemy vessel at 7:44, and after confirmation the enemy had successfully reported contact of their task force to Japan, Halsey gave the order to begin launch preparations for the B-25s. Months of planning, coordination and training culminated prematurely, but risk to the sixteen naval vessels with upwards of 10,000 sailors, far outweighed Halsey’s decision to launch the Raiders while still more than 800 miles from Japan, almost twice as far as Doolittle and Halsey originally planned.170

Doolittle raced up to speak with Capt. Mitscher, to confirm the overall situation and the launching order. Although the task force was still nine hours away from the planned launching site, Doolittle knew his aircraft still had the range to reach their planned targets.171 At 8:03 a.m. on 18 April, Capt. Mitscher ordered the Hornet to increase speed to 22 knots and prepare to launch the B-25s. Crews immediately began to remove their aircraft’s gun turret and engine covers and power up the aircraft to begin pre-flight procedures; meanwhile, Navy personnel


170 James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 177.

began topping off all fuel tanks, handing out additional five gallon fuel cans to each B-25, rotating engine propellers to properly lubricate the engines, unlatch the bombers from the flight deck and move them into a two column formation along the *Hornet*’s flight deck.\footnote{Clayton K S Chun, *The Doolittle Raid 1942: America’s First Strike back at Japan*, 49.} As the crews prepared for takeoff, the control tower provided each of the bombers with the current heading and speed of the *Hornet* as the heavy seas and poor weather conditions increased with wind gusts reaching up to 40 knots. Both Navy and Army personnel worked incredibly efficient during this period and in less than twenty minutes from the time Mitscher gave the order to launch, each crew was conducting pre-flight operations of their aircraft with the Navy moving the planes into their pre-takeoff positions.\footnote{Lisle A. Rose, *The Ship that Held the Line: The U.S.S. Hornet and the First Year of the Pacific War*, 68.} With the final conditions check for the mission complete, at 8:20 a.m. Doolittle was given the ‘go’ and after releasing his brakes, he jolted towards the end of the flight deck, raising his forward wheel up and successfully taking off with enough room to spare providing confidence to the other fifteen B-25s next in line. The remainder of the raiders all took off successfully from *Hornet* with an average of 4 minutes lapsing between each takeoff with the final B-25 taking off at 9:21.

Over two weeks off from not flying their aircraft the “Navy way,” proved a lack of muscle memory and anxiousness amongst the Raiders, creating more than a few narrow escapes when taking off from *Hornet*. Lt. Miller, who was able to stay with the Raiders throughout this period, recalled that, “It was a wet, windy, rough, and miserable morning.”\footnote{H.L. Miller, “Training the Doolittle Fliers,” In the Pacific Remembered: An Oral History Collection, 75.} Gale force winds coupled with the constant rocking of the ship and engines of the B-25s forced the Navy deck hands to wear safety lines to keep from being blown into the whirling propellers. As the engines were revving up, moving into takeoff positions and conducting takeoff procedures, deck hands

\footnote{Clayton K S Chun, *The Doolittle Raid 1942: America’s First Strike back at Japan*, 49.}
\footnote{Lisle A. Rose, *The Ship that Held the Line: The U.S.S. Hornet and the First Year of the Pacific War*, 68.}
\footnote{H.L. Miller, “Training the Doolittle Fliers,” In the Pacific Remembered: An Oral History Collection, 75.}
“had to literally drop to the deck and hang on with our fingers in the tie-down fittings.”\footnote{James Scott, \textit{Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor}, 179.} Even with these conditions present, Doolittle had a perfect takeoff but after the second and third aircraft narrowly escaped disaster due to their stabilizer not being in the neutral position, Lt. Miller, helping provide each aircraft with critical information prior to takeoff, wrote on his chalkboard, keep stabilizer in neutral. Lt. Lawson, piloting the seventh B-25, who made several severe piloting errors throughout the flight, was so anxious he forgot to put his flaps down and was the closet Raider to taking a tragic dip in the Pacific but noted in his autobiography that thankfully, “He got away with it.”\footnote{Ted W. Lawson, \textit{Thirty Seconds Over Tokyo}, 56.} As the flight deck increased as more and more planes took off, the remaining Raiders had few issues taking off from \textit{Hornet} and once aloft, each crew got comfortable and prepared themselves for the long flight to Japan.

Naval officers watching the Army pilot’s takeoff from \textit{Hornet} provided mixed reviews on the techniques used to successfully takeoff from the aircraft carrier. With Doolittle taking off so flawlessly, using the correct takeoff procedures and having the least amount of flight deck, Lt. Cdr. Jurika stated, “there was no reason for anybody to have any trouble getting off that deck. If Doolittle could do it with the same fuel load, the same load of bombs and everything else, everyone else could do it very easily.”\footnote{\textit{Doolittle Raiders Association Records}, The Reminiscences of Captain Stephen Jurkia Jr. –USN, Ret., (1979): 477.} Mitscher gave a more scathing report and after watching every B-25 takeoff with a mix of both shock and disbelief he stated, “With only one exception, takeoffs were dangerous and improperly executed. As each plane neared the bow, with more than required speed, the pilot would pull up and climb in a dangerous near-stall, struggle wildly to nose down, then fight the controls for several miles trying to gain real flying
speed and more than a hundred feet of altitude.”¹⁷⁸ Lt. Miller, understanding the Army airman may have perfected short takeoffs while on land, they had still never attempted a takeoff from an aircraft carrier under realistic conditions. He was very proud of them stating, “Takeoffs were made under the most trying conditions, the ship was pitching badly and they did a mighty good job of it.”¹⁷⁹ Miller later said, “Without a doubt every officer and man aboard the Hornet would have pinned every medal in the world on those people who went off that deck in those airplanes. They really had what it took.”¹⁸⁰ With so much distance between Hornet and their designated airfields in China, “we knew the pilots didn’t have a Chinaman’s chance of getting to China with those airplanes;” yet all eighty Raiders gladly accepted the challenge without thinking twice.¹⁸¹

With each crew given their specific primary and secondary targets, the sixteen aircraft configured into five separate, three aircraft formations. Once configured, each flight navigated towards the targeted cities of Tokyo, Yokohama, Kobe, Nagoya or Osaka on the Japanese island of Honshu. Although Doolittle remained the only aircraft not assigned into a specific flight, he led the way for the other flights towards Honshu ultimately dropping his bombs on Tokyo. The first three flights bombed select targets in Tokyo with the fourth flight bombing Yokohama and the fifth flight splitting up individually to bomb Kobe, Nagoya and Osaka.¹⁸² The selected military and economic targets the Raiders successfully bombed were oil refineries, fuel tank farms, ammunition factories, supply depots, dock yards and airplane manufacturing sites.

Helping to lessen the anxiety of each crew, the Japanese integrated defense of Tokyo was relatively light, uncoordinated and not very accurate due to the speed and surprise of the

¹⁸⁰ James Scott, Target Tokyo: Jimmy Doolittle and the Raid that Avenged Pearl Harbor, 184.
¹⁸¹ H.L. Miller, “Training the Doolittle Fliers,” In the Pacific Remembered: An Oral History Collection, 76.
raid. However, as more B-25s flew over Tokyo, the air defense artillery became more accurate with the Japanese more alert to what was occurring over their city. Navigator Lt. Griffin, on the ninth aircraft, confirmed that Doolittle, being the first aircraft, may not have had much opposition flying over Tokyo, but his aircraft flying about fifty minutes after Doolittle’s flight received a lot of flak and pursuit aircraft fire, taking several hits to their fuselage before they were able to get out of the defensive zones. Helping add confusion to both the Japanese defense plan and civilians in Tokyo, the same morning of the raid, Tokyo conducted an air raid rehearsal, allowing many civilians to believe that Doolittle’s bombers and the sirens heard were just part of the rehearsal. The rate of speed, single flights the bombers were traveling in and different approaches the bombers took towards their targets in Japan, prevented many Japanese aircraft, once airborne, to find the Raiders and engage them before they were well out of range. These positive offensive aspects allowed all of the Raider’s to successfully accomplish part one of their mission, achieving great strategic and psychological effect as a result. Accomplishment of part two would prove unfeasible due to the poor coordination between the Chinese and American liaisons and the lack of fuel the bombers had in reaching their designated landing sites.

Out of the sixteen bombers, all but one decided to follow Doolittle’s instructions and attempt to land in China. Captain York and his B-25 numbered 40-2242, was the eighth aircraft to takeoff at 8:46 and after the four hour flight to Japan, successfully bombed targets of opportunity on the outskirts of Tokyo but due to his high fuel consumption, he estimated his aircraft could not make the additional three hundred miles needed to make the Chinese coastline. He instead chose to fly to the Soviet Union and after landing near the city of Vladivostok, his crew and aircraft were interned until 1943. Not until after Capt. York’s crew were able to get back into Allied hands was he able to let Doolittle know, the replacing of his carburetors by the

183 Kevin C. McHugh, “Navigating from Shangri-La: Cincinnati’s Doolittle Raider at War,” 10.
civilian mechanics at McClellan caused the lack of range needed to get to China. The other
bombers were able to at least reach the Chinese coastline before lack of fuel forced them to
either crash land or bail out over China.

After nearly four months of planning, coordinating and training for the Tokyo Raid,
about the only thing that went perfectly during the mission was loading the aircraft on board the
USS Hornet; but the lessons learned were immense between the Army, Navy and civilian
authorities helping to pave the way for more joint operations in the Second World War.
Teamwork, a sense of duty and mission accomplishment drove all interested parties to put their
rivalries aside, allowing a strong unity of effort towards striking back at the Japanese after their
dastardly attack on Pearl Harbor. The destruction of military targets in Japan may have been
minimal but this first joint action was far from insignificant in helping to thwart the Japanese
initiative after four months of military defeats for the United States and our other Allied partners.
Chapter VIII.
Analysis of the Doolittle Raid

Over the last seventy years, the general interpretations from numerous American and Japanese historians of the Doolittle Raid’s significance have grown more strategic than just the original tactical level success and psychological effect the operation achieved. When viewing Japanese military records along with post-war interviews from former Japanese belligerents, it is clear the raid severely affected top Japanese military and political leaders as well as civilians that witnessed the American bombing of targets in Japan. As family members living in Japan wrote letters of concern about the bombing of Tokyo to their loved ones serving the Emperor in far off duty stations like the Solomon’s, the raid also had effects on these service members who believed the home islands were impenetrable to attack from a foreign nation. Japan’s top military and political officials, men serving in the Imperial Military and the citizens of the Empire were in a state of euphoria after the four months of sheer military domination following the attack on Pearl Harbor on 7 December 1941. By occupying huge areas in Southeast Asia, Indonesia, Wake Island, Guam and New Guinea, Japan’s Empire vastly expanded within these four months. The Japanese also soundly defeated the British, Dutch and American Military’s in Java, Singapore and the Philippines, where Lt. Gen. Wainwright and his Army were fighting a desperate battle of survival against the Japanese on the island of Luzon.

Immediately after the Japanese attack on Pearl Harbor, President Roosevelt was adamant about retaliating against the Japanese by bombing their home islands. Although Lt. Col. Doolittle and Navy planners were the principle designers of the Tokyo Raid, the original concept came from the outputs of the January 1942 Arcadia Conference. When planners were deliberating on solutions to deliver U.S. Army Air Force aircraft to North Africa as part of
Operation TORCH, Admiral King recommended using Navy aircraft carriers to deliver both twin engine bombers and fighters onto the North African continent; the fighters could simply takeoff from the carriers whereas the bombers would have to be off-loaded once the carriers docked safely. Sparked with the thought of transporting Army bombers to Africa via aircraft carriers, Gen. Hap Arnold, the commander of the AAF, made a note to research what twin engine bombers had the capability to successfully takeoff from an aircraft carrier.

Out of the eighty Raiders that participated in the raid, four died during the bail out or crash landings over China. Eight Raiders became prisoners of war with three executed by the Japanese after a trial deemed them guilty of war crimes. The remaining five were imprisoned for the remainder of the war with only four surviving the maltreatment during their imprisonment eventually returning to back to the United States after the wars completion. As the Raiders slowly linked up with one another, they traveled to Chinese safe areas with the assistance of Chinese partisans, government workers and Christian missionaries. The air route the Raiders eventually used to get back to the United States was generally through India, Africa, the Azores, South America, the Caribbean and finally Washington DC.

The aftermath of the Doolittle Raid for the Chinese, was not pleasant and once it was determined the B-25s had flown to China after the raid’s completion, the Japanese Army within the area immediately ceased all other operations and deployed to areas the B-25s had crashed. Japan’s goal was to capture all Chinese airfields within the Chekiang and Kiangsu Provinces and capture or kill all the local or guerrilla Chinese citizens that assisted the American aviators. This operation was code named “Sei-Go,” and caused massive reprisals on the Chinese within these provinces with Chiang Kai-Shek and Brig. Gen. Chennault informing President Roosevelt that,

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184 Carroll V. Glines, The Doolittle Raid: America’s Daring First Strike Against Japan, 10-11.
“The Japanese troops slaughtered every man, woman and child in those areas – let me repeat – these Japanese troops slaughtered every man, woman and child in those areas;” these claims were confirmed to be widely exaggerated and the exact number of Chinese citizens killed because of the raid is still unconfirmed but the death toll realistically ran as high as 20,000 Chinese killed at the hands of Japanese troops.\textsuperscript{186}

Once home from China, many of the Doolittle Raiders continued to serve in the Army Air Force predominately in the European Theater in areas such as North Africa, Italy and England; other Raiders remained in Asia to serve within either the 10\textsuperscript{th} of 14\textsuperscript{th} Air Force in the China, Burma and India Theater. Once Doolittle, now a Major General, was given command of the 12\textsuperscript{th} Air Force in North Africa, as part of Operation TORCH, he made it a point to try to get as many of the airmen that participated in the raid within his North African command. As the war progressed, many of the Raiders continued to fly the B-25 but some transitioned over to either single seat fighters or heavier bombers like the B-17 or B-24.

Over the last 70 years, the aftermath of the raid’s significance has changed based off the information writers and historians acquired. At home in the United States, the successful bombing of Tokyo reached American newsstands and radio broadcasts the same day of the attack on 18 April 1942. American morale was immediately lifted and in a single month, \textit{The New York Times}’ featured front page headlines about the raid’s success four times while also publishing over thirty articles about the raid; \textit{The Los Angeles Times} reported that America had found a new hero, and it was James Doolittle, emphasizing in front page headlines that “Doolittle Did It!”\textsuperscript{187} Timed to maximize the morale boost amongst Americans, on 19 May 1942, the day

\textsuperscript{186} Ian W. Toll, \textit{Pacific Crucible: War at Sea in the Pacific, 1941-1942} (New York: W.W. Norton & Company, 2012), 300-301.

\textsuperscript{187} Andrew P. Stohlman, “The Doolittle Raid in History and Memory,” (master’s thesis, University of Nebraska at Lincoln, 1999), 30.
Doolittle returned from China, President Roosevelt awarded him the Congressional Medal of Honor with the other 79 Raiders awarded the Distinguished Service Cross in a public ceremony that many newspaper and radio journalists viewed.188

Books and magazines referencing the raid began appearing as early as 1943, with Captain Ted Lawson, who piloted the seventh B-25 #40-2261, famously named the “Ruptured Duck,” because of the planes supposed bad luck, published his account of the Doolittle Raid entitled *Thirty Seconds Over Tokyo*, which became a hit blockbuster movie with the same name in 1944. By the end of 1944, two other movies about the raid hit the big screens with Hollywood producers trying to capitalize as much as they could on the joint operation that took the Japanese by surprise because of American audacity and grit. The famous Naval Historian Samuel Eliot Morison, stated that “no event in the war prior to the Battle of Midway gave the American people so much satisfaction as the news that Tokyo had been bombed.”189

From Gen. Hap Arnold and the AAF’s perspective, the raid was only partially successfully because no Air Force mission is considered a success when more than ten percent of the aircraft do not return home from the mission. With none of the B-25s landing in China, so they could be turned over to the 10th Air Force for future operations against the Japanese, Doolittle only achieved half of his mission. In fact, Lt. Col. Doolittle, while still in China, thought the mission was a complete failure due to all of the aircraft being lost; he was concerned the AAF would court martial him for the mission’s failure and never allow him to fly again. The poor coordination between the State Department, the U.S. Army and attaches’ operating in China with Chiang Kai-shek, led Brig. Gen. Clair Chennault, the famous leader of the Flying Tigers, to become furious that his unit was not informed about the raid, where he strongly believed for

188 Andrew P. Stohlman, “The Doolittle Raid in History and Memory,” 31.
could have provided air cover for the bombers as they entered Chinese airspace and escort them to their designated landing strips.\textsuperscript{190} Ultimately, Doolittle and leaders within the AAF gladly accepted the loss of the sixteen B-25 bombers after they learned of the immense psychological success the raid caused on the Japanese, forcing them to reevaluate their future strategic operations in the Pacific and how they would defend the Emperor and the home islands.

From the Japanese perspective, the “Tokyo Raid” was so militarily insignificant it was almost laughable causing only light structural damage to the various economic targets and damaging the light Japanese carrier \textit{Ryuho} while in dry dock in Yokosuka, preventing her from participating in Japan’s upcoming operation to seize Port Moresby, New Guinea; psychologically though, the raid’s impact was enormous on the military leaders sworn to protect the Emperor and the home islands.\textsuperscript{191} The thought that the Emperor’s life was placed in danger by the militaries inability to safe guard Tokyo led many Japanese leaders to take ill and feel immense guilt; furthermore, the fact that no B-25 bomber had been shot down by Japanese defenses “only made the whole episode even more mortifying.”\textsuperscript{192}

On April 20, the Imperial Military conducted a joint planning conference to determine how the Americans were able to bomb Tokyo and what the Japanese response would be. The output of this meeting deemed that although the Army was tasked with primary defense of the home islands, the Navy was ultimately held responsible due to the bombers coming from American aircraft carriers in a sea-borne attack.\textsuperscript{193} Admiral Yamamoto, already in a state of severe depression immediately called for the need to expand the eastern outer defense ring of the

\begin{footnotes}
\item[190] Duane Schultz, \textit{The Doolittle Raid}, 211.
\item[192] Ibid., 43.
\end{footnotes}
Empire. His proposal, which he and his staff tried unsuccessfully to get approved over the last month, mainly due to army opposition, was to seize Midway Island. Yamamoto claimed that Midway Island, located in the Central Pacific and almost halfway between Japan and Hawaii, was the next logical step for the Imperial Military to seize and after its occupation would not only increase Japan’s overall security but also be the primary staging point for the eventual seizure of the Hawaiian Islands. The Imperial Military Headquarters believed this plan was too aggressive and unsustainable, but due to the embarrassment the Doolittle Raid caused, the military reluctantly agreed to the plan after the Army seized Port Moresby.

Japanese leaders tried their best to use propaganda to quash any civilian fears that Japan was in major danger from the US, blocking off all bombed areas to the public for several weeks and describing the raid in the papers and radio as a failed venture that was a desperate and uncivil act from the American’s that were close to defeat. With Japanese leaders claiming they had shot down most of the bombers, they even took steps of bringing back from China, pieces of crashed B-25s to prove they had shot down numerous planes. Nevertheless, to onlookers of the raid, the damage was done, with many civilians sharing their thoughts in letters to loved ones, about the state of panic and anxiety they now live in. Saburo Sakai, an Imperial Navy fighter pilot received a letter from his cousin sadly stating that the raid “has brought about a tremendous change in the attitude of our people toward the war. Now things are different; the bombs have dropped here on our homes. It does not seem any more that there is such a great difference between the battlefront and the home front.” In post war interviews, Sakai stated he and his fellow airmen were “unnerved” about the Tokyo Raid and “the knowledge that the enemy was

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strong enough to smash at our homeland, even in what might be a punitive raid, was cause for serious apprehension of future and heavier attacks.”

As the Naval liaison officer and primary trainer to the Doolittle Raid, Lt. Miller observed all twenty-four crews from day one of training till the final B-25 took off from the USS Hornet on 18 April 1942, and after the raid’s execution, he delivered to the joint force his after action report with several recommendations on what to improve in the event the same type operation occurred again in the future. Within this report, he listed the following recommendations:

1) In order to keep the nose wheel locked and straight during takeoff, nose wheel pins should be installed to prevent any left or right movement from the front wheel. Flight line service members should only install these pins after the aircraft is set and ready for takeoff on the flight line.

2) From day one of the training period through execution of the mission, a senior Army flight engineer should be assigned to the operation. The few engineers participating in the operation were not experienced enough with the B-25, particularly after the extensive modifications were complete, resulting in numerous B-25s taking off with faults preventing their aircraft from operating at 100% efficiency. Some of these faults included leaky bomb bay fuel tanks, unserviceable top gun turrets and unserviceable .50 caliber machine guns. While on board the USS Hornet, Army crew members over relied on Navy mechanics to fix both minor and major B-25 problems, where experienced Army flight engineers could have easily fixed these problems. Although, the Navy was more than willing to help their Army counterparts, this is one of many examples where the Doolittle Raiders made an unfavorable impression to their joint partners.

3) At least four extra batteries and three spare generators with extra fuse sets and plugs per aircraft should be carried onboard the naval vessel to ensure there are sufficient replacement parts if needed. While cruising to the takeoff departure point, batteries and

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195 Ibid.
generators became unserviceable and required replacement from the Navy’s shop stock inventory; bringing extra parts, would have prevented the Navy from using its stockpile.

4) Although the Raiders carried 1,126 gallons of fuel adding 6,756 extra pounds of weight to the aircraft, Lt. Miller recommended in the future, each aircraft carry an additional one hundred gallons of fuel. The originally planned 1,126 gallons of fuel each B-25 carried was only designed to allow the aircraft to reach their planned landing zones under the assumption the aircraft would launch from a range of 400 to 450 miles away from Japan. An extra one hundred gallons, although adding an additional six hundred pounds to the aircraft, would provide increased range, in the event the B-25s had to takeoff early.

5) Miller believed too many outside organizations and administrators were involved in the Doolittle Raid, and in the future, these should be minimized to increase operational security. When it came to the Raiders being paid, “Too many people want to know why the crews were supposed to be paid all over the country.” At the civilian B-25 overhaul repair shops and maintenance bays, individuals wanted to know too much about the reasons for why adjustments were required for the aircraft. Miller recommended this number should be cut to only the minimal number with all overhaul or repair work completed at one location instead of the three locations used by the twenty-four aircrews.

6) Lastly, both Lt. Miller and Lt. Col. Doolittle were displeased with the performance of the majority of the navigators with Miller writing, “More experienced navigators should be assigned to such an exacting assignment.” Lt. Col. Doolittle often had to scowl them in order for them to take their job and work seriously.

In October 1942, after they were able to interview thirteen of the sixteen air crews that conducted the Doolittle Raid, the Army Air Forces Director of Intelligence conducted an intelligence summary on the effectiveness of the mission. An overwhelming theme that came out of this summary, and seconded by Doolittle in his after action review, was the importance that no country should be without home defenses and an adequate and integrated communication and air defense system.197 The Pearl Harbor attack already reinforced this point in the United

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197 Patrick Clancey, “Informational Intelligence Summary (Special) No. 20,” Hyper War Foundation, October 5, 1942, microfilm, 7-8.
States but for the Japanese, the Doolittle Raid was a hard lesson in the lack of effectiveness of their home defense integrated air defense system. The summary also found the modifications to the B-25 were adequate and useful with many of these modifications later permanently installed in future models of the aircraft. Both the M-43 demolition bombs and M-54 incendiary cluster bombs were determined as very effective and these munitions were used in the future throughout both theaters of war.198 One of the biggest regrets from the intelligence community was not knowing how poor Japan’s defense of Tokyo would be and “had it been known beforehand how complete was going to be the surprise and how weak the resistance, it would have been possible to concentrate all planes on such a target such as the Mitsubishi Aircraft Factory.”199

By far the biggest improvement of the raid should have been better coordination with the American Military Mission to China and Lt. Gen. Stillwell. Multiple parties on both sides of the Pacific were at fault for the incomplete coordination, but Gen. Arnold could have been more deliberate with the information he provided Stillwell. The Air Service Command made gallant efforts to supply the airfields with the required resources needed but due to weather and the lack of resources to complete their mission, none of the airfields were ready to receive the B-25s. Stillwell could have done a better job of conveying this information to Arnold; but Stillwell was also working off of incomplete information and was not given the date to expect the Raiders until 14 April.200 With the lack of information Stillwell received, he or his Air Force Chief, Brig. Gen. Bissell, cannot be blamed for the lack of preparation of the airfields. Stillwell was not an aviator nor did he have any sympathy for aviation problems, particularly when he received such minimal information from a general officer who was not in his direct chain of command.201

199 Ibid., 8.
201 Carroll V. Glines, The Doolittle Raid: America’s Daring First Strike Against Japan, 46-47.
Furthermore, throughout the months of March and April 1942, Stillwell was rarely in Chungking due to his respective command responsibilities with saving Burma from falling into the hands of the Japanese.\textsuperscript{202} With such limited information on the true intentions of special aviation project, Stillwell rightly assumed that operations in Burma took precedence over the preparations on Eastern Chinese airfields. The details of the Tokyo Raid were also kept from Col. Chennault, causing major frustrations from Chennault, and later the Doolittle Raiders once they found out, because the Chinese Air Task Force had an intricate aircraft warning system throughout this portion of China; had Chennault known about the Raid, he could have easily set the conditions to receive the B-25s at the airfields and potentially even provide the bombers fighter escort as they entered Chinese airspace.\textsuperscript{203}

In a rare planning mishap from Capt. Duncan, he failed to take into account that Task Force 16 would eventually cross the international date line, effecting losing a calendar day. As the task force crossed the International Date Line on 13 April, they leapt into 15 April, completely skipping 14 April. This was a major detail both the Navy and Army left out of the plan; and although ultimately inconsequential due to the Raiders launching early and the airfields not being ready to receive the B-25s, it could have had disastrous effects had the mission gone as planned. Furthermore, Chinese officials and U.S. military members in China, expected the Raiders on 20 April versus the 19\textsuperscript{th}, but authorities at Pearl Harbor or Washington failed to notify Chungking that Doolittle’s formation had to depart early, causing difficulties for the Raiders explaining who they were once they were in China bringing a few close calls of being shot by unsuspecting local nationals.\textsuperscript{204}

\textsuperscript{202} Duane Schultz, \textit{The Doolittle Raid}, 80.
In their book *Midway: The Battle That Doomed Japan, the Japanese Navy’s Story*, Mitsuo Fuchida and Masatake Okumiya stated that although the Tokyo Raid may have caused little physical damage, it’s true success came from the psychological damage it caused on the Japanese Military and her citizens. Japanese propaganda may have downplayed the raid’s success by calling it the “do-nothing” or “do-little” raid but this was far from the truth and on the contrary, the American mission to bomb Tokyo must be regarded as a “do-much” raid.205 On that day in history, seventy-nine courageous men with one well renown aviation pioneer as their leader, conducted an audacious plan that the U.S. Military was unsure would even work. Nobody had ever attempted to launch a B-25 medium bomber, loaded with a crew of five men, 2,000 pounds of bombs and topped off with 1,141 gallons of fuel weighing an average 31,000 pounds off a U.S. Navy aircraft carrier.206 Further anxiety was caused after a Japanese picket boat compromised the location of Task Force 16 forcing the Doolittle Raiders to takeoff over 400 miles from their planned departure distance. Fully knowing the hazards of this mission, the Raiders gladly accepted the order not knowing one, if their bombers would successfully takeoff from the *Hornet* and two, not knowing if their aircraft had enough fuel to reach their assigned landing areas in China. The realistic and tough training developed by Lt. Col. Doolittle, Maj. Hilger and Lt. Miller ensured that ever airmen participating in the raid were confident enough in their airframe, crew and ability to successfully conduct all aspects of their mission.

205 Mitsuo Fuchida and Masatake Okumiya, *Midway: The Battle that Doomed Japan, the Japanese Navy’s Story*, 97.
Chapter IX.
Conclusion

After Pearl Harbor, the United States and her Allies were on the ropes facing a very tough and determined Japanese opponent in the Pacific Theater. Four months of defeats and disappointments at the hands of the Japanese Military was swept aside by the successful bombing of Tokyo by Lt. Col. Doolittle and his seventy-nine Raiders. This raid has gone down in history as not only the raid that avenged Pearl Harbor, but also as an inflection point in the Pacific for both the United States and Japan. Strategy changed on both sides with the United States taking the offensive against the Japanese in the Solomon’s and New Guinea. The defeats of the Japanese Navy at the battles of the Coral Sea and Midway allowed the United States to remain on the offensive and thwart any remaining ambitions the Japanese had to expand their empire and outer ring defenses.

Militarily speaking the structural damage caused by the sixteen B-25s was minimal but the strategic and psychological impact the raid had on the Japanese, was enough to force a drastic change in the forces needed to defend the home islands and the reinforced notion that the Empire needed to expand its outer defensive ring. This opinion was not accurate and not shared or recommended by staff planners working within the highest Japanese Military headquarters but once approved, forced the Japanese into haphazard planning for the invasion of Midway, the Aleutian Islands and Port Moresby, New Guinea which turned into disasters for both the Japanese Army and Navy.207 Had it not been for the Doolittle Raid, these haphazard decisions may have never taken place.

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207 Mitsuo Fuchida and Masatake Okumiya, Midway: The Battle That Doomed Japan, the Japanese Navy’s Story, 104-105.
The Doolittle Raid was the first American joint action conducted in the Second World War with many more following prior to the completion of the conflict. It established several of the principles used to plan future joint operations. Whenever possible, planning and decisions were made with both Army and Navy personnel present in order to ensure all contingencies were thought through and risk minimized fully. Decades before World War II and throughout the first several months of the war, each service did not like each other, normally resulting in an us versus them attitude, and each service generally did not want to work with each other; but once the concept of the raid was approved, interservice rivalries were put aside from the highest levels of command down to the lowest Soldier or Seaman level until the completion of the mission. The unity of effort placed into accomplishing the raid was based off the mutual understanding and determination to defeat the Japanese in the Pacific and avenge the attack on Pearl Harbor and subsequent American loses within the theater.

This mutual respect continued until the day the bombers were required to takeoff much earlier than expected causing an attitude amongst many of the Raiders that the Navy let them down. The plan was for the Navy to launch the Army aircraft between 400 to 450 miles from Tokyo, but due to Task Force 16 and the Raiders rapid actions on the morning of 18 April, nobody provided the Army Airman, outside of Doolittle, the dire reasons for the early launch. It wasn’t until Doolittle informed the majority of the Raiders in Calcutta, India, of the reason behind the early launch that their negative attitudes towards the Navy minimized.208

The risk to the U.S. Navy was great during the execution of the raid and from the time Task Force 16 departed until they returned to Pearl Harbor, Admiral Nimitz had a feeling of immense regret allowing fifty percent of his carriers, the backbone of the Navy, to take part in an

operation that could prove fatal if his carriers were lost. 209 The Army normally gets the largest accolades for their part in the Tokyo Raid, but it was the Navy, with so much more to lose in the Pacific Theater, that led the preponderance of the operation transporting the Raiders over 5,000 miles across the Pacific and into the backyard of the Japanese Empire. It took upwards of 10,000 Sailors to operate the sixteen naval vessels that transported the Raiders to their launch site and once complete, they then had to traverse the same dangerous waters they had just come from with a fully alerted Japanese military. But similar to Doolittle and his seventy-nine Raiders, the Navy was up for the challenge and eager to get into a fight with the Japanese.

Perhaps the greatest significance of the Doolittle Raid was that it was mounted from U.S. Naval aircraft carriers and until Japan could destroy these enemy assets, there was little to be gained by the Japanese gaining territory in Southeast Asia and India, if her soft eastern underbelly was exposed to attack. 210 The Japanese may have had tremendous military success throughout the numerous months after Pearl Harbor, but if they could not protect the Emperor they worshipped or their capital city, there was little point in their grand strategic vision for the Empire. The raid made a mockery of the significant gains the Japanese military achieved throughout the Asia-Pacific Region and must have been a bitter pill to swallow for Japanese commanders operating so far away from their country and family members. 211 “The Doolittle Raid, therefore, forced the Japanese high command to face up to the reality that their conquests could not be secured, that the safety of the homeland could not be guaranteed, and that the

peoples of Southeast Asia could not be reconciled to Japanese rule unless and until the Americans were defeated.”

Had it not been for the unity of effort throughout the total Joint Force, the 18 April 1942 Tokyo Raid would not have been able to take place. From January until mid-April, the Army and Navy put aside biases and rivalries in an effort to strike back against the capital city of Japan. Duties and responsibilities were evenly distributed out amongst the services to plan, coordinate, train for and execute a bombing raid on Tokyo and leaders throughout both services made a strong effort to keep their counterpart informed on changes or updates to the plan. Coordination was not always perfect and mistakes were made along the way, but for the most part, the Doolittle Raid was a fine first action for the Joint Force in the Second World War. The lessons learned were applied to future joint operations and the modifications to the B-25s and the munitions used in the raid, pioneered new equipment that continued to provide use to the Allies against the Axis Powers throughout the rest of the war. On this seventy-five year anniversary of the Doolittle Raid, today’s Joint Force can look back at this raid as a great example of a tactical mission that caused strategic effects for both the United States and Empire of Japan during a period where the United States and her Allies were on the ropes in the Second World War.

\[212\] Ibid., 460.
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**Technical and military sources:**


**Websites:**
