

AIR POWER

SPRING 2017 - Volume 64, Number 1
WWW.AFHISTORY.ORG

History

know the past

....*Shape the Future*





The Air Force *Historical* Foundation

Founded on May 27, 1953 by Gen Carl A. “Tooey” Spaatz and other air power pioneers, the Air Force Historical Foundation (AFHF) is a nonprofit tax exempt organization. It is dedicated to the preservation, perpetuation and appropriate publication of the history and traditions of American aviation, with emphasis on the U.S. Air Force, its predecessor organizations, and the men and women whose lives and dreams were devoted to flight. The Foundation serves all components of the United States Air Force—Active, Reserve and Air National Guard.

AFHF strives to make available to the public and today’s government planners and decision makers information that is relevant and informative about all aspects of air and space power. By doing so, the Foundation hopes to assure the nation profits from past experiences as it helps keep the U.S. Air Force the most modern and effective military force in the world.

The Foundation’s four primary activities include a quarterly journal *Air Power History*, a book program, a biennial symposium, and an awards program.

MEMBERSHIP BENEFITS

All members receive our exciting and informative *Air Power History Journal*, either electronically or on paper, covering all aspects of aerospace history

- Chronicles the great campaigns and the great leaders
- Eyewitness accounts and historical articles
- In depth resources to museums and activities, to keep members connected to the latest and greatest events.

Preserve the legacy, stay connected:

- Membership helps preserve the legacy of current and future US air force personnel.
- Provides reliable and accurate accounts of historical events.
- Establish connections between generations.



AIR POWER

Spring 2017 - Volume 64, Number 1
WWW.AFHISTORY.ORG

History

know the past
....*Shape the Future*

Features

- Considered Advisable under Existing Conditions:
Philippine Airpower, 1912-1939
William Cahill 7
- Special Operations by Airpower: Strategic Lessons from World War II
Adam Leong Kok Wey 33
- What Might Have Been—XX Bomber Command's B-29 Offensive against
Japanese Oil Supplies in The Netherlands East Indies and Borneo
John F. O'Connell 41
- False Claims About the Tuskegee Airmen
Daniel L. Haulman 47
-

Book Reviews

- "Blackie" Captain Harold F. Blackburn, A Pioneering, Twentieth Century Pilot in Peace and War*
By William C. Cass Review by Jeffrey P. Joyce 56
- The Hunter Killers: The Extraordinary Story of the First Wild Weasels...*
By Dan Hampton Review by Michael A. Nelson 56
- Aircraft Carriers: The Illustrated History of the World's Most Important Warships*
By Michael E. Haskey Review by Daniel J. Simonsen 57
- Spyflights and Overflights: U.S. Strategic Aerial Reconnaissance Volume I, 1945-1960*
By Robert S. Hopkins, III Review by Tony Galeano 57
- My War in Italy: On the Ground and In Flight with the 15th Air Force*
By Keith W. Mason Review by Michael J. McCarthy 58
- Lindbergh: A Photographic Biography of the Lone Eagle*
By Bruce McAllister & Stephan Wilkinson Review by Scott Marquiss 59
- The Papers of George Catlett Marshall, Volume 7*
By Mark A. Stoler, ed. Review by Sherman N. Mullin 60
- The American Bomb in Britain: U.S. Air Forces' Strategic Presence, 1946-1964*
By Ken Young Review by Steve Agoratus 60
- Vanished Hero: The Life, War, and Mysterious Disappearance of America's World War II Strafing King*
By Jay A. Stout Review by Robert Huddleston 61
- EAA Oshkosh: The Best Airventure Photography*
By Jim Busha, Hal Bryan & Dick Knapinski Review by Steve Agoratus 62
- Flight Badges of the Allied Nations 1914-1918: Volume II...*
By Robert S. Pandis Review by Carl J. Bobrow 63

Departments

- President's Message 5
- Books To Review 64
- Upcoming Events and Reunions 65
- New History Mystery 68



Air Force Historical Foundation
P.O. Box 790
Clinton, MD 20735-0790
(301) 736-1959

E-mail: angelabear@afhistory.org
On the Web at <http://www.afhistory.org>

Board of Directors

Maj Gen Dale W. Meyerrose, USAF (Ret.)
Chairman
Lt Gen Charles L. Johnson II, USAF (Ret.)
First Vice Chairman
Lt Gen Stephen G. Wood, USAF (Ret.)
Second Vice Chairman
Lt Gen Christopher D. Miller, USAF (Ret.)
Secretary
Col Thomas A. Owens, USAF (Ret.)
Treasurer
Col Clarence R. Anderegg, USAF (Ret.)
Col Scott C. Bishop, USAF (Ret.)
Col William J. Dalecky, USAF (Ret.)
Lt Col (Dr.) Dik Daso, USAF (Ret.)
Lt Gen Robert J. Elder, USAF (Ret.)
CMSgt Robert L. Frank, USAF (Ret.)
Lt Col Steven Gress, Jr., USAF (Ret.)
Ms. Jonna Doolittle Hoppes
Lt Gen Nicholas B. Kehoe, USAF (Ret.)
Gen Lloyd W. Newton, USAF (Ret.)
Mr. Daniel R. Sitterly, USAF SES

Editor, *Air Power History*
Richard I. Wolf

Editor Emeritus, *Air Power History*
Jacob Neufeld

Staff

Lt Col James A. Vertenten, USAF (Ret.)
Secretary to the Board and
Executive Director
Mrs. Angela J. Bear, Office Manager

Patron Members

Col Gerald F. Christeson, USAF (Ret.)
Col Dennis M. Drew, USAF (Ret.)
Maj Gen Charles J. Dunlap, Jr., USAF
Lt Col Raymond Fredette, USAF (Ret.)
Dr. Rebecca Grant
Mr. Richard Lawless
Dr. Jerome V. Martin
Capt Robert Maxson, NOAA
Lt Gen George D. Miller, USAF (Ret.)
Mrs. Marilyn Moll
Col Bobby Moorhatch, USAF (Ret.)
Col J Calvin Shahbaz
Lt Col Raymond C. Tagge, USAF (Ret.)

President's Circle

Benefactor
Col William J. Dalecky, USAF (Ret.)
Mr. Darrell Dvorak
Lt Col Kenneth W. Sublett, USAF (Ret.)

Wing

Mr. Michael Clarke

Squadron

Gen Lloyd W. Newton
Maj Gen Dale W. Meyerrose
Lt Gen Christopher Miller, USAF (Ret.)
ROKAF Historical Foundation

Flight

Lt Gen Stephen Wood, USAF (Ret.)

CORPORATE SPONSORS

Gold Level (\$10,000 or more)
Lockheed Martin Corporation

AIR POWER *History*

The Journal of the
Air Force Historical Foundation
Spring 2017 Volume 64 Number 1

Editor
Richard I. Wolf

Editor Emeritus
Jacob Neufeld

Book Review Editor
Scott A. Willey

Advertising
Jim Vertenten

Circulation
Angela J. Bear

Air Power History (ISSN 1044-016X) is produced for Spring, Summer, Fall, and Winter by the Air Force Historical Foundation.

Prospective contributors should consult the **GUIDELINES FOR CONTRIBUTORS** at the back of this journal. Unsolicited manuscripts will be returned only on specific request. The Editor cannot accept responsibility for any damage to or loss of the manuscript. The Editor reserves the right to edit manuscripts and letters.

Address **LETTERS TO THE EDITOR** to:

Air Power History
3043 Sunny Ridge Drive
Odenton, MD 21113
e-mail: airpowerhistory@yahoo.com

Correspondence regarding missed issues or changes of address should be addressed to the **CIRCULATION OFFICE**:

Air Power History
P.O. Box 790
Clinton, MD 20735-0790
(301) 736-1959
e-mail: angelabear@afhistory.org

ADVERTISING

Jim Vertenten
P.O. Box 790
Clinton, MD 20735-0790
(301) 736-1959
e-mail: ed@afhistory.org

Copyright © 2017 by the Air Force Historical Foundation. All rights reserved.
Periodicals postage paid at Clinton, MD 20735 and additional mailing offices.

Postmaster: Please send change of address to the Circulation Office.

Once again, this issue struggles to find a theme, other than interesting articles on little-known part of our air power history.

Our first article is by a repeat contributor, William Cahill. It is a lengthy piece on a generally unknown part of our pre-World War II heritage, the development of American air power in the Philippine Islands. I found it fascinating and well-researched.

Our second article is about World War II air missions that should rightfully be considered special operations missions. Adam Leong Kok Wey writes about the bombing of the Ruhr valley dams, attempts to bomb prisoners into freedom, and the Yamamoto shoot-down as precursors to the kinds of missions that today we call special operations.

Our third article, again by a repeat contributor, is a “what if” piece by John F. O’Connell, undertaking to hypothesize about what the path of World War II would have been had the B-29s been unleashed against the Japanese oil industry.

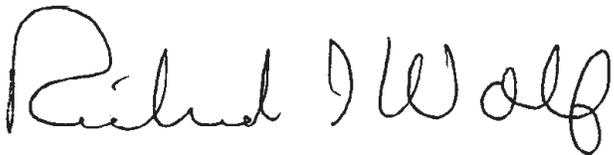
The fourth and final article is an examination by Daniel Haulman of seven claims about the Tuskegee Airmen that are not supported by the historical record. I think it really takes care of most of those false assertions.

We would love to have more of you send in contributions for articles. We can really use more in the way of scholarly pieces, but we also enjoy interesting and less footnoted articles and memoirs that illustrate history for our readers. If you have a submission, forward it.

In that vein, we would love to expand our group of reviewers as well, since we find it increasingly focused on a small circle of people. We want to broaden the appeal, and get more of you involved in your magazine.

Of course, we have our customary batch of book reviews once again. We have eleven this time, starting on page 56. We also continue to list upcoming events of an historical nature starting on page 65, reunion happenings on page 66, and we finish up with our New History Mystery on page 68. We hope you enjoy this fascinating issue.

Please don’t skip over coverage of the Foundation’s annual awards and their ceremony. The I.B. Holley Award is covered on page 6 and is preceded by the President’s Message on page 4. Don’t race by them in your haste to peruse the articles.



Air Power History and the Air Force Historical Foundation disclaim responsibility for statements, either of fact or of opinion, made by contributors. The submission of an article, book review, or other communication with the intention that it be published in this journal shall be construed as prima facie evidence that the contributor willingly transfers the copyright to *Air Power History* and the Air Force Historical Foundation, which will, however, freely grant authors the right to reprint their own works, if published in the authors’ own works.

Just a reminder

Save the date

The AFHF Annual Membership Meeting will take place on Thursday, May 4th beginning at 10:45 AM at Army Navy Country Club in Arlington, Virginia.

The meeting will be followed immediately by a luncheon; the guest speaker for the luncheon will be announced as we get nearer to the event date.

At the membership meeting we will conduct our Board member election for this year's slate of candidates, approve bylaw changes, and apprise the membership of the "State of the Foundation" and our plans as we move ahead.

When we open our registration at our website and via telephone at our office, we will let you know. We hope to see as many of you as possible!

P.S. For those unable to attend, we will offer voting online beginning Monday, April 17th.

Dear Foundation Members and Friends:

You will be pleased to know that, based on several different metrics your Foundation is **growing stronger**. Here is why we believe this:



After a long, slow decline in our membership over many years, we are seeing small but perceptible growth. This is very much contrary to other Air Force affiliated organizations, and hopefully bodes well for our future.

Some of this growth, we believe, stems from our growing social media presence. The response to our “This Day in Air Force History” vignettes via email, Twitter, and Facebook is very encouraging. Last year our growth in Twitter followers was approximately 25%, and we are on pace to exceed that in 2017.

With the most recent upswing in the markets, our Foundation endowment account is keeping pace and is in line with our targeted rate of return. We can with some optimism look forward to a time when the returns on the endowment can supplement our operating income, and enable us to invest in programs and projects that enhance the Foundation’s image and fulfill its mission of educating the public about the value of *Air Power* to our nation’s defense.

For two consecutive Foundation-hosted events (see the report on the Holley Award in this issue) we have been supported by speakers from senior Air Force leadership. Strengthening our relationship with senior Air Force leadership has been our goal for a good number of years. We view this as hopeful sign of a stronger partnership going forward.

Speaking of projects, we are hard at work updating our website; it has remained largely unchanged for eight years. In keeping with modern communications strategy and technology, the website will become the center of our messaging process. Virtually all forms of our communication will emanate from the website and then flow to other more traditional means. Look for this to be unveiled in the next sixty days or so.

However, make no mistake. This is still a tough economic environment for non-profits, and particularly your Foundation. It is an annual struggle for us to meet a budget that services the needs of our membership. And as we look to expand membership services and appeal, we’ll need to find the revenue sources to make it happen. Your continued support is vital to the relevancy and vibrancy of your Foundation.

It is our fervent belief that we are enhancing our reputation as the reliable source for accurate and accessible history of our United States Air Force. As always, let me thank you for the part that each of you played in the history and legacy of *Air Power*, and for your continued encouragement. It makes our role that much easier, knowing you stand with us. This is your Foundation. We need to hear your comments and suggestions as we continue to grow.

A handwritten signature in black ink that reads "Dale W. Meyerrose". The signature is written in a cursive style and is underlined with a single horizontal line.

Dale W. Meyerrose, Maj Gen, USAF (Ret.)
President and Chairman of the Board

Award Ceremonies

January 5, 2017



The Air Force Historical Foundation, along with **U.S. Air Force Chief of Staff David L. Goldfein**, (left, above) presented its **Major General I. B. Holley Award** in ceremonies at the Ft. Myer Officers Club, Arlington, Virginia, Thursday, January 5th. Foundation President **Maj. Gen. Dale W. Meyerrose USAF (Ret.)** (right, above) presided.

The **Major General I. B. Holley Award**, honoring an individual for his or her sustained, significant contribution to the documentation of Air Force history during a lifetime of service, was presented to **Dr. Mark Clodfelter**, (center, above) professor, National Security Strategy, National War College.

Dr. Clodfelter joined the National War College in July 1997. He is a former Air Force officer who was a ground radar officer by specialization. After serving radar tours at Myrtle Beach and South Korea, he spent the remainder of his career in military academia. That service has included two teaching tours in the Air Force Academy's History Department, one at the Air Force's School of Advanced Air and Space Studies (SAASS) at Maxwell AFB, and one as Air Force ROTC Professor of Aerospace Studies at the University of North Carolina at Chapel Hill. He holds a B.S. from the U.S. Air Force Academy, an M.A. from the University of Nebraska-Lincoln, and a Ph.D. from the University of North Carolina at Chapel Hill. He is the author of *The Limits of Air Power: The American Bombing of North Vietnam* (Free Press, 1989), *Beneficial Bombing: The Progressive Foundations of American Air Power, 1917-1945* (University of Nebraska Press, 2010) and numerous articles and book chapters dealing with the American military experience. His area of expertise is American military history, with a special emphasis on air power and the Vietnam War.

Previous recipients of the Holley Award include **2007**: Maj. Gen. (Distinguished Professor Emeritus) **2009**: Mr. Herman S. Wolk; **2010**: Dr. Alan Gropman; **2011**: Mr. Joseph Caver; **2013**: Mr. Jacob Neufeld; **2014**: Col. Walter J. Boyne; **2015**: Dr. Richard P. Hallion.

At the same ceremony, the Foundation presented General Goldfein with an art piece from the National Museum of World War II Aviation entitled "White 33," (left side in photo) a photograph of the last currently flying P-38, which will be hung in the Chief of Staff offices.

And last but not least, the Foundation presented its "Best Book Reviewed" Award to Col. (Dr) Edward Kaplan for his work *To Kill Nations: American Strategy in the Air-Atomic Age and the Rise of Mutually Assured Destruction*.

Considered Advisable under Existing Conditions: Philippine Airpower, 1912-1939



Martin B-10B of the 28th Bomb Squadron, 4th Composite Group circa 1939. Operating from Clark Field, the B-10s introduced to the Philippines an all-metal high speed bomber that aided in the transition to B-17s and B-18s as the clouds of war darkened.
(Authors collection)

William Cahill

The Air Service and Air Corps units assigned to the Philippine Department between 1912 and 1939 were literally at the end of the line. Geographically isolated from their brethren in the United States and at the end of a thin supply chain maintained by a monthly Army Transport from San Francisco, the airmen of the 4th Group could have easily slipped into the mode of many soldiers assigned to a colonial outpost – living a life of luxury until some crisis appears. They did not.

Airpower in the Philippines followed the evolution of that in the United States, morphing from an adjunct to static defenses to an asset capable of projecting power across a large geographic region. This change in focus was accomplished in spite of the economic privations of the Great Depression and created a generation of airmen who were inculcated with the spirit of joint operations and expeditionary movement that would turn the tide of the war in the Southwest Pacific in the dark days of 1942.

The Early Years: 1912-1922

Initial Activities

The acquisition of overseas colonies as a result of the Spanish-American War and other colonial excursions of the late 19th and early 20th centuries left the US Army in a difficult position – the territory they needed to defend grew from the US border to the Philippine Islands, the Hawaiian Islands, and the Panama Canal Zone. Additional infantry and artillery units were shifted to cover these territories, but their harbors (and future US Navy bases) had to be defended. The Taft Board of 1905/6 updated the earlier Endicott Board, taking into account these overseas possessions as well as the evolution of technology over the past twenty years. The “Taft Report” called out two sites in the Philippine Islands as needing defense for “strategic reasons.” Not only did the US naval base and coaling station at Subic Bay require protection, but Manila Bay was of “sufficient military importance” to “deserve adequate defense.”¹

After much deliberation, the War Department proceeded with construction in Manila Bay. The fortifications were spread across four islands, with Corregidor receiving the largest of the installations. Designated Fort Mills, the majority of construction on the island occurred between 1909 and 1920. First to go in were the gun batteries, most being completed by early 1911. The majority of the fort’s supporting structures were complete by 1915, with the Infantry Barracks completed in 1917 and many officers’ quarters finished the following year. Construction would continue

as money was found or the need for facilities arose, all the way up to the start of the Second World War. Though Fort Mills was built to control the entrance to Manila Bay, there was always a concern for the nearby Bataan Peninsula. If this were to fall into enemy hands, siege guns could reduce Corregidor to rubble. The hard part about controlling fire against targets located on Bataan was cover – an enemy battery could be located behind a hill, out of sight of the observation posts of Fort Mills built to control fire against naval targets. As early as 1911, Lt. Col. John Ruckman, commander of the Coast Defenses of Manila Bay, was looking into the question of controlling fire against the Bataan Peninsula and came upon the idea of using aircraft.² That solution was actually closer to being delivered than Ruckman likely anticipated.

Though the Wright Brothers first demonstrated manned, controlled flight of a heavier than air craft in December 1903, the US Army was slow to accept airplanes into its inventory. The first aircraft purchased by the Army was a Wright Model B Flyer in 1909 and by the end of 1911 the Army had trained perhaps a dozen pilots and had purchased a grand total of seven aircraft. In August of that year General James Allen, the Chief Signal Officer, recommended the establishment of an air station in the Philippines. On December 11, 1911, the Army shipped a Wright Model B Flyer to the Philippines with six months of spare parts and two mechanics with the hope the plane could train more pilots and be used to support Philippine Department maneuvers in early 1912. Lt. Frank Lahm, the second Army officer to qualify as a pilot, had been assigned to the 7th Cavalry in the Philippines after flight training but now was detailed for aviation duty. The Model B first flew on March 21, 1912, operating from a purpose-built hangar on the edge of the Ft William McKinley polo field. Lahm conducted training for the next two years under the auspices of the Philippine Air School, expanding operations as more aircraft became available and flying amphibian aircraft from the beach near the Manila Polo Club at Pasay. The first operational missions were flown in late 1913 utilizing a Burgess coast defense seaplane operating from a hangar constructed at Fort Mills located on the island of Corregidor. The aircraft conducted a series of tests and exercises with the coast artillery located on Corregidor and also flew reconnaissance missions to support the

William Cahill is a retired Air Force intelligence officer who contracts for DoD in the Washington D.C. area. An Intelligence Weapons Officer with squadron and wing-level experience, he has also served on the Air Staff and in an inter-agency capacity outside of DoD. Mr. Cahill is a graduate of San Jose State University and has MS degrees from Embry Riddle Aeronautical University and the National Defense Intelligence College. Mr. Cahill has been published in Air Power History, FlyPast, the USAF Weapons Review and C4ISR Journal.

coast defenses of Manila Bay. Flight activity came to an end in mid-January 1915 when coast artillery Lt Dargue, the pilot for the Corregidor missions, wrecked the Burgess in San Jose Bay.³

Though it had been costly in airframes – the Army had lost four Philippine-based aircraft in a span of less than three years - the tests on Manila Bay had proven the utility of aircraft in support of the coast defense mission. On April 9, 1915, the Signal Corps determined that after an aero squadron had been established at San Antonio, it would organize three companies for service overseas: one in the Philippine Department to be stationed at Fort Mills, Corregidor; one in the Hawaiian Department; and one in the Canal Zone. The Philippine and Hawaiian companies were to be equipped with seaplanes and were not to have any motor vehicles assigned. On April 21st the Chief Signal Officer advised the Quartermaster Corps that an aero company would be assigned to Corregidor by the end of 1915.⁴

The Army had lost four Philippine-based aircraft in a span of less than three years

At the direction of the Secretary of War, the 1st Company, 2d Aero Squadron was activated on May 12, 1915. The original plan was to have the company enroute to the Philippines by the end of 1915, but it did not begin to function as a unit until December 1st.⁵ Operations in the Philippines commenced in May 1916, with pilot training on the unit's Martin Model S seaplanes, a firing exercise with the batteries of Fort Mills quickly following.⁶ Within a year flight operations would halt again due to the fighting in Europe. After the declaration of war against Germany on April 6, 1917, a study of requirements for aircraft for coastal defense noted it was unnecessary to supply new aircraft to the Philippines until after the current hostilities.⁷ With no aircraft incoming, the 2d Aero was ordered home and by mid-October departed for Kelly Field, Texas. One week after the end of the war, on November 18, 1918, the 2d Aero Squadron was deactivated.

In the Great War, captive balloons and aircraft were used to aid in the spotting of field artillery. Both Allied experience and that of the nascent Air Service confirmed the utility of aerial observation and once squadrons returned to the United States airmen were eager to continue this role for airpower. A post-war Air Service study determined that fifteen airplane squadrons and ten balloon companies were needed to support US-based coast artillery units with an additional fifteen squadrons and nine companies needed for overseas.⁸

The Return of the 2d Aero Squadron

After the end of hostilities, the Air Service reset back to a peacetime organization. The demobilization of forces and post-war budgets wreaked havoc on planning, as



Five Douglas O-46 aircraft of the 2nd Observation Squadron circa 1939. Introduced to the Philippines in 1938, the O-46 proved a good replacement for the aging O-19 aircraft and was rapidly incorporated into exercises supporting the Philippine Division. (Authors collection.)

staff officers whittled away at piles of paper to develop options that could not be supported by available finances or personnel. The original August 1917 plan for the Philippines called for six aero squadrons and three balloon companies. Two of the squadrons would use flying boats out of Corregidor, joining all three balloon companies to provide adequate aircraft to support the defenses of Manila Bay in times of war. The 1917 plan also called for all coast defense observation squadrons to be “over-water” (flying boat) aircraft, later amended to 2/3 flying boat and 1/3 land machines. The final plan was for two squadrons (2d and 3d Aero Squadrons) to be allocated to the Philippines, with the 2d Aero going to Corregidor and the 3d Aero going to Camp Stotsenburg located outside Manila. Both squadrons would be under the 1st Observation Group, with an attached Photo Section and two balloon companies stationed on Corregidor.⁹

The aircraft allocation to the Philippines – the compromise of two squadrons against a plan of six – was indicative of the lack of strategic guidance in the area immediately following the Great War. Japan was emerging as a regional power and with the acquisition of former German colonies in the Central Pacific had complicated the mission of the Pacific Fleet in defending the islands. Prior to 1916, the fleet would have steamed to the rescue along with convoys of US Army reinforcements; now Japan was astride the line of communication between the West Coast of the US and the Philippines.¹⁰ The fact that two squadrons ended up overseas in the era of demobilization was victory unto itself.

In May 1919, the 2d Aero Squadron was re-established at Rockwell Field, San Diego for duty in the Philippines as one of the fifteen units designated to sup-

port overseas coast artillery forts. As personnel completed training and equipment became ready, it was shipped overseas in small detachments, the last group arriving Christmas Eve of 1919. The squadron moved into their old accommodations on Corregidor, the hangars and other support structures apparently surviving the two year absence of their airmen. To equip the new squadron, the Army turned to the Navy. In April 1919 six N9H seaplanes and 36 HS-2L flying boats were transferred from the Navy to the Army for use by the 2d Aero in the Philippines.¹¹ The squadron would operate a fraction of the HS-2L aircraft at any given time; this allocation was seen as a “lifetime” of aircraft and parts for the unit. The first flight of the newly reincarnated overseas 2d Aero Squadron was on September 24, 1919, with Lt Carroll Stein taking a Burgess N9H seaplane into the air over Manila Bay.¹² A Board of Officers was appointed in July 1919 to make recommendations where a new, permanent air station on Corregidor should be built. Though the board favored replacing the existing wooden hangars adjacent to San Jose Barrio with more modern, permanent structures, the Commander of Fort Mills opposed this location because the space for the hangars would be needed in time of war for storage purposes. The final site turned out to be at Camp Point on the tail of the Corregidor.¹³

The 3d Aero Squadron arrived in the Philippines on August 18, 1919. The squadron initially operated its DH-4A aircraft from Manila, moving to Camp Stotsenburg in December. Lacking sufficient Air Service observers to man the unit, the squadron set up a school to train Philippine Division line officers to make up for the deficit.¹⁴ It was not just observers that were lacking as

the 3d Aero was perpetually short of personnel for its first year of service in the Philippines, priority being given to the 2d Aero and its mission to support the coast defenses of Manila Bay. The squadron slowly worked on training for its primary function of supporting the Army ground forces assigned to the Philippines. Though designated observation squadrons, both the 2d and 3d Aero Squadrons had a secondary light attack capability for use in times of hostilities.¹⁵ The actual combat capabilities of the DH-4A, though, were seen as doubtful. Between 1919 and 1923 the Air Service contracted to have 1,538 DH-4As remanufactured into DH-4Bs by moving the pilot's seat back and the gas tank forward, correcting the most serious problems in the DH-4 design. Of these, 150 were allotted to the Philippines, but the first group of DH-4Bs did not arrive until January 1921.¹⁶

Balloons Float in to the Philippines

Part of the post-war plan from the beginning, balloons would serve as an adjunct to aircraft in supporting coast defenses. The balloon companies were equipped with a mix of Type C-3 / Caquot Type R tethered observation balloons and Type A-7 spherical 'free' balloons, though there is no evidence the latter was used in the Philippines. The concept for balloon employment was quite simple; from their high altitude perch, balloon observers could clearly see the splash of a shell and immediately relay results to the firing battery for adjustment. Experiments were done to use two tethered balloons to determine target location via triangulation, but the dynamic nature of the geometry due to wind made this task difficult.¹⁷ In April 1920 the 17th and 27th Balloon Companies completed training and departed Fort Omaha, Nebraska, arriving at Fort Mills on May 4, 1920. Once they were settled down on Corregidor, the balloon companies dove into their training.¹⁸

Washington finally relented and in September 1920 added a pursuit squadron to the Philippine Department

Peppered by correspondence from Manila entreating the need for "modern pursuit planes" to aid in holding Corregidor, the key to Army defense plans for the Philippines, Washington finally relented and in September 1920 added a pursuit squadron to the Philippine Department's existing allocation of two observation squadrons and two balloon companies.¹⁹ Though it would be over a year before action was taken on this initiative, in the interim the pilots would be able to fly planes a little more sprightly than their De Havilland charges. Earlier in 1920, the Philippine Department requested four fighter aircraft, either Vought VE 7s or Royal Air Factory/Curtiss S.E.5As, in order to maintain competence in acrobatics.²⁰ The request from February 1920 sat in Washington for a few months before a response was received. Since SE-5s and Voughts were unavailable at the

time, six Spad VIIIs would be sent over along with an additional six airframes in lieu of spare parts. The aircraft arrived in December 1920 – though damaged as they were sent as deck cargo on the Army transport for its trans-Pacific voyage!²¹ The 3d Aero Squadron was assigned the Spad VII aircraft, with one airplane detailed to 1st Group Headquarters at Paraque Beach.²² In early 1921 there was discussion to send to the Philippines six Fokker D.VII aircraft acquired as reparations after the Great War, but the plans to augment this fighter training force apparently never came to fruition.²³

Distracted as the pilots may have been by the fighter aircraft, they continued to stick to their mission at hand – supporting the Army units in the Philippines. After the end of the typhoon season, the US forces in the Philippines would dust themselves off and take advantage of the good weather to start their annual training cycle. The 2d Aero Squadron and 27th Balloon Company participated in its first coast artillery target practice in December 1920 using five Curtiss HS-2Ls and a number of N9Hs, all radio equipped.²⁴ Across Manila Bay, the 3d Aero supported the annual Department 'staff ride' or field exercise, though their role was mainly confined to liaison work, flying dispatches between Division Headquarters and subordinate units.²⁵ The training regimen of the 3d Aero was more indicative of their wartime mission – adjusting artillery, bombing, liaison work, and aerial reconnaissance. For two weeks in December 1920 the entire squadron deployed to a temporary gunnery and bombing range at Lingayen Pangasinan on the Lingayen Gulf, with aircraft flying off the beach and dropping on targets towed in the gulf. Over 100 flights were completed, culminating three months of training for the squadron's observers.²⁶

Even though the Air Service had been operating in the Philippines for close to a decade the islands were still a relatively unknown commodity from an airman's perspective. The size of the territory - 115,831 square miles spread over 7,500 miles – was intimidating, yet the two flying squadrons had to support the Army's Philippine Division over this vast and uncharted terrain. The 1st Group took a systematic approach to the problem, using both the 2d Aero and the 3d Aero to perform aerial mapping work of the islands – starting with Luzon and moving on to other islands when the local work was done. In addition, the 2d and 3d Aero would reconnoiter the islands by air and ground to look for possible airfield sites to support field deployments in time of exercise and emergency. All this work aided the 1st Group in planning how it could support the Philippine Department in times of war. Within the first couple years of existence, the Air Service presence in the Philippines had proven itself to be a true force multiplier. Aircraft were capable of patrolling out to sea – a concept demonstrated with Navy maneuvers by the 2d Aero and the aerial greeting of monthly Army transports from the Hawaii while they were out at sea – to look for foreign fleets. If these fleets started to go towards Manila Bay,



Curtiss HS2L of the 2nd Squadron parked on an unidentified beach. These aircraft not only supported coast artillery out of Fort Mills on Corregidor, they also were used in early exploration trips to map the islands. (US National Archives, Record Group 77)

the squadrons would attack in concert with the coast artillery defenses. If the enemy tried to land on the extended coastline of Luzon, aircraft could patrol and locate such an operation. Aircraft were even capable of reacting to ‘domestic insurgency’ in the southern islands (fighting with the Moros on Mindanao ending less than ten years earlier in 1913) by rapidly deploying to the south and making an airpower presence similar to that used by the British in their air policing endeavors in Iraq during the same time period. The promise of airpower in this era was ably demonstrated by 1st Group staff officer Captain Ira Eaker, who flew the entire coastline of Luzon in one day and on another occasion made the 10 hour and 27 minute flight to Zamboanga, Mindanao.²⁷

The 1st Observation Group, re-designated the 4th Group (Observation) in April 1921, operated from Paranaque Beach field near Manila. Conveniently located near Philippine Department Headquarters, the group would fly from this joint civilian-military base until a permanent Manila airbase was opened at Camp Nichols in late 1921. In April the 4th Group’s squadron composition – two observation and one pursuit – was also changed to one bomb, one observation, and one pursuit squadron. The 28th Bomb Squadron would be assigned to Clark Field (the name assigned for the Air Service post at Stotsenburg) in the coming year, bringing a third flying squadron and a dedicated strike element to the Philippines. To provide the assigned fighter element, the 3d Squadron (Observation) (changed from 3d Aero Squadron the month prior) was re-designated the 3d Squadron (Pursuit) and would be re-equipped with

pursuit aircraft as soon as they could be made available. In the interim, all department squadrons would standardize on the DH-4B airframe (2d Squadron amphibians notwithstanding).²⁸ Though the 3d Squadron was going to change missions and was directed to start training as a pursuit unit, the Philippine Division still needed support for their annual maneuvers. The 3d Squadron provided the December 1921 exercise with 6-8 aircraft and the 2d Squadron with 2-4 aircraft operating from Paranaque Beach. The Group expanded on the role it played in prior exercises, adding observation and reconnaissance missions on top of the dispatch and liaison work it had performed previously. The growing capability of the 4th Group reflected the effort the squadrons had put into training over the past year, with cooperative exercise flown with the 9th Cavalry Regiment and 24th Field Artillery Regiment providing the airmen the opportunity to closely work with their ground force brethren.²⁹

After two years of operation, the 4th Group recognized the need to have a dedicated second tier maintenance facility. Aircraft arrived from the US in a knocked down configuration and needed re-assembly. Additionally, it was not economical to ship aircraft back to the depots such as Fairfield or Rockwell in the United States for rebuild. Initially named the 11th Air Park, the Philippine Air Depot came into existence in June 1921. A lack of facilities and funds limited initial depot operations, but the opening of Camp Nichols for air operations in December enabled a rapid expansion of capability. Old stables were remodeled into workshops and new supply hangars and a machine shop con-



Aerial view of Paranaque Beach landing field, circa 1921. This facility provided a convenient post to operate land aircraft as well as flying boats and was used by the 2d Squadron and 4th Group headquarters aircraft until replaced by Nichols Field. (US National Archives, Record Group 18)

structed. By mid-1922, the depot provided a central storehouse and repair facility for the Philippine Department air assets.³⁰ Camp Nichols was fully operational by the summer of 1922, the first landing on its runway occurring in March with hangars relocated from Paranaque Beach following in May.³¹

Kindley Field Opens

On March 18, 1921 the Air Service garrison moved into their newly completed barracks at Kindley Field on Corregidor, three of the forty-three buildings of the new post. The squadron's aircraft operated from a seaplane ramp and beach located near five steel hangars, with two balloon hangars, additional quarters, and a bevy of technical support buildings including repair shops and a hydrogen plant.³² A landing field was envisioned at a future date, operations being restricted to seaplanes launched from Corregidor's south coast. That same month the 2d Squadron (Observation) (the 2d Aero Squadron being re-designated on March 14, 1921) worked with US Navy Asiatic Fleet destroyers for two weeks, working out techniques for the cooperative use of Air Service seaplanes with Navy ships. In late April the roles were changed, with the US Navy destroyers acting as aggressors. Four radio-equipped HS-2L aircraft of the 2d Squadron located and shadowed the ships, sending position updates to the Coast Defense Radio Station on Corregidor. Observation balloons of the 17th and 27th Balloon Companies were also used, with balloon observers reporting bearing and approximate range to fire control stations who started tracking the targets. Once the targets were being tracked, the balloon

observers were ready to spot and adjust the fire coming from the gun batteries. As the typhoon season approached, the 2d Squadron experimented with ways to continue flight operations. Personnel tried to gauge the surf and work through the weather at Camp Point with limited success.³³

As flying activities tapered off, the 2d Squadron turned its attention to looking after its fleet of flying steeds, assembling five HS-2Ls from their cache of boxed aircraft. The continual assembly of aircraft was necessitated by the attrition of squadron HS-2Ls due to normal flight operations, airframes becoming either too worn from rough operations or damaged in landing on Manila Bay. By the end of 1921 most of the squadron's N9H aircraft had been retired, leaving the unit operating only HS-2L seaplanes.³⁴

The inability to operate from Corregidor during the typhoon season was becoming apparent to all in the Philippines. In July 1921 the Air Officer assigned to the Philippine Department proposed that a detachment from the 2d Squadron be stationed at Paranaque Beach year round. Fifteen men with three DH-4B aircraft equipped with floatation bags would be used to provide support to coast defenses when bad weather precluded flight operations from Corregidor. Once a landing field for land aircraft on Corregidor was complete, the detachment would return to Kindley Field.³⁵ Though the Paranaque Beach detachment was not used at this time, construction of an airfield on Corregidor commenced in April 1922, completing one month later.³⁶ The 2d Squadron started to requisition DH-4Bs from the Philippine Air Depot, with the plan being to transition the squadron to these land planes and use the seaplanes only for auxiliary purposes. Air Service officers assigned to Kindley Field immediately noted the landing field was inadequate, being too small and with the prevailing wind quartering the long dimension. Pilots carefully ferried in DH-4B aircraft and flying training from the landing field started in early June. The 2d Squadron pilots continued to try and use the Kindley Field airstrip but it was too challenging for the average pilot. Very few landings were made on Corregidor and the airfield was abandoned for flight operations in 1923 due to the danger involved.³⁷

The Fort Mills annual firing practice started on January 6, 1922. Both balloon companies supported the firing and the 3d Squadron (Pursuit) teamed with 2d Squadron (Observation) personnel for HS-2L flight operations out of Paranaque Beach, with 33 sorties supporting the exercise. The next month the 2d Squadron was supporting a firing exercise using de Havilland DH-4Bs from Clark Field. With the apparent successful employment of the DH-4B in the coast artillery support role, plans were made to make a semi-permanent detachment of land planes for the 2d Squadron.³⁸ By early June 1922 the 2d Squadron (Observation) had split its operations into two flights; B Flight would operate four HS-2L seaplanes from Kindley Field on Corregidor until the supply of these aircraft was exhausted. A Flight

would operate six DH-4B aircraft from Paraque Beach, one mile from Camp Nichols, during the rainy season. This was ostensibly done due to lack of shelter for the DH-4Bs at the landing field on Corregidor – the typhoons that regularly hit the island would tear the linen covered aircraft to shreds unless they were under cover; in reality, this was likely due to the difficulty in operating from the Kindley Field airstrip. Though flying had only started from this location less than a month prior, by late July the Paraque Beach site was seen as lacking and A Flight was placed on inactive status during the 1922 rainy season.³⁹

The issuance of DH-4Bs to the 2d Squadron caused some concern to the Air Officer in the Philippine Department. The impending stand-up of the 28th Bomb Squadron would require additional DH-4Bs. Though one hundred of the aircraft (plus fifty for reserve) were allocated to the Philippines, the Department had only received its initial shipment – probably less than twenty-five – over eighteen months prior. Air Depot personnel broke into the stock of DH-4A aircraft at Clark and started to assemble twenty-five of the aircraft, fitting them with the latest appliances and floatation gear for operations over Manila Bay. These aircraft were obsolescent and not ideal for operations, resulting in a letter to the Chief of the Air Service asking about the remainder of the DH-4B aircraft allocated to the Philippines; fifty-one were promised as soon as they completed re-manufacture, but they would not arrive until early 1924.⁴⁰

The issuance of DH-4Bs to the 2d Squadron caused some concern to... Philippine Department

The Conference on the Limitation of Armament (also known as the Five Power Treaty or Washington Naval Treaty) was held in Washington, D.C. between November 1921 and February 1922. The United States, the British Empire, France, Italy and Japan signed the treaty on February 6, 1922. The signatories agreed that the status quo at the time of the signing of the Treaty, with regard to fortifications and naval bases, would be maintained in their respective territories and possessions. For the US, this applied to its insular possessions such as Guam and the Philippines but did not apply to the continental US, Alaska (not including the Aleutian Islands), the Panama Canal Zone, and the Hawaiian Islands. The maintenance of the status quo implied that no new fortifications or naval bases would be established in the territories and possessions specified. In addition, no measures would be taken to increase the existing naval facilities for the repair and maintenance of naval forces or increase the coast defenses of the territories and possessions. This restriction, however, did not preclude such repair and replacement of worn-out weapons and equipment as is customary in naval and military establishments in time of peace.⁴¹ The Five Power Treaty also gave impetus to the rewriting of US war plans for

the Pacific. The ORANGE plan of 1924 embodied a primarily naval offensive war that required a base in the western Pacific – Manila Bay. The primary mission of the Philippine Department was to hold this critical refuge until relieved by the US Navy – which had to fight its way across the intervening distance.⁴²

Air power was becoming more and more critical to the holding effort envisioned for the forces in the Philippines. During this time, the Air Service was seen as having seven functions, mainly in support of ground forces: reconnaissance, observation for artillery fire, bombardment, combat with hostile aircraft, contact with ground troops, ground attack and courier service. The training activities of the Philippine-based units during this period reflect these roles for airmen.⁴³ For four weeks in the spring of 1922 A Flight of 3d Squadron flew an aggressive training regime away from their home station. Deployed to Jolo on the island of Sulu, 750 air miles from Manila, 3d Squadron flew six DH-4B aircraft for 195 flights, a mixture of bombing, gunnery, photography, reconnaissance and general flying. The squadron was able to demonstrate the ability of air power to deploy to a remote part of the Department and conduct operations that could assist in repelling an invading force.⁴⁴ The first few years of the 1st / 4th Group were used to understand the environment. Many ground and air trips were used to get the lay of the land and ascertain future deployment sites and locations permanent landing fields. An official Board of Officers was appointed in January 1922 to determine throughout the archipelago the suitability of existing government land for airfields. Over the next couple years, many landing fields were developed and maintained by local governments for peacetime use and wartime deployments.⁴⁵

Airpower Rising: 1922-1929

Organization

Orders came down from Washington in late July 1922 to move both the 17th and 27th Balloon Companies onto the Army's inactive list. The units dutifully started the process of turning in supplies and equipment to the various supply branches while waiting to hear news on the disposition of personnel. Flying activities continued at a slower pace for the next couple months but the companies finally stood down in early September, their personnel dispersing to other Air Service units in the department.⁴⁶ The demise of the balloon companies coincided with the rise of the bombers. Later that same month ninety-two casual soldiers were used to stand up the 28th Bombardment Squadron at Clark Field. By October the unit was flying night bombing missions in its DH-4B aircraft.⁴⁷ With the return of good weather, 2d Observation Squadron (2d Squadron being re-designated on January 25, 1923) was once again split up, with B Flight forming at Camp Nichols in early January 1923. The unit would operate five DH-4Bs and two DH-4B-P1s (photographic reconnaissance aircraft) for the next five months, returning to Corregidor in May. With

the departure of B Flight, 28th Bombardment moved to Camp Nichols.⁴⁸

The Air Service in Washington wanted out of the seaplane business and felt that the 2d Observation Squadron should move to Camp Nichols and wholly be equipped with DH4B aircraft. To get to the bottom of the issue, Air Service Chief General Mason Patrick dispatched Assistant Chief of the Air Service Brigadier General William Mitchell to the Philippines.⁴⁹ In January 1924 Mitchell visited Kindley Field as part of his fact-finding mission. After touring the facilities he visited the landing field and stated it could be made into a proper emergency landing field with some grading but that in its present state it was not suitable for use as a military airfield.⁵⁰ Lacking funding and motivation to alter the Kindley Field landing strip, Corregidor flight operations maintained status quo.

After the January 1929 exercises were complete, the 2d Observation Squadron received orders to move

On September 26, 1925 2d Observation's B Flight was formally transferred to Camp Nichols from Corregidor in preparation for the start of the 1926 flying season. The move was considered permanent this time and the flight was assigned six DH-4Bs and two DH-4B-P1s. In a break from previous 2d Observation Squadron missions, the flight was tasked with permanently supporting infantry, artillery and cavalry units stationed at Camp Stotsenburg, Fort William McKinley and the Post of Manila.⁵¹ Once the 4th Composite Group (name change having occurred on January 25, 1923) was comfortable with the service provided by a land-based observation squadron – and A Flight was fully equipped with amphibian Loening aircraft that could operate from runways – the move was made to shut down Kindley Field. Expensive to operate, unable to expand, and inflexible in operations, Kindley Field had outlived its usefulness. After the January 1929 exercises were complete, the 2d Observation Squadron received orders to move A Flight from Kindley Field to Camp Nichols no later than April 1, 1929.⁵²

During this time the concept of the 'Cabcaban Project' surfaced. The idea was to concentrate all of the Air Service at Cabcaban on the Bataan Peninsula. Though ill-suited from a logistic and terrain standpoint, Bataan was viewed as the strategic redoubt during war and the thought was to provide permanent basing where the 4th Group could fight from. Without extensive funding the plan would not execute, so a cheaper version of locating a landing field on Bataan and using services at Kindley Field was considered but never acted upon.⁵³

Equipment

The DH-4 was to prove the backbone of the 4th Composite Group throughout the 1920s, at one time or

another equipping all flying squadrons. Since inception the 3d Squadron had been flying DH-4 aircraft, including a unique DH-4 'freighter' aircraft converted in the Philippines for moving supplies to Clark Field from the supply depot at Camp Nichols. Though referred to as the 3d Pursuit Squadron, the unit was pursuit in name only. The squadron continued to fly DH-4B aircraft tactically and train in aerial gunnery, aerial navigation, adjustment of artillery fire, bombing, and cavalry and artillery liaison. DH-4A aircraft were used for local training flights to maintain proficiency along with Spad VII aircraft for at least a year or two in the early 1920s.⁵⁴

With the docking of the Army Transport 'Meigs' in Manila in September 1923, the 3d Pursuit Squadron finally received its fighter aircraft. The 3d's first pursuit aircraft were MB-3As, part of an Air Service contract with Boeing Aircraft for 200 of these ships. The MB-3A was an improvement over the Thomas-Morse MB-3, the design changes addressing some of the structural design flaws associated with the original aircraft. The Air Service distributed the MB-3As to the 1st Pursuit Group at Selfridge Field and the overseas pursuit squadrons in the Philippines, Hawaii and the Canal Zone.⁵⁵ As the 24 MB-3As were crated for shipment to the Philippines, there was some concern expressed by the War Plans Division in Washington over the impacts of the tropical climate on the airframe, but the shipment went forward as planned. Initially, 12 of the aircraft were assembled, with flying starting in earnest in November 1923.⁵⁶

As the 3d Pursuit started to fly its new steeds, DH-4Bs continued to trickle into the Philippines. Of the 51 planned for shipment to the Philippines, 31 would be remanufactured by Boeing and 20 by Rockwell Air Intermediate Depot. The remanufacture process was a complicated dance of taking in DH-4As from the field, rebuilding them as DH-4Bs, and shipping them back out. For stateside units, air ferrying of aircraft was available; for overseas units, the limited capacity of Army Transports usually metered the flow to two to three aircraft a month at best.⁵⁷ The latest batch of 100 DH-4As returned from the Philippines on the same transport that brought in the MB-3As were all the remaining serviceable DH-4A airframes left in the islands, fulfilling an order from the Chief of the Air Service to return these excess airframes to the US. The remaining 50-odd DH-4A airframes not fit for remanufacturing were scrapped locally.⁵⁸

Unfortunately the MB-3A design failed to address the primary flaw of its predecessor – a hard engine mount that caused vibrations throughout the airframe, leading to failure of the welded steel joints and elongation of bolt holes. By April 1925 the 3d Pursuit had to cut back MB-3A training to 30 minutes per plane per week on account of deteriorating airframes. The trustworthy DH-4B ably flew in its place, keeping up flight hours for the squadron. The department was scheduled to receive eight refurbished MB-3A aircraft, but the Supply Division in the US was running behind schedule and the aircraft would not be received for quite some



Camp Stotsenburg hangar row in July 1921. During this time period, both squadrons assigned to the 4th Group were flying DH-4B aircraft but the aircraft in the photo is likely from the 3rd Squadron. (US National Archives, Record Group 77)

time. The Philippine Air Depot was doing its part in rebuilding the fragile pursuit aircraft but could not keep up with the demand of the 3d Pursuit – in January 1926 twelve MB-3As were languishing in Depot hangars awaiting work. A request for fourteen additional MB-3As from the Philippines was politely turned down by Washington.⁵⁹

Looking to internal resources, the 4th Composite Group tasked the Philippine Air Depot to continue to work on the MB-3A, concentrating on making as many airframes available for use as possible. In spring 1926 three had been completed and five were undergoing repairs, but their utility to the 3d Pursuit was minimal. The airframes had reached the end of their usefulness and were only being used for formation work around Clark airfield. As the airframe problem got worse, it became easier for the Air Service to retire the aircraft and by the end of 1926, only half of the MB-3A fleet was still in active service. The 3d Pursuit's salvation lay in the Boeing PW-9, used almost exclusively in Hawaii and the Philippines. The initial shipment of six PW-9s to Manila arrived in early 1926, with the first aircraft becoming operational by April. Five PW-9As followed later in the year with six PW-9Cs arriving in 1927 to bring the 3d Pursuit up to its authorized strength of 16 aircraft. With the arrival of the PW-9Cs the last of the MB-3As were finally retired, apparently the last of the Air Corps to do so.⁶⁰ As aircraft crashed and were surveyed the numbers of pursuit aircraft at Clark Field dwindled to 12. A plan to refurbish six PW-9D aircraft at Rockwell to bring the Philippines up to their allocation of 16 was rescinded in June 1929 with the planned delivery of a newer Boeing pursuit plane – the P-12. The Air Corps solved the ac-

counting problem by simply reducing the pursuit allocation down to ten PW-9 for Fiscal Year 1930.⁶¹

Like the 3d Pursuit, the 28th Bombardment had been flying the ubiquitous DH-4 since its arrival in the Philippines. In spring 1924 the squadron finally received its dedicated bomber aircraft in the form of Martin NBS-1s. The inbound bombers were the last of the type delivered to the Air Service, the 2d Bombardment Group and overseas units in Hawaii and Panama equipping first with this twin engine aircraft. Ten aircraft were initially received by the 28th Bomb Squadron in March 1924 and though they were soon being flown by the squadron pilots, the unit would continue to operate DH-4B aircraft for at least another six years.⁶² The NBS-1 aircraft assigned to the unit saw considerable service and required overhaul by the summer of 1926. Once the aircraft went into depot, a suitable airframe needed to be on hand to keep its pilots current and maintain the strike capability of the 4th Composite Group. Four replacement NBS-1 aircraft were shipped out at the end of April 1926, with the returning Army transport ship loaded with tired bombers for rebuild at Rockwell Depot in California. In late 1927 another attrition replacement batch of three NBS-1 aircraft was shipped from Rockwell Depot to the Philippines to keep the 28th Bombardment up to strength with healthy airframes, but a replacement type was needed.⁶³

By November 1927 the decision was made to allocate five of the 25 LB-5As on Contract W-535 AC 642 to the Philippines. The LB-5A was a large, single-bay biplane produced by the Keystone Company as a follow-on to the original LB-5, with twin tails differentiating the later model from its predecessor. The 28th Bombardment



Philippine Air Depot, circa 1920s. The Air Depot gave the 4th Composite Group the ability to assemble and, more importantly, repair and refurbish airframes without having to ship the aircraft back to the United States. (*US National Archives, Record Group 18*)

would need the aircraft soon, as the nine NBS-1 aircraft on hand were between 5 and 7 years old and wearing out fast. With only three operational bombers, the Philippine Department requested authority to overhaul three additional airframes but was denied due to the imminent arrival of the LB-5A. In August 1928 the five bombers arrived at the docks of Manila and were quickly assembled. The department was allotted nine bombers, so the difference was made up in DH-4Bs. A plan to augment Manila with four LB-5As from Hawaii in 1929 did not come to fruition.⁶⁴

The 2d Observation continued to fly HS-2Ls based on its initial stock of airframes delivered in 1919, with itinerant land-based operations using DH-4 aircraft. Two Loening S-1 Air Yacht seaplanes were received from the States in mid-1923, giving the 2d Observation Squadron additional aircraft for its mission. Mechanics continued to whittle away at the stored HS-2L airframes and parts to assemble airframes for use, but due to their age, the HS-2Ls were difficult to keep in flying condition as the hulls were old and leaky.⁶⁵ In December 1923 a Board of Officers convened at Camp Nichols for the purposes of recommending changes to aircraft in the Philippine Department. The Board recommended the acquisition of more seaplanes, their recommendation joining numerous requests sent throughout 1923 from the Philippines to Washington.⁶⁶ The answer was in the form of the Douglas O-5.

The Douglas World Cruiser (DWC) was developed to meet a 1923 Air Service requirement for an aircraft suitable for an attempt at the first flight around the world. After the completion of the 1924 circumnavigation, the Air Service ordered six similar aircraft for the observa-

tion role, retaining the interchangeable wheel/float undercarriage of the DWC but with much less fuel and two machine guns on a flexible mounting in the rear cockpit. These aircraft were initially designated DOS (Douglas Observation Seaplane) but were re-designated O-5 in May 1924, with all six aircraft assigned to the 2d Observation Squadron. Time was running out as the Philippine Department condemned all HS-2L seaplanes in November as unfit to fly, leaving the 2d Observation with one Loening Air Yacht aircraft. The Douglas aircraft were hurriedly loaded onto a transport in San Francisco, with the first two O-5s arriving in the Philippines in February 1925. The arrival of the Douglas aircraft marked the demise of the long suffering Curtiss HS boats and the remaining airframes were salvaged. The new aircraft proved well suited for their role, able to fly four hour missions in support of the coast artillery missions and communicating to the firing batteries via their SCR-134 radios.⁶⁷

Even with new aircraft the 2d Observation had a hard time maintaining its machine strength as neither the climate nor the flying in the Philippines was gentle on aircraft. By spring 1926 B Flight had to requisition four new DH-4Bs to replace condemned aircraft and A Flight crashed its remaining Loening S-1. The trend continued with the Douglas O-5s, the squadron writing off all six aircraft within 30 months of delivery.⁶⁸ The Air Corps, renamed from the Air Service on July 2d, 1926, was already planning for the next generation of aircraft to land the dangerous seas of Manila Bay. By August 1926 the squadron had received two Loening COA-1 amphibians. These aircraft would be joined by five additional Loenings, OA-1As, due to arrive at the end of the

1927. The rough conditions of Manila Bay would result in four squadron OA-1s being damaged in landing accidents over the next year of operations, being sent to the Philippine Air Depot for repairs. As the typhoon season of 1928 ended, the squadron had four OA-1s on strength.⁶⁹

In February 1928 the Philippine Department was getting concerned over the age of its observation airframes. Though eighteen aircraft were on hand, a mix of DH-4B, DH-4M and OA-1s, the department estimated that at current rates it had only 12 months of usable life before the last of the OA-1s needed to be replaced. The DH-4Ms were slowly being assembled and turned over to B Flight, 2d Observation, as older DH-4B airframes wore out.⁷⁰ Two Loening OA-1C aircraft off the production line in New York were shipped in March to keep A Flight in operations. The plan was to replace the DH-4 aircraft with new Douglas O-2H aircraft and an initial allocation of six airframes to the department would allow the older De Havillands to finally be retired. The Douglas aircraft arrived in September 1928 and B Flight rapidly converted to their new charges – none too soon as the flight was down to only a few airworthy DH-4s.⁷¹ Discussion to send six additional O-2H aircraft to the Philippines along with four OA-1 amphibians was investigated in late 1928 as the DH-4B aircraft were retired and the OA-1s continued to accumulate flight hours. Though five DH-4M aircraft would continue to soldier on in 1929, the need to keep up the allocation of 14 observation aircraft to the Philippines for Fiscal Year (FY) 1929 resulted in four O-2H and four OA-1 shipping to the islands in mid-1929.⁷²

Even with new aircraft the 2d Observation had a hard time maintaining its machine strength

The Air Corps had reached resolution on its quandary of supporting Manila Bay operations by procuring Loening amphibians, an aircraft that could be used at its overseas locations requiring a seaplane for extended over water operations – yet not being restricted to solely operating from water.⁷³ The Loenings would continue in service after the closure of Kindley Field, reserved for emergency water flights only. In 1931 the Loenings were finally retired, replaced by the Sikorsky C-6A, an amphibian based on the S-38.

Operations

The Joint Board in Washington continued to refine the ORANGE war plan for the Pacific. The Army had serious doubts that it could hold onto the Philippines until the Navy arrived; Brigadier General Stanley Embrick, commander of the Corregidor defenses, thought that while Fort Mills may be able to sustain a siege for a year, it would take two to three years for the fleet to fight its way across the Pacific. War Department planners dis-

agreed, knowing that politically the US could not abandon the Philippines without a fight.⁷⁴

During this time period, the 4th Composite Group fulfilled many functions for the Air Service and US Army. It provided a defensive force for the Philippine Department, aiding in the spotting of coast artillery and scouting for any enemy invasion forces; it helped with the commercial development of the Philippines, fostering aviation and aiding in the mapping of the islands; it enabled the soldiers of the Philippine Division to be accustomed to the support of aircraft in field operations; and it provided a test ground for the maintenance and operation of aircraft in a tropical environment.⁷⁵ Examples of this type of support can be found in the activities of the Group throughout the mid-1920s.

Support to Philippine Division

Support for the Philippine Division annual exercise would usually occur in late January or early February, with all squadrons supporting the ground maneuver elements. The maneuvers would normally be broken into a series of ‘tactical problems’ that flowed sequentially across different parts of Luzon. The 2d Observation would normally fly reconnaissance, contact, liaison, and artillery adjustment missions and put in the majority of the flight hours in support of the ground forces. The 3d Pursuit was usually tasked with aerial defense, ground attack and scouting missions while the 28th Bombardment would strike larger targets such as supply depots and troop concentrations and perform interdiction missions by attacking bridges. Lacking the aircraft to fully support both sides of an exercise, the 4th Composite Group would usually support only one side at a time with observation aircraft being split between ‘Blue’ and ‘Red’ forces. After the ‘Blue’ ground forces were located by ‘Red’ observation aircraft, ‘Red’ fighters attacked defending anti-aircraft positions before the ‘Red’ bombers came in to bomb troops and bridges.

As new equipment and capabilities were deployed to the 4th Composite Group, airpower’s role expanded. O-5 reconnaissance seaplanes allowed expanded observation missions along the coastal waters. NBS-1 bombers enabled the 28th Bombardment to perfect its attack mission, with the 1926 maneuvers witnessing formations of six of the twin-engine bombers being escorted by 3d Pursuit MB-3As. In 1927 the 28th Bombardment switched to night attacks, successfully evading searchlights from the defending 60th Coast Artillery (Anti-Aircraft) (CA (AA)) Regiment to attack a supply base near San Fernando. While the squadrons usually flew from Clark Field, in 1928 A Flight of the 2d Observation moved by barge from Kindley Field to Bataan to set up operations for its Loening OA-1s in a field near the ‘Blue’ forces it was supporting.⁷⁶

The squadrons also organized their own training activities with local ground forces, the 3d Pursuit frequently working with the Camp Stotsenburg based-26th Cavalry and 24th Field Artillery Regiments while the 2d

Observation supported the Fort McKinley-based infantry regiments, flying contact missions on route matches and coordinating communications training. One of the missions performed by the 4th Composite Group was cooperative training for the anti-aircraft regiment that supported the Division – the 60th CA (AA). An annual training camp was set up at Fort Stotsenburg and the assigned Air Corps unit flew from Clark Field for a period of 1-2 weeks. In mid-1925 the 28th Bombardment started cooperative training with the 60th CA (AA) in a mutually-benefitting role to enhance each other's understanding of their operations. In 1926, B Flight of the 28th Bombardment deployed to Clark Field to support 60th CA (AA) annual training for 10 days in January while also performing bombing training. In 1927, the 3d Pursuit took over the job of supporting the AA unit with training iterations in February and November. The 3d towed targets for gun target practice during the day and flew sorties at night for training searchlight and sound locating gear operators. Similar support was provided in November 1928 to the 60th CA (AA), though the exercise lasted five weeks. For target sleeve towing, it is likely both units used a DH-4M-1 specifically modified for the task by the Philippine Air Depot that was maintained at Clark Field.⁷⁷

On August 1, 1927 the Philippine Air Depot transitioned from a Branch Depot to an Air Intermediate Depot

Support to Coast Artillery

The 2d Observation continued supporting the coast artillery at Fort Mills and the other fortified islands around Manila Bay. Two way radio contact with the firing battery was now normal as the aircraft worked to refine the shooting of the long range artillery against targets that could not be seen from the battery position. The annual target practice would usually come towards the end of the good weather period, usually in March-April, and last for two to three weeks. Some years there was also a Harbor Defense Command 'formal tactical inspection' that was supported by the 2d as well. As new equipment appeared such as the Douglas O-5 with longer range and better radios, the support to the gun batteries improved to the point that airmen were better at calling fire onto a target than the battery's own fire control station. At the end of the Coast Artillery target season in late April 1928 75 rounds of ammunition were allocated for use by the Air Corps in position finding practice. Five practices were flown, two stationary and three against a towed target, with all targets not visible from the gun battery. In the first practice, a hit was scored on the fourth shot.⁷⁸

Air Operations

Starting in spring 1924, the 4th Composite Group would also hold its own annual exercise, working around sorties supporting the Philippine Division and coast de-

fense maneuvers. Aircraft would usually deploy away from their home fields to locations like Aparri on the north coast of Luzon or San Jose on the south coast of Mindoro. Each squadron would send eight to ten aircraft for a one to two week maneuver that exercised not only air operations but also deploying to field conditions and the logistics associated with such an activity. Reconnaissance, bombing, ground attack/strafing and other activities were carried out in a coordinated manner. The exercise enforced the cooperative nature of the squadrons that had been displayed earlier in the training cycle with the Philippine Division maneuvers but enabled airmen to set the training requirements and objectives.⁷⁹

These major activities – the Philippine Division maneuvers and the 4th Composite Group maneuvers – built upon foundational training conducted at the squadrons. Each squadron followed an annual training plan to accomplish specific training but also looked for opportunities to enhance local training around the home base. In September 1924, the 28th Bomb Squadron attacked ships in Manila Bay after the completion of a navigation exercise, using a target of opportunity to enhance its role of maritime strike. The 28th Bomb also started to use their NBS-1s in their intended nocturnal role, flying night cross-country sorties after landing lights were installed at Camp Nichols in mid-1925 and leading up to night attacks under parachute flares in 1926. In the good spring weather between Philippine Division or coast artillery maneuvers, the 4th Composite Group would fly weekly tactical exercises in order to ensure all the squadrons were used to flying cooperative missions together.⁸⁰

Army-Navy Maneuvers

The 2d Observation maintained a close working relationship to the US Navy's Asiatic Fleet due to its equipment, location and operating environment. In February 1923 the squadron flew three observation missions with US Navy destroyers conducting torpedo firing practice. This relationship became more formal with the participation of the 4th Composite Group in the Army Navy Maneuvers in February 1926. The air component joined the Navy in assaulting Fort Mills on Corregidor. All flying squadrons attacked the island, with the 2d Observation leading the charge with reconnaissance missions and joining with the 3d Pursuit for mock bombing and machine gun attacks on the Fort Mills. The 28th Bombardment bombed Los Cochinos Rocks and Razor Rock near Corregidor with two flights of three NBS-1 bombers shielded by an NBS-1 aircraft fitted with a smoke generator to mask the attacking aircraft.⁸¹ Similar maneuvers were held in 1927 and 1928, with the 2d Observation performing more in its traditional role of scouting for the enemy fleet in support of the coast defenses before joining in on the aerial assault on Corregidor. The 1928 maneuvers witnessed three Navy amphibians augmenting the 2d Observation for scouting missions.⁸²



Aerial view of Clark Field taken from a 2nd Observation aircraft on October 31, 1939, with most of 4th Composite Group inventory parked for review by a senior officer. Visible are eight B-10s of the 28th Bomb Squadron, twelve P-26s of the 3rd Pursuit, and five O-19 and five O-46 from the 2nd Observation. (US National Archives, Record Group 342-FH)

Airpower Reigns over Luzon – 1929-1933

Once the 2d Observation was moved to Camp Nichols (renamed Nichols Field in August 1929), the 4th Composite Group entered a period of organizational stability that lasted until mid-1941. The only major change came in the support side of the organization. On August 1, 1927 the Philippine Air Depot transitioned from a Branch Depot to an Air Intermediate Depot. With this change came increased responsibilities to include major repairs and overhaul of all Air Corps equipment in the Philippines. Though the 66th Services Squadron would still continue to play a role, the Repair Department transitioned to civilian personnel. Four American civil servants arrived and 50 Filipino civilians were hired to perform the aircraft overhauls. As the Air Corps relied more and more upon the Philippine Air Depot to keep the 4th Composite Group planes flying, difficulties started to arise. By late 1931, it became apparent that an inadequate number of civilians were in place to meet the requirements of overhauling the 3d Pursuit's aircraft every ten months. Without additional funds to hire more civilians, the solution was to extend the overhaul period to twelve months – the pinch of the Depression was starting to be felt in Manila. It continued the next year when the allocation table for the Philippines was compared against the requirements associated with planning for War Plan ORANGE. Though assigned forces were not optimum, Assistant Secretary of War Davison stated “the present Air Corps garrison is that considered advisable under existing conditions.”⁸³

Equipment

The 3d Pursuit's dwindling PW-9 fleet required attention sooner rather than later. In early 1930 plans were confirmed in Washington to allocate the last of the P-12B order to the overseas posts, with plans to ship sixteen of the sleek biplane fighters to the Philippines in FY 1932. Thankfully for the 3d Pursuit's pilots, the aircraft were received much sooner. Shipped out by June 1930, the new pursuit ships arrived in August and after assembly and testing the 3d Pursuit was fully equipped with P-12Bs, the PW-9s being quietly retired after their Curtiss D-12-C engines were removed and sent to San Antonio. Attrition replacements in the form of five P-12E aircraft arrived in early 1932; the Air Corps noted the metal-skinned P-12Es were “especially adapted to Foreign Possessions” due to the ease of maintenance as compared to the fabric covered P-12B and earlier pursuit aircraft. These would be the last aircraft the squadron received for almost five years.⁸⁴

In FY 1930, for the first time in its history cargo aircraft were officially allocated to the Philippine Department. Up until this point, the department relied upon bomber aircraft or a DH-4B converted by the Philippine Air Depot into a freighter. Two aircraft – a Douglas C-1C and a Ford C-9 Tri-motor – were initially allocated to the department, though Manila felt they needed more – in fact six transports, three light single engine craft and three multi-engine ships. Prior 4th Composite Group exercises had highlighted the need for an organic transport capability to move the squadrons beyond their central Luzon operating locations. If an enemy force were to land on Mindanao or another major island, it would take too long using surface transport to be able to forward deploy to meet such a contingency. Though sympathetic, the Air Corps had little more to offer; the three Sikorsky C-6A amphibians received by the department in early 1931 did provide a light transport capability to the 4th Group, partially making up for the Ford C-9 that had disappeared off the group roster by then. The lone C-1 survived until mid-1932, about the same time a Douglas Y-1C-21 Dolphin amphibian came on strength.⁸⁵

The 2d Observation continued to stay healthy with respect to assigned aircraft. Four attrition O-2H airframes were received in mid-1930 to keep the squadron up to strength, but the O-2H was getting old. Its replacement was one of the last Thomas-Morse products, the O-19C. The metal framed biplane would replace and augment the older Douglas observation aircraft, the O-2Hs remaining in the Philippines as they were not required back in the States. O-2Hs would continue to be carried on 4th Composite Group rosters through at least 1933. The O-19Cs trickled into the Philippines starting in late 1930, with the 16th and final airframe arriving by mid-1931.⁸⁶

The LB-5A had been in service with the 28th Bombardment for less than a year when problems started to crop up with the structural integrity of the fleet. By May 1929 crews noted the tail would “shimmy” in flight; investigations would reveal that excessive vibration

caused wear to the front horizontal stabilizer attachment. The vibrations eventually resulted in structural failure that caused a fatal crash at Nichols Field of an LB-5A on September 24, 1929.⁸⁷ The LB-5A aircraft were placed under flight restrictions due to structural weaknesses, so the Philippine Department requested replacement bombers. With none enroute, the Department requested authority to overhaul the aging Martin NBS-1 aircraft to give a modicum of capability to the 28th Bombardment. Washington denied the request and with the surveying of the NBS-1 aircraft, the Philippine Department was left with four structurally questionable multi-engine bombers – LB-5As – in theater.

Though allocated four DH-4 aircraft in addition to the LB-5As, the Philippine Department needed something better than a Great War veteran to protect its shores. Department commander General Douglas MacArthur then requested nine O-2H that could function as light bombers for the 28th Bombardment until the situation improved. Unfortunately the cupboards were bare in Washington and neither bombers nor observation aircraft could be spared; a similar request for attack aircraft was also denied for the same reason.⁸⁸ With the 28th Bombardment pilots flying OA-1s and the lone C-1C to maintain currency, something had to be done. In May 1930 two O-2H aircraft were transferred from the 2d Observation to help out with flying, though the LB-5As were still flown periodically for tactical training in “limited in commission status” after modifications specified by Technical Orders. This came to an end on September 12, 1930 with the grounding of the 28th Bombardment LB-5As by the Philippine Department – the aircraft were to be kept flyable and “used only in case of emergency.” With no bombers on station, the Philippines jumped to the head of the list for the new bombers being procured by the Air Corps – the Keystone B-3A. Twelve of the initial batch of these multi-engine bombers were allocated to the Philippines, with the first group of six arriving in early 1931 followed by another six in June 1931. For the time being, the department once again ruled the air over and around Luzon.⁸⁹

Operations

The early 1930s saw the emergence of air power as a capability that provided more than just point defense of Manila Bay – it was a capability for the entire archipelago. Aircraft could interdict enemy fleets to assist the Navy and coast defenses, provide support to the Philippine Division, and perform operations independent of either of these services.

Philippine Division Maneuvers

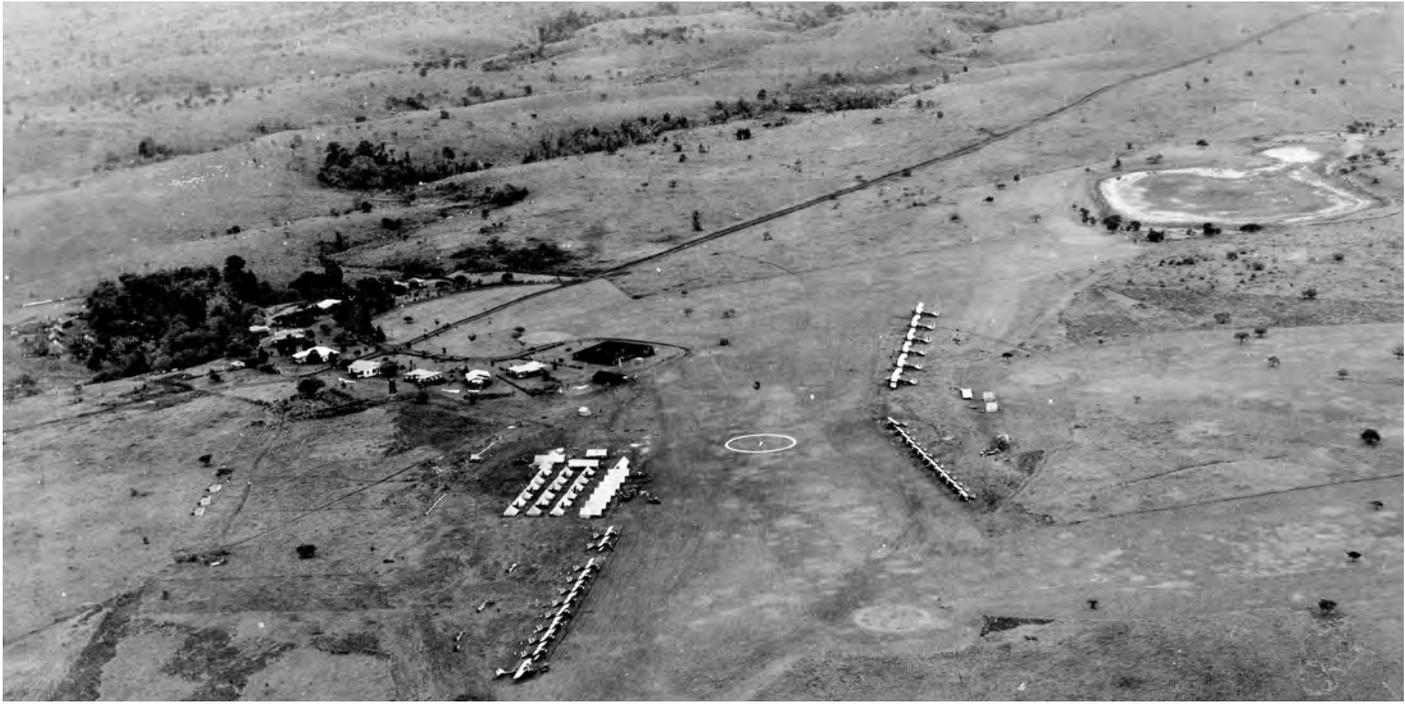
The Philippine Division Maneuvers carried on much as before, though the 1932 maneuvers took on an expanded scope. The first week was a period of intensive training. The 28th Bombardment sent eight B-3A bombers up to Clark Field, flying with the 2d Observation and 3d Pursuit as ‘Blue’ forces and conducting in-shore and offshore reconnaissance to look for the ‘Red’

fleet. The B-3As flew six hour sorties and during one such mission an aircraft was lost due to engine troubles. Once the ‘fleet’ was located steaming towards Lingayen Gulf, contact was maintained until the ships dropped anchor and commenced landing troops. The ‘Blue’ air fleet then followed up with two night and one daylight attack against the ‘Red’ forces, with 3d Pursuit P-12s escorting 28th Bombardment B-3As on all the missions. The second phase of the maneuvers started with the enemy forces ashore. The 4th Composite Group (except the four O-19C of Flight B of the 2d Observation who stayed ‘Blue’) then became ‘Red’ forces, operating from Del Carmen, Pampanga, and San Miguel, Tarlac. Their primary mission was to attack ‘Blue’ lines of communications and shipping and fly reconnaissance missions for the ‘Red’ force. Of note, the 3d Pursuit flew night strafing missions under the illumination of parachute flares.⁹⁰

By the 1930s the aviation presence on Corregidor was reduced to short periods of time

The squadrons continued to work closely with their local ground units in the fall period in preparation for the division maneuvers. The 2d Observation in particular worked closely with most ground units in a training befitting its mission, working communications, liaison, and photography missions with the 45th and 57th Infantry as well as the 26th Cavalry and 24th Field Artillery.⁹¹ The 4th Composite Group continued to support training of the anti-aircraft regiment in the Philippines. In December 1929 the 2d Observation temporarily took over the task from the 3d Pursuit, towing targets during night and day missions above the 60th CA (AA)’s home installation of Fort Mills. In December 1930 the 3d Pursuit flew night maneuvers with the 60th CA (AA).⁹²

By the 1930s the aviation presence on Corregidor was reduced to short periods of time for the housing, maintenance and servicing of aircraft participating in “cooperative training and operations” with the coast artillery of Fort Mills. The 2d Observation Squadron worked with these units, supporting the 59th Coast Artillery’s annual artillery practice in the spring months. But after the bond of Kindley Field was broken, the relationship between airmen and coast artillerymen would never be the same.⁹³ The 4th Composite Group continued to participate in the Army-Navy Maneuvers as they provided valuable attack training against dynamic targets. In April 1931 the 28th Bombardment worked with the Navy over a two day period, attacking coast artillery batteries at Ft Mills and Ft Hughes while two ‘attack flights’ (possibly PW-9s and P-12s assigned to the 28th Bombardment during this period) did ground strafing of AAA and battery control stations. 1932 saw a similar evolution of training, with day and night attacks on Corregidor that included 3d Pursuit P-12s laying smoke to screen the movement of Navy ships.⁹⁴



The 4th Composite Group 1935 maneuvers featured all squadrons deploying to Del Monte, Mindanao, to acquaint the units with the logistics of field operations and to provide orientation of the island of Mindanao and the 19 satellite fields in the area. This aerial photo from January 25, 1935, depicts O-19s and an OA-3 of the 2nd Observation Squadron, P-12s and an O-19 of 3rd Pursuit, and B-3s of the 28th Bomb Squadron. (US National Archives, Record Group 18)

Air Operations

By 1929 the 4th Composite Group had defined a distinct air power role for itself in the defense of the Philippine Islands. Aircraft were used in a coordinated effort to find, fix and finish targets to use today's vernacular. For a projected enemy invasion force – Japan being the anticipated actor – the Group practiced finding a ship or convoy at sea using 2d Observation Squadron amphibians and other aircraft as scouts. Once the target was found, tracking data would be relayed to Group Headquarters at Nichols Field and an attack force dispatched. The 2d Observation also practiced patrolling the coast, looking for a landing party or invasion in progress. Once a land target was spotted, a similar plan would follow – Group Headquarters would dispatch the 28th Bombardment Squadron and 3d Pursuit Squadron. The 3d would suppress the target area prior to the arrival of the 28th's bombers. Similar actions would be used against enemy forces in the field. To maintain this type of expertise, the 4th Composite Group maintained a robust training schedule, working with other Army or Navy units in the Philippines.

The 4th Composite Group had many opportunities to stay proficient in the maritime environment. An exercise with the Navy in March 1929, provided the high end of this type of training. The one day exercise featured OA-1 aircraft performing in the scouting role and NBS-1, LB-5, O-2H, and PW-9 comprising the main striking force. The designated Air Force commander issued orders to the different elements from his aircraft and also established communications with the destroyer USS Jason.⁹⁵ Not all attacks on ships involved exercising

with the Navy. The monthly inbound US Army Transports provided an excellent training opportunity for the 4th Composite Group to practice finding and attacking ships on the open ocean – and also to welcome new recruits to the Philippines. While some transports were merely found by a dozen or so aircraft and 'buzzed', many times the 4th Composite Group enacted a more complicated scenario. The transport was first found by the scouting force of 2d Observation OA-1 amphibians who radioed back to Camp Nichols the ship's location, course and speed. The rest of the Group then took off and simulated attacking the hapless transport.⁹⁶ To stay trained in attacking moving ships, the 28th Bombardment would attack targets towed by tug boats in the South China Sea.⁹⁷

Not all the Group maneuvers were of a maritime bent. In July 1929 the 4th Composite Group rendezvoused over Mount Arayat before moving on to attack the town of Cabanatuan with 3d Pursuit strafing runs and 28th Bombardment attacks.⁹⁸ Many similar Group maneuvers were held, usually involving flights to locations around Luzon including Dagupan, Olongapo, and Batangas; these flights also included radio coordination between the designated airborne commander and elements within the Group. In May 1929 the 4th Composite Group held its 'annual tactical inspection' consisting of a simulated attack on Corregidor, with 3d Pursuit PW-9s arriving before the 28th Bombardment aircraft to suppress defenses.⁹⁹

The 4th Composite Group was also continuing its regimen of night training. Night attacks by the 28th Bombardment and 3d Pursuit were part of the annual



The 1933 Group maneuvers saw the 28th Bombardment deploy to Iba with nine B-3s, the 3rd Pursuit to San Miguel with fourteen P-12s, while the 2nd Observation flew thirteen aircraft from Del Carmen with 4th Composite Group Headquarters. This photo shows eight of the B-3s of the 28th Bombardment at Iba on January 21, 1933. (*US National Archives, Record Group 18*)

maneuvers with the Philippine Division. The Group also held its own night maneuvers to hone the skills of its pilots. The installation of General Electric field lighting equipment at Clark Field in November 1930 helped to make the night operations easier for the 3d Pursuit. In January 1931, likely in preparation for the impending division maneuvers, the Group held night maneuvers that included 3d Pursuit pilots flying search and interception problems in cooperation with searchlights and sound ranging equipment of the 60th CA (AA).¹⁰⁰

When not participating in Group maneuvers, the squadrons followed their own training schedule that included cross country flights around the islands. In December 1930 the 3d Pursuit flew six P-12s out to the Mindoro Sugar Estate at San Jose, Mindoro for an overnight stay while in March 1931 the unit flew ten P-12s and the Group Douglas C-1C to Aparri for a three day out and back. Later that year the 4th Composite Group sent two Sikorsky C-6A amphibians to Jolo and return.¹⁰¹ Similarly, in April 1932 the 28th Bombardment deployed to Iba, Zambales with nine B-3As. Over a four day period, the squadron flew three plane attack missions twice a day against bridges, docks, and simulated troop concentrations. Later that year, in June, the 3d Pursuit also deployed to Iba for three days. Using nine P-12s, the squadron flew simulated offensive patrols and fired on targets towed by a deployed O-2H.¹⁰²

The Era of Austerity – 1933-1939

In December 1934 Japan gave notice of its withdrawal from all naval treaties and that as of January 1937 Japan was free of all treaty restrictions. The with-

drawal of Japan from the treaty also lifted the restrictions that had previously limited construction work in the Philippines, but now the War Department had to face a more formidable foe – the US Congress. The Hare–Hawes–Cutting Act was the first US law passed for the decolonization of the Philippines. Passed by Congress over a Presidential veto on January 17, 1933, the law promised Philippine independence after 10 years but still required ratification by the Philippine Senate. The Philippine Senate rejected the bill and advocated for a new bill that won the support of President Franklin D. Roosevelt. The result was the Tydings–McDuffie Act of 1934 which in several ways was similar to the Hare–Hawes–Cutting Act. The Tydings–McDuffie Act (officially the Philippine Independence Act) of March 24, 1934 immediately transferred most non-military property to the Commonwealth of the Philippines. The act stated that the Philippines would gain their independence on July 4, 1944 and all military reservations (except naval reservations and fueling stations) would transfer to the government of the Philippines. As soon as the Hare–Hawes–Cutting Act started to be debated on Capitol Hill, the War Department held back funding for any fixed construction in the Philippines. With the passing of the Tydings–McDuffie Act, the War Department enacted a policy to spend no more money in the Philippines for permanent improvements, unless savings would come from an upfront outlay of funds.¹⁰³ Occurring concurrently was the Drum Board, a body appointed in late 1933 to perform a comprehensive survey of the Air Corps. Tellingly, the Philippines were not considered an area vital to national defense due to ‘na-

tional policy' and force size (and budget) for the mid-1930s reflected this thought. This policy likely played out in the allocation of aircraft to Manila post 1933.¹⁰⁴

The passage of the Tydings–McDuffie Act also reopened the debate on the role of US forces in the Philippines. The Army and Navy commanders in the Philippines wrote their respective services in Washington, stating they could not carry out their missions under the ORANGE plan with the reductions in their forces. After debates within Washington on the topic, in the fall of 1935 the Secretaries of War and Navy called for the Joint Board to re-examine the US military position in the Far East. The Army recommended concentrating US forces in the Alaska-Hawaii-Panama strategic triangle while the Navy insisted on an offensive against Japan west of Hawaii. The solution was to have the Army hold the entrance to Manila Bay (the fortified coast defense islands including Corregidor) for as long as possible; the Army also had no provision for reinforcements, accepting the fact that the Philippines would fall before the Navy arrived. The 1938 revision of the ORANGE plan had a similar strategy, but the authors felt that there would be a period of 'strained relations' with Japan in the run up to war that would allow the US time to mobilize and strengthen its forces in the Pacific.¹⁰⁵

In concert with planning for War Plan ORANGE, the concept of a redoubt on Bataan supporting the fortified islands of Manila Bay was always in the back of the minds of Army planners in Manila. In June 1936 the Philippine Department decided once again to review landing field options for Corregidor. All Air Corps landing fields were in the vicinity of Manila; the War Department was still desirous of a landing field for wartime use that was within the final defensive area of the fortified islands and could be under the cover of Corregidor's anti-aircraft fire in times of war.¹⁰⁶ The 1936 board consisted of five members, but only had one Air Corps officer; three coast artillerymen and one engineer rounded out the group. After two days, the board offered three locations for an airfield on Corregidor, none of which was practical. The Board then looked at locations off Corregidor, and offered that sites were available on either Caballo Island or Bataan Peninsula. The locations on Bataan – near Barrios Mariveles and Cabcaben – ended up being used during the defense of the Philippines in early 1942. Finally, the board reviewed the existing facilities on Corregidor. Though it could be extended by cutting into the hill on the western end, Kindley Field was still not optimal for flight operations. The Board recommended that fighter aircraft be based at neighboring airfields vice on Corregidor, which only needed basing for transportation and communication aircraft. The Board recommended that improved seaplane ramps be constructed at the old Kindley Field seaplane ramp. It then recommended a new seaplane facility be constructed between Infantry Point and Artillery Point and that an underground hangar that could accommodate at least thirteen amphibian aircraft be constructed from this new location to the existing seaplane ramp at an estimated cost of \$310,726.¹⁰⁷ The plan

was forwarded to Washington where it was promptly shot down due to the policy of the War Department to not incur large additional expenses with respect to the Philippine Islands – the result of the Tydings–McDuffie Act.¹⁰⁸

On June 15, 1938 the 3d Pursuit and 28th Bombardment swapped duty stations, with the 28th taking up residence at Clark Field. Nichols was proving too constraining for the 28th's new B-10Bs both from a hangar space and a landing field perspective. At the same time, the runway at Nichols Field was paved with asphalt and extended, with the completed runway now measuring 1500 by 60 feet.¹⁰⁹ The next year, the runway at Clark Field was enlarged as well, the work being performed by a company of engineers from Fort McKinley. Construction returned to Nichols Field later in the year with the building of a 200 man and a 100 man barracks in anticipation of personnel expected to arrive on the November 1939 transport.¹¹⁰

By 1936 the Air Corps started to become serious about acquiring replacement aircraft

Equipment

Aircraft assigned to the 4th Composite Group were starting to age. A 1933 inspection of Clark Field noted the assigned P-12s were "not the most modern types" but were not quite "obsolete" yet. Major General Booth, the Commanding General of the Philippine Department, sent a memo in August 1933 to The Adjutant General of the Army stating that it appeared that the War Department followed a policy "wearing out obsolescent equipment at overseas stations." Brigadier General Westover, acting Chief of the Air Corps, did not address that allegation in his response. While likely empathizing with Major General Booth, the Air Corps was merely providing what was available at the time. It would only get worse as the Great Depression continued.¹¹¹ In early 1935 the War Department changed its policy with respect to overhauling aircraft. Due to financial shortages within the department, aircraft which would not normally be overhauled due to their age would be given an additional overhaul provided the aircraft was structurally safe for flying and the cost was not excessive. With this in mind, many of the aircraft in the Philippines would continue to serve beyond their projected replacement period.¹¹² That did not stop Manila from requesting additional aircraft. Besides the perennial request for transports, the Philippine Department requested attack aircraft to enable better support of the Philippine Division and let the 3d Pursuit concentrate on the air superiority mission.¹¹³

By 1936 the Air Corps started to become serious about acquiring replacement aircraft. The older aircraft could only be overhauled so many times before they became structurally unfit. In May 1936 Air Corps staff developed plans to replenish the bomber, observation and pursuit fleet in the Philippines in FY 1938. Due to aging

of airframes, within five months the pursuit and bomber portion of this plan was accelerated to late FY 1937.¹¹⁴

P-12s

By mid-1936 the heavily used P-12Bs – which made up the majority of the aircraft assigned to the 3d Pursuit – were showing their age. The aircraft had been routed through the Philippine Air Depot twice to extend their flight hours but their maintenance needs was impacting the number of aircraft available for flight training. The four P-12E aircraft allocated to the squadron were not able to carry the full burden on their own and a replacement was needed.¹¹⁵ The long term plan was to ship fifteen new pursuit aircraft to Manila in FY 1938, but in the interim enough P-12C/D airframes were to be transported to the Philippines to keep 3d Pursuit at its allotted strength of 13 aircraft.¹¹⁶ In her September 1936 arrival in Manila, the Army Transport 'Meigs' delivered nine P-12C/D aircraft from March Field to the 3d Pursuit. These aircraft would be formally declared obsolete and given a 'Z' prefix by the turn of the year, but additional help was coming. The following month the Adjutant General in Washington approved an order maintaining the 3d Pursuit at 12 serviceable airframes; when the Philippine Department could not maintain that number with assigned P-12s, P-26s would be shipped. This direction was codified within two days in a request from General Westover, Chief of the Air Corps, to the Commanding General, General Headquarters Air Force (GHQAF), to ship fourteen P-26A aircraft to the Philippines in FY 1937.¹¹⁷

Once the order was approved by GHQAF, Rockwell Depot was tasked to ready the fourteen airframes, twelve of which had to be ferried in from Selfridge Field from the 1st Pursuit Group which was due to receive Seversky P-35s.¹¹⁸ The fourteen P-26As were refurbished and loaded onto the Army Transport 'Meigs' for shipment to the Philippines. By May 1937 the monoplanes were unpacked in Manila and made flyable and the 3d Pursuit started the process of surveying the twelve obsolescent ZP-12B, C and D airframes that were on hand. Two of the 'C' models and all of the 'E' models survived the culling, but all other P-12s were consigned to the scrap heap. After two months of operational flying, the pursuit pilots found that the P-26 was capable of flying out of all but a few of the satellite airfields spread throughout the archipelago.¹¹⁹ The following year the Hawaiian Department was directed to refurbish ten P-26A aircraft on hand and ship them to Manila on the September 1938 transport run.¹²⁰ Though the P-26 was starting to be considered long in the tooth by 1939, aviation technology was undergoing a rapid change at this time and the Air Corps was hard pressed to keep up with the times with its Depression-era budget.

Bombers

The B-3A continued to plod along at Clark Field, providing stately if outdated equipment for the 28th Bombardment. Though five B-4/B-5 aircraft were avail-

able for shipment from Hawaii, the 1935 War Department policy change regarding overhauling older airframes made it not worth the effort to ship these outdated aircraft half way across the Pacific. The 28th Bombardment maintained a core of flyable B-3As by cycling airframes through the Philippine Air Depot.¹²¹ The depot performed minor miracles, keeping six of the geriatric aircraft available through spring 1937 and a couple in service through mid 1938. The replacement for these aircraft was the 'new' Martin B-10 and its Pratt & Whitney engine-variant, the B-12. The original plan was to ship eleven bombers in FY 1938, the details of which variant (B-10 or B-12) hinging on the merit of concentrating the B-12s in the Pacific (Hawaii was already operating the type).¹²² The first installment of five B-10Bs left for Manila in February 1937. An additional four B-10B aircraft were delivered by January 1938 with five more shipped from Rockwell Depot to Manila in late 1938. The FY 1940 plans were still in the works in mid 1938,¹²³ and the B-10s would soldier on until early 1941 when they were finally replaced by B-18s.

Transport

Air transport continued to constitute a minor but critical mission for the 4th Composite Group. There never seemed to be enough air transport for the department, with B-3A's being tasked with hauling supplies and personnel for exercise deployments to field sites and making daily supply and mail runs back to the home base.¹²⁴ The 1933 4th Composite Group exercises noted the need for assignment of "six cargo type airplanes ... other than amphibian type" to the Philippine Department for mobility operations. With the establishment of a chain of airfields throughout the archipelago, the only amphibians needed were those that would fly over water in support of the Coast Artillery at Corregidor.¹²⁵ Unfortunately, there were no transport aircraft available for shipment to the Philippines – just amphibians. The S-38/C-6A was gone by 1934, leaving the Y-1C-21 (now designated OA-3). This aircraft was joined by a pair of OA-4Bs, a follow-on variant of the OA-3, one in 1937 and one in 1938.¹²⁶ As B-10Bs were delivered to the 28th Bombardment in mid-1937, the excess ZB-3A aircraft were available and the 3d Pursuit acquired one for use at Clark Field. When heavy rains washed out the highways and railroad between Clark and Manila, the old bomber was pressed into a daily supply run to haul mail, newspapers and milk.¹²⁷

Observation

By mid 1935 the age of the observation aircraft was starting to become an issue and replacement aircraft were planned for shipment to Manila the following year. Nine O-19E aircraft arrived in Manila in late 1936 to maintain the Philippine allocation of twelve observation aircraft,¹²⁸ with twelve observation aircraft planned for allocation in 1938. A shortage of observation aircraft within the Air Corps resulted in only six aircraft of the O-46A type being shipped to Manila in late May 1938 –



The 28th Bombardment Squadron operated Keystone B-3A aircraft from 1931 through 1937. Ship "4" of the squadron was photographed in August 1935 flying over Santa Cruz, Ilocos Sur Province in northwest Luzon. (US National Archives, Record Group 18)

and that was at the expense of aircraft planned for Hawaii and Panama.¹²⁹ The aircraft were delivered and operational by fall 1938.

Operations

With an operational requirement to defend the Philippines for as long as possible but sourced with aging aircraft, the 4th Composite Group did the best with what it had. The squadrons continued their commitment to working with the joint partners of the Philippines – both Army and Navy units. Operational mobility characterized group training of the 1930s, with assigned squadrons learning to move away from their prepared bases on the Luzon Plain and operate for as long as they could survive when hostilities commenced.

Philippine Division

Throughout the 1930s, the 4th Composite Group continued to support the Philippine Division maneuvers in January of each year. The squadrons would usually deploy to flying fields around Luzon, including Del Carmen and Sugar Centrales, and fly attack or reconnaissance missions but the feeling that this exercise was the culmination of the training year as it was in earlier days was gone.¹³⁰ The 2d Observation continued to train with most of the Philippine Division regiments stationed in the Philippines, conducting artillery adjustment, photographic and reconnaissance missions with units stationed at Ft McKinley, Post of Manila, and Ft Stotsenburg. The other squadrons did some work with the Philippine Division units, but not to the extent of the 2d Observation.¹³¹ The 2d Observation continued to work with the 60th CA (AA) throughout the 1930s, towing target sleeves for machine gun and anti-aircraft fire over Manila Bay and releasing the target sleeves onto the

emergency landing field on Corregidor for scoring by the anti-aircraft crews – a fitting drop site for the 2d.¹³² Work with the large gun units on Corregidor – the 59th, 91st and 92d Coast Artillery – continued as well, the observation crews flying artillery adjustment missions and working with the fire control of the batteries.¹³³

Army-Navy

Joint exercises continued to play a role in the training of the airmen in the Philippines, exposing the aircrew to overwater operations and maintaining a familiarity with Navy operations. A multi-stage joint maneuver was conducted in Manila Bay in March 1937. The first part of the exercise, training for the Coast Defense garrison, saw the 4th Composite Group attacking the fortified islands of Manila Bay (Forts Mills, Hughes, Drum, and Frank) over a four day period, with the 2d Observation flying reconnaissance missions at 10,000 feet and the 3d Pursuit performing simulated attack missions. The second part of the exercise was with the Navy as part of a five day Joint Army Navy Exercise. The 2d Observation and 3d Pursuit continued their missions as before, joined by the 28th Bombardment making night attacks. The 2d Observation was in radio contact with the 'Black' force of the Navy. The 4th Composite Group had an excellent opportunity to practice air attacks in the face of anti-aircraft fire while the 60th CA (AA) received training and the big gun batteries had to dodge air attacks while the working to protect the entrance to Manila Bay.¹³⁴

Air Power

During the late 1930s, the emphasis of 4th Composite Group exercises appeared to shift from tactical training to logistics, deployed operations and command and control. Tactical training – attack, bombardment, and pursuit functions – was performed at the squadron level or in Joint Army-Navy Exercises. For example, the June 1939 4th Composite Group training directive for the training year of July 1, 1939 through June 30, 1940 had the objective of raising the individual proficiency of the assigned aircrews. Of note, all crews regardless of their squadron assignment were required to be proficient in aerial bombing and gunnery, night flying, and reconnaissance.¹³⁵

The 1933 Group maneuvers saw the 28th Bombardment deploy to Iba with nine bombers, the 3d Pursuit to San Miguel with fourteen P-12s, while the 2d Observation flew thirteen aircraft from Del Carmen with 4th Composite Group Headquarters. The units were in the field for twelve days, with operations starting out with four days of squadron exercises followed by four days of group exercises. Of the four group exercises, two concentrated on the control of the group by the Group Commander via radio. These dynamic exercises allowed changes to plans such as new objectives or rendezvous points. The 1935 maneuvers, which featured all squadrons deploying to Del Monte, Mindanao, served to acquaint the flyers with the logistics of field operations 500 miles from home stations and to provide orientation

of the island of Mindanao and the 19 satellite fields in the area. No tactical exercises appeared to have been flown other than communications work via radio. The 1936 maneuvers were similar in nature, staged on Cebu in the southern islands as well.¹³⁶ These large mobility maneuvers exercised the critical airfield infrastructure that had been developed in the Philippine Department over the prior two decades.

Movement

By 1935 the Philippine Department had in place a network of airfields across the 'thousand islands' of the archipelago. The landing strips were a combination of those associated with industry such as the Del Carmen or Del Monte landing fields (or golf course in the case of Del Monte) and municipal fields maintained by the local populace and the Philippine Constabulary. The Philippine Bureau of Aeronautics, under the guidance of Major Harvey Possar, oversaw this network of landing fields. These numerous runways provided the 4th Composite Group the ability to rapidly move and operate from across the islands, increasing the effectiveness of the limited assigned forces. As newer aircraft with increased landing speeds and weights were introduced, the fields were expanded to accommodate them – Jolo and Zamboanga having no problem accommodating the B-10Bs of the 28th Bombardment on a trip in February 1939. The fields, though, were just that and lacked facilities. Accommodations were either in existing commercial structures such as warehouses or under canvas, and servicing was limited – for example, refueling was accomplished using five gallon gas cans.

Extended distance training flights were flown to familiarize the squadrons with these airfields, especially those on the islands south of Luzon, and to train the crews in rapidly deploying to meet any threat. Examples include a 3d Pursuit trip in December 1932 to fields across northern Luzon, a 28th Bombardment flight of five B-3As to Iwahig, Palawan via San Jose, Mindoro and a September 1939 2d Observation mission of six aircraft to the southern islands for three days.¹³⁷ Sometimes

these training flights would turn into individual field maneuvers. In 1938 the 3d Pursuit deployed to Baguio, Mountain Province for two weeks in December and flew cooperative missions with the 45th Infantry (Philippine Scouts). During the same time period, the 2d Observation flew out of Del Carmen, Pampanga, using six O-46 and three O-19 aircraft in reconnaissance and liaison missions with the 24th Field Artillery and 26th Cavalry. Aircraft were operated under field conditions to include camouflage to deny aerial detection.¹³⁸ This field work would shortly pay off as the US slid inexorably towards war with Japan.

Summary

The role of airpower in the Philippines evolved through the three decades prior to the Second World War. Initially used as an adjunct to the coast defenses of Manila Bay the assigned squadrons slowly expanded their mission, first incorporating that of support to the Philippine Division then evolving to an independent striking force. This evolution mirrored that of the Air Corps for this time period. Though its aircraft were sometimes dated and obsolescent, the 4th Composite Group had adequate equipment to perform its deterrence and training mission. Most importantly, it developed a mobility doctrine and infrastructure that served it well in December 1941. Though most of its forces were devastated in the attacks of December 8th and 10th, the forces that survived followed the doctrine conceived over the prior decade by operating from Del Monte field and expeditionary airfields on Bataan. This doctrine continued through the early part of the Pacific War as forces moved throughout the southwest Pacific in support of General MacArthur's drive back to the Philippines. Another vestige of the 4th Composite Group – the independent air striking force that could find, fix and finish an adversary at sea – was displayed at the Battle of Bismarck Sea and other operations under General Kenney's Fifth Air Force. Though never a large force, the impact of pre-war airpower in the Philippines was felt throughout the Southwest Pacific area in the Second World War. ■

NOTES

1. "Report of the National Coast-Defense Board – Appointed by the President of the United States by Executive Order, January 31, 1905," 59th Cong., 1st Sess., Senate Doc. 248, March 5, 1906.
2. *Air Service Newsletter*, August 13, 1920, p. 12.
3. "The Wright Brothers and the U.S. Army Signal Corps, 1905-1915" by A. Timothy Warnock; located in *Reconsidering a Century of Flight* - edited by Janet Rose Daly Bednarek, Roger D. Launius; Juliette Hennessy, *The United States Army Air Arm, April 1861 to April 1917* – USAF Historical Studies No. 98 (USAF Historical Division, Research Studies Institute, Air University, 1958), p. 79-81, 84
4. Hennessy, p. 150-151
5. *Ibid.*, p. 151
6. *Ibid.*, p. 152

7. The Adjutant General of the Army. Memorandum to Chief Signal Officer, Washington, D.C. 15 August 1917. Subject: Aircraft for coast defenses of United States and Insular Possessions. Box 506, General Correspondence 1918-1921, General Correspondence 1917-1938, Central Decimal Files 1917-1938, RG 18, National Archives
8. Mauer Mauer, *Aviation in the U.S. Army 1919-1939* (Washington: U.S. Government Printing Office, 1987), p. 108-111
9. Aerial Coast Defense Officer, Operations Division. Memorandum to Chief, Training and Operations Group, Headquarters Air Service. No subject. 26 June 1919. Box 508, General Correspondence 1918-1921, General Correspondence 1917-1938, Central Decimal Files 1917-1938, RG 18, National Archives; Training and Operations Group, Air Service. Memorandum for the Administrative Group. No subject. 16 July 1919. Box 499, General Cor-

respondence 1918-1921, General Correspondence 1917-1938, Central Decimal Files 1917-1938, RG 18, National Archives

10. Louis Morton, *United States Army in World War II – The War in the Pacific: Strategy and Command – The First Two Years* (Washington: U.S. Government Printing Office, 1962), p. 25

11. Secretary of War. Memorandum to Secretary of Navy, Washington, D.C. No subject. Apr. 15, 1919; Chief, Air Service Operations. Memorandum to Telegraph and Cables Division. No subject. Jul. 1, 1919; Supply Group, Property Division. Memorandum to Director of Air Services. Subject: Material destined for Philippine Islands. Jul. 25, 1919. All in Folder 452.2, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

12. *Air Service Newsletter*, December 13, 1919, p. 2; June 2, 1920, p. 7

13. Major W.A. Danielson. Memorandum to The Quartermaster General (Construction Service), Washington, D.C. February 6, 1922. Subject: Completion Report of Air Service Projects, Ft. Mills, P.I. Fort Mills, P.I. Book No. 1. No date. Box 1222, Central Decimal Files, Project Files 1917-1925, RG 407, National Archives; *Air Service Newsletter*, October 29, 1920, p. 17

14. *Air Service Newsletter*, August 5, 1920, p. 11-12; Mauer Mauer, *World War II Combat Squadrons of the United States Air Force* (New York: Smithmark Publishers, 1982), p. 23

15. November 23, 1920 *Air Service Newsletter*, p. 18; O.D.A.S. (Office of the Director of Air Service) Index Sheet to A.D.O. (?). No subject. Apr. 27, 1920. Box 3080, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

16. Unknown Air Service Office. Index Sheet to Chief, Training and Operations Group. Subject: Policy regarding DH-4B Airplanes. Jul. 2, 1920. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.S. (Chief of Air Service). Index Sheet to The Aeromarine Plane and Motor Corporation, Keyport, NJ. No subject. Jul. 27, 1920. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; March 17, 1921 *Air Service Newsletter*, p. 13

17. “Fort Barry Balloon Hangar and Motor Vehicle Sheds - Abbreviated Historic Structures Report” (Harpers Ferry, WV: Cultural Resources and Museum Management Division, National Park Service, 2004), p. 10; *Air Service Newsletter*, January 28, 1921, p. 8-9

18. “Fort Barry Balloon Hangar and Motor Vehicle Sheds - Abbreviated Historic Structures Report” (Harpers Ferry, WV: Cultural Resources and Museum Management Division, National Park Service, 2004); *Air Service Newsletter*, April 20, 1920; August 13, 1920, p. 13-14; October 29, 1920, p. 17; November 29, 1920, p. 13

19. Air Service Officer, Philippine Department. Synopsis of cable to Chief of Air Service. No subject. Jul. 13, 1920. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Air Officer, Philippine Department. Memorandum to Chief of the Air Service. Subject: Coast Defenses of Manila & Subic Bays - Seaplane for. Sep. 21, 1920. Folder 452.2, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Adjutant General. Index Sheet to C.A.S. (Chief of Air Service). No subject. Sep. 15, 1920. Box 3080, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

20. Commanding Officer, Air Service Station (Fort Stotsenburg). Memorandum to Director of Air Service. Subject: Scout Planes. 25 February 1920. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

21. Training and Operations Group. Memorandum to Director of Air Service, Headquarters Air Service Station, Camp Stotsen-

burg. Subject: Shipment of Spad VII's to Philippine Department. Jul. 12, 1920. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of Air Service. Memorandum to Air Service Officer, Philippine Department. Subject: Transfer Order 1220. Jan. 5, 1921. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of Supply Division. Memorandum to Assistant Chief of Air Service. No subject. Feb. 12, 1925. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

22. December 16, 1920 *Air Service Newsletter*, p. 13; Air Officer, Philippine Department. Air Service Activities, January 15 to 31, 1921. Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Air Officer, Philippine Department. Air Service Activities, December 1 to 15, 1920. Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

23. February 2, 1920 *Air Service Newsletter*, p. 8; September 9, 1921 *Air Service Newsletter*, p. 12; C.A.S. (Chief of Air Service). Index Sheet to C.O., Fairfield A.I.D. (Air Intermediate Depot). No subject. Feb. 15, 1921. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.S. Index Sheet to C.O., Fairfield Air Intermediate Depot. No subject. Mar. 2, 1921. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Property Division, under direction of the Chief of Air Service. Memorandum to Commanding Officer, Fairfield Air Intermediate Depot. No subject. Mar. 14, 1921. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

24. *Air Service Newsletter*, January 12, 1921, p. 10-11, 17; February 23, 1921, p. 15; March 23, 1921, p. 4-5, 8-9.

25. March 17, 1921 *Air Service Newsletter*, p. 13.

26. January 12, 1921 *Air Service Newsletter*, p. 13; January 28, 1921 *Air Service Newsletter*, p. 19; February 23, 1921 *Air Service Newsletter*, p. 5-6.

27. September 17, 1920 *Air Service Newsletter*, p. 15; November 20, 1920 *Air Service Newsletter*, p. 6; June 16, 1921 *Air Service Newsletter*, p. 20; September 9, 1921 *Air Service Newsletter*, p. 12.

28. Training and War Plans Division, under authority of the Chief of Air Service. Memorandum to Air Officer, Philippine Department thru Commanding General. No subject. Dec. 27, 1921. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

29. November 18, 1921 *Air Service Newsletter*, p. 16; December 2, 1921 *Air Service Newsletter*, p. 10; December 27, 1921 *Air Service Newsletter*, p. 17; January 6, 1922 *Air Service Newsletter*, p. 20

30. September 9, 1921 *Air Service Newsletter*, p. 12; November 9, 1921 *Air Service Newsletter*, p. 14; February 20, 1922 *Air Service Newsletter*, p. 13

31. February 20, 1922 *Air Service Newsletter*, p. 13; March 21, 1922 *Air Service Newsletter*, p. 19; May 18, 1922 *Air Service Newsletter*, p. 15

32. Chief of Construction Division. Memorandum to Director of Operations, Washington, D.C. May 7, 1920. Subject: Construction of Officer' and Non-commissioned Officer' Quarters at Ft. Mills, P.I. Box 1222, Central Decimal Files, Project Files 1917-1925, RG 407, National Archives; Major W.A. Danielson. Memorandum to The Quartermaster General (Construction Service), Washington, D.C. February 6, 1922. Subject: Completion Report of Air Service Projects, Ft. Mills, P.I. Fort Mills, P.I. Book No. 1. No date. Box 1222, Central Decimal Files, Project Files 1917-1925, RG 407, National Archives; *Air Service Newsletter*, June 10, 1921, p. 12; July 28, 1921, p. 11; September 16, 1921, p. 11-12; Nov 25, 1921, p. 16

33. *Air Service Newsletter*, May 16, 1921, p. 18-19; May 27, 1921, p. 12; June 30, 1921, p. 13-14; August 4, 1921, p. 8; September 16, 1921, p. 11
34. *Air Service Newsletter*, August 19, 1921, p. 13-14; Sept 16, 1921, p. 11; October 15, 1921, p.11; Oct 25, 1921, p. 8; November 18, 1921, p. 16; Nov 25, 1921, p. 16; December 27, 1921, p. 17; January 20, 1922, p. 18; February 20, 1922, p. 14
35. Air Officer, Philippine Department. Memorandum to Commanding General, Headquarters, Philippine Department, Manila, P.I. Subject: Detachment of 2nd Observation Squadron at Paraque Beach. 29 August 1921. Folder 373A, Box 3084, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
36. *Air Service Newsletter*, June 23, 1922, p. 17-18; June 30, 1922, p. 18; July 12, 1922, p. 15; August 10, 1922, p. 13; August 29, 1922, p. 16
37. BG Oscar Westover, Assistant Chief of Air Corps. Endorsement to staff package AG 580.82 Ft. Mills (12-9-32) (Extension of Ft. Mills electric railway through Malinta Tunnel to Kindley Field). 21 December 1932. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives; *Air Service Newsletter*, September 27, 1922, p. 14; September 29, 1923, p. 20
38. *Air Service Newsletter*, March 21, 1922, p. 12-13; March 29, 1922, p. 18; April 7, 1922, p. 20; April 26, 1922, p. 17; May 3, 1922, p. 14; May 24, 1922, p. 15; June 23, 1922, p. 18
39. *Air Service Newsletter*, September 13, 1922, p. 13-14; October 10, 1922, p. 20
40. *Air Service Newsletter*, June 23, 1922, p. 18; July 12, 1922, p. 16; Air Officer, Philippine Department. Memorandum to The Chief of Air Service. Subject: Supply-Equipment for 28th Bombardment Squadron. 5 August 1922. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
41. Conference on the Limitation of Armament; available at http://www.ibiblio.org/pha/pre-war/1922/nav_lim.html, accessed 3 July 2015
42. Morton, p. 29
43. Philippine Department. Training Memorandum No. – Subject: Co-operation between Air Service and Ground Troops. April 1922. “Activity Reports” Folder, Box 3078, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
44. *Air Service Newsletter*, August 10, 1922, p. 12; August 16, 1922, p. 14
45. Philippine Department. Report of Sub-Committee of Board of Officers. No date, estimated March 1922. “Activity Reports” Folder, Box 3078, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
46. *Air Service Newsletter*, August 10, 1922, p. 13; October 10, 1922, p. 21; October 19, 1922, p. 16; November 16, 1922, p. 19
47. *Air Service Newsletter*, December 13, 1922, p. 18; January 23, 1923, p. 20
48. *Air Service Newsletter*, March 5, 1923, p. 19; August 3, 1923, p. 14
49. Chief of the Air Service. Memorandum to Brigadier General Mitchell. No subject. 8 December 1923. Folder 452.2, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
50. *Air Service Newsletter*, February 21, 1924, p. 3, p. 21; April 12, 1924, p. 12, 22-23
51. *Air Service Newsletter*, December 8, 1925, p. 25; April 5, 1926, p. 23; June 8, 1926, p. 23
52. Headquarters, Harbor Defenses of Manila and Subic Bays, Fort Mills, PI. Memorandum to the Commanding General, Philippine Department. Oct 10, 1930. Subject: Transfer of Balloon Hangars from Air Corps to QMC; Air Officer, Headquarters, Philippine Department. Memorandum to the Commanding General, Philippine Department. April 10, 1931. Subject: Hangars No. 619 and 620 Kindley Field. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives; *Air Service Newsletter*, April 5, 1929, p. 124; July 20, 1929, p. 261
53. Air Officer, Philippine Department. Memorandum to the Chief of Air Service. No subject. 28 October 1925. “Miscellaneous Staff” Folder, Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
54. *Air Service Newsletter*, July 19, 1923, p. 15; September 14, 1923, p. 17-18; September 29, 1923, p. 21
55. Alain Pelletier, “Made in America: Thomas Morse MB-3 and Boeing MB-3A,” *Air Enthusiast* Issue 131 (September/October 2007), p. 51; *Air Service Newsletter*, November 22, 1923, p. 20; August 23, 1923, p. 19; C.A.S. (Chief of Air Service). Synopsis of cable to McCook Field. No subject. 20 June 1922. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
56. War Department General Staff, War Plans Division. Memorandum for Assistant Chief of Staff, G-4. Subject: Shipment of 24 MB-A Pursuit Planes to the Philippine Department. 10 May 1923. “Miscellaneous Staff” Folder, Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief, Property Requirements Section. Memorandum to Officer-in-Charge, Property Maintenance & Cost Compilation, Fairfield Air Intermediate Depot. No subject. 27 June 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Service Newsletter*, December 21, 1923, p. 17-18; January 1, 1924, p. 21
57. C.A.S. (Chief of Air Service). Synopsis of cable to A.G.O. (Adjutant General’s Office). No subject. 11 June 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.S. (Chief of Air Service). Synopsis of cable to Ninth Corps Area. No subject. 7 September 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Rockwell A.I.D. (Air Intermediate Depot). Synopsis of cable to Chief of Air Service. No subject. 31 July 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief, Property Requirements Section. Memorandum for Cable Section (Thru Chief, Supply Division). No subject. 31 July 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; San Fran Calif. Synopsis of cable to C.A.S. (Chief of Air Service). No subject. 21 April 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives
58. Chief, Property Requirements Section. Memorandum to Officer-in-Charge, Property Maintenance & Cost Compilation, Fairfield Air Intermediate Depot. No subject. 27 June 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Service Newsletter*, December 21, 1923, p. 17-18; February 20, 1923, p. 19; October 27, 1923, p. 19
59. Pelletier, p. 50-51. *Air Service Newsletter*, June 22, 1925, p. 19; November 16, 1925, p. 18; Field Service Section, Fairfield Air Intermediate Depot. Memorandum to Chief of Supply Division, O.C.A.S. No subject. 24 July 1925. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Field Service Section, Fairfield Air Intermediate Depot. Memorandum to Chief of Supply Division, O.C.A.S. No subject. 5 August 1925. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Philippine Department. Memorandum to The Adjutant General. Subject: Air Service Activities Report. 26 February 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files

1917-1938, RG 18, National Archives

60. Office of the Chief of Air Service. Memorandum to Air Officer, Philippine Department. No subject. 17 May 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, July 9, 1926, p. 22; May 8, 1926, p. 14; October 16, 1926, p. 15; November 12, 1926, p. 18; December 31, 1926, p. 21

61. Chief Material Divn. Memorandum to Commanding Officer, Philippine Air Depot. Subject: Transfer Order FSS-29-840. 29 June 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief Material Divn. Memorandum to Commanding General, Philippine Department. Subject: Aircraft Allotment Table Fiscal Year 1930. 18 September 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

62. Chief, Training and War Plans Division, Office of the Chief of Air Service. Memorandum for the Chief of the Supply Division. No subject. 22 May 1923. 'Miscellaneous Staff' Folder, Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.S. (Chief of Air Service). Synopsis of cable to Philippine Department. No subject. 31 August 1923. Folder 452.1A, Box 3090, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Service Newsletter*, May 16, 1924, p. 22; May 31, 1924, p. 8, July 15, 1924, p. 21

63. Air Officer, Philippine Department. Memorandum to Chief of the Air Service. Subject: Airplanes for Replacement. 25 January 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Office of the Chief of the Air Service. Memorandum to Chief, Field Service Section, Fairfield Air Intermediate Depot. No subject. 23 December 1925. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Office of the Chief of the Air Service. Memorandum to Commanding Officer, Philippine Air Depot. No subject. 10 March 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Acting Chief, Training and War Plans Division. Memorandum for Chief, Supply Division. No subject. 5 August 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief, Material Division. Memorandum to Chief of the Air Corps. Subject: Report of Annual Tactical Inspection, Philippine Department. 10 June 1927. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

64. Commanding Officer, Camp Nichols. Memorandum to Chief of the Air Corps. Subject: Status of Bombardment Equipment. Undated (estimated Feb 1928). Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Memorandum to Chief Material Division. No subject. 19 March 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Material Liaison Section, Air Corps. Memorandum for The Executive. Draft Cablegram. 17 July 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief Material Division. Memorandum to Chief of the Air Corps. No subject. 6 April 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, October 29, 1928, p. 401

65. *Air Service Newsletter*, February 21, 1924, p. 5, 20-21; April

12, 1924, p. 22

66. A.G.O (Adjutant General's Office?). Synopsis to C.A.S (Chief of Air Service?). Subject: Air Service Organizations – Equipment Allowances. 17 December 1923. Folder 686, Philippine Department Flying Fields, Box 3094, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Service. Memorandum to Brigadier General Mitchell. No subject. 8 December 1923. Folder 452.2, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

67. *Air Service Newsletter*, December 4, 1924, p. 18; April 20, 1925 p. 12, 22; May 22, 1925, p. 19; June 22, 1925 p. 11; Chief of the Air Service. Memorandum to the Adjutant General. Subject: Nine Crates of Airplane Equipment and Supplies for Manila, P.I. Dec. 2, 1924. Folder 452.2, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

68. *Air Corps Newsletter*, September 23, 1927, p. 284

69. Loening OA-1A accidents: s/n 26-438 damaged in landing accident at Kindley Field, Corregidor, Philippines Mar 27, 1929, s/n 26-439 damaged in forced landing at Capa Calavite, Philippines Jul 19, 1928; Loening OA-1B – s/n 27-323 damaged at Nichols Field, Philippines Jul 4, 1929; Loening OA-1C – s/n 28-75 damaged in landing accident at Manila Bay, Philippines Oct 3, 1928; *Air Corps Newsletter*, January 7, 1928, p. 32; June 20, 1928, p. 243; December 18, 1928, p. 456

70. Assistant Adjutant General, Philippine Department. Memorandum to Chief of the Air Corps. No subject. 11 February 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, March 10, 1927, p. 72; April 21, 1928, p. 163

71. Chief of the Air Corps. Memorandum to Chief Material Division. No subject. 19 March 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, October 29, 1928, p. 401; November 24, 1928, p. 426; Material Liaison Section, Air Corps. Memorandum for The Executive. Draft Cablegram. 17 July 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

72. Chief Material Division. Memorandum to Chief of the Air Corps. Subject: Airplanes for the Philippine Department. 5 November 1928. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to Q.M.G. (Quartermaster General?). No subject. 14 February 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief Material Division. Memorandum to Chief of the Air Corps. No subject. 6 April 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

73. *Air Service Newsletter*, June 8, 1926, p. 23; October 16, 1926, p. 16; November 12, 1926, p. 19; Grover Loening, *Amphibian: The Story of the Loening Amphibian* (New York: New York Graphic Society, 1973); Air Office, Headquarters Philippine Department. Memorandum to the Chief, Engineering Division, McCook Field, Ohio. No subject. 15 March 1926. Folder 452.2 – Amphibians, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Office of the Chief of the Air Corps. Memorandum to the Chief, Field Service Section, Fairfield, Ohio. No subject. 4 October 1926. Folder 452.2 – Amphibians, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

74. Morton, p. 35

75. Executive, Office of the Chief of Air Service. Memorandum to Colonel Benjamin Castle, F.J. Lisman Company. No subject. 16

August 1924. 'Miscellaneous Staff' Folder, Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

76. Department Air Officer, Headquarters, Philippine Department. Memorandum to the Adjutant General. Subject: Air Service Activities Report. 14 March 1925. "Activity Reports" Folder, Box 3077, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Philippine Department. Memorandum to The Adjutant General. Subject: Air Service Activities Report. 26 February 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Service Newsletter*, March 5, 1923, p. 19; March 29, 1923, p. 16; April 14, 1923, p. 18; April 20, 1925, p. 22; March 10, 1927, p. 73; March 31, 1927, p. 99; February 21, 1928, p. 63-64; March 31, 1928, p. 121, 123.

77. *Air Service Newsletter*, October 24, 1925, p. 14-16; April 5, 1926, p. 22; March 10, 1927, p. 73; March 31, 1927, p. 99; May 14, 1927, p. 148-9; June 8, 1927, p.179; January 27, 1928, p. 58; January 31, 1929, p. 44; February 23, 1929, p. 77.

78. *Air Service Newsletter*, March 21, 1923, p. 18; May 31, 1924, p. 11-12; June 22, 1925 p. 11; March 10, 1927, p. 73; May 14, 1927, p. 148-9; June 8, 1927, p.179; April 21, 1928, p. 165; June 20, 1928, p. 243.

79. *Air Service Newsletter*, March 7, 1924, p. 1-4; June 8, 1926, p. 12; January 7, 1928, p. 32; January 27, 1928, p. 58; March 31, 1928, p. 135; April 21, 1928, p. 163.

80. *Air Service Newsletter*, March 7, 1924, p. 1-4; November 17, 1924, p. 17; December 4, 1924, p. 16; January 30, 1925, p. 19; April 20, 1925, p. 22; June 22, 1925, p. 19; July 8, 1925, p. 20; September 12, 1925, p. 19; October 24, 1925, p. 14-16; January 31, 1929, p. 44; Headquarters, Second Observation Squadron. Memorandum to Chief of Air Service. Subject: Military Operations. Report of Air Service operations in Conjunction with Target Practice of Coast Defenses of Manila and Subic Bays, Fort Mills, P.I. 15 April 1924. 'Joint Training Exercises' Folder, Box 3081, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

81. Philippine Department. Memorandum to The Adjutant General. Subject: Air Service Activities Report. 26 February 1926. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Service Newsletter*, May 13, 1923, p. 15; May 8, 1926, p. 14, 24-25.

82. *Air Corps Newsletter*, March 31, 1927, p. 99; January 7, 1928, p. 32; April 21, 1928, p. 165

83. Assistant Secretary of War. Memorandum to Mr. W. Henry Grant. No subject. 4 February 1932. 'Miscellaneous Staff' Folder, Box 3079, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief, Plans Division. Memorandum for Chief of the Air Corps. Subject: Report of Annual Inspection of the Philippine Air Depot for the FY 1932. 21 April 1932. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Field Service Section, Fairfield Air Intermediate Depot. Memorandum to Chief, Material Liaison Section. Subject: Overhaul of Aircraft, Philippine Department. 28 October 1931. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, December 8, 1927, p. 345; February 21, 1928, p. 69.

84. C.A.C. (Chief of Air Corps). Synopsis of cable to Air Officer, 9th C.A. No subject. 14 February 1930; Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief Material Divn. Synopsis of cable to C.A.C. (Chief of Air Corps). No subject. 19 March 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Field Service

Section, Fairfield Air Intermediate Depot. Memorandum to Chief, Material Liaison Section. Subject: Monthly Activity Reports, Nichols Fd & 4th Comp. Grp. For February; Mitchell Fd. & Scott Fd. For March; Nichols Fd. & 4th Comp. Grp., Clark Fd., & Phil.A.D. for January. 19 April 1930. Box 3076, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps) Synopsis of cable to Chief, Material Divn. No subject. 16 July 1932. Folder 452.2 – Amphibians, Box 3090, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, September 23, 1930, p. 286; November 14, 1930, p. 344; February 18, 1932, p. 62

85. Chief Material Divn. Memorandum to Commanding General, Philippine Department. Subject: Aircraft Allotment Table Fiscal Year 1930. 18 September 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Headquarters, Nichols Field and Fourth Composite Group. Memorandum to Chief of the Air Corps. Subject: Transport airplanes, Procurement of. 12 February 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Adjutant General, Material Liaison Div. Draft of Cablegram to MacArthur, Manila, P.I. No Subject. 4 September 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to C.O. Nichols Field P.I. No subject. 2 January 1931. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

86. Field Service Section, Fairfield Air Intermediate Depot. Memorandum to Chief, Material Liaison Section. Subject: Monthly Activity Reports, Nichols Fd & 4th Comp. Grp. For February; Mitchell Fd. & Scott Fd. For March; Nichols Fd. & 4th Comp. Grp., Clark Fd., & Phil.A.D. for January. 19 April 1930. Box 3076, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Adjutant General, Material Liaison Div. Draft of Cablegram to MacArthur, Manila, P.I. No Subject. 4 September 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

87. Chief of Air Corps. Memorandum to Air Officer, Hawaiian/Philippine/Panama Canal Departments. Subject: Attachment Fittings on LB-5A Airplanes. 21 May 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Headquarters Philippine Department. Cablegram to The Adjutant General. No subject. 10 October 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, June 29, 1929, p. 237

88. Chief Material Divn. Memorandum to Commanding General, Philippine Department. Subject: Aircraft Allotment Table Fiscal Year 1930. 18 September 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Headquarters Philippine Department. Radiogram to The Adjutant General. No subject. 6 December 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief Material Divn. Cable to Chief of the Air Corps. No subject. 13 November 1929. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

89. Headquarters, Philippine Department Air Corps, Nichols Field and Fourth Composite Group. Operations Order No. 12. 12 September 1930. Box 3076, Entry 172: Project Files – Depart-

ments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; *Air Corps Newsletter*, March 5, 1930, p. 66; May 7, 1931, p. 182; AS News, September 18, 1931, p. 327; Office of the Chief of the Air Corps. Memorandum to Chief, Material Division. No subject. 13 September 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Air Corps Material Division. Memorandum to the Chief of the Air Corps. Subject: Monthly Activities Reports for the following: Clark Field & 3d Pursuit Squadn., for July 1930; Nichols Fld & 4th Composite Grp., for August, 1930; 7th Bomb. Grp., Rockwell Field, Calif, for August 1930. 25 October 1930. Box 3076, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to C.O. Nichols Field P.I. No subject. 2 January 1931. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to Chief Material Divn. No subject. 24 January 1931. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Headquarters Philippine Department. Memorandum to The Adjutant General. Subject: Shortage of Bombardment Aircraft. 21 February 1930. Folder 452.1B, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

90. *Air Corps Newsletter*, March 31, 1930, p. 96; April 8, 1932, p. 142; May 3, 1932, p. 177; May 29, 1932, p. 193; Headquarters, Nichols Field & Fourth Composite Group. Memorandum to The Adjutant General. Subject: Field Exercises, 4th Composite Group, Air Corps, Training Year, 1932. 15 August 1932. ‘Philippines-Maneuvers’ Folder, Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

91. *Air Corps Newsletter*, October 17, 1929, p. 367; December 21, 1929, p. 449; January 16, 1930, p. 15

92. *Air Corps Newsletter*, January 16, 1930, p. 15; January 15, 1931, p. 26

93. Adjutant General’s Office, Headquarters Philippine Department. Memorandum to Commanding General, Philippine Department. 10 Apr 1931. Subject: Hangars No. 619 and 620 Kindley Field. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives; *Air Corps Newsletter*, March 31, 1930, p. 96

94. *Air Corps Newsletter*, June 30, 1931, p. 247; May 29, 1932, p. 211.

95. *Air Corps Newsletter*, June 29, 1929, p. 179.

96. *Air Corps Newsletter*, May 16, 1929, p. 219; August 31, 1929, p. 313; December 21, 1929, p. 449; January 15, 1931, p. 26

97. *Air Corps Newsletter* July 20, 1929, p. 260.

98. *Air Corps Newsletter*, August 31, 1929, p. 313

99. *Air Corps Newsletter*, May 16, 1929, p. 219; July 20, 1929, p. 260.

100. *Air Corps Newsletter*, December 8, 1930, p. 376; February 28, 1931, p. 95

101. *Air Corps Newsletter*, January 15, 1931, p. 26; May 7, 1931, p. 186; July 21, 1931, p. 275

102. Headquarters, Nichols Field & Fourth Composite Group. Memorandum to The Adjutant General. Subject: Field Exercises, 4th Composite Group, Air Corps, Training Year, 1932. 15 August 1932. ‘Philippines-Maneuvers’ Folder, Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

103. Mark Stille, “The Imperial Japanese Navy in the Pacific War,” (Oxford: Osprey Publishing, 2013), p. 13; Commanding Officer, Nichols Field and Fourth Composite Group. Memorandum to Commanding General, Philippine Department. 6 June 1934. Subject: Lighting System for Fort Mills Landing Field. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives;

Adjutant General’s Office, Harbor Defenses of Manila and Subic Bays. Memorandum to Commanding General, Philippine Department. 7 Oct 1932. Subject: Construction of Cable Terminal Huts at Fort Mills. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives

104. Irving Brinton Holley, *Buying Aircraft: Material Procurement for the Army Air Forces* (Washington, D.C.: Government Printing Office, 1964), p. 53

105. Morton, p. 36-42

106. Staff package associated with Lighting System for Fort Mills Landing Field. Correspondence dating between June 6, 1934 and October 26, 1934 between Philippine Department and War Department and within the War Department. Box 3059, Adjutant General Projects 1926-1939, RG 407, National Archives;

107. Proceedings of a Board of Officers appointed for the purpose of studying and making recommendations reference the establishment of a suitable airdrome on Corregidor Island, July 15, 1936. IRIS 121632, Air Force Historical Research Agency, Maxwell AFB, AL.

108. Proceedings of a Board of Officers appointed for the purpose of studying and making recommendations reference the establishment of a suitable airdrome on Corregidor Island, July 15, 1936. War Department response, 16 December 1936. IRIS 121633, Air Force Historical Research Agency, Maxwell AFB, AL.

109. *Air Corps Newsletter*, August 1, 1938, p. 11, 13

110. *Air Corps Newsletter*, May 15, 1939, p. 14; October 15, 1939, p. 6

111. Office of the Air Officer, Headquarters Philippine Department. Memorandum to the Adjutant General. Subject: Aircraft allotment Table, FY. 1934. 2 August 1933. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

112. C.A.C. (Chief of Air Corps). Synopsis of cable to Chief of Cavalry. No subject. 9 June 1933. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Memorandum to the Adjutant General. No subject. 15 May 1935. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

113. Chief of the Air Corps. Memorandum to the Inspector General. No subject. 30 June 1938. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

114. Chief of Air Corps. Synopsis of cable to Chief Material Divn. No subject. 11 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of Air Corps. Memorandum to Commanding General, GHQ Air Force, Langley Field, VA. Subject: Airplanes to Hawaii and Philippine Departments. 22 October 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

115. *Air Corps Newsletter*, June 15, 1936, p. 17; September 1, 1936, p. 23

116. Chief of the Air Corps. Memorandum to the Adjutant General. No subject. 15 May 1935. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to Chief Material Divn. No subject. 11 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

117. *Air Corps Newsletter*, December 1, 1936, p. 19; Material Division. Memorandum for the Executive. No subject. 13 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Adjutant General’s Office. Memorandum to the Chief of Air Corps. Subject: Allocation of Pursuit Airplanes. 14 October 1936. Folder 452.1C, Box 3089, Entry 172: Project

Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; General Westover. Synopsis of cable to Assistant Chief of Staff. No subject. 16 October 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of Air Corps. Memorandum to Commanding General, GHQ Air Force, Langley Field, VA. Subject: Airplanes to Hawaii and Philippine Departments. 22 October 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

118. C.A.C. (Chief of Air Corps). Synopsis of cable to Commanding Genl. GHQ AF, Langley. No subject. 14 January 1937. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

119. *Air Corps Newsletter*, May 15, 1937, p. 23; August 15, 1937, p. 9

120. Chief of the Air Corps. Memorandum to the Quartermaster General. Subject: Air planes for Overseas Departments. 4 January 1937. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Radiogram to the Commanding General, Hawaii Department. No subject. 21 June 1938. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

121. Chief of the Air Corps. Memorandum to the Adjutant General. No subject. 15 May 1935. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Material Division, Wright Field. Memorandum to Chief of the Air Corps. No subject. 6 February 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; General Arnold. Synopsis of cable to A.G. (Adjutant General). No subject. 6 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

122. Material Division, Wright Field. Memorandum to Chief of the Air Corps. No subject. 6 February 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to Chief Material Divn. No subject. 11 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

123. Chief of Air Corps. Memorandum to Commanding General, GHQ Air Force, Langley Field, VA. Subject: Airplanes to Hawaii and Philippine Departments. 22 October 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Memorandum to Colonel Philoon, Sacramento Air Depot. No subject. 1 July 1938. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Air Corps Material Division, Wright Field, OH. Memorandum to Chief of the Air Corps. Subject: Airplanes for Overseas Shipment. 6 February 1937. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

124. Headquarters, Nichols Field & Fourth Composite Group. Memorandum to The Adjutant General. Subject: Field Exercises, 4th Composite Group, Air Corps, Training Year, 1932. 15 August 1932. 'Philippines-Maneuvers' Folder, Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

125. Headquarters, Nichols Field & Fourth Composite Group. Memorandum to The Adjutant General. Subject: Report on Annual Field Exercises, 4th Composite Group, A.C. 21 February

1933. 'Philippines-Maneuvers' Folder, Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

126. General Westover. Synopsis of cable to Assistant Chief of Staff. No subject. 16 October 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Memorandum to the Quartermaster General. Subject: Air planes for Overseas Departments. 4 January 1937. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Office of the Air Officer, Headquarters Philippine Department. Memorandum to the Adjutant General. Subject: Aircraft allotment Table, FY. 1934. 2 August 1933. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

127. *Air Corps Newsletter*, September 15, 1937, p. 15

128. Chief of the Air Corps. Memorandum to the Adjutant General. No subject. 15 May 1935. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Material Division. Memorandum for the Executive. No subject. 13 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; C.A.C. (Chief of Air Corps). Synopsis of cable to A.G. (Adjutant General). No subject. 17 June 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

129. C.A.C. (Chief of Air Corps). Synopsis of cable to Chief Material Divn. No subject. 11 May 1936. Folder 452.1C, Box 3089, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Chief of the Air Corps. Memorandum to the Adjutant General. Subject: O-46A planes for Philippine department instead of for Panama and Hawaii. 4 May 1938. Folder 452.1C, Box 3089, Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

130. *Air Corps Newsletter*, February 15, 1937, p. 12; May 15, 1937, p. 4; February 15, 1938, p. 9; August 15, 1939, p. 3

131. *Air Corps Newsletter*, April 28, 1933, p. 105; February 1, 1939, p. 5; August 15, 1939, p. 3, 6.

132. *Air Corps Newsletter*, April 28, 1933, p. 105; November 1, 1938, p. 15; April 1, 1939, p. 7; August 15, 1939, p. 6

133. *Air Corps Newsletter*, April 28, 1933, p. 105; August 15, 1939, p. 3-4

134. Headquarters, Fourth Composite Group. Memorandum to The Adjutant General. Subject: Minor Joint Army and Navy Exercises. 12 May 1937. 'Joint Training Exercises' Folder, Box 3081, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

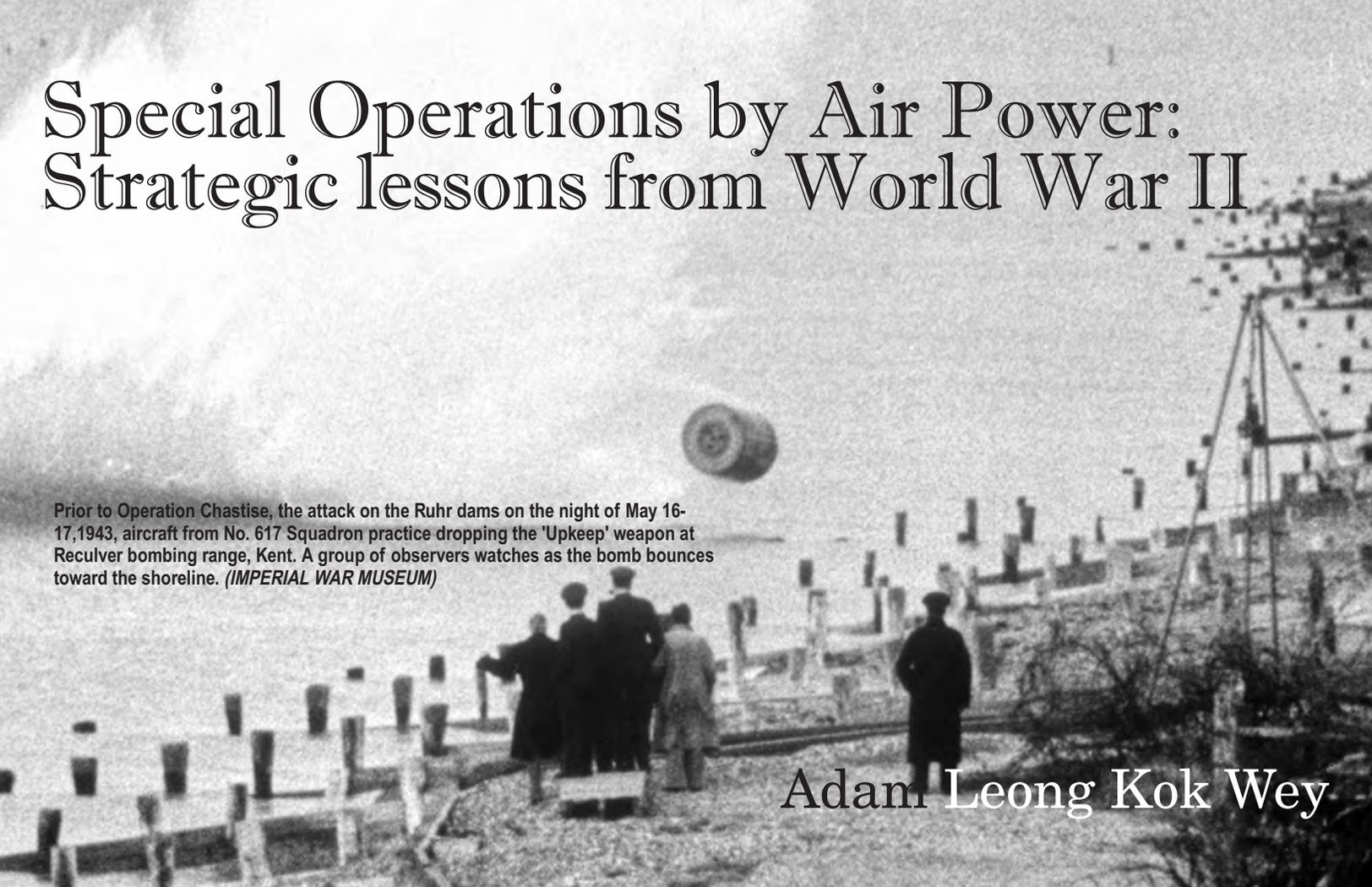
135. *Air Corps Newsletter*, February 1, 1939, p. 5; August 15, 1939, p. 3; September 15, 1939, p. 15

136. *Air Corps Newsletter*, April 28, 1933, p. 105; April 1, 1935, p. 145; May 1, 1935, p. 22; January 15, 1936, p. 23; Headquarters, Nichols Field & Fourth Composite Group. Memorandum to The Adjutant General. Subject: Report on Annual Field Exercises, 4th Composite Group, A.C. 21 February 1933. 'Philippines-Maneuvers' Folder, Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives; Commanding General, Philippine Department. Memorandum to The Adjutant General. Subject: Annual Field Exercises. 13 July 1935. Box 3082, Entry 172: Project Files – Departments; Philippine Department, Central Decimal Files 1917-1938, RG 18, National Archives

137. *Air Corps Newsletter*, January 31, 1933, p. 16; April 1, 1935, p. 145; October 1, 1935, p. 2; May 15, 1937, p. 4; August 15, 1937, p. 9; April 1, 1939, p. 21; November 1, 1939, p. 15

138. *Air Corps Newsletter*, February 1, 1939, p. 5; August 15, 1939, p. 3; September 15, 1939, p. 15.

Special Operations by Air Power: Strategic lessons from World War II



Prior to Operation Chastise, the attack on the Ruhr dams on the night of May 16-17, 1943, aircraft from No. 617 Squadron practice dropping the 'Upkeep' weapon at Reculver bombing range, Kent. A group of observers watches as the bomb bounces toward the shoreline. (IMPERIAL WAR MUSEUM)

Adam Leong Kok Wey

Special operations conducted by the United States's (US) Office for Strategic Services (OSS) and the British Special Operations Executive (SOE), and other military special forces units such as the U.S. Army Rangers, U.S. Marines Raiders, British Special Air Service (SAS) and the Commandos in WWII had captured the romanticism and imagination of special operations with the public. Since then, various accounts of special operations had been published crediting special operations forces with various spectacular raids in sabotaging and destroying key targets, hostage rescue operations, and covert operations during World War II (WWII).¹ Navies too had also its share of WWII special operations fame. For example the Royal Navy's X-Craft midget submarine naval special operations with its most famous operation in the disabling of the German battleship *Tirpitz*.² Nonetheless, air forces had also conducted special operations during WWII – all with rudimentary navigation and flying aids. Three aerial special operations will be examined in this article which demonstrate the usage of airpower in conducting sabotage, rescuing prisoners, and targeted killing of enemy leadership. These special operations are the Royal Air Force's (RAF) Operation *Chastise* or the 'Dambusters' raid in the Ruhr valley intended to sabotage Germany's wartime industrial effort; the RAF Mosquito light bombers conducting precise hits on Nazi Germany's *Gestapo* Headquarters in Amiens and Copenhagen - Operations *Jericho* and *Carthage* respectively - which were intended to *free* prisoners held in these prisons; and the aerial killing of Japanese Admiral Isoroku Yamamoto by the U.S. Army Air Force in the Pacific War.

These operations will show that air power in WWII had successfully conducted special operations without the infiltration of ground commandos or special operations agents to conduct sabotage operations, prisoner-rescue, and targeted killing, deep behind enemy lines which would had entailed high risks of death or capture by enemy forces. Nonetheless, as all tactical actions must be measured against the calculus of its strategic value, the strategic effects of these operations will also be assessed. This article strives to fill the gap in special operations literature neglecting the contribution of air power and give credit to the valiant airmen who had conducted these daring aerial special operations during WWII.

Special operations and strategic effects

Special operations as a conceptual form of warfare have existed since ancient military history was first recorded.³ Examples of the practice of special operations-like concepts can be traced from ancient Greek military history,⁴ through the middle ages,⁵ from the Seven Years War to the Napoleonic Wars,⁶ in the American Revolution (War of

Independence, 1775-1782),⁷ and the American Civil War (1861-1866).⁸ Nonetheless, modern special operations and the establishment of contemporary military special operations units, can be traced back more recently to WWII, where special operations were responsible in conducting commando raids, sabotage of enemy infrastructure targets, rescuing hostages and one's own prisoners, enemy military leadership killing, working with indigenous forces conducting guerrilla warfare, and gathering intelligence. Although there is a plethora of definitions explaining what special operations are, the late M.R.D. Foot, a prominent Special Operations Executive (SOE) historian and ex-SAS intelligence officer during World War II, provides a useful definition of special operations,⁹

They are unorthodox coups, that is, unexpected strokes of violence, usually mounted and executed outside the military establishment of the day, which exercise a startling effect on the enemy; preferably at the highest level.

Foot's definition concisely sums up special operations' most important ingredients for its operational success and unit's survival, which are using the element of surprise and unexpected acts of warfare. More importantly for the purpose of this article, Foot described special operations as a way of fighting an enemy unconventionally and also operations that are conducted not just by designated special operations units. Foot's definition of special operations has its intrinsic value in explaining the distinct nature of special operations without being obstructively narrow in its focus. Thus, aerial special operations which will be used in this article conforms with Foot's definition as containing elements of unexpected ways of attacking the enemy exploiting surprise and carefully chosen targets to yield startling strategic effects.

Each special operation has its intrinsic tactical and operational objectives which complement the overarching strategy of a particular campaign by yielding strategic effects. As strategy is done tactically, effectiveness at the tactical level must be studied in conjunction with the

Dr. Adam Leong Kok Wey is a senior lecturer in strategic studies at the National Defence University of Malaysia and a postdoctoral research fellow at the Department of Politics and International Relations, University of Oxford (2015-2016). He has also held the prestigious "Australia-Malaysia Towards 2020 Fellowship" at the University of New South Wales, Australia in 2014. Dr. Leong holds a PhD in strategic studies from the University of Reading and has published numerous articles on strategy, military history and foreign policy in The RUSI Journal, Comparative Strategy, Australian Journal of Maritime and Ocean Affairs, The Diplomat and East Asia Forum. His most recent book is Killing the Enemy! Assassination operations during World War II (London: IB Tauris, 2015).

effects it generates at the strategic level. However, regardless of whether the tactical operations fail or succeed, they will still have *strategic effects*, intended or unintended. Although strategic effects cannot be measured with mathematical precision, it can be observed in the enemy's manner of response. The enemy's response, or non-response, will enable us to understand if the strategy has resulted in its intended or unintended effects. The impact of these strategic effects provides heuristics in helping us understand how special operations contribute to the overall strategic performance of the polity utilising such operations.¹⁰ The next sections will study examples of aerial special operations conducting sabotage, prisoner rescue, and targeted killing in WWII, and evaluates the strategic effects gained against each operations' strategic contexts.

Sabotage from the air

During the early stages of World War II in Western Europe, both the *Luftwaffe* and RAF had initiated 'strategic bombing' campaigns, at first targeting military and infrastructure targets, and later civilian centres with the hope of destroying the enemy's industrial output to sustain the war and break the enemy's civilian morale. These early bombing campaigns were hampered by lack of accuracy in bomb aiming with most of the bombs scattered over wide areas and the bombers suffering heavy losses to enemy fighter aircraft and anti-aircraft artillery. Even before the start of World War II, at the end of 1937, British intelligence had pointed at the importance of the German Ruhr Valley for industry, and the Ruhr Valley dams providing the water necessary for heavy industry and for the generation of hydro-electricity.¹¹ Since then, the RAF had laid various plans to destroy the vital Ruhr Valley dams including using special operations personnel and commandos to conduct sabotage attacks on the dams. However, the risk of heavy bomber losses and lack of accuracy in bomb aiming as well as the large amount of explosives needed had hampered most aerial plans.¹² Infiltrating of commandos or special operations operatives would be suicidal as the dams and its vicinities were well guarded. Furthermore, the explosives needed to blow the dams would had been of immense weight and quantity which would had been near impossible to be brought in.

Nonetheless when WWII began, RAF's Bomber Command continued to muse about destroying the dams from the air if there were solutions to the two main issues – bombs suitable for breaching the dam walls, and precise bomb-aiming and dropping of the bombs. These issues were resolved by the ingenuity of British scientist Sir Barnes Wallis whom devised a 'bouncing bomb' – code-named Upkeep- in the spring of 1942. Various experiments to deduce the exact flying height and speed to drop the bomb were also conducted and solutions were found by trial and error. A rudimentary bomb-sight to drop the 'bouncing bomb' was subsequently developed, thus completing the key elements of a possible successful operation to destroy the dams.¹³ It took close to a year of planning, scientific designing and experimenting, and training be-



A test drop of the spinning, bouncing, dam-busting weapon for the Ruhr Valley dams.

fore the bomber force was ready to launch the attack.

The bombing raid to destroy the dams, codenamed Operation *Chastise*, was carried out by nineteen Avro Lancaster bombers on the night of May 16/17, 1943 by RAF's No. 617 Squadron flying Lancaster bombers led by Wing Commander Guy Gibson, VC. Operation *Chastise*'s main objectives were to destroy the Möhne, Sorpe, the Ennepe, and Edersee dams in the Ruhr valley resulting in massive floods which would destroy the factories producing armaments for Nazi Germany as well as killing the labourers working at the factories, and to destroy the dams' supply of water and production of hydro-electricity.¹⁴

***Chastise's* main objectives were to destroy the Möhne, Sorpe, the Ennepe, and Edersee dams in the Ruhr valley**

In order to accurately drop their bouncing bombs, the bombers had to fly at a speed of 240 mph and drop the bombs at exactly 60 feet and between 300 to 400 yards from the dams' walls.¹⁵ The bombs when released, will spin in the air and then upon hitting the surface of the dams' waters would bounce on the surface, and once reached the dams' walls will sink and explode at a predetermined depth. The resulting explosion underwater will cause a massive shock wave transmitted to the wall due to the density of the water and will result in the cracking of the thick dam walls.

Amidst heavy anti-artillery fire, the bombers succeeded in approaching and accurately dropped a few 'bouncing bombs' and managed to breach the Möhne and Edersee dams, causing widespread flooding and destruction. The Sorpe dam was also damaged but did not breach. The results of the attacks were two hydroelectric power stations destroyed and an estimated 1,600 people drowned (more than half of them prisoners of war used as forced labourers in the industrial factories). The 617

Squadron lost eight Lancaster bombers and 53 airmen killed in the raid.¹⁶ Although the Dambuster raids had managed to destroy two dams, the failure in breaching the Sorpe dam resulted in lesser damage to the Germans' industries. Albert Speer, German Minister of Armament and War Production, had remarked that he could not understand why the RAF destroyed the Eder dam and not focused on the more important Sorpe dam. He posited that had the RAF focused its efforts in breaching the Sorpe dam, the effects on the German industry in the Ruhr Valley would have been disastrous.¹⁷ Furthermore the damage on the dams were repaired within a few months and German industrial output had normalized by the end of September 1943.¹⁸ It does appear that the Dambusters raid did not manage to seriously destroy Germans' industrial capabilities in the Ruhr Valley and at most disrupted production for four months. Nonetheless, the raid was heavily reported and celebrated as a legendary British bombing success, raising both British and her Allies' morale.¹⁹

Regardless of its minor disruption in German's industry output from the Ruhr Valley, Operation *Chastise* however, managed to yield intangible strategic morale effects which were critically needed at that point of time – the RAF Bomber Command's continuing bombing raids on German cities had been met with high losses of bombers and aircrew, and the accuracy of the bombings were seriously lacking. Although the Germans had been stalled in the Eastern Front at that point, and had been defeated in North Africa, nonetheless, the Germans still occupied vast territories in Western Europe. The British and Canadian forces had also suffered horrendous losses in the debacle at the beaches of Dieppe (Operation *Jubilee*) in the previous year (August 19, 1942). The British forces had also continuously suffered setbacks in Burma against Japanese forces – it had been defeated in every encounter with the Japanese at that point - and India was at threat of being successfully invaded by the



The breach in the Mohne Dam four hours after the Dambusters raid in May 1943.

Japanese. All these setbacks continued to erode the morale of the British forces and her allies - the thought of hitting back successfully at Nazi Germany in Western Europe in the summer of 1943 must have been of desperate hope. The innovatively spectacular and reportedly successful raid on the Ruhr Valley dams had managed to temporarily raise the morale of the British and her Allies (it was not known then, the amount of real damage done or the fast repair turnaround time by the Germans). Although the weight of the strategic morale gained was intangible, the destruction of seemingly impregnable dams by an aerial special operations was an economical demonstration of strategic willpower and military prowess at a critical moment.

Rescuing prisoners from the air

The advent of the de Havilland Mosquito multi-role combat aircraft – the ‘wooden wonder’, as it was made mostly of wood - had given the RAF an aircraft that was able to fly low with high manoeuvrability. More importantly, the twin-engine wooden wonder was capable of flying at speeds of over 400 mph, the fastest aircraft at that time. It could carry a bomb load of up to 4,000lb with a range of 1,500 miles.²⁰ The Mosquito had been used in various roles during WWII such as night fighter, light bomber, reconnaissance and aerial photography, anti-submarine, jamming of enemy air defence radars, and as pathfinders for large bombing raids. Nonetheless, the ubiquitous Mosquito was famous for its numerous high-speed low-level precision bombing strikes including two daring operations attempting to free prisoners held in German Gestapo prisons. These two operations codenamed Operations *Jericho*

and *Carthage* were unique in that it used aircraft and precision bombing to blow open cell doors by concussion, and destroy the walls of the prison buildings holding the prisoners, enabling the prisoners to escape.

Operation *Jericho* was conducted on February 18, 1944 by Mosquitoes, attacking a Gestapo prison in Amiens, France holding about 700 French prisoners, most of them suspected resistance fighters. Some of these prisoners were rumoured to be executed soon and there was a request as well as detailed information about the prison from the local French resistance cell.²¹ The prison was located in a cross-shaped building with 20-foot tall and three-foot thick walls. The operation entailed the Mosquitoes dropping 500lb bombs with 11-second delay fuses. Sixteen Mosquitoes from the 2nd Tactical Air Force (TAF) No. 140 Wing led by Group Captain Percy Charles Pickard – four from No. 21 Squadron (RAF), six from No. 464 Squadron (Royal Australian Air Force) and another six from No. 487 Squadron (Royal New Zealand Air Force) – were selected for the operation.²² The Mosquitoes took off in a heavy snowstorm in the morning from Hunsdon air base and flew the two hours journey to Amiens. At a little past noon, the Mosquitoes reached its target and in its final approach to the prison, flew at just 100 feet height to avoid radar detection and to surprise the prison guards. The prison was hit by at least sixteen bombs, successfully blowing the cell doors open by concussion and destroying parts of the wall. The prison guardhouse was also hit, killing many of the German guards having lunch there. The British attacking force lost three Mosquitoes in the attack.

Operation *Jericho* was conducted on Feb. 18, 1944 by Mosquitoes, attacking a Gestapo prison in Amiens, France

The bombing resulted in a total of 258 prisoners escaping and 50 Germans were killed. Nonetheless, 102 prisoners were killed during the attack and two-thirds of the prisoners which escaped were recaptured later.²³ The operation in its net assessment, although provided a template for further accurate precision bombing attacks against Gestapo prisons, failed to yield the expected result of large numbers of prisoners successfully escaping. The operation however, can be argued plausibly, produced intangible morale effects. The French resistance by early 1944, were already in a desperate situation. The long wait for liberation of France and the opening of the Second Front in Western Europe had been exasperating at best. The Allies had instead continued its offensive against the Axis powers with landings in Sicily and mainland Italy in the summer and autumn of 1943, and ostensibly stuck there facing determined German resistance. The opening of the second front in Western Europe in Italy coupled with the early disaster at Dieppe in 1942, must have been extremely bitter for the occupied French longing for the Allies to liberate them. The Amiens attack was a spectacular aerial



The Amiens jail, breached during Operation Jericho.

operation intended to raise the morale of the French resistance and as an indication that their cause had not been forgotten by the Allies.

Similarly more than a year later another operation was envisaged with the same objective of freeing prisoners albeit in a different location. Operation *Carthage* was conducted on March 21, 1945 targeting the Gestapo HQ and prison located in the *Shellhaus* in Copenhagen, Denmark. There was an alleged request from the Free Danish Resistance and its SOE handlers for a RAF bombing attack to prevent the impending execution of resistance prisoners and freeing them from the air as well as to destroy the Gestapo archives on resistance activities in Denmark.²⁴ The operation was conducted by 18 Mosquitoes from No. 140 Wing, by now the most experienced Mosquito force in conducting low-level precision bombing raids. The Mosquitoes flew out from Fersfield airbase in the morning of March 21 and flew 350 miles to its target. The Mosquito force reached Copenhagen just after 11:00. The raid, typical of low-level Mosquito precision strikes, was conducted from rooftop level. The Mosquitoes extreme low flying inevitably caused one of the Mosquitoes to hit a lamp post resulting in the aircraft crashing into the Jeanne d'Arc School, located about one mile away from the intended target. Several Mosquitoes mistaking the burning school (due to the Mosquito exploding and burning) as the main target, dropped their bombs on the school compounding further destruction on the wrong target. Nonetheless, the main target, the *Shellhaus* was hit with pinpoint accuracy and the building was partially destroyed, allowing some of the prisoners to escape as well as successfully destroying the Gestapo archives. As a result of the bombing, thirty prisoners held at the *Shellhaus* managed to escape, and 151 Germans and Gestapo col-

laborators were killed.²⁵ Eight prisoners were also killed in the air raid. More tragically at the school which was mistakenly bombed, eighty-six schoolchildren and eighteen teachers were killed. Operation *Carthage* cost the RAF four Mosquitoes.²⁶

Although the operation had yielded some minor successes in enabling some prisoners to escape, destroying the Gestapo records and killing a substantial number of Germans at the *Shellhaus*, it had also resulted in tremendous civilian losses. The plausible strategic effects gained from this aerial special operation was to demonstrate to the Danes that the Allies had not forgotten them although the liberation of Nazi Germany-occupied states in Western Europe had bypassed Denmark and concentrated elsewhere such as France, Holland and Belgium. It was also intended to show to the Danes that the Allies' supported the Free Danish Resistance (itself handled by SOE) and a strong indication of who the Allies will be rooting for in the coming post-war government of Denmark.²⁷

Killing enemy leadership from the air

The operation to kill Japanese Admiral Isoroku Yamamoto was initiated by U.S. naval intelligence, whose operatives intercepted and broke the coded Japanese messages. One of these coded messages carried detailed information and itinerary about Admiral Yamamoto's intended visit to a forward military base located in the island of Bougainville.²⁸ It was widely believed at the time that killing Yamamoto, revered as a legendary military commander by the Japanese, would seriously demoralise the Japanese and blunt their strategy as he was believed to be the main 'brain' of Japanese military strategy in the Pacific war.²⁹



The group of pilots who flew in Operation Vengeance, the attack of Admiral Yamamoto.

President Franklin D. Roosevelt and the Secretary of the Navy, Frank Knox, were widely believed to have personally authorised and instructed Admiral Nimitz to launch the operation.³⁰ What followed was the hasty planning of the longest distance aerial intercept operation ever conducted. The Lockheed P-38 Lightning was selected for the job as it was the only fighter plane available at that time capable of flying the round trip from Henderson Airfield in Guadalcanal to Bougainville - a 425-mile trip to intercept Yamamoto's flight, loiter and intercept, and the return journey. The operation was launched on the morning of April 18, 1943. The P-38 Lightning fighters flew at just thirty feet above the waves in complete radio silence to avoid radar detection and maintain complete secrecy and surprise. The flight took two hours and fifteen minutes to reach the ambush point just south of Empress Augusta Bay, Bougainville. The pilots relied on only three rudimentary items to ensure that the squadron would arrive and meet Yamamoto's flight at the correct position and time which were a watch, a compass and the P-38's airspeed gauge.³¹

Admiral Yamamoto did not disappoint his would-be killers. He was flying in a 'Betty', a Mitsubishi G4M light bomber, accompanied by another 'Betty' and escorted by six Mitsubishi A6M 'Zero' fighters, was right on schedule.³² The assigned killer flight of four P-38s peeled off to attack the 'Betty' bombers, while the rest of the P-38s went in to attack the escorting Zeroes. The two slower 'Betty' bombers were caught and shot down.³³ The 'Betty'

carrying Admiral Yamamoto crashed into the jungle killing all its occupants. The other 'Betty', carrying Vice-Admiral Ugaki crashed into the sea; he and his pilot survived the crash and were rescued by Japanese troops.³⁴ What happened next was a series of disputed claims about who had shot down Admiral Yamamoto's plane. Two pilots, Captain Thomas G. Lanphier, Jr. and First Lieutenant Rex T. Barber, claimed to have shot down Yamamoto's plane, triggering debates that lasted decades on who had actually shot down Yamamoto.³⁵ The U.S. lost a P-38 in the attack.

The killing of Yamamoto has been often criticised for its limited value

The killing of Yamamoto has been often criticised for its limited value and because, alive, Yamamoto may have been a bigger asset for the Americans for his lack of strategic vision. Yamamoto was often blamed for leading the U.S. into a war with the Japanese with his Pearl Harbor attack, which ultimately led to the final defeat of Japan. Again, context is important. Yamamoto, after the successful Pearl Harbor attack, had gained such prestige in Japan that he had been almost raised to the level of a demi-god by the Japanese. As for the Americans, he was the arch villain 'that did Pearl Harbor.' The hatred against Yamamoto was strong and when the chance came to kill him it was an easy decision. The



Japanese Admiral Isoroku Yamamoto

main strategic effect of this operation was to raise the morale of the U.S. forces fighting in the Pacific and the destruction of the Japanese morale. The death was not reported in the Japanese press until May 21, 1943, and

The death of Yamamoto resulted in the loss of the most revered Japanese military icon

was met with national grief.³⁶ A news broadcast on Radio Tokyo read out, "...while directing general strategy on the front line in April of this year, [Admiral Yamamoto] engaged in combat with the enemy and met gallant death in a war plane."³⁷ Yamamoto's remains were cremated and shipped back to Japan for a state funeral. His remains were buried on June 9, 1943. Half of Yamamoto's ashes were buried in a grave next to Admiral Togo, Japan's greatest naval hero who defeated the

Russian Baltic Fleet in the famous Battle of Tsushima. The death of Yamamoto resulted in the loss of the most revered Japanese military icon and a capable Japanese naval commander who could still prove himself to be a continued credible threat to U.S. naval strategy in the Pacific theatre.

Conclusion

This article had highlighted the use of air power in conducting special operations in sabotaging enemy's industrial efforts, rescuing prisoners, and targeted killing of a senior enemy naval commander during World War II. Special operations in World War II were not just conducted by personnel on the ground or by naval forces but also by air power which had conducted equally spectacular operations. The results of these special operations had varied strategic consequences within each respective strategic context. The main common thread that these operations shared was that special operations by aircraft was an economical way to exercise a state's grand strategy in war when it could not exercise its military power yet or in periphery theatres of operations, by demonstrating its will to support the fight and to raise friendly forces' morale in difficult times through its spectacular display of daring and precision attacks. The aerial special operations highlighted here were a few small audacious acts, striking at key enemy targets which apart from causing actual physical damage to the enemy, served as excellent 'stunts' to showcase the competence of the Allies' air forces in fighting the enemy. These small daring individual 'heroic' special operations are more easily recognised opposed to larger battles between armies, and has more utility in raising one's own side's morale and disrupt the enemy's morale when assessed against each respective operations' strategic contexts.³⁸ Field Marshal Archibald Wavell, a senior British military commander who had served in both World War I and World War II, provides an apt concluding note on the importance of morale:

*The final deciding factor of all engagements, battles and wars is the morale of the opposing forces. ...Better weapons, better food, and superiority in numbers will influence morale, but it is a sheer determination to win by whomever or whatever inspired that counts in the end. ...Study men and their morale always.*³⁹ (Emphasis added by author) ■

NOTES

1. For example see Alan Hoe, *David Stirling: The Authorised Biography of the Creator of the SAS* (London: Warner, 1st edn 1992, ppb. 1999); John Lewes, *Jock Lewes: Co-founder of the SAS* (Barnsley: Leo Cooper, 1st edn 2000, ppb. 2001); Hamish Ross, *Paddy Mayne: Lt Col Blair 'Paddy' Mayne, 1 SAS Regiment* (Stroud: The History Press, 1st edn 2003, ppb 2008); Hilary St George Saunders, *The Green Beret: The story of the Commandos,*

1940-1945 (London: Michael Joseph, 1949); C.E. Lucas Phillips, *Cockleshell Heroes* (London: Pan Books, 1st edn 1956, ppb. 2000); and *ibid. The Greatest Raid of All* (London: Pan Books, 1st edn 1958, ppb. 2000); Robin Neillands, *The Raiders: The Army Commandos, 1940-1946* (London: Fontana, 1st edn 1989, ppb. 1990); and John Lodwick, *Raiders from the Sea* (Annapolis, MD: Naval Institute Press, 1st edn 1947, ppb. 1990).

2. See Patrick Bishop, *Target Tirpitz: X-Craft, Agents and Dambusters: The Epic Quest to Destroy Hitler's Mightiest Warship* (London: Harper Press, 2012); and Charles Esme Thornton Warren and James Benson, *Above Us the Waves: The Story of Midget Submarines and Human Torpedoes* (Barnsley: Pen and Sword, 2006).
3. For example, Homer's tale of the Trojan-Greece War has one of the most important early examples of Special Operations - the 'Trojan horse' account. Even if the story was a mythical narration, the originator of this story had demonstrated in the 'Trojan horse' that the ideas of using Special Operations to overcome tactical obstacles to obtain strategic effects had existed in the thoughts of ancient mankind. See Robert Graves, "The Fall of Troy", chapter in John Arquilla (ed), *From Troy to Entebbe: Special Operations in Ancient and Modern Times* (London: University Press of America, 1996), pp. 2-9.
4. See H.G. Robertson, "Commando Raids in the Peloponnesian War", *Classical Weekly*, Vol. 37 No. 11 (1944), p. 130.
5. For an excellent overview see Yuval Noah Harari, *Special Operations in the Age of Chivalry, 1100-1550* (Woodbridge: The Boydell Press, 2007).
6. See Beatrice Heuser, "Small Wars in the Age of Clausewitz: The Watershed Between Partisan War and People's War", *Journal of Strategic Studies*, Vol. 33 No. 1 (February 2010), pp. 139-162. See also Lewis Michael de Jeney, *The Partisan, or the Art of Making War in Detachment*, trans. An Officer of the Army (London: R. Griffiths, 1760); and Andreas Emmerich, *The Partisan in War, of the use of a Corps of Light Troops to an Army* (London: J. Debrett, 1789).
7. See Johann Ewald, *Diary of an American War: A Hessian Journal*, trans. Joseph P. Tustin (New Haven, CT: Yale University Press, 1979); and Johann Ewald, *Treatise on Partisan Warfare*, trans. Robert Selig and David Skaggs (Westport, CT: Greenwood Press, 1991).
8. See Thomas J. Evans and James M. Moyer, *Mosby's Confederacy: A Guide to the Roads and Sites of Colonel John Singleton Mosby* (Shippensburg, PA: White Mane Publishing Co, 1991).
9. M.R.D. Foot, "Special Operations/I", chapter in Michael Elliott-Bateman (ed), *The Fourth Dimension of Warfare: Vol. 1, Intelligence, Subversion, Resistance*, (Manchester: Manchester University Press, 1970), p. 19.
10. Colin S. Gray, *Explorations in Strategy* (Westport, CT: Greenwood Press, 1996), pp. 11-2. See also Colin S. Gray, *The Strategy Bridge: Theory for Practice* (Oxford: Oxford University Press, 2010), pp. 171-72.
11. John Sweetman, David Coward and Gary Johnstone, *The Dambusters* (London: Time Warner, 2003), p.19.
12. Max Arthur, *Dambusters: A landmark oral history* (London: Virgin, 2008), pp. 2-3.
13. For more in-depth technical details on the attack, see "Attack on Ruhr Dams by aircraft of 617 Squadron on the night of 16-17 May 1943", Royal Air Force website, <http://www.raf.mod.uk/history/bombercommanddambusters21march1943.cfm> (accessed 9 April 2016).
14. James M. Kiras in his recent study on the relationship between special operations and strategy, had used the Dambusters raid as one of his case studies. He argued that the raid did not yield the intended result of destroying the heart of German war production by paralyzing Germany's Ruhr industrial area. See James D. Kiras, *Special Operations and Strategy: From World War II to the War on Terrorism* (London: Routledge, 2006), pp. 53-7.
15. Sweetman, Coward and Johnstone, *The Dambusters*, p. 103.
16. *Ibid.*, pp. 188-89.
17. Arthur, *Dambusters*, pp. 262-63; and Sweetman, Coward and Johnstone, *The Dambusters*, p. 178.
18. Arthur, *Dambusters*, p. 262.
19. *Ibid.*, pp. 289-306.
20. Martin W. Bowman, *The Men Who Flew the Mosquito: Compelling accounts of the Wooden Wonder's triumphant WW2 career* (Sparkford: Haynes, 1995), pp. 14-5.
21. *Ibid.*, p. 158.
22. *Ibid.*
23. See "Attack on Amiens prison, 18th February 1944", Royal Air Force website, <http://www.raf.mod.uk/history/bombercommandattackonamiensprison18thfebruary1944.cfm> (accessed 9 April 2016).
24. Martin W. Bowman, *Mosquito Missions: RAF and Commonwealth De Havilland Mosquitoes* (Barnsley: Pen and Sword, 2012), p. 187.
25. See "Attack on Gestapo Headquarters", Royal Air Force website <http://www.raf.mod.uk/history/bombercommandattackongestapoheadquarterscopenhagen.cfm> (accessed 9 April 2016).
26. Another badly damaged Mosquito, crashed killing its crew while attempting to fly to Sweden and land there. Bowman, *The men*, p. 165.
27. For an excellent historical analysis see Knud J.V. Jespersen, *No Small Achievement: Special Operations Executive and the Danish Resistance 1940-1945* (Odense, Denmark: University Press of Southern Denmark, 2002).
28. William Friedman was credited with breaking the Japanese military codes by using 'Purple' (codename for the deciphering machine similar to the British Enigma). The end product from Purple was called 'Magic.' See Ronald Lewin, *The American Magic: Codes, Ciphers and the Defeat of Japan* (New York: Farrar Straus Giroux, 1982), p. 17 and pp. 36-7; and John Keegan, *Intelligence in War: Knowledge of the Enemy from Napoleon to Al-Qaeda* (London: Pimlico, 1st edn 2003, ppb. 2004), pp. 222-24.
29. For a concise analysis of Yamamoto as a naval fleet admiral see H.P. Willmott, "Isoroku Yamamoto: Alibi of a Navy (1884-1943)", chapter in Jack Sweetman (ed): *The Great Admirals: Command at Sea, 1587-1945* (Annapolis, MD: Naval Institute Press, 1997), pp. 443-57. For another concise but critical assessment of Yamamoto's career see Roger Pineau: "Admiral Isoroku Yamamoto", chapter in Michael Carver (ed), *The War Lords* (Barnsley: Pen and Sword, 1st edn 1976, ppb. 2005), pp. 390-403.
30. This was mentioned in Nimitz's authoritative biography. See E.B. Potter, *Nimitz* (Annapolis, MD: Naval Institute Press, 1976), p. 233.
31. John W. Mitchell, "The Flight to Bougainville", in R. Cargill Hall (ed): *Lightning over Bougainville* (London: Smithsonian Institution, 1991), p. 74.
32. *Ibid.*, p. 75.
33. See US Air Force Historical Research Agency, Maxwell Air Force Base, Alabama (USAFHRA), IRIS 1105929, 168.7285-2, Rex T. Barber, "Yamamoto Mission Account and Statement", pp. 2-4 and Appendix 1-2; and USAFHRA, IRIS 01095140, K239.0512-1863 C.1, Oral History Interview, Transcript of Interview of Maj.- Gen John P. Condon, USMC (ret) by Cargill Hall', pp. 25-8.
34. For full details of the aerial ambush from the Japanese perspective, see interview transcript with Hiroshi Hayasi. Hayasi was the Japanese pilot flying the 'Betty' carrying Admiral Ugaki. See USAFHRA, IRIS 01105635, K239.0512-1941 C.1, Oral History Interview, "Transcript of Interview of Hiroshi Hayashi by Jay Hines and translated by Hisashi Takahashi".
35. Both of them shared the kill; however, each of them later claimed full credit. The debate dragged on for years. See Richard H. Kohn, "A Note on the Yamamoto Aerial Victory Credit Controversy", *Air Power History* (Spring 1992); and Thomas G. Lanphier, Jr "I Shot Down Yamamoto", *Reader's Digest*, December 1966, reprint, pp. 1-6.
36. Donald A. Davis, *Lightning Strike: The Secret Mission to Kill Admiral Yamamoto and Avenge Pearl Harbor* (New York: St Martin's Press, 2005), pp. 308-309.
37. Potter, *Nimitz*, p. 234.
38. See Gray, *Explorations*, pp. 175-76.
39. Archibald Wavell: *Speaking Generally* (London: Macmillan, 1946), p. 79.

What Might Have Been – XX Bomber Command's B-29 Offensive against Japanese Oil Supplies in The Netherlands East Indies and Borneo



John F. O'Connell

B-29s were in great demand throughout the Far East commands.

This article describes a potentially successful strategic B-29 air bombing campaign that never occurred, but might have taken place if some key command decisions were altered during WW II.

On January 29, 1940, the U. S. Army Air Corps¹ sent out a request for proposals for a very heavy bomber, later redesignated a very long range (VLR) bomber, to five aircraft manufacturers.² Four manufacturers responded and two were awarded contracts, Boeing and Consolidated (later Convair). The Boeing XB-29 Superfortress made its first test flight September 21, 1942.³

U. S. Army Air Forces Air War Plan One (AWPD-1), conceived in the Pentagon by the Army Air Staff in July- August 1941, envisioned four different types of heavy (B-17 and B-24) and very heavy (B-29 and B-36) bombers in a strategic bombing campaign against Nazi Germany and its European allies. B-17s and B-24s were to operate from England, while very long range B-29s would be based in Northern Ireland and Egypt. Extremely long range Convair B-36s would eventually operate from the northeastern United States against German targets.⁴ The clear and intense focus on offensive air operations aimed at Germany stemmed from Plan D, which dictated a defensive stance towards Japan and its naval and air forces until the defeat of Germany.⁵ That was the status of air planning on December 7, 1941.

When the U.S. unexpectedly entered the war that day as a result of the surprise Imperial Japanese Navy carrier air strikes at Oahu and Pearl Harbor, the basic thrust of Plan D continued. During 1942 Army Air Forces were slowly built up in England for the long planned day-light precision strategic bombing campaign against German industry with the goal of rendering it incapable of supporting the war effort, and thus forcing a German surrender.⁶

The political decision to land U.S. ground forces in North Africa in late 1942 was designed to provide proof of serious U.S. intent in the face of repeated Soviet demands for a Second Front, a combined British-U.S. invasion of northern Europe, something that neither the United States nor Great Britain was prepared to undertake at that time. North African operations drew a significant fraction of U.S. heavy bomber forces away from the British Isles and slowed the planned strategic bombing campaign.⁷

By the time the B-29 was ready for operational service in late 1943 it was obvious to Army Air Forces planners that Great Britain was saturated with air fields serving B-17s and B-24s, as well as Royal Air Force heavy bombers engaged in a separate night bombing campaign. Not only was there not room for additional airfields but British air space was also severely restricted.

In the Pacific, not everyone was prepared to accept the Plan D mandate of a purely defensive stance against Japan. Admiral Ernest King, the Chief of Naval Operations and Commander U. S. Fleet, was concerned that letting Japanese



Gen. Douglas MacArthur.

forces run wild and then entrench themselves would make it very difficult later to retake their many island strongholds. On the Army side, Gen. Douglas MacArthur had been extracted from the embattled Philippine Islands by direct order of President Franklin Roosevelt, and sent to Australia. Once there, MacArthur and his dedicated staff set about planning a combined air, ground and naval campaign using Australian and American forces to first prevent a Japanese invasion of northern Australia and then to move back to the Philippines. MacArthur was commander of the Southwest Pacific Area (SWPA).

The Navy had in mind a central Pacific thrust through Japanese held islands under Admiral Nimitz's direction,

Captain John F. O'Connell, USN (Ret.) served from 1952 to 1982 in an aircraft carrier, an 8-inch gun cruiser, and in five diesel submarines including a troop transport submarine, a guided missile submarine, and three attack submarines, the last as commanding officer, all in the Pacific. He commanded Submarine Division 41 and Submarine Group Hawaii before serving as Defense and Naval Attaché in Tokyo. He was a legislative assistant to Senator Robert Dole after retirement from the Navy, and worked as Marketing Manager in Tokyo for the Patriot missile system which was acquired by the Japan Defense Agency for the Japanese Air Self Defense Force. He has published three books dealing with air power and two dealing with submarines keyed to their respective operational effectiveness during the 20th century.



Gen. Laurence Kuter.

while the Army urged strong moves to New Guinea and on to the Philippines under MacArthur's leadership. The arguments over which would be *the* chosen axis of U. S. attack against Japan remained unsettled until March 1944 when the Joint Chiefs of Staff (JCS) decided to continue the already established two-prong attack against Japanese conquered territories.⁸

The Joint Chiefs of Staff (JCS) decided to continue the already established two-prong attack

In March 1943, Maj. Gen. Laurence Kuter, Assistant Chief of Air Staff - Plans had initiated studies for basing B-29s in China.⁹ Planners estimated that no suitable bases would be available in the Pacific theater until fall 1944, leading to an alternate plan to base them in China.¹⁰

In August 1943, at the QUADRANT Conference in Quebec, Gen. Henry H. "Hap" Arnold proposed basing B-29s in China to the Combined Chiefs of Staff in order to attack strategic industrial targets in mainland Japan. This would boost the morale of the Chinese people and help keep them in the war, a cherished political goal of President Roosevelt.

Later in the fall of 1943, General Arnold queried Lt. Gen. George C. Kenney, MacArthur's air commander, about the use that Kenney might make of B-29s in the event that they were assigned to the Southwest Pacific Area command. Kenney noted that ninety percent of Japanese oil came from the Netherlands East Indies (NEI) and Borneo,



The SEXTANT conference in Cairo, November 1943. (Left to Right) Generalissimo Chiang Kai-shek, Franklin D. Roosevelt, and Winston Churchill.

and that most facilities (oil fields, refineries, loading ports) were within reach of B-29s operating from airfields in northern Australia. Kenney concluded that the SWPA Theater was the place where B-29s could be put to most effective use against Japanese strategic oil targets.¹¹ Kenney replied that he would use them to shut down oil production in the NEI and in Borneo. Kenney stated that disruption of the oil supply, and recapture of the Philippine Islands, would end the war. Kenney foresaw the problems that China-based operations would bring, but also thought that building B-29 bases in the Marianas would be very difficult. However, in early November 1943, Gen. Barney M. Giles, Arnold's Chief of Staff, let General Kenney know that it was unlikely that any B-29s would be sent to the Southwest Pacific Theater.¹²

In November 1943, the Joint War Plans Committee of the JCS concluded that few proposed targets could be reached from Cheng-du. They recommended more studies of possible base areas including Calcutta, Ceylon, and Australia.¹³

Nevertheless, President Roosevelt was very interested in ensuring that China remained fully committed to the war against Japan and not seek an accommodation which would free more Japanese forces for use against the U.S. in the western Pacific. He also was intent on bringing the war home to the Japanese as soon as possible. Therefore, the decision was made to move the first group of operational B-29s to India and subsequently Cheng-du, China to conduct very long range bombing missions against mainland Japan (Operation MATTERHORN).

At the SEXTANT Conference on November 10, 1943, President Roosevelt formally approved the China basing plan, with a target date of May 1, 1944 to commence strategic bombing operations. At the conference, General Arnold told the JCS that bombing of Japan from China would

begin on the scheduled date, and from the Marianas Islands by the end of 1944. He noted that VLR attacks in SWPA against NEI oil resources could be effective July 20, 1944 (for planning purposes only). However, he added that bombardment of targets in the Japanese home islands had priority for B-29 employment.¹⁴

On November 10, 1943, President Roosevelt formally approved the China basing plan

On November 27, 1943, XX Bomber Command was activated at Salina, Kansas. Its parent command was Twentieth Air Force, which Arnold would command from Washington.¹⁵ Twentieth Air Force was unique among the numbered air forces during the war. It operated independently from the theater commander in whose area its bases existed. Its strategic bombing operations were directed by the Joint Chiefs of Staff, through their executive agent – General Arnold, commander U. S. Army Air Forces.

Careful Air Staff analysis had indicated that the proposed B-29 operations from China were almost unworkable from a logistics point of view. Cheng-du, well inland, had no fuel supplies, and no water, rail or road links to India. All B-29 aviation gasoline and bombs would have to be flown from India over the Himalayas, the "Hump" route. It would take about eight aerial tanker flights from India to Cheng-du to bring enough fuel for a single B-29 sortie. Nevertheless, because of political pressure from the commander-in-chief, the project continued. In addition to logistic difficulties, the only significant (strategic) Japanese targets within reach of the B-29 from Chengdu were those in Manchuria and the southernmost main Japanese island of Kyushu. B-29 maximum range without bombs was



B-29s on the assembly line at Wichita, Kansas in 1944.

4,400 miles. A round trip to Tokyo from Cheng-du involved a distance of 4,800 miles.¹⁶

In January 1944, during a visit to Washington, General Kenney again asked General Arnold about assigning B-29s to SWPA. Kenney's B-24s had a range of 2,400 miles with 4,000 pounds of bombs. B-29s would increase that range to 3,500 miles with 8,000 pounds of bombs.¹⁷ Arnold made no promises but stated that if Kenney had a runway long enough to take B-29s by July, he *might* let Kenney have fifty B-29s. Kenney immediately sent word to his headquarters to lengthen the runway at Darwin to 10,000 feet and ensure parking spaces for 100 B-29s.¹⁸

In January 1944...General Kenney again asked General Arnold about assigning B-29s to SWPA

The first B-29s arrived in India on April 2, 1944. By April 15, some thirty-two B-29s were on hand. They moved forward to Chengdu on April 29.¹⁹ Initial B-29 operations from Cheng-du involved attacks on Bangkok on June 5, 1944. On June 15, 1944, the first B-29 air attack on mainland Japan was launched. The target was the Yawata Iron and Steel Works in Kyushu. The results were unsatisfactory. Seventy-eight B-29s departed, sixty-eight got airborne, one crashed and four aborted with mechanical failures. The Yawata target area was blacked out when they arrived. Fifteen aircraft bombed visually, thirty-four bombed using radar. Seven B-29s were lost along with fifty-five air crew. There was negligible damage to the target. However, it was the first air raid on mainland Japan since the Doolittle attack in early 1942.²⁰

MATTERHORN planners had suggested VLR missions from Bengal, India against oil targets at Palembang in Sumatra, via Ceylon. The SEXTANT conference accepted the idea. B-29s would take off from airfields at China Bay near Trincomalee. Two B-29 groups were as-

signed (fifty-six aircraft). There were 7,200 foot runways, hard stands and complete fuel systems there. On August 10, 1944, the first and only mission took place, involving fifty-seven B-29s. It was titled BOOMERANG. The round trip distance was 3,855 air miles. Based on post-strike photos XX Bomber Command considered the strike a failure, and decided against continued strikes from Ceylon.²¹

The continuing failure of China-based operations to achieve significant results led General Arnold to send Maj. Gen. Curtis E. Lemay to China to take over command on August 20, 1944 in an attempt to salvage them.

Overall, including those under LeMay's leadership, the B-29s missions from Cheng-du were not very effective. Craven and Cate note "...the necessary shakedown might have been accomplished at less expense elsewhere, perhaps in the Southwest Pacific..."²²

In the meantime, the Navy move through the Central Pacific led to amphibious assaults on Guam and the other Marianas Islands. The Army Air Forces had sided with the Navy against the Army in supporting a Central Pacific thrust since seizure of the Marianas would provide airfields suitable for B-29 attacks on mainland Japan. Similar to operations in the European theater, Army Air Forces airpower doctrine supposed that long range, daylight precision bombardment of the enemy nation's industrial structure would lead to national collapse. The first B-29 strike from the Marianas against mainland Japan took place on November 24, 1944.

Eventually, all B-29s were removed from China and India, and repositioned in the recently captured Marianas Islands in the Pacific Theater, where they participated in a full blown strategic bombing campaign against Japanese industry. In January 1945, the command element of XX Bomber Command departed Cheng-du and relocated to the Marianas Islands. The final XX Bomber Command B-29 mission from India was flown on March 3, 1945. The last Japanese oil tanker to reach the home islands from South East Asia arrived in March 1945.



The B-29s offered a much longer range and a heavier payload capacity than the B-24s.

At this point it is interesting to contemplate an alternate plan for the use of B-29s against Japanese targets, one that focused on a true strategic target – their captured oil supplies in the Netherlands East Indies and Borneo.

Craven and Cate note in their Volume Five that all Netherlands East Indies oil resources could be attacked from Ceylon – targeting Sumatra, and Australia – targeting Borneo.²³ Interference with the production of that oil and its transportation to Japan by sea would grievously affect Japan's ability to wage war, as General Kenney well realized.

Interference with the production of that oil...would grievously affect Japan's ability to wage war

Let us suppose that the Cairo Conferences had focused on that goal instead of sending B-29s to Cheng-du, China in a predictably futile attempt to "attack Japan". We will leave all wartime major event dates unchanged.

In our alternate scenario B-29s are sent to Ceylon, specifically to China Bay. They arrive on April 2, 1944. China Bay-based B-29s will be used to attack oil facilities at Palembang, Sumatra, a 3,855-mile round trip. That range is extreme and limits each B-29 to only 2,000 pounds of bombs (or mines) per aircraft. It will take repeated raids, but a combination of bombs on oil production facilities and mines in the rivers and oil loading ports will bring produc-

tion and transportation to a halt in a period of probably four to five months.²⁴ Logistic support of B-29s at China Bay should not be a problem. Aviation gasoline, bombs and mines are easily transportable by sea.

By April 1944, the Imperial Japanese Navy (IJN) no longer presents a potential strategic threat to Ceylon, a large number of its aircraft carriers having been sunk in the battles of the Coral Sea and Midway in early and mid-1942. The IJN is intent on preserving its remaining aircraft carriers for the final "decisive battle" in the western Pacific. That will occur in due time in the battle of the Philippine Sea in June 1944, but let's not get too far ahead of ourselves.²⁵

Simultaneously on April 2, 1944, another set of B-29s arrive in Townsville, Australia. The main B-29 base at Townsville has been prepared well in advance and its runways lengthened. Townsville will be the permanent base for the B-29 force operating from Australia against oil facilities in Borneo. They will stage through Darwin for each mission. Darwin's airfield runways will be lengthened and adequate air defenses will be in place: early warning radar, antiaircraft guns, and interceptors on alert.²⁶ Darwin has been attacked by air in the past and is potentially more vulnerable than China Bay, but the Japanese Army Air Force (JAAF) lacks sturdy long-range bombers that could provide a serious threat.²⁷ The JAAF has some good fighters but they lack the "legs" of the IJN "Zero" and we can probably rely on the usual bitter inter-service rivalry to preclude any interference

from them. JAAF aircraft are operating at the end of long supply lines from Japan and are at a serious disadvantage. Kenney's B-24s can cover JAAF airfields in the NEI and beat them down just as they did in New Guinea. Townsville will be similarly protected but is further away and is much less likely to be attacked. Supply of aviation gasoline, bombs and mines to Townsville should not be a problem. Neither should a supply of aviation gasoline to Darwin by sea.

The distance from Darwin's airfields to the North Borneo oil fields and oil ports are: Balikpapan – 1,223 miles; Surabaya – 1,280 miles; and Tarakan – 1,380 miles. B-29s operating through Darwin could deliver bombs against Borneo oil production facilities and lay mines in the port

approaches. Again, some four to five months of such operations would probably bring all oil production and shipment from Borneo oil facilities and ports to a halt. While the Japanese would resist desperately, they are at the end of a long supply line from mainland Japan. U.S. submarines were already making that journey very hazardous.

The author's thesis is that if B-29s had been assigned to the CBI and SWPA theaters with operations focused intently on oil and port facilities in Sumatra and Borneo, and began operations in April 1944, most of Japan's oil imports probably would have ended by October-November 1944 instead of March 1945. As noted the first Marianas B-29 strike against mainland Japan took place on November 22, 1944. ■

NOTES

1. All "what if?" material is presented in italics, while normal type is used to lay out actual events as they occurred.
2. The Army Air Corps became the Army Air Forces on Jun. 20, 1941.
3. *The Complete Encyclopedia of World Aircraft*, (Barnes and Noble, 1997), pp. 156-157. The Consolidated XB-32 Dominator was a rival to the B-29, a backup VLR bomber in the event that the B-29 failed to become operational. There were serious B-32 development problems but it finally became operational in the Pacific theater towards the end of the war in small numbers.
4. Specifications for the B-36 were issued Apr. 11, 1941. They called for ability to deliver 10,000 pounds of bombs on European targets from bases in the continental United States. The first XB-36 rolled out on Sep. 8, 1945, six days after the Japanese surrender ceremony in Tokyo Bay. *The Complete Encyclopedia of World Aircraft*, p. 271.
5. The Chief of Naval Operations, Admiral Harold Stark, in an attempt to get overall strategic guidance from President Roosevelt, sent forward a memorandum outlining an overall strategy to be followed in the event that the United States was forced to wage war on the Axis Powers: Germany, Italy and Japan. It was coordinated with General Marshall, Chief of Staff, U. S. Army. The key point was that Germany would be the prime target for offensive operations, with a defensive strategy to be employed regarding Japan.
6. Eighth Air Force was established with this goal in mind.
7. Eventually in 1943 these operations would lead the allies into Italy. Fifteenth Air Force based in Italy joined in the strategic bombing campaign against German targets.
8. Griffith, Jr., Thomas E., *MacArthur's Airman*, (University Press of Kansas, Lawrence, Kansas, 1998), p. 155. It is an interesting fact that United States industrial capacity could support two major offensive moves in the Pacific while also preparing for an invasion of France.
9. Wesley Frank Craven & James Lea Cate, eds., *The Army Air Forces in World War II*, reprint edition, (Washington, D.C.: Office of Air Force History, 1983), (hereafter cited as *Craven and Cate*), Vol. Five, p. 17.
10. China fell into the China-Burma-India (CBI) Theater, separate from the Pacific theater.
11. *MacArthur's Airman*, pp. 148-149. The two main sources of oil were in Sumatra (CBI Theater) and Borneo (SWPA Theater). The oil targets in Sumatra were out of reach of Australian-based B-29s but Borneo targets were not. Some were later attacked by B-24s operating from Darwin.
12. *MacArthur's Airman*, p. 149.
13. *Craven and Cate*, Vol. Five, p. 23. See a series of radius maps regarding bases and targets.
14. *Craven and Cate*, Vol. Four, p. 550.
15. Twentieth Air Force would be a unique numbered air force reporting directly to General Arnold acting as the Joint Chiefs of Staff agent, and not reporting to the commander of the theater in which it would be based. This concept was finally approved, with Admiral King's concurrence, since the arrangement mirrored existing Navy policy regarding independent naval task forces.
16. *Craven and Cate*, Vol. Five, p. 9.
17. *MacArthur's Airman*, pp. 147-150.
18. Kenney, George C., *General Kenney Reports* (Duell, Sloan and Pearce, New York, 1949) pp. 341-342
19. AAF headquarters in Washington specified that B-29 runways would be 8,500 feet long, with 10-inch thick pavement. The runways at Cheng-du were constructed largely with hand labor. By 10 May 1944, four runways at Cheng-du were ready to receive B-29s. *Craven and Cate*, Vol. Five, p. 64, p. 71 and p.78. Fourteenth Air Force in China was tasked with keeping a fighter unit at Cheng-du for defense of the B-29 base. See *Craven and Cate*, Vol. Four, p. 537.
20. *Craven and Cate*, Vol. Five, pp. 99-100.
21. *Craven and Cate*, Vol. Five, p. 109.
22. *Craven and Cate*, Vol. Five, pp. xv-xvi.
23. *Craven and Cate*, Vol. Five, p. 5.
24. *Craven and Cate*, Vol. Five, p. xxi. In late March 1945 the 313th Wing began an aerial mining program. By VJ-Day they laid 12,053 2000 pound and 1,000 pound mines. These B-29 mining operations from the Marianas against the Inland Sea and the Shimonoseki Strait were very effective in shutting down all maritime commerce. As late as 1954 when the author transited the Shimonoseki Strait in a heavy cruiser, the ship had to stay in "mine free" waters. Mines were still being swept some nine years after the end of WW II.
25. The battle of the Philippine Sea cost the IJN three aircraft carriers, two lost to U.S. submarines and the third to air attack. That was effectively the end of the IJN aircraft carrier capability.
26. P-51s did not arrive in SWPA until January 1945; however Kenney had an ample supply of Lockheed P-38 fighters. See George C. Kenney, *General Kenney Reports*, 2nd Edition (Washington, D.C.: Office of Air Force History, 1987), p. 510.
27. Darwin was attacked by air on Jul. 6, 1943 by a force of twenty-seven bombers and twenty-one fighters. Ten bombers and two fighters were lost against a Royal Australian Air Force loss of seven Spitfires. *General Kenney Reports*, p. 269. JAAF and IJN bombers had good range but they lacked adequate self-sealing fuel tanks and armor, rendering them extremely vulnerable to opposition fighters – unlike the B-17, B-24 and B-29.

FALSE CLAIMS ABOUT THE TUSKEGEE AIRMEN



Daniel L. Haulman

A group of Tuskegee flyers huddle over charts.

The Tuskegee Airmen have become famous as the only black pilots in the American military in combat during World War II. As the “Red Tails,” they are celebrated in newspaper, magazine, and online articles, in books, in museum displays, in television documentaries, and in motion pictures. In the more than seventy years since World War II, many claims have grown up about the Tuskegee Airmen, many of them false. In this paper, I intend to focus on the seven of the most popular false claims about the Tuskegee Airmen. My evidence is the primary source documentation at the Air Force Historical Research Agency, where I have worked for thirty-four years. The Air Force Historical Research Agency is essentially the archives of the Air Force, and contains the histories of squadrons, groups, wings, numbered air forces, and major commands; mission reports; orders awarding honors to units and individuals; missing air crew reports; oral history interviews; personal papers of many Air Force personnel; and many other documents. The documentation includes histories and mission reports written during World War II by the Tuskegee Airmen themselves. These histories and reports are more reliable than oral recollections recorded decades after the events.

I will address seven false claims about the Tuskegee Airmen:

The false claim that the Tuskegee Airmen “never lost a bomber”

The false claim that a Tuskegee Airman was an ace with five aerial victory credits, but one of his aerial victories was reduced or taken away

The false claim that the Tuskegee Airmen were the first American pilots to shoot down German jets

The false claim that the Tuskegee Airmen sank a German destroyer by strafing alone

The false claim that the Tuskegee Airmen were inferior to the white pilots in combat.

The false claim that the 332d Fighter Group significantly outperformed the other fighter groups.

The false claim that a Tuskegee Airman flew more combat missions than any other Air Force pilot, or more combat missions as a fighter pilot in three wars than any other Air Force pilot.

The False Claim that the Tuskegee Airmen “Never Lost a Bomber”

The most common and popular myth about the Tuskegee Airmen, which circulated for decades before anyone ever decided to check the documentation, is the claim that on their escort missions, the Tuskegee Airmen “never lost a bomber” to enemy aircraft. A version of this misconception appears in Alan Gropman’s book, *The Air Force Integrates* (Washington,

DC: Office of Air Force History, 1985), p. 14: “Their record on escort duty remained unparalleled. They never lost an American bomber to enemy aircraft.” This misconception originated even before the end of World War II, in the press. A version of the statement first appeared in a March 10, 1945 issue of *Liberty Magazine*, in an article by Roi Ottley, who claimed that the black pilots had not lost a bomber they escorted to enemy aircraft in more than 100 missions. The 332d Fighter Group had by then flown more than 200 missions. Two weeks after the Ottley article, on March 24, 1945, another article appeared in the *Chicago Defender*, claiming that in more than 200 missions, the group had not lost a bomber they escorted to enemy aircraft. In reality, bombers under Tuskegee Airmen escort were shot down on seven different days: June 9, 1944; June 13, 1944; July 12, 1944; July 18, 1944; July 20, 1944; August 24, 1944; and March 24, 1945.¹ Moreover, the Tuskegee Airmen flew 312 missions for the Fifteenth Air Force between early June 1944 and late April 1945, and only 179 of those missions escorted bombers.

Alan Gropman interviewed General Benjamin O. Davis, Jr., years after World War II, and specifically asked him if the “never lost a bomber” statement were true. General Davis replied that he questioned the statement, but that it had been repeated so many times people were coming to believe it (AFHRA call number K239.0512-1922).² Davis himself must have known the statement was not true, because his own citation for the Distinguished Flying Cross, contained in Fifteenth Air Force General Order 2972 dated 31 August 1944, noted that on June 9, 1944, “Colonel



General Benjamin O. Davis, Jr., shown here as a colonel in World War II.

Davis so skillfully disposed his squadrons that in spite of the large number of enemy fighters, the bomber formation suffered only a few losses.”³ In order to determine whether or not bombers under the escort of the Tuskegee Airmen were ever shot down by enemy aircraft during World War II, I practiced the following method.

Davis so skillfully disposed his squadrons that ... the bomber formation suffered only a few losses

First, I determined which bombardment wing the Tuskegee Airmen were escorting on a given day, and when and where that escort took place. I found this information in the daily narrative mission reports of the 332d Fighter Group, which are filed with the group’s monthly histories from World War II. The call number for these documents at the Air Force Historical Research Agency is GP-332-HI followed by the month and year.

Next, I determined which bombardment groups were in the bombardment wing that the Tuskegee Airmen were escorting on the day in question. I found this information in the daily mission folders of the Fifteenth Air Force. The Fifteenth Air Force daily mission folders also contain narrative mission reports for all the groups that took part in missions on any given day, including reports of both the fighter and bombardment groups, as well as the wings to which they belonged. The call number for these documents at the Air Force Historical Research Agency is 670.332 followed by the date. The bombardment group daily mission reports show which days bombers of the group were shot down by enemy aircraft.

Next, I checked the index of the Missing Air Crew Reports, to see if the groups that the Tuskegee Airmen were

Daniel L. Haulman is Chief, Organizational Histories, at the Air Force Historical Research Agency, Maxwell AFB, Alabama. After earning a BA from the University of Southwestern Louisiana and an ME (Master of Education) from the University of New Orleans, he earned a Ph.D. in history from Auburn University. Dr. Haulman has authored several books, including Air Force Aerial Victory Credits, The USAF and Humanitarian Airlift Operations, and One Hundred Years of Flight: USAF Chronology of Significant Air and Space Events, 1903-2002. He has written several pamphlets, composed sections of several other USAF publications, and compiled the list of official USAF aerial victories appearing on the AFHRA's web page. He wrote the Air Force chapter in supplement IV of A Guide to the Sources of United States Military History and completed six studies on aspects of recent USAF operations that have been used by the Air Staff and Air University. He has also written a chapter in Locating Air Force Base Sites: History's Legacy, a book about the location of Air Force bases. The author of fifteen published articles in various journals, Dr. Haulman has presented more than twenty historical papers at historical conferences and taught history courses at Huntingdon College, Auburn University at Montgomery, and Faulkner University. He co-authored, with Joseph Caver and Jerome Ennels, the book The Tuskegee Airmen: An Illustrated History, published by New South Books in 2011.



P-51s of the Tuskegee Airmen.

escorting that day lost any aircraft. If any aircraft of those groups were lost that day, I recorded the missing air crew report numbers. This index of Missing Air Crew Reports is located in the archives branch of the Air Force Historical Research Agency. The Missing Air Crew Reports usually confirmed the bomber loss information contained in the bombardment group daily narrative mission reports.

Finally, I looked at the individual Missing Air Crew Reports of the Tuskegee Airmen-escorted groups that lost airplanes on that day to see when the airplanes were lost, where the airplanes were lost, and whether the airplanes were lost because of enemy aircraft fire, enemy antiaircraft fire, or some other cause. The Missing Air Crew Reports note that information for each aircraft lost, with the aircraft type and serial number, and usually also contain witness statements that describe the loss. For lost bombers, the witnesses were usually the crew members of other bombers in the same formation, or members of the crews of the lost bombers themselves, after they returned. The Missing Air Crew Reports are filed on microfiche in the archives branch of the Air Force Historical Research Agency.

Using this procedure, I determined conclusively that on at least seven days, bombers under the escort of the Tuskegee Airmen's 332d Fighter Group were shot down by enemy aircraft. Those days include June 9, 1944; June 13, 1944; July 12, 1944; July 18, 1944; July 20, 1944; August 24, 1944; and March 24, 1945.⁴

The False Claim that a Tuskegee Airman was an Ace with Five Aerial Victory Credits, but One of his Credits was Reduced or Taken Away

Another popular misconception that circulated after

World War II is that white officers were determined to prevent any black man in the Army Air Forces from becoming an ace, and therefore reduced the aerial victory credit total of Lee Archer from five to less than five to accomplish their aim. A version of this misconception appears in the Oliver North compilation, *War Stories III* (Washington, DC: Regnery Publishing, Inc., 2005), p. 152, in which Lee Archer is quoted as saying "I figure somebody up the line just wasn't ready for a black guy to be an ace." In the same source, Archer claimed that one of his five victories was reduced to a half, and no one knew who got the other half.⁵ Another version of the story is contained in an interview of Lee Archer by Dr. Lisa Bratton conducted on March 13, 2001 in New York, NY. Archer claimed that he shot down five enemy airplanes, without specifying the dates, and that one of his victories was cut in half and given to another pilot named Freddie Hutchins, leaving him with 4.5. He also claimed, in the same interview, that the American Fighter Aces Association honored him, implying that the association had named him an ace at last.⁶

In reality, according to the World War II records of the 332d Fighter Group and its squadrons, which were very carefully kept by members of the group, Lee Archer claimed a total of four aerial victories during World War II, and received credit for every claim.⁷ Moreover, there is no evidence that Lt. Freddie Hutchins earned any half credit, with the other half credit going to Archer. In fact, Hutchins earned a full credit for shooting down an enemy aircraft on July 26, 1944. The mission report for that day, which lists all the claims from the mission, does not list Archer.⁸ The order that awarded the credit to Hutchins on July 26 was issued on August 6, 1944, and it was the same order that awarded a credit to Archer for July 18, 1944.⁹



The much talked about German jet fighter, the Messerschmitt Me-262.

The misconception that Lee Archer was an ace was perpetuated in part because of an excerpt in the book *The Tuskegee Airmen* (Boston: Bruce Humphries, Inc., 1955), by Charles E. Francis. In that book, Francis notes an aerial victory for July 20, 1944, but the history of the 332d Fighter Group for July 1944, the mission report of the 332d Fighter Group for July 20, 1944, and the aerial victory credit orders issued by the Fifteenth Air Force in 1944 do not support the claim.¹⁰

World War II documents, including monthly histories of the 332d Fighter Group and Twelfth and Fifteenth Air Force general orders awarding aerial victory credits show that Lee Archer claimed and was awarded a total of four aerial victory credits during World War II, one on July 18, 1944, and three on October 12, 1944. There is no evidence among these documents that Lee Archer ever claimed any more than four enemy aircraft destroyed in the air during the war, and he was never awarded any more than four. A fifth was never taken away or downgraded to half. Moreover, there is no evidence, among the documents, that there was any effort to prevent any members of the 332d Fighter Group from becoming an ace. If someone had reduced one of his July credits to a half, or taken it away entirely, that person would have had no way of knowing that Archer would get credit for three more aircraft months later, in October, and approach ace status. When claims were made, they were recorded and evaluated by a victory credit board that decided, using witness statements and gun camera film, whether to award credits, which were confirmed by general orders of the Fifteenth Air Force. There is no evidence that the black claims were treated any differently

than the white claims. If there had been such discrimination in the evaluation of claims, Colonel Benjamin O. Davis, Jr., the leader of the group would have most likely complained, and there is no evidence of any such complaint. To think that someone or some group was totaling the number of aerial victory credits of each of the members of the various squadrons of the 332d Fighter Group and intervening to deny credit to anyone who might become an ace is not consistent with the aerial victory credit procedures of the day.

American pilots shot down no less than sixty Me-262 aircraft before March 24, 1945

During World War II, the only African-American pilots in the Army Air Forces who flew in combat served in the 99th, 100th, 301st, and 302d Fighter Squadrons and the 332d Fighter Group. None of these pilots earned more than four aerial victory credits. None of them became an ace, with at least five aerial victory credits. Were the Tuskegee Airmen who earned four aerial victory credits sent home in order to prevent a black pilot from becoming an ace?

That is very doubtful. 1st Lt. Lee Archer was deployed back to the United States the month after he scored his fourth aerial victory credit, and the same month he received his fourth aerial victory credit. Captain Edward Toppins was deployed back to the United States the second month after he scored his fourth aerial victory credit, and the month after he received credit for it. However, Captain

Joseph Elsberry earned his fourth aerial victory credit in July 1944, and received credit for it early in August 1944. He did not redeploy to the United States until December 1944. If there was a policy of sending Tuskegee Airmen with four aerial victory credits home, in order to prevent a black man from becoming an ace, the case of Captain Joseph Elsberry contradicts it, because he was not sent home until four months after his fourth aerial victory credit was awarded, and five months after he scored it. It is more likely that the pilots who deployed back to the United States did so after having completed the number of missions they needed to finish their respective tours of duty.

Finally, the American Fighter Aces Association did indeed invite Lee Archer as a guest to speak, but did not in fact name him an ace. The same association invited Charlton Heston to speak at the same event, and Heston was not named an ace. Frank Olynyk, a historian for the American Fighter Aces Association, confirmed that the association never recognized Lee Archer as having shot down five enemy aircraft, and the Olynyk's record agrees with that the Air Force Historical Research Agency: Lee Archer earned a total of four aerial victory credits.¹¹

The False Claim that the Tuskegee Airmen were the First American Pilots to Shoot Down German Jets

In a March 30, 2007 American Forces Press Service article regarding the awarding of the Congressional Gold Medal to the Tuskegee Airmen, there is the statement that Tuskegee Airman Roscoe Brown was "the first U.S. pilot to shoot down a German Messerschmitt jet."¹² Lee Archer, one of the most famous Tuskegee Airmen, repeated the claim in a 2001 interview. He claimed that "guys like Roscoe Brown and three other people shot down the first jets in our history, in combat."¹³ Three Tuskegee Airmen, 1st Lt. Roscoe Brown, 1st Lt. Earl R. Lane, and 2d Lt. Charles V. Brantley, each shot down a German Me-262 jet on March 24, 1945, during the longest Fifteenth Air Force mission, which went all the way to Berlin.¹⁴ However, American pilots shot down no less than sixty Me-262 aircraft before 24 March 1945. Most of these American pilots served in the Eighth Air Force.¹⁵

The Tuskegee Airmen were also not the first Fifteenth Air Force pilots to shoot down German jets, as is sometimes alleged.¹⁶ Two such pilots, 1st Lt. Eugene P. McGlaufflin and 2d Lt. Roy L. Scales, both of the Fifteenth Air Force's 31st Fighter Group and 308th Fighter Squadron, shared a victory over an Me-262 German jet on 22 December 1944, and Capt. William J. Dillard, also of the Fifteenth Air Force's 31st Fighter Group and 308th Fighter Squadron, shot down an Me-262 German jet on 22 March 1945. Moreover, on the day three Tuskegee Airmen shot down three German jets over Berlin on March 24, 1945, five other American pilots of the Fifteenth Air Force, on the same mission, with the 31st Fighter Group, also shot down German Me-262 jets. They included Colonel William A. Daniel, 1st Lt. Forrest M. Keene, 1st Lt. Raymond D. Leonard, Capt. Kenneth T. Smith, and 2d Lt. William M. Wilder.¹⁷

The False Claim that the Tuskegee Airmen Sank a German Destroyer by Strafing Alone

In the movie *Red Tails* by George Lucas, a P-51 fighter pilot is depicted as strafing a German destroyer until it explodes, and group members are later shown watching gun camera film of the attack and the explosion, suggesting that a Tuskegee Airman in a red-tailed Mustang sank a destroyer by himself. The 332d Fighter Group narrative mission report for June 25, 1944 notes that eight of the group's pilots flying P-47 aircraft strafed a German destroyer, on June 25, 1944, and two of them went around for another pass to do more strafing. The group did not begin flying P-51s in combat until the next month.¹⁸

The...records show that the ship did not sink on June 25, 1944, but was heavily damaged

The mission report also notes that the group sank the destroyer that day in the Adriatic Sea near Trieste. The pilots on the mission undoubtedly believed that they had sunk a German destroyer at that place and time. In a 2001 interview, Tuskegee Airman Lee Archer claimed "We sank a destroyer escort," and when others doubted, "we sent them the film," implying that gun camera film showed the ship sinking.¹⁹

It is not likely that gun camera film, activated when the machine guns were fired, also showed the actual sinking of the ship, which would not have been immediate. Moreover, other records show that the only German ship that was attacked at the same place and time was the TA-22, the former World War I Italian destroyer *Giuseppe Missori*, which the Germans had converted into a very large torpedo vessel. The same records show that the ship did not sink on June 25, 1944, but was heavily damaged. The TA-22 was decommissioned on November 8, 1944, and scuttled at Trieste in 1945. It might as well have been sunk on June 25, 1944, because it never fought the Allies again.²⁰

The book, *The Tuskegee Airmen*, by Charles Francis notes that the Tuskegee Airmen attacked an enemy ship on June 25, 1944, and that Gwynne W. Pierson and Wendell O. Pruitt each earned a Distinguished Flying Cross for the mission. The book also claims that Pierson was given credit for sinking the ship. The only Distinguished Flying Cross I found for Gwynne W. Pierson was for his action on August 14, 1944 (Fifteenth Air Force General Order 287 dated January 19, 1945), and the only Distinguished Flying Cross I found for Wendell O. Pruitt was for his action on August 27, 1944 (Fifteenth Air Force General Order 3950 dated October 15, 1944).²¹

Some sources suggest that the Tuskegee Airmen sank the German ship TA-27, which had been the Italian warship *Aurige*. The TA-27 was actually sunk on June 9, 1944 off the coast of Elba, west of the Italian peninsula, far from the Adriatic Sea, which is east of the Italian peninsula. The Tuskegee Airmen would not have sunk the TA-27, because the date and place do not match the group mission report.²²

The False Claim that the Tuskegee Airmen were inferior to the White Fighter Pilots in Combat

Traditional racism prevented black pilots from serving in the American military until 1941, when President Franklin D. Roosevelt, as part of a campaign pledge he made in his 1940 campaign for President, directed the War Department to constitute and activate the first black flying unit in history, the 99th Pursuit Squadron. By the time it entered combat, about a year after its first pilots were trained at Tuskegee, the unit had been redesignated as the 99th Fighter Squadron.

Discrimination continued in 1943. The all-black 99th Fighter Squadron overseas was attached to various white fighter groups, since there was not yet a black fighter group overseas to which it could be assigned (the 332d Fighter Group would not deploy to the Mediterranean Theater until 1944). One of the groups to which the 99th was attached was the 33d Fighter Group, whose commander was not happy having a black unit attached to his group, which already had three white fighter squadrons assigned to it. That commander was then Colonel William Momyer. As a result of his recommendations, Major General Edwin J. House of the XII Air Support Command sent a memorandum dated 16 September 1943 to Major General J. K. Cannon which called into question the combat efficiency of the 99th Fighter Squadron. The memorandum claimed that “the consensus of opinion seems to be that the negro type has not the proper reflexes to make a first-class fighter pilot.” It went on to recommend reassignment of the 99th Fighter Squadron away from the front lines. General Cannon seconded the House memorandum with one of his own, dated, 18 September 1943, which he in turn forwarded to Lt. Gen. Carl Spaatz, commander of the Northwest African Air Forces. Cannon noted “The pilots of the 99th Fighter Squadron fall well below the standard of other fighter squadrons of this Command...” Spaatz forwarded the House and Cannon memoranda on to Gen. Henry “Hap” Arnold on 19 September 1943, noting his “full confidence in the fairness of the analysis made by both General Cannon and General House.”²³

After the memoranda of Generals House, Cannon, and Spaatz reached General Arnold, the War Department launched a study to compare the combat performance of the 99th Fighter Squadron with the other P-40 squadrons in the Mediterranean Theater. In the meantime, the 99th Fighter Squadron was attached to other white fighter groups besides the 33d, and with them it had more opportunities and more success. When the War Department study was finally released, at the end of March 1944, it had the title “Operations of the 99th Fighter Squadron Compared with Other P-40 Aircraft Squadrons in the MTO (Mediterranean Theater of Operations), 3 July 1943-31 January 1944.” The War Department study, from the Statistical Control Division, Office of Management Control, implicitly refuted the House, Cannon, and Spaatz memoranda of the previous year, and claimed that the 99th Fighter Squadron pilots performed in combat as well as their white counterparts.²⁴

By one measure, an argument could be made that instead of proving their inferiority in combat, the Tuskegee Airmen actually performed better than their white counterparts. The 99th Fighter Squadron was eventually assigned to the all-black 332d Fighter Group in Italy in mid-1944. During the period from June 1944 through April 1945, the 332d Fighter Group flew primarily bomber escort missions for the Fifteenth Air Force. It was one of seven fighter escort groups, four of which flew P-51s and three of which flew P-38s for most of that period. During that period, 27 bombers under Tuskegee Airmen escort were shot down by enemy aircraft. The Fifteenth Air Force lost a total of 303 bombers to enemy aircraft during the period. Subtracting 27 from that number leaves 276. Dividing that number by six gives the average number of bombers lost by each of the other fighter groups: 46. The Tuskegee Airmen lost significantly fewer bombers than the other fighter groups in the Fifteenth Air Force during the same period. Moreover, the Tuskegee Airmen flew 179 bomber escort missions for the Fifteenth Air Force, and lost bombers on only seven of those missions. If these were the only statistics we consider, we might conclude that the 332d Fighter Group performed better than the other groups.

The False Claim that the 332d Fighter Group significantly Outperformed the Other Fighter Groups

The claim that the Tuskegee Airmen, instead of performing more poorly in combat than the white fighter pilots, outperformed them, is also questionable. Certain statistics show that the 332d Fighter Group was better than the other groups, but those statistics are counterbalanced by other data that show the other groups were better, depending on the category. The idea that the Tuskegee Airmen were expected to perform much more poorly than the white pilots in the other fighter units, but proved to be much better than them instead, is another popular myth. They were not worse, but they were also not better. In the long run, they proved to be equal.

They were not worse, but they were also not better. In the long run, they proved to be equal

The 332d Fighter Group, from July 1944 through early March 1945, had four fighter squadrons assigned to it, while the other fighter groups in the Fifteenth Air Force had only three squadrons assigned to them. Having one more fighter squadron than the other P-51 fighter groups gave the 332d Fighter Group an advantage over the other groups. According to a War Department Table of Organization and Equipment from late December 1943, the number of fighter airplanes per squadron is given as 25. According to that, each of the other fighter groups in the Fifteenth Air Force was authorized 75 airplanes, because each of those groups had three fighter squadrons assigned to it. But the 332d Fighter Group had four fighter squadrons assigned to it. If each of those squadrons were



Singer Lena Horne visited the Tuskegee Airmen on January 1, 1945.

authorized 25 airplanes, the 332d Fighter Group would have had 100 airplanes, 25 more airplanes than any of the other fighter groups. That greater total is confirmed in the numbers of airplanes taking off in the mission reports of the 332d Fighter Group and the 31st Fighter Group during the month of August 1944. Not all a group's fighters were launched on a group mission, because some were held in reserve, some were being repaired or maintained, and some were lost. A typical 332d Fighter Group mission in August 1944 launched more than 60 fighters, and sometimes as many as 72. A typical 31st Fighter Group mission that month launched between 50 and 55 fighters. The bottom line is that the 332d Fighter Group had more squadrons and more airplanes to send up than each of the other fighter groups in the Fifteenth Air Force, which might help explain the superior bomber escort record.²⁵

In the same period it flew missions for the Fifteenth Air Force, June 1944-April 1945, the 332d Fighter Group shot down a total of 94 enemy airplanes. Three of the other fighter groups in the Fifteenth Air Force flew P-51 Mustangs like the 332d Fighter Group did (the other three fighter groups flew P-38s). Each of the three other P-51 fighter groups in the Fifteenth Air Force shot down well over 200 enemy airplanes in the same time period that the 332d Fighter Group shot down 94. The 332d Fighter Group shot down significantly fewer enemy airplanes than the other three P-51 fighter groups in the Fifteenth Air Force in the same time period. If we looked at only those statis-

tics, we might conclude that the 332d Fighter Group performed more poorly than the other P-51 fighter groups with which it served.

If one looks at the escorted bomber loss statistics, the 332d Fighter Group appears to be superior to the other fighter groups. If one looks at the numbers of enemy airplanes the groups shot down, the 332d Fighter Group appears to be inferior to the other fighter groups. I conclude that the performance of the Tuskegee Airmen defies both the myth of inferiority and the myth of superiority.

The False Claim that a Tuskegee Airman Flew More Combat Missions than any other Air Force Pilot, or more Combat Missions as a Fighter Pilot in Three Wars Than Any Other Air Force Pilot

One of the most respected and honorable of all the Tuskegee Airmen is Colonel Charles McGee. Like many other Tuskegee Airmen, such as Gen. Daniel "Chappie" James and Lt. Col. George Hardy, Col. McGee served his country not only during World War II but also in Korea and Vietnam, but unlike them, he served as a fighter pilot in all three of those wars. Col. McGee accumulated a very impressive total of 409 combat missions.²⁶ Nothing should take away from that achievement. But while McGee's total of 409 combat mission for a fighter pilot in three wars is very commendable, and he should be remembered and honored for that service, he does not hold the record



Col. Charles McGee, who flew 409 missions in several wars, in front of his aircraft in 1944.

for most combat missions of any Air Force pilot. There were several U.S. Air Force pilots who flew more than 409 combat missions, and therefore more than Colonel McGee. Alophus H. "Pat" Bledsoe, Jr., in an e-mail to the marketing director of the CAF Red Tail Squadron, noted that he personally had flown 422 combat missions in Vietnam, and was aware of several other Air Force pilots who flew more than 500 missions in during the Vietnam War. However, Bledsoe was a Forward Air Contoller (FAC) and not a fighter pilot, and he referred to other USAF pilots who were FACs, and not fighter pilots. Colonel Alan Gropman flew 671 missions in Vietnam, a total much higher than McGee's 409, but Gropman flew transports, not fighters.²⁷

There were other Air Force pilots who flew fighters and who also flew more than 409 combat missions

There were other Air Force pilots who flew fighters and who also flew more than 409 combat missions. One of them was Major Kenneth Raymond Hughey, who flew 564 combat missions in Vietnam before he was shot down and became a prisoner of war in North Vietnam. His number of combat fighter missions is 155 more than the 409 combat missions of Colonel McGee, but unlike McGee, he did not fly in three wars.²⁸ Another pilot named Richard Toliver, who served two

tours in Vietnam, flew a total of 446 combat missions, also more than McGee's 409. Toliver was also an African American pilot, but he was not a Tuskegee Airman.²⁹

Another claim is that, although Col. McGee did not fly more combat missions than any other Air Force pilot, and although he did not fly more fighter combat missions than any other Air Force pilot, that he flew more fighter combat missions than any other Air Force pilot in three wars. That claim is also false. There is at least one other Air Force fighter pilot who flew more combat missions during World War II, the Korean War, and the Vietnam War. That other pilot, who was not a Tuskegee Airman, is Col. Ralph S. Parr Jr., who flew a total of 641 combat missions. Like McGee, he also flew fighters in World War II, Korea, and Vietnam. Parr flew P-38s during World War II, F-80s and then F-86s during two combat tours in Korea, and F-4Cs and then F-4Ds during two combat missions in Vietnam.³⁰

Colonel Charles McGee should be honored for having flown 409 combat missions as a fighter pilot in the Air Force, and for having flown in three wars, World War II, Korea, and Vietnam, but the claim that he flew more combat missions than any other USAF pilot, or more combat missions than any other USAF fighter pilot, or more combat missions than any other USAF fighter pilot in three wars, is false.

Conclusion

Whoever dispenses with the false claims that have

come to circulate around the Tuskegee Airmen in the many decades since World War II emerges with a greater appreciation for what they actually accomplished. If they did not demonstrate that they were far superior to the members of the six non-black fighter escort groups of the Fifteenth Air Force with which they served, they certainly demonstrated that they were not inferior to them, either. More-

over, they began at a line farther back, overcoming many more obstacles on the way to combat. The Tuskegee Airmen proved that they were equal to the other fighter pilots with whom they served heroically during World War II. Their exemplary performance contributed to the fact that of all the military services, the Air Force was the first to integrate, in 1949. ■

NOTES

1. Daniel L. Haulman, "Tuskegee Airmen-Escorted Bombers Lost to Enemy Aircraft," paper prepared at the Air Force Historical Research Agency. This paper is based on histories of the 332d Fighter Group, daily mission reports of the Fifteenth Air Force, and Missing Air Crew Reports that show the times, locations, and causes of aircraft losses.
2. Interview of General Benjamin O. Davis, Jr., by Alan Gropman, AFHRA call number K239.0512-122.
3. Fifteenth Air Force General Order 2972 issued on 31 Aug 1944.
4. 332d Fighter Group histories, under call number GP-332-HI at the Air Force Historical Research Agency; Fifteenth Air Force daily mission folders, under call number 670.332 at the Air Force Historical Research Agency; Missing Air Crew Reports, indexed and filed on microfiche in the Archives Branch of the Air Force Historical Research Agency.
5. Oliver North, *War Stories III* (Washington, DC: Regnery Publishing, Inc., 2005), p. 152.
6. Interview of Lee Archer by Dr. Lisa Bratton, conducted on 13 Mar 2001 in New York, NY, on file at the Air Force Historical Research Agency under call number K239.0512-2580, pp. 23-24.
7. Monthly histories of the 332nd Fighter Group, June 1944-April 1945; Fifteenth Air Force General Order 2350, dated 6 Aug 1944; Fifteenth Air Force General Order 4287 dated 1 Nov 1944.
8. 332nd Fighter Group narrative mission report 37 dated 26 July 1944.
9. Fifteenth Air Force General Order 2350 dated 6 Aug 1944.
10. Charles E. Francis, *The Tuskegee Airmen* (Boston: Bruce Humphries, Inc., 1955), pp. 92 and 194; 332nd Fighter Group mission report number 30, for 20 July 1944.
11. Interview of Lee Archer, by Dr. Lisa Bratton, conducted on 13 Mar 2001 in New York, NY, on file at the Air Force Historical Research Agency under the call number K239.0512-2580, pp. 23-24; conversations of Daniel Haulman with Frank Olynyk during several of the latter's research visits to the Air Force Historical Research Agency.
12. John J. Kruzal, "President, Congress Honor Tuskegee Airmen," *American Forces Press Service*, March 30, 2007.
13. Interview of Lee Archer by Dr. Lisa Bratton, conducted on 13 Mar 2001 in New York, NY, on file at the Air Force Historical Research Agency under call number K239.0512-2580, pp. 19-20.
14. Fifteenth Air Force General Order 2293 dated 12 Apr 1945.
15. USAAF (European Theater) Credits for the Destruction of Enemy Aircraft in Air-to-Air Combat, World War 2, Victory List No. 5, Frank J. Olynyk, May 1987; USAAF (Mediterranean Theater) Credits for the Destruction of Enemy Aircraft in Air-to-Air Combat, World War 2, Victory List No. 6, Frank J. Olynyk, June 1987; USAF Historical Study No. 85, USAF Credits for the Destruction of Enemy Aircraft, World War II, Albert F. Simpson Historical Research Center, 1978; *Combat Squadrons of the Air Force, World War II*, edited by Maurer Maurer, 1969. Maurer Maurer, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983). This information was compiled by Ms. Patsy Robertson, a historian at the Air Force Historical Research Agency.
16. John B. Holway, *Red Tails, Black Wings* (Las Cruces, NM:

Yucca Tree Press, 1997), p. 262.

17. Fifteenth Air Force General Orders 2525, dated 19 Apr 1945 and 2709 dated 24 Apr 1945.
18. 332nd Fighter Group history for June 1944 and 332nd Fighter Group mission report for 25 June 1944.
19. 332nd Fighter Group history for June 1944 and 332nd Fighter Group mission report for 25 June 1944; Interview of Lee Archer by Dr. Lisa Bratton, conducted on 13 Mar 2011, in New York, NY, on file at the Air Force Historical Research Agency under call number K239.0512-2580, p. 20.
20. 332d Fighter Group history for June 1944; 332d Fighter Group mission report for 25 June 1944; David Brown, *Warship Losses of World War II* (Annapolis, MD: Naval Institute Press, 1990); "Fighting Ships of the World," website of Ivan Gogin (http://www.navydepot.org/ships/germany/ger_tb_ta22.htm); Aldo Fraccaroli, *Italian Warships of World War II* (London: Ian Allan, 1968). Jurgen Rohwer, *Chronology of the War at Sea* (London: Chatham Publishing, 2005), p. 338.
21. Charles Francis, *The Tuskegee Airmen*, edited by Adolph Caso (Boston: Branden Books, 2008), pp. 113-114; Fifteenth Air Force General Order 287 dated 19 Jan 1945; Fifteenth Air Force General Order 3950 dated 15 Oct 1944.
22. Myth contained in Wikipedia under Ariete Class Torpedo Boat; more correct information from H. P. Willmott's *The Last Century of Sea Power*, volume 2, *From Washington to Tokyo, 1922-1945* (Bloomington, Indiana: Indiana University Press, 2010), p. 207.
23. Memoranda from Maj Gen House, Maj Gen Cannon, and Lt Gen Spaatz, Sept 1943, to Gen Henry H. Arnold, commander of the Army Air Forces, call number 141.281-22 at the Air Force Historical Research Agency.
24. "Operations of the 99th Fighter Squadron Compared with Other P-40 Aircraft Squadrons in the MTO (Mediterranean Theater of Operations), 3 July 1943-31 January 1944, published by the Statistical Control Division, Office of Management Control, War Department. The document is filed under call number 134.65-496 at the Air Force Historical Research Agency.
25. Maurer Maurer, *Air Force Combat Units of World War II* (Washington, DC: Office of Air Force History, 1983), pp. 83-85, 113-115, 206-208, 212-213; War Department Table of Organization and Equipment #1-27 dated 22 Dec 1943, p. 14; Histories and narrative mission reports of the 332nd Fighter Group and the 31st Fighter Group for August 1944.
26. Charlene E. McGee Smith, *Tuskegee Airman: The Biography of Charles E. McGee* (Boston, MA: Branden Publishing Company, 1999), p. 174.
27. Telephone call, voice message, Alan Gropman to Daniel Haulman, 29 July 2013.
28. "The Volunteer States Goes to War: A Salute to Tennessee Veterans," electronic pamphlet issued by the Tennessee State Library and Archives.
29. Telephone conversation of author with Richard "Dick" Toliver on 24 Jun 2016.
30. John L. Frisbee, "The Pinnacle of Professionalism," *Air Force Magazine* (February 1987), p. 109; "Ralph S. Parr, Fighter Pilot," *Daedalus Flyer*, vol. XXXVI, no. 2 (Summer 1996), pp. 15-21; e-mail, Barrett Tillman to Daniel Haulman, 22 July 2013.

“Blackie” Captain Harold F. Blackburn, A Pioneering, Twentieth Century Pilot in Peace and War. By William C. Cass. Wellesley, Mass.: Branden Books, 2016. Photographs. Bibliography. Index. Pp. 484. \$29.95 paperback ISBN: 9780828326230.

“Blackie” is the biography of pilot Captain Harold Blackburn, a man whose flying career spanned over 40 years. Blackburn engaged in combat during World War II and served as a commercial airline pilot for Trans World Airlines (TWA). Since many pilot biographies and memoirs tend to focus on combat experiences, this book is a welcome addition that provides insight into the development of commercial and military aviation from the 1920s to the 1960s.

Author Bill Cass came across the story of Captain Blackburn (nicknamed Blackie) while researching his earlier book, *The Last Flight of Liberator 41-1133*, which chronicles the story of a B-24 Liberator bomber and her crew killed during a routine training mission over New Mexico during World War II. Blackie was a B-24 instructor at the time of the crash. Captain Gerald “Bud” Bodding, a close friend, former commercial pilot, famous Alaskan bush pilot, and fellow instructor was aboard; and Blackie was involved in the search for the missing B-24. Cass has also written a biography of Bodding.

Born in Illinois in 1901 to a dentist, Blackie’s first flight in a Curtiss Jenny in 1919 was the beginning of a long and varied aviation career. He was accepted as an Aviation Cadet in 1930 at Kelly Field in Texas. During the next decade, he flew for both the Army Air Corps and TWA in such aircraft as the Curtiss B-2 Condor (a bomber that served for only a short period with the Air Corps) and Douglas DC-3 airliner. During World War II, Blackie served as a civilian flight instructor and Air Transport Command ferry pilot. Amazingly, as a civilian he also flew unofficial combat missions over occupied Europe in Lockheed F-4/F-5 (P-38) Lightnings with the 7th Photographic Group (Reconnaissance)—a story that brings to mind Charles Lindbergh’s experiences as a civilian consultant flying with Marine and AAF combat units in the Pacific.

Following the end of World War II, Blackie returned to a career as an airline pilot with TWA, flying Lockheed Constellations and Boeing 707s until his retirement at the age of sixty in 1961. During this period, he experienced the radical airline transition from pistons to jets. Following his retirement as an airline pilot, he remained involved in TWA management during the 1960s.

Cass has provided a comprehensive biography of a memorable pilot. At over 450 pages, this book is probably too long and detailed for the general reader; but it will be enjoyed by aviation enthusiasts and fellow pilots. The only negative comment is that the index page numbers are not accurate and may reflect an earlier version of the book.

As a Docent at the Smithsonian’s Udvar-Hazy Center, I found that the story of Blackburn’s career comes to life

when I view the museum’s Curtiss Jenny sitting near the Boeing 367-80—the technology demonstrator that led to the 707. Those two airplanes serve as fitting bookends for Blackie’s amazing life as a pioneering pilot.

Maj. Jeffrey P. Joyce, USAF (Ret.)



The Hunter Killers: The Extraordinary Story of the First Wild Weasels, the Band of Maverick Aviators Who Flew the Most Dangerous Missions of the Vietnam War. By Dan Hampton. New York: HarperCollins, 2015. Maps. Tables. Photographs. Notes. Sources. Appendices. Glossary. Index. Pp. 351. \$23.00 hard cover, \$16.00 paperback ISBN: 978-0-06-237512-4

Wild Weasels is a label given to specially trained crews flying modified fighters with the bold mission of suppressing ground-based defenses, primarily radar-guided anti-aircraft artillery (AAA) and surface-to-air missiles (SAMs) so that strike aircraft can attack successfully and return to base safely. To do this, as Hampton intricately details, Weasels in the Vietnam war paved the way in a new role by routinely preceding the strikers to the target area and then departing the area last. Thus, their motto: “First in, last out.”

Having flown 151 combat missions (Middle East) in U.S. Air Force fighters, earning four Distinguished Flying Crosses with Valor and a Purple Heart, this guy has an insight into his subject that is rare for a best selling author (*Viper Pilot* and *Lords of the Sky*). In fact, while his focus in this excellent book is on the early Weasels flying F-100s and F-105s in Vietnam, he flew the mission himself in F-16s during his twenty years in the Air Force.

Plus, he went way beyond the expected requirements of research to build his book, including interviewing extensively many of those who actually learned the business the hard way—looking for targets; killing them with missiles, bombs or, in some rare cases, guns; and watching buddies being shot down and rescued, captured, or killed.

So, pay attention. Dan Hampton knows what he’s writing about. And what he writes about is the rise in Vietnam of the radar-guided-missile threat, for which U.S. forces were embarrassingly ill-prepared. He points out how we reacted to this threat, producing equipment that could detect radar signals, training pilots and electronic warfare officers (EWOs or “bears”) to use the new equipment and tactics, then testing them in the hottest test range in the world at the time—North Vietnam.

It’s a great story that is well written. A mild word of caution: to put this Wild Weasel story in its larger context, Hampton devotes large chunks of his book to the history of the Vietnam war, including a fair amount of what happened in the ground war, primarily in South Vietnam. If your interest is solely in the Weasel story, you may be

tempted to leap over some of this. Don't. I counted it as an added benefit of the book.

If I could add one thing to the story, it would be coverage of the role played by the Air Force's Tactical Air Warfare Center (TAWC) at Eglin AFB, Florida. TAWC was charged with influencing the equipment and tactics that were used in combat. To make sure the contact between the field and TAWC was active and useful, TAWC assigned an experienced fighter pilot and EWO to each base flying into the North. The team was called the Anti-SAM Combat Assistance Team (ASCAT) and played a key role in solving the many problems our guys encountered over the North.

Having said that, I encourage anyone with an interest in this story of a challenging mission and the fearless men who flew it to read Dan Hampton's very thorough and accurate account. You will be impressed with the thoroughness of his research, the tale itself, and his skill at writing about it.

Lt. Gen. Michael A. Nelson, USAF (Ret.), NASM Docent and former ASCAT/Wild Weasel



Aircraft Carriers: The Illustrated History of the World's Most Important Warships. Michael E. Haskey. Minneapolis, Minn.: Zenith Publishing, 2016. Photographs. Pp. 239. \$40.00 ISBN 978-0-7603-4814-7.

Aircraft Carriers traces the development of the aircraft carrier from the early days of aviation to today, where the aircraft has become a centerpiece of American diplomacy. Michael Haskey develops the argument that the aircraft carrier has changed the nature of combat and has transformed itself into the most important warship.

Haskey develops the history of the aircraft carrier by dividing the text into six chapters and an epilogue, where he discusses the aircraft carrier's future. As with many things involving flight, Haskey begins this history during the first decade of flight with the efforts of Glenn Curtiss and the early days of flying from temporary flight decks built on various warships. Slowly the importance of aviation for sea forces grew. Not until the 1920s did the U.S. Navy build its first aircraft carrier, the USS *Langley*, by converting the collier USS *Jupiter*.

The heart of the book is the World War II discussion. During that war aircraft carriers faced each other in combat for the first time. The United States' entry into the Second World War came after the Japanese attacked Pearl Harbor using aircraft carriers. The war in the Pacific was punctuated by battles between aircraft carriers that never came in visual range of each other. Haskey provides a solid description of the major types and classes of U.S. Navy aircraft carriers as well as their roles during the war.

Haskey also discusses the critical role of British aircraft carriers in both the sinking of the *Bismarck* and the

attack on the Italian fleet at anchor in Taranto. In both cases, the British utilized antiquated Swordfish biplanes to carry out their attacks. *Aircraft Carriers* also includes a brief discussion of Germany's aborted attempt to field an aircraft carrier, the *Graf Zeppelin*.

The book finishes with today's super carrier's role and capabilities as a leading edge of American military capability. With the small number of modern American aircraft carriers, Haskey is able to describe each of the ships in detail.

Haskey's focus in this book is the United States' aircraft carriers, with lesser coverage provided to Japanese, French, and British carriers. While he does provide a quick list of all the nations that operate aircraft carriers, that is the extent of discussion of the other nations that have aircraft carriers. Certainly, the U.S. Navy has historically been, and continues to be, the preeminent power in aircraft-carrier operations; but, based on the title of this work, some discussion of the globe's other carriers is in order. With the U.S. Navy being the focus of this book, perhaps a better title would be *Aircraft Carriers: The Illustrated History of the U.S. Navy's Most Important Warships*.

The numerous high-quality photographs are the strength of this book; it is very well illustrated. The images make up approximately half of the book's 240 pages. The numerous photographs, paintings, and drawings are both well annotated and sharply reprinted. Many of the images are "fresh" images rather than the "standard," all-too-often reused images that appear in many other books about aircraft carriers. Many of the images of modern aircraft carriers are simply stunning.

Aircraft Carriers delivers as a respectable illustrated history of the globe's most important warship. The text is an easy read. Fans of American aircraft carriers and the development of sea-based airpower will certainly enjoy this book.

Lt. Col. Daniel J. Simonsen, USAF (Ret.), Bossier City LA



Spyflights and Overflights; U.S. Strategic Aerial Reconnaissance Volume I 1945-1960. By Robert S Hopkins III. Crowborough UK: Hikoki Publications, 2016. Maps. Tables. Photographs. Notes. Index. Pp. 240. \$44.95 ISBN 9-781902-109503

Anyone at least passingly familiar with the Cold War knows about the American (and, occasionally, allied) overflights of the Soviet Union. Robert Hopkins takes a subject most people know little about and fleshes it out into a detailed and fascinating story. The first volume of what should be a historically important series covers the years 1945 to 1960, the time of the "crawl and walk" stages of overflight development. Hopkin's career flying RC-135s would put him in a later timeframe than this volume, but

his subsequent MA and PhD in history from the University of Virginia certainly inspire confidence in his scholarship. This book confirms that confidence.

President Truman was the first chief executive to recognize the gaping hole where knowledge of the USSR should be, so the first tenuous and off-the-cuff reconnaissance efforts were authorized by him. These early flights exposed operational- and equipment-related weaknesses and began the drive towards greater innovation and specialization. Hopkins does a very good job plotting these early developments and lays out the efforts to build working relationships between contractors and operators. Establishing the flow from requirements, to equipment manufacture, to operational planning and employment, to exploitation and distribution is a difficult problem; and the growing pains are well documented here.

Most of the book's story takes place during the historically maligned term of Dwight Eisenhower. More recent scholarship has used declassified materials to help us get a more balanced view of our thirty-fourth president. Ike's behind-the-scenes efforts to learn what we needed about the Soviet Union without publically making waves has become increasingly respected, and this book's story is a big part of that trend. Reading Hopkin's book, the reader can get a feel for the difficult decisions Eisenhower had to make, and the delicate balancing act of ordering what well could have been seen as acts of war.

To keep the reader from getting tunnel vision, Hopkins puts his narrative into the larger context of both domestic and international politics. Recognizing that U.S. overflights were both a response to, and a driver of, fluctuating relations with the Soviets is another strength of this book. The geopolitical chess game of basing rights, intelligence sharing, and overflying other nations in transit is a window into Cold War international relations that isn't written about very often outside of specialized publications.

Physically, the book is a quality hard back with very high-resolution photographs and illustrations. Most (107) of the pictures are black-and-white, as one would expect for the time period; but there are 45 in color. All are crisply printed on heavy gloss paper and a real joy to look at. There are 24 very well-drawn maps showing bases, overflight routes, tanker orbits, sampling mission tracks, ELINT and TELINT collection areas, and so on. All are optimized with enough detail to show what's needed, but not so much crammed in that the reader is overwhelmed by extraneous nonsense. Four very useful appendixes span 25 pages

Although the price might seem steep, it's a bargain considering the amount of information included in a single volume. A very valuable addition to anyone's bookshelf, especially to any old Cold Warriors out there. "So, thaaaaats what those guys were up to!"

Tony Galeano, NASM Docent



My War in Italy: On the Ground and In Flight with the 15th Air Force. By Keith W. Mason. Columbia, Mo.: University of Missouri Press, 2016. Photographs. Pp. 288. \$32.95 ISBN 978-0-8262-2059-2

There are few memoirs of aircrew assigned to Fifteenth Air Force during World War II—fewer still from B-24 pilots. Mason fills that lacuna with his story of service with the 460th Bomb Group and his 48 combat missions over occupied Europe. What makes this memoir unique is how Mason tells it with detail and imagination, honesty and humility, and the wisdom that comes from true personal reflection. Mason depicts in sharp prose the irritations of military training; the frustrations that come from serving as an instructor during a war; the aggravations of working under an ineffectual commander; and, finally, the tedium and terrors of combat. It is an enjoyable book that entertains as well as educates.

Mason's love of aviation began with Lindbergh's 1927 flight from New York to Paris. At fourteen he had his first airplane flight. His heart set on becoming a pilot, Mason was accepted into the Flying Cadet program. He says he was always one step away from being washed out until he became the first in his class to solo. In flight training Mason learned two important lessons: in the military, losing track of friends is sometimes the price to be paid for new opportunities; and personnel assignments are often determined by fate. While many of his classmates went on to operational units, Mason was sent, bitterly disappointed, to serve as an instructor pilot.

He spent the next nineteen months performing duty he found to be a "monumental bore" punctuated only by occasional brushes with death caused by the buffoonery of students. Mason longed for an overseas assignment and finally, in March 1943, was sent for B-24 transition training. Once again his dreams were crushed; he was assigned as a B-24 instructor pilot.

Six months later, however, he got his chance. Spotting a bulletin requesting volunteers to serve as an operations officer in a B-24 squadron heading overseas, he swung an assignment to the 760th Bomb Squadron, 460th Bomb Group. Immediately he began to regret his decision, as the commander, Captain Martin, was a prickly martinet. Mason had to tread carefully around Martin through the rest of the war. The group started moving to Italy in January 1944. Thanks to Martin's lack of leadership, 26 squadron members were killed when their planes, unable to find the Italian air base through the overcast, crashed in the mountains.

Mason devotes as much time discussing ground activities as he does the air missions, to great effect. His descriptions of the abysmally rainy weather, the mud, and the absence of any comforts (and most necessities) are chilling. Many of the challenges he faced were inherent in his duties as operations officer. Prior to each mission, he had to orchestrate maintenance, operations, medical, per-

sonnel, and myriad other factors to put as many aircraft in the air as possible. His description of a typical mission is sober and informative, and his detailed narratives of specific flights make for fantastic reading. These missions ran the gamut from milk runs to flights where the squadron faced the most intensive anti-aircraft fire imaginable.

Sprinkled throughout the narrative are sixteen black-and-white photographs of Mason, his friends and colleagues, and the locations at which he served. One wishes there were more, particularly of the bases in Tunisia and Italy and perhaps of the operational missions. But the absence of any maps is a major shortcoming, particularly when the story transitions to Mason's service overseas. A simple map showing his deployment base at Spinazzola, Italy, and the locations of some of the more important targets would have added great value to the book.

Mason's love for flying pervades every chapter of this book. It is therefore a surprise to discover in the last pages that after the war Mason separated from the Army to become an automobile mechanic and later a teacher. Other than a short stint with the local flying club, he left aviation. He never explains why, but it is clear that his few years in the Army Air Forces shaped his entire life. Mason had previously self-published this book as a means of describing his wartime experiences to his two daughters. The University of Missouri Press deserves great credit for bringing this remarkable memoir to a larger audience. I recommend it for those with an interest in the air war in World War II as well as those seeking greater insight into the personal challenges of serving in a deployed combat squadron in a hard and dirty location, led by seemingly incompetent leaders, and tasked with ostensibly unachievable missions.

Col. Michael J. McCarthy, USAF (Ret.), Tampa FL



Lindbergh; A Photographic Biography of the Lone Eagle. By Bruce McAllister and Stephan Wilkinson. Boulder, Colo.: Roundup Press, 2017. Photographs. Illustrations. Maps. Bibliography. Pp. 232. \$59.95 ISBN: 9780692705247

When visitors tour the Smithsonian's National Air and Space Museum, the airplane that is the most awe inspiring is the *Spirit of St. Louis*. It's *the* airplane that transformed Charles Lindbergh from an unknown Mid-Western pilot to, arguably, aviation's most famous one. McAllister and Wilkinson have created a visually stunning book full of photos of his life. McAllister has published eight books on aviation, all photo-histories. Wilkinson is a former executive editor for *Flying Magazine*. This is their second collaboration.

This book is wonderfully organized. Each of the fourteen chapters begins with two pages of text followed by

photos and other illustrations. All aspects of Lindbergh's life are covered, starting with his childhood in Minnesota and Washington, D.C. through his early aviation career of barnstorming and flying the mail. A quarter of the book, not surprisingly, shows the preparations, flight, and goodwill tour in the *Spirit of St. Louis*. The reader soon meets Anne Morrow and shares their joy of parenthood and devastating loss of their son. The next chapters cover the pioneering great-circle routes from North America to Europe and to the Orient. After looking at Lindbergh's isolationist leanings followed by his World War II experiences, readers see images of his work as a researcher and inventor in a wide variety of endeavors. The final chapter tells of his environmental work and death in Hawaii. An epilogue describes his affairs with three different European women, with a large picture of his European children. These affairs came to light just after Anne died in 2001. This epilogue smacks of tabloid journalism. Lindbergh's legacy in aviation that he set in motion so many years ago, or coverage of what became of Charles' and Anne's children would have been better topics.

This *is not* the authoritative biography of Charles Lindbergh. Berg's *Lindbergh* is probably the best biography of both Charles and Anne Morrow Lindbergh ever published. McAllister and Wilkinson have quoted Berg throughout the book. Useful in the text is the comparison of 1927 to 2016 dollars (e.g., the Orteig prize in 1927 was \$25,000, equal to \$330,000 today). Each chapter can be considered light reading, but the text sets up the real highlight of each chapter—the illustrations! Nearly all of them fill each 8.5" x 11" page. Several chapters contain maps of Lindbergh's flights; others have contemporary advertisements and posters. As someone who has studied Lindbergh for over thirty years, I've seen many images of his world. About two-thirds of the images in this book are new to me. Perhaps the finest collections in the book are in *Barnstorming & Flying Mail* (photos of the many airplanes he flew) and *Survey Flights* (photos of their Lockheed Sirius and landscapes that passed below them on their trips to the Orient in 1931 and Europe in 1933).

There are several problems with the book. "The authors have attempted to be accurate in listing aeronautical information. They cannot be held responsible for the accuracy of this information." This statement in the front of the book suggests that what follows may *or may not* be true. Interesting! In the acknowledgements, there are some glaring omissions: the National Air and Space Museum and the Missouri Historical Society. Lindbergh split his estate between these two. One would think they would be the "go-to" places for any research on him. Further, the text fails to mention his backers (St. Louis businessmen) or the designer and builders of the *Spirit* (Ryan Airlines, San Diego California)—people whom Lindbergh considered so critical to his flight across the Atlantic, that he described them as "WE" when he talked about the flight.

Despite these and several other shortcomings, this

book fills a need: a photo biography of Charles Lindbergh. For the reader looking for images of Lindbergh's life travels, this is the book. The version reviewed was a low-resolution galley proof. When Roundup Press publishes on glossy photographic paper, the imagery promises to be breathtaking.

Scott Marquiss, National Air and Space Museum Mall and Udvar-Hazy Center Docent



The Papers of George Catlett Marshall, Volume 7.

By Mark A. Stoler, ed. Baltimore, Md.: Johns Hopkins University Press, 2016. Photographs. Notes. Index. Pp. xxxvii, 1046. \$90.00 ISBN:13:978-1-4214-1962-6

This is the final volume of Marshall's papers, covering October 1, 1949, to October 16, 1959, when Marshall died at age seventy-eight. This volume concludes a diligent four-decade effort by Johns Hopkins in conjunction with the George C. Marshall Research Library. The exhaustive editing results in what must be some kind of a record in the number and length of footnotes.

The papers, in chronological order, are a wide mix of official documents and a large number of personal documents, primarily many letters to his family, friends, and other acquaintances. He was very devoted to his second wife, Katherine Tupper Brown Marshall, his stepchildren, and his widowed sister.

The first section covers Marshall's year as president of the American Red Cross (October 1949 to September 1950). Taking this assignment at President Harry Truman's request, he put much energy into it. He served Truman earlier on a controversial special assignment in China (1945-1947) and then as Secretary of State (1947-1949).

The most significant papers in this volume, nearly half the total, cover Marshall's term as Secretary of Defense from September 1950 to September 1951, during the Korea War. It was a national military and political crisis. Based on his conduct, Secretary of Defense Louis Johnson was forced to resign by President Truman. Replacing Johnson, Marshall's stature and authority were unparalleled. Truman, his political backer, idolized him. Secretary of State Dean Acheson, who had been Marshall's deputy when he had served as secretary, admired him. Most of his military and civilian subordinates were in awe of him. He was deeply respected by important leaders worldwide. He strongly supported U.S. allies.

Two episodes covered are historically significant: At his Senate confirmation hearing Marshall was grilled by several Republican senators over major contentions. Based on his unsuccessful efforts in China he was called "front man for traitors," a "stooge for the [Truman] administration," and other gems. He was confirmed 54-11, with

11 Republican senators voting against him. After President Truman's abrupt relief of General of the Army Douglas MacArthur on April 11, 1951, Marshall spent seven days testifying before Senate Committees on supporting MacArthur's dismissal, which he and others had recommended to President Truman. The military conflict in Korea was improved and stabilized. Marshall retired for the final time on September 17, 1951, and was replaced by his trusted deputy, Robert Lovett.

This book makes frequent reference the excellent four-volume Marshall biography by Forrest Pogue. From them, Air Force people can learn how hard Marshall worked to make the Army Air Forces a separate, first-rate organization under Hap Arnold, setting the stage for it becoming the independent U.S. Air Force in 1947.

George Marshall is one of my heroes. I have the previous six volumes in my library and have read them twice. Obviously these volumes are primarily for historians who are looking for and using the key writings of one of the great men of the twentieth century. Reading them requires an abnormal interest in a sea of detail.

Sherman N. Mullin, retired President, Lockheed Skunk Works



The American Bomb in Britain: U.S. Air Forces' Strategic Presence, 1946-64.

By Ken Young. Manchester UK: Manchester University Press, 2016. Photographs. Index. Diagrams. Index. Bibliography. Pp. 304. \$70.00 ISBN: 978-0-7190-8675-5

This book explores the adjustment of British military and diplomatic policy to both the deployment of USAF strategic bombers capable of carrying nuclear weapons and the subsequent development of Britain's own strategic nuclear weapons capability. In the immediate postwar years, B-29s arrived in a host nation essentially unprepared to handle them. By the late 1950s the military relationship between Britain and the U.S. evolved to what was effectively a joint nuclear strike capability. Ken Young, who grew up gazing at the noses of B-47s scattered through the English countryside, is an urban historian experienced at extracting meaning from the often obtuse deliberations of civil, military, and diplomatic officials.

After World War II, Britain—focused on economic and physical recovery, loss of empire, and the turmoil engulfing postwar Europe—initially chose a policy of accommodation with the Soviet Union, at one point even selling advanced jet engines to the Soviets. Thus, when the USAF, pursuing a rapidly evolving strategy of containment, requested basing rights for B-29s, no formal guiding principle was in place. Rather, the two men in charge of the respective air forces, General Carl Spaatz and Lord Arthur Tedder, had a "handshake" agreement. This informal

agreement, unique amongst global U.S. basing agreements, led to a large U.S. military presence in Britain.

Originally understood as temporary, the USAF presence instead grew as the Cold War developed. Bases were added. B-50s and, later, B-47s appeared. The implications of hosting U.S. bombers capable of carrying nuclear weapons belatedly became apparent to the British: did this not expose Britain to Soviet nuclear strikes? Would they be consulted in the event that the U.S. and Soviets decided on war? Did these bases automatically involve the British in U.S. policies with which they did not necessarily agree? Young contends the authorities did not answer these questions satisfactorily.

Despite these hesitations, persistent negotiations over the years gradually evolved a substantial working partnership. Skillfully interpreted evidence reveals how civil and military authorities dealt with diplomatic roadblocks and interagency rivalries. By the end of the early Cold War era, Britain was implicitly part of a coordinated, joint strategic-deterrence operation with the US. By 1964, development and fielding of ICBMs (and a robust USAF tanker force) obviated the need for permanently deployed strategic bombers, essentially ending the era described in this work.

Given that Britain started to independently develop nuclear weapons in 1947 and had a strategic nuclear strike force in hand by the late 1950s, this book's theme of initial British hesitations regarding nuclear weapons development contrasts with other histories. Greenwood, *Britain and the Cold War 1945-91* (2000), recognizes an early and active, if not aggressive British role in shaping the Cold War and evolving the strategy of containment. Paul, *Nuclear Rivals*, (2000), finds contests with the U.S. in the immediate postwar years over the limited supply of uranium ore for nuclear weapons development and manufacture to be a key driver of policy development on both sides. Moore, *Nuclear Illusion, Nuclear Reality*, (2010) again notes Britain's early role in shaping Cold War policies, but considers the V-Force and Thor missiles of the 1950s a token force, arguing that a true British strategic nuclear capability did not arrive until 1964. In another vein, Baylis, *Ambiguity and Deterrence*, (1995) portrays vagaries of postwar British diplomacy as deliberate ambiguity on their part to enhance deterrence until a substantial strategic nuclear force was available.

Based heavily on original British civil and military records, this book clearly ties narrative to source documentation. The writing style is lively and clear. It is assumed the reader is familiar with the basics of post-war British policy and programs and the Cold War. A glossary would help with otherwise unattributed program names, technical terms, personalities, and place names. A few hand-drawn maps appear, but a book heavy on operating locations, targets, and bombing ranges should place a greater reliance on them. The concentration on military hardware and operations in this work led me to expect

more than the very few carefully selected, high-quality photos of aircraft, places, and people that appear. The end notes are detailed and specific. The bibliography cites most of the important works on this topic. The index is fairly thorough.

Although this book is a valuable contribution to the genre, study of the origins of the Cold War is, and most likely always will be, a lively field. Young's detailed passages on the intricacies of deploying, bedding down, maintaining, and operating strategic bombers, and how such skilled and famed USAF officers as General Leon Johnson forged and maintained working relationships with RAF and British civil authorities on a day-to-day basis to achieve operational goals are especially informative. The book is well worth the rather steep purchase price for these particulars alone.

Steve Agoratus, Hamilton N.J.



Vanished Hero: The Life, War, and Mysterious Disappearance of America's World War II Strafing King. By Jay A. Stout. Philadelphia and Oxford, UK: Casemate, 2016. Photographs. Notes. Bibliography. Index. Pp. 289. \$32.95 ISBN 978-1-61200-395-5

For this story, Stout puts the ending right up front in the introduction: On April 17, 1945, Lt Col Elwyn G. Righetti, Commanding Officer, 55th Fighter Group, revved up his P-51 and roared down the runway at the Eighth Air Force base at Wormingford, England. A few hours later, with his aircraft damaged by ground fire while strafing a Luftwaffe airfield, he bellied in. His last words radioed to the flight, "Tell the family I'm okay. Broke my nose on landing. It's been a hell of a lot of fun working with you, gang. Be seeing you a little later." He then vanished (later assumed to be captured and killed by German civilians) and eventually declared KIA.

Stout has written a virtual autobiography using the well-written and very informative letters Righetti exchanged with his family. Stout details Righetti's military experiences and sets his experiences in the context of the times. His excellent research expanded the Righetti story.

Righetti was born in 1915 of Swiss parents who instilled the ethic of hard work into him. When he signed-on as a flying cadet in 1939, he had two years of college, was an excellent marksman and hunter, and had his a private pilot's license—all advantages in becoming a fighter pilot.

Cadet Righetti's civilian flying experience and talent for mastering the craft enabled him to graduate with Class 40-D on July 26, 1940, and receive his coveted silver wings and a commission as 2nd Lieutenant. He was immediately ordered to duty as a flight instructor—an assignment he soon found boring. He rose in rank quickly but was determined to be posted for combat duty, even managing to

acquire flight time in both the P-47 and P-51.

Meanwhile, in preparation for the Normandy invasion, IX Fighter Command was reassigned from North Africa, where its commander, Brig Gen “Pete” Quesada, had developed tactical air support for ground forces. On arriving in England, Quesada was amazed to learn that P-51s were assigned to the Ninth AF for tactical operations while P-47s went into Eighth AF for escort duty. “That’s plain stupid,” Quesada is reported to have declared; and a switch was made. The P-51, with its liquid-cooled engine, was especially susceptible to gunfire. It had a poor reputation as a ground strafier in part because it was so often compared to its contemporary, the P-47. The big and heavily gunned “Jug” was powered by an air-cooled radial engine that was spectacularly rugged and capable of absorbing extreme levels of punishment. When directed to withdraw from escort duty and engage in strafing attacks, many Mustang pilots were reluctant noting the vulnerability of their engines. The VIII Fighter Command offered an inducement by declaring that aircraft destroyed on the ground were given equal credit as those destroyed in aerial combat.

Lt Col Righetti finally was assigned to combat duty in October 1944 with the 55th Fighter Group, Eighth Air Force, flying P-51 Mustangs. A lieutenant colonel with no combat experience coming into a combat unit, Righetti methodically and practically integrated himself into the group. Initially, he flew combat as a wingman. “If I am to make a good fighter [group] commanding officer,” he wrote, “I do want to know how my boys operate.”

Righetti was a quick learner. He was given command of the 338th Squadron on November 25, 1944. In mid-February 1945, he wrote home: “This afternoon word came that our group CO was being taken off operations and that in a week or ten days I would start functioning permanently as CO” (he officially took command on February 22nd). Later he would write, “This will be the largest job I’ve had in the Army thus far.” And indeed it was—in charge of and responsible for all aspects of the 55th, a unit of nearly 2000 men. “He was a good leader,” wrote one pilot, “and had our deepest respect.” Another later declared, “I think the 55th [under Righetti] was the most aggressive and successful outfit the last three months of the war.” He went down on his 30th birthday with official credit for 7.5 aircraft destroyed in the air and another 27 on the ground, the highest total for ground victories in the Mighty Eighth. Following his loss, Righetti was promoted to full colonel and awarded the Distinguished Service Cross, both a testament to his talent as a fighter pilot and group commander.

In addition to producing an excellent biography of a true American hero, Stout has included details of related facts that should be appreciated by readers new to the history of air power evolving during World War II. Some of the more important topics covered are the dearth of trained Luftwaffe pilots because of German expectations of a short war; the relatively poor performance of the P-38 fighter because of engine failures; the importance of efficient mail

service from and to servicemen and women; and the development of the K-14 gyroscope gunsight that gave American fighter pilots an edge in aerial combat. This book is well-researched, well-written, very informative, and often very touching. It is a worthy contribution to an understanding of the application of air power in the Second World War. Don’t miss it.

Robert Huddleston, WW II P-47 fighter pilot, Chapel Hill N.C.



EAA Oshkosh: The Best Airventure Photography. By Jim Busha, Hal Bryan, and Dick Knapinski. Minneapolis, Minn.: Quarto Publishing Group, 2016. Photographs. Pp. 224. \$24.99 ISBN: 978-0-7603-5184-0

Vacation, you say? Ever approached a week off with a bit of trepidation, knowing you’ll probably end up marking time at some corny, outdated theme park? Need a break from friends, colleagues, and relatives who think every light plane is a Piper Cub, every corporate plane is a Lear-jet, and every airliner is a 747? Then EAA Oshkosh—Air-Venture is the place for you. The largest annual airshow in the world, AirVenture convenes for a week every year with a half-million people and 10,000 aircraft (warbirds, vintages, home-builts, seaplanes, and all manner of astonishing ultralights) to celebrate, learn, watch, and just plain enjoy the prowess, craftsmanship, expertise, and love of aviation of fellow enthusiasts. Co-written by the EAA Director of Publications, Senior Editor, and Director of Communications, this volume expertly encapsulates the show, the spirit, and the people of AirVenture in a vivid panoply of masterly photos and lively text.

The book is themed as a guided tour, as though the reader is walking the show grounds with the authors, conversing about the sights, sounds, and experiences. The text is tied to the photos, with descriptions of, for instance, night-time air demonstrations accompanied by pictures of the aircraft in action. The crisp, clear, and professionally shot photos are selected for that memorable moment that sustains showgoers for months afterward. For instance, the finale of a nighttime fireworks display is pictured over the B-29 *Fifi*, with youngsters sitting on the wings gazing in awe at the lit-up sky. Photos of such famed airshow stunt teams as Tinstix of Dynamite maneuvering against a wall of flame or the Iron Eagles doing an impossibly close crossover put the reader right in the action. Although there are plenty of shots of aircraft, the focus is on people throughout. Aviation buffs, owners, builders, daring pilots, and reenactors all are here. The camaraderie of the crowd sharing a common, deeply loved experience comes through in the photos. Shots of aviation buffs in AirVenture caps examining displays, congregating around presentations by aircraft owners, and showing

their kids the planes are scattered throughout the book. Tribute is paid to the late EAA founder Paul Poberezny, who originated the airshow in 1953 with twenty-one aircraft. He is still missed; besides photos of him in his favorite P-51, there are numerous shots of him cruising the airshow grounds in his famous VW Beetle.

Although AirVenture has a strong warbird, modern military, and commercial component, EAA is about the devotion, skills, and accomplishments of the weekend garage builder. There are lots of photos of homebuilts (scratch and from kits), including the Sonex Waix, Kitfox Series 7, Van's RV 8, and Throp T-18. Unbelievably scanty ultralights - some little more than a framework big enough for a pilot and airfoil - include the Revo LSA, Aerolite 103, and Quick-silver GT 500 LSA, and M-Squared Breese 2. There are even autogiros and paragliders. How about cars that convert into airplanes? They're here, including the modern Terrafugia and vintage Aerocars and Mavericks. The variety is astonishing: if it can fly, some devoted and bold soul is venturing into the skies. Remember the guy some years ago who tied a lawn chair to some dollar-store birthday balloons and proceeded to float past an airliner? He inspired the field of cluster ballooning. Johnathan Trappe, one of the most proficient practitioners, is shown in action (both gondola and lifting devices have comfortably evolved over the years). Homebuilts aren't just small planes. Amazingly scratch-built deHavilland DH-88 Comet, Gee Bee racers, and even a full-scale Spitfire Mark IX are depicted.

Those wishing to further explore AirVenture will find plenty of the annual programs, packed with pictures, available on the net. The EAA's own DVD *Only in Oshkosh: July 29-August 4 2013 Air Venture Oshkosh* adds the thunder of aircraft in action. But it is the shared experience of people with a common interest that makes AirVenture special. Jill Rutan Hoffman's *Oshkosh Memories: Reflections on the World's Greatest Fly-In* (2000) gives voice to EAA Oshkosh's photos of aviation buffs enjoying the show. Compilations of contemporary interviews of attendees and participants for the show's daily newspaper appear in Jack Hodgson's *Around the Field* (2011-2013). D.A. Lande's entertaining and informative chronological *Oshkosh, gateway to aviation: 50 years of EAA fly-ins* (2002) explains how AirVenture attained its preeminence. *Gateway* celebrates, most of all, the people of AirVenture—the devoted EAA staffers and volunteers, the aviators, and the half-million aviation fans who show up every year.

There's no index, but aircraft are grouped by type in chapters. Printed on heavy, photo-quality stock, the book is bound in cloth with flexiboard covers, so you can tuck it into a backpack and pull it out as you walk around the show. This book is highly recommended to get you through a gloomy winter day or sustain you through an afternoon on yet another anonymous beach.

Steve Agoratus, Hamilton, N.J.



Flight Badges of the Allied Nations 1914-1918: Volume II—The British Empire, American, Belgian, Japanese, Italian, and Serbian Air Services. By CDR Robert S. Pandis, USNR (Ret). Robert S. Pandis, 2016. Photographs. Bibliography. Pp.482. \$95.00 ISBN: 1532305737

This is Pandis' fourth book in a series on early flight badges and just as exceptional as the other three. This reference work examines the British Empire, American, Belgian, Japanese, Italian, and Serbian air services for the period between 1914 and 1918. It covers in detail the development of insignia worn as well as the related government orders for their creation. Of the emblems' details he provides information on the nature of when, how, and by whom each was to be worn. These particulars provide an interesting side story in the development of early military aviation and give insight into the establishment of the various air services.

The British Empire section includes "sealed" documents (stamped wax-sealed papers) showing the creation of badges, insignia, and wings by the officiating military directorate; they provide not only a baseline in which the researcher can determine authenticity but also the historic timeframe. The variations in the production by the different commercial firms are staggering. Fortunately Pandis was working with subject matter specialists and has provided a clear and concise outline to make sense of and authenticate everything.

The next section covers the United States Army Air Service and naval aviator wings, an area Pandis is quite familiar with. It was his initial foray into this area in 2012 that initiated this series of books. He includes the Lafayette Escadrille and Lafayette Flying Corps badges, as well as army observer and aeronaut wings and various associated insignia. The second part of this section features an outstanding selection of naval aviator and observer wings in all variations. Throughout the book, Pandis features pilot certificates, medals, and aircraft of the associated aviators. These help bring the human stories to light. As with his other works, he provides sobering details on fakes and reunion copies—invaluable for the novice and expert alike.

The section on Belgian aviation begins in 1909 and provides a whole host of variations, along with accompanying official documents. Included are photographs of individuals with their insignia on their uniforms providing excellent reference to how they were worn.

Perhaps one of the most important sections of the book is the section on the Imperial Japanese air services, both army and naval, from their inception. It also details many of the Japanese military officers who flew during the war in France. Pandis once again has dug deep and come up with gold by providing details not previously available outside of Japan.

The section on the Italian Military Aviation Corps, like all the other segments, is a compilation of army and navy insignia and wings. It provides the useful government doc-

uments regulating the type and use of the insignia. It also has a section on the U.S. aviators who served in Italy and were provided national insignia as well. The fact that so many original pieces exist from this period for all the nations involved is nothing less than remarkable.

The final section deals with the Serbian Air Service and is perhaps the first English-language work that deals with the design, variations, manufacture, and history of flight badges for the Serbian military. Pandis has gone a little afield and taken the subject into the 1920s and '30s.

Overall this book is an important reference work with high-quality images and contains documentation not to be found anywhere outside of the archival holdings from where they originated.

Carl J. Bobrow, Museum Specialist, National Air and Space Museum



Books to Review

- Cutler—The Bakers Creek Air Crash: America's Worst Aviation Disaster of the Southwest Pacific War. 261p.
Del Calzo—Wings of Valor: Honoring America's Fighter Pilots. 250p.
Laurier—Fighter! Ten Killer Planes of World War II. 192p.

PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the new books listed above is invited to apply for a gratis copy of the book. The prospective reviewer should contact:

Col. Scott A. Willey, USAF (Ret.)
3704 Brices Ford Ct.
Fairfax, VA 22033
Tel. (703) 620-4139
e-mail: scottlin.willey@gmail.com



FLYING TO VICTORY
Raymond Collishaw
and the Western Desert
Campaign, 1940-1941
By Mike Bechthold
\$34.95 HARDCOVER
296 PAGES · 30 B&W ILLUS.

Canadian-born flying ace Raymond Collishaw served in Britain's air forces for twenty-eight years. *Flying to Victory* examines Raymond Collishaw's contribution to the British system of tactical air support—a pattern of operations that eventually became standard in the Allied air forces and proved to be a key factor in the Allied victory.

 **UNIVERSITY OF
OKLAHOMA PRESS**

800 627 7377 · OUPRESS.COM

THE UNIVERSITY OF OKLAHOMA IS AN
EQUAL OPPORTUNITY INSTITUTION. WWW.OU.EDU/EOO

Coming Up



Compiled by
George W. Cully

March 13-15, 2017

The **Association of the United States Army's** Institute of Land Warfare will present its annual Global Force Symposium and Exhibition at the Werner von Braun Center in Huntsville, Alabama. For details, see the Association's website at <http://ausameetings.org/globalforce2017/>.

March 30-April 2, 2017

The **Society for Military History** will hold its 84th annual meeting at the Hyatt Regency Jacksonville Riverfront in Jacksonville, Florida. This year's theme is "Global War: Historical Perspectives." For further information, check the Society's website at <http://www.smh-hq.org/2017/2017annualmeeting.html>.

April 3-6, 2017

The **Space Foundation** will present its 33rd annual Space Symposium at the Broadmoor Hotel in Colorado Springs, Colorado. Details for registration and other info can be had at the Foundation's website: <http://www.spacefoundation.org/events/space-symposium>.

April 6-9, 2017

The **Organization of American Historians** will hold its annual meeting at the New Orleans Marriott in New Orleans, Louisiana. This year's theme is "Circulation." For further info, see the Organization's website at <http://www.oah.org/meetings-events/meetings-events/call-for-proposals/>.

April 13, 2017

The **Society for History in the Federal Government** will hold its annual meeting at the National Archives and Records Administration (NARA) Building in Washington D.C. The theme of this year's meeting is "A Return to Archives." For more information, see the Society's website at <http://shfg.org/shfg/events/annual-meeting/>.

April 26-28, 2017

The **Army Aviation Association of America** will host its annual Army Aviation Mission Solutions Summit at the Gaylord Opryland Hotel in Nashville, Tennessee. For particulars, see the Association's website at <http://www.quada.org/index.php>.

May 8-11, 2017

The **Association of Unmanned Vehicle Systems International** will host its premier annual event, "XPONENTIAL 2017," at the Kay Bailey Hutchison Convention Center in Dallas, Texas. For registration and other info, see the AUVSI website at <http://xponential.org/xponential2017/Public/Enter.aspx>.

May 9-11, 2017

The **American Helicopter Society International** will hold its 73rd annual forum and technology display at the Fort Worth Convention Center in Fort Worth, Texas. The theme of this year's gathering is "the future of vertical flight." For more details, visit the Society's website at <http://www.vtol.org/annual-forum/forum-73>.

May 22-27, 2017

The **American Society of Aviation Artists** will present its annual Forum and International Aerospace Art Exhibition at the Virginia Air and Space Center in Hampton, Virginia. For details and registration, see the Society's website at <http://asaa-avart.com/asaaawp2014/american-society-of-aviation-artists/news>.

June 5-9, 2017

The **American Institute of Aeronautics and Astronautics** will host AVIATION 2017, its premier annual aviation and aeronautics forum and exposition, in Denver, Colorado. For more information as it becomes available, see the Institute's website at <http://www.aiaa.org/Forums/>.

July 11-16, 2017

The Womens' Aviation Association better known as **The Ninety-Nines** will hold its annual convention at the Westin Riverwalk Hotel in San Antonio, Texas. For more details, visit the Association's website at <http://www.ninety-nines.org/who-we-are.htm>.

July 12-14, 2017

The **NASA Langley Research Center** will celebrate its 100th anniversary with a symposium to be presented at the Hampton Roads Convention Center in Hampton, Virginia. For additional information, see the Center's website at <https://www.nasa.gov/langley/100>.

July 23-29, 2017

The **International Congress of History of Science and Technology** will hold its 25th meeting in Rio de Janeiro, Brazil, on the Praia Vermelha campus of the Federal University of Rio de Janeiro (UFRJ). This Congress' theme will be "Science, Technology and Medicine between the Global and the Local". More details can be had on the ICHST's website at <http://hssonline.org/the-25th-ichst-meeting-in-rio-de-janeiro/#more-5876>.

July 23-29, 2017

The **International Committee for the History of Technology** will hold its 44th annual meeting in conjunction with the ICHST meeting to be held in Rio de Janeiro, Brazil. For details, see the Committee's website at <http://www.ichstec.org/annual-meeting-2017.html>.

September 7-10, 2017

The **Tailhook Association** will hold its annual meeting and naval aviation symposium at the Nugget Resort Hotel in Sparks, Nevada. For registration and more details, see the Association's website at <http://www.tailhook.net/>.

September 12-14, 2017

The **American Institute of Aeronautics and Astronautics** will host SPACE 2017, its premier annual space and astronautics forum and exposition, in Orlando, Florida. For more information as it becomes available, see the Institute's website at <http://www.aiaa.org/Forums/>.

September 20-23, 2017

The **Society of Experimental Test Pilots** will hold its 61st Symposium and Banquet at the Grand Californian Hotel in Anaheim, California. For registration details, see the Society's website at <http://www.setp.org/annual-symposium-banquet/60th-annual-symposium-banquet-registration-2.html>.

October 4-8, 2017

The **Oral History Association** will hold its annual meeting at the Hilton Minneapolis Hotel in Minneapolis,

Readers are invited to submit listings of upcoming events. Please include the name of the organization, title of the event, dates and location of where it will be held, as well as contact information. Send listings to:

George W. Cully
3300 Evergreen Hill
Montgomery, AL 36106
(334) 277-2165
E-mail: warty@knology.net

Minnesota. For further details, see the Association's website at <http://www.oral-history.org/annual-meeting/>.

October 9-11, 2017

The **Association of the United States Army** will hold its annual meeting and exposition at the Walter E. Washington Convention Center in Washington, D.C. For registration details, see the Association's website at <http://ausameetings.org/2017annualmeeting/>.

October 19-20, 2017

The National Security Agency's **Center for Cryptologic History** will present its biennial Symposium at the Johns Hopkins Applied Physics Laboratory's Kossiakoff Center in Laurel, Maryland. Following the Symposium, on Saturday, October 21, participants will be given an opportunity to tour the National Cryptologic Museum and participate in a workshop on sources for

research in cryptologic history. The theme for the 2017 Symposium is "Milestones, Memories, and Momentum." For more information, contact Program Chair Betsy Rohaly Smoot at history@nsa.gov or to her care at The Center for Cryptologic History, Suite 6886, 9800 Savage Road, Fort George G. Meade, MD 20755.

October 24-26, 2017

The **American Astronautical Society** will host its annual Wernher von Braun Memorial Symposium at the University of Alabama – Huntsville in Huntsville, Alabama. For more details as they become available, see the Society's website at <http://astronautical.org/calendar/>.

October 26-30, 2017

The **Society for the History of Technology** will hold its annual meeting and symposium in Philadelphia, Pennsylvania. For further details as

they become available, see the Society's website at <http://www.historyoftechnology.org/index.html>.

October 28-29, 2017

The **National Aviation Hall of Fame** will hold its annual enshrinement ceremony during the Alliance Air Show to be held at the Alliance Fort Worth Airport in Fort Worth, Texas. For additional information, see their website at <http://www.nationalaviation.org/national-aviation-hall-fame-hold-2017-enshrinement-ceremony-alliance-air-show-fort-worth-texas-2/>.

November 9-12, 2017

The **History of Science Society** will hold its annual meeting in Toronto, Canada. For more details as they become available, see the Society's website at <http://hssonline.org/meetings/annual-meeting-archive/>.

Reunions

1st Fighter Assn. Sep 7-10, 2017, Dayton, OH. Contact:

Bob Baltzer
1470 Foxtale Ct,
Xenia, OH 45385
937-427-0728
robertbaltzer@sbcglobal.net

4th Fighter Group Assn. Sep 28 - Oct 1, 2017, Fairborn, OH Contact:

Keith Hoey
120 Bay Breeze Dr,
Belleville, Ontario ON K8N 4Z7
613-962-2461
khoey98@hotmail.com

38th Tactical Recon Sqdn. Oct 3-6, 2018, Dayton/Fairborn, OH Contact:

Greg Hartley
4304 Beaumont Ct,
Fairfax, VA 22030
571-238-6273
pghartley@hotmail.com

58th/60th Fighter Interceptor Sqdn. Sep 20-23, 2017, Fairborn, OH. Contact:

Richard Doritty
5598 St Rt 37,
Sunbury, OH 43074
740-965-2455
voodoo101b@gmail.com

302nd Buckeye Wing Assn. Aug 16-18, 2018, Fairborn, OH. Contact:

Jerry Millhouse
6715 Yorkcliff Pl,
Dayton, OH 45459
937-433-3156
jmillhouse@aol.com

312th Depot Repair Sqdn. Apr 27-30, 2017, Fairborn, OH. Contact:

4072 Old Manchester Ct,
Mason, OH 45040
513-254-8025
ninapobel@gmail.com

366th Fighter Assn. Sep 19-24, 2017, Fairborn, OH. Contact:

Paul Jacobs
2409 Mallard Ln, Apt. 1,
Beavercreek, OH 45431
614-906-4470
paul@jacob.net

425th Tactical Fighter Training Sqdn. Oct 3-4, 2017, Fairborn, OH. Contact:

Richard Kaercher
P.O. Box 446,
Cedarville, OH 45314
937-766-2502
rlmjkaercher@reagan.com

531st Transportation Unit. Sep 29 - Oct 1, 2017, Fairborn, OH Contact:

George Biehle
1507 Woodland Dr,
Loveland, OH 45140
513-575-3795
gfbiehle@fuse.net

548th Recon Technical Grp. Jul 12-14, 2018, Fairborn, OH. Contact:

Cecil Brown
2459 S Old Oaks Dr,
Beavercreek, OH 45431
937-426-0948
cecilb211@ameritech.net

610th Military Airlift Support Squadron. August 23-25, 2018, Fairborn, OH. Contact:

Harold Mitchell
354 Sussex Cir,
Vacaville, CA 95687
707-447-3536
mitch610mass@aol.com

4950th Test Wing/Aria 328 Memorial. May 6, 2017, Fairborn, OH Contact:

Bob Beach
1616 Ridgeway Dr,
Springfield, OH 45506-4023
937-325-6697
ariabob@woh.rr.com

6694th Security Sqdn. Aug 17-20, 2017, Fairborn, OH. Contact:

Richard Krejsa
121 Crestfield Place,
Franklin, TN 37069
615-791-9012
rkrejsa@bellsouth.net

AF Officer Candidate School. Oct 5-9, 2017, Seattle, Wash. All classes (1943-1963) are encouraged to attend. Contact:

Dave Mason
757 820-3740
blokemason@verizon.net

Cam Rahn Bay AB. Sep 28 - Oct 1, 2017, Dayton, OH. Contact:

Diana Westphal
673 West Rock River Circle,
De Pere, WI 54115
920-609-5672
dwestphal8@new.rr.com

PTC-68H (Moody AFB). Jun 7-9, 2018, Fairborn, OH. Contact:

Tom Crowley
9168 Woodstream Ln,
Dayton, OH 45458
937-885-5286
tj-bj@woh.rr.com

UPT Class 69-05E (Webb AFB). Oct 26-29, 2017, Fairborn, OH Contact:

A. J. Thrush
186 Skyline Dr,
Lancaster, OH 43130
740-653-7585
ajthrush@sbcglobal.net

PTC-68A. Oct 16-19, 2017, Fairborn, OH Contact:

Bil Fitzpatrick
2869 N. Teetime Ct,
Wichita, KS 67205
316-640-1373
wfitzpatrick1@att.net

PTC-69-03. 28 Sep 28 - Oct 1, 2017, Dayton, OH. Contact:

Emery Kiraly
9221 Aldershot Dr,
Bethesda, MD 20817
301-469-0838
madlazlo@yahoo.com

List provided by:

Rob Bardua
National Museum of the U.S. Air Force
Public Affairs Division
1100 Spaatz Street
WPAFB, OH 45433-7102
(937) 255-1386

History Mystery Answer



While assigned to the 39th Fighter Interceptor Squadron, Captain Joseph C. "Mac" McConnell became a triple ace on May 18th, 1953.

Like thirty-seven of his fellow Korean War American aces, he scored his kills flying an F-86. Flying F-86 Sabre jets named "Beauteous Butch" and "Beauteous Butch II," Captain McConnell shot down a total of sixteen aircraft. McConnell named his jet after his wife Pearl "Butch" McConnell. Actress June Allyson portrayed her in the biopic movie: *The McConnell Story*.

McConnell was shot down by a MiG-15, which he in turn shot down (his eighth kill). McConnell flew his heavily damaged F-86 over the Yellow Sea where he ejected and was rescued. Sadly, shortly after the war, McConnell lost his life while testing the F-86H. His wife never remarried.

To learn more about Captain McConnell and the airwar over Korea, visit these Air Force Websites:

<http://www.nationalmuseum.af.mil/Visit/MuseumExhibits/FactSheets/Display/tabid/509/Article/196382/leading-jet-ace-capt-joseph-mcconnell-jr.aspx>

McConnell Personal Account:

<http://www.nationalmuseum.af.mil/Visit/MuseumExhibits/FactSheets/Display/tabid/509/Article/196905/personal-account-from-capt-mcconnell.aspx>

William T. Y'Blood's *MiG Alley: the Fight for Air Superiority*:

<http://media.defense.gov/2010/Sep/28/2001330151/-1/1/0/AFD-100928-020.pdf>



Test your knowledge of air power history by trying to answer this quarter's history quiz. Since the goal is to educate and not merely stump readers, you should find the multipart question, challenging but not impossible. Good Luck

The Korean War was the first true jet vs. jet air war. Despite being routinely outnumbered by communist MiG-15s, American pilots dominated the skies over North Korea. Forty American pilots became aces, with two pilots becoming triple aces. Capt. James Jabara was one of the triple aces. For this month's question, actor Alan Ladd portrayed this top scoring ace in the Warner Brother's biopic movie about his life. The pilot was actually once shot down and subsequently rescued after being shot down and bailing out over the Yellow Sea (The helicopter photo was taken during the rescue). Can you name the first Korean War triple ace? What type of jet did he fly? What did he call his aircraft? You can find the answers on page 65.



Air Force *Historical* Foundation
P.O. Box 790
Clinton, MD 20735-0790



To: Air Force *Historical* Foundation
P.O. Box 790
Clinton, MD 20735-0790

Visit Us Online at:
www.afhistory.org



Know the Past,
Shape
the Future



A I R F O R C E H I S T O R I C A L F O U N D A T I O N M E M B E R S H I P F O R M

NAME _____ PHONE _____ E-MAIL _____

STREET ADDRESS _____ CITY _____ STATE _____ ZIP _____

Associate Membership (\$25/year) (on-line magazine access) (Visit our Web site at www.afhistory.org)

Sustaining Membership (\$45/year)

GIFT FOR (NAME) _____

Gift Membership (\$45/year)

ADDRESS _____

Life Membership (Inquiries to the Foundation)

Become a Patron or Contributor (Please ask)

CITY _____ STATE _____ ZIP _____

* Non-US recipients please add \$8.00 for postage (See Web site for additional membership options)

Check enclosed, payable in US Funds to Air Force *Historical* Foundation

Please charge my credit card (VISA/MasterCard/Discover)

CARD NUMBER: _____ EXPIRATION DATE: _____

SIGNATURE: _____ DATE: _____

Send form, along with your remittance to:
Air Force *Historical* Foundation
P.O. Box 790
Clinton, MD 20735-0790

