

AIR POWER

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History





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The Fall 2012 issue of *Air Power History* is the first “digital only” version. Currently, the Air Force Historical Foundation still plans to alternate between printed and electronic versions.

Stephen Craft leads off this issue with an article on primary flight training during World War II. Even before the start of the war, in 1939, President Franklin D. Roosevelt recognized the urgent need to prepare to fight. Tasked to expand the U.S. Army Air Corps, Gen. Henry H. “Hap” Arnold developed a plan to train 4,500 pilots annually. And, because the Air Corps lacked both aircraft and trainers to undertake the mission, Arnold’s plan involved the use of civilian contractors and facilities. Some of Arnold’s closest subordinates, including “Tooe” Spaatz and Ira Eaker, railed against using civilian contractors. In the end, however, Arnold’s plan succeeded far beyond expectations.

In the second article, Richard Dunn analyses the performance of the iconic U.S. fighter plane in the Pacific, the P-38 Lightning. While Dunn readily acknowledges that the P-38 was a stellar performer throughout the war, he is perplexed by references that Rabaul was neutralized. Comparing the air combat claims and other factors, by both the Americans and Japanese, Dunn concludes that maybe it was because the P-38 lost at Rabaul. Moreover, he suggests that historians measure the results of other campaigns based on verifiable facts, rather than on claims.

Douglas Dildy was curious about the origin and structure of the North Korean air force. But it was not until the dissolution of the USSR, that the former Soviet Union opened some of its records and, more recently China’s archives were opened, that researchers were able to investigate the subject. In Part I, the author describes the growth of the Korean People’s Air Force in the Fatherland Liberation War—we call it the Korean War, 1950-1953. In part II, scheduled for winter 2012, Dildy will examine the demise of the NKPAF.

In “The Korean War and the Maturation of SAC Reconnaissance,” Bill Cahill examines the evolution of Strategic Air Command’s (SAC) reconnaissance forces from 1946 through 1953. During this seven-year period, SAC was transformed from a force with a marginal capability equipped with obsolescent aircraft flying insignificant mapping missions to a state of the art organization overflying enemy nations at the President’s behest to gather critical intelligence. The Korean War provided an opportunity for SAC’s Commander-in-Chief, General Curtiss E. LeMay, to find the right role for his reconnaissance assets and how to best utilize them in the expanding Cold War.

I don’t know how he does it, but Scott Willey, our book review editor manages to squeeze out about twenty superb book reviews every quarter. Speaking of reviews, John Kreis and his band of judges evaluated all of the books reviewed in *Air Power History* in 2011 and chose Mark Clodfelter’s *Beneficial Bombing* as the winner. (See page 68.) If you’re interested in news from the Foundation’s leadership and interested in helping, turn to the President’s Message on page 66.

We note with sadness the passing of the astronaut Neil Armstrong and historian John Keegan. Both men performed *giant leaps for mankind*. (See pages 67 and 69.) Other items of interest include upcoming symposia (see pages 64-65) and reunions (see pages 70-71.) Finally, Bob Dorr closes out this issue by unveiling the X-5 as the Summer issue’s mystery plane, and challenges readers to identify the new mystery plane (see page 72).



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LAYING THE FOUNDATION OF A MI SCHOOLS AND PRIMARY FLIGHT T



IGHTY AIR FORCE: CIVILIAN TRAINING DURING WORLD WAR II

CORPS -



Stephen G. Craft

(Overleaf) In April 1941, the Riddle-McKay Aeronautical Institute dedicated Carlstrom Field in Arcadia, Florida. Among those standing in the foreground (R to L) are: John Paul Riddle, Gen. Walter Weaver, commander of the Southeast Army Air Corps Training Center, Gen. Clarence Tucker, John McKay, and Capt. Stanley "Moose" Donavan, the local detachment commander.

IN 1938, THE UNITED STATES ARMY AIR CORPS CONFRONTED THE ENORMOUS TASK OF EXPANDING ITS POWER AT THE MOMENT THAT THE UNITED STATES GOVERNMENT WAS CONSTRAINED POLITICALLY

In 1938, the United States Army Air Corps (USAAC) confronted the enormous task of expanding its power at the moment that the United States government was constrained politically by the Great Depression and isolationism. Meanwhile, Japan and China were at war and Adolph Hitler's Nazi Germany sought one with Czechoslovakia. War in Europe was averted on September 30 when leaders of Germany, Britain, France, and Italy met at Munich and agreed to Hitler's acquisition of the Sudetanland, territory composed predominantly of Germans but vital to Czechoslovakia's security. Sensing that Hitler's ambitions were not sated, President Franklin D. Roosevelt wanted to simultaneously build up America's air strength, while producing fighters and bombers to sell to Britain and France to hold Hitler at bay. The day before the Munich Conference commenced, Roosevelt met with key military and civilian advisers to discuss expanding U.S. aircraft production to 10,000 planes a year.¹

The burden of creating a larger air force at a critical moment in history fell on the shoulders of Maj. Gen. Henry H. "Hap" Arnold, who became Chief of the USAAC on September 29. During the meeting with Roosevelt, Arnold explained that Germany possessed 6,000 combat aircraft, with 2,000 in reserve. Congress had only approved expansion of the USAAC to 2,320 aircraft. Arnold wanted 7,500 combat aircraft and 2,500 trainers. Not only did Arnold need more fighters and bombers, but he needed pilots to fly them. The USAAC's total strength was 1,650 officers and 16,000 enlisted men.² By contrast, the USAAC believed that Germany's *Luftwaffe* consisted of one million officers and men.

Committing the USAAC to train more pilots required considerable expansion of USAAC infrastructure. Between 1933 and 1937, it produced an average of only 208 pilots a year. Not until 1938 did it generate more than 300 pilots, when 301 pilots received their wings. Randolph Field and Kelly Field, both in Texas, were the only two facilities committed to Elementary, or Primary, and Advanced training. Worse, it took a cadet an entire year to complete his training: eight months of Primary training at Randolph Field followed by four months of Advanced training at Kelly Field. A USAAC study later called the annual addition of 300 pilots a year "ridiculously inadequate."³ Yet, Arnold needed to produce hundreds, if not thousands, of pilots each year. The question was how?

One answer was for the USAAC to simply build new airfields and schools and use only Air Corps instructors. Arnold rejected building new "Randolph

Fields" because it took too much money and time when "speed was of the essence." The other answer was to utilize civilian flight schools, which had been certified by the Civilian Aeronautics Authority (CAA). They were scattered across the country and consisted of airfields, planes, hangars, and experienced instructors and administrators. Many became involved in the Civilian Pilot Training Program established by Congress late in 1938 for the purpose of creating a pool of potential combat pilots and to help the struggling aviation industry. Universities across the country partnered with local flight schools to offer government scholarships to men and women either in college or with some college experience interested in getting a pilot's license and other certifications.⁴ Although Col. John R. Morgan and Lt. Col. Howard Davidson, who were in charge of the USAAC's Training Center, were credited with suggesting using civilians to relieve the USAAC of the burden of providing Primary training, the idea was not entirely a new one. Prior to World War I, the nation's first army pilots, including Arnold, were trained at schools operated by the Wright Brothers. During the war, a handful of contractors trained American and Royal Flying Corps cadets. Although the method had been tried-and-tested, there were skeptics in the USAAC who argued that civilians could never offer the same quality of training comparable to Randolph Field, the "West Point of the Air."⁵ Years later, Ira Eaker and Carl Spaatz, who were then colonels on Arnold's staff, claimed they told their commander that the use of civilians to train air corps cadets was just "plain murder."⁶

After the war, Arnold specifically remembered this moment when he "overruled the Air Staff," and insisted on relying on civilian contractors. However, he needed to determine if they were willing and able to assist the USAAC. In October 1938, Arnold met with Oliver Parks, president of Parks College in St. Louis, Missouri, Corliss C. Moseley, owner of the Curtiss-Wright Technical School in Glendale, California, and Theophilus Lee, director of the Boeing School of Aeronautics in Oakland, California. He asked them if they would be "willing to go out and set up at his private school the facilities to house, feed and train flying cadets for the Army Air Corps?" Being straightforward, Arnold told them that he did not have any money, but he would work to get it from Congress. He proposed that they send their instructors to Randolph Field for "indoctrination in the Air Corps' method of training." In return, he would provide them with training aircraft, and would pay them a certain amount per head for those who graduated and a lesser amount

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One of the original eight contractors was Allan Hancock, owner of the Hancock College of Aeronautics, Santa Maria, California. Pictured (L) is Hancock and an unknown individual. (Courtesy of Allan Hancock College Library, Hancock Family Estate Archive, Santa Maria, California.)

ARNOLD RECEIVED A MESSAGE FROM LOUIS JOHNSON, THE ASSISTANT SECRETARY OF WAR, TO DEVELOP A PLAN TO MASS PRODUCE PILOTS

for those eliminated. Arnold remembered that the civilians were “flabbergasted.” Nevertheless, the contractors claimed they could do the job, but the cost would be \$200,000 per school. When Arnold asked, “You can borrow the money, can’t you, until I can get a congressional appropriation?” Again, the answer was yes.⁷

Shortly after this meeting, Arnold received a message from Louis Johnson, the Assistant Secretary of War, to develop a plan to mass produce pilots. In response, Arnold appointed a Board of Officers to determine the feasibility of using civilian schools. After inspecting civilian facilities and observing training methods, the Board recommended that the USAAC implement a pilot mission or plan that would produce 4,500 pilots over the next two years, commencing July 1, 1939. The plan called for using civilian schools, approved by the CAA to provide advanced training (the CAA version of advanced training was the equivalent of the latter stages of Primary training under the USAAC), to offer Primary training to 666 cadets, with new classes starting every six weeks, using the contractors’ planes until more were provided by the USAAC.⁸ The civilian schools would also hire their own instructors, and provide fuel, oil and maintenance. In return, they would receive a flat rate of \$20 per flying hour. Under this scheme, the civilian contractors did not replace, but rather supplemented, the existing USAAC training schools. Some cadets would be assigned to Randolph Field for Primary and Basic flight training while Kelly Field continued in its traditional role as the Advanced training center. The USAAC expected that 52.5 percent of the flying cadets who entered Primary training would graduate.⁹ Instead of one full year, the total training time would be reduced to thirty-six weeks.

Two boards of officers were responsible for selecting civilian contractors. In 1938, there were fourteen flying schools with the necessary CAA approval whose owners were anxious to win a government contract. The boards inspected these facilities during the winter, and further required that

each contractor have a ground school, a satisfactory airdrome, auxiliary fields and necessary housing and dining facilities. The boards determined that the cost of running the program from July 1, 1939, to January 1, 1940, would exceed \$3.5 million, but still slightly less than the Randolph School.¹⁰

Despite these preparations, the overall scheme underwent modifications. In January 1939, the 4,500-trainee plan was slashed to 2,238 pilots within two years, with 396 cadets forming each class.¹¹ President Roosevelt insisted that funding to expand the Air Corps be limited to \$500 million. The plan submitted by Louis Johnson and “Hap” Arnold required Congressional appropriations of over \$1 billion. Isolationist Congressmen would never support such a plan especially when the aircraft manufacturers were balking at producing thousands of planes a year.¹² Although there was no opposition, when Congress approved the plan to expand the Air Corps on April 3, it appropriated only \$300 million.¹³

Meanwhile, there were questions inside and outside of the military about what the civilian contractors could accomplish for the USAAC. There were certainly doubts on the part of the contractors who worried about the financial aspect of the scheme. During World War II, Colonel Morgan recalled that the contractors “were a little afraid. Some were low on funds and others were in doubt as to the cost of operating.” Opposition also remained within the USAAC. Col. J.B. Brooks, who commanded the Primary Training Center at Randolph, insisted that the scheme be “shelved,” calling it “radical” and “inefficient.” But Arnold remained steadfast. Although the USAAC was short 230 Primary trainers and was not authorized to loan government aircraft to civilians, the plan was implemented. On April 3, Congress permitted these aircraft loans, but added an unexpected stipulation: one of the civilian contractors had to offer training to “Negro air pilots.”¹⁴

By May 1939, the two boards of officers had selected nine schools operated by eight contractors: Parks, who owned both Parks Air College, St. Louis, Missouri and the Alabama Institute of Aeronautics, Tuscaloosa, Alabama; Moseley, who headed Cal-Aero Flight Academy, Glendale, California; Allan Hancock, president of Hancock College of Aeronautics, Santa Maria, California; T. Claude Ryan, owner of the Ryan School of Aeronautics, San Diego, California; W.G. Skelly and John Paul Getty, owners of the Spartan School of Aeronautics, Tulsa, Oklahoma; Maj. William Long, operator of the Dallas School of Aviation & Air College, Dallas, Texas; Rev. Ernest J. Sias, owner of the Lincoln Airplane & Flying School, Lincoln, Nebraska; and Harold Darr of the Chicago School of Aeronautics, Chicago, Illinois.¹⁵ The schools in Nebraska and Illinois were given a lower priority because of harsh weather conditions, but received contracts nevertheless. Because the funds allocated by Congress to pay the contractors would not be available until July 1, the schools took the risk and prepared for the arrival of cadets. A USAAC study later noted



In 1944, Women's Air Service Pilots at Avenger Field in Sweetwater, Texas stand at a attention for a review by Gen. Henry Arnold during graduation exercises. The civilian contractors were Joe Plosser and Charles Prince, owners of Plosser-Prince Air Academy. (Photo courtesy of the Louise B. Brown Collection, Air Force Historical Research Agency.)

OF OVER 3,000 MEN TRAINED, ONLY TWO INSTRUCTORS AND THREE CADETS WERE KILLED... THE NOTION THAT IT WAS "MURDER" TO PLACE SUCH TRAINING IN THE HANDS OF CIVILIANS PROVED FALSE

that if the contractors had not gone ahead without a "guarantee of compensation, the revised 4,500 mission would have failed."¹⁶

Many of the original eight contractors selected by Arnold represented some of the best civilian flight schools in the country. In a time when heavier-than-air flight was not even forty years old, several had been involved in some aspect of aviation since World War I. Most had a military background and a few were wealthy businessmen. The USAAC later asserted, "These men, almost without exception, had had considerable experience in civilian flying training and their schools were considered among the best in the United States."¹⁷ Arnold's insistence on using them paid off. Although there had been opposition by USAAC officers to using civilian schools, opposition that never went away during World War II or afterward, the initial assessments of the contractors' work were positive. The civilian schools, using the exact curriculum of Randolph Field, had a lower accident rate and better graduation rate than expected. The graduation rates for the first eight classes trained at all nine schools ranged from 61-70 percent.¹⁸ More pilots, 1,786, were produced in those six weeks than had graduated between 1919 and 1939.¹⁹ Of over 3,000 men trained, only two instructors and three cadets were killed, all at Love Field in Dallas, Texas.²⁰ The notion that it was "murder" to place such training in the hands of civilians proved false. Moreover, cadets trained by civilians had a better graduation rate in basic than Randolph-trained students. Some civilian-trained classes were rated superior to those trained by the military. The civilian contractors were now a vital part of the effort to provide the country with more pilots for defense. As a USAAC history noted several years later, "From the summer of 1939 on, the civil schools were considered an integral, even valued, part of the pilot training system."²¹

Months after Arnold implemented his new training scheme, the Germans overran Poland in September 1939, leading Britain and France to declare war on Nazi Germany. German forces later occupied Denmark and then Norway, but otherwise, the three major powers remained at a standoff known as the Phony War. The stalemate lulled Arnold into considering a reduction of Primary training until the Phony War came to an end on May 10, 1940, when Germany attacked Belgium, Holland and France. Within weeks, the British army barely escaped Dunkirk, Italy declared on war

on Britain and France, and France was forced to surrender in June. In light of these events, President Roosevelt called Arnold to the White House to discuss how to expand the USAAC.²²

On May 23, 1940, Arnold held another meeting with the civilian contractors in Washington, D.C. He wanted the country to produce 7,000 pilots a year by July 1, 1941, while simultaneously training 3,600 bombardiers and navigators. The overall training schedule consisted of thirty-five weeks with ten weeks devoted to Primary; ten weeks to Basic; ten weeks to Advanced; and five weeks of specialized training. The 3,600 bombardiers and navigators would come from the pool of cadets eliminated from pilot training. Arnold asked each contractor to submit a plan to double their capacity for the 7,000-Pilot Plan, and to establish "branch schools." In an effort to reduce the impact of weather on training, these "branch schools" were to be located south of the 37th north latitude, east of the Rocky Mountains, and south of rain areas near the Pacific Ocean.²³ Although the term, "Sunshine Belt," would not be used by the United States Army Air Forces until 1944, the U.S. military, since the days of the Wright Brothers and Glenn Curtiss, knew that this geographical slice of the United States was conducive to year-round flight training.²⁴ Primary training would be done solely by the contractors, with Randolph Field becoming a Basic school.²⁵ In the meantime, Arnold assured Gen. George C. Marshall, a fellow Pennsylvanian, longtime friend and the U.S. Army Chief of Staff, that the peak of training would be reached by August 1941.²⁶

On June 19, 1940, Henry Stimson, secretary of war, announced that another nine civilian flight schools were to be established by the original eight contractors though one was a relocation of an existing school: Ryan School of Aeronautics, Hemet, California; Mira Loma Flight Academy, Oxnard, California; Lakeland School of Aeronautics, Lakeland, Florida; Darr Aero Tech, Albany, Georgia; Mississippi Institute of Aeronautics, Jackson, Mississippi; Missouri Institute of Aeronautics, Sikeston, Missouri; Spartan School of Aeronautics, Muskogee, Oklahoma; Texas Aviation School, Fort Worth, Texas. The schools in Missouri and Mississippi were operated by Oliver Parks. Simultaneously, Cal-Aero Flight Academy relocated from Glendale to Ontario, California. In most cases, new facilities were required, and yet many were able to be completed by October 1940.²⁷ Each operator spent approximately \$100,000 in building their new flight schools. The cost for the government to implement the expansion of flight and technical training using civilians was put at nearly \$11 million.²⁸

Under the 7,000-Pilot Plan, contractors were paid \$20.50 per hour for every cadet hour flown. The USAAC noted that the costs of training under the civilians decreased. It was the contractor's responsibility to employ flight and ground instructors. The contractor also provided, staffed, and maintained: the main airfield; auxiliary and satellite airfields; all buildings and grounds; aircraft and parachute



From October 1941 to August 1945, the Hawthorne School of Aeronautics in Orangeburg, South Carolina trained over 4,000 American and over 1,600 French aviation cadets. During that time, only two cadets, one American and one Frenchman, were killed.

maintenance; cadet barracks; the dining hall; and other essential domestic facilities. The cost for each graduate of civilian flying schools was calculated to be \$1,517. USAAC officers found this figure to be uniform across all civilian contract schools. In May 1941, in hearings before a House subcommittee of the Committee of Appropriations, Maj. Gen. George Brett told congressmen that if the military provided the same facilities and training, the cost would be \$55 per hour. Brett also assured the politicians that “civil flying schools trained the young men as thoroughly as did the Army schools.”²⁹

After the defeat of France, Germany launched its air campaign against the United Kingdom known as the Battle of Britain. In November 1940, Arnold, who now wore the additional hat of Deputy Chief of Staff of the Army, announced that the USAAC would pursue a 12,000 Pilot Plan, and ordered that eleven schools be established. The contractors selected were to be capable of “further expansion,” and that “each should present concrete evidence of ability to finance the expansion of existing facilities.” Arnold was looking beyond the 12,000 Pilot Plan to the day when existing and newly selected contractors would expand to meet the demands of a pilot plan nearly triple that of the 12,000 Pilot Plan. The next month, eleven contractors met at Wright Field in Dayton, Ohio, to discuss the potential problems of running a Primary flight training program. The contractors were then required to select a site and start construction in preparation to commence training on March 22, 1941. The sites were to be located away from existing air routes, ten miles from any radio station or municipal airport, and ten miles from any army, navy or civilian training facility.³⁰ Cadet classes at each school would be 206 in size, but in the meantime, each school would operate at 75 percent capacity.³¹

The eleven schools selected and the sites established were: the Rankin School of Flying in Van Nuys, California in 1939;³² Lou Foote Flying Service, Stamford, Texas;³³ Brayton Flying Service, Cuero, Texas;³⁴ Graham Aviation Company,

Americus, Georgia;³⁵ Riddle-McKay Aeronautical Institute, Carlstrom Field, Arcadia, Florida;³⁶ Pine Bluff School of Aviation, Pine Bluff, Arkansas;³⁷ Southern Aviation School, Camden, South Carolina;³⁸ Southwest Airways, Thunderbird Field, Glendale, Arizona;³⁹ Air Activities of Texas, Corsicana, Texas;⁴⁰ Oklahoma Air College, Cimarron Field, Yukon, Oklahoma;⁴¹ and Palo Alto Airport, Inc., King City, California.⁴² Many potential contractors were obviously disappointed that their bids had been rejected. The USAAC mailed them all a form letter that explained that operator experience in flight training, the “nucleus...for expansion,” suitability of selected site and nearby terrain, and financial ability were all factors that affected the final decision.⁴³

Over opposition from the Gulf Coast Air Corps Training Command (GCACTC), which believed that it should assume authority for all civilian contractors in the United States, Arnold insisted that the 12,000 Pilot Plan would operate more effectively within three separate geographic training centers drawing candidates from fairly equal-sized populations.⁴⁴ This resulted in the establishment of the Southeast Air Corps Training Command (SEACTC) and the West Coast Air Corps Training Command (WCACTC). The WCACTC’s eastern boundary extended from the 108th to the 103d meridian to encompass southern California, southern Arizona, New Mexico and part of west Texas where the weather proved more favorable for flight training.⁴⁵

The projected cost of the 12,000 Pilot Plan was nearly \$40 million. Several USAAC generals met with Congressional leaders and testified before various committees to discuss the program and praised the civilian contractors for their work. In March 1941, Gen. Brett informed Congress that “the civilian primary flying school has replaced the Government primary flying school.” Despite opposition from some in the USAAC, Brett announced that by May, three civilian schools would provide Basic military flight training, the next stage beyond Primary: Cal-Aero Flight Academy, Ontario, California, Georgia Aero Tech, Augusta, Georgia, owned by Harold Darr, and Dallas (Brady) Aviation School, Brady, Texas, owned by Maj. Long. Once the 12,000 Pilot Plan got underway, Brett praised its accomplishments before Congress, saying that the cadets being produced were “better pilots than we had 5 years ago.”⁴⁶

Before the USAAC even implemented the 12,000 Pilot Plan, it was already planning to expand the number of schools. In October 1940, Henry Stimson asked Arnold to do a separate study to determine the number of facilities needed to train 30,000 pilots. In December 1940, all three training centers were ordered to recommend sites for building more civilian schools. In March 1941, Gen. Davenport Johnson, Chief of the Training and Operations Division and one of Arnold’s assistants, told the Senate committee for appropriations that since the USAAC expected an attrition rate of 7-10 percent (the percentage of cadets eliminated from or killed during training), the 30,000 Pilot Plan was

SEVERAL USAAC GENERALS MET WITH CONGRESSIONAL LEADERS AND TESTIFIED BEFORE VARIOUS COMMITTEES TO DISCUSS THE PROGRAM AND PRAISED THE CIVILIAN CONTRACTORS FOR THEIR WORK



In 1940, Ryan Field, in Hemet, California, named after T. Claude Ryan, was dedicated for use as a primary training field. Pictured (L to R) are: Capt. Lloyd P. Hopwood, Gen. Henry W. Harms, T. Claude Ryan, and Capt. Kenneth P. McNaughton.

A USAAC REPORT NOTED THAT FORTY-EIGHT SCHOOLS, INCLUDING ONE TO TRAIN AFRICAN-AMERICAN PILOTS, WOULD BE NECESSARY TO CARRY OUT THE 30,000 PILOT PLAN

necessary to provide replacements and avoid a pilot shortage. The near tripling of pilots would double the striking power of the USAAC. A USAAC report noted that forty-eight schools, including one to train African-American pilots, would be necessary to carry out the 30,000 Pilot Plan.⁴⁷ Although it still had the final say, the USAAC decided to make the contractors responsible for selecting the sites to establish their schools. As one USAAC report explained, “contractors should be selected without regard to site for that can be determined later.” Eventually, the USAAC, renamed the United States Army Air Forces (USAAF) on June 20, 1942, selected fifteen contractors.⁴⁸

To meet the demands of the 30,000 Pilot Plan, SEACTC added three new schools under existing contractors, and four under new contractors: Lodwick Aviation Military Academy, Avon Park, Florida; Riddle-McKay Aeronautical Institute, Dorr Field, Arcadia, Florida; Southern Airways, Inc., Decatur, Alabama; Georgia Air Services, Bennettsville, South Carolina; Raymond-Richardson Aviation, Douglas, Georgia; Hawthorne Flying Service, Orangeburg, South Carolina; Greenville Aviation School in Ocala, Florida; and Tuskegee Institute, Tuskegee, Alabama (which was supposed to open under the 12,000 Pilot Plan, but did not start training until August because of delays).⁴⁹ The GCACTC added seven schools, all but one in Texas and Oklahoma: Bonham Aviation School Bonham, Texas; Hangar Six Inc., Uvalde, Texas; Wilson & Bonfils, Chickasha, Oklahoma; Harman Training Center, Ballinger, Texas; the Austin Flying School, Coleman, Texas; Ritchey Flying School, Vernon, Texas.⁵⁰ Only one school was opened in the WCACTC under the 30,000 Pilot Plan: J. Lloyd O'Donnell's Visalia School of Aeronautics.⁵¹ The contractors were required to obtain financing of \$500,000 or more.⁵²

The decision to implement the 30,000 Pilot Plan proved prudent. The Japanese attack at Pearl Harbor on December 7, 1941, and declarations of war by Germany and Italy within a few days

brought the United States firmly into World War II. The country now faced a two-front war that would require an untold number of pilots and aircraft. On December 29, nearly three weeks after Pearl Harbor, Arnold ordered an immediate expansion under the 50,000 Pilot Plan that required building more civilian-operated schools.⁵³

All three geographic training centers, soon to be known as Flying Training Commands, were confronted with different problems in the effort to meet the increased demand for pilots. The Pacific War and fear of Japanese attack forced the Western Flying Training Command (WFTC) to relocate the Ryan School of Aeronautics, San Diego, to Tucson, Arizona, and start a new one, Southwest Airways, Inc., in Phoenix, Arizona, where the desert was flat and relatively free of obstructions.⁵⁴ Three other schools were opened in California and Texas: Morton Air Academy, Blythe, California; Coast Aviation Corporation, Dos Palos, California; Pacific Air School, Ft. Stockton, Texas.⁵⁵ The largest expansion of civilian schools occurred in the Eastern Flying Training Command (EFTC) which added seven new schools: Wiggins-Marden Aero Corporation, Camden, Arkansas; Lafayette School of Aeronautics, Lafayette, Louisiana; Clarksdale School of Aviation, Clarksdale, Mississippi; Cape Institute of Aeronautics, Cape Girardeau, Missouri; Georgia Air Service (Southeastern Air Service), Jackson, Tennessee; Riddle-McKay Aeronautical Institute, Union City, Tennessee.⁵⁶ The Gulf Coast Flying Training Command (GCFTC) did not add any new schools, but it converted an existing school that trained Royal Air Force cadets into a Transport Command Pilot School with the intent of establishing a Primary school. Instead, it became the Women's Air Force Service Pilot's School, which encompassed Primary, Basic, and Advanced flying training at Avenger Field in Sweetwater, Texas.⁵⁷ Schools that had been training 2,035 cadets under the 30,000 Pilot Plan were expected to matriculate 3,206 by the end of 1942. Total class sizes jumped from 7,285 to 11,797. Each school saw individual class sizes increase from an average of 178 to 230. Pressure from Washington to add new schools also reflected Arnold's belief that further expansion would occur in the future.⁵⁸

In the meantime, the USAAF made the decision to purchase the airfields used by the civilian contractors. The civilians still retained control over management, but the Defense Plant Corporation (DPC), a subsidiary of the Reconstruction Finance Corporation, purchased the schools and their assets, and assumed the leases of auxiliary airfields. The DPC also assumed responsibility for expenditures during the war as many schools expanded to take in more cadets. The USAAF took this measure so as to “relieve” the contractors of the “financial problems and risks.”⁵⁹ Not all contractors took advantage of the relief. Tuskegee Institute and the Hancock School of Aeronautics retained ownership. Oliver Parks retained ownership for two of his fields, but did sell the two in Jackson, Mississippi, and Sikeston, Missouri. Spartan retained owner-



In 1945, Gen. Henry "Hap" Arnold, the man responsible for utilizing civilian contractors to provide primary and basic training to Army Air Forces cadets during World War II, visits the Escola Técnica de Aviação, or Technical Aviation School, in Sao Paulo, Brazil, that was operated by the John P. Riddle Company. (Photo courtesy of ERAU archive)

THE USAAF'S PRESSURE TO INCREASE PILOT PRODUCTION LED TO SERIOUS PROBLEMS, ESPECIALLY THE LABOR SITUATION AT THE CIVILIAN CONTRACT SCHOOLS, WHICH STRUGGLED TO RETAIN AND HIRE INSTRUCTORS AND MECHANICS

ship of the field in Tulsa, Oklahoma, but sold the one in Muskogee.⁶⁰ Although the DPC may have been a financial godsend, problems arose. Because of demands from the USAAF, contractors rushed to make additions to their schools, but the approval process was slow and unwieldy. Many contractors simply carried out the construction at their own expense and expected reimbursement only to have such requests denied by the DPC. This instilled much bitterness between the contractors and the DPC.⁶¹

The year 1943 represented the final expansion and the peak of the USAAF training program during World War II. For a time, Arnold spoke of implementing 70,000, 75,000, 85,000 and possibly even 102,000 Pilot Plans. The Central Flying Training Command (CFTC), formerly the GCFTC, noted that the calls for expansion in 1942 had been so common that in 1943, they "sounded a little like 'Wolf, Wolf!'"⁶² To fulfill the initial 75,000 (5,000 foreign) Pilot Plan, it was believed that fourteen additional schools were required.⁶³ The CFTC added one new school: Oklahoma Air College, Mustang Field, El Reno, Oklahoma.⁶⁴ The school at Fort Stockton, Texas, was transferred from the WFTC to the CFTC.⁶⁵ The WFTC converted two former glider schools into Primary schools: Claiborne Flight Academy in Wickenburg, Arizona, and Twenty-Nine Palms Air Academy, in Twenty-Nine Palms, California.⁶⁶ Oliver Parks' schools in East St. Louis and Sikeston, Missouri were transferred to the EFTC, since Parks already had two schools under the EFTC's authority. Otherwise, the EFTC only added one new, and its last, primary contract school: Anderson Air Activities, McBride, Missouri.⁶⁷

In June 1943, Arnold ordered what became known as the "All-Out Effort." When he ordered that no application for cadet training be disapproved, he seemed bent on launching the 102,000 Pilot Plan. Apparently, the commanders for each of the flying training commands recognized that they were not prepared to fulfill such an ambitious plan, which the CFTC labeled as "premature." Within two

months, the "All-Out Effort" was fixed at the 93,600 Pilot Plan.⁶⁸ Nevertheless, in October 1943, 14,000 students entered Primary training with classes averaging 250 cadets, putting the rate at 98,000 per year.⁶⁹

The USAAF's pressure to increase pilot production led to serious problems, especially the labor situation at the civilian contract schools, which struggled to retain and hire instructors and mechanics. As a result, some consideration was given by the U.S. government to completely militarize the civilian contract schools. Yet, the civilian contractors had their supporters. Robert A. Lovett, Assistant Secretary of War for Air, acknowledged that the use of contractors had been the "best course for us to have followed up until this time." Col. Kenneth P. McNaughton, director of training under the CFTC, gave a speech before a conference of contractors in which he declared that their schools were "performing the most important single function in the war, in that they provide the basis for the Army Air Forces."⁷⁰

Militarization, though, became a moot point in late 1943. In November, Arnold called on all training commands to prepare for retrenchment. The USAAF now faced a pilot surplus. The separate commands were to consider which Primary schools to close in light of the general drawdown that became the 85,000 Pilot Plan starting in January 1944; 60,000 in February; 40,000 in April; 17,000 in September; and then 10,000 in December. The first group of schools would close in April 1944 followed by closures in the summer and fall. In December 1943, a secret letter went out to the commanding officers stating that contractors would be retained on the basis of their school's physical plant, its location and weather conditions, size and the contractor's performance. Senior contractors were to receive preference. The decision to close certain schools was supposed to remain a secret until the USAAF felt the time was opportune, but unfortunately there were leaks. Not only were local communities disappointed, but morale plummeted at the schools where the training would be discontinued. Arnold came under such harsh criticism that the contractors held a conference in May 1944 and issued a statement expressing no confidence in the general.⁷¹ Gradually, the schools were closed especially after the surrender of Germany and Japan in 1945.

From 1939 until 1945, Arnold relied on these civilian flight schools to be the pilot training engine of the evolving wartime USAAF. The responsibility for training the bulk of America's air force was unprecedented, something never seen before World War II or since. The civilian contractors and employees played a key role in providing the aviation foundation for young men necessary to fly the fighters, bombers, and transport aircraft that formed the crux of American air power. In no other aspect of training for either the U.S. Army or Navy could any civilian contractor make a similar claim. The contractors were patriots, but they were also businessmen. Some clearly sacrificed a great deal financially to win and fulfill their contracts. Ultimately, most wanted to succeed for the

benefit of the country and their reputations and make a profit. Some would fail, Arnold and the USAAF had no choice but to find another contractor to replace them. The relationship between the civilians and the military was not perfect. Arnold never spelled out who truly ran the schools: the civilians or the military. Mistakes were made on both sides. Although most contractors and their local USAAF officers got along well, there were conflicts that led to calls to militarize the schools. In the end, Arnold never militarized a Primary school. He simply ignored opposition to his reliance on the civilian contract system and stayed the course, showing considerable trust. Or it showed the extent of his hope and the considerable risk that he was willing to take to get the air force he needed to win the war.

By 1945, the fruits of the civilian contractors were too obvious. In the WFTC, 75,651 cadets completed their Primary training.⁷² The EFTC graduated 73,982 plus an additional 1,376 African-Americans from Primary.⁷³ Records for the CFTC are not complete, but the CFTC probably experienced comparable graduation rates. In 1943, Col. John R. Morgan, an early skeptic of using civilian contractors despite being one of the officers that suggested the concept, was asked in an interview whether, if he had to do it all over again, he would still turn to civilians to mass-produce pilots and if that was the best solution. Morgan answered, "Yes. The results were gratifying, and certainly exceeded expectations at the Training Center. It was a life saver, and the only solution."⁷⁴ ■

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Shootout at Rabaul





Richard L. Dunn

(Overleaf) This bomb carrying P-38H was from the same production as many of the Lightnings that fought over Rabaul.

(Right) Zero 21's undergoing servicing at Lakunai in 1942. Zero 21's were still serving in significant numbers a year later when the Shootout took place.



**THE
LOCKHEED
P-38
LIGHTNING
HAS AN
ICONIC REPU-
TATION AS
THE OUT-
STANDING
U.S. ARMY
AIR FORCES
FIGHTER FOR
MUCH OF
THE PACIFIC
AIR WAR**

The Lockheed P-38 Lightning has an iconic reputation as the outstanding U.S. Army Air Forces fighter for much of the Pacific air war. The two top ranking U.S. Army fighter aces of World War II, Richard Bong and Thomas McGuire, both flew the P-38 in the Pacific. After its first major combat in late December 1942, the fighter commander in New Guinea, General Ennis Whitehead, announced, “we have the Jap[anese] Air Force whipped.”¹ This is the reputation that has come down to us—the P-38 was *the* fighter, the nearly unbeatable fighter, which conquered the Japanese in the southern Pacific.

The Lightning did not hit the ground running. The first thirty arrived in the southwest Pacific in August 1942, with additional P-38s arriving in the following month. It was November before the P-38 actually got into combat and late December 1942, before it claimed its first air kills. Over New Guinea, after a few false starts, it quickly gained a positive reputation, and by providing top cover for P-39s and P-40s improved the effectiveness of those fight-

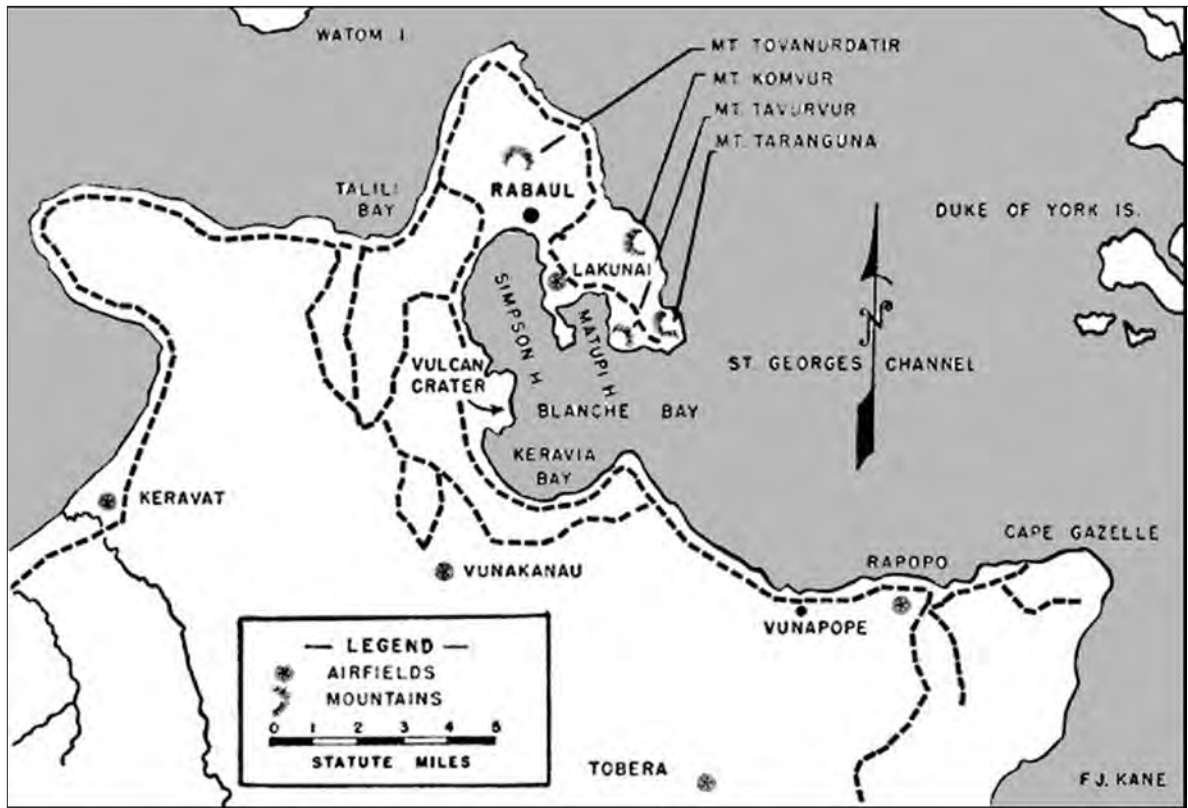
ers as well as racking up an impressive ratio of claimed kills to losses. In the Solomons some of its early actions were medium altitude escort missions and it did not initially impress the pilots who flew victory to loss ratio among Allied fighters operating in the Solomons.²

Some aviation historians have noted the slow start of the P-38. In the book *Zero*, Masatake Okumiya asserts that pilots of the Japanese navy's Zero fighter were able to master the P-38 in early combats, but with improved tactics the P-38 became an extremely formidable opponent. Captured documents indicate Japanese army fighter pilots, who initially encountered the P-38 over New Guinea, felt capable of handling the big American fighter, but also recognized its potential if used in tactically advantageous situations.³ Once its teething problems were worked out and suitable tactics were developed, the P-38 gained its formidable reputation.

This article studies a series of combats constituting a relatively brief but significant air campaign

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BASED ON CLAIMED VICTORIES VERSUS ADMITTED LOSSES, THE P-38'S RECORD WAS REMARKABLE



to assess the P-38's combat performance at mid-career and test its super star reputation. Undoubtedly, the P-38 was a good fighter with longer range and better high altitude performance than the P-39 and P-40. Based on claimed victories versus admitted losses, the P-38's record was remarkable. Was the P-38 a super fighter? Was its superiority highly dependent on favorable tactical circumstances? One campaign does not determine the merit of an aircraft, but the facts cited in this article suggest that other campaigns need to be examined on the basis of verified losses and not just claims. The outcome of those campaigns, and possibly the reputation of the P-38, may need to be reconsidered.

The Rabaul Campaign

As a preliminary to the invasion of Bougainville by South Pacific forces scheduled for November 1, 1943, Gen. George C. Kenney, Commander of Allied Air Forces in the Southwest Pacific and U.S. Fifth Air Force, was assigned the mission of getting rid of the Japanese air force at Rabaul, destroying the supplies in the town, sinking shipping in the harbor, and making the place *untenable* for enemy vessels. In his book, *General Kenney Reports*, he titles the chapter on the October-November campaign against Rabaul "Taking out Rabaul."⁴ The official history of the Army Air Forces (Craven & Cate, *The Army Air Forces in World War II*, vol. IV) says "the Fifth's attacks...neutralized Rabaul as a major threat to the American beach head at Bougainville..."⁵ admitting it was done with some help from carrier strikes. Some historians protest that such claims are inaccurate.

While the Fifth's attacks caused considerable damage, evidence that Rabaul was *not* "taken out" or "neutralized" is not hard to find. During and after the Fifth Air Force's bombing campaign, Japanese planes and ships from Rabaul were active in opposing the Bougainville invasion. On October 27, planes from Rabaul attacked the preliminary landing in the Treasury Islands, just south of Bougainville, and damaged a destroyer. A few days later another destroyer received a near miss and was damaged. On the day of the invasion, Rabaul responded by flying more than 100 sorties against the landing. Cruisers and destroyers from Rabaul fought a major surface engagement with U.S. ships on the night of November 1-2; and, afterwards an American cruiser was damaged in an air attack. On November 6-7, destroyers from Rabaul landed hundreds of Japanese troops near the Torokina beachhead. An American reinforcement convoy was attacked on November 8-9, with a transport and a cruiser hit. On November 11, Japanese planes from Rabaul executed a large, albeit costly and ineffective, daylight attack on U.S. carriers. A few nights later another cruiser was damaged by air attack. Japanese night attacks on shipping were frequent. They sometimes delayed unloading supplies and inflicted casualties on landing craft and small ships. On November 17, the destroyer transport *McKean* was sunk with heavy loss of life. The Japanese also carried out twenty bombing and strafing attacks against the beachhead during November. These resulted in twenty-four troops killed and ninety-six wounded as well as artillery and supplies destroyed. A month later Rabaul again proved it had not been *taken out* when MacArthur's forces invaded western New Britain in December 1943.

A fuel dump in flames on Bougainville: just part of the damage inflicted by Japanese bombers on November 20, 1943, several days after Rabaul had allegedly been "taken out" as a threat to U.S. landings on Bougainville by the 5th Air Force and Navy carrier attacks.



Planes from Rabaul vigorously opposed the landings at Arawe and Cape Gloucester sinking a destroyer and several smaller vessels as well as inflicting other damage in a series of raids by day and night. Also during November and December major troop movements transited through Rabaul, including significant reinforcements for western New Britain.

Rabaul may not have been knocked out or taken out, but there certainly was heavy air fighting over Rabaul. Each side made lop-sided victory claims. Both the Americans and Japanese claimed victory in the air fighting—the shootout. With the notable exception of the climactic raid of November 2, anti-aircraft fire caused few casualties and but little inconvenienced the Fifth Air Force so the campaign really was a duel between the defending Japanese fighters and the Fifth's attacking bombers and fighters. What really happened? What were the consequences for the Fifth and the Japanese? The remainder of this article provides a summary of the air battles and reveals the real loser in the air fighting over Rabaul.

The October Attacks

In August 1943, the Fifth Air Force struck the Japanese army air force airfield complex at Wewak and caused heavy losses as a preliminary to the invasion of Lae, New Guinea. By October 1943, the Fifth had grown stronger than it had been when it had devastated Wewak in August. The P-38 long range fighter force had grown to six regular squadrons (three in the 475th Fighter Group plus the 9th, 39th, and 80th Fighter Squadrons) and a provisional squadron made up from excess strength of the regular units.⁶ According to Kenney, the first Rabaul raid on October 12th was, "the biggest attack so far in the Pacific."⁷ Its two attack waves

comprised eighty-seven heavy bombers, 114 B-25 strafers, twelve R.A.A.F. Beaufighters, and 125 P-38s supported by a score of weather and photographic planes, plus their escorts.

Rabaul was almost as unprepared for attack as Wewak had been. There had been no Fifth Air Force day raids on Rabaul for many months and no night raids since July (Japanese night fighters had inflicted several losses on American heavy bombers over Rabaul during May, June, and July). The Japanese navy had a long established radar station on high ground southeast of Vunakanau air base. This and more recent installations were useful for detecting aircraft approaching at high altitude, but had limitations. The mountainous spine of New Britain interfered with detection of aircraft from that direction and their ability to spot low flying aircraft was poor. Visual observations from lookout stations complemented radar observations.

For the Japanese army air force, Rabaul was a rear area base where planes were sent for maintenance and crews for training. The Japanese navy was present at Rabaul in strength, although part of its fighter force (the main strength of Air Group 201 and an element of Air Group 253) operated from Buin and Buka in the Solomon Islands. In early October, American air reconnaissance detected eighty-seven medium bombers, thirty-seven light bombers, and fifty-nine single-engine fighters on Rabaul's airfields.⁸ This number jumped by about ninety aircraft, most of which were fighters, just before the raids began. Many of these were navy fighters and dive bombers involved in a temporary shuffling of units between Rabaul and Bougainville. The aerial photos also included some army aircraft, unserviceable hulks and even a few dummies. Japanese records indicate their naval fighter units at Rabaul and Bougainville numbered about 120 operational Zero fighters when the Rabaul raids began.

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A Mitsubishi Type Zero model 22 carrier fighter, well represented among the defenders of Rabaul. The pilot of this Zero is reputedly high ranking ace Hiroshi Nishizawa who served with Air Group 253 in early October 1943.

HOWEVER, THERE WAS SOMETHING NEW IN STORE FOR THE ATTACKING AMERICANS. BOTH JAPANESE UNITS HAD A SMALL NUMBER OF THE LATEST ZERO MODEL 52s [POSSESSING] AN IMPROVED LONG BARREL 20MM CANNON THAT WAS MUCH MORE EFFECTIVE THAN THE OLDER VERSION



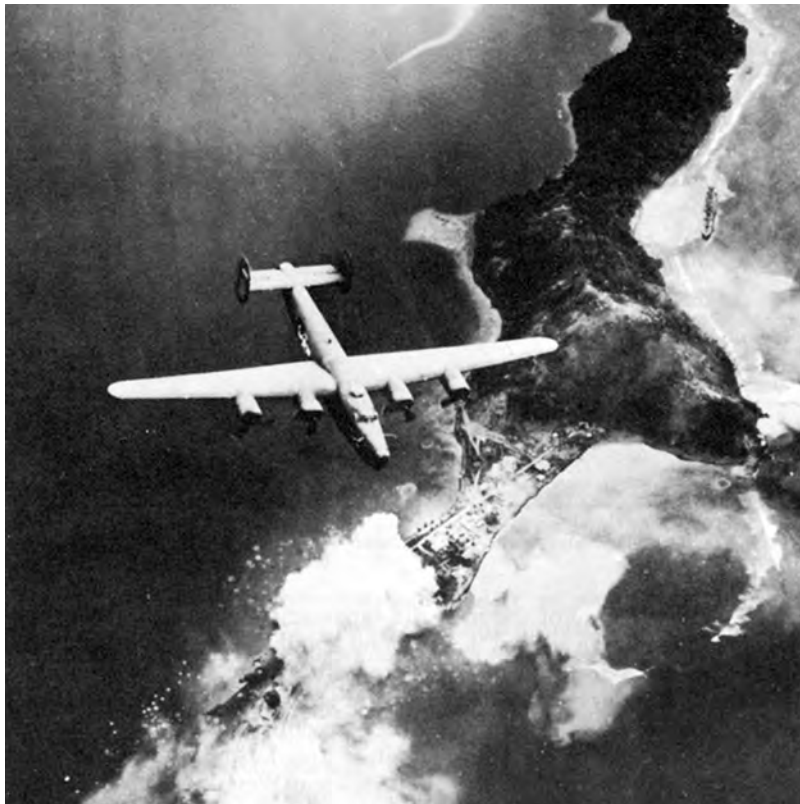
The defending fighter force was made up of Naval Air Group (*Kaigen Kokutai* abbreviated *Ku* meaning Air) 204, withdrawn from Buin to Rabaul just prior to the 12th and Air Group 253. Air Group 204, whose flight leader was Lt. (j.g.) Sumio Fukuda, had about forty serviceable Zero fighters (Zeke in the Allied codename system) and Air Group 253's Rabaul detachment numbered twenty-two. Many of these were Zero model 21s, essentially the same fighter that had opened the Pacific war over Hawaii and the Philippines and which had been in combat since 1940. The only significant improvement in these aircraft was an increase in cannon ammunition from sixty rounds per gun to 100 rounds and this improved version had only recently started to leave the production line. However, there was something new in store for the attacking Americans. Both Japanese units had a small number of the latest Zero model 52s on strength. The Zero 52 featured an improved long barrel 20mm cannon that was much more effective than the older version. Moreover, most of the Zero 22s in these units also were armed with long barrel cannon. In the case of Air Group 253, for example, on October 1, 1943, it had fifty-one serviceable Zeros, of which twenty-one were model 21s, twenty-three model 22s, and seven model 52s.⁹

On October 12, the first attack wave made up of B-25 strafers covered by P-38s took the Japanese by complete surprise. At Vunakanau (Rabaul No. 2 or West airfield to the Japanese) Type 1 land attack bombers of Air Groups 702 and 751 were bombed and strafed in their revetments.¹⁰ Nine were burned, three others damaged beyond repair, with many others suffering lesser forms of damage. At the army's Rapopo airfield several Type 97 heavy bombers of the 14th Flying Regiment (FR) were caught in the process of taking off for New Guinea. One was shot down, while others were destroyed or damaged on the ground. Along with light bombers of the 208th FR and transports of the 20th Independent Squadron, a total of sixteen army aircraft were destroyed or badly damaged. In the harbor a 5,800 ton transport, three small transports

(sea trucks), and a patrol boat were sunk. Three destroyers and several other vessels sustained minor damage.¹¹

Near the end of the first attack wave, a number of Japanese fighters got into action. Zeros shot up a B-25, which crashed into Simpson Harbor and was the only B-25 lost. Air Group 253 claimed three B-25s. The P-38s of the 475th FG claimed an Oscar over Vunakanau as well as a Betty (one of several Type 1 land attack bombers up on training missions). One part of the mission was fouled up when a dozen Beaufighters arrived over Tobera (Rabaul No. 3), without their P-38 escort. They encountered a reported nineteen Japanese fighters likely those from 204 Air Group under Lt. (j. g.) Fukuda. The Beaufighters aborted their strafing attack and hastily withdrew, harassed by Japanese fighters. Eventually one Beaufighter was lost, probably the new type B-26, claimed by Air Group 204.¹²

The second attack wave was made up of B-24s escorted by P-38s. Flying at 21,000 feet or higher the B-24s were at an altitude where their Lightning escorts had a definite performance advantage over the Zero. The B-24s were apparently confronted by fighters from both Japanese groups which had received warning from Japanese observation posts in western New Britain. Some of the B-24s "were but little bothered" by fighter opposition while one commander saw "the biggest swarm of enemy fighters I had ever seen in the air at one time" (twenty-five to thirty by most counts). The P-38 escort had been thinned out by mechanical aborts, while others failed to rendezvous with the bombers. The Japanese fighters were able to make repeated attacks on the bombers. One observer counted eighty-seven individual fighter passes. In one flight of the 400th Bomb Squadron, all six B-24s were hit. Two B-24s of the 90th Bomb Group were lost and the 43d, which encountered less opposition, also lost one bomber. One B-24 returned with a fuel tank so badly damaged that the self-sealing material did not seal. Another B-24 ditched due to loss of fuel from a damaged tank. This damage may well have been caused by the



A B-24 over Salamaua.

JAPANESE RECORDS ...CONTAIN CONFLICTING INFORMATION... BUT OFTEN AMERICAN RECORDS ALSO CONTAIN TRAPS FOR THE UNWARY

improved cannon and ammunition used in the newer model Zero.

Air Group 253 claimed three B-25s, one B-24, and a P-38. It lost two Zeros with one pilot killed. Nine other Zeros were hit and two of these listed as seriously damaged. Japanese records summarizing the action indicate four fighters were lost, so Air Group 204 apparently also lost two fighters. Total Japanese air claims were nine plus four others damaged. Ground gunners also claimed a P-38 and four bombers. As a minor point in the action, Japanese interceptors caused one photo plane to abort its mission. They repeated this interference several other times during the campaign.

Leafing through Japanese records that sometimes contain conflicting information requires some effort and the application of judgment, but often American records also contain traps for the unwary. The official Army Air Forces history mentions the downed B-25 and the two B-24 losses of the 90th Bomb Group, but implies the 43d Bomb Group's loss was not due to combat. It ran out of gas and ditched after a fuel tank was shot up. It does not mention the loss of the Beaufighter nor that three P-38s failed to return and another crash landed at base. Other sources generally attribute the loss of the P-38s to weather. What is certain is that they reached the target area, failed to return to base, and the exact cause of their loss has never been established. Such losses are usually considered combat losses.

This first raid was proclaimed a great success in a communiqué issued by General Douglas MacArthur's headquarters. Official shipping claims included three destroyers, three large merchant vessels, forty-three smaller sea-going ships sunk, and damage caused to other warships and harbor

craft. Aircraft claims included 100 destroyed, fifty-one damaged on the ground, plus twenty-six shot down in combat. The communiqué admitted the loss of four aircraft.

While this article focuses on the P-38 and the Japanese defensive response to the Fifth Air Force bombing campaign against Rabaul, it should not be thought that the Japanese were confined to Rabaul or flying only defensive missions nor that the Fifth Air Force was not also striking other targets. American bombers continued to visit Wewak and strike other targets in New Guinea. P-40s and P-47s were now flying as far as Wewak and relieved the P-38 force of some of the escort and fighter sweep effort on that front. On the 15th the Japanese mounted an attack against American shipping sighted off the New Guinea coast. Thirty-nine Zeros escorted fifteen dive bombers of the 582d Air Group and ran into more than fifty P-38s and eight P-40s. The dive bombers were virtually annihilated and five Zeros also went down (American claims totaled twenty-six dive bombers and eighteen fighters). Only one American fighter went down, although others were hit including some damaged beyond repair. On the same day twenty-one Thirteenth Air Force B-24s, escorted by twelve P-38s and sixteen F4Us, were intercepted by twenty-two Zeros over Bougainville. Two days later a Japanese fighter sweep by fifty-six Rabaul-based Zeros approaching New Guinea was met by forty-three P-38s and three P-40s. Eight Zeros failed to return. Four P-38s and a P-40 were lost and others were damaged. Future Medal of Honor winner Thomas McGuire barely escaped with his life when he was shot down and had difficulty with his parachute. On the same day, P-39s clashed with escorted Japanese army bombers in the same region. Throughout the month, Japanese medium bombers based at Rabaul carried out night bombing attacks and also flew long patrol missions.

In addition to the main attack force of P-38s, B-24s, and B-25s, the Rabaul campaign had a supporting cast that included three squadrons of R.A.A.F. fighters protecting the staging base on Kiriwina Island; R.A.A.F. Beaufighters that participated in some attacks and also flew coastal patrols close to Rabaul; plus R.A.A.F. Beauforts that flew night attack missions.

Except for a pre-dawn attack by Beauforts, inclement weather precluded a follow-up attack planned for October 13. It was not until October 18 that the Fifth returned to Rabaul and this attack, too, was partially disrupted due to weather. The 38th and 345th Bomb Groups failed to receive or ignored the recall signal and fifty-one B-25s pressed on to their targets unescorted through rain and under a low overcast. Targets were the Japanese army airfield at Rapopo, where seventy-seven aircraft had been reported and Tobera base of the 253d Air Group. At Rapopo, a transport plane and two heavy bombers were burned or badly damaged. At Tobera five aircraft were destroyed or badly damaged. The 38th claimed sixteen destroyed on the ground at Tobera, while the 345th claimed twenty-five at Rapopo adding ten or more destroyed



B-25s leave Bougainville.

MORE THAN 100 AIRCRAFT WERE LAUNCHED EACH DAY AND CLAIMS RAN AS HIGH AS 175 AIRCRAFT DESTROYED, RIVALING THE SUCCESS AT WEWAK THE PREVIOUS AUGUST

in air combat. Three B-25s failed to return and others were damaged.

A force from the 204th Air Group, combined with fighters from the 201st Air Group, totaling forty-two *Zeros*, saw most of the action and claimed eight bombers including three by Ensign Susumu Ishihara. Two *Zeros* went down. Air Group 253 also got into the action and claimed one B-25, while losing a single fighter. Most of the heavy bombers aborted or bombed secondary targets at Cape Hoskins in north central New Britain. At that target the Japanese claimed a "large aircraft" damaged, however, and a 400th Bomb Squadron B-24 succumbed to combat damage. Three missing heavies were believed lost due to weather.

After a brief hiatus, General Kenney launched a series of strikes on three successive days beginning October 23. More than 100 aircraft were launched each day and claims ran as high as 175 aircraft destroyed, rivaling the success at Wewak the previous August. The P-38s contributed significantly to the claims for enemy aircraft destroyed. The reality of both air and ground claims was somewhat different.

On the day Kenney resumed his attacks, the Japanese launched another anti-shipping strike with just four dive bombers escorted by twenty *Zeros*. These were away from Rabaul when Kenney's bombers arrived. The *Zeros* clashed with twenty-three P-47s of the 348th FG. Each side claimed enemy aircraft destroyed but no fighters were actually lost. Although the Thunderbolts did not engage any of the bombers one dive bomber failed to return.

On October 23, 100 P-38s escorted forty B-24s, with the P-38s claiming thirteen victories. The

B-24s claimed to have destroyed twenty aircraft on the ground and shot down four. Rapopo was the target of 105 tons of bombs. Eleven army and navy aircraft were burned or badly damaged and a few others suffered lesser damage from the bombing attack. Air Group 253 sent up flights of fifteen and seven fighters. Available Japanese records for Air Groups 201 and 204 are contradictory but they apparently scrambled twenty fighters. The official Japanese communiqué reported twenty-four victories, but some of these were actually claimed as *uncertain* or *probable*. Two P-38s, including one pilot, and a B-24 were lost. Three *Zeros* were lost. One of these was from Air Group 253, which also reported three others damaged.

In other action over or near Rabaul on October 23, Beaufighters conducting a fighter sweep over Jacquinot Bay south of Rabaul shot down a reconnaissance floatplane; and a P-38 escorting an F-5 photo reconnaissance plane failed to return.

The next day it was the turn of the medium bombers and the biggest air battle to date occurred. Fifty-four P-38s escorted sixty-two B-25s, and the P-38s claimed thirty-eight victories. Japanese fighters got among the low-level B-25s and shot down one bomber before the escorts could intervene. Covering from high above, flights of P-38s dove to attack the interceptors. Capt. Jay T. Robbins of the 80th FS personally claimed four victories bringing his total to eleven. In fact, ten Japanese fighters were either shot down or forced to land. It was the worst combat loss for the Japanese yet. Killed in this action was W.O. Shizuo Ishii of Air Group 204, who was officially credited with twenty-seven air victories since first entering combat in China in 1941. In addition, the B-25s destroyed seven Japanese land attack bombers and damaged an additional twenty-seven. Among the American fighter claims was a probable victory over a Tony (a Japanese army fighter with an in-line engine). Joining the *Zeros* on this occasion were two *Suisei* carrier bombers (501 Air Group) sent up to drop aerial bombs on the attacking planes. The *Suisei* was powered by an engine similar to the army's Type 3 fighter (Tony) and often misidentified as such. The Japanese claimed two bombers and fourteen P-38s. Two bombers were lost but no P-38s were shot down outright. However, a dozen were damaged including several that crash landed at base or were damaged beyond repair.

On October 25, the American strike force consisted of fifty P-38s and sixty-one B-24s and the target was Lakunai airfield. Most of the fighters turned back due to weather and several bombers also aborted. Maj. Charles H. MacDonald led eight P-38s of the 475th FG and stayed with the bombers throughout their bombing runs providing moral support, diverting a number of Japanese fighters, and claiming one destroyed. The bombers hit Lakunai heavily; destroying not only navy planes but also army reconnaissance planes based there and severely damaging the army's 14th Air Repair Depot. Twenty-two navy planes were burned and eight moderately damaged. The army's 10th Flying



Enemy aircraft destroyed on the ground.

Regiment lost five Type 100 headquarters recon planes burned or badly damaged and another five moderately or slightly damaged.

Like air combat claims, assessment of ground damage left much to judgment. In this strike, the B-24s inflicted considerable damage. They also returned with strike photos showing fragmentation bombs exploding within a hundred feet of two Betty and four Sally bombers. Presumably extensive damage was inflicted. In a later attack low altitude photographs would reveal that these same aircraft were not extensively damaged although they had been assessed as *unserviceable*. These may have been aircraft the Japanese reported as moderately or slightly damaged. The army bombers were probably at Lakunai for repairs; it is unlikely they were combat-worthy before the attack.

The Japanese sent up forty-four fighters and two Suisei bombers for this raid. Air Group 253, with about fifteen fighters, provided most of the opposition, claiming two P-38s of which one was uncertain plus engines shot out on two B-24s and five others trailing smoke. The Americans noted the air burst bombs but did not specifically identify the Suisei as being involved. They likely also encountered some of the Zeros from the twenty-nine put up by Air Groups 201 and 204. Two Zeros failed to return and six others were damaged. Only one B-24 was lost though several were damaged. Total bomber claims ran to thirty-seven Japanese aircraft destroyed and twenty-one damaged. The official Japanese communiqué announced two P-38s destroyed and fourteen B-24s damaged.

General Kenney supplemented his attacks on Rabaul by sending R.A.A.F. Catalinas to raid Kavieng at night starting on October 25. In addition to destroying planes on the ground these attacks might discourage Rabaul-based aircraft from using Kavieng as a safe haven. Although Rabaul was still functioning as a major base, there is no doubt Kenney's attacks were having their effect. When an American invasion force was sighted off the Treasury Islands on the morning of October 27, the

11th Air Fleet advised the Combined Fleet that it had available only seventy-one fighters, ten dive bombers, thirty-six medium bombers, and a handful of carrier attack planes available for night attacks. For daylight attacks against this invasion force, they requested immediate reinforcements, including four *chutai* of fighters and three of dive bombers.

The Japanese had already consigned replacements for Air Groups 201 and 204. A commitment of thirty fighters to be ferried to these units as well as another fourteen to be shipped in crates had been made in the middle of the month and the first of these must have arrived in the latter part of October. The Japanese fighters had been driven out of Buin air base on southern Bougainville on October 22, and at the end of the month they abandoned Buka as well. As for obtaining new units, the only ready source of these were the carrier air groups at Truk. But the Combined Fleet resolved not to send these in light of the near certainty that the assault on Treasury I. would be followed by an invasion of the main island of Bougainville. New players were about to join the *Shootout at Rabaul*, Japanese carrier air groups and U.S. Navy carrier strikes, but before they did, the Fifth Air Force had a final go at Rabaul on its own.

On October 29, fifty-three P-38s, escorted the Liberators for another attack on Vunakanau. From an altitude of about 19,000 feet, the 43d Bomb Group dropped clusters of fragmentation bombs, while the B-24s of the 90th Group discharged their loads of 500-pound bombs. Five Japanese navy bombers went up in flames along with two army fighters. Several other aircraft were damaged, including two badly damaged army fighters. Unusual casualties were suffered when some bombs fell on a Japanese army veterinary hospital killing nine horses.

Seventy-five Zeros from Air Groups 201, 204, and 253 took off and about fifty engaged the attackers. Air Group 253 apparently spent most of its time sparring with the escort claiming seven P-38s, but only reporting observable damage to one B-24. It lost three fighters and had two others badly damaged and two pilots wounded. Air Group 201 claimed a B-24 without loss and Air Group 204 claimed a B-24 and four P-38s without suffering a loss. The P-38s claimed seventeen victories. Capt. Daniel T. Roberts of the 433d FS claimed his fifth kill of the campaign bringing his victory total to thirteen. Leading ace Richard Bong claimed a double victory, his first score in the campaign, to bring his total to nineteen. Only one P-38 was shot down over Rabaul; several others limped back to Kiriwina in a badly damaged condition. One B-24 also went down.

As October came to a close, the honors in the air fighting in six major Rabaul attacks were roughly even. The Japanese lost twenty-five Zeros shot down or missing, with others damaged including some damaged beyond repair. General Kenney's forces lost about twenty aircraft shot down or failing to return from combat including both fighters and bombers. Like the Japanese, the Americans had suffered numerous aircraft damaged, some of which

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were damaged beyond repair and others that were written off later. The Japanese lost more aircraft in offensive operations during October than in its defense of Rabaul.

On November 1, came the actual invasion of Bougainville and major changes in the battle. The 11th Air Fleet at Rabaul launched three attacks totaling more than 100 aircraft. The attacks caused relatively little physical damage, but they did delay unloading, resulting in very little heavy cargo being delivered to the invasion beaches. In return, the Japanese suffered heavy losses, with twenty-three fighters and five dive bombers shot down or force landing with major damage. Air Group 201 suffered heavily with eight pilots killed or missing. On the same day, but too late to join the attacks on the invasion fleet, some 150 planes from the carrier air groups at Truk arrived at Rabaul and Kavieng.

Climax of November 2

The following day, the Fifth Air Force returned to deliver the *coup de gras* to shipping in Rabaul's harbor. For the Japanese, the Fifth's attack was just part of the action on two fronts. They launched an early morning attack against the Bougainville landing site with eighty-nine Zeros and eighteen dive bombers. They claimed a destroyer sunk and other ships damaged, but actually scored only two hits on the light cruiser *Montpelier*, causing relatively minor damage; near misses on other ships did little or no harm. Six dive bombers fell to defending fighters and ships' guns. The Japanese striking force returned to Rabaul before the Fifth's attack.

Nine squadrons comprising seventy-five B-25s headed toward Rabaul to carry out low level

attacks. Six squadrons of eighty P-38s would fly fighter sweeps and provide top cover and close escort. The attack plan called for four squadrons of B-25s to attack anti-aircraft positions around the harbor and drop phosphorous bombs on Lakunai airfield before five other squadrons of B-25s swept the harbor from the north to sink the large concentration of shipping sighted there. It is interesting to note that though this was a maximum effort both the B-25 force and P-38 force were only about 2/3's as strong as the forces launched in the October 12 attack.

The attack became the subject of a small book issued by the Army Air Forces in 1944. The book declared that in "the space of twelve minutes a formidable sea and air armada, in the powerful, well organized, well defended stronghold of Rabaul, was attacked and decisively defeated. Never in the long history of warfare has so much destruction been wrought upon the forces of a belligerent nation so swiftly and at such little cost to the victor." There followed claims for 114,572 tons of shipping destroyed or damaged, sixty-nine enemy aircraft destroyed in combat and sixteen others destroyed on the ground. "This was accomplished for the loss of nine American bombers and ten American fighters."¹³

Those claims were consistent with the contemporaneous battle damage assessment and repeated in General Kenney's memoirs. General Kenney also marked this action as the Fifth Air Force's toughest and hardest fought battle. From the Japanese perspective, the attack achieved little and the defensive air battle was a major success. For one Japanese seaman, a veteran of many surface engagements, who found himself in the thick of things this battle "was the most spectacular action of my life."¹⁴

Weather delayed the American attack. It was not until 1300 hours (1100 Japan time) that the attack force approached the eastern coast of the Gazelle Peninsula. The improved Japanese warning system spread word of the threat. Fighters that had returned to Rabaul after the Bougainville attack were in the process of being readied for additional action. Most of the fighters from the 11th Air Fleet as well as from the carrier fighter groups were assembled at Lakunai adjacent to Rabaul's inner harbor. Air Group 253 was at its base Tobera and the fighter unit from the carrier *Shokaku* was at Vunakanau. Lt. (j.g.) Yoshio Oba a relatively inexperienced pilot was the senior fighter leader of 201 Air and led twenty-one Zeros from that unit. Lt. (j.g.) Morita led seventeen Zeros from 204 Air and Zeros from 253 Air brought the 11th Air Fleet's intercepting force to fifty-seven Zeros. One Suisei was also scrambled. Lt. Hohei Kobayashi led the *Shokaku* Zeros from Vunakanau and with those of *Zuikaku* and *Zuiho* the carriers contributed fifty-eight Zeros.

The American approach route ran roughly north up St. George's Channel to a point east of Rabaul town; a left turn to the west would bring the attackers in at the northern extremity of the harbor from where they would commence their runs spread out abreast in attack formation in order for individ-



AFTER THE FIRST COMBATS BETWEEN CLIMBING ZEROS AND LIGHTNINGS, BOMBERS AND THEIR ESCORTS, AND, INTERCEPTING JAPANESE FIGHTERS CONVERGED OVER THE HARBOR AND ALONG THE WITHDRAWAL ROUTE

ual aircraft to sight and attack their targets. Just minutes before the bombers arrived two squadrons of P-38s would sweep in north of Lakunai to clear the air of fighters and then fly a circuit to cover the bombers. They would be followed by four squadrons of B-25s and two squadrons of P-38s that would neutralize anti-aircraft positions and attack Lakunai. The first anti-shipping wave would follow closely covered by a squadron of P-38s. The second anti-shipping wave would fly farther north to gain separation and come over the harbor a few minutes later also covered by a squadron of P-38s.

Capt. Tameichi Hara was the commander of a division of three old destroyers that had just survived the Battle of Empress Augusta Bay the preceding night. Rather than have his crews rest that morning he ordered them to prepare for action and when the air raid alert was received steamed out of the harbor. As these destroyers made their way out of the harbor the 39th and 80th Fighter Squadrons passed by on their fighter sweep mission. So too did the four squadrons of the 345th Bomb Group. The 39th saw only a few Japanese fighters but both the Lightnings of the 80th and bombers of the 345th ran into an aggressive batch of Japanese fighters. Following behind, the bombers of the 3d and 38th Bomb Groups unexpectedly encountered Hara in destroyer *Shigure* followed by another and at a distance by the third. Anti-aircraft fire spewed at the low flying bombers and sent plumes of water up ahead of them. This was soon followed by the arrival of intercepting fighters. According to the Army Air Forces official history: "Two destroyers off the mouth of the Warangoi River, directly in the path of the approaching planes, caused some confusion, as their fire, together with that of intercepting fighters, forced the B-25s to break formation and attack in two-plane or individual bombing and strafing runs."¹⁵

The alert did not reach Lakunai as quickly as it did Hara. An alert lookout sighted the American strike force headed north east of Lakunai and sounded the alarm. The flight leader of the *Zuiho* fighters rushed to get his fighters into the air. He

was followed by the other groups as dozens of fighters sought to take off.

Sixteen P-38s of the 80th FS came in over Rabaul about 1315 hours at 8,000 feet. They sighted Zeros rising from Lakunai and dove to attack. The highest Zeros were at about 4,000 feet. After exploiting its initial height advantage the fight got tougher for the 80th and for half an hour they engaged an estimated fifty to sixty Japanese fighters claiming fourteen destroyed for two P-38s missing and two crash-landed upon return. The 39th FS flying above a layer of clouds sighted only fifteen to twenty Zekes and misidentified Oscars over Rabaul. These did not appear eager to engage. Late in the action they sighted several others headed south from Cape Gazelle and claimed one of these. They returned without a loss.

After the first combats between climbing Zeros and Lightnings, bombers and their escorts, and, intercepting Japanese fighters converged over the harbor and along the withdrawal route. Wild low level combats ensued with anti-aircraft fire adding to the mayhem.

Following the B-25s of the 345th the anti-shipping strike proceeded into the harbor after its initial contact with Hara's destroyers and harassment by intercepting Zeros. In addition to Hara and the Zeros some B-25s were confronted by smoke and preceding formations out of position. Despite this they pressed home attacks and brought back reports and photographs that seemed to verify impressive results.

The 345th Bomb Group lost three bombers and had several others shot up. The following waves suffered more heavily. Anti-aircraft fire from Japanese warships in the harbor was heavy. Maj. Raymond Wilkins, commander of the 8th Bomb Squadron was shot down by anti-aircraft fire and later awarded the Medal of Honor for his courage and leadership on this and earlier missions. Some B-25s and an escorting P-38 crashed into Rabaul's inner harbor. Six B-25s in this phase of the attack were shot down. Maj. John Henebry, of the 3d Bomb Group, was acting as mission commander. His B-25 was

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badly shot up and later ditched close to Kiriwina with the crew safe. Three other B-25s limped back to base for crash landings.

Kobayashi's *Shokaku Zeros* taking off from Vunakanau were not in the direct line of attack but soon joined the action. The *Shokaku* pilots getting into action in more organized fashion than the other Japanese fighter units became the stars of the battle claiming forty victories and seven additional uncertain mainly P-38s. Old timer Hitoshi Sato, a pilot since 1935, but whose career up to this point was not particularly distinguished, made his mark by claiming eight victories. Also a pilot since 1935 Special Duty Ensign Kazunori Miyabe claimed six victories. Both these pilots would be killed in action flying from Rabaul in the next several days. Lt. Kobayashi also had a successful day claiming four victories. Kobayashi had been a pilot since June 1942 and first saw combat in the Battle of Santa Cruz in October 1942. For several months before arriving at Rabaul he had drilled *Shokaku's* fighters in combat tactics and adopted the four plane combat formation in lieu of the three-plane vic formally used by most Japanese air groups. Kobayashi was killed in October 1944. Kazuo Sugino claimed three victories in his first combat. Takeo Tanimuzu, also in his first combat, claimed two P-38s. Like Sugino he went on to score numerous other air victories and survived the war. Three of Kobayashi's pilots were killed.

Ens. Yoshio Fukui of *Zuiho* graduated in the same class as Hitoshi Sato but had established himself as a top pilot early in his career by achieving six victories in China. In this battle he shot down a B-25 at low-level but was then attacked by several P-38s. Fukui bailed out of his burning fighter and saved himself by parachute. Despite suffering burns he was back in action within a few days. He continued to fight in later campaigns and survived the war. Neither *Zuikaku* nor *Zuiho* following their confused scramble from Lakunai were able to duplicate *Shokaku's* success and *Zuikaku* lost four pilots killed.

Despite its small number of fighters engaged Air Group 204 claimed ten B-25s and nine P-38s. Susumu Ishihara repeated his earlier success and claimed three B-25s. Air Group 204 lost two pilots killed. Air Group 201 claimed a single B-25 and seven P-38s and lost one pilot killed. Rookie pilot Masajiro Kawato of 253 Air attacked the bombers but he reported that his attempt to evade escorting fighters by diving under a burning B-25 resulted in a collision. Like Fukui Kawato parachuted to safety. After the war Kawato immigrated to the United States where he wrote a book and became a fixture at California air shows, touting his claim to have shot down American Marine ace Gregory Boyington (who had gained fame due to a popular television program vaguely based on his exploits).

The American fighter squadrons returned with reports that indicated most of the Japanese fighter pilots encountered were experienced while some were described as eager and aggressive and others as not eager or even very cautious. The four squadrons providing close escort for the bombers all

had numerous encounters with most reporting sighting up to seventy enemy fighters and engaging thirty or more in combat.

Only nine P-38s of the 431st FS made it to Rabaul. Their action started soon after crossing the New Britain coast when a B-25 was observed with one engine burning under attack by three Japanese fighters. One of the attacking fighters was jumped by 1st Lt. M.F. Kirby who claimed it as the first of his two victories on this mission bringing him ace status. The 431st engaged other Japanese fighters during and after the bombing attack claiming ten destroyed and others probably destroyed. Two of their P-38s were missing and another ditched on the return flight. The 432nd FS was in action thirty miles south of Rabaul harbor and claimed six destroyed. They lost one P-38 and had two others damaged. The 433rd FS claimed two Japanese fighters. Three of their P-38s were damaged including one that crash-landed on Kiriwina. The 9th FS sighted Japanese fighters over Simpson Harbor and Keravia Bay at 3-4,000 feet altitude and claimed eight destroyed; two of their P-38s were listed as missing.

The American planes withdrew and left Rabaul harbor smoking and seemingly badly hurt. But as the smoke cleared the damage proved to be far less than the attackers imagined. Two merchant vessels totaling about 4,600 tons sank as did a minesweeper and a few smaller vessels. A large tanker was badly damaged and several other ships suffered from bomb fragments or machine gun hits. A few planes at Lakunai as well as some float planes in the harbor had been destroyed or damaged.

The Japanese press reported the battle as a major success. Japanese claims ran to seventy-nine P-38s and twenty-two B-25s as well as additional *uncertain* victories which in Japanese press reports were included to reach a victory total of 122 American planes. Japanese losses were fifteen fighters destroyed or missing and four others badly damaged (and presumably write-offs). Kenney was informed by General Whitehead in command of his headquarters advanced echelon that "one of the major victories of the Pacific war" had been won but since the Japanese air force had not been destroyed the "attack will continue."¹⁶

Final Attacks and Repercussions

The attack was going to continue in large measure because MacArthur, meaning Kenney's air force, was committed to additional attacks on Rabaul in conjunction with carrier strikes by Admiral Nimitz' South Pacific forces. General Kenney would probably have been content to "declare victory" after the November 2d, attack but for those previous commitments.

Rabaul was very much a going concern not just as an air base but also as the major port and logistics facility in the area. The day following the Fifth Air Force *victory*, the Japanese sent out an initial strike of eight dive bombers and thirty-nine Zeros against shipping off Bougainville. Finding none, they attacked the beachhead. In the course of the

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action they shot down two intercepting Corsairs losing one fighter and one dive bomber. Earlier in the day Japanese fighters intercepted nineteen Solomons-based B-24s attacking a convoy; shot down one and damaged others, one of which crash-landed at a forward airfield. Due to a lack of shipping targets the Japanese flew no additional strikes on November 3-4.

The Fifth Air Force attack on November 5, 1943, did little to help the carrier forces because twenty-seven B-24s and fifty-eight P-38s arrived over Rabaul only as the carrier-based planes were withdrawing. Naval historian Samuel E. Morison recorded that this caused some consternation among South Pacific naval commanders. The carrier strike disabled several Japanese cruisers recently arrived at Rabaul from Truk and strategically was more damaging to the Japanese than any of the previous Fifth Air Force attacks. The 43d Bomb Group had not been assigned specific targets by the Fifth Air Force, suggesting this was merely show of force to meet a commitment rather than part of premeditated bombing campaign. They bombed a section of Rabaul township. The Japanese fighters had spent their effort against the carrier attack and only a few were seen by the army flyers. Ace Dick Bong claimed the only two kills. One P-38 failed to return.

The final day attack by the Fifth Air Force came two days later when twenty-six B-24s of the 90th Bomb Group escorted by sixty P-38s bombed Rapopo from high altitude. Fifty-eight Japanese fighters intercepted, including twenty-seven from the carriers. It appears six Japanese planes were burned on the ground and four shot down in combat. Five P-38s failed to return. The shootout between the Fifth Air Force and Japanese navy flyers at Rabaul was over.

In a month-long air campaign, the Americans had attacked from high, medium, and low altitude.

P-38s had flown bomber escort missions, fighter sweeps, and escort to photo and weather planes. During the course of the campaign P-38s even flew some defensive missions against Japanese raiders that sortied from Rabaul. The attacking P-38s usually outnumbered the *Zeros* and the combined American bomber and fighter force substantially outnumbered the defenders. Japanese early warning was usually—but not always—good enough to get a substantial force of defenders up before the attackers were over the target. In short this campaign constitutes a good case study to assess the P-38 against the Japanese navy's Zero fighter.

By mid-November, the carrier air groups returned to Truk. The carrier attack planes and reconnaissance planes had been virtually annihilated and the dive bombers nearly so. The fighters had also suffered heavy losses. The Fifth Air Force had little to do with the decimation caused to these units. They had been expended in attacks on Bougainville and most particularly in a disastrous assault on an American carrier task force on November 11, 1943. Their losses in defensive battles over Rabaul had been relatively minor. The fighter groups at Rabaul ended the campaign at about half their operational strength compared to the beginning of the campaign. An influx of a few dozen replacement planes and pilots plus a brief period for maintenance of damaged aircraft soon had an effect. Having consolidated after abandoning Buin and Buka they were stronger than before the Fifth's campaign began.¹⁷

It was clear that despite inflicting damage the Fifth Air Force had failed in its mission to knock out Rabaul. The numbers in the shootout had been fairly even. Had it been a draw? Actually, though few histories reveal it, there had been one clear loser. The Fifth Air force P-38 force had taken a drubbing. Recorded combat losses do not reveal this. Moreover, it seems counter-intuitive since the P-38

is iconic, the *championship* fighter of the Pacific war. However, outright combat losses, returning aircraft damaged beyond repair, and wear and tear caused by long range missions and combat damage came close to decimating the P-38 force.

In the initial attack, on October 12, seven squadrons and 125 P-38s participated. In the maximum effort attack of November 2d only eighty P-38s were involved. The P-38 force shrank to such an extent that not only did the provisional squadron disappear but two regular squadrons (9th and 39th FS) were reequipped with P-47s after the Rabaul campaign. The only all P-38 fighter group, the 475th, began October with 71 P-38H's and ended the month with fifty of which only about thirty-five were serviceable. In November it received P-38s from the two squadrons that transitioned to P-47s and built up strength to seventy-six P-38s of various models. A further influx of late model P-38J's failed to increase strength because older model P-38s that were hard to keep in combat condition were retired almost as quickly as newer P-38s were received. The 80th FS was the only other fighter unit to continue to fly the P-38. In early December the four P-38 squadrons had only about seventy serviceable aircraft on hand. It was not until well into March 1944 that P-38

strength returned to what it had been at the start of the Rabaul campaign.

During October, the P-38s claimed more than 150 aerial victories virtually all of which were the result of missions to Rabaul or defensive missions against Rabaul based navy aircraft. The P-40s and P-47s flying offensive missions against Japanese army aircraft at Wewak as well as defensive missions contributed less than fifty aerial victories (P-39s engaging in only defensive combat added a few more). Thus the P-38 accounted for about 75 percent of the Fifth Fighter Command's October air combat victories. Missions to Rabaul in early November drove their Rabaul total to nearly 190 victories. While these claims are greatly exaggerated they do allow for comparison. For the remainder of November the Fifth Fighter Command claimed a little over fifty air victories. Of this total the P-38s share was fifteen or less than one third.

The P-38 performed valiant service through the end of the war. Rabaul did not end the story for the P-38 in the Southwest Pacific but Rabaul is a *hiccup* in the P-38's success story, an incident, or perhaps the right word is a defeat that is usually overlooked in standard histories on the subject. The Fifth Air Force's P-38 force was the real loser of the shootout over Rabaul. ■

NOTES

1. Craven & Cate, *The Army Air Forces in World War II, Vol. IV, The Pacific: Guadalcanal to Saipan*, University of Chicago Press (1950; reissued, U.S. Air Force History Program, 1983), p. 125. Whitehead's optimism was somewhat misplaced. In their first combat encounters Dec 27 and 31, 1942, the P-38s wildly over-claimed. On Dec 31, they encountered eight Japanese army fighters but claimed ten destroyed. Only one Japanese fighter was shot down. Moreover, Australian observers hidden in the hills above Lae, New Guinea saw the surviving seven land, (a fact not necessarily reported, or, known to Whitehead). In their next combat on Jan 6, 1943, the P-38s claimed nine Japanese fighters, but again only one was lost.
2. Okumiya & Hirokoshi, *Zero*, Ballantine Books (1956), p. 160; reports from several American pilots operating from Guadalcanal complained that in medium altitude escort missions the P-38 was little faster than the *Zero* but the *Zero* was vastly more maneuverable. Poor downward visibility from the cockpit and other details were also criticized. Some pilots suggested the P-40 was more suitable for the kind of missions to which they had been assigned.
3. Japanese pilots opinions summarized in 51st Division Intelligence Record, 12 Jan. 1943 (Allied Translator and Interpreter Section, ATIS, Enemy Publication No. 44)
4. Kenney, *General Kenney Reports*, Duell, Sloan & Pearce (1949), p. 312.
5. Craven & Cate (note 1), p. 328; other basic references for this period include Shaw & Kane, *Isolation of Rabaul, History of U.S. Marine Corps Operations in World War II*, Historical Branch, U.S.M.C. (1963); Morison, *History of U.S. Navy Operations in World War II*, Vol. VI, *Breaking the Bismarck Barrier*, reissued U.S. Naval Institute Press (2010); and, Miller, *Cartwheel: The Reduction of Rabaul*, Chief of Military History (1959).
6. The 5th Air Force P-38 force numbered 208 aircraft

on October 7, 1943 of which 158 were in units, Ltr., HQ ADVON (Whitehead) to CG 5th AF (Kenney), subj.: Escalator Force, 20 Oct. 1943 (RG 18, U.S. National Archives, hereafter, NARA) [serviceability of P-38s with units was approximately 80%].

7. Kenney (note 4) p.312.

8. Photo recon data and estimated enemy order of battle data here and elsewhere in this article is from Allied Air Forces, Southwest Pacific, Intelligence Summaries (RG 165, NARA)

9. Status report for Air Group 253, 1 Oct 1943, translation of intercepted radio message (RG 38, NARA)

10. 25th Air Flotilla war diary (translation of captured document WDC 161761, U.S. Navy History Center)

11. Loss details from "Reports of Damage and Casualties" (ATIS Enemy Publication No. 270) and other ATIS translations of Japanese reports; published sources include McAuley, *Into the Jaws of the Dragon: Fifth Air Force Against Rabaul*, Motorbooks International (1987); *Southeast Area Naval Air Operations* (Monograph No. 140, U.S.Army Japanese Monograph series)

12. Allied details come from Fifth Bomber Command and Fifth Fighter Command A-2 mission summaries; AAF, SWPA intelligence summaries (note 8); unit mission reports; individual mission reports; and Odgers, *Air War Against Japan*, Australian War Memorial (1957)

13. *The Battle of Rabaul*, 5th Air Force (1944) [reproduced in part with many photographs at website 475thfg.org]

14. Hara, *Japanese Destroyer Captain*, Ballentine Books (1961)

15. Craven & Cate (note 1), p. 326

16. *The Battle of Rabaul* (note 13) quoting message, Whitehead to Kenney, evening, 2 Nov. 1943.

17. Allied intelligence estimated Japanese single-engine fighter strength on New Britain as 149 fighters on 12 October and 175 fighters on 12 November, 1943.

THE KOREAN PEOPLE'S AIR FORCE IN THE



THE FATHERLAND LIBERATION WAR: PART I



Douglas C. Dildy

(Overleaf) To rebuild the destroyed ROKAF, Fifth Air Force gathered ten F-51Ds being used around the command for “target towing” duties, rearmed them, and initiated “Project Bout One,” a training program to teach surviving South Korean pilots to fly the Mustang. Being the perfect fighter to escort Gen MacArthur’s C-54 to Suwon AB, the 8th FBW emergency requisitioned eight of these, filled their cockpits with F-80C pilots with recent F-51D experience and sent them on the high priority escort mission.

(Right) NKPAF Yak-9Ps being readied for a training mission at Pyongyang. The USSR provided about 100 of these post-World War II interceptors to the fledgling NKPAF, of which seventy-nine were operational at the outset of the Korean War. (Detlef Billig Collection)

To Build an Air Force—First You Get Some Airplanes...

To build a modern, effective air force is a daunting undertaking—and was so even in the middle of the twentieth century, when World War II-surplus warplanes abounded all around the globe. After “the Great Leader” Kim Il-Sung established the Democratic People’s Republic of Korea (DPRK) on September 9, 1948, that is exactly what its Communist government attempted to do. Having been established the previous August, when Kim organized his personal Communist paramilitary force (called the “Constabulary Discipline Corps”) into the “People’s Army Group,” the NKPAF was commanded by Gen. Van Len and was to consist of an aviation (or “flying”) corps and an anti-aircraft artillery corps.¹ The former, under Maj. Gen. Wang Yong, was intended to consist of one “aviation division” comprised of three to five “aviation regiments,” each with three squadrons and a statutory strength of forty-four aircraft.²

General Wang was a forty-year old, Soviet-trained, bomber crewman who was ably assisted by Maj. Gen. Lee Whal as his vice-commander. Lee was a six-foot tall, imposing figure; a dashing thirty-five-year old pilot sporting a handlebar mustache. One of the few experienced pilots in Korea, and one of a very few with any college education. Early in 1946, Lee volunteered his services to the Korean Communist leadership in Pyongyang to help establish an air force and train its first pilots. Coming from a wealthy family, he generously donated classrooms, dormitories, and a dining hall (well before they would have been confiscated by the Communists) to provide the nascent air arm with training facilities. Although he had flown for the Imperial Japanese Army Air Force (IJAAF) during World War II, his generosity proved his patriotism and he was readily accepted by the North Korean leadership and its army.³

Major General Lee knew that a modern, effective

Authors Note: Even after some sixty-five years, North Korea remains the most culturally closed, socially isolated, and information-denying nation in the world. Therefore, very little is known about the North Korean People’s Air Force (NKPAF) and its participation in the invasion of South Korea and the resulting Korean War.⁴ However, with the availability of records from the former Soviet Union,⁵ and the more recent research permitted in Chinese archives, what is now known from the Communist allies’ perspective begins to tell us this otherwise missing story in military aviation history.



air force is based on effective aircraft, trained personnel, and adequate support facilities and personnel. For the North Koreans, getting aircraft was the easiest of these three. While USAF Intelligence reported the NKPAF inventory to be a polyglot assortment of war-surplus Soviet aircraft, including Lend-Lease Bell P-39/63s, only two combat types were initially included in the NKPAF inventory: the Yakovlev Yak-9 fighter and Ilyushin Il-10 assault, or ground attack, aircraft. During 1949, the Soviets shipped some 145 military aircraft to the DPRK, the bulk of these being Yak-9s and Il-10s.⁶

The Yak-9P (P for *pushyechnyi*, or cannon) was the final development of the World War II Yak-9D, the Soviets’ relatively unrefined equivalent of the USAAF’s North American Aviation (NAA) P-51D Mustang (soon to be redesignated the F-51D once the USAF became an independent military service), being of a similar configuration: a low-wing monoplane, powerful inline engine, “bubble canopy”, and belly-mounted coolant radiator. The post-war Yak-9P was armed with a single 23mm VYa-23 cannon firing through the propeller hub and a pair of synchronized ShVAK 20mm cannons mounted atop the engine. First appearing in 1946, it was slower than the Mustang but had a superior climb rate and a heavy, bomber-killing punch, making it more of an interceptor than an air-superiority fighter.⁷

The Soviets’ initial shipments of the type included nine Yak-9V two-seaters; twelve old, original Yak-9s; and forty-two new Yak-9Ps. The fighter—a very complicated aircraft incorporating a complex liquid-cooled engine, constant speed propeller, and retractable landing gear—suffered high attrition at the hands of the neophyte Korean pilots. Before starting the Klimov V-12 engine, it was necessary to hand-crank a small cockpit-mounted oil

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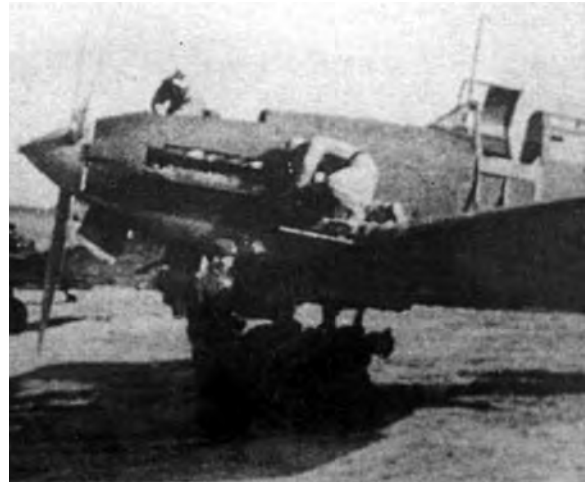
(Above) The NKPAF also received twenty-four Yak-18 primary trainers during late 1949/early 1950 and were training approximately 150 student pilots at the time Kim Il-Sung began his invasion of South Korea. (Detlef Billig Collection)

(Above right) The NKPAF put a lot of stock in the Il-10 as its dedicated ground attack aircraft, receiving 107 from the USSR in 1949-50. However, the prerequisite for successful "assault" operations was aerial superiority, something—as it turned out—the Yak-9Ps could not provide once the USAF became heavily involved in the Korean War. (Detlef Billig Collection)

pump twenty-five times to provide initial lubrication; skipping this vital step resulted in inevitable engine failures during the takeoff roll and initial climb, causing several accidents. Consequently, in the first half of 1950, the NKPAF had to be reinforced with about two dozen more Yaks, six of them being the two-seat version. To start the war, according to the Soviet advisors stationed in the North Korea, the NKPAF possessed seventy-nine examples, equipping two fighter regiments—a training organization and the 56th Fighter Aviation Regiment (FAR).⁸

More prevalent was Ilyushin Il-10 "*Shturmoviki*" ground attack aircraft.⁹ The heavily armored and powerfully armed successor to the original Il-2 carried as many as six 100kg (220.5lb) bombs (or an assortment of anti-personnel and anti-tank bomblets) and was armed with four Nudelman-Suranov NS-23 23mm cannon. In 1949, the USSR supplied 67 Il-10s, including thirteen UII-10 trainers, to the DPRK. The initial batch was supplemented with another forty in the first half of 1950, the Soviet advisors reporting that ninety-three were available when the war began, equipping two "assault aviation regiments"—a training unit and the 57th Assault Aviation Regiment (AAR).¹⁰

The last component of the NKPAF's 1st Aviation Division was the 58th Training Aviation Regiment equipped with sixty-seven trainers, transports, and liaison aircraft. Initially the trainers were eight prewar Po-2 biplanes, a few Yakovlev UT-2 fixed-gear monoplanes, and a few leftover IJAAF Tachikawa Ki-9 (Army Type 95 Intermediate Trainer) "Spruce" biplanes and Ki-55 (Army Type 99 Advanced Trainer) "Ida" monoplanes. Included with the influx of Soviet warplanes were twenty-four Yak-18 primary trainers, and six of the far more powerful Yak-11 (the USSR's equivalent of the NAA T-6 Texan) advanced trainers, as well as an additional five Po-2 biplanes. The transports were a handful of Douglas C-47s and their Lisunov Li-2 clones, supplemented by a few Yak-6s



and at least one former IJAAF Tachikawa Ki-54c (Army Type 1 Transport) "Hickory" twin-engine, eight-passenger light transport for liaison duties.¹¹

...Then Train Some People to Fly Them

By mid-1950, USAF Intelligence assessed NKPAF strength at three combat aviation regiments—totaling 132 warplanes—and approximately thirty trainers and transports. While this assessment was surprisingly accurate in terms of total inventory and major units, what USAF Intel could not know was how few trained personnel the North Koreans actually had to fly them. According to Soviet sources, by May 1950, the NKPAF had 120 trained pilots—with another 151 undergoing training—but only thirty-two were qualified as combat ready. These were enough to man only one Yak-9P and two Il-10 squadrons.¹²

This sorry state of affairs existed because General Lee's training program had an immense challenge to overcome. He began in mid-1946, by organizing flying clubs at Pyongyang and four other airfields,¹³ where Soviet occupation units were still stationed. The Russians became the instructors at these locations, teaching North Koreans to fly Po-2s and UT-2s, with the first Yak-18s being received shortly thereafter.¹⁴

The main problem was the lack of suitable pilot candidates. Until the Soviets' "liberation" of what became North Korea, the only indigenous pilots were those who had served in the IJAAF and these were outcast as "enemies of the people" and "were not asked" to join the fledgling air arm. Additionally, most literate members of Korean society had fled south into the "US Korean Zone of Occupation" to escape persecution and "rehabilitation" under "the true light of Korean Socialism," leaving behind an almost entirely illiterate peasant population. Called "ricepaddy workhorses" by the Russians, the Korean peasants were turned into infantrymen fairly readily, but teaching them to fly a modern, complex aircraft was an entirely different matter.¹⁵

Consequently, "specialist recruiters" of the Soviet Army (primarily those of Chinese, Korean and Mongolian extraction) canvassed the "Russian Korean Zone of Occupation" to select and solicit



young literate Koreans for induction into the flying clubs and their successors, the military aviation schools. The “First Swallows” began graduating at the end of 1947, and obtained early operational experience flying C-47/Li-2s from Pyongyang to the Soviet Primorye area (Vladivostok and Khabarovsk) and China (Harbin) as copilots to Russians delivering diplomatic mail and ferrying Communist personnel between the Occupation Zone and two “brother partner” nations.¹⁶

A year later, when combat aircraft began to arrive, the most politically reliable, experienced, and skilled aviators began advanced training, under Soviet tutelage, on the Yak-11 then the Yak-9 and Il-10. Russian teaching techniques were very structured and methodical—“more suitable to Communist peasant soldiers”—and progress was commensurately “slow but thorough,” impeded by an almost insurmountable language barrier and the Koreans’ lack of education. Consequently, by mid-1950 only a few graduates had attained the proficiency necessary to fly these advanced high performance aircraft in combat.¹⁷

...And Build Some Places to Base Them

The third essential of ingre-dient was the estab-

lishment of air bases with landing strips and the facilities necessary to maintain modern combat aircraft, as well as a support organization manned and trained to do so. From the Japanese, the North Koreans inherited nine airfields, three of them with paved runways and well-developed facilities. These were the former IJAAF’s large Heijo airfield at Pyongyang, the abandoned IJNAF depot at Wonsan on Korea’s east coast, and the nearby Yonpo airfield. Also the NKPAF used the small, unimproved Onjong-ni airfield on the coast west of Pyongyang and the four former “flying club” fields spread across the northern part of the country.

The NKPAF was fortunate to possess the former Japanese facilities at Heijo, which included a major army arsenal manufacturing small arms and munitions, including artillery shells and aircraft bombs. During World War II, the “air section” of the arsenal overhauled IJAAF aircraft, assembled aircraft arriving in “kit form,” and manufactured replacement parts, including some engines. The facility was supported by the Showa Aircraft Company factory, located five miles to the east, which produced aircraft landing gear assemblies and other aircraft components. The Heijo depot became the KPAF’s primary aircraft overhaul, maintenance, and supply facility.

Here, using abandoned Japanese equipment, Soviet technicians taught the new North Korean maintenance personnel the skills required to overhaul and rebuild aircraft. For example, the memoirs of one Russian mechanic describes how they restored a Nakajima Ki-43-II (Army Type 1 Fighter) “Oscar” from the remains of two derelict airframes. Never airworthy, but complete with NKPAF markings, the Japanese fighter was made the “gate guardian” at Heijo airfield.

To operate the NKPAF’s three main bases and perform line maintenance on the aircraft assigned to them General Wang established two “aviation technical battalions” that provided the essential services at base level. Each battalion included engineering, finance, supply, and aircraft maintenance companies and altogether numbered 2,541 men. The 1st Technical Battalion was stationed at Heijo (and its satellite Onjong-ni) airfield in the west side of the country, and the 2d Technical Battalion was split between Yonpo and Wonsan airfields on the east coast.

Finally, anticipating the upcoming campaign, the NKPAF also constructed four forward operating airstrips near the 38th Parallel, the most significant being at Sinmak and Pyonggang.¹⁸

Kim Il-Sung’s Plan for Invading South Korea

According to recent research in the Archive of the President of the Russian Federation, Kim Il-Sung’s invasion plan¹⁹ was formulated with substantial assistance of the Soviet General Staff in Moscow. NKPAF troop deployments, in accordance with this plan, began on June 12th.

The plan prescribed two main axis of attack. In the west, three infantry divisions (1st, 3d, and 4th),



(Above and right) The NKPAF began its existence with a handful of left-over Japanese aircraft, primarily Tachikawa Ki-9 and Ki-55 trainers, but its early inventory also included this Tachikawa Ki-54c "Hickory" eight-passenger transport. The tail emblem (a squirrel holding an acorn) was apparently that of the IJAAF Heijo "air arsenal." (James E. Tidwell via Warren Thompson)



tional artillery operations. The second Il-10 squadron, remaining at Heijo, and the Yak-9Ps would support the main advance towards Seoul.²¹

The NKPAF's Adversaries

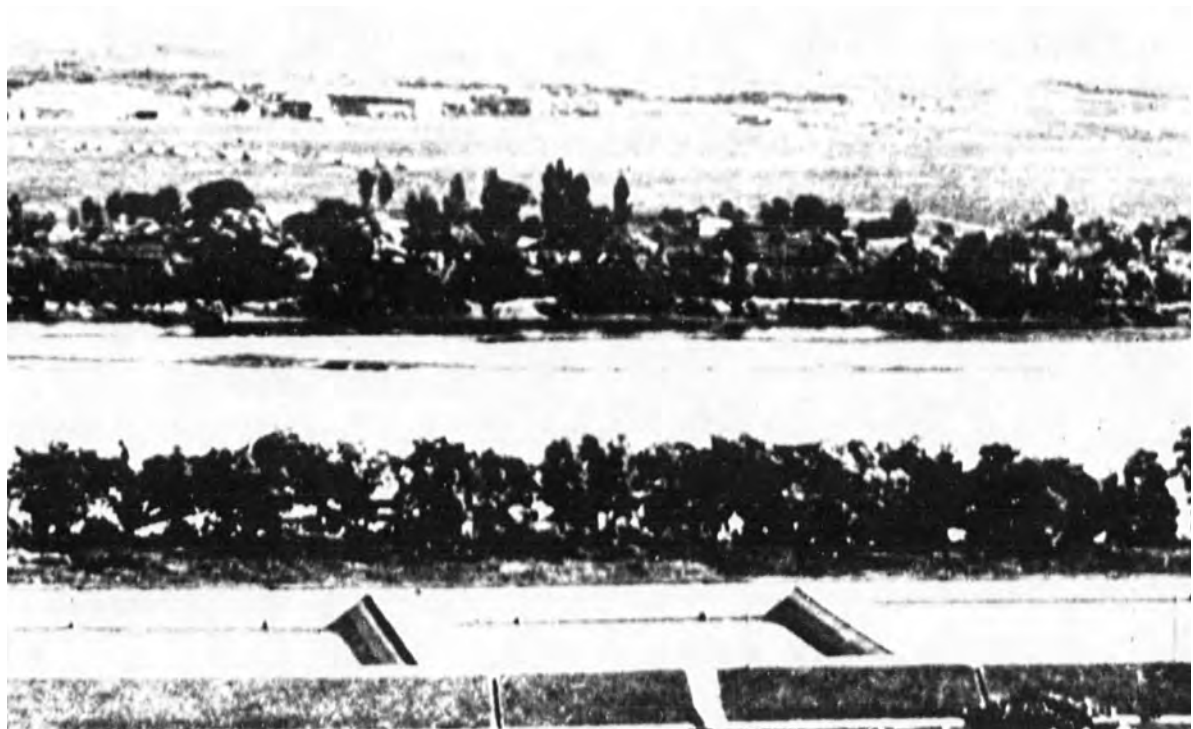
Even though the NKPAF was not the awesome air force that USAF Intel suspected, it was far more powerful than its adversary. Beginning in May 1948, the nascent ROKA formed its first air unit using former IJAAF aircraft—mostly a handful of Ki-9 "Spruce" training biplanes. In mid-September 1949, the United States provided ten Piper L-4 Grasshoppers²² (the ubiquitous Piper Cub), allowing the ROK air force (ROKAF) to be established on October 1st that year. The Korean government purchased ten NAA T-6D Texan trainers from Canada, and requested ten F-51Ds from the U.S., but the latter proved reluctant to provide the South Koreans with combat aircraft.

In June 1950, the ROKAF consisted of one

each spearheaded by a battalion of Soviet-supplied T-34-85 tanks from the 105th Tank Brigade, would attack frontally towards the Republic of Korea (ROK) capital of Seoul while a fourth (6th) drove southwest to capture Kimpo AB and the port of Inchon. Meanwhile, two infantry divisions (2nd and 12th) and a motorcycle regiment (603rd) would attack through the central mountain range in the hope of being able to descend behind the ROK army (ROKA) forces defending Seoul, thus cutting off their retreat. Additionally, reinforced "border brigades" would provide flank coverage by advancing down each coast.²⁰

The NKPAF had three squadrons of combat aircraft to support the invasion. One Il-10 unit deployed to Yonpo to provide air support for the forces pushing through the central highlands because the mountainous terrain precluded conven-

Across the Taedong River from Pyongyang was the NKPAF's main air base, headquarters, and primary maintenance and support facility, the "Air Section" of the World War II Imperial Japanese Army arsenal. (This photo is from the USAAF Intelligence's Air Objective Folder for Korea Area, No. 84-3, Target 61, The Heijo Arsenal.)





(Above) Like the NKPAF, the South Korean air arm began life with abandoned Japanese World War II equipment such as this Tachikawa Ki-9 "Spruce" primary trainer, the JAAF equivalent of the USAAF's PT-17 Kaydet. Once almost all the ROKAF's newer equipment (L-3s and T-5Ds) was destroyed in the NKPAF's initial onslaught, this "Spruce" was pressed into service once again, seen here at Taegu in September, 1950. (*Australian War Memorial*)

(Above right) The first USAF fighters faced by the NKPAF Yak-9Ps was the dozen NAA F-82G Twin Mustangs of the 68th Fighter-All Weather Squadron based at Itazuke AB, Japan. Reinforced by fourteen more from the 4th and 339th FAWs, these big night fighters drew first blood from the NKPAF, shooting down three Yaks on June 27th.



Division back about six miles. The secondary thrust towards Chunchon in the central highlands initially made little progress while, beginning at 0520, approximately twenty KPA navy junks and sampans—escorted by a half dozen motor gunboats and motor torpedo boats—landed two battalions of KPA marines on the east coast about fifteen miles south of the 38th Parallel.²⁶

The morning's low clouds and light rain precluded early NKPAF operations, but by 1315 the cloud deck began to break up allowing a reconnaissance patrol by two Yak-9Ps to roam as far south as Seoul. Spotting targets at Kimpo AB and Youi-do airport at 1700, six Yak-9Ps showed up to destroy them. One pair wrecked the control tower and set a fuel dump ablaze, with their cannon fire as well as damaging a USAF Military Air Transport Service (MATS) C-54 (grounded with a damaged wing) on the ramp at Kimpo. The other four Yaks strafed the ROKAF's ten L-4 and T-6 trainers at Youi-do, damaging seven of them.²⁷ Two hours later six Yaks-9Ps returned, completing the destruction of the MATS C-54.²⁸

Based on reports that the KPA's T-34s had penetrated as far south as Uijongbu, seventeen miles north of Seoul, U.S. Ambassador John J. Muccio ordered all American civilians evacuated, initially planning on using three merchant vessels in Inchon harbor. However, the next morning FEAF responded with transport aircraft to augment the merchantmen and fighters to fly defensive cover for the evacuation. A pair of C-54s and eleven C-47s, the latter scraped together from various FEAF base flights and other ancillary units, began evacuating personnel from Kimpo and Suwon AB (twenty miles south of Seoul). For air cover, eighteen F-82G Twin Mustangs [68th and 339th F(AW)Ss] gathered at Itazuke AB, Japan,²⁹ and began flying Combat Air Patrols (CAPs) in relays over Inchon, Seoul, and the road connecting them.³⁰

The NKPAF spent that morning deploying their operational fighter squadron—ten Yak-9Ps, and a pair of Il-10s—forward to Sinmak airfield, to give their short-ranged interceptors a deeper reach into South Korean airspace and more combat time when engaged. The day's only encounter occurred early in the afternoon when two NKPAF fighters flying over Seoul spotted a pair of the large Twin Mustangs

training unit with eight L-4s and three T-6Ds. The service had thirty-nine qualified pilots with another eighteen in training. The former were either instructors or members of a liaison unit flying five Stinson L-5 Sentinel light planes. Both units were based at Youi-do airfield (fancifully referred to as "Seoul International Airport"), but frequently flew to the USAF's Kimpo Air Base (AB; now Gimpo International Airport), across the Han River from the ROK capital, and periodically to five other airfields (all "under construction" at this time) where military detachments were stationed.²³

What the "Great Leader of the Korean People" failed to reckon on was the USAF's Far East Air Forces (FEAF)²⁴, including the Fifth Air Force (AF). This command consisted of three fighter-bomber and interceptor wings (8th and 49th FBWs and 35th FIW) flying jet-powered Lockheed F-80C Shooting Stars and two independent all-weather fighter squadrons (68th and 339th F[AW]Ss) equipped with NAA F-82G Twin Mustangs, as well as a two-squadron wing [3rd BW(L)] of Douglas B-26 Invaders and another of four-engine Douglas C-54 Skymaster transports (374th TCW). Altogether Fifth Air Force had 342 serviceable combat aircraft available (plus thirty-one reconnaissance and twenty-six transport aircraft) and could also call upon additional F-80C and F-82G units based on Okinawa and in the Philippines, as well as B-29 bomber groups of the FEAF's war-winning Twentieth AF.²⁵

The Fatherland Liberation War Begins

In the early hours (0440 local) of a quiet Sunday morning—June 25, 1950—beneath a slate gray overcast and persistent rain, the KPA surged across the 38th Parallel following a thirty-minute barrage of artillery fire, ousting the forward elements of the ROKA out of their rudimentary frontier fortifications. Each led by a battalion of thirty T-34-85 tanks, three KPA divisions overwhelmed the hurriedly-responding ROKA, pushing its 1st



(Above) (L to R; all 1st Lts) Pilots Chuck Moran and Bill "Skeeter" Hudson and radar operators Francis Meyer and Carl Fraser flank a shirtless 8th FBG intelligence debriefer to describe their destruction of a NKPAF Yak-11 and Yak-9P on June 27th. Six weeks later Moran and Meyer were killed during a night intruder mission in the Chinju-Sunchon area of North Korea.

(Above right) The NKPAF deployed two squadrons of Il-10 Shturmoviki for the invasion of South Korea. In addition to supporting the advance through the mountainous "spine" of Korea, they were used in airfield attacks at Kimpo and Suwon AB, flying 74 combat sorties in the last week of June. (Robert F. Dorr Collection)

[68th F(AW)S] and "bounced" them, but firing out of range they failed to inflict any damage.³¹

While some 905 people were evacuated from Inchon aboard the freighters, the ROKA stiffened, delaying the KPA in a tough, day-long battle near Uijongbu. However, the South Koreans were spent and the next morning the North Koreans broke through. As the routed defenders streamed back towards the Han River, two KPA divisions and their tank brigade drove onto the heights overlooking Seoul. The ROK government abandoned their capital, moving to Taejon.³²

Ahead of the armored thrust flew two waves of NKPAF warplanes. Arriving midday, the first was a formation of five Yaks—a two-seat Yak-11 trainer, probably being used as a reconnaissance aircraft, escorted by four Yak-9Ps—headed for Seoul at 10,000 ft.³³ On CAP over Seoul-Kimpo-Inchon area were three formations of USAF Twin Mustangs. One flight of four [68th F(AW)S] orbited below a broken cloud deck at 4,000 ft between Kimpo and Suwon, while another formation [339th F(AW)S] patrolled at 8,000 ft and four more [4th F(AW)S] provided top cover, above a solid overcast, at 12,000 ft.

Once again the NKPAF fighters initially had the advantage, jumping the lowest CAP. Led by the Yak-11, they managed to get some hits on one of the big Twin Mustangs' tail before the Americans turned the tables on them. 1st Lt. William G. Hudson ran down the slower trainer as it attempted to escape in the clouds and shot it down. The pilot bailed out and was killed in a shootout with ROKA troops near Kimpo, while the rear seat observer rode the doomed aircraft to his death. 1st Lt. Charles B. Moran destroyed one of the escorting Yak-9Ps.³⁴ The mid-level CAP heard the radio calls from the low formation, spotted the engagement through breaks in the clouds below and Maj. James W. Little dived into the mêlée, shooting down a third Korean fighter.³⁵



At 1300 hrs, eight NKPAF Il-10s crossed Seoul winging southwest from Yonpo airfield to disrupt the aerial evacuation from Kimpo AB. By this time the Twin Mustangs had been replaced on CAP by four F-80C Shooting Stars (35th FBS/8th FBW), split into two pairs orbiting between cloud layers north of Seoul. The lead element (pair) spotted the NKPAF raiders, cruising south above the lower cloud deck in a long, loose right echelon formation. Leading the flight, 1st Lt. Robert E. Wayne, attacked and quickly shot down two *Shturmoviki* before the formation scattered and ducked into the clouds. The second pair of jets found the survivors beneath the cloud deck, scurrying for home "at treetop height" and Capt. Raymond E. Schillereff and 1st Lt. Robert H. Dewald shot down two more in quick succession.³⁶

Seoul and Kimpo AB fell to the advancing KPA forces on June 28th—by then FEAF transports had rescued another 851 people—and took the day to regroup before attempting to cross the Han River. FEAF transport operations were now centered on Suwon AB, with C-54 transports bringing in 150 tons of ammunition for the beleaguered ROKA troops. Consequently, it became the next target of NKPAF air attacks.³⁷

American defensive CAPs over Suwon proved insufficient and twice NKPAF fighters evaded interception to strafe the airfield and do significant damage. The first was at 1330 hrs when four Yak-9Ps caught an F-82G [68th F(AW)S] and B-26B [13th BS(L)] on the ground,³⁸ severely damaging both with their cannon fire. Five hours later six Yaks repeated the attack, one of them shooting up a C-54 (6th TCS/374th TCW) in the landing pattern and others destroying another (22nd TCS/374th TCW) on the ground.³⁹

Encouraged by the lack of effective defense, the NKPAF mounted six raids on Suwon the next day, June 29th. In one case a formation of three Il-10s, escorted by six Yak-9 fighters, arrived between CAPs and made bombing attacks wrecking the terminal building and destroying a third C-54 (6th TCS/374th TCW), killing twenty-three American servicemen. However, two flights of F-80Cs were "on station" when six more NKPAF aircraft

attempted do the same. One flight (80th FBS/8th FBW) shot down an Il-10 while the other (9th FBS/49th FBW) claimed one fighter (as an “La-7”),⁴⁰ one of the NKPAF pilots bailing out to become a prisoner of war (POW).⁴¹

The Shooting Star was not proving to be the best air defense fighter for the Americans—its Allison J33 turbojet engine’s high fuel consumption limited its “on station” time and its high speed frequently resulted in “overshooting” their prop-driven targets. Two days earlier, FEAF had pulled ten F-51D Mustangs from “target-towing” duties to provide to the now non-existent ROKAF. Four of these were commandeered by the 8th FBW⁴² to provide close escort for Gen. Douglas MacArthur’s C-54 during his trip to Suwon to confer with the ROKA HQ.

The Mustang pilots were flying their CAP over the school house where the conference was being held when four Il-10s appeared, headed for Suwon AB. The faster Mustangs quickly intercepted them and, because they were 80 mph slower, the NKPAF

assault aircraft could not get away and eventually all four were shot down.⁴³ Two NKPAF crewmen bailed out, one of whom was killed on the ground.⁴⁴

With NKPAF air operations interrupting the resupply and evacuation airlift with alarming regularity—and with FEAF fighters, flying from Japan, unable to prevent their frequent successes—MacArthur having witnessed the latest air battle over his own conference center, authorized FEAF to begin an immediate “offensive counter-air” campaign to destroy the NKPAF warplanes at their bases. He also sent an urgent message to Washington seeking approval for air attacks on enemy military facilities and lines of communication north of the 38th Parallel. In the event, the first strikes would arrive over Heijo airfield before the permission to do so came from Washington.

The devastating effect of this campaign, as well as the mounting attrition due to increasingly effective USAF fighters—ultimately resulting in the virtual destruction of the KPAF—is the subject of Part II of this article. ■

NOTES

1. Technically known as the “Korean People’s Air Force Air Corps” this cumbersome title will be abbreviated NKPAF for use in this article. The air arm’s ground-based anti-aircraft artillery corps will not be addressed here.
2. As a component of the NKPA the North Korean air force was structured in the classic army pattern: corps, division, regiment, and battalion, with the last mentioned being the equivalent of a squadron in other air arms. Due to the greater familiarity with that term as an air force organizational unit, it will be used in this article.
3. See Vladislav Morozov and Sergey Uskov, “On Guard for Peace and Labor”, *Mir Aviatsiyi*, February 1997, trans Tushino-Aviapress, 1998, pp. 29, 30; and Xiaoming Zhang, *Red Wings over the Yalu: China, the Soviet Union, and the Air War in Korea*, (College Station: Texas A&M University Press, 2002), p. 18.
4. Even after the departure of Soviet forces from North Korea in 1948, several advisors remained behind. In May 1950, the Soviet Armed Forces General Staff authorized 246 instructors and educational personnel to assist the NKPA and NKPAF, although only half of these positions were filled due to the lack of experienced personnel. Eleven of these were placed in the NKPA’s general HQ with the rest attached to NKPA/NKPAF divisions and regiments. While strictly forbidden by the Soviet General Staff from crossing the 38th Parallel, these men were still able to periodically provide detailed reports of North Korean operations—and assessments of them—that are now stored in the Central Archives of the Ministry of Defense of the Russian Federation and the Archives of the President of the Russian Federation. These have provided a basis for several excellent publications outlining, and in some cases detailing, NKPA/NKPAF’s Korean War operations and their results. See V. A. Yaremenko, A. N. Pochtarev, and A. V. Usikov, *Russia (USSR) in Local Wars and Regional Conflicts in the Second Half of the 20th Century*, Maj Gen V. A. Zolotarev, ed., trans Stephen L. Sewell, (Moscow: Kuchkovo Polye Publishing, 2000), 68-70.
5. Originally Kim Il-Sung’s name was Kim Sung Chu, but feeling that this was too bland, while fighting Japanese occupation forces in 1935, “The Great Leader” adopted the name of a dead—and non-Communist—Korean guerilla leader (whose name meant meaning “become the sun”) as his own. Max Hastings, *The Korean*

War (N.Y.: Simon and Schuster, 1987), p. 26.

6. No Kum-Sok, *A MiG-15 to Freedom: Memoir of the Wartime North Korean Defector Who First Delivered the Secret Fighter Jet to the Americans in 1953* (Jefferson, N.C.: McFarland & Company, Inc., Publishers, 1996), p. 12, 13; and Xiaoming, *Red Wings over the Yalu*, p. 25.

7. Anatoliy Demin, “In the Skies of Korea: The ‘Eagles’ of Mao Zedong Against the ‘Hawks’ of Uncle Sam,” a series of articles published in *Mir Aviatsii* magazine, 2004, translated by Stephen L. Sewell, 2010, p. 2; and Morozov and Uskov, “On Guard for Peace and Labor”, pp. 30, 38.

8. Powered by the 12-cylinder Klimov M-107A engine, rated at 1,500hp (1,650hp for takeoff), the Yak-9P’s top speed is given as 367mph/590km/hr at sea level, while the P/F-51D’s max speed at that altitude was 390 mph/ 628 km/hr. The Yak-9P’s initial climb performance was 4,528fpm (23m/sec), able to reach 16,405ft (5,000m) in less than six minutes, but its range was only 746 miles (1200km). William Green and Gordon Swanborough, *The Complete Book of Fighters* (London: Salamander Books Ltd., 1994), pp. 447, 601-603; Yefim Gordon and Dmitriy Khazanov, *Yakovlev’s Piston-Engined Fighters*, (Hinkley, UK: Midland Publishing, 2002) p. 98, 99, 102, 136.

9. Demin, “In the Skies of Korea,” p. 2; and Morozov and Uskov, “On Guard for Peace and Labor”, pp. 30, 38.

10. Powered by a 1,750hp (2,000hp for takeoff) Mikulin AM-42 V-12 engine, the Il-10 could carry four 100kg (220.5lb) bombs in internal bomb bays and another pair under the wings. More commonly used against troops and armor the type used 2kg/4.4lb AO-2 fragmentation and 2.5kg/5.5lb PTAB-2 anti-tank bomblets. Generally flown at lower altitudes, it had a top speed of 304 mph (490km/hr) at sea level but normally cruised at 193mph (310km/hr) at an altitude of 1,640ft/500m. At that altitude and speed, it had a maximum range with a full bomb load of 497mi (800km). William Green and Gordon Swanborough, “Ilyushin’s Proliferous Shturmovik—Part Two”, *Air Enthusiast*, No. 13, August-November 1980, pp. 26, 27.

11. Demin, “In the Skies of Korea”, p. 2; Green and Swanborough, “Ilyushin’s Proliferous Shturmovik”, pp. 33, 34; and Morozov and Uskov, “On Guard for Peace and Labor”, p. 30.

12. The Ki-54c “Hickory” bears a strong resemblance to the Yak-16 twin-engine, ten-passenger light transport

and its presence may have been one reason that USAF Intelligence reported in 1950 that the NKPAF had 22 Yak-16s on strength. However, only two Yak-16 prototypes were built and mass production was not authorized (the requirement being fulfilled by the An-2 "Colt"), the two Yak-16 prototypes living out their days as executive transports for the Yakovlev OKB (design bureau) and Factory No. 464 that built them.

13. Demin, "In the Skies of Korea," p. 2; and Morozov and Uskov, "On Guard for Peace and Labor", p. 36.

14. *Ibid.*, 38. N. L. Volkovskiy, ed., *The War in Korea 1950-1953*, trans Stephen L. Sewell (Saint Petersburg: OOO Izdatel'stvo Poligon, 2000), p. 30.

15. Heijo airfield (K-24 in the FEAF K-series airfield designation system) at Pyongyang became the NKPAF's headquarters and main operating base. The others were located at Sinuiju (K-30), Hamhung (K-28), Chonjin (K-34), and Hoeryong (K-35). Morozov and Uskov, "On Guard for Peace and Labor", p. 29.

16. *Ibid.*

17. *Ibid.*

18. *Ibid.*

19. Xiaoming, *Red Wings over the Yalu*, pp. 21, 41, 43

20. Heijo was the Japanese name for the Korean city of Pyongyang. The airfield and arsenal were located across the Taedong River from the city. Because it was a major IJAAF base, depot, and arsenal, to distinguish this former Japanese military complex from facilities inside the city, it will be referred to in this work by its original IJAAF name. USAF Intel called it "Pyongyang Main" airfield.

21. Robert Frank Futrell, *The United States Air Force in Korea, 1950-1953*, (Washington, D.C.: Office of Air Force History, 1981), p. 19.

22. Futrell, *United States Air Force in Korea*, p. 184.

23. Jacek Jackiewicz and Severyn Fleischer, *Japanese Aircraft in Foreign Service, Volume 1* (Warsaw: Atelier Keczay, 2011), p. 98.

24. In the FEAF airfield designation system, Onjong-ni was K-22, Wonsan was K-25, Yonpo was K-27, and Hamhung was K-28. Gordon L. Rottman, *Inch'on 1950: The last great amphibious assault* (Oxford, UK: Osprey Publishing Limited, 2006), p. 38.

25. These were at Sinmak (K-20), Pyonggang (K-21), Kumchon (K-52), and Kansong (K-50). Futrell, *United States Air Force in Korea*, p. 19.

26. Kathryn Weathersby, "New Russian Documents on the Korean War," *Cold War International History Project Bulletin*, No. 6-7, Winter 1995/1996, pp. 30, 31.

27. Volkovskiy, *The War in Korea 1950-1953*, 57, 58; and Weathersby, "New Russian Documents", pp. 57, 58.

28. Morozov and Uskov, "On Guard for Peace and Labor", p. 38.

29. Of these ten L-4s, one was written off in an accident and in May 1950, and a second was used by a pilot to defect to the North. Of the ten T-6Ds ordered, only the first three had been received by the time the war began. Morozov and Uskov, "On Guard for Peace and Labor", p. 30.

30. These were Taegu (K-2), Kwangju (K-7), Suwon (K-13), Kunsan (K-8), and Cheju-do (K-39). Youi-do airfield was K-16 and Kimpo AB was K-14. Futrell, *United States Air Force in Korea*, p. 17; and Morozov and Uskov, "On Guard for Peace and Labor", pp. 30, 38.

31. Later redesignated Pacific Air Forces (PACAF).

32. According to FEAF strength reports for May 31, 1950, the command's operational (i.e., "combat ready") forces consisted of 272 F-80Cs, 22 F-82Gs, 26 B-26s, 22 B-29s and 26 C-54s, as well as six RB-29s and 25 RF-80As. Futrell, *United States Air Force in Korea*, p. 58.

33. Futrell, *The United States Air Force in Korea*, pp. 2-4.

34. Max Hastings, *The Korean War*, p. 53; Gordon Rottman, *Inch'on 1950*, p. 38; Volkovskiy, *The War in Korea 1950-1953*, pp. 58-60; Yaremenko, *Russia (USSR) in Local Wars and Regional Conflicts in the Second Half of the 20th Century*, p. 68; and Weathersby, "New Russian

Documents on the Korean War," pp. 39, 40.

35. One of the eleven ROKAF trainers—T-6D #101—was absent that day. The rest of the ROKAF's initial inventory of aircraft was lost—either destroyed or abandoned to invading NKPA forces—during the opening phase of the war. Morozov and Uskov, "On Guard for Peace and Labor", p. 31.

36. Brian Cull and Dennis Newton, *With the Yanks in Korea, Volume One* (London: Grub Street, 2000), pp. 9, 10; Futrell, *The United States Air Force in Korea, 1950-1953*, p. 7; and Robert Jackson, *Air War over Korea*, (New York: Charles Scribner's Sons, 1973), p. 14.

37. The 68th F(AW)S was stationed at Itazuki and had 12 F-82s operational. The 339th F(AW)S was based at Yokota AB, near Tokyo, and immediately dispatched six serviceable F-82s to Itazuke, retaining its remaining four combat-ready aircraft for air defense alert duties protecting the Japanese capital. At Itazuke these were joined by eight F-82Gs from 4th F(AW)S to form the 347th Provisional Fighter Group (All Weather) under Lt. Col. John F. Sharp. This unit controlled F-82 operations over Korea until July 5th when it was inactivated. The 4th and 339th F(AW)Ss returned to Naha and Yokota ABs, and the 68th F(AW)S was attached to the 8th FBW for continued employment, in the ground-attack role, in Korea. Warren Thompson, "F-82: Killers over Korea", *Air Enthusiast*, No. 6, March-June 1978, p. 123.

38. *Ibid.*; Futrell, *The United States Air Force in Korea, 1950-1953*, pp. 8, 9, 12.

39. Futrell, *The United States Air Force in Korea, 1950-1953*, pp. 12, 19; and Thompson, "F-82: Killers over Korea", p. 123.

40. Futrell, *The United States Air Force in Korea, 1950-1953*, pp. 9, 12, 13; Volkovskiy, *The War in Korea 1950-1953*, pp. 59, 60.

41. Cull and Newton, *With the Yanks in Korea*, pp. 11, 12; Robert F. Dorr, Jon Lake, and Warren Thompson, *Osprey Aircraft of the Aces: Korean War Aces*, (Oxford, UK: Osprey Publishing Limited, 1995), p. 7; Futrell, *The United States Air Force in Korea, 1950-1953*, p. 13; Jackson, *Air War over Korea*, p. 15; Thompson, "F-82: Killers over Korea", p. 123; and Warren E. Thompson, "Fighter Combat over Korea, Part 1: First Kills", *Wings of Fame*, Vol. 1, 1995, pp. 6-8.

42. Cull and Newton, *With the Yanks in Korea*, p. 12; Robert F. Dorr, Jon Lake, and Warren Thompson, *Korean War Aces*, (Oxford, UK: Osprey Publishing Limited, 1995), p. 9; Futrell, *The United States Air Force in Korea, 1950-1953*, p. 13; Green and Swanborough, "Ilyushin's Proliferous Shturmovik", p. 26; Jackson, *Air War over Korea*, pp. 15, 16; Thompson, "Fighter Combat over Korea, First Kills", pp. 9, 10; Warren Thompson, "The (Shooting) Stars of Korea", *Air Enthusiast*, No. 21, April-July 1983, p. 21; and Warren Thompson, "Shooting Stars over Korea", *Air Power*, March 1985, Vol 15, No. 23, pp. 24, 55; and Warren Thompson, *F-80 Shooting Star Units Over Korea*, (Oxford, UK: Osprey Publishing Limited, 2001), pp. 36-38.

43. Futrell, *The United States Air Force in Korea, 1950-1953*, pp. 12, 13, and Volkovskiy, *The War in Korea 1950-1953*, p. 63.

44. The B-26B [S/N 44-34379 of the 13th BS(L)] was one of two Invaders badly damaged during the morning's low-level attack on the Munsan railway yards just south of the 38th Parallel. The other returned to Ashiya AB, Japan, damaged beyond repair (DBR) and a third crashed due to weather during its approach to Ashiya. The F-82G [S/N 46-364 of the 68th F(AW)S] was one of eleven CAPING Suwon AB and landed there due to mechanical problems. Futrell, *The United States Air Force in Korea, 1950-1953*, p. 27; and "Korean War Aircraft Loss Database (KORWALD): Date of Aircraft Loss Report", (Washington, D.C.: Defense Prisoner of War/Missing Personnel Office) as posted on Department of Defense, Defense Technical Information Center website: www.dtic.mil/dpmo/korea/reports/air/korwald_date.htm, p. 1.

THE KOREAN WAR AND THE MATURATION OF SAC RECONNAISSANCE





William Cahill

(Overleaf) RB-29C s/n 44-61817 in flight with the circle X of the 91st SRS emblazoned on the tail. The aircraft has over 40 combat missions as depicted by Camera outlines on the left side of the nose. This November, 1950 photo was taken by the squadron aerial photographer using a hand-held aerial photo camera. (Eugene Grace)

THE RELATIONS BETWEEN THE USSR AND THE UNITED STATES... HAD DETERIORATED RAPIDLY AFTER THE CONCLUSION OF HOSTILITIES. IN LATE 1946, THE UNITED STATES ARMY AIR FORCES STARTED TO FLY RECONNAISSANCE FLIGHTS ALONG THE BORDER OF THE SOVIET UNION

The Hollow Force of 1950

The invasion of the Republic of Korea in June 1950, and the subsequent call to arms for U.S. forces came as a surprise to most if not all elements of the new Department of Defense. To the headquarters staff at Strategic Air Command (SAC) in Omaha, Nebraska, it was not only a validation of their call to readiness that started years earlier but also an opportunity to test out their theories on strategic reconnaissance as an integral piece of a bombing campaign.

The foundation of SAC's reconnaissance doctrine rested on experience gained in World War II. The drawdown of forces after the Second World War had a great impact on SAC and it caused the experience the XXI Bomber Command had gained literally months previously to be seemingly forgotten overnight. The few reconnaissance assets that remained available were focused on peacetime activity such as the Post Hostilities Mapping Program. One exception to this was the emerging threat from the communist Soviet Union.

The relations between the USSR and the United States, never extremely cozy during the Second World War, had deteriorated rapidly after the conclusion of hostilities. In late 1946, the United States Army Air Forces started to fly reconnaissance flights along the border of the Soviet Union and its satellite states. Known as the Peacetime Aerial Reconnaissance Program (PARPRO), these missions gradually increased in intensity.¹ This uptick in operations against the Soviet Union was soon causing concern within SAC. In June 1948, Brig. Gen. P.T. Cullen, the commander of the 311th Air Division (AD) and owner of all SAC reconnaissance assets at the time, wrote a letter to Commanding General of SAC expressing concern over the state of the reconnaissance force. He outlined a lack of doctrine and capability, stating that war could erupt at any time and the U.S. required equipment and tactics in place and adjusted to the new era of nuclear war.² Cullen's concerns resulted in the 311th AD staff setting up an operations research staff that eventually worked with Headquarters SAC staff to promulgate new reconnaissance doctrine.³ By the time this doctrine was published, SAC was shifting about its reconnaissance assets.

By late 1949, all SAC reconnaissance assets had been consolidated in three Strategic Reconnaissance Wings, all under the command of Second Air Force located at Barksdale AFB, La.⁴ This shortly changed in April 1950, to each of SAC's three numbered air forces incorporating their own reconnaissance wing and Headquarters SAC establishing a new Reconnaissance Division to oversee all reconnais-

sance operations and requirements.⁵ Though SAC had started to recapitalize its equipment, there were delays in bringing new reconnaissance aircraft into the inventory.⁶ These delays put the burden of day-to-day reconnaissance on the aging RB-29 fleet. In November 1949, troubles with the Wright R-3350 engines that powered the Superfortress finally came to a head with the grounding of the B-29 force until aircraft could be fitted with modified engines. This resulted in a complete shutdown of flight operations in Superfortress-equipped units that lasted over two months.⁷ Particularly hard hit was the 31st Strategic Reconnaissance Squadron (SRS) in Japan, where all aircraft were grounded and aircrew had to borrow flight time with other units.⁸

Pacific Reconnaissance – the Early Years

After 1945, reconnaissance forces in the Pacific consisted of just two squadrons performing dedicated mapping missions in the Philippines and, after October 20, 1947, two squadrons in Japan performing mapping and other reconnaissance duties. These two squadrons were eventually consolidated into one squadron, the soon-designated 31st Reconnaissance Squadron (RS), in May 1949.⁹ While the 31st RS had the capability to perform intelligence collection missions, its emphasis was focused upon mapping to support post-war economic development.

The 31st RS and its predecessors were under the operational control of Far East Command. Established on January 1, 1947, Far East Command (FECOM), Pacific Command (PACOM) and Alaska Command (ALCOM) had purview over portions of the western Pacific.¹⁰ Originally, the Joint Chiefs of Staff (JCS) did not prescribe geographic boundaries to delineate the commands, and their respective commanders were authorized to extend operations into areas normally under the cognizance of another command.¹¹ For reasons of proximity, FECOM became responsible for monitoring China and ALCOM took charge of surveilling the Pacific Soviet Union. FECOM's responsibility included "recon and other operational matters" and that acted as the driver for reconnaissance missions against China before the outbreak of the Korean War.¹²

FECOM reconnaissance missions against China got off to a rough start. The U.S. military had planned to gather mapping data about China under the Post Hostilities Mapping Program to support emergency actions against the USSR, but had to hold off on operations due to the deteriorating political situation. FECOM did what it could under existing restrictions by using RB-29s to fly Signals Intelligence (SIGINT) missions over international waters starting in early 1948, but the intelligence

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(Near right) General Curtis E. LeMay in his headquarters office, circa the Korean War period.

(Far right) A 1949 photo of Strategic Air Command's Deputy Commander, Major General Thomas S Power. Power would play an important role in establishing SAC (X-Ray) in Japan.



take was not enough to keep theater leaders informed of unfolding events.¹³ Political considerations kept aircraft from flying within three miles of the Chinese coast—not an optimum mission profile but better than the twenty miles that was required for flights off the Soviet Union.¹⁴ While the theater CINCs were constrained by these approach limits, precedence was being built for special missions, most requiring Presidential approval, that would actually overfly Chinese and Soviet territory.

Due to the political sensitivity of these missions, little archival material exists to illuminate the approval trail of early overflight missions. The process appeared to start with a request by a theater commander for permission to fly a mission. The request was routed through the JCS who would either forward it to the Secretary of Defense and on to the National Security Council or send it back to the theater commander for further justification. In addition, some “top down” missions were directed because of leadership desires or strategic intelligence gaps. The first recorded overflights were flown by ALCOM's 72d RS against Siberia in August and September 1948. Additional tactical overflights were flown by FECOM's 8th Tactical Reconnaissance Squadron (TRS) RF-80A aircraft against Soviet targets in the months leading up to the Korean War, but these missions do not appear to have been flown on a regular basis.¹⁵

While the 72d RS and 8th TRS were flying Presidentially-approved missions against the Soviet Union, the 31st RS was slowly changing from a peacetime squadron to one prepared for war. In March 1949, the squadron was directed by Far East Air Forces (FEAF) to change priorities from the Post Hostilities Mapping Program to SIGINT. On April 1, 1950, the squadron, along with 72d RS in Alaska, transitioned from their respective theater commands to SAC's 311th AD. Two months later the squadron was renamed the 31st Strategic Reconnaissance Squadron (SRS) to reflect its new mission.¹⁶

Into Combat

On June 25, the North Korean army rolled across the 38th Parallel and into South Korea, initiating the Korean War. On that day, the total of SAC reconnaissance forces immediately available to respond consisted of the five RB-29s of the 31st SRS at Kadena AB on Okinawa.¹⁷ On June 27, President Truman ordered U.S. forces to respond to the communist aggression, an action complicated by the convoluted command and control arrangements for the theater. There was no unifying joint command; instead, Gen. Douglas MacArthur as Far East Commander utilized his Army theater staff at his General Headquarters (GHQ). Far East's air component, FEAF, was under the command of Lt. Gen. George Stratemeyer with bomber and strategic reconnaissance assets consolidated under FEAF Bomber Command (Provisional). FEAF had relative freedom of action but still had to respond to inputs from the GHQ—essentially an Army organization with little understanding of a strategic air war.¹⁸

In response to hostilities, SAC rapidly brought the 31st SRS up to its full authorization of aircraft. In addition to airframes, manpower also surged into theater to support squadron activities. SAC increased squadron manning from twelve aircrews to sixteen and flowed additional ground personnel to service the increased number of aircraft.¹⁹ The growth of the 31st SRS allowed it to cover new wartime requirements in Korea and continue to monitor strategic intelligence targets in the Far East.

By early August, the JCS was asking FECOM to establish “the fact of support to the North Koreans by the USSR or Chinese Communists” but restricted the command to flights over the Korean peninsula and surrounding waters. The orders stated that in no case would the borders of China or the Soviet Union be violated by a FECOM-directed mission.²⁰ Thus restricted, FECOM was con-

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BY THE TIME THE RB-45s WERE OPERATIONAL, THE NORTH KOREAN ARMY HAD BEEN LARGELY DEFEATED BY UNITED NATIONS FORCES. THE WAR'S FIRST FEW MONTHS OF OPERATIONAL MISSIONS WAS SEEN AS A GOOD THING FOR THE FEAF-ASSIGNED SAC PERSONNEL

strained to using SIGINT to assess the wider communist plot. Although 31st SRS RB-29 SIGINT (ECM in 1950s vernacular) aircraft were required to accompany bomber strikes, and to fly over North Korean territory to look for new radars, they also maintained their strategic focus. Aircraft were still regularly tasked to monitor Chinese radars, both in the region of Taiwan to detect massing invasion forces, and elsewhere to monitor general Communist radar deployments. In addition, the RB-29 ECM birds would fly north along the Siberian coast and into the Sea of Okhotsk to monitor Soviet intentions and deployments.²¹

In late September three RB-45C aircraft took up residence with the 31st SRS. Officially designated Detachment 4149A, 84th Bombardment Squadron (colloquially known as “Det. A”), these 91st Strategic Reconnaissance Wing (SRW) aircraft were flown by Tactical Air Command crews for their first few months of operations. Initially deployed to perform “reconnaissance suitability tests” overseas, the aircraft soon became an integral part of SAC’s reconnaissance operations in the Far East.²²

By the time the RB-45s were operational, the North Korean Army had been largely defeated by United Nations forces. The war’s first few months of operational missions was seen as a good thing for the FEAF-assigned SAC personnel. FEAF Bomber Command chief Maj. Gen. Emmett O’Donnell noted in a letter to SAC’s Commander, Gen. Curtiss LeMay, that crews “profited by their experience out here” with improved flying technique and continuous drill in emergency procedures. Even the 31st SRS noted the “great deal of valuable experience” the unit was gaining from the war.²³ By the end of October the JCS had disestablished the no-strike buffer along the border to China and authorized strikes on bridges across the Yalu River. This movement to targets adjacent to China saw the emergence of a new threat in the form of the MiG-15 jet fighter on November 1.²⁴

The 31st SRS witnessed its first air attack on November 9, when two MiG-15s attacked an RB-29. While gunners claimed one of the attacking fighters, the Boeing was so badly shot up that it crashed when attempting to land back in Japan.²⁵ After this attack, RB-29s were banned from the vicinity of the Yalu, and reconnaissance tasking in MiG Alley was taken up by more survivable RF-80s.²⁶ Due to the advance of the UN forces, the reconnaissance tasking—mainly looking for troop concentrations—continued to drop off as there was less and less of North Korea to cover.²⁷ The MiGs continued to make their presence felt and battles erupted between Bomber Command B-29s and MiG-15s as the UN ground forces slowly moved north. All this changed on November 26, when the Chinese Army assaulted southward in earnest.

The War Widens

The attack by the Chinese military caught FECOM off guard, and many assumed it was the

precursor to a widening war in Asia. On November 30, General Stratemeyer sent a personal message to Chief of Staff of the Air Force (CSAF) Gen. Hoyt Vandenberg requesting SAC be given a warning order to be prepared to re-deploy two B-29 bomb groups with “atomic capabilities” to the Far East; Vandenberg replied that all of SAC had already been on “a constant state of readiness for some time.”²⁸ In fact, LeMay took advantage of the situation to relay to Vandenberg that if it came to using atomic forces in the Far East, SAC was the one with the expertise and training to do it. LeMay went so far to state it was in the best interests of the Air Force to ensure SAC was commanding the forces that dropped nuclear weapons and SAC was prepared to deploy an advanced headquarters to the Far East to support such an operation.²⁹

On December 4, Soviet MiG-15s shot down one of Det. A’s RB-45Cs on a routine mission along the Yalu River. The loss highlighted the vulnerability of the unarmed RB-45s and undoubtedly helped bring tensions in the area from a low simmer to a near boil.³⁰ The Joint Chiefs of Staff, sensing these developments, dispatched a message on December 6, to all theater commanders stating “the current situation in Korea has greatly increased the possibility of general war” and commanders “take such action as is feasible to increase readiness without creating atmosphere of alarm.”³¹ In the Far East, General O’Donnell in Bomber Command favored attacking Chinese airfields in Manchuria while MacArthur preferred a broader land offensive into China.³²

It was the threat of all out war with China that would eventually turn the Korean War from a theater sideshow to a strategic security concern. The menace of Chinese air power loomed large against FECOM. FEAF forces were arrayed in an offensive posture across the peninsula with little thought given to an air threat—General Stratemeyer confided to General Vandenberg that he was concerned intruding Chinese aircraft could wreak havoc on his airfields. FEAF was being confronted with “new and grave situations” and the need to find out what was massing across the border grew to immense proportions.³³ If war with China broke out, FEAF needed to know where communist air assets were located so they could undertake an air superiority campaign and target active enemy airfields. In a memo to CSAF Vandenberg, General Stratemeyer wrote the 91st SRS’ RB-29s (the squadron was re-designated from 31st SRS to 91st SRS on November 16) would not be able to conduct missions into communist airspace without a “prohibitive number of fighters” escorting them, asserting that RB-45s and RB-47s were the only aircraft that could complete the mission. Since additional RB-45s were not forthcoming, CG FEAF was “worried as to what we should do” with respect to strategic reconnaissance against communist airfields.³⁴

Before such hostilities broke out, Stratemeyer also needed a capability to look for massing Chinese and Soviet bombers deep inside Manchuria and Siberia. There were two assets in theater that were capable of reconnoitering denied territory—the



1st Lt. Joseph McQuaid, a radar operator with the 91st Strategic Reconnaissance Squadron, watches a radar scope during an aerial photo mission. The angled objects on the floor are film magazines for two of the aircraft's cameras.

IN SAC'S VIEW OF THE WORLD, BOMBER AND RECONNAISSANCE FORCES IT HAD "LOANED" TO THE FAR EAST WOULD FALL BACK UNDER ITS DIRECT CONTROL IN THE EVENT OF OPEN HOSTILITIES WITH CHINA

RB-45 and the RF-80. The RF-80As of the 15th TRS had continued FEAF's on again, off again missions against the Soviet Union after the Korean War had broken out. Senior policy makers in Washington had concluded since the Soviets were an unannounced co-belligerent in the Korean War, they were open to monitoring via aerial reconnaissance. RF-80 missions were flown against the Kurils, Sakhalin and Vladivostok, but they did not provide the deep look that was needed to uncover a massing air threat.³⁵ The RB-45, vulnerable but still more survivable than the RB-29, was being pulled into the war over the peninsula as the only reconnaissance platform that could operate near the MiG threat. To resolve the Soviet threat dilemma, President Truman authorized two overflights of eastern Siberia to locate Soviet bomber forces and assess their disposition. The fourth B-47B was pulled from the production line and modified for this mission, but it would not reach Alaska until August 1951.³⁶ Something needed to be done sooner. Thankfully, a partial solution had landed in the Far East earlier in the month.

On December 1, two modified RB-29s arrived on the ramp of the 91st SRS from the depot at Oklahoma City.³⁷ The two aircraft would be employed on "special photographic" missions utilizing a K-30 camera with a 100-inch focal array lens. This camera had a focal length approximately three times that of existing sensors, giving FEAF the capability to photograph Chinese and Soviet targets from international airspace.³⁸ Test flights in December preceded operational missions along the Yalu River the following month to image the airfield at Antung.³⁹

While plans for cross-border imaging continued at FEAF headquarters, FECOM persevered with the fight against advancing Chinese forces. Despite the best efforts of ground forces and FEAF bombs, the Chinese moved relentlessly southward and soon re-crossed the 38th Parallel.⁴⁰ Reconnaissance task-

ing during this period was focused on fixing enemy ground forces for attack from the air.⁴¹

The 91st SRS was being pulled in two directions. While FEAF was tasking the squadron to find and fix enemy forces for its operational needs, FECOM and the Joint Chiefs were requiring the squadron to function at the strategic level by seeking out any indicators that the Chinese or Soviets were looking to expand hostilities. The stand-off restriction for China, three miles off the coast, had been relaxed in order to collect adequate intelligence, but penetrations into the Chinese interior were still the purview of the JCS.⁴² This was proving to be a challenge for gathering of strategic intelligence. The RB-29 special photo missions, while providing a look across the Yalu River at communist fighter airfields, still could not fill the information gap regarding communist bomber forces and their likely intentions. A reconnaissance capability was still needed to not only look deeper into communist territory, but also to prepare for follow on strikes, if directed.

The push for RB-45C flights into denied territory dated to late November 1950. Spurred by the fear of heavy air attacks from the Chinese, General Stratemyer drafted a message to General Vandenberg requesting CSAF advocacy on behalf of a FECOM request to overfly Manchurian airfields with RB-45s. But CINCFE MacArthur deferred on releasing the message, and the proposal sat unaddressed for another six weeks.⁴³ The concept of overflight, though, had a rebirth in the Pentagon. Soon after the Chinese intervention, the Joint Chiefs opened JCS study 2118 to examine response options to the communist offensive. New national objectives were outlined and operational actions were given to General MacArthur in late January to include lifting the restrictions on "air reconnaissance of China coastal areas and Manchuria."⁴⁴ As in the past, mission approval rested with the President, with nominations coming direct from the CINCFE. The first RB-45 overflights of Manchuria were flown in early February 1951, likely imaging Manchurian airfields out of reach of the special photo RB-29s.⁴⁵ While FEAF was doing all it could to image targets necessary for forecasting and prosecuting a war with China and the Soviet Union, that was not enough to satisfy HQ SAC's desire to build target folders for its own emergency war plan. On April 8, General LeMay sent a personal memo to CSAF General Vandenberg requesting permission to send a liaison officer to FEAF to review their progress to date, and to make arrangements to obtain the desired target coverage as soon as possible with the existing two RB-45s.⁴⁶ LeMay was clearly frustrated with not being in charge of the reconnaissance process upon which his bomber forces would have to rely.

In SAC's view of the world, bomber and reconnaissance forces it had "loaned" to the Far East would fall back under its direct control in the event of open hostilities with China, the Soviet Union, or both; this idea was backed by a Joint Chiefs decision which had exempted SAC forces from theater con-



RB-45 s/n 48-014 "Hot T Trot" and another unidentified RB-45 on the flight line at Yokota Air Base between missions. The "O" within a square on tail denoted assignment to the 91st SRW. (Richard Rodrigues)

THIS AGREEMENT, WORKED OUT IN JAPAN BY SAC VICE COMMANDER MAJ. GEN. THOMAS POWER, ESTABLISHED THE OFFICE OF SAC (X-RAY) AS AN EXTENSION OF HQ SAC

trol. Unfortunately, FECOM did not interpret the JCS decree as such and their Plan 1-50 maintained control of SAC elements for the first five days of the war.⁴⁷ Better coordination was required between Tokyo and Omaha to smooth out the seams between the two commands during the transition from peacetime to global war with the Soviets or Chinese—a seam that was initially seen in December 1950, when global atomic war was threatening. A February 1951, exercise convinced SAC of the essential need to have a headquarters element in an overseas theater, not only to rapidly assume command of SAC elements deploying for wartime missions, but also “for coordination and control of operations to secure desired prestrike target coverage.”⁴⁸ On May 1, General LeMay formalized the chain of command of his forces in the Far East with an agreement between the two commands. This agreement, worked out in Japan by SAC Vice Commander Maj. Gen. Thomas Power, established the office of SAC (X-Ray) as an extension of HQ SAC; this subordinate unit would coordinate nuclear planning for FECOM and command those forces in war. As Power departed the theater to return to Omaha, he recommended dual-hatting CG FEAF BC, Brig. Gen. Robert Terrill, as commander SAC (X-Ray). SAC got what they wanted out of the deal—control of their forces (specifically all of FEAF BC) when their war plan went into effect. More importantly for the bomber plan, SAC would now help choose targets for the theater war plan, an activity previously done solely by FEAF.⁴⁹

This last piece was critical to SAC’s immediate expectations. In mid-March 1951, the JCS issued JCS 2150/11 which directed the study of aerial reconnaissance of China to support attack planning if all out war erupted. FECOM examined what was on hand to initiate the required reconnaissance operations and was underwhelmed with what it found. RF-80s could only hit targets within 400 miles of bases on Taiwan while RB-29s were precluded from further consideration due to the requirement for fighter escort. This left only the two remaining Det. A RB-45s, formally integrated into the 91st SRS since the end of January 1951 as Det. 2, 91st SRW. FECOM recommended an all-out reconnaissance offensive, using a large number of

aircraft on the first day of the reconnaissance campaign to maximize the advantage of surprise. To accomplish such a plan FECOM required “approximately 24 RB-45 aircraft with properly trained crews.”⁵⁰ LeMay’s memo to CSAF on April 8, mentioned earlier was likely also a response to FECOM’s blatant attempt to commandeer his RB-45 fleet. In LeMay’s mind, the professionals from Omaha could handle this mission with two RB-45s, and his opposition likely played into the delayed response from the Joint Chiefs. Six weeks later they finally answered FECOM’s request. The simple six line response stated no additional RB-45s were available, and “in view of political implications and security desired, JCS believe that program could be accomplished by infrequent flights made by individual aircraft.”⁵¹

FECOM continued to nibble at the edges of the reconnaissance approval process. With authority for strategic-level overflights held back by Washington, the FECOM staff continued to press for delegation of operational-level reconnaissance to the theater. On April 27, FECOM leaders used the results of a command-level exercise in which FEAF assets were “destroyed” by a communist surprise air attack to press FECOM’s need for continual surveillance of Chinese airfields of interest.⁵² FECOM requested JCS authorization to strike Chinese air bases in Manchuria and the Shantung Peninsula in the event of a major enemy air attack from outside Korea. In addition, FECOM commander Gen. Matthew Ridgway requested authority to surveil those same bases to preclude being caught off guard. The JCS responded the next day granting such authorization for retaliatory strikes and for reconnaissance of enemy air bases, but requested that, if practicable, the flights should be made at high altitude and “as surreptitiously as possible.”⁵³

With permission to overfly of parts of China in hand, FECOM set up a process for conducting such missions. Based on JCS guidance, individual mission approval rested with General Ridgway. The Chief of FEAF Intelligence would nominate targets that 1) fulfilled theater requirements of assessing Chinese force readiness 2) monitored status of communist airfields 3) satisfied SAC target development.⁵⁴ Unfortunately for Omaha, SAC was the lowest priority. On June 6, Col. Winton Close of SAC (X-Ray) staff complained to SAC Vice-Commander, General Power, that SAC was still getting “short-changed” by FEAF intelligence staff doing what he called “operations business”—the choosing of reconnaissance targets; only two SAC target folders had the appropriate imagery while another 13 had “limited” radar scope photography available. Radar scope photography was an essential element of any target folder for SAC operations in the Far East. Prevailing weather almost guaranteed cloud cover over targets and the B-29 crews of FEAF BC tasked with the initial strikes were equipped with a poor bombing-navigation radar in the APQ-13 and were not regularly practicing their requisite radar skills. SAC needed the photos to fulfill its wartime tasking. Close continued to work with FECOM staff and



The busy Yokota Air Base flight line of the 91st SRS in summer of 1951 – the shark-mouthed nose of an RB-45 guards a line of RB-29s and RB-50s background. (Richard Rodrigues)

IT WAS THIS VERY “HOT WAR” THAT CONTINUED TO WORRY THE FEAF LEADERSHIP....LT. GEN. OTTO P. WEYLAND ASKED SAC CG LEMAY TO DISPATCH ADDITIONAL RB-45 AIRCRAFT TO HELP PREPARE FOR “ALL OUT WAR”

collection against SAC targets slowly increased through the summer of 1951, the problem eventually being worked out by fall of that year.⁵⁵

With Chinese targets finally being imaged, SAC worked to address some of the inherent limitations of the RB-45 force. The RB-45s in Japan did not have the range necessary to overfly targets deep in China, let alone the Soviet Union. SAC quickly worked to resolve the issue by deploying a KB-29P tanker to Guam in early July, the RB-45 crews working hard to train in air refueling techniques so as to enable such long-range missions as they were approved.⁵⁶ The geographic limitations of FECOM’s authorities, though, would not allow such inland missions against China, even though they involved critical targets for SAC’s war plan. A request from FECOM to the JCS to allow collection against all of SAC’s China targets was transmitted in mid-July but Washington apparently deferred, preferring not to widen the already expanding reconnaissance “hot war” against China and the Soviet Union.⁵⁷

It was this very “hot war” that continued to worry the FEAF leadership. On July 13, FEAF Commander Lt. Gen. Otto P. Weyland asked SAC CG LeMay to dispatch additional RB-45 aircraft to help prepare for “all out war” because his RB-29s were too vulnerable to fly over Manchuria, China and Russia. Ten days later LeMay, probably annoyed about receiving the same question he had answered three months prior, outlined the status of his small RB-45 fleet. That said, he did dispatch one additional aircraft to FEAF in October.⁵⁸ Help for the stressed SAC reconnaissance fleet, though, was on the way.

As SAC started to expand its forces in early 1951, it looked to the west and implemented policies to support the FEAF in the fight over the peninsula. In April 1951, SAC established a rotation policy for its bomber and reconnaissance crews on duty with FEAF and it set aside personnel to be used as attrition replacements. Most of the expanded manpower available to SAC, though, was being poured into a larger reconnaissance force.⁵⁹ These expanded reconnaissance forces were needed to meet a

renewed mandate from SAC regarding electronic warfare and its necessary partner, signals intelligence.

On February 26, 1951, SAC issued an Electronic Countermeasures Policy, which posited a peacetime need for a “vigorous electronic reconnaissance effort.” This requirement drove the equipping of the Puerto Rico-based 343rd SRS with RB-50G aircraft specifically designed for the worldwide signals intelligence mission. Fifteen RB-50B photo reconnaissance aircraft were returned to Boeing for conversion to RB-50Gs, with the first three aircraft arriving at the squadron in July 1951.⁶⁰ In August 1951 the first 343rd SRS RB-50G arrived in the Far East on a 90 day rotational basis with the 91st SRS; it was joined the following month by a second aircraft and crew. Tasked to monitor communist air defenses, these aircraft were SAC’s premier SIGINT platform and their deployment showed the command’s growing commitment to FEAF—and LeMay’s ability to take advantage of an opportunity to chart enemy air defenses for his bomber crews.⁶¹ The long legs of the RB-50s would enable them to fly missions from Ladd AFB, Alaska to monitor the Kamchatka Peninsula, and from Kadena AB, Okinawa to monitor littoral China. The RB-50G aircraft were not the only arrivals at Yokota in summer 1951. Three KB-29P aircraft also joined the squadron in September to experiment with aerial refueling to extend the range of theater reconnaissance assets and fighter aircraft, an expansion of the work done with the single KB-29P a few months prior.⁶²

The 91st SRS’ air war continued to evolve with new airframes and missions, even as the ground war began to stabilize. What followed after June 1951, was a war of attrition fought mainly along the 38th Parallel. The air war followed a similar evolution, with Soviet and Chinese air forces arrayed along the Yalu in a defensive manner with radar nets and airfields set up to confront the UN air forces that ranged over North Korea.⁶³ The RB-50Gs had arrived just in time to help sort out this new battle of technology.

While the RB-50s were initially an expansion of SAC support to the tactical fight, the summer of 1951, marked a transition of the 91st SRS from the operational level of war back to the strategic. With most North Korean industry and fixed facilities destroyed, FEAF Bomber Command targets tended to be tactical in nature such as troop concentrations or supply depots—a perfect match for FEAF’s tactical reconnaissance squadrons. In August the squadron RB-29s started to transition to a new mission—maritime surveillance. Charged with the daily surveillance of shipping along the Soviet coast from the Vladivostok area north, the mission was seen by FECOM as vital to monitoring Soviet capabilities and intentions. Although lacking the appropriate training and optimal equipment, the 91st SRS did possess the long range aircraft necessary for the mission. This came at a time when the RB-29 was becoming less and less capable over Korea due to the growing communist air threat.⁶⁴



The winter weather conditions in Japan were far from ideal for maintaining aircraft on the flight line. Here one of the 91st SRS RB-29s with the unit's circle "X" marking on the tail is having snow removed by ground crew. Circa 1951 - late 1952, Yokota Air Base, Japan. (Pete Walker)

THE TOTAL NUMBER OF 91ST SRS SIGINT MISSIONS FLOWN PER MONTH CONTINUED TO DECLINE THROUGH THE WINTER OF 1951 AND INTO THE SPRING MONTHS OF 1952

By November 1951, FEAF BC had transitioned many sorties to the hours of darkness in order to avoid the increasing threat from MiG fighters. The Communists slowly adjusted their defenses to counter this tactic by fielding radar-directed searchlights and night fighters.⁶⁵ A November 9 daylight attack on an RB-45, by nine MiG-15s near Haeju, influenced the FEAF to restrict RB-45 flight operations from areas where the aircraft was considered vulnerable. Since June 1, FEAF had directed that all aircraft operating in "MiG Alley" during the day required a fighter escort. Now RB-45s had to have a fighter escort to operate north of 38-30N and west of 127 East, while RB-29s could not operate in this area even with a fighter escort.⁶⁶

At the end of November, the restrictions went into effect and the impact on the 91st SRS was dramatic. For the next two and a half months the RB-45s shouldered the burden of flying missions over Korea while the RB-29s concentrated on Sea of Japan surveillance missions. It was not until February 1952, that the RB-29s returned to the peninsula—and even then, the missions were flown at night using photo flash bombs. Even the RB-45s were being pushed off the Peninsula—Det. 2 voicing its concerns to FEAF about daylight missions to MiG Alley, noting the RB-45 was "not capable of making successful daylight penetrations into enemy territory." However, the RB-45 would remain a day-only asset longer than the RB-29, waiting until April 1952, for bomb bay modification kits to enable night photo flash operations. With that improvement, Det. 2 resumed flying missions up along the Yalu River. The RB-29's cameras, built for use in the daylight, were never really up to nocturnal missions no matter what tweaks the 91st SRS did to them. The RB-29 had become increasingly marginalized over the Korean peninsula due to the threat profile and the additional need to fly the maritime surveillance missions in the Sea of Japan.⁶⁷ The default answer for FEAF strategic

reconnaissance over the Peninsula was turning out to be the RB-45.

While the United Nations ground forces were locked in a death struggle with Chinese and North Korean armies on the peninsula, SAC reconnaissance forces continued their monitoring of the greater communist threat in the Far East and northern Pacific. In addition to the RB-29 maritime surveillance sorties against the Soviets, the RB-45s of Det. 2 continued their itinerant overflight missions. Two Presidentially-approved missions were flown over littoral China in September 1951.⁶⁸ The pressure against Beijing continued in December when an RB-29 with a K-30 camera was dispatched to Clark Air Base, Philippine Islands, to fly four missions against coastal China.⁶⁹

1952—The War Drags On

As the New Year dawned, the relationship between SAC and FECOM was being continually tested as both parties sought a balance between the war at hand and the war around the corner. As SAC refined its Emergency War Plan, it looked to use the 91st SRS for target development and planned to task FEAF with providing RF-80 and RF-86 aircraft to perform battle damage assessment after the initial strikes. Though not entirely palatable to FECOM, SAC had JCS tasking to back them up and many if not all SAC units were exempted from theater plan tasking in JCS' February Unified Campaign Plan 1259/27.⁷⁰ FECOM took it all in stride as the command was making use of SAC assets to monitor the ever-growing monolithic communist threat in the western Pacific.

The total number of 91st SRS SIGINT missions flown per month continued to decline through the winter of 1951 and into the spring months of 1952, the average dropping from ten flights per month to five. As the squadron RB-29 ECMs departed for depot work, the SIGINT gear was removed from the aircraft and stored for future use, leaving the RB-50Gs to shoulder the SIGINT tasking.⁷¹ The majority of the missions were still flown against Korean targets, though by May 1952, the weight would switch to missions against the Soviet Union. While the aircraft and crews were on a rotational basis, the two aircraft that had started the tour had grown to three by the beginning of 1952. FEAF saw a need to stabilize and even increase the number of missions, and it requested an additional two aircraft in February. SAC was unable to support this burden, facing what the Air Force characterized as a "critical aircrew problem" with SAC's ferret squadron, the 343d SRS. Although various interim fixes were tried, by the end of 1952 the 91st SRS was back to three RB-50Gs.⁷² Even with the RB-50G rotational fleet, the squadron still maintained at least one RB-29 ECM until the end of the war.

The 343d SRS was a microcosm of what was going on with all of SAC. By mid-1952 the command was in the middle of an expansion program that started the year prior. An effort was being made to

expand the force while standardizing equipment with the B-36, B-47 and KC-97. Unfortunately, the command was able to acquire aircraft much faster than it could generate airmen to fly and maintain them; by mid-1952 SAC found itself in a manpower crunch. Everything from low re-enlistment rates to under-planned manpower charts was impacting the number of combat crews available for deployment. Reserve personnel mobilized for the Korean War were lost during the latter part of 1952, decreasing combat ready reconnaissance crews across the command from 171 in July to 158 in December. Perturbations continued into early 1953, when planned USAF (and SAC) manpower growth was slashed by the incoming Eisenhower administration.⁷³ SAC did the best it could to balance theater needs against national requirements but its personnel limitations were still not resolved by mid-1953.

Manpower strains notwithstanding, theater and national interest in the Soviet Union continued to demand the attention of the 91st SRS and other SAC reconnaissance crews in the western and northwestern Pacific. Starting in March, special photo and SIGINT missions were flown against the Kuriles and the Kamchatka Peninsula. Over the next three months nine 91st SRS missions would be flown, along with additional missions flown by the 38th SRS out of Alaska. The photographic missions confirmed the Soviets were staging Tu-4 Bull bombers through these bases, thereby gaining the ability to strike U.S. cities. Once the basing location was known, SAC reconnaissance missions could “fix” the Soviet bombers in times of increased hostilities for counter-force strikes by SAC bomber assets.⁷⁴

While special photo missions ended in May 1952 and did not resume until January 1953, FEAF-CG “Special Mission” RB-50G SIGINT missions against Pacific Russia increased.⁷⁵ The 91st SRS was proving to be a key strategic asset in the western Pacific; the same could not be said for its role in the Korean War.

The continued inadequate performance of the RB-29 in the night photographic role, coupled with its proven vulnerability to MiG-15s, forced the Det. 2 RB-45s to continue to shoulder the burden for most of the 91st SRS’ peninsula reconnaissance program. The jets of Det. 2 were also being pulled to fly their special missions, and FEAF BC had to outline a priority schema to ensure their proper usage. Accordingly, the Det. 2 aircraft were given the following missions in order of precedence: national/FECOM-directed, FEAF CG-directed, bomb damage assessment, FEAF BC-directed, and target development.⁷⁶ Clearly, the war in Korea was not the focus of the SAC’s reconnaissance squadron.

The FECOM plan to image MiG airfields across the Yalu continued on through 1952. Not only were the Det. 2 RB-45s tasked for the mission—quite often the 15th TRS was tasked with the airfield surveillance. The 15th TRS would also fulfill some of the theater-requested, Presidentially-approved missions over Manchuria, China and Pacific Russia.⁷⁷ While the RF-80s and RF-86s of the 15th

TRS provided adequate imagery for indications of an impending attack, they did little to fill the SAC target folders with radar scope imagery, a function only the Det. 2 aircraft could fulfill. Even with pressing strategic requirements, RB-45 and RB-29 special mission activity appears to have stood down in the summer months, likely due to the shorter nights impacting overflight survivability. With the waning daylight hours of fall activity once again picked up for the RB-45 flight crews.

But kicking off the season was something out of the ordinary: a flight by a visitor from the states—a specially-configured B-47B. Project 52 AFR-18 had its birth in the hard days of December 1950. After production challenges, aircraft maintenance issues, and just plain bad luck the special mission was finally flown on October 15, 1952. President Truman approved the mission on August 12, against a requirement to confirm staging of Soviet bombers in Far East. The aircraft penetrated deeply into Siberian airspace and brought back the required intelligence. Three days later a Det. 2 RB-45C tried to overfly Vladivostok, but it had to abort its mission due to “unfriendly air activity”—likely the Soviets not wanting to allow two overflights in the same week. Two other flights would be flown by Det. 2 aircraft that month and one the following month, the majority to China.⁷⁸

SAC transitions to the strategic fight

The dawn of the New Year did little to improve the threat situation facing Far East Air Forces. The air threat confined the RB-29 to night operations over the Peninsula—an operational environment to which it was still ill suited due to inadequate sensors. Even daylight RB-45 missions were confined to an area of the Peninsula where the threat was minimal to the jet bomber. Consequently, much of the intelligence supporting the bombing campaign came from the 67th Tactical Reconnaissance Wing and its reconnaissance fighters.⁷⁹ As ineffective as the 91st SRS may have seemed to FEAF BC, FECOM leadership appreciated their strategic reconnaissance capability and “special mission” tasking continued to flow in.

In early February FEAF CG Weyland floated the concept of conducting reconnaissance flights against airfields, heavy industry, naval facilities and other military targets in the Primorsky Krai or Maritime Military District of the Soviet Union. The commander’s intent was to use night overflights to obtain radar scope photography of targets that were on SAC’s war plan, and to develop “valuable intelligence on Soviet air defense capabilities.” He anticipated four to six missions would be required to obtain the necessary coverage. LeMay concurred with the concept, but it appears the JCS had little appetite to further poke the Soviet bear as flights along the coast and over islands were already stirring up enough interest.⁸⁰

After apparently taking off the month of January, the squadron was back in the overflight business again in February with two missions to



Preflight on RB-29 s/n 44-61810. "1810" was one of the "special photo" birds assigned to the 91st SRS' "C" Flight and its K-30 camera port is visible under the prop blade of #2 engine. (Bill Welch, The Cold War Museum, Vint Hill, Virginia)

WITH HOSTILITIES OVER IN KOREA, SAC ACTED QUICKLY TO REGAIN CONTROL OF ITS ASSETS

THE KOREAN WAR EXPERIENCE WAS THE TURNING POINT FOR SAC RECONNAISSANCE

airfields near Shenyang, China.⁸¹ The overflight tempo continued in April with at least three China missions and followed into May with two more missions and additional sorties in the months to follow targeted Sakhalin Island—with fighter escort for good measure.⁸² As the squadron was starting to wind down the air war over North Korea, a new capability appeared on the scene—airborne communications intelligence (COMINT).

Up until this point, RB-50G and RB-29 ECM aircraft had only been intercepting enemy radar signals—collecting what is properly termed electronic Intelligence or ELINT. Though a ground-based COMINT capability had existed for much of the war, SAC reconnaissance aircraft flying off China and the Soviet Union did not have the ability to collect enemy communications. In April, the 91st SRS started to fly RB-50G missions with Air Force Security Service linguists on board to monitor enemy communications. Not only did this provide insight into communist operations and command and control but it also provided a degree of self protection to the aircraft through divining enemy intent. Two missions against the Soviet Sakhalin Islands and two missions monitoring the North Koreans had airborne linguists on board to monitor enemy radio traffic.⁸³ This capability continued through the end of hostilities, and it set the stage for future Cold War missions.

As the war was winding down in Korea, SAC was just starting to rationalize its jet reconnaissance force, beginning with the long-awaited arrival of the RB-47. Although FEAF had been pushing hard for RB-47s to replace the Det. 2 RB-45s, SAC thought otherwise. In a January 7, memo to CSAF Gen. Nathan F. Twining, General LeMay expressed his concern over the deployment of his newest reconnaissance platform. The B-47B overflight six months prior notwithstanding, CG SAC felt that exposure of the RB-47 to combat would give "the enemy valuable info on its performance" and that any loss over enemy territory would compromise the "SAC atomic force". General Twining concurred

with SAC's position, and he ordered SAC to increase Det. 2 from two to four RB-45 aircraft. SAC was required to maintain this force structure in the Far East until the 91st SRW completed transition to the RB-47 in October 1953.⁸⁴ LeMay tried to fight the ruling, citing RB-45 tail turret upgrades occurring at the 91st SRW, but he was over-ruled, and all four aircraft were on the ramp at Yokota the following month.⁸⁵ The truce ending Korean hostilities was signed on July 27, but the war only continued for the 91st SRS. There was no planned let up on any of the special reconnaissance missions or the maritime surveillance sorties flown against the Soviet Union. Just two days after the armistice was inked, an RB-50G flying a SIGINT mission in international waters off Vladivostok was attacked and shot down by two Soviet MiG-15 fighters.⁸⁶

With hostilities over in Korea, SAC acted quickly to regain control of its assets. Using the loss of the RB-50G in late July as a lightning rod, LeMay expressed concern to CSAF Twining that his forces were not being taken care of by FEAF BC, an organization charged with providing bomber and reconnaissance assets between California and North Africa. LeMay felt that that atrophy of reconnaissance crew gunnery skills, along with a poor understanding of operational safety, had contributed to the loss of the 91st SRS RB-50. As with his atomic forces, LeMay wanted to maintain control of his reconnaissance forces when they were deployed overseas.⁸⁷ Earlier in the month LeMay had written to the VCSAF extolling the value of having SAC perform all pre-hostility special reconnaissance; this action completed the circle and showed his desire to keep all strategic reconnaissance—peacetime and wartime—under the control of Omaha.⁸⁸ LeMay lost the fight with the 91st SRS transferring to FEAF effective August 15, 1953. Within fifteen months the squadron was back in SAC's arms, and soon SAC won the war to control all strategic reconnaissance—but that's another story.⁸⁹

Summary

The Korean War experience was the turning point for SAC reconnaissance, marking a transition from a hollow force to a seasoned force made ready for combat and capable of supporting national missions. SAC Commander General Curtiss LeMay confronted the Korean War like any leader, seeing not only the risks posed to his strategic forces but also the opportunity available to expand and season his airmen. The risks were many—SAC had to juggle the challenge of managing simultaneous hot and cold wars—deploying forces to fight with FEAF while preparing for a potential nuclear exchange with equipment upgrades, training and peripheral/overflight missions. SAC walked a fine line between equipping FEAF with assets and keeping a reserve available for a possible expansion of hostilities. General LeMay provided manpower and aircraft to FECOM by rapidly augmenting the 31st SRS with manpower and aircraft at the outbreak of



1st Lt. Denver Cook and his crew pictured on their return from the last combat mission flown over Korea before the signing of the truce in July 1953.

hostilities. But he also kept his new RB-47s out of theater and minimized the RB-45 and RB-50s detachments to maintain SAC's national strategic force. LeMay made a conscious decision to keep the 91st SRS—the only SAC reconnaissance squadron fully deployed to Korea—equipped with the obsolescent RB-29 as CONUS-based units transitioned to the RB-50 and RB-47. The balance was a delicate one, with SAC being overturned on more than one occasion and ordered to support the war in Korea by the JCS.

Faced with supporting what he viewed as a peripheral effort to SAC's primary strategic mission, LeMay made the best of the situation by allowing his crews to gain combat experience through a rotation policy. The results provided SAC with insights into the wartime employment of strategic reconnaissance.⁹⁰ Valuable lessons learned while operating against the Chinese and Soviet threats were also gained during top secret penetration flights over China and the littoral USSR. Discoveries regarding the ability of communist GCI controllers to work night intercepts were fed back directly to the SAC Director of Operations

(Right) 91st SRS aircrew inspecting personal survival equipment before boarding their RB-29 for a mission over Korea. May 1951, Yokota AB, Japan.

for tactics adjustment for not only reconnaissance wings but also SAC's bomber fleet. SAC staffers also gained wartime experience by routinely deploying to FEAF to help with solving specific problems.⁹¹ Even better, SAC was able to develop and test the employment of a theater liaison staff in the form of SAC (X-Ray), an element that enabled SAC to better integrate with other commands, and to operate SAC forces more smoothly with other theater assets.

Finally, the Korean War allowed SAC to gather intelligence for its Emergency War Plan that it would not have been able to obtain otherwise. Looser restrictions on overflights enabled SAC to gather material for its target folders, with SAC (X-Ray) advocating for overflights with FECOM that helped fulfill SAC's strategic intelligence needs. Indeed, by August 1953, SAC had completed the production of all war plan target folders for the Far Eastern theater.⁹²

Today's airmen should take note of this operational and strategic integration. In many instances, those in the areas of hostilities are too focused on the tactical day to day fight to see strategic opportunities available for the taking. While it is easy to be distracted by the war that is, LeMay and SAC showed that making an extra effort to focus on the big picture can produce valuable insights and intelligence with only a little extra effort. Many times the opportunity is there for the taking and only the question needs to be asked. ■



NOTES

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3. Strategic Air Command. History 1949, Volume 1. 10 May 1950, page 121. Air Force Historical Research Agency, K416.01 V.1, January - December 1949, Maxwell AFB, AL.
4. Strategic Air Command. History 1949, Volume 1. 10 May 1950, pages 7-8. Air Force Historical Research Agency, K416.01 V.1, January - December 1949, Maxwell AFB, AL.
5. Headquarters Strategic Air Command. Topical Study

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 8. 31st Strategic Reconnaissance Squadron, Photo. Unit

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10. Ronald Cole, Walter Poole, James Schnabel, Robert Watson and Willard Webb, *The History of the Unified Command Plan, 1946 – 1993* (Washington, DC: Joint History Office, 1995), p. 14
11. Cole et al, p. 19
12. CINC Far East Command. Message to the JCS. Message Number C 59152. 111205Z Dec 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 3
13. Joint Intelligence Committee. Report – Re-Establishment of Certain Phases of the Chinese Photographic Program Under the Post Hostilities Mapping Plan. 8 February 1949. RG 218, UD#5, JCS Decimal File, 1948-50, Box 28; Acting Secretary of State. Memo to Secretary of Defense. No Subject. May 23, 1949. RG 218, UD#5, JCS Decimal File, 1948-50, Box 28; Dir of Intel, DCS/OPS. Memorandum for Record . Subject: Action Items from Verbal Report given by SAC A-2 to Ai Staff A-2. April 1948. TS Control 2-1137, Folder 6 - File 2-1100 to 2-1199, Box 40, Entry 214, Intel General File, Jun 45 – Dec 54, RG 341, National Archives
14. Joint Intelligence Committee. Report – Re-Establishment of Certain Phases of the Chinese Photographic Program Under the Post Hostilities Mapping Plan. 29 July 1949. RG 218, UD#5, JCS Decimal File, 1948-50, Box 28; CINC Far East Command. Message to the JCS. Message Number C 52314. Sep 4, 1949. RG 218, UD#5, JCS Decimal File, 1948-50, Box 28
15. Walter J. Boyne, “The Early Overflights,” *Air Force Magazine*, June 2001, Vol. 84, No. 6. The 46th RS was redesignated the 72nd RS on 13 Oct 1947 and transferred from SAC to ALCOM.
16. 31st Strategic Reconnaissance Squadron, Photo. Unit Historical Report, 1 April through 31 August 1949. September 1949, p. 1-2, 14-15. Air Force Historical Research Agency, SQ-RCN-31-HI, 1 April 1949 – 31 Aug 1949, Maxwell AFB, AL. The RB-29 ECM or SIGINT aircraft had a checkered background. The two aircraft were originally hand-modified in theater in late 1948 to carry one electronic warfare officer (countermeasures operator in that day’s vernacular) who operated APR-4 and APR-9 receivers; in 1949 HQs FEAF had Tachikawa Air Depot in Japan update the aircraft to carry four EWOs, additional receivers, pulse analyzers and direction finding antennas – necessary items to plot radars and develop an order of battle. See Alfred Price, *The History of US Electronic Warfare, Volume 2* (Washington: The Association of Old Crows, 1989), p. 43-44.
17. Headquarters Strategic Air Command. Topical Study Monographs – 1950. Tab C – Reconnaissance Activities, Jan – June 1950, p. 8-9. Curtiss LeMay Papers, B9151, Box 196, Manuscript Division, Library of Congress
18. “Steadfast and Courageous”, p. 11. FEAF Bomber Command (BC) Intelligence Directorate Targets Analysis Section initially worked directly with the squadron to provide imagery for target folder development. See Far East Air Force Bomber Command. Narrative History, N.d., p. 135-136. Air Force Historical Research Agency, K713.01-1, 4 July – 31 October 1950, Maxwell AFB, AL.
19. 31st Strategic Reconnaissance Squadron, Photo. Historical Summary, Korean Campaign, 25 June through 31 October 1950. November 1950, p. 47. Air Force Historical Research Agency, K-SQ-RCN-31-HI, 25 June - Oct 1950, Maxwell AFB, AL.; Strategic Air Command. History July-December 1950, Volume 2. N.d., p. 24. Air Force Historical Research Agency, K416.01 V.2, July-
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22. John Fredriksen, *The B-45 Tornado* (London: McFarland & Company, Inc., 2009), p. 64-68.
23. O’Donnell to LeMay. Personal message from CG FEAF BC to CG SAC. 9 September 1950. Curtiss LeMay Papers, B7136, Box 196, Manuscript Division, Library of Congress
24. “Steadfast and Courageous”, p. 21-22.
25. Strategic Air Command. History July-December 1950, Volume 2. N.d., p. 25. Air Force Historical Research Agency, K416.01 V.2, July-December 1950, Maxwell AFB, AL.
26. Robert Jackson, *High Cold War* (Somerset: Patrick Stephens, 1998), 41
27. Strategic Air Command. History July-December 1950, Volume 2. N.d., p. 25. Air Force Historical Research Agency, K416.01 V.2, July-December 1950, Maxwell AFB, AL.
28. Stratemeyer to Vandenberg. Personal message from CG FEAF to HQ USAF. 30 November 1950. Hoyt S. Vandenberg Papers, November 1950 Folder, Box 86, Manuscript Division, Library of Congress; Vandenberg to Stratemeyer. Personal message from HQ USAF to CG FEAF. 30 November 1950. Hoyt S. Vandenberg Papers, November 1950 Folder, Box 86, Manuscript Division, Library of Congress
29. LeMay to Vandenberg. Personal message from CG SAC to CSAF. 2 December 1950. Hoyt S. Vandenberg Papers, December 1950 Folder, Box 86, Manuscript Division, Library of Congress.
30. Fredriksen, p. 70; Far East Air Force Bomber Command. Narrative History, N.d., p. 220-222. Air Force Historical Research Agency, K713.01-12, 1 Feb – 30 June 1951, Maxwell AFB, AL.
31. JCS to Theater CINC’s and SAC HQs. 6 December 1950. Curtiss LeMay Papers, B8583, Box 196, Manuscript Division, Library of Congress
32. “Steadfast and Courageous”, p. 24-26.
33. Stratemeyer to Vandenberg. Personal message from CG FEAF to HQ USAF. 29 November 1950. Hoyt S. Vandenberg Papers, November 1950 Folder, Box 86, Manuscript Division, Library of Congress
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36. R. Cargill Hall, “Early Cold War Overflight Programs: An Introduction,” in *Early Cold War Overflights, 1950-1956*, ed. R. Cargill Hall and Clayton Laurie, 2 vols. (Washington, D.C.: Office of the Historian, National Reconnaissance Office, 2003), vol. 1, p. 3
37. Stratemeyer to Edwards. Personal message from CG FEAF to HQ USAF. 21 Nov 1950. Hoyt S. Vandenberg Papers, November 1950 Folder, Box 86, Manuscript Division, Library of Congress.

38. For reference, the “normal” cameras on an RB-29 were the K-17 with a 6 inch focal length and the K-38 with a 36 inch focal length. Supplement to the History of the 91st Strategic Reconnaissance Squadron, Photo (M). 1 May through 31 May 1951. June 1951, p. 4-5. Air Force Historical Research Agency, K-SQ-RCN-91-HI, May 1951, V. 2, Maxwell AFB, AL.
39. “William F. (Bill) Welch 31st and 91st SRS Recollections” on “B-29s over Korea” webpage; available at <http://b-29s-over-korea.com/billwelch/29wfw.htm>; accessed 13 August 2011; 91st Strategic Reconnaissance Squadron, Photo. Unit Historical Report, 1 November through 31 December 1950. N.D., p. 17. Air Force Historical Research Agency, K-SQ-RCN-91-HI, Nov-Dec 1950, Maxwell AFB, AL.; 91st Strategic Reconnaissance Squadron, Photo. Unit Historical Report, 1 January through 28 February 1951. N.d., p. 18. Air Force Historical Research Agency, K-SQ-RCN-91-HI, Jan-Feb 1951, Maxwell AFB, AL. This was not the first overseas deployment of a long focal length camera to the Pacific theater. In mid-1948 experimental 48 and 100-inch focal length cameras were deployed to Alaska for use against Soviet airfields on the Chukotski Peninsula along the Bering Strait. Though FEAF asked for this capability in late 1948, these one-off prototypes were not available for further deployment. Though the 48 inch camera was expected to go in production in early 1950, the 100-inch camera was going to take longer to get into service. The December 1950 deployment of the K-30 was the first time a long focal length camera was deployed to FEAF. See: Dir of Intel, DCS/OPS. Staff Package for SecAF. Subject: Photographic Coverage – Chukotski Peninsula Airfields. 7 May 1948. TS Control 2-1560, 2-1432 Folder 3, Box 41, Entry 214, Intel General File, Jun 45 – Dec 54, RG 341, National Archives; Dir of Intel, DCS/OPS. Memorandum to Headquarters, Alaska Air Command. Subject: Importance of Long-Range Photography to Alaskan Theater. 15 Dec 1948. TS Control 2-5476, Folder 8, Box 43, Entry 214, Intel General File, Jun 45 – Dec 54, RG 341, National Archives; Dir of Intel, DCS/OPS. Staff Package for DCS/OPS. Subject: Intelligence Justification for Off-Shore Reconnaissance. 20 Dec 1948. TS Control 2-5375, Folder 6, Box 43, Entry 214, Intel General File, Jun 45 – Dec 54, RG 341
40. “Steadfast and Courageous”, p. 26-28.
41. Strategic Air Command. History July-December 1950, Volume 2. N.d., p. 26. Air Force Historical Research Agency, K416.01 V.2, July-December 1950, Maxwell AFB, AL.
42. Joint Chiefs of Staff. Message to CINC Far East Command. Message Number JCS 83339. 122252Z Feb 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 9
43. William Y’Blood, editor, *The Three Wars of Lt. Gen. George Stratemeyer – His Korean War Diary* (Washington: Government Printing Office, 1999), p. 314, 30 November 1950 diary entry.
44. Joint Chiefs of Staff. Message to CINC Far East Command. 22 January 1951. Folder 2, Box 14, Entry 381 - Far East, CJCS Geographic File, 1951-53, RG218, National Archives
45. Fredriksen, p. 74-75. By 1 Mar 1951 FEAF Deputy For Intel was generating target lists of airfields to strike in event of general war and noted that airfields in Sakhalin area, Manchuria and China all had “radar scope material available. See Briggs to LeMay. Personal message from CG FEAF BC to CG SAC. 1 March 1951. Curtiss LeMay Papers, B10122, Box 197, Manuscript Division, Library of Congress.
46. LeMay to Vandenberg. Personal message from CG SAC to CSAF. 8 April 1951. Curtiss LeMay Papers, B10526, Box 197, Manuscript Division, Library of Congress
47. LeMay to Briggs. Personal message from CG SAC to CG FEAF BC. 28 February 1951. Curtiss LeMay Papers, B9994, Box 197, Manuscript Division, Library of Congress
48. Anderson to LeMay. Personal message from CG 8th ADVON, England to CG SAC. 3 February 1951. Curtiss LeMay Papers, B9590, Box 197, Manuscript Division, Library of Congress
49. Briggs to LeMay. Personal message from CG FEAF BC to CG SAC. 1 March 1951. Curtiss LeMay Papers, B10122, Box 197, Manuscript Division, Library of Congress ; LeMay to Briggs. Personal message from CG SAC to CG FEAF BC. 21 March 1951. Curtiss LeMay Papers, B10311, Box 197, Manuscript Division, Library of Congress; Power to LeMay. Personal message from SAC element in Japan (SAC X-Ray) to Commander SAC. 2 May 1951. Curtiss LeMay Papers, B10856, Box 197, Manuscript Division, Library of Congress. The differing views between Far East Command and SAC on the exact timing of wartime transfer were resolved with the JCS approval of SAC EWP 1-51, the global atomic war plan for SAC, and further discussions between FEC and SAC that resulted in the May 1, 1951 agreement. Under this agreement, CG FEAF BC was dual-hatted as DC, SAC (X-Ray), with verbal instructions given personally by CG SAC.
50. CINC Far East Command. Message to the JCS. Message Number CX 58087. 200031Z Mar 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 1; Far East Air Force Bomber Command. Narrative History, N.d., p. 28. Air Force Historical Research Agency, K713.01-9, 1 Nov 1950 – 31 Jan 1951, Maxwell AFB, AL.
51. Joint Chiefs of Staff. Message to CINC Far East Command. Message Number JCS 589627. 271545Z April 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 9. Aircraft operating over China were likely given modified rules of engagement. While aircraft over international waters had the right of immediate self defense against attack from Chinese fighters, aircraft operating over Chinese territorial waters (and by extension over China) were only allowed “defensive action only as necessary to insure evasion will be taken.” See CINC Far East Command. Message to the Com Nav FE, CG FEAF. Message Number CX 56765. 020813Z Mar 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 1.
52. Stratemeyer to LeMay. Memo from CG FEAF to CG SAC with subject “Aerial Refueling of Atomic Carriers.” 29 April 1951. Curtiss LeMay Papers, B10921, Box 197, Manuscript Division, Library of Congress
53. CINC Far East Command. Message to the JCS. 271315Z April 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 1; Joint Chiefs of Staff. Eyes Only Message to General Ridgway. 28 April 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 9. FEC, emboldened by this victory, sent a memo to JCS the following month outlining their deficiencies highlighted by the war game. The memo noted that “unless substantial warning of an impending attack is available”, a large quantity of air defense equipment in the form of radars, AAA and fighters would be required to maintain security of FEC’s AOR. The memo also asked for two “jet type strategic reconnaissance squadrons”, likely RB-47s, and conversion of the 91 SRS to the same type of aircraft. See CINC Far East Command. Message to the Com Nav FE, CG FEAF. Message Number CX 62309. 120291Z May 1951. RG 218, JCS – Other records – Correspondence with FEC/Korean War, Box 1. No response from JCS could be found, but it is not hard to guess what the reply was.
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Arctic Mission: 90 North by Airship and Submarine. By William F. Althoff. Annapolis, Md.: Naval Institute Press, 2011. Maps. Photographs. Appendices. Notes. Illustrations. Bibliography. Index. Pp. xviii, 264. \$39.95 ISBN: 978-1-61251-010-1

Arctic Mission deals with two separate expeditions into the region, one by a nuclear submarine and the other by an airship. Both took place during the International Geophysical Year (July 1, 1957 to December 31, 1958) that was marked by the Soviet's successful orbiting of the first artificial satellite, *Sputnik*, on October 4, 1957 and by the ignominious failure of the first U.S. satellite launch vehicle, *Vanguard*, in December. Although the U.S. finally got *Explorer I* into orbit, the country was left with egg on its face. Not only had the Soviet Union beat the U.S. into space, but the fact that it could orbit a 183.9-pond satellite meant it could launch an equal-weight nuclear warhead at a target in the U.S. Those events marked the start of the "space race" that ended in 1969, with the successful landing of Americans on the moon's surface.

Althoff lays out two parallel paths into the arctic region: one followed by nuclear attack submarine *USS Nautilus* (SSN 571), and the other by a lighter-than-air ZPG-2 naval airship, *Snow Goose*. Their missions were separate and unrelated except that each included the collection of information about the physical characteristics of the arctic region in its goals.

The missions were different not only in using two vastly different mediums—water and air—but also in security classification. *Nautilus's* mission was Top Secret; only a very few people had access. The airship mission was unclassified; an Associated Press reporter was a passenger during its entire operation, sending off reports of mission progress.

Both attempts had antecedents. Althoff relates the earlier attempt to explore the Arctic by submarine in the 1931 *Nautilus Expedition* by Sir Hubert Wilkins, an Australian explorer. He used a leased and modified U.S. O-class boat renamed *Nautilus* after Jules Verne's imaginary submarine. There were many problems with equipment. The expedition got as far as 82° north latitude but could go no further. It did gather information that was to be of value to the *USS Nautilus* mission of 1957, which successfully transited from the Pacific to the Atlantic after passing under the North Pole. The modern *Nautilus's* mission was a deliberate and highly successful scheme to score a significant U.S. scientific victory to offset the *Vanguard* humiliation. As with *Sputnik*, no word was allowed to leak out

about *Nautilus* until she had safely arrived in the Atlantic Ocean.

On the airship side, the semi-rigid *Norge* reached the North Pole in May 1926, not long after Richard Byrd and Floyd Bennett had crossed the Pole by airplane. *Snow Goose's* mission was aimed at examining the potential for lighter-than-air craft in collecting geophysical information about the arctic.

The book goes into great detail about the preparations for and conduct of each mission. Although both were successful, end results were highly unequal. *Nautilus*, the first nuclear-powered undersea craft and, thus, the first true submarine, came home to a hero's welcome and was awarded the first peacetime Presidential Unit Citation. *Snow Goose* returned home to the scrapping list as lighter-than-air craft were phased out of the Navy inventory.

Arctic Mission is well researched and written and interesting, dealing with the arctic and its unforgiving environment and with Canadian sensitivities to U.S. nuclear submarine operations up north.

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Joe Rochefort's War: The Odyssey of the Codebreaker Who Outwitted Yamamoto at Midway. By Elliott Carlson. Annapolis, Md.: Naval Institute Press, 2011. Photographs. Illustrations. Maps. Index. Appendices. Glossary. Notes. Bibliography. Pp. xvi, 572. \$36.95 ISBN: 978-1-61251-060-6

The Battle of Midway, fought 3-7 June 1942, has been called variously the turning point of the war in the Pacific, the high point of Japanese expansion, and possibly the most important battle of World War II. All are true in some respects and have been and will be debated for years. Most people with even a passing acquaintance with World War II in the Pacific have at least heard of Midway. It even merited its own movie. Those who have looked a further into the battle may be acquainted with the role of the Navy's code breakers in the victory. An even smaller faction may even have heard one of the leading protagonists, CDR Joseph John Rochefort.

A journalist by trade, Carlson chose one of the most enigmatic personalities in a genre populated by perplexing personalities. Rochefort was bright, sharp-edged, and competent, as attested to in most of the personnel evaluations cited in this carefully and prodigiously footnoted book. He was also not one to tolerate fools and

was quick to make that plain, much to his eventual detriment.

The book traces Rochefort's life from a childhood of an itinerant Irishman to the pinnacle of a career as a cryptanalyst providing ADM Nimitz with the vital information that allowed him to place his limited resources advantageously to counter the Japanese attempt to take Midway.

The role of naval intelligence has been chronicled in many books; most acknowledge and some document Rochefort's role. Rochefort was more than a codebreaker. First and foremost, he was a cryptanalyst—one who takes in all aspects of information, synthesizes it, and produces a thoughtful observation, leaving the final choice to the operator. Rochefort was adamant about producing an observation and avoiding the recommendation.

Carlson traces development of US naval communications intelligence (COMINT), something viewed by many in the line Navy as a black art of little consequence to a strategic intelligence unit. Ironically, Rochefort developed just such a unit to divine Japanese intentions. Carlson also well traces and documents the palace politics that led to Rochefort's exile after his crowning achievement, his professionalism while in a seemingly backwater assignment, and his return to grace late in the war.

Only the middle half of the book chronicles the roll of COMINT in the Midway battle. Expanding beyond that, it is a treatise on the application of COMINT, where it works, and where it doesn't. Unfortunately, Carlson fails to credit British cryptanalysts for their significant contribution to breaking the main Japanese fleet code, JN-25. Generally, however, he does an excellent job of giving proper recognition to the roles of those along the way who contributed to Rochefort's successes.

This book should appeal to a wide audience. Those interested in World War II at a macro level will find solid information on Japanese tactics and movements early in the war. Those with an intelligence bent will see analysis applied to COMINT. And those interested in how new methodologies often fight for acceptance will gain much insight through the trials and tribulations experienced by practitioners. Lastly, this is an excellent biography of a man who played a pivotal role in a dramatic victory, at a time when victories were frequently the result of generous interpretations by public affairs officers.

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The German Aces Speak: World War II through the Eyes of Four of the Luftwaffe's Most Important Commanders. By Colin D. Heaton and Anne-Marie Lewis. Minneapolis MN: Zenith Press, 2011. Photographs. Appendix. Bibliography. Index. Pp xiii, 354. \$29.00. ISBN: 978-0760341155.

Heaton and Lewis provide a revealing look at German fighter pilots during the second world war by stitching together the interviews of four Luftwaffe aces cross referenced with other interviews and primary and secondary sources. They begin their work with a brief chapter to provide a context for the interviews, briefly explaining the *Luftwaffe's* ranks and medals followed by a summary of the European air war. Rather than focus on the highest scoring aces, Heaton and Lewis chose four significant officers who provide a wider exposure into the *Luftwaffe*: Walter Krupinski (The Count); Adolph Galland (General of Fighters); Eduard Neumann (Mentor to Many) and Wolfgang Falck (Father of the Night Fighters).

Each ace's chapter begins with a brief background. Each has his own unique focus and then recounts flying and battle experiences and family lives. Included are their candid opinions of German leadership and the Nazi Party.

Walter Krupinski fought on the Eastern Front. In sharing experiences with fellow aces such as Steinhoff, Hrabak, and Hartmann, Krupinski brings the reader into the cockpit of his Bf 109: "I pulled the nose up and finished him off. I kicked left rudder and fired into the cockpit of the nearest IL-2. He started smoking and went down, both men bailing out."

Galland's interviews also included multiple gripping seat-of-the-pants flying stories in both the Bf 109 and Me 262. He also discusses his time as the General of Fighters including personal experiences with both Hitler and Göring. His view of Göring as an incompetent leader is repeated throughout the book.

Neumann, despite having only 15 victories, was a great mentor. The most famous of his pupils, Hans-Joachim Marseille, is the focus his interview and provide a firsthand look at Marseille's exploits in Africa. Neumann also includes his memories of the "Fighter Revolt" against Göring.

Lastly, Falck, the Father of German Night Fighters discusses the Bf 110. While unsuitable for daytime air defense, it provided a starting point as Falck developed the idea for night fighters. Hearing British bombers fly over at night, he recognized that eventually his airfield would be targeted. "If the RAF can fly at night, why

couldn't we?" Falck continues to discuss the development of German night fighters.

To bring the four aces' stories to life, the book combines multiple interviews and divides each chapter into shorter discussions. This approach seamlessly creates a single continuous story. Only occasionally were there cases of where points made appeared to be out of place or disjointed. This is a result of combining multiple interviews while working to remain true to the aces' original words.

While some books that focus on after-the-event interviews end up with factual inaccuracies, Heaton and Lewis appear to have avoided this pitfall. The text is both footnoted with verifying information and confirmed with a solid bibliography of both primary and secondary sources.

Apparently this is to the first in a series that will use Heaton's extensive oral-history collection. Hopefully, the authors will follow through with this. Their format and writing work well and make for an easy and enjoyable read. This book is well worth reading.

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Introducing...The Sky Blazers: The Adventures of a Special Band of Troops That Entertained the Allied Forces During World War II. By Jack Jacobson. Washington, D.C.: Potomac Books, 2009. Photographs. Pp. xii, 279. \$25.00 ISBN: 978-1-59797-285-7

Jack Jacobson was a young musician in New York City when World War II broke out. He kept company with a number of other musicians that worked together to entertain in the bars and cabarets of the city. Entertaining was what he liked to do. Following the war Jack went into radio broadcasting for a career that spanned more than 50 years. But on the way were some interesting experiences. He didn't know there were different stages awaiting him.

Most of us who went to Vietnam appreciated the visit of a USO or other show. Bob Hope stopped at the larger bases in Southeast Asia. Not everyone got their chance to see one of his shows, but other entertainers made the rounds of the smaller sites around the region to entertain Americans far from home. This is what Jack would do for the men fighting World War II.

Following the attack on Pearl Harbor, Jacobson and a few of friends thought that it was the right thing to do to join the military and do their part to win the war. So they joined the Army and ended up in sup-

ply. Before leaving though, one of Jack's friends introduced him to a delightful young lady named Doris.

On their way to Europe via a slow boat they discovered the overcrowded conditions and the food intolerable. Their first stop was Rio. Then it hit Jack and a few friends that the best thing they could do to raise morale on the boat was to start up a show. With the approval of General Brereton, they auditioned a number of people for their group—musicians, comics, and singers. And so it started. The ship was their first gig. The even managed to work it out so that they played for the officers and managed a better supper for everyone. Their war would be on stages fashioned in England, France, and North Africa.

When they landed in England they were on their way to wandering the island to entertain the troops wherever they were. They even got a trip to North Africa. Most of their shows ended in one huge party except for one show. They played for the fliers in a B-24 unit. All of fliers hit the sack shortly after the show. The band didn't know they had just played for the men flying to Ploesti, Romania. The band watched them leave the next day and again when the group came home. The war came home to them that day.

And when D-Day happened they found themselves not too far behind and headed inland with the infantry. They were then subject to the same combat situations that could develop for the infantry units. Their travels between shows found them actually being strafed on several occasions. They just weren't very far behind the infantry and tankers taking back France.

The band played across England, North Africa, and all over France on the way to the end of the war. They had played for royalty in England and Egypt. They even had the chance to make fun of an occasional general. The group partied, played music, and dodged an occasional German strafing or patrol. Jack finally rejoined Doris after the war and married her.

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The Other Cold War: Canada's Military Assistance to the Developing World 1945-1975. By Christopher R. Kilford. Kingston, Ontario: Canadian Defence Academy Press, 2010. Tables. Notes. Bibliography. Index. Pp 318. Free paperback ISBN: 978-1-100-14338-5

Interest in the particulars of the Cold War seems to diminish with the passing of

each year. Perhaps, ironically, that is so because everyone living on this planet at that time had to contend either directly or indirectly with the possibility of nuclear annihilation or the lasting effects of nuclear winter. A global sigh of relief was experienced with its ending and a sense that it was now time to move beyond its era of pervading fear. The 45-year-long nightmare has been over for some 23 years, and the Cold War has been increasingly relegated to the dustpan of history. In light of that, it is interesting to occasionally read a book that addresses some aspect of the struggle, especially when the key players are not Russians, Communist Chinese, or Americans. This is one such work.

Kilford, a Canadian Forces officer, has produced an informative book on Canada's Cold War military assistance programs and, as well, a look back, for contrast, to 19th century examples of the impact of military modernization on emerging nations. Early on he explains the perhaps overly optimistic view held by some in the West that if a developing country first creates a modern military the ripple effect on that nation would be felt in needed improvements in its economic, educational, and political sectors. Under the shadow of the Cold War, the presence of military assistance teams from NATO nations also would allow for significant influence by the West on developing countries. The need for hands-on involvement by the West was made glaringly clear in the post-colonial period when Soviet Premier Khrushchev promised support for wars of national liberation—wars intended to be fought for control of emerging nations.

The book addresses the how and why of Canada's military assistance role and its involvement in military arms sales, especially those to several newly independent African nations, including Ghana and Tanzania, from 1945 to 1975. Kilford discusses the burden placed on the Canadian military to provide military assistance when it was already weighed down by its commitments to NATO and the United Nations. He also points out that Canadian arms and aircraft industries could not sustain viability if solely reliant upon the needs of the Canadian military. Therefore, the reasoning went, the Canadian private sector stood to benefit from Canada's involvement in military assistance.

Kilford reminds the reader that within any nation's government there will always be competing demands on the budget. He highlights the difficult choices that must be made in allocating government monies. Prime Minister Trudeau was faced with this dilemma. His assessment was that Canada could not at the same time sustain forces in Europe, fulfill UN

commitments, carry out military assistance programs, properly fund domestic social programs, and respond to security issues at home. He also rejected, philosophically, the use of limited monies in developing countries to arm and maintain standing armies. Consequently, he effectively ended Canada's military assistance programs in the early 1970s.

In light of what has been written about Russian, Chinese, and American involvement in the Cold War, it was interesting to read about Canada's military assistance contributions. *The Other Cold War* provides valuable insights and details of Canada's efforts. I believe readers will be better informed by this well-researched and well-written book.

Col. John Cirafici, USAF (Ret.), Milford, Delaware.



History of Rocketry and Astronautics: IAA History Symposia 1967-2000—Abstracts and Index of Papers Presented at the First through Thirty-Fourth History Symposia of the International Academy of Astronautics [vol 31 of the AAS History Series]. By Hervé Moulin, ed. San Diego CA: Univelt, Inc., 2009. Photographs. Index. CD-ROM. Pp. 372. \$95.00 [\$80.00 paperback] ISBN: 978-0-877030552-7; **History of Rocketry and Astronautics: Proceedings of the 38th History Symposium of the International Academy of Astronautics, Vancouver, British Columbia, Canada** [vol 35 of the AAS History Series, and vol 24 of the IAA History Symposia]. By Å. Ingemar Skoog, ed. San Diego CA: Univelt, Inc., 2011. Photographs. Illustrations. Notes. Index. Pp. xiii, 544. \$95.00 [\$75.00 paperback] ISBN: 978-0-87703-568-8; and **History of Rocketry and Astronautics: Proceedings of the 39th History Symposium of the International Academy of Astronautics, Fukuoka, Japan, 2005** [vol 36 of the AAS History Series, and vol 25 of the IAA History Symposia]. By Emily Springer, ed. San Diego CA: Univelt, Inc., 2011. Photographs. Drawings. Notes. Index. Pp. 304. \$95.00 [\$75.00 paperback] ISBN: 978-0-87703-573-2

Since 1954, the American Astronautical Society (AAS) has established an enviable reputation for its prolific publication program, encompassing multiple journals dealing with the science, technology, practice, and impact of astronautics. It has been particularly supportive of the International Academy of Astronautics (IAA), which has held a sym-

posium on the history of rocketry and astronautics annually since 1967. The venue of the IAA's various symposia has encompassed all space-faring nations and many others as well; and presenters have included notable historians of spaceflight ranging from pioneers of the field (Frederick Durant, Barton Hacker, Cargill Hall, George James, Mitchell Sharpe, Viktor Sokolsky, Frank Winter) to more recent luminaries (Philippe Jung, Roger Launius, Michael Neufeld). Arguably even more useful than these have been the range of practitioners of astronautics—individuals as diverse as Boris Chertok, Robert Gilruth, Irene Sängler-Bredt, Frank Malina, and Igor Merkulov, pioneers of astronautics who worked in the field from its earliest days prior to the Second World War through the heyday of Sputnik and the Space Race to Tranquility Base—who have offered memoirs, reminiscences, and papers covering their work and that of their colleagues.

Taken together, the thirty-six volumes of papers presented at these symposia constitute an unrivaled collection of historical studies. No other field of aerospace inquiry has been so systematically documented in such consistent fashion as the IAA has done with the field of astronautics and spaceflight, and the IAA-AAS series are, as a consequence, a mandatory reference source for anyone attempting serious research in space history. Volume 31 is a compilation of abstracts of all the papers presented at the various IAA history symposia from the first symposium held in Belgrade in 1967 through the year 2000. In some respects, from a research standpoint, this is the single most useful of these volumes (indeed, of all the IAA symposia volumes produced prior to volume 31) because of its tremendous value to researchers. This is no mere listing of speakers and topics: the authors' abstract summaries are reprinted in full, and since these often run to a typed page of text or longer, the reader secures a very thorough appreciation of the paper discussed and whether it is worth further research. A CD-ROM is included, though it was not included in this review copy.

Volumes 35 and 36 follow the classic format of a volume devoted to each symposium. The papers presented reflect careful editing and editorial preparation; and the works are, as with their predecessors, amply illustrated and meticulously source-referenced.

Volume 35 includes twenty-seven chapters, each a single paper, organized among the themes of pioneers of the space age, organizations and heritage, technologies and projects, and development of the International Space Station (ISS). While

all are valuable, there are several standouts: Frank Winter's review of Robert Goddard (which surprisingly turns up new information on this already much-covered pioneer), Philippe Jung's continued study of German rocketry's postwar influence on French rocketry and launch systems (his bottom line is that German influence has been "largely overblown"); Roger Launius' thoughtful examination of the Apollo astronauts as cultural icons, indeed "American gladiators against the unknown [serving] as surrogates for the society that they represented"; Christophe Rothmund's fascinating study of small "man-rated" rocket engines applied to French military aircraft; and W. Henry Lambright's provocative analysis of the role of senior leadership and leadership styles in the evolution of the ISS and large-scale technology programs.

Volume 36 consists of 15 papers organized among memoirs, scientific and technical reviews, and—reflecting that the papers were presented at a 2005 conference held in Fukuoka—the history of Japanese contributions to astronautics. While many of the papers are particularly good, the standouts are a study by Christian Lardier of the Soviet Union's space industrial base from 1946 through the collapse of the Soviet system in 1991; and the collection of Japanese studies, including excellent studies by Toshio Masutani, Hisao Saijo, Hidemaro Wachi, Yoji Shibato, Shinsuke Kuroda, and Eiji Sogame on the evolution of Japanese rocketry from the 1930s through the Second World War, the postwar recovery, and the establishment of a Japanese space program and a space launch center at Tanegashima. All of these break new ground.

Any series is dependent upon the quality of its contributors and, particularly, its editors. These volumes, prepared by three of the finest scholars working in the field of space history, are highly recommended for professionals working within the field of space history and space policy, and for those responsible for assembling technical references for libraries, museums, archives, and research facilities. The price is, admittedly, daunting, but the value of these works is such that it represents a reasonable sum for the knowledge gained. Finally, a note of appreciation and credit is due to Rick W. Sturdevant, series editor for these and other AAS-IAA historical publications, for overseeing this monumental and unmatched publication effort.

Dr. Richard P Hallion, Research Associate in Aeronautics, National Air and Space Museum

Submarine Operational Effectiveness in the 20th Century: Part Two (1939-1945). By John F. O'Connell. New York: iUniverse, 2011. Diagrams. Notes. Glossary. Bibliography. Index. Pp. xii, 325. \$21.95 paperback ISBN: 978-1-4620-4257-9

This is the second of three planned works on submarine use in the 20th Century. The first took the reader from the beginnings of submarine warfare in World War One to just before the beginning of World War Two. This second book is dedicated entirely to the Second World War, which makes sense given the conflict's scope and the huge amount of submarine activity.

All major combatants used submarines during World War II. The war's geographic expanse was far greater than that of the first war and involved submarines in virtually every corner of the earth. Operations in both wars were similar in many ways including attacks against enemy shipping and warships, scouting, and covert activities.

O'Connell organizes the narrative by country (including independent Vichy French and Free French forces who sided with the Allies) and then discusses operations chronologically. The overall perspective is broader than the first book, focusing more on strategy and less on technical data and exploits of commanders and crews. This focus is entirely appropriate given submarine impact on operations worldwide. The work's main theme compares two strategies for submarine use: attacks on the enemy battle fleet versus those on enemy shipping. The first follows naval theorist Alfred Thayer Mahan's concepts of control of the seas. Simply put, the idea is that your navy must defeat or bottle up the enemy navy giving you freedom of action on the seas. You can then attack when and where you want, and your merchant shipping can move unfettered. The submarine's role was to give its side an advantage by sinking as many enemy warships as possible prior to the decisive fleet engagement. The US prior to the war and Japan throughout the war followed this strategy. The alternative is to destroy enemy shipping. Without ships, raw materials cannot get to the factories and finished products to the warfront eventually forcing your enemy to capitulate. The Germans in both wars and the Americans after the attack on Pearl Harbor practiced this approach.

In a short span, O'Connell well addresses each combatant's operations. He deals with strategy, tactics, and equipment and shows how and, to some extent, why they eventually succeeded or failed. But he doesn't compare the combatant's efforts.

The Germans came close to success in starving Britain, while the Americans overwhelmingly starved Japan by destroying shipping. Equipment shortcomings and tactics are discussed for the respective countries but are never put in a larger context. Both faced similar obstacles which are discussed separately but never compared. The reader is left to do that.

The book reads very quickly and, as with the first, is obviously well researched. Compared to the previous volume it is surprisingly short given the scope of operations covered. This seems due to less focus on technical discussions of submarine design and almost no anecdotes of crew and commander exploits characteristic of the first volume. Some of the same criticisms of the first volume are appropriate here. The narrative is often repetitive and sometimes disjointed. There are no maps or illustrations at all leaving the reader to access an atlas or the internet to get a handle on distances and locations. There are a few other issues as well. Submarine design and capabilities and the impact these had on success or failure are discussed for some classes but not others. The book ends abruptly at the end of the chapter on American operations; there is no effort to summarize discussions or tie the narrative together.

A concluding chapter comparing combatant's strategies, tactics, and equipment with tables showing displacements, ranges, weapons, and equipment would be very useful. It would go a long way to putting the entire work in perspective. There are many books on World War Two history dealing with submarine operations. As a primer for someone not very familiar with the subject, the book is very useful; but it falls short of providing the big picture. Readers will have to look elsewhere for that. The third volume will cover all submarine operations since World War Two; it has a lot of ground to cover. I am interested to see what O'Connell has to offer.

Lt. Col. Golda Eldridge, USAF (Ret.), Fredericksburg, Virginia.



Stealth Fighter, A Year in the Life of an F-117 Pilot. By William B. O'Connor. Minneapolis Minn.: Zenith Press, 2012. Illustrations. Photographs. Pp. 424. \$30.00 ISBN: 978-0-76034135-3

This book is an interesting documentary that reads like a novel. It offers the aviation enthusiast an opportunity to read the year-long exploits of an Air Force fighter pilot and his flying experiences within the F-117 community of warriors.

O'Connor writes about not only the F-117 but also his thoughts on the attributes of a fighter pilot and his understanding of the Air Force promotion and assignment processes. He seems excited about the opportunities he had in the Air Force flying the jets; however, his discouragement with non-flying staff positions comes through as well.

Many memorable flying incidents captured my attention. Other incidents not involving flight were less riveting. One key story concerned flying the F-117 while O'Connor was still in training. This incident involved a landing gear malfunction he experienced at Holloman AFB, New Mexico. It was interesting to read the thought process as the F-117 pilot evaluated his limited options and ultimately safely recovered the jet. The F-117 had a tricycle gear, which consists of a nose wheel and two main wheels (from the gear box under each wing). As O'Connor was preparing for a landing, the gear retraction device did not give the needed "3-down-and-locked" indication. It showed the nose wheel and left main gear were down, but the right main gear was still up in the jet with the accompanying gear door closed. This is a very unsafe condition, and the flight checklist offered few options other than to eject. O'Connor was able, through a detailed set of approaches, to get the missing gear extended; however, he never did get a "safe-and-locked" (green light) indication. This type of flight emergency truly brought me into the cockpit with the pilot and was by far one of the most interesting incidents related in the entire book.

The book got extremely interesting and fast paced when O'Connor focused his writing on the deployment of his F-117 squadron to an operational theater for combat flying. The aircraft squadron deployed to Aviano AB, Italy; and the action now had a decidedly increased-flight-operations flair. The first mission flown by O'Connor was what I would call a "goat rope." His aircraft broke, so he jumped into the spare aircraft, accomplished a quick preflight and a fast flight out to the tanker, cut some corners, and then just made the entry timing criteria—by 5 seconds! This story was an extremely well written flying anecdote that captured my full attention and is the type of incident reporting I hoped for when I chose this book to read. I was not disappointed.

O'Connor relates most of the activity surrounding his time as an F-117 pilot and not just the flight stories. He is justifiably proud of all his aerial achievements, but specifically his assignment in the F-117 squadron. His description of flying the F-117 both in training and in the

Bosnia Theater of Operations were clearly the highlights of this book for me.

Overall it is a great flying-oriented book and a fantastic story, well worth the time and effort. Readers will come away with more knowledge on the F-117 aircraft and military flight operations during this conflict. I recommend the book.

Col. Joe McCue, USAF (Ret.), Leesburg, Virginia



The Final Mission of Bottoms Up: A World War II Pilot's Story. By Dennis R. Okerstrom. Columbia Mo.: University of Missouri Press, 2011. Illustrations. Photographs. Notes. Bibliography. Index. Pp. x, 254. \$29.95 ISBN: 978-0-8262-1948-0

This is a biographical account of B-24 pilot Lt Edgar Lee Lamar, 760BS, 460BG, Fifteenth AF, who flew 21 missions out of Spinazzola, Italy, as part of the US strategic bombardment campaign in Europe during World War II. Flak shot down his aircraft, B-24J #42-51926, *Bottoms Up*, just after bombs away on an 18 Nov 1944 mission to the Luftwaffe base at Udine, on the Adriatic coast of northern Italy. The enemy captured four of the crew, including Lamar. Five others evaded with the help of Yugoslav partisans and eventually returned to their group. Lamar was sent to the Dulag Luft for interrogation (the book adds valuable perspective regarding goings-on there) and was then shipped to Stalag Luft 1 POW camp at Barth, Germany, where he spent the last five months of the war. His impressions of captivity and liberation add to previous work on Barth, surely one of the most thoroughly documented POW camps.

Okerstrom describes in detail the path Lamar took to become a pilot, from growing up on a farm in Depression-era Missouri through his B-24 training. He thoroughly explains wartime mobilization, organizations, and programs to clarify the workings of the military and place Lamar's career in perspective. His descriptions are vivid: e.g., the strength needed to move the controls of a heavily laden B-24 bomber to maintain a high-altitude combat formation is described as "standing in the back of a pickup truck . . . at 70 mph and trying to hold a sheet of plywood vertical against the wind."

A professor of English at Park University whose father was in the Eighth Air Force during the war, Okerstrom has two prior books to his credit. He is sensitive to the emotions of combat veterans and carefully explores how the war affect-

ed Lamar, his family, and friends. His coverage of the hunt for and discovery of the wreckage of Lamar's aircraft and the scene of his bailout in present-day Croatia enables the reader to sense the closure Lamar felt as a result.

This is the first time Lamar's story has been told; it relies heavily on Lamar's written and spoken reminiscences, wartime journals, and photos. Original sources are well documented: Missing Air Crew Reports, bomb group records, and other documents from official archives. The informative footnotes further explain and place the text in perspective. For instance, the footnote explaining tour length describes how and why the number of required missions varied over time, and how Lamar's projected total of fifty became Fifteenth AF policy in late 1944.

The bibliography cites most of the expected works on the World War II air war in Europe and the Liberator, including Walter Boyne's *Clash of Wings* and Stephen Ambrose's *The Wild Blue*. Accounts of Fifteenth AF might have benefited from Bob Dorr's *B-24 Liberator Units of the Fifteenth Air Force*. Descriptions of Liberator paint schemes and the vagaries of weathering—critical to identification of the wreckage of Lamar's plane some sixty-odd years after the event—would have gained from Monogram's *Official Aircraft Color Guide* or Squadron Signal's *Air Force Colors* series. Since this book depends heavily upon descriptions of European geography and locations, some maps would have been useful. These are minor quibbles, however. Part of the American Military Experience Series, written for non-specialists as well as expert readers, this book is a highly recommended addition to the body of combat flyer memoirs.

Steve Agoratus, Hamilton, New Jersey.



The Aluminum Trail: How and Where They Died. By Chick Marrs Quinn. Lake City Fla.: Hunter Printing, 1989 (Reprint 2011). Illustrations. Photographs. Pp. 476 See below for cost and ordering information.

This is unlike any other World War II book. It has no plot, no narrative, and contains more than 3,000 characters in 476 pages of data covering 696 fatal airplane crashes in the China-Burma-India Theater of World War II. It gives the date of the crash, aircraft type, crewmembers on board and their fates, and any other facts known of the incident. It is truly an encyclopedia of the cost of the air war in the CBI from a

laconic, "Aircraft left Kunming at 0900 and has not been heard from since. Crew declared administratively dead," to the three-page report of B-24 #8308 which was shot down November 14, 1943 over Burma. That report describes in considerable detail, the crash, capture, deaths, and survivors of the ten-man crew.

The book records the heroism of Major Horace S. Carswell who stayed with his wounded crew members trying to land his crippled B-24 and was killed when the bomber hit a mountain in southern China. He was awarded the only Medal of Honor in the CBI. Undecorated, but equally heroic, were Major Carrol D. Gregory, pilot, and 2d Lt Ralph R. Young, who rode their C-47 down, refusing to leave their 35 Chinese passengers. They died with their passengers on . After bailing out of his troubled C-46, 2d Lt Hillyer G. Maveety wandered away from friendly lines into Japanese held territory. Found by Burmese, he offered them 800 rupees to guide him to his base, but they turned him over to the Japanese and he was executed. A British Intelligence Agent, a Gurkha, discovered the pilot's fate and reported later, "These Burmese, their sin was great. I have executed!" However, most entries are the bare bones of the crash and the fate of the crew.

Just how Mrs. Quinn found all the facts she crammed into her book is not entirely clear. However, the Missing Air Crew Reports (MACR) developed by the USAAF in mid-1943 were probably used extensively, with report numbers quoted on some pages. For anyone interested in researching the war in the air in the CBI, this volume is indispensable. The reason for the years of research that resulted in the book, though, is clear. Her husband, 1st Lt Loyal Stuart Marrs, Jr. was killed on the Hump while flying a C-109 (a dedicated tanker version of the B-24) from India to China. These planes were instrumental in providing fuel for XX Bomber Command B-29s operating from the four bases in the Chendu area.

The book was originally printed in 1989 but has been out of print until recently. The late Mrs. Quinn's family has authorized several reprintings, and books are once more available on Amazon or directly from Robert L. Willett, 4423 Sea Gull Dr, Merritt Island FL 32953. Mr. Willett arranged for the reprint in honor of his cousin, James Sallee Browne, killed on the Hump . His is the second entry in the book. Cost is \$37 plus shipping on Amazon and \$42 including shipping from Willett. All proceeds go directly to MIA Recoveries to help fund searches for MIA planes.

Robert Willett, Merritt Island, Florida.



NASA Launch Systems, Space Transportation/Human Spaceflight, and Space Science, 1989-1998 [vol 7 of the NASA Historical Data Book, NASA DP-2009-4012]. By Judy A. Rumerman. Washington, D.C.: NASA History Division, 2009. Photographs. Tables. Diagrams. Illustrations. Notes. Index. Pp. xxiii, 1050. \$59.00 ISBN: 978-0-16-080-501-1

Established shortly after creation of the National Aeronautics and Space Administration (NASA), the NASA Historical Division (formerly the NASA History Office) has produced a wide range of publications tracing the history of NASA and its predecessor, the National Advisory Committee for Aeronautics (NACA) that, taken together, mark it as one of the most prolific and productive of all Federal history programs.

One of the most useful NASA history publications has been the periodic Historical Data Books that lay bare the internal workings of the agency, including its resources, priorities, work force, projects, and ambitions. Volume 7 of this series, tracing the agency's investment in space in the critical years between the loss of Shuttle *Challenger* but ending before the loss of Shuttle *Columbia*, offers its readers a rich dish of information, whether one is looking at organizational structure, policy and planning; space technology development; launch systems utilization, flight safety, human presence in space; and space science and exploration.

This book is far more than a series of statistical tables. Aply collected, organized, and analyzed by veteran space historian Judy Rumerman, it includes a number of essays, commentaries, and introductions that enhance its value. The range of technical material presented is staggering, including well-known efforts such as the Space Shuttle and International Space Station, but also lesser-known efforts such as the abortive X-33 and X-34 launch vehicle programs, various upper-stage programs and payloads, detailed cost and funding breakdowns for multiple Shuttle missions, costs and investment in space infrastructure, detailed mission summaries, and lengthy examinations of a variety of space-science programs.

Altogether, this is less a reference work than a substantial history of the agency and its commitment to space in the "return-to-space" years after the *Challenger* tragedy. It is equally tragic that all this effort culminated in yet another disaster in space, when *Columbia*, fatally damaged during launch, broke up during reentry over the American southwest on its return to the Kennedy Space Center. Today the American space program is in

disarray, with NASA paying nearly \$60 million per astronaut to send crews on Russian boosters to the taxpayer-funded International Space Station. As future historians parse the records to see how this peculiar situation—something that a Schriever, a von Braun, a Webb, or a Dryden could hardly have conceived as they structured the space successes of the 1960s—this volume will constitute a mandatory reference. Reasonably priced and constituting a good value for the money, it is, nevertheless, also available (as are its predecessors) as a pdf from the NASA Technical Reports Server at www.nttrs.nasa.gov for those who may still find it beyond their budgets.

Dr. Richard P Hallion, Research Associate in Aeronautics, National Air and Space Museum



Five Down, No Glory: Frank G. Tinker, Mercenary Ace in the Spanish Civil War. By Richard K. Smith and R. Cargill Hall. Annapolis, Md.: Naval Institute Press, 2011. Maps. Photographs. Notes. Appendices. Index. Pp xiii, 377. \$36.95 ISBN: 978-1-61251-054-5

R. Cargill Hall, a former U.S. Air Force historian, left government service in 2009. Fortunately for students of the Spanish Civil War, he continued to practice his craft. Hall began editing the efforts of his good friend, the late Richard K. Smith, a noted historian of aeronautical engineering. Hall estimates Smith started researching Tinker's life in the early 1960s. By about 1983, Smith had completed a draft that he set aside for the next 20 years. Before he died in 2003, Smith asked Hall to review it. Hall decided the best course was to expand on Smith's work.

Fortunately for his biographers, Tinker left a detailed account of his life. Smith and Hall had access to letters to family members and diaries. In 1938, Tinker published his account of fighting for the Republican forces and also wrote a number of articles for aviation journals after his return from Spain. The authors thoughtfully list Tinker's published works in one of the four appendices.

Aside from the first chapter that briefly introduces Tinker, the book proceeds in a straightforward, chronological manner. After high school, Tinker bounced in and out of the US Navy and Army. He served as a seaman, graduated from Annapolis in 1933 but didn't receive his commission until 18 months later, and nearly completed flight school at Randolph Field with the Air Corps before receiving

his wings at Pensacola in January 1935. His flying time with the fleet lasted only six months before he resigned his commission rather than face court-martial proceedings. Having previously received his papers as a mate, Tinker spent much of the next year serving on Standard Oil Company tankers. His heart, however, remained with flying.

In the summer of 1936, civil war erupted in Spain as nationalist rebels, led by Francisco Franco, challenged the government. Nazi Germany and fascist Italy backed the rebels. The government, with substantial assistance from the Soviet Union, began recruiting foreigners.

Tinker arrived in Spain in early 1937. Flying Russian-built Polikarpov I-15 and I-16 fighters for the next eight months, he received credit for eight victories, including two Bf 109s. Hall and Smith provide a detailed account of Tinker's experience and insight into Republican Air Force operations. Most revealing is the inability of the Republican fighters to successfully intercept the relatively fast German- and Italian-built bombers. By comparison, the successes of the Royal Air Force in the Battle of Britain and Claire Chennault in China against the Japanese seem all the more remarkable.

In the epilogue, Hall and Smith include more than two dozen biographical sketches on Tinker's compatriots, most of whom were Spaniards or Russians. While the notes are extensive, a bibliography would have been appreciated. Nevertheless, this is a good read that puts a face on aerial combat in what arguably marked the beginning of World War II.

Lt. Col. Steve Ellis, USAFR (Ret.), docent, Museum of Flight, Seattle, Washington.



Red Phoenix Rising: The Soviet Air Force in World War II. By Von Hardesty and Ilya Grinberg. Lawrence: University Press of Kansas, 2012. Photographs. Appendices. Notes. Bibliography. Index. Pp. 428. \$34.95 ISBN: 978-0-7006-1828-6

This review is based in part on an in-depth reading of the work and an opportunity to informally discuss the book with co-author Ilya Grinberg.

As the title implies, this is a story of near resurrection. Like the Phoenix rising from the ashes to take wing once again, the Soviet Air Force, decimated by the Nazis at the outset of hostilities on 22 June 1941 finds its way back to preeminence. Struggling with internal politics, technological and operational hurdles, and the whims of Stalin, they manage within

four grueling, hard-fought years to wrest mastery of the skies from the Luftwaffe, thus helping bring about the crushing defeat of the German war machine and the end of World War II.

The classic *Red Phoenix: The Rise of Soviet Air Power, 1941-1945*, which was subsequently translated into Russian during the time of *Perestroika* (restructuring) and *glasnost* (openness) was used at the USSR's Gagarin Air Force Academy. The thesis was sound and insightful; it was the best available work on the subject, particularly for the Soviets at that time.

From time to time, authors find it necessary to review previous efforts and bring them up to date with new material that has come to light. In this case, 30 years have passed. In that time the Soviet Union has become the Russian Federation; with that, much has changed. The access to archival material and censorship that restricted comprehensive research and publication is also different. It would seem that in the intervening years few western authors took up the subject, perhaps because of the daunting task of language, resources, or courage to undertake the effort required. There are a number of resident Russian historians who have made extensive use of this opportunity, but only a handful of American researchers have done the same. In 1988, I was one of those few western researchers given access to military archives, so I do have an idea about the plethora of material available.

Hardesty teamed-up with Grinberg to use the "DNA of the Von's original classic" and create a new work. The book uses newly available material which allowed the authors to reassess many of the previous findings and assumptions. It basically follows the same structure of the original; a big difference is the personal narrative that appears in each of the chapters. This brings a perspective that enhances the overall effort as it complements the facts and analysis with the human side of the story.

The only detraction rests with the publisher; they should have paid more attention to the publication quality of the photographs throughout the book, such as those found in Carl Fredrick Geust's *Red Stars* series. There are a substantial number of new and previously unpublished images included that bring the reader a needed visual component. All the same it is the textual content composed from the myriad of archival documents, statistical data, and scholarly Russian language works previously unavailable that are key to this new work.

Included in this book are the all-important appendices. The bibliography is one of the best available in English, so we

may not have to wait too long for others to pick-up the gauntlet and start serious research on an area of history long overdue for additional in-depth histories.

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



Oka: A Convergence of Cultures and the Canadian Forces. By Timothy C. Winegard. Kingston, Ontario: Canadian Defence Academy Press, 2008. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Glossary. Bibliography. Index. Pp. vi, 309. No price available. ISBN: 978-1-100-10108-8

In an era where internal threats to a nation's sovereignty from disaffected ethnic or polarized political groups are often more serious than external threats, it is imperative we learn from previous efforts—both successes and failures—on how best to deal with and counter them. This book provides an excellent discussion of the Canadian government's successful handling of perhaps its most serious internal security incident of the 20th century: the standoff between the Mohawk of Oka and civil, police, and military forces. The government was not directly threatened by events at Oka, but the possibility of disaffection spreading to other native peoples across the country and creating a major crisis was very real. Winegard provides context, describes events, and finally draws conclusions from lessons learned in a narrative that can benefit all military and government professionals who may someday face an internal threat.

"The Oka Crisis is considered a defining moment in Native-Canadian relations...the 300-year long convergence of two distinct cultures that culminated in a violent clash in the microcosm of Oka and included the domestic deployment of Canadian Forces, 4500 strong." This is how the jacket frames this tremendously well researched and very useful work. The legacy of relations between native peoples and Europeans who settled in this hemisphere starting over 500 years ago has often been one of conflict and struggle. Canada is rarely mentioned in these accounts, and there are no parallels between Spanish brutality toward natives in Central and South America or the British then American displacement of and disregard for the natives in North America. The Canadian government has had its share of conflict with native peoples, but they haven't been either as violent or extensive as elsewhere. But these conflicts are real, and in 1990 they culminated in a standoff

between natives and government forces over land rights and usage. The confrontation tested the Canadian government and military at all levels and resulted in some important lessons and have since been incorporated in new legislation on civil-military cooperation and military operating procedures.

The narrative is chronological starting with European settlement of the Oka area and tracing the issues through the standoff in 1990. Winegard provides excellent background and context without bogging down the reader in excessive detail. Throughout, he frames the confrontation in the larger context of Native-Canadian relations both in the Quebec province and the nation. This makes events much more comprehensible. The Canadian governmental structure for domestic use of the military is significantly different from that of the US; and, although the book isn't written for a US audience, his discussion of pertinent legislation and its use makes this potentially confusing element quite clear. His sources are extensive and include government, media, and participant interviews from both sides for a complete picture of events. He shows no bias and makes no judgments about the Native cause; he focusses on the lessons learned for the government and especially the military. His summary of ongoing tensions shows that the resolution of the Oka standoff may not be the last time the Canadian military is called on to help defuse such a situation.

My only criticism regards maps! There are a few, but they are reproductions of participant's tactical maps. While interesting, they aren't a large-enough scale or clear enough to be useful. The area in question covers the US-Canadian border with Mohawk land in both countries and straddling the border. This geography coupled with the Natives' right to unimpeded movement across the international border on their land was a factor in events, and a couple of good maps showing geography and deployments would have made the tactical situations much clearer. That said, this is by far the best of four excellent books I've reviewed from the Canadian Defence Academy Press. It isn't a book for the casual reader, but it offers a great deal to professionals looking to learn more about, and develop a better understanding of, the use of military force in domestic scenarios.

Lt. Col. Golda Eldridge, USAF (Ret.), EdD, Fredericksburg, Virginia.



The 14 Hour War: Valor on Koh Tang and the Recapture of the SS Maya -

guez. By James E. Wise Jr. and Scott Baron. Annapolis, Md.: Naval Institute Press, 2011. Maps. Photographs. Notes. Appendices. Index. Pp. xix, 297. \$34.95 ISBN: 978-1-59114-974-3

The Mayaguez incident is generally recognized as the last combat action of the United States involvement in Southeast Asia. Coming just weeks after the fall of Saigon, the Cambodian Khmer Rouge seizing of a US merchant ship tested US military and political leaders still coming to grips with the end of the war. The book's subtitle tells the reader what to expect; the authors do not disappoint. This book does not provide the big picture surrounding the events on the Mayaguez and Koh Tang. It does tell the story of the Marines and Airmen who fought on Koh Tang using their own words.

The book starts with the seizing of the ship and the military efforts to recover it and the crew. This is followed by veterans' recollections of events. There is no setting the stage with regard to politics or the international situation at the time. The narrative is chronological and takes up only 83 pages (including several pages of photographs) of an almost three hundred page book. This section concludes with a discussion of the fate of three Marines inadvertently left behind in the confusion of a night combat evacuation. They were never recovered. The information throughout is presented in a very straightforward manner with no embellishment leaving readers to draw their own conclusions about events. Veteran's recollections of the assault and rescue make up the bulk of the book. These are presented alphabetically without regard to rank or involvement. Each veteran's section is prefaced with a several-paragraph biography including what that individual did after this mission. The comments speak for themselves without notes or commentary.

This book was written to recognize the valor of the men who fought at Koh Tang. Someone looking for a larger context including the political decision-making and activities beyond the fight should read John Guilmartin's *A Very Short War*. But for those interested in the thoughts and perspectives of the men who fought there, this is an excellent read. The narrative frames their comments giving the reader an understanding of events. The recollections provide the real interest here. The other elements of the book—maps, photos and appendices—are very useful and add significantly to its worth. Unlike those in many books I've reviewed, the maps are outstanding. The photographs include many taken during the

actual operation. The appendices list participants, casualties and decorations.

Two comments (not criticisms, as neither issue detracts from the book's worth): First is the lack of a formal bibliography. Wise and Baron cite all their sources in the notes, and the book's size ensures searching for sources is not too difficult. The second is there is no attempt made to explain possible contradictions between veterans' stories. The format and wealth of information provided make me think this omission is intentional. I believe the authors are content to let the veterans speak for themselves and let readers draw their own conclusions. This book doesn't give you the whole story of the Mayaguez, but it does give you a unique glimpse into the minds of the men who fought there. While not an inexpensive book it is worth the price.

Lt. Col. Golda Eldridge, USAF (Ret.), EdD, Fredericksburg, Virginia.



Attack on Pearl Harbor: Strategy, Combat, Myths, Deceptions. By Allen D. Zimm. Havertown, Pa.: Casemate Publishers, 2011. Maps. Illustrations. Photographs. Appendices. Notes. Bibliography. Index. Pp. 464. \$32.95 ISBN 978-1-61200-021-3

This interesting and informative book is a significant addition to the literature on Pearl Harbor. Zimm says it is not intended to be a history but rather an operational analysis of some aspects of the attack. Cdr. Zimm (USN Ret.) had many years of ops analysis experience in the Navy and continues this work at Johns Hopkins University. His exhaustive analysis goes through every element of the raid from planning through execution to withdrawal. He follows major actors, individual airplanes, individual bombs and torpedoes, even miniature submarines. He analyses the function and effectiveness of these elements, evaluating them against what would be expected on the basis of the goals of the raid and the resources allocated to it.

Zimm says that the fundamental goal of the master proponent and architect of the raid, Admiral Yamamoto, was destruction of the U.S. battleships, the loss of which would so shock the American people and government that they would be moved to seek a negotiated peace as Japan pursued its aggressive aims in southern Asia. This goal seems contrary to the common image of the Admiral, which identifies him with the emerging capability of the aircraft carrier and the

waning importance of the battle line. While that characterization may be debated, Zimm says Yamamoto wanted to sink at least four U.S. battleships. His skilled and courageous torpedo bomber crews sank *West Virginia*, *Oklahoma*, *California*, and *Nevada* while a horizontal bomber destroyed *Arizona* with an armor-piercing bomb. Zimm attributes mission success to just eleven torpedoes and one bomb.

The operational analysis is exhaustive, penetrating, and brutal. Zimm judges that almost every aspect of the raid fell short of what could have been done with the assets at hand. He faults planning, coordination, execution, and leadership. He judges Yamamoto to be a poor strategist in conceiving this raid, First Carrier Division Air Staff Officer Genda to be a flawed planner, and mission leader Fuchida to be a weak tactical leader. Zimm dispels as a myth the belief that a third strike should have been carried out against the repair docks and fuel oil supply, rebutting the argument that the destruction of these assets would have forced the Navy to pull back to the West Coast to form a sustainable force. He criticizes Japanese failure to follow their doctrine of suppression of enemy air defenses, a doctrine developed and used for fleet operations at sea. He faults them for failing to exercise any effective command and control during the raid, in large measure because of their failure to develop effective radiotelephone communications among strike aircraft. He concludes that Japanese dive-bombing was ineffective. He asserts that the Japanese warrior code, with its emphasis on aggressive individual combat, inhibited them in developing effective combined arms operations with bombers, torpedo planes, and fighters in a coordinated strike. Zimm says the fighters failed to protect the bomber force, behaving, in his words, “like teenagers on a spree.”

A few elements of the raid find Zimm’s favor. Torpedo bombing saved the mission. Bombing by horizontal bombers was generally good but was compromised by the poor design and miserable performance of the armor-piercing bombs. Offensive counter-air against aircraft on the ground was judged to be good. Zimm also compliments Admiral Nagumo, strike-force commander, for his decision to withdraw and save his valuable force to fight another day. On the American side, Zimm speaks well of naval anti-aircraft defenses and the handful of Army pilots who got into the fight and achieved a 4:1 kill ratio.

Despite Zimm’s disclaimer, this is an important new historical study of Pearl Harbor. But one can also view *Attack* as a

third kind of book, a reference that complements the traditional histories by serving the reader as a sort of Cliffs Notes on Pearl Harbor, providing details about the Japanese side of the battle. Readers get a much better understanding of events described in histories such as Prange’s *At Dawn We Slept* and other major narrative histories of the raid. Zimm details events that traditional histories describe broadly by relating which Japanese aviators, airplanes, and weapons were involved in the event, and how crews applied their planning, experiences, training, and skills to carry out their challenging mission.

Attack does have faults. Zimm does not appreciate the extent to which the Japanese went far beyond the capabilities of other navies in developing multi-carrier operations. The U.S. Navy did not perfect multi-carrier tactics for two years or so after Pearl Harbor. While Zimm’s writing is generally clear and logical, there are minor shortcomings in reviewing and editing. For example, almost identically worded descriptions of some bomb damage on *Tennessee* is used in two separate places. In another example, Lt. Matsumura Hirata is identified on adjacent pages as the leader of both the strike force from carriers *Akagi* and *Kaga* and a separate force from *Hiryu* and *Soryu*. This ambiguity is clarified by a graphic in the following chapter, but it makes for a bit of confusion while reading the passage. In a puzzling digression, Zimm draws an analogy between pre-strike reconnaissance for Pearl Harbor and an incident at Midway, the often-studied case of Scout #4 from the cruiser *Tone*. Parshall’s *Shattered Sword*, which was available to Zimm, concludes that the late launch and foreshortened search did not delay, and may even have hastened, detection of the U.S. fleet. In any event, the incident had little bearing on the outcome at Midway. Zimm also confuses the terms Air Corps and Army Air Forces.

Zimm provides a great depth of understanding of the interaction of the two sides in the battle along with an appreciation of the human elements involved. *Attack* is not easy reading, being dense with names, numbers, diagrams and charts, but these and Zimm’s explanations and insights are key to the book’s value. Anyone who wants better understanding of the attack on Pearl Harbor, particularly its operations, should read *Attack* as a companion to one of the classic histories. But read it with pencil and paper at hand to deal with the details.

Brig. Gen. William L. Shields, USAF (Ret.)

On December 7, 1941, the naval forces

of Japan successfully attacked US forces at Pearl Harbor in an operation that was planned and carried out superbly in every respect. Or at least that’s what the “conventional wisdom” would have us believe. In this work, Alan Zimm presents a significantly different view: While the attack achieved its tactical objectives, the conventional thinking about the operation is flawed. Zimm’s analysis leads him to the conclusion that the attack was neither brilliantly planned nor brilliantly executed.

The author brings solid credentials to the task of studying and analyzing the evidence. He is a former Navy officer and is as a member of the Applied Physics Laboratory at Johns Hopkins University. He holds several advanced degrees, one in Operations Research, a skill set that forms the foundation for much of his analysis.

The first half of the book is a thorough analysis of the strategic and tactical planning that preceded the attack and of the attack itself. It draws heavily on the historical record, taken from the work of respected historians and first-person accounts of senior Japanese leaders. Beyond the historical record, the book depends to a large extent on mathematical data—perhaps its greatest strength. For example, Zimm devotes entire chapters to determining the likelihood of sinking a battleship based on the number of aircraft that would be targeted against the vessel, the probability of striking the ship with one bomb, the explosive power of the weapon, and the thickness of the ship’s steel plating. He applies similar analysis to all aspects of the attack. When he combines the numeric analysis with his research into the historical facts and the personalities of the individuals involved, Zimm draws interesting conclusions about this critical event.

In the second half of the book, Zimm presents his conclusions. Several of the bits of “folklore” (Zimm’s word) are:

Folklore: *Most of the Japanese pilots attacking Pearl Harbor in December 1941 were experienced pilots with nearly 1000 hours of flying time and combat experience in Japan’s war against China.* **Fact:** Many of the aviators in the attack force were so inexperienced that after departing Japan for Hawaii they had to devote most of their flying hours to basic skills such as carrier landings, and had little or no time to hone the skills needed for the attack.

Folklore: *If the Japanese had launched an immediate follow-on attack on the shipyards and oil storage facilities at Pearl Harbor, the US fleet would have been crippled for two years and the outcome of the*

Books Received

Aerospace Electronic Warfare Doctrine. Winnipeg, Man.: 2d Canadian Air Div. Notes. Photographs. Illustrations. Index. Pp. 32 Paperback

Aerospace Sustain Doctrine. Winnipeg, Man.: 2d Canadian Air Div. Notes. Photographs. Illustrations. Index. Pp. 68 Paperback

Bashow, David L. *Soldiers Blue: How Bomber Command and Area Bombing Helped Win the Second World War.* Kingston, Ont.: Canadian Defence Academy Press, 2011. Notes. Photographs. Index. Pp.101. Paperback ISBN: 978-1-100-18026-1

Belanger, Julie and Psalm Lew, Eds. *Developing the Next Generation of Military Leaders.* Kingston, Ont.: Canadian Defence Academy Press, 2011. Notes. Illustrations. Glossary. Photographs. Index. Pp. ix, 206 Paperback ISBN: 978-1-100-19212-3

Converse, Elliott V. III *Rearming for the Cold War, 1945-1960. [Vol. I: History of Acquisition in the Defense Department.]* Washington, D.C.: Historical Office OSD, 2012. Notes. Illustrations. Index. Photographs. Pp. xiii, 766

Denton, Peter H. *Believers in the Battlespace: Religion, Ideology and War.* Kingston, Ont.: Canadian Defence Academy Press, 2011. Notes. Index. Pp. xxiii, 231. Paperback ISBN: 978-1-100-16168-6

Harrington, Daniel F. *Berlin on the Brink: The Blockade, the Airlift, and the Early Cold War.* Lexington: University Press of Kentucky, 2012. Maps. Notes. Photographs. Bibliography. Index. Pp. 414. \$40.00 ISBN: 978-0-8131-3613-4

Higham, Robin. *Two Roads to War: The French and British Air Arms from Versailles to Dunkirk.* Annapolis, Md.: Naval Institute Press, 2012. Map. Notes. Photographs. Tables. Bibliography. Index. Pp. xxii, 410. \$44.95 ISBN: (978-1-61251-10583

Kerr, W.P. *History Etched in Stone: Gravestone Art and Garrison Graveyard at Annapolis Royal.* Kingston, Ont.: Canadian Defence Academy Press, 2011. Notes. Photographs. Illustrations. Bibliography. Index. Pp., vii, 169. Paperback ISBN: 978-1-100-18026-1

March, W.A. *Sic Itur Ad Astra: Canadian Aerospace Power Studies [Vol. 2, Big Sky, Little Air Force.]* Notes. Tables. Index. Pp.135.

Raskin, Marcus G. and Gregory D. Squires, Eds. *Warfare Welfare: The Not So Hidden Costs of America's Permanent War Economy.* Washington, D.C.: Potomac Books, 2012. Notes. Index. Pp. x, 275. Paperback \$32.95 Paperback ISBN: 978-1-59797-533-9

Wakelam, Randall. *Cold War Fighters: Canadian Aircraft Procurement, 1945-1959.* Vancouver: The University of British Columbia, 2011. Notes. Appendices. Index. Pp. 32. \$35.95 Paperback ISBN: 978-0-7748-2149-0

PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the following new books 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

war might have been altered. Fact: The ability of the Japanese to cause serious damage was questionable at best. And even if the US had been delayed for two years from staging a significant counter-strike against Japan's territories in the Pacific, that would have worked against Japan, which knew it was not capable of winning a long, protracted war.

Folklore: *Commander Minoru Genda planned the operation brilliantly and Commander Mitsuo Fuchida executed it superbly. Fact:* Genda's plan was characterized by extreme inflexibility, poor synchronization, and questionable use of his fighter aircraft. Although the plan achieved its tactical objectives, even

greater success would have been possible were it not for these errors. Fuchida's reputation is based largely on books he helped to write and a movie (*Tora, Tora, Tora*) for which he served as technical advisor. Subsequent recent research has shown that many of his statements were not accurate representations of his true contributions to the events of 7 December, causing us to question much of his self-generated reputation.

Other analyses in the book address long-debated issues, to include whether General Short and Admiral Kimmel, the two senior commanders in Hawaii, committed serious errors that contributed to Japan's success; whether Japan assigned too great a priority to sinking battleships;

and whether the attack achieved all of Japan's tactical and strategic expectations.

Zimm presents conclusions that challenge traditional thinking, and his merging of historical research and statistical analysis make for a compelling argument. While readers with more than a casual knowledge of the Pearl Harbor attack might disagree with some of his conclusions, just about everyone will find this to be an interesting work and well worth the read.

Lt. Col. Joseph Romito, USA (Ret.), Docent, National Air and Space Museum.



Coming Up



Compiled by
George W. Cully

September 6-9, 2012

The **Tailhook Association** will hold its annual Reunion and Naval Aviation Symposium in Reno, Nevada. For details, view the Association's website at <http://www.tailhook.org/> or contact the Association's Reunion Coordinator, Mr. Marc Ostertag, at tag@tailhook.net, tel. (800) 322-4665.

September 7-8, 2012

The **World War I Historical Association** will hold its annual National Seminar at the USMC University in Quantico, Virginia. For further information, see the WWIHA website at www.worldwar1.com/tripwire/smtw.htm or contact Ms. Carol Vandenbruhl at cvandenbruhl@netscape.net, tel. (248) 471-2366.

September 11-13, 2012

The **American Institute of Aeronautics and Astronautics** will host "AIAA Space 2012," its premier annual event on space technology, policy, programs, management, and education, at the Sheraton Pasadena in Pasadena, California. For details, see the Institute's website at www.aiaa.org/SPACE2012/ or contact the Institute at custserv@aiaa.org, tel. (703) 264-7500 or (800) 639-AIAA.

September 14 & 18, 2012

The **Space Foundation** will host two events to honor the 30th anniversary of the founding of Air Force Space Command. The event on September 14 will be held at the Broadmoor Hotel in Colorado Springs, Colorado; the event on September 18 will be held at the Army-Navy Club in Washington, D.C. For further information, check the Foundation's website at www.spacefoundation.org.

September 17-19, 2012

The **Air Force Association** will present its 2012 Air & Space Conference and Technology Exposition at the Gaylord National Resort & Conference Center on the Potomac River's National Harbor, directly across from Alexandria, Virginia. View the Association's website at www.afa.org/events/conference/2012/default.asp for details, or contact the AFA's expositions director, Mr. Dennis Sharland, at DSarland@afa.org.

September 23-26, 2012

The **Association of Old Crows** will host its 49th International Symposium and Convention at the Phoenix Convention Center in Phoenix, Arizona. For details, see the Associations' website at <http://www.crows.org/> or pulse a Headquarters Crow at tel. (703) 549-1600.

September 25-27, 2012

The **Army Aviation Association of America** will host its 10th annual Luther G. Jones Aviation Summit at the American Bank Convention Center in Corpus Christi, Texas. This year's theme is "Cost-Readiness." For more information, see the Association's website at www.quad-a.org/, or tel. (203) 268-2450.

September 26-29, 2012

The **Society of Experimental Test Pilots** will host its 56th annual Symposium and Banquet at the Grand Californian Hotel in Anaheim, California. For details, see the Society's website at <http://www.setp.org/> or contact the Society at Setp@setp.org, tel. (661) 942-9574.

October 4-7, 2012

The **Society for the History of Technology** will hold its annual meeting at the Copenhagen Business School in Copenhagen, Denmark. One of this year's major themes is "Technology, East-West Relations, and the Cold War." For more information, see the Society's website at http://www.historyoftechnology.org/annual_meeting.html, or contact them by e-mail at shot@virginia.edu.

October 6, 2012

The **National Aviation Hall of Fame** will host its 50th annual enshrinement ceremony, in which four figures distinguished for their aviation-related achievements—Geraldyn "Jerrie" Cobb, Keith Ferris, Richard T. Whitcomb and Lt Gen Elwood R. "Pete" Quesada—will join the ranks of previous honorees. For details, see the NAHF's website at www.nationalaviation.org.

October 10-14, 2012

The **Oral History Association** will hold its annual meeting at the Cleveland Marriott Downtown hotel in Cleveland Ohio. For more details, see the OHA's website at www.oralhistory.org.

October 16, 2012

The **U.S. Naval Institute** will host its 2012 History Conference on the grounds of the U.S. Naval Academy in Annapolis, Maryland. This year's theme is "The History and Future Challenges of Cyber Power." For more details, see the Institute's website at www.usni.org/.

November 15-16, 2012

The **Air Force Association** will host its annual Global Warfare Symposium and Air Force Ball at the Century Plaza Hyatt Regency hotel in Los Angeles, California. For details, see the Association's website at www.afa.org.

November 15-18, 2012

The **History of Science Society** and the **Philosophy of Science Association** will co-host their annual meetings at the Sheraton San Diego Hotel and Marina in San Diego, California. For details, see the Society's website at www.hssonline.org or contact them at Info@hssonline.org, tel. (574) 631-1194.

November 28-29, 2012

The **American Astronautical Society** will hold its annual meeting in Pasadena, California. For details, see the Society's website at astronautical.org/conference, or contact the Society at aas@astronautical.org, tel. (703) 866-0020.

December 6-8, 2012

The **National WWII Museum** will host an international conference on World War II at the museum in New Orleans, Louisiana. The theme of the conference is "Stem-ming the Nazi Tide: The End of the Beginning, 1942-43," and it will include discussions of the Battle of the Atlantic, Operation Torch, the Eastern Front and other topics. For more information, visit the conference website at www.ww2conference.com or tel. (877) 813-3329, ext. 511.

2013

January 3-6, 2013

The **American Historical Association** will hold its 127th annual meeting in New Orleans, Louisiana. The theme of the meeting will be "Lives, Places, Stories," emphasizing the impact of environment and geography upon human history, but

other topic proposals will also be entertained. To propose panels or papers, or to request additional information, contact the AHA's meeting program committee via the AHA website: www.historians.org/perspectives/issues/2011/1109/1109ann4.cfm.

January 7-10, 2013

The **American Institute of Aeronautics and Astronautics** will host its 51st annual Aerospace Sciences Meeting, to include the New Horizons Forum and Aerospace Exhibition at the Gaylord Texan Resort and Convention Center in Grapevine (Dallas/Ft. Worth Region), Texas. For details, see the Institute's website at www.aia.org.

January 29-31, 2013

The U.S. Naval Institute and AFCEA International will co-host **WEST 2013**, billed as "the largest event on the U.S. West Coast for communications, electronics, intelligence, information systems, imaging, military weapon systems, aviation, and shipbuilding," at the San Diego Convention Center in San Diego, California. For more details, see USNI's website at www.usni.org/.

February 21-22, 2013

The **Air Force Association** will present its annual Air Warfare Symposium and Technology Exhibition at the Rosen Single Creek hotel and convention center in Orlando, Florida. For more information, see the Association's website at www.afa.org.

March 14-15, 2013

The **Air Force Association** will present its annual Cyber Futures Conference and CyberPatriot Championships competition at the Gaylord Convention Center on the Potomac River, directly across from Alexandria, Virginia. For more information, see the Association's website at www.afa.org.

March 14-16, 2013

The **Society for Military History** will hold its annual meeting at the National WWII Museum in New Orleans, Louisiana. This year's theme is "War, Society and Remembrance." For more information, visit the SMH website at www.smh-hq.org/index.html or e-mail Kurt.Hackemer@usd.edu.

April 8-11, 2013

The **Space Foundation** will host its 29th annual National Space Symposium at the Broadmoor Hotel in Colorado Springs, Colorado. Information and registration details can be found on the Foundation's website at www.spacefoundation.org.

April 11-14, 2013

The **Organization of American Historians** will hold its annual conference at the San Francisco Hilton in San Francisco, California. This year's theme is "ntangled Histories: Connections, Crossings, and Constraints in U.S. History." For further information, visit the OAH website at www.oah.org/ or contact them via e-mail at help@oah.org.

April 17-20, 2013

The **National Council on Public History** will hold its annual meeting at the Delta Ottawa City Centre in Ottawa, Canada. The theme of this year's meeting is "The Significance of Audiences in Public History." Visit the Council's website at www.ncph.org for details.

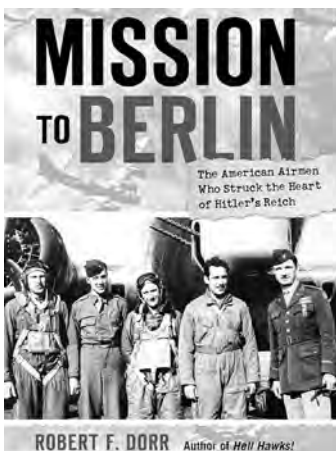
May 21-23, 2013

The **American Helicopter Society** will host its 69th annual forum and technology display at the Phoenix Convention Center in Phoenix, Arizona. The theme of the forum will be "Advancing Vertical Flight Technology in Demanding Environments." For more information, visit the Society's website at www.vtol.org/index.cfm or e-mail them at staff@vtol.org.

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

Recently Released



The book "MISSION TO BERLIN" by Robert F. Dorr was published April 15. This is a general-interest World War II history that focuses on the B-17 Flying Fortress crews who attacked Berlin on February 3, 1945, in the largest mission ever flown against a single target. The book also includes a new look at the entire bombing campaign in Europe.

The young men who flew and maintained the B-17 are at the center of the story but "MISSION TO BERLIN" also has lengthy passages about Americans who flew and maintained the B-24 Liberator, P-47 Thunderbolt and P-51 Mustang.

Bob Dorr is technical editor and co-creator of this journal and was recently honored by the Foundation for his work on Air Power History. Bob describes "MISSION TO BERLIN" as a "Stephen Ambrose-style popular history of the triumphs and tragedies of everyday Americans who did something no one had done before. They fought giant battles several miles up in the sky across vast distances inside aircraft where oxygen was always needed and the temperature was almost always below freezing."

"MISSION TO BERLIN" is available from on-line sources and at bookstores. You can order a signed copy directly from the author by contacting Robert F. Dorr; tel. (703) 264-8950, robert.f.dorr@cox.net

As you already know, this is our first all-digital *Air Power History* issue. A special thanks to our publisher, editor, and staff for working to produce the same level of quality in this publication that we've enjoyed in print for almost sixty years. While the Foundation's financial situation forced this particular step, this web-based venue opens potential opportunities for broadening our distribution and organizational exposure. If anyone has feedback on how to improve this new process, please let us know as future all-virtual issues are going to be a fact-of-life.



As highlighted in the last issue, publishing two of our four annual publications only on our web site was brought about by the Foundation's extreme financial situation. Our modest numbers of members are extremely loyal—and for that the Foundation is extremely grateful. However, in order to remain viable we have to re-examine our value proposition to our members and business partners, and create a larger revenue stream.

One avenue that we've not emphasized in the past is the ability for members to gift or memorialize loved ones through the Foundation. Our status as a 501(c)(3) independent, non-profit, tax-exempt, publicly supported organization is an advantage in this respect. Further, our awards program provides additional recognition opportunities for deserving individuals.

The challenges that we face as a non-profit are not unique as potential business partners and members re-assess their ability to contribute and participate in today's economic environment. We reduced the Foundation's business expenses by seventy-five percent of the level that we spent two years ago. Foremost among this "belt tightening" was eliminating our paid, full-time executive director—and reducing our annual printed issues of *Air Power History* to two. Further, adjustments may be in the offing if we don't broaden our appeal—and soon.

Your board of directors is dedicated to strengthening our Foundation as we approach our 60th anniversary as an organization. We want to ensure that we carry the torch borne for so long and so well by those who have gone before. In that vein, we need your ideas and support on how to make our Foundation better. Feel free to contact me through our web site <http://www.afhistoricalfoundation.org>.

Again, we can't thank you enough for your generous support of the Air Force Historical Foundation as we seek to promote and preserve the history of our United States Air Force and its predecessors.

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

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

Neil A. Armstrong (1930-2012)



Neil Alden Armstrong, first man to set foot on the moon on July 20, 1969, and who uttered the famous line, "That's one small step for man, one giant leap for mankind," died on August 25, 2012, at the age of eighty-two.

Armstrong was born in Wapakoneta, Ohio, and from a young age was fascinated with aviation, experimenting with model airplanes and a home-built wind tunnel. At fifteen he began flying lessons in an Aeronca Champion, and by sixteen, acquired his student pilot's license. In 1947, he enrolled at Purdue University on a Navy scholarship to pursue a degree in aeronautical engineering, but in 1949, the Navy called him to active duty. As a navy pilot, he flew seventy-eight combat missions. He was shot down once and received three medals for his military service. In 1952, he returned to his studies and completed his BS at Purdue and an MS in aerospace engineering at the University of Southern California.

In 1955, he became a civilian research pilot at the Lewis Research Center of the National Advisory Committee for Aeronautics (NACA), the forerunner of the National Aeronautics and Space Administration (NASA). Later that year, he transferred to NACA's high-speed flight station (today, NASA's Dryden Flight Research Center) at Edwards AFB, in California as an aeronautical research scientist, and then as a pilot. He was a test pilot on many pioneering high-speed aircraft, including the 4,000mph X-15. He flew more than 200 different models of aircraft.

Armstrong was engaged in both the piloting and engineering aspects of the X-15 program from its inception. He completed the first flight in the aircraft equipped with a new self-adaptive flight control system and made seven flights in the rocket plane. In 1962, he was one of the nine test pilots chosen by NASA for its second astronaut-training program.

Armstrong, the astronaut, first flew in March 1966, as commander of Gemini 8. The mission also involved the first serious space emergency, highlighting the dangers of manned space flight. The Gemini 8 mission was designed to perform the first docking in space by astronauts, but after successfully docking, the combined spacecraft went into a spin. Armstrong was eventually able to bring the Gemini craft under control.

On July 16, 1969, Apollo 11 blasted off for the moon. Four days later, at 4:18pm Eastern Daylight Time, the Eagle lunar lander was guided to land on a plain near the southwestern edge of the Sea of Tranquility. At 10:56pm Armstrong stepped off the ladder of the Apollo 11 lunar module and became the first human to set foot on the moon. Twenty minutes later Edwin "Buzz" Aldrin joined him. The third member of their crew, Michael Collins, orbited overhead in the command module. The two astronauts took numerous photographs, carried out the lunar surface experiments assigned to the mission and collected fifty lbs of samples of lunar soil and rocks. After a rendezvous in space with their command module, the three Apollo astronauts returned to Earth on July 24, 1969.

Following the moon landing and the subsequent world tours by the crew of Apollo 11, Armstrong became deputy associate administrator for aeronautics, NASA headquarters office of advanced research and technology from 1969 to 1971, when he resigned. For the next eight years he was professor of aerospace engineering at the University of Cincinnati. Numerous industrial appointments followed, including New York's AIL Systems, where he was chairman from 1981 until 2001. In 1979 he was chairman of the board of Ohio's Cardwell International; from 1982 to 1992 chairman of Computing Technologies for Aviation, in Virginia.

In 1985-86 he served on the National Commission on Space, a presidential committee to develop goals for a national space program into the 21st century; and was also vice-chairman of the committee investigating the Space Shuttle Challenger disaster in 1986. During the early 1990s he presented an aviation documentary series for television entitled *First Flights*. Earlier this year he spoke at an event to mark the 50th anniversary of the orbiting of the Earth by the first American to do so, John Glenn.

Armstrong is survived by his second wife, Carol, and two sons from his first marriage, which ended in divorce.

Air Power History's Best Book Award for the Year 2011

Mark Clodfelter's *Beneficial Bombing, The Progressive Foundations of American Air Power, 1917-1945* won the Air Force Historical Foundation's Best Air Power History Book award for 2011. The award is given annually after a three-judge panel carefully considers and rates all of the books that were reviewed in the Foundation's journal, *Air Power History*, during the year. Criteria for selection call for the book to be of high quality, contribute to an understanding of air power, and for the author or authors to have had a connection to the U.S. Air Force or be a member of the Air Force Historical Foundation.

Dr. Clodfelter is professor of military strategy at the National War College in Washington, DC, and a member of the Air Force Historical Foundation. A 1977 graduate of the Air Force Academy, Dr. Clodfelter has had a distinguished career as a student and teacher of air power history. His previous work includes *The Limits of Air Power: The American Bombing of North Vietnam*, as well as articles in *Air and Space Power Journal*, *Journal of Strategic Studies*, and *Strategic Studies Quarterly*. When a cadet at the Air Force Academy, Mark won the Air Force Historical Foundation's history writing competition in both 1976 and 1977.

Beneficial Bombing is a fascinating book. Mark Clodfelter traces the origins of the U.S. Air Force's thinking and doctrine, as well as its development into an independent military service, from the progressive politics of Theodore Roosevelt, through those of Woodrow Wilson and both political parties to Franklin Roosevelt and into the post World War II period. The author's basic premise is that the early generation of American airmen, aghast at the waste and killing of World War I saw in air power the promise of winning wars "quickly, cheaply, and efficiently." This was an attempt, Dr. Clodfelter believes, to reform war—inspired by the progressive agenda—that would rely on war's own destructive technologies as the

instrument of change. The airmen argued that the slaughter of clashing armies would no longer be necessary in war, given an air force's ability to destroy the vital centers of an enemy's economy and the key ingredients of modern war as well as an enemy's political and cultural life. That this did not play out in World War II's European Theater quite as they wanted it did not dampen their belief. In fact, the defeat of Japan without a land invasion led to the creation of the U.S. Air Force based upon a strategic bombardment capability that continued to the present.

The book's title comes from the idea Dr. Clodfelter expresses that "...finite destruction [of specific targets] would end wars quickly, without crippling manpower losses—maximum results with a minimum of death—and thus, bombing would actually serve as a beneficial instrument of war." To achieve this, the air leaders prior to World War II wanted a reform of America's defense establishment, with an independent air force. This would accomplish simultaneously two things: "the ability of air forces to fight and win wars independently of armies and navies justified an autonomous air force—and an autonomous air force was necessary to assure that air power could efficiently achieve victory on its own." A prime adherent of this philosophy was General of the Air Force Henry H. Arnold, the Army Air Forces' commanding general during the war, who, along with a number of other prominent thinkers brought about the creation of the present U.S. Air Force. This book should have a prominent place on the desk of every airman.

This year's judges included Dr. Andrew Wackerfuss, a member of the staff at the Air Force Historical Studies Office at Bolling AFB; Lt. Col. Lawrence Spinetta, an Air Force Historical Foundation member and a member of the Foundation's board of directors; and Mr. Scott Shaw a research staff member at the Institute for Defense Analyses in Alexandria, Virginia. These three had a particularly difficult job, as several of the books considered scored highly.

The judges' voting was very close, with *Fighter Pilot*, the memoirs of Robin Olds barely being edged into second place. Robert F. Dorr has described Robin Olds as the "greatest fighter wing com-

mander ever to serve in the U. S. Air Force." If Olds does not meet Bob Dorr's description, then it would be difficult to see who might have surpassed him (although Olds himself likely would have said Hubert Zemke). This book is an at times joyful and sometime painful story that is a touching and honest appraisal of the sacrifices and tribulations, as well as triumphs, of families who serve in today's military, and one that should be read by every member of the U. S. Air Force simply to help understand what a modern air combat commander ought to be, if for no other reason.

Fighter Pilot had two supporting authors, Robin Olds's daughter Christina, and Mr. Ed Rasimus, also a retired Air Force officer; both are talented writers. Robin Olds graduated from West Point in 1943, where he was an All American football player. He flew P-38s and P-51s in Europe with the Eighth Air Force, becoming a double ace. During the Southeast Asia War, Olds commanded the 8th Tactical Fighter Wing, personally flying the lead in more than 150 missions over North Vietnam. His leadership and his men's efforts made the wing's performance legendary.

I am most grateful to the three judges, who spent many hours on this task, and to the several authors and those who supported and advised them during the time they spent researching, writing, contemplating their projects, and revising the texts.

The award will be presented at the annual Air Force Historical Foundation's awards banquet in November.

The list of the other books nominated for this award follows, and the judges and I recommend all, as well as those mentioned above, to anyone who has an interest in air power and the Air Force:

Sterling M. Pavelec, *The Jet Race and the Second World War*

William B. Colgan, *Allied Strafing in World War II*

Daniel Jackson, *The Forgotten Squadron, the 449th Fighter Squadron in World War II*

Kenneth V. Horrigan, *Coffin Corner, The True Story of Kenneth Horrigan, World War II POW in Stalag 17B*

Notice

Thomas C. Reed and Danny B. Stillman, *The Nuclear Express: A Political History of the Bomb and Its Proliferation*

Bruce Gamble, *Fortress Rabaul: The Battle for the Southwest Pacific, January 1942-April 1943*

Herman Wolk, *Cataclysm: General Hap Arnold and the Defeat of Japan*

Matt J. Martin and Charles W. Sasser, *Predator: The Remote-Control Air War over Iraq and Afghanistan: A Pilot's Story*

Jeffrey Record, *A War It Was Always Going to Lose: Why Japan Attacked America in 1941*

John F. Kreis, Chairman, Publications Awards Committee

General Andrews's Plane Found

In February 1943, Lt. Gen. Frank M. Andrews, was named Commanding General of the U.S. Forces in the European Theater. A command pilot, he had received two Distinguished Service medals and a Distinguished Flying Cross. He had commanded the GHQ Air Force and was a leading candidate to command the Army Air Forces. On May 3, 1943, he was killed in an aircraft accident while flying over Iceland. Andrews AFB, Maryland was named in his honor.

According to the "Grapewine," Jim Lux, a retired IBM executive tracked down the wreckage of Andrews's B-24, named HOT STUFF, at Mt. Fagradalsjfall. Icelandic Airlines delivered the pieces to Lux's home in Austin, Texas. Mr. Lux wants to turn over the plane to the Smithsonian Institution's National Air and Space Museum so that they may put it on display to honor the nine officers and four enlisted men who perished in the crash.

Submitted by Lt. Col. Golda Eldridge

Reprint Requests

Editor : *At least once a month, we receive requests to reprint our previously published articles, either to disseminate the material more widely or for use in military history courses. We almost always approve the requests, asking only that the articles be faithfully represented [that is, in context] and with proper attribution. Below is a typical example:*

I would like to inquire about the possibility of reprinting an article from *Aerospace Historian* in our quarterly journal *Canadian Military History*. The article details are:

William J. McAndrew, "Canadian Defence Planning between the Wars: The Royal Canadian Air Force Comes of Age *Aerospace Historian* Vol. 9, No.2 (1982) pp.81-89.

This is an important article that does not seem to be available anywhere online and we would like to share it with our readers.

Our publication is a not-for-profit quarterly academic journal published out of Wilfrid Laurier University in Waterloo, Ontario. You can find more details on our website: <http://www.canadianmilitaryhistory.ca/category/the-journal-cmh/current-issue/>

Thanks very much for your consideration.

Cheers,
Mike Bechthold
Managing Editor, CMH

In Memoriam

John D. P. Keegan (1934-2012)

John Desmond Patrick Keegan, highly honored as the foremost military historian of his time and knighted in 2000, died on August 2, 2012, at his home in Kilmington, England. He was seventy-eight. The cause of death was not disclosed.

Mr. Keegan earned a history degree from Oxford University. In 1957, he went to the U.S. to study Civil War battlefields.



After his return, he worked for a time preparing political reports for the American Embassy. From 1960 to 1986, he was a lecturer at Sandhurst, the British Royal Military Academy. Throughout his career, Keegan was in great demand as a visiting scholar at many universities in the U.S., UK, and Canada. Following his retirement, Keegan became the defense editor for the *Telegraph*, where he worked for the next twenty years.

In 1976, with the publication of his book, *The Face of Battle*, Mr. Keegan gained near universal acclaim. Keegan reexamined three famous historical battles: Agincourt (1415), Waterloo (1815), and the Somme (1916), but he did it from the perspectives of the soldiers involved. Thus, instead of focusing on grand strategy, tactics, or leadership, Keegan served up a stew of what a soldier faced in battle: noise, smoke, gore, confusion, stench, and fear.

He wrote some twenty books, including: *Six Armies in Normandy* (1982) about the D-Day invasion; *The Mask of Command* (1987), in which he argued that the best military commanders succeeded because they projected a sense of strength and charisma through their theatricality, which inspired their troops to follow them into battle; *A History of Warfare* (1993), where Keegan urged world leaders to use negotiation and diplomacy to avoid war; and *Fields of Battle: The Wars of North America* (1996), in which he analyzed the importance of geography – perhaps more important than the generals who fought there. An ardent pacifist who admired soldiers but despised war, Keegan never served in the military.

He is survived by his wife of fifty-two years, the biographer Susanne Everett and four children.

Reunions

1st Radio Relay. Sept. 17-20, 2012. Dayton, OH. Contact: William Hayton
385 Lower Gragston Creek Road
Pritchard, WV 25555.
(304) 486-5349
wshayton@netzero.net

51st Fighter Interceptor Wg. Sept. 13-16, 2012. Dayton, OH. Contact: Allie Craycraft
9501 East Jackson
Selma, IN 47383
(765) 744-1489.
alandjuanita@yahoo.com

91st Air Refueling Sq. Sept. 19-21, 2012. Fairborn, OH. Contact: Richard Seivert
1954 Wynstone Court Circle NE
North Canton, OH 44720
(330) 499-4676.
rseivert@att.net

343rd Strategic Recon Sq. Sept. 19-22, 2012. Fairborn, OH. Contact: Paul Dolby
1221 Riverside Drive
Huntington, IN 46750
(260) 356-1761
Paul343rdsrs@yahoo.com

Professional Loadmasters Assn. Sept. 19-23, 2012. Fairborn, OH. Contact: Kent Brown
28 Pine- view Drive
Browns Mills, NJ 08015
(609) 893-1833
kabrown9@comcast.net

42nd Bomb Wing (Loring 60s Generation). Sept. 20-23, 2012. Dayton, OH. Contact: Col. Paul Maul (Ret.)
4605 Bobolink Drive
Castle Rock, CO 80109
(303) 523-8972
pablomaul@aol.com

815th Troop Carrier Sq. Sept. 20-23, 2012. Fairborn, OH. Contact: Bob Tweedie
2783 Double Eagle Drive
Beavercreek, OH 45431
(937) 426-7947.
ineztwbird@aol.com

PTC 67F (Vance AFB). Sept. 20-23, 2012. Fairborn, OH. Contact: Bill Simmons
5528 Brewer Road
Mason, OH 45040-9236
(513) 404-2422
Bsimmons02@earthlink.net

441st Bombardment Sq. (1985-1989) Sept. 21-22, 2012. San Antonio, TX. Contact: Connie Krueger
W1677 City Road A,
Randolph, WI 53956
(920) 229-4418.
AF441Reunion@yahoo.com

Redhorse Association Sept.22-26, 2013 Bowling Green, KY. Contact: Charlie Hogan
1838 J Brown Road
Park City, KY 42160
(270) 749-5461
chogan@scrtc.com

B-58 Hustler Assn. Sept. 25-30, 2012. Dayton/Fairborn, OH. Contact: Ray Guffe
8675 West Carol Lane
Glendale, AZ 85305
(707) 481-5665
rwg1@uad1.com

90th Bomb Group. Sept. 26-30, 2012, Fairborn OH. Contact: Frank Hess
1666 Moore Road
Wooster, OH 44691
(330) 264-6993
fwsheels@aol.com

38th Air Police Sq. Sept. 27-29 , 2012. Dayton, OH. Contact: Ray Cummings
1128 Brookdale Ave.
Bayshore, NY 11706
(631) 667-7783.
djraegs@verizon.net

12th Tactical Fighter Wg. (MacDill-Camranh, Phu Cat, RVN) **12th Bomb Gp.** (WWII), **12th FEW/SFW** (Korean Era). Sept. 27-30, 2012. Seattle, WA. Contact: E. J. Sherwood,
3638 E Southern Ave., Ste. C105-121
Mesa, AZ 85206-2566
(480) 396-4681
EL.Sherwood.BIZ@cox.net

50th Supply Sq. (Hahn AB, Germany). Oct. 1-6, 2012. Dayton, OH. Contact: Dave Thompson
5122 Havana Ave.
Wyoming, MI 49509
(616) 531-2979.
daves3iron@yahoo.com

511th AC&W Gp. Oct. 3, 2012. Rapid City, SD. Contact: Donald Simmons
704 S Grove Road
Richardson, TX 75081-5116
(972) 231-6518.
dona7112@sbcglobal.net

355th Fighter Gp. Assn. Oct. 4-8, 2012. Fairborn, OH. Contact: William Cook
811 Old Forge Road
Kent, OH 44240
(330) 541-2653
bigbilldot@aol.com

Retired Air Force Chapel Staff Alumni. Oct. 5-8, 2012. Fairborn, OH. Contact: Thomas Curry
2500 Parkway Drive
Selma, AL 36703
(334) 872-7895
tcacpkwy@earthlink.net

6927th Radio Sq. (Mobile) Onna Point, Okinawa. Oct. 6-10, 2012. Orlando, FL. Contact: Jerry Stein.
flyjerry@bellsouth.net

26th Bomb Sq. Oct. 10-13, 2012. Fairborn, OH. Contact: Jan Demuth
3486 Weavers Ft. Jefferson Road
Greenville, OH 45331
(937) 548-4710
jan.demuth3486@gmail.com

463rd Bomb Gp. Historical Society. Oct. 11-14, 2012. Fairborn, OH. Contact: Art Mendelsohn, Jr.
PO Box 1137,
La Canada, CA 91012
(714) 547-6651
swoosegroup@463rd.org
www.463rd.org

Tan Son Nhut Assn. Oct. 11-14, 2012. Fairborn, OH. Contact: Johnnie Jernigan
956 Donham Drive
Beavercreek, OH 45434
(937) 426-3785
jernigan1@ameritech.net

3500th Pilot Training Sq. {Oct. 11-14, 2012. Fairborn, OH. Contact: Ed Mentzer
2734 Pheasant Run Lane
Beavercreek, OH 45434-6664
(937) 426-8807.
edmentzer@aol.com

63rd Flying Training Detachment (Army Air Forces-Douglas, GA). Oct. 14-19, 2012. Douglas, GA. Contact: John A. Hermann
3562 West Fork Road
Cincinnati, OH 45211
(513) 481-0130.
johnandirma@yahoo.com

47th Bomb Wg. (All Units). Oct. 17-20, 2012. Sacramento, CA. Contact:

Charles Palmer
1352 S. Century Circle, Apt. 103
Wasilla, AK 99654
(907) 242-1530.
crpalmer@gci.net

Misty FAC Oct. 18-21, 2012 Dayton, OH. Contact:

Christine Manning
406 Snowcap Lane
Durango, CO 81303
cambc@aol.com

43rd Bomb Group Oct. 24-28, 2012 Fairborn, OH. Contact:

Michael Lavean
Box 31
Saranac MI 48881
(616) 617-4939
lavean@hotmail.com

434th Fighter Squadron. Oct. 25-28, 2012, Fairborn OH. Contact:

Jeff Grosse
6508 Werk Road
Cincinnati OH 45248
(513) 305-3344
mack1@fuse.net

380th Bomb Gp. Assn. Oct. 31-Nov. 4, 2012. New Orleans, LA. Contact:

Barb Gotham
130 Colony Road
West Lafayette, IN 47906-1209
(765) 463-5390
380th.ww2@gmail.com

2013

4th Fighter Interceptor Sq. Apr. 10-14, 2013. Fairborn, OH. Contact:

Col. Bob Ettinger (Ret.)
2122 Via Pacheco
Palos Verdes Estates, CA 90274
(310)541-8625
rcettinger@aol.com

388th Fighter-Bomber Wg. May 30, - Jun. 2, 2013. Fairborn, OH. Contact:

Don Rahn
5902 Lynnaway Drive
Dayton, OH 45415
(937) 278-4390

B-52 DFCS Assn. Jun. 13-16, 2013. Fairborn, OH. Contact:

Sharon Lemanek
1326 Town Hall Road
Beavercreek, OH 45432
(937) 426-8557
kenamel.s.j@fuse.net

510th Fighter Sq. Sept. 4-8, 2013. Mason, OH. Contact:

Guy Wright
1701 Mall Road Apt. 14
Monroe, MI 48162
(734) 740-3164
guywright@chartermi.net

8th Tactical Fighter Sq. (1972 Takhli). Sept. 5-8, 2013. Fairborn, OH. Contact:

Ron Hunt
1328 Meadow Moor Drive
Beavercreek, OH 45434.
(937) 426-0867
ron.hunt.oh@gmail.com

379th Bomb Gp. Assn. Sept. 5-8, 2013. Fairborn, OH. Contact:

Larry Loveless
140 Newton Road
Fredericksburg, VA 22405
(540) 373-1596
ginlotfarms@verizon.net

MacDill Flyers. Oct. 4-6, 2013. Fairborn, OH. Contact:

Gene Stevens
3380 Greenburn Road
Beavercreek, OH 45434
(937) 429-1552
genestevens@sbcglobal.net

Ranch Hands Vietnam Assn. Oct. 10-13, 2013. Fairborn, OH. Contact:

Jack Spey
4245 South Rome Way
Hurricane, UT 84737
(435) 877-1166
maresfwb@aol.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

Guidelines for Contributors

We seek quality articles—based on sound scholarship, perceptive analysis, and/or firsthand experience—which are well-written and attractively illustrated. The primary criterion is that the manuscript contributes to knowledge. Articles submitted to *Air Power History* must be original contributions and not be under consideration by any other publication at the same time. If a manuscript is under consideration by another publication, the author should clearly indicate this at the time of submission. Each submission must include an abstract—a statement of the article's theme, its historical context, major subsidiary issues, and research sources. Abstracts should not be longer than one page.

Manuscripts should be submitted in triplicate, double-spaced throughout, and prepared according to the *Chicago Manual of Style* (University of Chicago Press). Use civilian dates and endnotes. Because submissions are evaluated anonymously, the author's name should appear only on the title page. Authors should provide on a separate page brief biographical details, to include institutional or professional affiliation and recent publications, for inclusion in the printed article. Pages, including those containing illustrations, diagrams or tables, should be numbered consecutively. Any figures and tables must be clearly produced ready for photographic reproduction. The source should be given below the table. Endnotes should be numbered consecutively through the article with a raised numeral corresponding to the list of notes placed at the end.

If an article is typed on a computer, the disk should be in IBM-PC compatible format and should accompany the manuscript. Preferred disk size is a 3 1/2-inch floppy, but any disk size can be utilized. Disks should be labelled with the name of the author, title of the article, and the software used. Most Word processors can be accommodated including WordPerfect and Microsoft Word. As a last resort, an ASCII text file can be used.

There is no standard length for articles, but 4,500-5,500 words is a general guide.

Manuscripts and editorial correspondence should be sent to Jacob Neufeld, Editor, *c/o Air Power History*, 11908 Gainsborough Rd., Potomac, MD 20854, e-mail: editor@afhistoricalfoundation.org.



Our “mystery plane” in the last issue was the Bell X-5, which tested a new aviation concept—a wing that could be swept backward and forward while in flight.

Although the X-5 looked like a fighter, it was never meant for any purpose but research.’

A variable geometry wing could be swept back for high-speed, combat performance and swept forward for low-speed operations in an airfield pattern. The wing of the X-5 spanned about 31 feet when swept fully forward for lower-speed flight but only about 18 feet when swept back to its maximum angle of 60 degrees.

The X-5 derived from the German Messerschmitt P.1101, which was brought to the United States for evaluation at the end of World War II. After the Air Force rejected the idea of developing a fighter-interceptor based on the P.1101. In 1949, Bell won a \$2.4 million contract to build two X-5 research craft.

The X-5 first flew at Edwards Air Force Base, California, July 27, 1951, piloted by Bell test pilot Jean “Skip” Zeigler. Initially, the plane was flown with the wing swept forward only. The sweep-back mechanism was first tried on its fifth flight.

The X-5 was powered by a 4,900-pound thrust Allison J35-A-17 turbojet engine. Bell planned to replace this powerplant with a more powerful Westinghouse J40 turbojet but the J40 failed to meet expectations and never flew aboard the X-5.

A second X-5 joined the test program at Edwards AFB in December 1951. Several test pilots flew both craft. In a 2005 interview, the late test pilot A. Scott Crossfield said the X-5 was “highly unstable.” This may have been proven on October 14, 1953, when the second plane crashed at Edwards, killing Major Raymond Popson. The first X-5 was retired in 1955 after its 133d flight, carried out by Neil Armstrong.

Crossfield said the “swing wing”—the plane’s reason for existence—worked just fine. However, he said, the aircraft was uncomfortable, difficult to fly, had a nasty tendency to stall, and lacked sufficient lateral stability. Still, the idea was adopted on several operational aircraft, including the F-111 Aardvark, F-14 Tomcat and B-1B Lancer.

Because the variable-geometry wing requires mechanisms that add considerable weight, it isn’t considered ideal for most combat aircraft and today’s newer warplanes don’t use the feature.

The surviving X-5 now belongs to the National Museum of the U.S. Air Force in Dayton, Ohio.

Twenty-nine APH readers entered our latest contest and all identified the X-5 but one had to be disqualified for not including a telephone number. Our winner, B. K. Hodge, PhD, PE of Mississippi State University will receive a copy of *Mission to Berlin*, about American B-17 Flying Fortress crews in World War II. Congratulations to all.

See if you can identify our latest mystery aircraft. Remember, we also want to hear from you as to whether you think this long-running contest is too easy or too difficult. Remember the “Mystery” rules:

1. Submit your entry via e-mail to robert.f.dorr@cox.net. Entries may also be sent via postal mail in any form to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124.

2. Write a sentence about the aircraft shown here. Include your address and telephone number. Remember to include a phone number.

3. A winner will be chosen at random from among correct entries and will receive an aviation book.

And let’s get serious about those historical treasures in your attic or basement. Some readers say they just don’t remember where their color slides are. That’s not a good way to assure the

preservation of history. Dig out your slide or snapshot of a rare aircraft and lend it to *Air Power History* for this contest.



This Issue’s Mystery Plane



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