

AIR POWER

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History



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COVER: The 20 Airmen from the 86th Contingency Response Group who airdropped onto Bashur Airfield, Iraq, and began aerial port operations for the 173d Airborne Brigade to stabilize northern Iraq.



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Thomas Wildenberg's series on Howard Hughes's involvement with the Air Force has gotten considerable acclaim from readers. In this issue Wildenberg completes the third and final installment of his three part series on the life of the extraordinary Hughes. The article centers on the development of guided missiles and airborne fire control systems. The later involvement of Hughes Company engineers who worked on the Falcon missile—Simon Ramo and Dean Wooldridge, the R-W of TRW—presages the connection of these individuals to the USAF ballistic missiles program.

Following on to Jeff Duford's fascinating piece on the enduring value of artifacts [*Air Power History*, Vol. 55, No. 1 (Spring 2008), pp. 4-15] is Jeffery Underwood's article "The *Sacred Cow* and the Creation of the United States Air Force." If you have never been to the National Museum of the United States Air Force or have not visited the *Sacred Cow*, this article should inspire you to do both.

Nine years ago, Gen. William Y. Smith, the former president of the Air Force Historical Foundation, penned a brief memoir of his Air Force service in Greenland during the Korean War. ["I Remember....," *Air Power History*, Vol. 46, No. 1 (Spring 1999), pp. 26-27.] In this issue General Smith picks up the story of his subsequent duty assignment to the Far East. In his article, "Korean War Diary," General Smith describes the life of a typical fighter pilot during the war.

Highlighted on the front cover are The Twenty Airmen from the 86th Contingency Response Group, who air-dropped onto Bashur Airfield, Iraq in March 2003, and began aerial port operations for the 173d Airborne Brigade. While many of our readers are familiar with air power's role in the Global War on Terror, fewer readers know much about the contributions of the airmen on the ground. Randy Bergeron, who served as the historian for the Combined Joint Special Operations Air Component Command, provides "The Perspective from the Ground."

The *Readers' Note* story, by Col. Frank T. Trippi, USAF (Ret.), recounts the recognition accorded by a French village to U.S. Army Air Forces flyers some sixty years after the Americans' acts of selflessness and heroism transpired. (See pages 44-45.)

On the pages indicated, you will find our customary Book Reviews (46), Books Received (56), and Departments (59)—Letters, News, Reunions, History Mystery (64), and the winner of the Best Article for 2007 (58).

Unfortunately, as evidenced by the number of news obituaries, the deaths of our World War II veterans continues to mount, including the late, great flyer and historian Don Lopez. (See page 62.)

Save the Date! The Air Force Historical Foundation annual awards banquet is scheduled to be held on Monday evening, October 6, 2008, at the Sheraton Crystal City Hotel, Arlington, Virginia. Our featured speaker will be General Ronald R. Fogleman, USAF (Ret.), the sixteenth Air Force Chief of Staff (October 1994-September 1997). More information will be posted this summer on www.AFHistoricalFoundation.Org



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A Visionary Ahead of His Time: Howard Hughes Part III: The Falcon Missile and Airb



ard Hughes and the U.S. Air Force— orne fire Control



Thomas Wildenberg

(Overleaf) Hughes in the pilot seat of his radar equipped Constellation. Note the radar warning indicating lights on top of the instrument panel. (All photos courtesy of the author.)

No military R&D effort received a higher priority in the postwar years than that to defend the continent against a nuclear air strike. No military weapons systems called for greater advances of technology. No group of scientists and engineers received stronger support of their efforts by the U.S. government. Yet the key organization involved was neither a branch of the government nor a publicly held corporation. It was the property of one man . . .

Simon Ramo, former employee of Hughes Aircraft and co-founder of TRW¹

That man was Howard Hughes and the organization described by Simon Ramo was the Hughes Aircraft Company, then a division of the Hughes Tool Company. How Hughes' lifelong interest in radio electronics and the establishment of a highly specialized laboratory transformed Hughes Aircraft Company from a third rate airframe manufacturer into the Air Force's premier supplier of airborne guided missiles, electronic fire control systems, and radar is the subject of this article.

When Howard Hughes returned to Culver City in the Fall of 1945, after an eleven-month hiatus dealing with the after effects of a nervous breakdown, his dream of turning Hughes Aircraft into a major manufacturer was in ruins. Production contracts for both of the company's major projects had been cancelled; no production runs would be ordered for either the HK-1 flying boat or the F-11 reconnaissance plane. Aside from completing prototypes for each of the aforementioned aircraft, the only ongoing project was a relatively small (\$500,000) research and development contract issued by the Army Air Forces (AAF) for work on an experimental air-to-air missile designated as the JB-3.

The award was one of several dozen R&D contracts for guided missile research issued by the Air Technical Service Command (ATSC) during the last 12 months of World War II. The JB-3 project, which was first proposed in October 1944, was started because of the need for a "weapon to combat high speed enemy aircraft under adverse weather conditions."² It was officially established as R&D Project MX-570 on November 13, 1944.³

Initial design parameters were worked out during the joint industry conference sponsored by the National Advisory Committee on Aeronautics (NACA) and the AAF in December 1944. The conference was held in great secrecy at the Langley Aeronautical Laboratory, at Langley Field, in Hampton, Virginia. The lab had already begun to work on the project, having conducted preliminary

wind tunnel tests a month earlier.⁴ The missile, named "Tiamet," after the goddess in Assyrian-Babylonian mythology whose emblem was a winged dragon, would be guided by control equipment adapted from the Radar Homing Bomb (RHB) developed earlier in the war.⁵ The rocket propelled air-to-air missile was designed to attack aircraft at altitudes up to 50,000 ft. with a 100-lb warhead. It would accelerate to a top speed of 600 mph and had a range of 5-9 miles.⁶

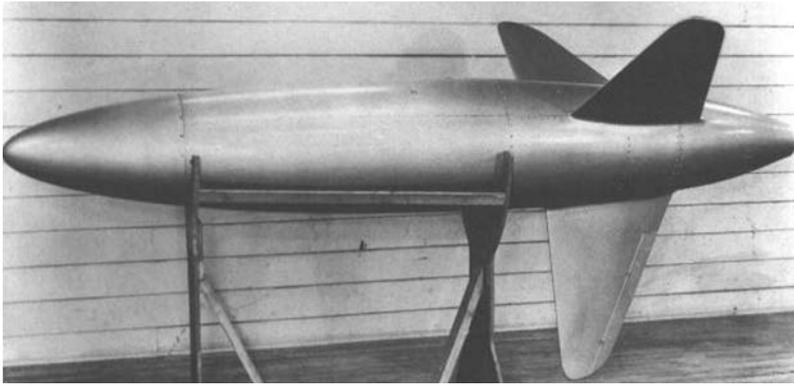
Hughes Aircraft was selected as the prime contractor and given an order to produce twenty-five JB-3s. In addition to the airframe, the company was also responsible for coordinating the activities of the other suppliers that provided the aerodynamic configuration (NACA), the radar seeker (Belmont Radio Corp.), and the control system (Lear-Avis, Inc.).⁷ Hughes began working on the contract on January 15, 1945, and was ready to begin testing the first missiles in the early part of August. The first JB-3 was fired from underneath the wing of an A-26 aircraft at Wendell Field, Utah, on August 6, 1945.⁸ Three more missiles were fired during the course of the next ten days to test the aerodynamic configuration of the missile. None of the missiles fired carried a radar seeker as it had already been determined that the RHB was not suited to the task. Instead, Hughes negotiated with Belmont to buy 20 frequency-modulated (FM) radar seekers from the company to be used in the missile (Belmont was soon taken over by Raytheon, which assumed responsibility for developing the seeker).⁹

Hughes Aircraft continued to work on the development of the JB-3 until the contract was terminated in September 1946. Of the twenty-five missiles contracted for, only fourteen had been tested fired. The remaining missiles were transferred to another new Hughes missile project for use in developing a control system for high-speed homing devices. Before terminating the JB-3 contract, the ATSC began negotiations with Hughes Aircraft on the design of a "practical" air-to-air missile that could be developed within two years.¹⁰

In the spring of 1947, Simon Ramo, one of the pioneers of microwave research then working for the General Electric Company, visited Hughes Aircraft Company. Ramo, a graduate of the California Institute of Technology, was eager to return to California where he planned to establish his own high-technology venture to exploit the military's growing interest in electronics.¹¹ While visiting the company, he was offered the position of director of research by Dave H. Evans, who then headed the Electronics Division of Hughes Aircraft.

THE JB-3... WAS... A WEAPON TO COMBAT HIGH SPEED ENEMY AIRCRAFT UNDER ADVERSE WEATHER CONDITIONS.

Thomas Wildenberg is the co-author of Howard Hughes: An Airman, His Aircraft and His Great Flights (Paladwr Press, 2006). He is a former Smithsonian Fellow having served successive terms as a Ramsey Fellow at the National Air and Space Museum in 1998 and 1999. Mr. Wildenberg is the recipient of a number of awards recognizing his scholarship. These include the Surface Navy Association Literary Award, the Edward S. Miller History Award, and the John Laymen Award. The first part of this article was published in the Fall 2007 issue of Air Power History, while the second part was published in the Spring 2008 issue.



The JB-3 had an ellipsoidal, streamlined body with three wings placed 120 degrees apart. It was powered by two solid fuel rocket motors: one to accelerate the missile to 600 mph, and the other to maintain its speed over the missile's 5-9 mile range. The 100-lb warhead could be exploded by either a proximity fuse, which was part of the radar homer, or by impact.

Ramo accepted the position and started work in October of that year.

Evans, who was hired in 1938 to support Hughes' around-the-world flight, was a member of the management team that had met at Eaton's Ranch during the evening of February 4, 1941, to discuss the establishment of a research, test, and development group for Hughes Aircraft.¹² The company was deeply involved in the design of the D-2 at the time, which included extensive development work on Duramold, a new composite material composed of wood and phenolic resin. There were other projects too that "Mr. Hughes" wanted them to work out. As Glenn Odekirk explained, "[The] company was primarily organized to work out ideas and special things that Mr. Hughes wanted."¹³ Although Howard Hughes did not attend the meeting himself, there can be no doubt that it was called at his request. Hughes was intimately involved with the D-2 at the time and was micromanaging most aspects of the company. What effect this meeting had on the R&D activities of Hughes Aircraft is

General Ira C. Eaker. When hiring Eaker for the Hughes Tool Company, Hughes told Eaker that he could tell his friends in the Army, Navy, and Air Force, "that if it ever develops that they can't get money for any weapons, experimental weapons, they think is vital to the national security," his company would "take a crack at it."



not known, but it does provide evidence of Howard Hughes's vision and his desire to take the company in directions far beyond the production of airframes.

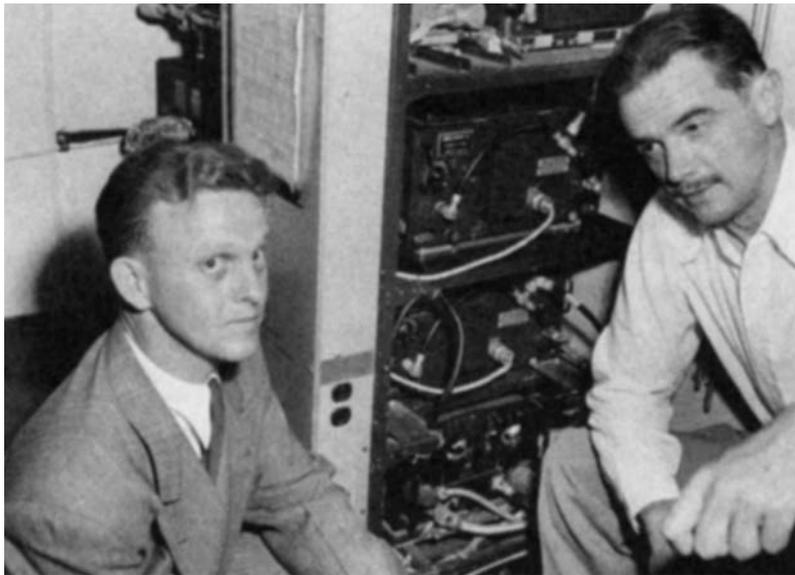
Sometime after Hughes' return to Culver City after the war, Dave Evens persuaded Hughes that the wave of the future lay in electronics.¹⁴ Evans was already working on the JB-3 and may have been the one to suggest the idea of using radar to provide terrain avoidance for aircraft. Hughes had been interested in radio since his teenage years, when he built his first radio set and became a member of the Radio Relay League.¹⁵ He always had the latest radio equipment installed in each of his airplanes and had the radio division of Hughes Aircraft construct a waterproof emergency radio for this around-the-world flight. Hughes instructed Evans to scour the country for the best electronics engineers.¹⁶ Evans recruited Simon Ramo, who in turn brought in Dean Wooldridge. Together, Ramo and Wooldridge would build the staff of the Electronics Division of Hughes Aircraft into one of the most successful research and development teams in the burgeoning aerospace industry.

Howard Hughes' direct involvement in the activities of the Electronics Division continued into the following year. He personally demonstrated the Terrain Warning Indicator (TWI) developed by Dave Evans from surplus radar equipment during "three hair-raising Constellation flights" conducted during the week of April 27-May 3, 1947.¹⁷ Hughes invited various members of the aviation press to join him on board a Trans World Airlines (TWA) Constellation equipped with the new safety device, which he demonstrated while flying in the canyons near Los Angeles. Robert W. Rummel, Hughes' personal consultant for eighteen years, described what happened as the Constellation approached the canyon walls a low level:

When the 2,000-foot alarm sounded, and the cliffs less than five seconds away, he [Hughes] rammed the throttles full forward and made abrupt, steep climbing turns, barely clearing the canyon walls.¹⁸

The flights garnered an enormous amount of extremely favorable publicity for Hughes personally, the Electronics Division, and TWA, which he owned.

That summer, while Hughes was in Washington testifying before the Special Senate Committee Investigating the National Defense Program, he met again with Lt. Gen. Ira C. Eaker. As will be recalled from Part I, Hughes had contacted General Eaker earlier in the year in order to obtain permission to fly the second XF-11. At the meeting Hughes offered Eaker, who was about to retire from the Air Force, an executive position within the Hughes Tool Company organization. Hughes needed someone of Eaker's standing to help develop the electronics laboratory for experimental weaponry that Hughes wanted to establish. "I propose to take all of the funds, profits, from my enterprise," he told Eaker, "and found a great labo-



Dave Evans (left) and Howard Hughes posing in front of the electronic bay of the radar equipped Constellation that Howard used to demonstrate the terrain warning indicator developed by the Electronic Division of Hughes Aircraft in 1947.

ratory and attract the most eminent scientists in the world and give them ideal facilities with which to work.”¹⁹ Hughes continued:

*I think that we are going to be in trouble again and I think the side that has the best weapons this time will win. I believe it will always be as it was in the years between World War I and World War II, that the Armed Services will have difficulty getting sufficient money for experimentation and research. If you will join me and help me found this laboratory, and I especially want you because you know who the people are that I should have join us because of your service for four years in Britain. You know also where the British scientists are and you probably can help me get them. You can tell your friends in the Army, Navy and Air Force, that if it ever develops that they can't get money for any weapon, they think is vital to the national security, we will take a crack at it.*²⁰

Eaker took the job offered by Hughes in October 1947, and moved to Houston to become a vice president of Hughes Tool Company responsible for the aircraft division. As Hughes predicted, Eaker would play a leading role in acquiring a weapons contract that would eventually lead to hundreds of millions of dollars in profits for the nascent aerospace giant that Hughes Aircraft would become, but this was months away.

In the meantime, the electronics engineers and scientists at Hughes Aircraft continued to work on the new air-to-air missile project (Air Force MX-798) as well as a study contract for the Navy to develop a ship launched anti-ship missile (Contract No. NOA(S)-8285).

In January 1947, Hughes Aircraft had requested that the contract for Project MX-798 be modified to allow the development of a supersonic air-to-air guided missile to defend bombers. The change came as a result of severe budgetary cuts in the AAF's guided missile program brought about by the peacetime scarcity of dollars and the

subsequent reevaluation of the entire missile program. Item three on the revised AAF priority list specified the need for “greatly improved defense armament for bombers,” and that the bomber launched air-to-air missile should proceed on a high priority.²¹

In March, a new contract was issued to Hughes Aircraft under Project MX-904 for the design and development of a supersonic air-to-air launched guided missile to be utilized primarily for defense of bombers against hostile fighters and missiles flying at speeds equal to Mach 1.5.²² The missile would have cruciform wings and be guided by means of a parasitic radar seeker. In June 1947, further cutbacks in the missile budget forced the AAF to reduce size of the contract from a complete missile to the development of a two-mile parasitic radar seeker and control.²³ In July the program was tied to General Electric's Dragonfly missile (later shelved).

In March 1948, the Air Force, which had been established in September 1947, revised Project MX-904 and the Hughes's contract to cover the development of a supersonic air-to-air missile designated as the XAAM-A-2 for use as an offensive weapon for interceptor aircraft and for defensive use by bombers. The design specifications called for a rocket that would be approximately .5 feet in diameter and 7.2 feet long, controlled by means of elevators and rudders mounted on the cruciform tail hydraulically activated by electrically controlled valves operated by the error signal from the target seeker.²⁴ The missile, which Hughes Aircraft had named the Falcon, was test fired for the first time in 1949. When the Air Force began to assign aircraft type designations to its guided missiles in 1951, interceptor missiles were designated as “Fighters,” and the Falcon became the F-98. By the time the missile had entered service in 1955, the aircraft designation (X-98) had been replaced by the GAR-1 (Guided Air Rocket-1). In 1963, the GAR-1 and its variants GAR-2, -3, and -4 s were redesignated the AIM-4 series.

During its operational lifetime, which continued until the late 1980s, the Hughes AIM-4 Falcon was fielded on McDonnell's F-4D Phantom and F-101 Voodoo, Northrop's F-89 Scorpion, Convair's F-102 Delta Dagger and F-106 Delta Dart, SAAB's J-35 Draken and JA-37 Viggen, and Dassault's Mirage IIIS. It was tested for possible use on the F-94 Starfire, and was to have armed the F-12A Blackbird and Republic F-103 and F-108 Rapier fighters. It served with the air forces of Japan, Sweden, Switzerland, Taiwan, Canada, Greece, and others. More than 60,200 Falcon missiles, representing an estimated \$18 billion in sales for Hughes Aircraft, were built over the years, with 48,000 of them being delivered to the U.S. Air Force.

The year 1948 proved to be pivotal for Hughes Aircraft. In addition to its first contract for the Falcon missile, the company also received its first contracts for what would be the beginning of a series of sophisticated fire control systems for all-weather interceptors. During the early months of

**EAKER
WOULD PLAY
A LEADING
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WEAPONS
CONTRACT
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EVENTUALLY
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OF MILLIONS
OF DOLLARS
IN PROFITS
FOR...
HUGHES
AIRCRAFT**

Over 60,200 Falcon missiles, representing an estimated \$18 billion in sales for Hughes Aircraft, were built during the weapons lifetime.

ALL OF THE OTHER BIDDERS, EXCEPT FOR HUGHES, WANTED SEVERAL YEARS FOR DEVELOPMENT. HUGHES WON THE COMPETITION BY PROMISING TO DELIVER IT WITHIN A YEAR



that year, the Armament Laboratory at Wright Field was testing an AN/APG-3 radar to determine its possible application to night fighters.²⁵ The feasibility of combining the A-1 lead computing sight with the radar to present computed course information directly to the pilot was also under consideration. In May, the Materiel Command issued a Request for Quotation (RFQ) for a radar fire control system for the F-89, a two-place, all-weather interceptor being built by Northrop. Hughes, along with several other bidders, responded with a proposal and cost estimate employing the A1-B sight and a modified AN/APG-3 with provisions for a dual display. All of the other bidders, except for Hughes, wanted several years for development. Hughes won the competition by promising to deliver it within a year.²⁶ On June 30, 1948, Hughes Aircraft was awarded a development contract for the E-1 fire control system. In November the contract was amended to extend the requirements to a second two-place all-weather interceptor, the Lockheed F-94 Starfire.

That summer the Armament Laboratory became interested in a similar radar system for single-place aircraft. In July 1948, laboratory personnel visited North American Aviation to discuss the possibility of mounting a pod-contained radar fire control system in an F-86.²⁷ North American felt that pod mounting posed too much of a threat to aircraft performance and both sides agreed the equipment—designated the E-2 system—might be installed in the nose. Hughes soon agreed to see if the E-2 could be mounted internally in the F-86.

Though both E-1 and E-2 programs began with a high priority, the E-2 never reached the production stage. Production and development of the E-1 system started simultaneously with the design frozen in the early stages of the program to insure

that the early delivery date would be met. (The first production unit was even fabricated prior to the completion of tests of the experimental models). A major facet of the development program was the conversion of the AN/APG-3 into the AN/APG-33.

By February 1950, twenty-five E-1 systems had been completed and were in various stages of installation, the 100-hour flight test program for the prototype radar in the F-94 had ended, and production systems were soon to be installed in the F-89. As the first F-94As were delivered, however, it soon became apparent that many of the E-1 fire control systems were out of calibration or not operating properly. Although Hughes had built the first production units in record time, the Air Force had requested that the system be developed by modifying equipment designed for other purposes and by taking shortcuts in the design. As reported in one official Air Force document, this resulted in a system that had operational limitations, marginal performance, and the need for many modifications.²⁸ In addition to its limited range, the inability of the A-1B and A-1C(M) sights, which were employed without modifications, were unable to measure accurately the angle of attack, true air speed and yaw of the interceptor, or the true air density at high altitudes. The foregoing were serious limitations for a fire control system designed for an all-weather interceptor.

In mid-1949, the U. S. Air Force was seeking to obtain a more advanced fire control system for its interceptors. Prime emphasis was placed on the need for a one-man, all-weather interceptor whose role was to be filled by the F-86D. Though the E-2 fire control system could have been fitted into this aircraft, the Air Force decided to increase the airplane's "kill" probability by using rockets. This created the need for a new fire control system design-

Operational Use of the E-Series Fire Control Systems

The E-1 fire control system consisted of the AN/APG-33 radar and the A-1C(M) sight directing 20-millimeter cannon in the F-89 and .50-caliber guns in the F-94. The system was designed to intercept enemy bombers with pilot and observer playing separate roles. The radar was operated solely by the observer, who switched it to automatic search operation at the beginning of a mission. If a blip appeared and was identified as unfriendly, the observer assumed manual control of the antenna and locked the radar on the target. The antenna then automatically held on the target while the radar continuously measured range, azimuth, and elevation.

At the lock-on point the pilot would begin the attack. He could steer on a pursuit course either by focusing on the target visually with the optical sight or by following steering data presented on the scope. In a radar attack, the pilot maintained the interceptor on the course of the target by keeping a dot within the steering circle in the center of the radarscope. At the appropriate range he uncaged the computer gyro and thus displayed the steering dot by the computed lead angle. After correcting his course for the lead angle by centering the dot dot again and watching the range circle shrink to a point where it coincided with a circle etched on the face of the scope, he opened fire.

The E-3, E-4, E-5, and E-6 fire control systems functioned generally like the E-1, but employed the lead collision attack mode. In the E-3 and E-4, an artificial horizon and range trace marker were displayed on the scope until the target blip appeared and lock-on could begin. At that time the steering dot and two concentric circles appeared. Centering the dot in the inner, or reference circle placed the aircraft in the lead collision attack mode. A gap in the outer, or time-to-go circle indicated the closing rate on the target. When the time before the projected impact of the rockets with the target reached 20 seconds the inner circle suddenly shrank to provide for more precise steering, and the outer circle gradually collapsed until approximately four and one half seconds before firing. The rockets were fired automatically at the instant time-to-go equaled the time it would take for the rockets to reach target. In the E-5 and E-6, the pilot saw only the artificial horizon until the radar locked on, after which the steering dot and concentric circles appeared.

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nated the E-3, which would be designed around the E-2 system combined with a new rocket-firing computer. The E-3 fire control system [see Table I] would be an solution pending development of a high powered radar proposed by Hughes Aircraft that would form the basis for the more advanced E-4 fire control system [see Table I].²⁹

In April 1950 the AN/APG-33(XA-2) radar, initially developed for the E-2 fire control system and now destined for the E-3, was redesignated the AN/APG-36. At the same time, the AN/APG-33(XA-3)—first proposed by Hughes a year earlier—was redesignated as the AN/APG-37. The AN/APG-37 had the same tracking range as the AN/APG-36, but twice the range. Part of the improvement resulted from increasing the power of the magnetron transmitter tube to 250 kilowatts, with the rest from doubling the power of the receiver-transmitter and increasing the diameter of the antenna reflector by several inches. The AN/APG-40 was identical to the AN/APG-37, except for mounting provisions peculiar to the F-94C and the F-89D, which were equipped with the E-5 and E-6 fire control systems [see Table I].

By the time production of the E-Series fire control systems was terminated in 1957, Hughes Aircraft had shipped more than 5,600 units to the U.S. Air Force. These units were installed on the F-89A,B,C, D and H models; the F-94A, B, and C models, and the F86-D.

On January 13, 1949, the Force announced an Advanced Development Objective (ADO), for a specially designed interceptor (dubbed the “1954 Interceptor” for the year it was expected to become operational) that could surpass the estimated speed and altitude of Soviet intercontinental jet bombers.³⁰ Recognizing that the increasing complexity of weapons no longer permitted the isolated development of equipment and components that went into a modern aircraft, the Air Force concluded that the new interceptor should be developed in conformity with the Weapon System Concept. This concept (as yet to be tried) was based on having an integrated the design in which each of the components was compatible with every other in the system. In keeping with this concept, the Air Force held a design competition for a fire control system (Air Force Project MX-1179) for the new interceptor that would insure the success of the interceptor’s mission by putting the aircraft in the right place at the right time, pointed in the right direction, so that it’s missiles could be launched automatically. Once the characteristics of the weapon system were determined, the Air Force felt confident that it could then go out to the airframe manufacturers and solicit bids for the new interceptor, which would be designed around the Project MX-1179 fire control system.

Research already conducted by the Air Force’s Armament Laboratory had proven the feasibility of collision-course attack, using folding-fin, spin stabilized rockets, and the Air Force was anxious that the new supersonic interceptor should employ an air-to-air guided missile. In May 1949, the Air Force selected the Hughes Falcon to arm the new interceptor because it was the only missile suited to the task that could be readied in time for the 1954 deployment date.³¹

In October 1950, three months before bidding ended for the airframe (Project MX-1554), Hughes Aircraft was awarded a contract for the electronic control system around which the MX-1554 airframe would be built. As explained by *Aviation Week*: “Hughes’s previous fire control experience and the fact that the advanced system was to fire Hughes-developed missiles undoubtedly played a part in the Air Force selection.”³² A contract for the airframe was not awarded until September 11, 1951, when Convair (Consolidated Vultee Aircraft Corporation) received a contract authorizing the construction of the delta-wing XF-102.

Hughes began an extensive program to study what it would take to design and build the new system as soon as the award was announced. Progress was slow, and it soon became evident that Hughes would be unable to deliver the new system by the scheduled delivery date in 1954. To expedite delivery, the Air Materiel Command and the Air Research

Table I: Hughes Fire Control Systems Supplied to the U.S. Air Force

System	Aircraft Used on	Aircraft Name	Aircraft Speed	Armament
E-1	F-89A,B,C F-94A,B	Scorpion Starfire	Subsonic Subsonic	.50 Cal. machine gun
E-3	F-86D (Early)	Sabre	Subsonic	2.75 in FFAR (Folding fin aircraft rocket)
E-4	F-86D	Sabre	Subsonic	2.75 FFAR
E-5	F-94C	Starfire	Subsonic	2.75 FFAR
E-6	F-89D	Scorpion	Subsonic	2.75 FFAR
E-9	F-89H	Scorpion	Subsonic	2.75 FFAR; AIM-4A,B,C,D
MG-3	F-102A	Delta Dagger	Mach 1.2	2.75 FFAR; AIM-4A,B,C,D
MG-10	F-102A	Delta Dagger	Mach 1.2	2.75 FFAR; AIM-4A,B,C,D
MG-12	F-89J	Scorpion	Subsonic	2.75 FFAR; MB-1
MG-13	F-101B	Voodoo	Mach 1.7	MB-1; AIM-4A,B,C,D
MA-1	F-106A,B	Delta Dart	Mach 2	AIM-4E,F,G
APG-63	F-15A,B,C,D	Eagle	Mach 2.5+	AIM-7F/M; AIM-9L/M; AIM-120
APG-70	F-15C,D,E	Eagle	Mach 2.5+	AIM-7F/M; AIM-9L/M; AIM-120

and Development Command, jointly recommended the development of an interim fire control system based on the two-man E-9 system that Hughes had developed for testing the Falcon missile. By the end of 1952 the Air Force had also decided to proceed with the F-102 on an interim basis.³³

At the heart of the E-9 system was the AN/APA-84 computer, whose development dated back to 1950 and the decision to provide a rocket-firing computer for the E-3 system. At that time, the Armament Laboratory asked Hughes to study the design of a new computing mechanism which could direct a variety of weapons and permit variations in armament and attack mode in a given interceptor without extensive electronic changes. In October 1950, Hughes proposed the “universal computer” to satisfy this requirement designed to fit into the space required for the AN/APA-84 computer and to control air-to-air and air-to-ground rockets and guns.³⁴

After the Air Force had decided to proceed with the interim F-102A interceptor and the modified E-9 fire control system, Hughes set out to determine just what had to be done to the E-9 to suit it for use in the one-man Convair aircraft. Investigation revealed that the changes required were quite extensive; consequently the new system was re-baptized as the MG-3.³⁵

The Pentagon approved the project on April 2, 1953. By that time, Hughes had decided it was possible to obtain an integrated system of flight control, fire control, and control-surface-tie-in for the F-102A. A data link and automatic instrument landing system was added to the new system, which became the MG-10 Aircraft and Weapon Control System. Hughes Aircraft eventually received orders for 750 of these systems.

By 1953, Hughes Aircraft was ensconced as the sole source of fire control systems and air-to-air guided missiles for the Air Force’s interceptor pro-

gram. The company was in its fifth year of phenomenal growth. From a business grossing \$1.5 million in 1947, it had grown into \$200-million-a-year avionics concern with a \$600 million backlog.³⁶ Annual earnings topped \$5 million and the work force totaled more than seventeen thousand. But all was not well.

As sales and profits increased, the operations at Culver City came under increasing scrutiny of Hughes Tool Company’s executive vice president, Noah Dietrich. Dietrich, characterized by *Fortune* magazine as “Hughes’s major-domo in financial matters,” began to take an ever increasing role in the management of Hughes Aircraft Company.³⁷ As the company’s need for working capital soared, Dietrich continually clashed with Harold L. George and Charles B. Thornton—the two-man management team hand picked by Howard Hughes to run the company in 1948—over decisions regarding budgets and the need to expand facilities.

Like Ira Eaker, George was a retired Air Force general who had won acclaim during World War II for his handling of the Air Transport Command. He was selected to run the day-to-day operations as the company’s general manager. Thornton, the assistant general manager, had been an executive with the Ford Motor Company.

In June, 1952, the management team in Culver city decided that Hughes must choose between them and Dietrich. As reported by *Fortune* magazine:

Through Eaker, the four vice presidents George, Thornton, Wooldridge, and Ramo sent to Hughes a memorandum marked Important Communication. They flatly accused Dietrich of attempting to seize personal power without regard to the consequences to the company and to the likely detriment of the Air Force schedules. They asked to see Hughes immediately.

TALBOT
[TOLD
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Hughes, however was not so easily brought to bay. A week passed before his secretary even acknowledged he had received the memorandum. But the desired meeting was never set up. When next the management had information about Hughes, it was that he had flashed in and out of the plant, unannounced, shepherding several strangers whose names but not their connections had been entered on the visitors registry, but who had been recognized as Westinghouse executives. Soon George's group received a tip that Hughes had put the company on the market.³⁸

The visit and others to follow were set up by Hughes as a means to establish the value of the company, but he had no interest, as the management team soon realized, in selling the company. Deciding to force matters once again, the managers sent Hughes a second communication putting him on notice that they could no longer be responsible for meeting the company's commitments.

On the evening of September 20, 1952, Eaker, Thornton, Wooldridge, and Ramo met with Hughes in an attempt to resolve their differences.³⁹ Hughes only chastised the group telling them that they were allowing their emotions to cloud their judgment. Nothing was settled and the dispute continued to fester throughout the spring and early summer. Ramo and Wooldridge made a final effort to break the impasse in July, when they met again with Hughes in one last attempt to resolve the matter. The pair waited twenty days for a response. When none was forthcoming, they handed in their resignations. One month later on September 11, 1953, Ramo and Wooldridge cleaned out their desks and walked out of the plant for the last time. Three days later George handed in his resignation, which was closely followed by Thornton's.⁴⁰

The Air Force, which had been watching the growing crisis at Culver City with increasing alarm, decided to take action. The Pentagon had long anticipated that the differences between Howard Hughes and the company's management might jeopardize deliveries of the critical weapons systems being developed by Hughes Aircraft. Secretary of the Air Force Harold E. Talbot was forced to act after word began to spread that the rest of the senior scientists and executives, comprising practically the entire secondary level of management, were about to leave.

Talbot could not let Hughes Aircraft fall apart. On September 18, he flew to Culver City accompanied by Roger Lewis, Assistant Secretary for Materiel, for a showdown with Howard Hughes.⁴¹ “You have made a hell of a mess of a great property and by God, so long as I am Secretary of the Air force, you are not going to get another dollar of new business,” Talbot exclaimed, threatening to put the Tool Company's Aircraft Division out of business.⁴² Hughes pleaded for time to straighten out his company. Talbot relented and gave Hughes ninety days to revamp the ailing company's management structure.

As the ninety days ran out at Culver City,

Hughes used the crisis to solve another vexing problem plaguing him: his spiraling federal tax bill. The domestic oil business was booming in 1953 and with it the profits at Hughes Tool Company. As the profits grew, so did his tax bill, but Hughes abhorred paying taxes.

It was against this background: an aircraft company torn by bitter revolt, the military pressing him to straighten out his business affairs, and the soaring income-taxes, that Howard Hughes demonstrated his genius for business and finance. In conjunction with his lawyers, Hughes devised a brilliant scheme for resolving both issues.

On December 17, 1953, Hughes's attorneys filed legal documents in Delaware setting up two new corporations. One was the Hughes Aircraft Company, a separate company formed from the assets and liabilities of the Radio Group of the Aircraft Division; the other was called the HHMI Corporation—a non-profit corporation set up with Hughes as its sole trustee.⁴³ The purpose of HHMI, as stated in its incorporation papers, was “the promotion of human knowledge within the field of the basic sciences and its effective application for the benefit of mankind. The next day, Hughes, or someone in his organization, decided that the HHMI Corporation sounded too much like a business and the name was changed to the Howard Hughes Medical Institute.

The creation of the HHMI was a bold stroke of financial genius. By transferring all his stock of the Hughes Aircraft Company to the institute, Hughes turned the large defense contractor into a tax-exempt charity, preventing the loss of the company (Defense Department officials would think twice before canceling the contracts of a company owned by a company devoted to medical research “for the sake of mankind”) and turning it into a tax heaven that would generate millions of dollars of revenue through payments from the Howard Hughes Medical Institute to the Hughes Tool Company. The former leased land and buildings from the Tool Company that would be used by Hughes Aircraft, which in turn paid HHMI for the use of the property. In addition to the lease payments, HHMI also owed the Tool Company for the difference between the assets it bought and the liabilities it assumed.

Without donating a single penny, Howard Hughes had created a public relations bonanza that was worth millions of dollars in income and tax deductions. As Bartlett and Steel so aptly point out, Howard Hughes had created the ultimate charity: “the American taxpayer was to pick up the entire bill for the Howard Hughes Medical Institute, while Hughes basked in the warm glow of testimonials to his philanthropy and quietly collected money from his own charity.”⁴⁴

The last act in the thirty-year drama surrounding Howard Hughes active participation in managing the Hughes Aircraft Company was played out in February 1955, when the first and only board of director's meeting of the Hughes Aircraft Company was held since its inception three months earlier.⁴⁵ At the meeting Hughes

appointed Pat Hyland vice-president and general manager, elected him as a director, and formed an executive committee of Howard Hall and Pat Hyland. He then gave the committee all powers in the operation of corporation, except:

1. The name of the company could not be changed.
2. The executive committee could not authorize payment of dividends.
3. The executive committee was not empowered to take title to any real estate, but was empowered to take leases as might be necessary for corporate purposes.⁴⁶

Once this was completed Hughes adjourned the meeting.

For the next twenty years, Hughes Aircraft was successfully run by Pat Hyland, who had only minimal contact with Hughes until the latter's death in 1976. In the interim, Hyland guided Hughes Aircraft as it grew into a multi-billion dollar aerospace giant.

In 1985, the company which Howard Hughes had established in 1932 to support his interest in aviation was sold to General Motors for \$5 billion. ■

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THE SACRED COW AND THE CREATION



Y OF THE UNITED STATES AIR FORCE



Jeffery S. Underwood

(Overleaf) The *Sacred Cow* at the Yalta Conference on the Crimean Peninsula in February 1945 with its tail number altered for security reasons. Clearly visible is the bullet-proof window of the executive suite. (All images courtesy of the National Museum of the United States Air Force.)

(Right) An interesting photograph of the *Sacred Cow* and its replacement, *The Independence*, at the Douglas factory in Santa Monica, California. Both aircraft are currently on display at the National Museum of the USAF in Dayton, Ohio.

(Below left) The *Sacred Cow* before its restoration at the National Museum of the USAF.

(Below right) The unofficial emblem of the *Sacred Cow* with its elevator door prominently displayed. Thinking the image too undignified for a presidential aircraft, the crew chose to adorn the aircraft with small flags of the countries visited by the aircraft.



Dr. Jeffery S. Underwood received his doctorate in American history from Louisiana State University in Baton Rouge, Louisiana, in 1988. His book, The Wings of Democracy: The Influence of Air Power on the Roosevelt Administration, 1933-1941, was published by Texas A&M University Press in 1991. Since 1988, Dr. Underwood has worked as a historian for the United States Air Force with the Military Airlift Command, USAF Air Defense Weapons Center, First Air Force, and Air Combat Command. Currently, he is the historian for the National Museum of the United States Air Force at Wright-Patterson AFB, Ohio. In addition to writing official histories and curating museum exhibits, he has written numerous articles and book reviews for professional journals and magazines. He has also done television and radio interviews for the History Channel, PBS, National Geographic, BBC, CNN, MSNBC, C-SPAN, NPR, CBS, and others.

After its presidential service, the *Sacred Cow* continued flying VIPs for the U.S. Air Force until 1961.



THE ONLY MILITARY PERSONNEL WHO WITNESSED THE EVENT WERE TWO ENLISTED MEN SERVING AS STEWARDS ON THE SACRED COW

The United States Air Force came into existence on September 18, 1947, with the official activation of the Office of the Secretary of the Air Force. On that date, Stuart Symington took the oath of office and became the first Secretary of the Air Force. Accordingly, the Air Force celebrates September 18th as the date of its creation.¹ Yet, two months earlier, an equally significant but generally forgotten event in the history of the Air Force occurred with little fanfare.

On July 26, 1947, Congress passed the National Security Act of 1947, which contained the provisions for creating an independent Air Force, and legislation needed only President Harry S. Truman's signature to become law. For a short while, however, it seemed that the required signature would not be easily obtained because Truman was hurriedly leaving Washington to visit his critically ill mother in Missouri. Despite his rush, Truman delayed his flight until a courier brought the legislation to his airplane.

After signing the National Security Act, President Truman stated: "We now have a separate Air Force." This simple declaration fulfilled the dream held by American military aviators for almost half a century. The event occurred with little ceremony and no photographers in the small 5½ by 12 foot stateroom of the President's VC-54C aircraft, nicknamed the *Sacred Cow*. In fact, the only military personnel who witnessed the event were two U.S. Army Air Forces (USAAF) enlisted men serving as stewards on the *Sacred Cow*.²

No photographer recorded the signing for posterity, but every year, tens of thousands of people view the executive stateroom and the pen used by President Truman at the National Museum of the United States Air Force at Wright-Patterson Air

Force Base near Dayton, Ohio. Visitors may walk through the *Sacred Cow* and see the stateroom and desk used by Truman and President Franklin D. Roosevelt. In addition, they may tour President Truman's Douglas VC-118, *The Independence*, President Dwight D. Eisenhower's Lockheed VC-121E, *Columbine III*, and the Boeing VC-137C aircraft best known as President John Kennedy's "Air Force One."

A very popular attraction at the National Museum of the USAF, the *Sacred Cow* has an interesting history. In the fall of 1943, the USAAF contracted with the Douglas Aircraft Company to build the first aircraft configured specifically for presidential use. To fulfill the USAAF's requirements, Douglas merged the fuselage of a C-54A Skymaster with the wings of a C-54B modified to use larger ailerons. The resultant aircraft (serial number 42-107451) received the designation of VC-54C—the only one ever constructed. Besides additional fuel tanks built into the front fuselage, the *Sacred Cow* included several specialized adaptations. First, the executive stateroom transformed this aircraft into one of the earliest examples of an executive aircraft. Equipped with a sliding desk, a fold-down bed, and a small lavatory, the VC-54C provided the comfort available only on much larger flying boats, like the Boeing 314 that had flown President Roosevelt to the Casablanca Conference in 1943. However, the land-based *Sacred Cow* had a more practical airframe, and it could land at virtually any large airfield around the world. The stateroom's rectangular bullet-proof window provided the only external clue that the aircraft was not an ordinary C-54, but even that tell-tale sign could be covered to look like any other window.³

Second, and of most interest to the general



(Above) Executive stateroom of the *Sacred Cow*. On the table to the right, President Harry S. Truman signed the National Security Act of 1947, which contained the provisions for creating an independent U.S. Air Force. Notice the Army Air Forces emblem displayed on the couch seat covers.

(Right) Aircraft instruments installed in the executive suite allowed the president to monitor the flight plan, and maps neatly rolled down for use in flight.

(Opposite page top) A unique feature of the *Sacred Cow* is the elevator used to lift President Franklin D. Roosevelt into the aircraft. This photograph, taken in the summer of 1945, shows the wheelchair carried on board.



public, Douglas incorporated a battery-operated elevator in the *Sacred Cow's* aft fuselage to accommodate President Roosevelt's polio-induced paralysis. The elevator made it possible for him to enter and exit the aircraft easily and secretly in a wheelchair. Once onboard, the president could move to his stateroom with a minimum of effort.⁴

The aircraft was delivered to the USAAF's Air Transport Command at Washington National Airport, Washington, D.C., in June 1944, with the official designation of "The Flying White House." However, that designation never took hold. Since the aircraft was maintained separately from the other Army aircraft and access was strictly limited, the ground personnel began referring it as a "sacred cow," and the press quickly adopted that name. An unofficial logo for the aircraft was created but was never painted on the aircraft.⁵

In February 1945, the *Sacred Cow* made its most famous flight when it carried President Roosevelt to the Yalta Conference. This flight on a military aircraft ushered in the presidential airlift mission performed by today's Air Force. It also marked the only time that President Roosevelt flew in the aircraft because he died unexpectedly in April 1945. However, President Truman used the plane extensively, and the last time he used the aircraft was the day he signed the National Security Act of 1947. The *Sacred Cow* was retired from the presidential fleet and was replaced by the Douglas VC-118 named *The Independence* in 1947. During



(Right) To efficiently use the space of the small executive suite, the table swiveled and the chair moved back to allow the bed to fold down. The seal of the United States is clearly visible in this photograph.

its presidential career, the *Sacred Cow* covered 431,000 air miles during 1,900 flying hours, and only ten percent of those hours were flown in support of Presidents Roosevelt and Truman. After leaving presidential service, it continued flying very important persons (VIPs—hence the “V” in

the aircraft designation) until 1961, when the Air Force retired it to the Smithsonian Institution with 12,135 hours 25 minutes total flying time.⁶

Left to the elements while awaiting restoration, the *Sacred Cow* faced serious deterioration, and in 1981, the Smithsonian transferred it to the United States Air Force Museum (now the National Museum of the USAF) for restoration. It arrived at the Museum on a flatbed truck, and restoration began in August 1985. After ten years and more than 34,000 hours of restoration work, the *Sacred Cow* was brought back to its condition when it flew President Roosevelt to Yalta. Accuracy took precedence during the restoration, down to the intentional use of the different tail number which had been changed for the flight to Yalta for security purposes. The aircraft went on public display at the Museum in April 1995.⁷

Today, the National Museum of the USAF carefully displays and protects the *Sacred Cow* with its eight other presidential aircraft. Not only does this collection represent the finest gathering of presidential aircraft, but it serves to inform the public about the important mission of presidential airlift. ■



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Air Power in the Global War on Terror



error: *The Perspective from the Ground*



Randy G. Bergeron

(Overleaf) Airmen carefully managed wing tip clearance of the large C-17 aircraft at Bashur, Iraq, after being left with no other choice but to put work-space and pallet space on the ramp due to the muddy conditions. (All photos courtesy of the author.)

(Right) Airmen constantly struggled with adapting to the mindset of a former Soviet satellite state.



Most articles on air power focus on pilots and planes. This article deals with airmen contributing to air power from the ground: aerial port, security police, environmental health, combat controllers. If you regard these, mostly enlisted career fields, as less glamorous and therefore less important and interesting, think again. Based on my observations as an Air Force historian during three deployments in support of Operation Enduring Freedom and Operation Iraqi Freedom, the contributions to air power by airmen on the ground are anything but ordinary.

Airmen in Kyrgyzstan

Following his firsthand historical interpretation of Operation Allied Force in Kosovo in 1999, Gen. John P. Jumper, Commander, United States Air Forces in Europe, revamped the capability to rapidly stage and launch forces at austere locations by activating the 86th Contingency Response Group (CRG). The 86th CRG consisted of an air mobility squadron, a security forces squadron, and an environmental medicine flight, all designed to form one cohesive unit to achieve this goal.¹

After the terrorist attacks of September 11, 2001, the United States required aircraft to operate from bases near Afghanistan. Closer locations meant increased combat effectiveness by reducing aircraft response time, increasing aircraft time-on-station, limiting aerial tanker requirements, and

enabling the arrival, storage, and loading of large quantities of humanitarian relief supplies. Traditionally, the Air Force sent Tanker Airlift Control Elements from Air Mobility Command to perform this mission, but when an air base was needed in Kyrgyzstan, General Jumper, now Chief of Staff of the Air Force, pushed for the deployment of the 86th CRG.²

Airmen of the 86th CRG constantly struggled to adapt to operations in a former Soviet satellite state. From holiday celebrations to daily operations, airmen faced numerous challenges as diplomats and war-fighters. Upon their arrival at Manas International Airport, in Bishkek, Kyrgyzstan, in December 2001, an immediate decision had to be made concerning the placement of cargo. The group arranged with Kyrgyz airport authorities to use a certain portion of the terminal. However, when forces moved pallets that night, the group was “double-crossed” and quickly found the deal made with the day-shift supervisor also required a handshake agreement with the night-shift supervisor. This lesson of stovepipes and power trips suggested the use of interpreters in the future.³

Inclement weather and lack of airlift hampered initial delivery of supplies and equipment. However, by January 2002 aerial port specialists had unloaded more than 6,000,000 pounds of materials stretching the cargo yard to one-quarter mile and enough equipment to begin building a tent city. Airmen first removed piles of snow. Then, on the

THE CONTRIBUTIONS TO AIR POWER BY AIRMEN ON THE GROUND ARE ANYTHING BUT ORDINARY

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In early January 2002, airmen begin building tents at Manas International Airport in Bishkek, Kyrgyzstan. Never before had locals seen such nice weather for January. Before the end of the day, airmen were building tents in t-shirts.

day they began erecting tents, the weather changed dramatically to sunny and 60 degrees Fahrenheit. In fact, at one point airmen wore T-shirts as they erected tents. Never before had the local interpreters seen such warm weather for January and were dumbfounded. For many airmen, they knew exactly who was responsible for the good weather.⁴

While on patrol, security forces handed out candy to a local child.



The Environmental Medicine Flight took soil samples to make sure the ground was safe before construction



The day after arriving at Manas, security forces patrolled the airport with open weapons. The airmen, conscious not to scare the local inhabitants, handed out candy to the children. As each day passed security forces increased their presence little by little. Whether it was by issuing badges, establishing entry control points, or building an armory, security forces constantly improved the posture at Manas.⁵

The mission for the Environmental Medicine Flight was clear: to make sure the meals were safe. As it turned out, the problem wasn't so much the food, but water. Airmen initially tried to get the local Coca Cola bottling plant to provide water, but once again dealt with the wrong people who made empty promises. The plant could not change production from sparkling to plain water. Eventually the Environmental Medicine Flight helped a local company pass inspection and began purchasing bottled water. The flight also took soil samples to make sure the ground was safe before construction.⁶

By the end of February 2002, airmen of the 86th CRG had built an air base in Kyrgyzstan and handed it over to the 376th Aerospace Expeditionary Wing. The group handled more than 25,000,000 pounds of fuel for 170 aircraft and unloaded more than 12,000,000 pounds of cargo. The group also erected more than 200 tents and set the stage for over 3,000 coalition forces. Combat sorties took off from Manas only 75 days after the first airmen arrived. The remarkable achievement of air power on the ground kept Operation Enduring Freedom at the enemy's front door.⁷

In 75 days, Airmen built an air base in Kyrgyzstan that supported over 3,000 Coalition Forces.



Airmen in Iraq

The 86th CRG learned of a possible mission in northern Iraq when the group participated in a planning conference with the Southern European Task Force. Contacts made during the conference led to the 86thCRG providing assessment data on eight airfields in northern Iraq. Concurrently, United States Army Europe earmarked the 173d Airborne Brigade, SETAF's major component, for United States Central Command. Because the 86th CRG had worked with the 173d in past exercises, the combination was a good match.⁸

Members of the 86th CRG traveled to Vicenza, Italy, home of the 173d, to conduct liaison work crit-

Fifteen C-17s line up at Aviano Air Base, Italy, as the first airborne insertion using the Globemaster III is about to begin.



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ical to their participation in OIF. Just like it had done for Kyrgyzstan, Air Mobility Command competed for the base opening piece, but the 86th CRG had already begun interacting with the 173d and become a key participant in the joint planning and eventual operation. Ironically, the planning lasted longer than the operation itself.⁹

In early March 2003, the 86th CRG and the 173d went to Qatar for further planning. There the 86th CRG learned that the mission in northern Iraq would not be an airfield seizure of Bashur but an airfield lodgment because of the local Kurdish population's friendliness towards the United States. The concept called for an airborne insertion of 1,000 troops, 20 of whom would come from the 86th CRG. The insertion used 15 aircraft—the first five carried heavy equipment and the rest carried passengers. Then, over the next five days, 40 additional aircraft delivered the remaining equipment and personnel. Airmen decided what went on each aircraft, to include cross-loading airborne soldiers based on their specialties, as to not put “all of their eggs in one basket.”¹⁰

The twenty-airmen airborne team came from a variety of specialties including security, intelligence, aerial port, medical, civil engineering, and fuels. The plan called for the team to get to Pisa, Italy, by March 21. However, after arriving on the 20th they quickly learned the Army had moved the 173d directly to Aviano Air Base, Italy. The location changed due to limited capabilities at Vicenza and political considerations to use an Italian airfield versus Aviano—an American-run base. It became clear the 20 paratroopers were in the wrong place, so they boarded a bus for a seven-hour ride to Aviano and arrived as planned on March 21.¹¹

Meanwhile, the rest of the 86th CRG prepared for deployment from Ramstein Air Base, Germany. The Supply Mobility Element issued Joint-service Lightweight Integrated Suit Technology (J-LIST) suits, the latest version of chemical warfare defense equipment. The Air Force had originally directed the suits be sent to Incirlik AB, Turkey. However, they were diverted to Ramstein for the CRG's use, when by chance the Air Force Civil Engineer heard of the group's need through connections with an AMC representative, who had earlier visited the CRG with an eye toward AMC building a similar type unit. During his visit, the CRG had briefed the AMC representative of the need for J-LIST suits who con-

veyed that need to the Air Force Civil Engineer.¹²

On March 23, the main body of the 86th CRG arrived at Aviano. While there, the CRG further planned with the 173d Brigade. During the planning, United States Central Command set the night of March 27 for the parachute drop and first combat airborne insertion using the C-17 Globemaster III.¹³

The day prior to the airdrop, the media criticized OIF for not having any troops in Iraq's oil rich north. The next day there were 1,000 combat troops on the ground in northern Iraq. Within a couple of days after the initial airdrop there was a full brigade on the ground. Only the U.S. Air Force was capable of such a feat.¹⁴

Planners were concerned about exposing the valuable C-17 aircraft to possible hostile fire. Airmen addressed the threat by considering more than 140 possible routes into Iraq. A day before the airborne mission started, Turkey agreed to permit over-flight rights, which shortened the mission from eight to five hours. In addition, planners made the airlift mission work through a stream of nearly three-dozen air refueling connections over the Black Sea. The Air Force committed 65 percent of its combat air power to protect the airlift force.¹⁵

As the C-17s taxied on the ramp at Aviano, aircrews looked out the window and noticed an amazing sight. Although the air and ground crews tried to maintain a low profile days before the launch, the base woke up to thousands of troops and 15 aircraft lined up on the ramp. The huge formation drew people from every direction. People waving American flags stood on rooftops and lined the streets. They sensed that something big was about to happen.¹⁶

Prior to their arrival at Aviano, the 86th CRG sent an airfield survey team to design a plan to park the many C-17s there, something that had never been done before. The planners succeeded, and though it took a lot of choreographing the plan worked out well.¹⁷

About an hour out from the drop zone, the mood aboard the aircraft turned serious. Usually aircrews used an independent source of instrument information to guide to final approach; however, for Bashur, crews used only their Global Positioning System, which meant the navigational systems on board the C-17 were deemed trustworthy enough to navigate the airplane to visual flight rule minimums.¹⁸



The use of night vision goggles proved essential with required nighttime landings on an unimproved airstrip with no lighting.

THE MUD WAS SO THICK IN PLACES THAT AIRMEN SANK TO THEIR KNEES. AS A RESULT, PLANS FOR REAL ESTATE MANAGEMENT AND MOVEMENT OF VEHICLES WERE QUICKLY ALTERED

Once over Bashur airfield hundreds of soldiers and airmen stood, yelled, stomped their feet, and then ran out the back of the airplane. It literally brought tears to aircrew members' eyes. The necessity to get an Air Force commander, Col. Steve Weart, jumping in with an Army commander validated General Jumper's vision of the contingency response group being a force with an airborne capability.¹⁹

Only three paratroopers suffered injuries serious enough to warrant extraction. None of them belonged to the Air Force. The rainy weather leading up to the jump reduced the impact on what otherwise would have been a hard surface. Of the 964 paratroopers scheduled to jump (944 from the 173d and 20 from the 86th CRG), only 36 did not exit the aircraft in time and became known as "alibis." Jumpers only had 55 seconds of usable drop zone between the green light, telling jumpers they were clear to jump, and the red light, telling jumpers to stop.²⁰

Airmen jumped carrying 35-pounds of load-bearing equipment and a weapon, a 50-pound parachute, and an 80-pound rucksack. Because it rained heavily just prior to the jump, the mud was both a blessing and a curse. Although the soft ground made for a favorable landing, it also complicated assembly at the rallying points.²¹

The mud was so thick in places that airmen sank to their knees. As a result, plans for real estate management and movement of vehicles were quickly altered. To make matters worse, it hailed twice that first day, and temperatures dropped as low as 33 degrees Fahrenheit. With no shelter, cool temperatures, and limited water, hypothermia became a real concern. Left with no choice but to put workspace and pallet space on the ramp, the aerial porters carefully managed wing tip clearance of the large C-17 aircraft.²²

The muddy conditions at Bashur delayed follow-on forces. The old adage that "no plan survives contact with the enemy" was no exception, only this time it wasn't contact with the enemy, it was contact with the enemy's land.²³

The use of night vision goggles proved essential for required nighttime landings on an unimproved airstrip with no lighting. The Air Force

front-loaded some of its key command and control, aircraft maintenance and marshalling, and mobile aerial port capabilities because the mission required immediately setting up a tanker airlift control element within 30 minutes and receiving follow-on aircraft.²⁴

The planned mission was extremely ambitious. For instance, the minimum time to download a C-17 by AMC regulations was one hour and 45 minutes, and that was with rapid offload for one aircraft. During this mission, airmen unloaded two aircraft in 30 minutes in totally blacked-out conditions using night vision goggles and infrared illuminators and glint tape all over the field. The engine running offload was a record shattering event.²⁵

The aerial porters placed all rolling stock and pallets on the ramp until daylight and then moved the cargo forward because it was too hazardous to navigate on the muddy surface at night. The delay in movement did not affect C-17 ground operations.²⁶

During the first four nights of the air land operation, airmen downloaded, on average each night, a dozen C-17s, carrying 100 vehicles, 500 personnel, and 1,000,000 pounds of cargo. They did so in only four hours of darkness in a completely austere field with bare base equipment. Bashur was now the only C-17 strategic airlift capable airfield available to coalition forces in northern Iraq.²⁷

The 86th CRG deployed with 150 people and only one-fourth of its equipment. Unlike its deployment to Kyrgyzstan in 2001 when the 86th CRG deployed using six C-5s, the group entered northern Iraq using only two C-17s. The remaining 13 C-17s were used by the Army.²⁸ Members of the 86th CRG built a base at Bashur airfield under harsh weather conditions and provided an aerial port for 371 missions, 4,264 passengers, and 11,283 short tons of cargo, enabling the 173rd Airborne Brigade and Joint Special Operations Task Force-North to stabilize the north.²⁹

Air Commandos in Iraq and Afghanistan

From February to May 2007, I was privileged to serve as the historian for Air Force Special Operations Forces in Iraq and Afghanistan. Known as the Combined Joint Special Operations Air Component, its mission was to provide highly flexible and predictable air and ground effects in support of the overall special operations commander. Although a joint organization with helicopter forces from the U.S. Army and Navy, the air component comprised mostly of Air Commandos from the 1st Special Operations Wing at Hurlburt Field, Florida.³⁰

Since the beginning of the Global War on Terrorism in 2001, special operations became "the worst nightmare of America's worst enemies," according to President Bush. Night after night, Air Force Special Operations Forces teamed with designed task forces to successfully achieve tactical, operational, and national strategic objectives. These task forces comprised of Army Special Forces, Navy SEAL, other government agencies,



Air Commandos contributed to the battle at Najaf by deconflicting airspace for troops in the trenches.

THE MISSION WAS “THE SINGLE MOST IMPORTANT AND SUCCESSFUL COMBAT OPERATION CONDUCTED IN AFGHANISTAN SINCE 2002”

Sperwan Ghar, the key to Operation Medusa because of its commanding view and tactical advantage.

conventional, coalition, as well as Iraqi and Afghani special operations forces and police. During my tenure, I covered two of these task forces’ historically significant operations.³¹

The most important objective in 2006 was called Operation Medusa in Afghanistan. From September 2 to 14, special operations forces attacked the Taliban’s Panjwayi Anti-Coalition Militant command network of hundreds of well-trained fighters gathered west of Kandahar Province. Air Commandos supported the fight with AC-130 Spectre Gunships and MC-130 Combat Talon aircraft. The operation proved significant because the anti-coalition militant forces had control of the Panjwayi District and consistently attacked nearby highways and bases. Despite Al Qada persistently re-supplying and reinforcing enemy forces, special operations forces killed nearly all of the enemies in action. The defeat of the anti-coalition militant hindered the Taliban’s obvious desire to control Kandahar.³²

To put in perspective the importance of Operation Medusa, the regional commander stated the mission was “The single most important and successful combat operation conducted in Afghanistan since 2002 (Operation Anaconda).” According to the task force commander, “The warrior ethos and professional acumen demonstrated by every Air Commando was instrumental to the success of one of the most decisive campaigns in the history of combat operations in Afghanistan.”³³

A second historically significant objective occurred when troops came in contact with the enemy at Najaf in Iraq on January 28 and 29, 2007. Air Commandos provided the quick reaction forces needed to support the Iraqi and U.S. special operations forces. These forces contributed as first contact in the battle. Specifically, Air Commandos contributed by the de-confliction of airspace on troops in the trenches. Air Commandos also furnished devastating fire with the gunships, which arrived over the engagement area. Air Commandos also provided three of the four combat air controllers and all of the helicopters throughout the engagement.³⁴

Air Force Special Operations Forces flew numerous sorties and killed hundreds of enemy fighters in this operation. According to the Combined Joint Special Operations Task Force Arabian Peninsula Commander, “The AC-130 airpower was decisive in Najaf.” Ultimately, the Iraqi army moved on the village of Najaf and secured the surrender of hundreds of personnel.³⁵

Overall in 2006, Air Commandos flew more than 5,000 sorties and more than 15,000 hours in support of operations similar to these. This was significant considering a force structure possessing very few airframes. Air Commandos received more than 3,000 requests for air support and delivered on nearly all of them. This was due in large part to a 97.6 percent maintenance effectiveness rate and the high degree of flexibility on the part of the crews and planning staff. During the year, Air





(Above) Although dealing with an average fleet age of 40 years, Air Commandos supported nearly all air requests due in large part to the 97.6 percent maintenance effectiveness rate.

Commandos expended more than 120,000 rounds of munitions, transported more than 7,000,000 pounds of cargo and 20,000 passengers, and offloaded more than 200,000 pounds of fuel. As a result, the unconventional Air Force directly contributed to more than 600 enemy killed in action, more than 400 high value targets destroyed, and more than 2,000 detainees captured.³⁶

Having seen firsthand the contributions of air power from the ground, I find it ironic that the Army and Marines Corps added troops throughout Operations Iraqi Freedom and Enduring Freedom, while the Air Force reduced its number of airmen. Since then, the Air Force announced it will need up to 2,000 more “battlefield airmen” to support our ground forces. ■

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Korean War Diary





William Y. Smith

(Overleaf) The author with his F-84D in Greenland, July, 1950, before heading to Korea. (All photos courtesy of the author.)

East to Far East

The 20th Fighter Bomber Wing arrived home at Shaw Air Force Base, South Carolina, on December 19, 1950. Our flight from Greenland had been uneventful, our landings and departures from Goose Bay, Labrador, and Bangor, Maine, routine. The weather was good, and we all reached Shaw Field pleased to have had the experience but also grateful to be home.

We had gone east when the war began, but we knew that soon would be going in the other direction—to the Far East. And we were eager to go. As we awaited orders, we continued to train, routine for the most part. We did get in some night and all weather flights.

My last flight at Shaw was on March 2, 1951; my orders for Korea had come through. I was one of ten F-84 pilots to be attached—not assigned—to the 27th Fighter Escort Wing, then also stationed at Itazuke Air Field on the southern Japanese island of Kyushu.

After several days processing into the Far East theatre, I was flown to Itazuke Air Field and attached to the 522d Fighter Squadron of the 27th Fighter Escort Wing. The 27th was a well respected wing. The two SAC officers who had “assisted” the 20th Fighter Bomber Wing on our move to England some nine months earlier had both been commanding officers of the 27th—Colonels Ashley Packard and Cy Wilson. When I first arrived, Col. Raymond F. Rudell was wing commander and Col. William E. Bertram the group commander. I was attached to the 522d squadron, with Lt. Col. John W. Lafko commanding. My flight leader was Capt. Bill Slaughter.

Spring 1951

After two local flights I flew my first combat mission on March 27. I was not surprised that I did not have more in theatre pre combat orientation. Quite the contrary, I would have been surprised and disappointed if I did not go into combat as soon as possible. A further contributing factor was that I had more time flying the F-84 aircraft than most, if not all, the pilots in the 27th.

The 27th was composed primarily of veteran pilots, most of whom had flown F-82 twin mustang escort fighters in and after World War II. After the war they had become a fighter escort wing trained to escort and protect SAC bombers on their combat missions. The 27th included three squadrons, the

522d, the 523d, and the 524th, plus maintenance, armament, and logistics functions. Because the conflict in Korea required more fighter aircraft than the Air Force had readily on hand, the 27th was assigned to serve both as escort for B-29 bomber strikes and, additionally, in a fighter bomber role. The 27th had only recently converted to the F-84E, the premier U.S. fighter-bomber at that time.

The 27th pilots were far more experienced than us, but we had more flying time in the F-84 and understood better its strengths and weaknesses. We “new sports” appreciated the combat experience and maturity of the 27th pilots. The squadron’s World War II veterans included my flight commander, Capt. Bill Slaughter, Capt. Billy Edens, Maj. Clark Manning, Maj. Bill Fullilove, and Capt. Charlie Minter.

Shortly after I joined the 27th I began making notes, not daily, but periodically.

My purpose as I start this is simple and direct. I intend to commit to paper my thoughts concerning the events as they happen in my sphere of activity. Why do I start at this time? The answer is that I’m convinced this war situation will not long continue as it is; it must break one way or the other—into a big war or no war.

Between March 27 and April 14, I flew seventeen missions. I also received a number of useful briefings. On April 14 we had a lecture on escape and evasion if downed behind enemy lines. One most encouraging bit of information was that if captured by the Chinese “all hope is not lost.” I was also impressed by being told to answer questions truthfully—to give more than name, rank, and serial number. Our speaker said the Chinese liked to talk, and we should give them various unclassified information we had read in aeronautical publications. He added that the Chinese liked to look at photos and personal belongings were usually returned. We could expect three levels of interrogation: (1) Front line—Chinese (brief); (2) Army—Chinese or Russian (high school level English); and (3) Russian officer or advisor, a very thorough interrogation.

On April 16, we lost our first pilot, from another squadron in the group. He was hit by ground fire. Enemy ground activity was increasing during this period, as was their fire on our aircraft. The harsh realities of combat hit closer to home on April 22, the day the Chinese spring offensive began.

Barnes, [David P.] Class of '49, USMA, was shot

Gen. William Y. Smith, USAF (Ret.), rose from fighter pilot to Deputy Commander-in-Chief of the U.S. European Command. Shot down behind enemy lines and severely wounded on his 97th mission in Korea, his subsequent assignments included teaching at West Point, serving on the Air Staff, Joint Staff, the Kennedy White House, and as Chief of Staff at SHAPE. He commanded the 601st Air Base Wing and the Oklahoma City Air Materiel Center and worked for two Secretaries of the Air Force and three Chairmen of the Joint Chiefs of Staff in various capacities. After retirement, he was named a Fellow at the Woodrow Wilson Center for International Scholars and subsequently became President of the Institute for Defense Analyses. General Smith was President of the Air Force Historical Foundation from 1996-2003.

I HAD MORE TIME FLYING THE F-84 AIRCRAFT THAN MOST, IF NOT ALL, THE PILOTS IN THE 27TH



A JATO assisted F-84E well airborne, near Taegu, Fall 1951.

down by flak in the Kumwha area this morning. They (he was flight leader) had made one pass on a target just SW of Kumwha, and during the pass heavy flak was encountered. He and his wingman decided to make another pass, and as he passed over the gun position at about 1000 ft a single shot from the gun hit him in the dive brake section; the plane was set afire and Barnes bailed out. He was seen on the ground, out of the chute. A CAP [Combat Air Patrol] was immediately set up and other flights were called in. After about 3 1/2 hours the CAP was called off—7 planes and 2 helicopters had been damaged by flak. Barnes...wasn't far from friendly lines, but there are a lot of enemy troops there.

Pilots in the CAP flight said the flak was tremendously heavy. Attacks on enemy gun positions—six of them uncamouflaged—were successful, hitting many enemy, but the guns were immediately remanned. Sixteen flak positions were identified along the road. More CAP flights went to the area over that day and one or two after. Barnes was not seen. After the war, we learned he had been captured and died in captivity the following June.

One thing that struck me about the Barnes incident was that we all knew the dangers of making a second pass over a defended target. But in the heat of battle, as Barnes and the CAP pilots showed, pilots get so involved they sometimes forget important cautions. The Chinese offensive continued, but evidently there had been no deep penetration. On April 24 I noted:

The amazing thing to me is the lack of any idea where the lines are, where the enemy is hitting, etc. There have been no drawn battles that I know of and in the Chorwon valley I didn't see enemy supplies moving down the roads....In fact, from the air it looks no different than it did before the attack began.

On April 29 our intelligence briefers reported that the enemy was just outside Seoul, moving south. They also stated that the enemy pressure seemed to be lessening.

On our second mission today we hit troops just NE of Seoul CS3266. I led the flight—first one I've led,

and I was a little rough in spots. However, we got there, had plenty of time to work over the target and return home. I still hope to get that flight before I leave here—but I must work to do it.

On May 1, I wrote, "From all appearances we won the May Day prize." I was convinced the Chinese wanted to take Seoul so as to have another reason to celebrate May Day. But we decided "not to give them Seoul unless it was absolutely necessary." Apparently we had been successful because there had been little contact for the past two days, and our ground force patrols in some cases had pressed forward over 5000 yards.

During this period I flew one or two missions a day, and more than once I found out first hand the value of experience. On May 1, I flew an armed reconnaissance mission led by Bill Slaughter, our flight commander.

We recced up near Sinmak along the road from Kaesong, only we started at Namchon dong North. Just south of Sinmak we saw smoke coming from a tunnel—as a locomotive would issue forth, but Slaughter, flt ldr, said it looked too easy; so we circled wide—about 2000 ft. As we turned Slaughter yelled "flak" and we poured on the coal. We stayed low, taking advantage of the hills, circled low and dropped our napalm on box cars in the marshalling yards, our objective being to hit such yards if they looked pregnant. As we pulled off we got more flak.... They [the enemy gunners] both tracked us and threw up a barrage, but none of the flight got hit.... We first knew there was flak—I wasn't sure—when I felt a pattering on the underside of the plane like hail on a tin roof—but the bursts were only near misses. The one thing I noticed most -- how rapidly I began breathing when all this developed; I was really sucking in the oxygen! I enjoyed the flight very much. Next flight a little south of there we saw nothing.

I also noted that night that I agreed with the tactics of staying low in flak attack situations, dodging around any terrain features available—at speeds of 400 mph or better; because one was not in range of the enemy guns for very long.

In my first 68 days in theatre I flew 67 battlefield interdiction/armed reconnaissance, close air support, and other combat missions with the 27th Wing, all but a few with the 522d fighter squadron. I was soon appointed squadron adjutant, but that did not take much of my time. SAC procedures were different from those of TAC that governed the 20th Fighter Bomber Wing, especially maintenance procedures. SAC relied more on centralized maintenance, while TAC decentralized more. I preferred the latter.

Roughly speaking, about half of my missions were close air support (CAS), some 30 percent armed reconnaissance, and the remainder a mix of fighter sweeps, bomber escort, and radar bombing through the overcast. One CAS missions our task was to get in contact with designated ground forces

HALF OF MY MISSIONS WERE CLOSE AIR SUPPORT ... 30 PERCENT ARMED RECONNAISSANCE, AND ... A MIX OF FIGHTER SWEEPS, BOMBER ESCORT, AND RADAR BOMBING THROUGH THE OVERCAST

F-84Es being prepared for a combat mission, Taegu, Fall 1951.



**I OFTEN
FLEW TWO
MISSIONS A
DAY, I
WOULD
ARISE AT ...
0330, BE
BRIEFED ...
AT 0430,
TAKE OFF AT
... 0530,
RETURN TO
BASE AT ...
0730. I WAS
THEN FREE
UNTIL ... 1530
... WHEN THE
WHOLE
PROCESS
WOULD
BEGIN ANEW**

and support their ground combat actions. Our contact was through a T-6 “Mosquito” aircraft and an on-the-ground forward air controller—an Air Force officer attached to an Army unit—who would tell us where it was safe to use our napalm, bombs, rockets, and machine gun fire against enemy troops. On armed reconnaissance missions, we would fly beyond friendly lines and look for lucrative targets that we could attack—troops, enemy supply areas, etc. In fighter sweeps, we would be part of a large number of aircraft that would attack an important enemy target area, such as an airfield far north in Korea, near the Yalu River. As bomber escorts, we joined up with the bombers over friendly territory and escorted them to and from their targets. A final type of mission, bombing through the overcast, we did more than we liked, and it was not very often a pre-designated mission. It could be effective on occasion, but often the communications between the fighters and the Dora Able, the target directing aircraft, were not sufficient. Be that as it may, weather in the target area forced that option on us more often than we liked.

A major advantage of flying several different missions was that we did not go to the same location each time. Our flights during these times were mostly in central Korea, in and around the 38th parallel. U.S. forces were continuing to push Chinese/North Korean forces back up the peninsula, slowly but steadily. There were no clear front lines in this area of movement, but considerable activity. Our flights went to areas on the west coast around Kaesong, or the east coast around Wonson, but mainly in the central part of the peninsula—the Chorwon valley, Kumwha and other such locations. Another plus was that on most missions we flew in flights of four—presenting smaller targets for the enemy—and, given that the UN (U.S.) had fighter units at various locations in Korea, the enemy was subject to attacks through most of the daylight hours. True, the 27th, flying from Japan, did not have the same flexibility as units in Korea;

so many of our flights were early in the morning or late afternoon. That gave our maintenance people time between missions to make any repairs and re-arm the aircraft. In this context, at one point during this time, when I often flew two missions a day, I would arise at say, 0330, be briefed for a mission at 0430, take off at around 0530, return to base at around 0730. I was then free until about 1530, when the whole process would begin anew, the flight returning to base around 1930 or later. I did this for a number of days.

One major lesson I learned during this period was that more often than one hoped the results of our missions were less than we desired. A number of reasons contributed to this. But, to me, it seemed that weather and communications weaknesses were the main contributors. At certain times, fires ignited by the enemy caused smoke to drift over the areas we were attacking, and that was a handicap. But weather was the primary culprit. Springtime in Korea brings with it frequent showers and periodically hours or days of inclement weather. The weather in Japan often differed from that in Korea. Some days we could not fly because the weather was bad in Japan; on other days the fault lay with the weather in Korea. Then there was the problem of weather in the target area. Too often we could not make contact with the forward air controller; we could not find him, or he us. A few times in bad weather, we were directed to a particular area and directed to drop our bombs at a designated time through the overcast. At least we had some hope of accomplishing something worthwhile. But more often than I liked, we either dropped our bombs over water, or toggled them through the overcast further north in Korea, hitting who knows what.

The frustration stemming from less than satisfactory missions reflected itself in my notes at the time. As early as April 15, I commented that on a mission to the Chorwon valley, poor visibility “rendered us useless,” causing us to “dump our load in the water; we couldn’t see any targets.” On April 22,



With the 27th Fighter Escort Wing, Spring, 1951.

WE WERE LOSING TWO TO FOUR PILOTS A MONTH TO ENEMY GROUND FIRE OR ACCIDENTS; BUT THAT HAD LITTLE EFFECT ON THE MORALE OF THE 27TH

the day the Chinese/North Koreans launched their spring offensive, I blamed myself for an inadequate mission. Our mission that day sent us to the area where Lt. Barnes had been shot down by ground fire that morning. Our assignment was close air support, and we were “all keyed up,” expecting flak. I saw none, although two members of our flight said they did. I was long with both my napalm and never got straight on where we were supposed to strafe.

So I just fired where no. 3 fired. And he did not try very hard—we both fired out of range most of the time, I trying to keep up. So far as I was concerned I wasn't very effective on that mission. That's not good. I've not had a satisfactory mission in days, partially my own fault, I guess, partially because of poor planning by flight leaders and poor firing patterns in the target area. But I must do better! Am I getting lazy? Now is not the time for that, but I don't have the satisfaction of feeling it's a job well done. I can't analyze my feeling very accurately at this point, but something is lacking. I long for a few missions where I feel I'm doing some good.

At other times, I believed things were going pretty well. I was regularly flying missions, a respectable number of them at least somewhat useful. I had no fear of flying missions, although there were times when matters became really intense.

In fact, during this period, I had confidence that I would not be hit by ground or air fire. If I were, I kept in mind our lecture on escape and evasion. All would not be lost.

On a May 29 mission, after return to Itazuke I found my aircraft had twice been hit by ground fire, once in the wing, once in the fuselage, but sustained no significant damage. To be sure, we were losing two to four pilots a month to enemy ground fire or accidents; but that had little effect on the morale of the 27th. We all expected losses of people, even in peacetime. That was part of our lives. And I liked the F-84E, the fighter bomber we were flying. By this time I had over 200 hours in the aircraft; so I had long passed the period where I had to worry about the aircraft “flying me.”

One aspect of the F-84E that I especially liked was that it was durable. On a close support mission on April 16, one of our pilots bounced his aircraft off a hilltop. The impact pulled the tail cone completely off, but the pilot, Lieutenant Conley, nevertheless managed to fly the aircraft back to Itazuke, where on inspection after landing the ground crew could move the whole vertical and horizontal stabilizer section by applying pressure and twisting the elevator stabilizer. That the aircraft could fly with that disability impressed me most favorably.

As noted, I believed many of our missions could have been performed better. I was not dissatisfied or unhappy. Rather, like a number of other young pilots, I believed that our newly established Air Force could and should do better. We wanted a more professional Air Force. Some missions were both interesting and remunerative. On May 9, we flew our first fighter sweep to Sinuiju airfield in northern Korea, just south of Antung airfield in Manchuria. Intelligence told us there were several Russian/Chinese camouflaged aircraft around the field that were to be committed to combat. The enemy's plan was to have them fly south to other airbases, land, refuel, and continue from there to attack UN forces. Our Air Force kept the bases further south in North Korea unusable; so Chinese aircraft were forced to stay at Sinuiju. Weather also was a contributing factor to the inability of the enemy to carry out its plans.

Our effort on May 9 included more than 300 aircraft. The U.S. Navy forces were to hit the field first. Then USAF F-80s, some with 500-pound bombs and some with rockets would attack. Next came more Navy attackers, followed by F-51s with napalm. All these aircraft were covered by F-84s. We had two sections of 28 aircraft, each staying in the area for 25 to 30 minutes. We were in the first group of F-84s, arriving in the area about an hour after the sweep began. We carried max 50 caliber ammunition and two pylon tanks. With this load and distance from target, we had to use JATO [jet assisted take off support]. Once in the area of Sinuiju we orbited at about 6,000 feet, covering the F-51s on their runs. MiGs were said to be sneaking across the border at low altitudes, hitting and running back. I only got one look at a flight of MiGs, and they were nowhere near us. The section behind



The author's living quarters while on Forward Air Control duty, Summer 1950.

OUR GROUP WAS THE ONLY ONE TO ANSWER THE CALL FROM THE JOC. WE GOT MORE THAN 700 TROOPS PLUS PACK ANIMALS

us turned back north to cover some late attacking F-51s. On their way from the airfield they were caught by some MiGs at about 21,000 feet. One of our planes suffered damage.

Of course, as interesting as the mission was, in my notes I had some comments, identifying the need for a clearer briefing, more definite statement of the formation to be flown, an improved procedure for joining up, and emphasis on making time on target without hesitation. I referred to the lateness on target of F-51s as one incident relative to this point.

My conclusion at the time was that I was not certain how successful the mission had been. Some flights fired rockets at nothing, and I uncharacteristically stated "most flights probably went in with the idea of getting out rather than with the idea of doing a job." Combat evidently makes one cynical. Rumors a week later were that we had destroyed only one aircraft and damaged another. Also, according to this source, there were not as many aircraft on the field as intelligence believed. Those rumors proved dramatically incorrect.

*The smashing air attack knocked out all the Red aircraft on the field, destroyed 106 buildings, fired an unusually large aviation fuel dump, exploded 26 other ammunition and supply dumps, and undoubtedly inflicted heavy casualties among the enemy personnel who streamed out of the buildings into the open.**

We had earlier flown a bomber escort mission (before I began keeping notes), and my notes on forming up with the piston engine bombers highlighted the difficulties of jet aircraft escorting the much slower piston driven B-29 aircraft. It took us too long to get ourselves at the correct altitude and location and it took too long to join up with the bombers. The result was we had used too much of

* Robert F. Futrell, *The United States Air Force in Korea, 1950-1953*, Washington, D.C.: Office of Air Force History, 1983 [Revised Edition], p. 302.

our fuel supply before getting to the purpose of the mission

On May 16, I referred to the Chinese retreat. I flew two missions that day, on the first one almost attacking some trucks we spotted. The number 3 man was ready to do so, but just in time we learned they were *our* trucks. That afternoon, working with a Mosquito aircraft, we hit some troops on a ridge, "with good results, considering poor visibility."

Another interesting mission occurred on Saturday, May 26, when U.S. ground forces were pushing the Chinese/North Koreans northward up the peninsula. Weather was bad most of the day. I flew on one of four flights of the 27th on a mission resulting from a call from the Joint Operations Center (JOC) of Fifth Air Force. Retreating enemy troops had been sighted in the open.

Weather was fair; we have flown in worse. Up there we hit the jackpot, and I could see troops and pack animals all over the place. The only objection I had was that too many flights were in the restricted area at the same time — a 5,000 foot ceiling broken, rain showers to the north of us....we got some troops, although we did not fire all our ammo—we had to circle and wait for the flight ahead of us to finish; so we were short of fuel.

The next morning Gen. Edward J. Timberlake, commander of Fifth Air Force, came down and awarded medals to those on the mission. Flight leaders got the Distinguished Flying Cross, wingmen, including me, the Air Medal. Our group was the only one to answer the call from the JOC. We got more than 700 troops plus pack animals. Late that Sunday, we went again to the same area, broken ceiling, 7/10ths on mountain tops. We got some more troops in the open, a more difficult mission—but no medals.

With such good results over several days, I wondered if the Chinese were crumbling. I noted that a newspaper in Tokyo predicted there would be peace in three days. I noted "a nice thought, but apparently without foundation." What I did not know at the time was that on May 23 the Soviet representative at the UN, Jacob A. Malik said the time had come to find a peaceful solution to the Korean War. That may have been the source of the Tokyo newspaper's peace article.

While most of my thoughts and actions were concentrated on the air/ground war in which I was involved, I thought about the war in a larger context. I was not, however, all that consumed with the troubles surrounding the U.S. command structure in Korea. My only comment on the removal of Gen. Douglas MacArthur as commander of UN forces was: "Gen MacArthur arrived in the States today—now the fireworks begin."

On April 29, in the midst of the Chinese spring offensive, I wrote:

This attack will show whether the Chinese wanted to push us off the peninsula or intend to play with us just to keep our troops occupied in this area. To

The author, (left) with Bert Brennan and Mac MacElroy in the Seoul area, Summer, 1951.



THE CHINESE WERE PLAYING WITH US, DRAWING DOWN OUR ECONOMIC POWER, BELIEVING THE DRAIN ON OUR ECONOMIC POWER WAS GREATER THAN THE DRAIN ON THEIR MANPOWER

me the purpose of the war must be revealed at this time — and if they intend to push us off the peninsula they will probably commit their air power. That is another development that bears watching.

The next day I wondered if the “peninsula shuffle” would start again, or would the Chinese launch a major offensive. If the shuffle started again, I felt convinced the Chinese were playing with us, drawing down our economic power, believing the drain on our economic power was greater than the drain on their manpower. For this they needed no specific field objective. And years of civil war had given them experience in these matters.

On the other hand, Mao Tse Tung may realize that he is fighting Russia’s war, not communism’s, and wearying of the loss of manpower with no objective may break from Kremlin control and place China in a situation similar to Yugoslavia.

The question of objectives kept arising in my mind over the next few weeks. On May 16 I felt there seemed to be no objective for either side in the war, that if the new Chinese attack didn’t materialize soon, the war would fizzle out.

Neither side wants to suffer more casualties—the Chinese have suffered seriously—and therefore I believe this action in Korea will not continue much longer on the same scale. It must enlarge or develop into a waiting game.

As involved as I was with the 27th, flying missions regularly, I nonetheless wondered what I would do once I completed my 100 missions having

been, as seemed likely, in theatre only about three months. In mid-May, however, rumors quickly spread that the 27th was soon to return to the States. A short period thereafter, the rumor was confirmed. We attached pilots, however, were not to accompany the wing; we were to be assigned elsewhere in the theatre. On June 1, I learned that I was to be assigned to the 7th squadron of the 49th Fighter Bomber Wing, based at Taegu Air Field in southern Korea. I was not to join the 49th immediately, however; I was to be, for two months, a forward air controller with the 25th U.S. Army Infantry Division in the Chorwon Valley area of Korea.

The SAC 27th Fighter Escort Wing returned to the States in June 1951, having been in theatre for slightly over six months. For its April and May combat missions, the wing received a Distinguished Unit citation. The eight surviving of the ten attached pilots participated in that award—we were, in effect, “members” of the wing while we were there.

Summer/Fall 1951

When I left the 27th wing on June 2, 1951, I was assigned to the 6147th Tactical Air Control Group, and went immediately to a “Mosquito” T-6 squadron for orientation on becoming a forward air controller and to fly one Mosquito combat mission in the rear seat of a T-6. My pilot on the orientation flight was my West Point classmate, Bob Mathis.

A forward air control team in 1951 consisted of three men—an officer, a radio operator, and a mechanic. The supporting equipment was a radio jeep, a trailer, and a personnel carrier. My team

With PFC Richard DeBrule and our Forward Air Control radio jeep, Summer, 1951.



I WAS A FORWARD AIR CONTROLLER “IN RESERVE.” ... I BELIEVED THAT ... A RATED AIR FORCE OFFICER WAS NOT NEEDED. HE WAS LITTLE MORE THAN A RADIO MAN

members both seemed competent, but we had few combat experiences; we spent most of the time I was a forward air controller “in reserve.” My most critical comments of my tour as forward air controller were about the then current state of having Air Force officers doing the job I was then doing. I believed that under that setup, a rated Air Force officer was not needed. He was little more than a radio man.

The Mosquito aircraft do most of the actual fire directing. The FC [forward controller] has little to do other than give the Mosquito possible targets to recce.... At regt [regimental] level, they [AF officers] are of no value; the FC should be at least at bn [battalion] level, lower would be better. A flexible system could be established in each division utilizing no more controllers than are now required but give each company or at least each bn a controller — for seldom are all of units of a regt on line.

I completed my forward air control assignment in early August and reported to the 49th Fighter-Bomber Wing. My new squadron, the 7th, was with the wing at Taegu in southern Korea, but I was not to join them. The 49th was at the time converting from the F-80 aircraft to the F-84E fighter bomber. So instead of going directly to Taegu, I was assigned to the training detachment at Itazuke—my old airfield. I was for a week or so an instructor pilot but then became operations officer of the detachment—the second most senior officer in the unit. The commander, Maj. Eugene Williams, had been there for some time and left Itazuke for Taegu to become commander of the 9th Fighter Bomber Squadron. Shortly after I arrived at Itazuke, Arnold Braswell, a West Point classmate and a first

lieutenant, was assigned to the 49th and went through the orientation course. He then went to Taegu, as Major William’s squadron operations officer, a key combat position.

I believe I got assigned to the training detachment because I had more experience in the F-84 than most if not all of the pilots in the wing, with over 150 hours of combat time. I stayed at Itazuke for about three months, giving in-theatre indoctrination and training to new pilots arriving to the 49th and pilots of the 136th Air National Guard fighter wing that had just been activated.

When I joined the training detachment, I found some things “disorderly; there seems to be no planning in the training of the pilots.” Once I became the operations officer I set about establishing a defined program of training. The program worked reasonably well, and we sent through the in-theatre orientation some 75 pilots in the three months I was there. Not completely satisfied, I wrote in my notes, “there is still much to be done before we have this thing hacked.” I should add that the detachment received an inspection from Fifth Air Force headquarters during my time as operations officer, and they reported up-the-line that they were very favorably impressed with our program.

I enjoyed my time at the training detachment, but I naturally wanted to complete my remaining 32 missions and to do that I had to get in a squadron. I was not all that interested in hurriedly completing my tour because most fighter pilots leaving the theatre were being assigned to the Air Defense Command in the United States. That type of mission did not appeal to me, and I began to think how I could extend my tour once I had completed 100 missions. One possibility was to ask to



On Forward Air Control duty, Summer 1951.

**CHINESE
MIGS BEGAN
FLYING REG-
ULARLY
AGAIN....
THAT MADE
INTERDIC-
TION
FLIGHTS
MORE CHAL-
LENGING
AND RISKY**

be assigned to an F-86 squadron, flying against MiGs. Another was to get a job at Fifth Air Force headquarters. But, being where I was in mission numbers, my future assignment was not an immediate problem.

I was struck about becoming the detachment operations officer. I attributed it to the lack of experience in the 49th wing. "I'm considered an old head—after two years of being a new sport—where was the transition period from one stage to the other?"

The more I saw of the 49th, the more I appreciated the 27th with its experienced pilots and strong leaders. Part of the problem was with the equipment, especially the Allison engine on the F-84E. Also, ground equipment supporting the aircraft was in short supply. One wing, the 136th (some of whose pilots I had trained at Itazuke), came over without its ground support equipment. Consequently, the 49th and 136th had to share the same equipment. Replacement equipment was to arrive—but when? Additionally, the personal equipment for the incoming pilots, including helmets and parachutes, was in very short supply.

Lack of experience in the squadrons was another problem. The extended experience of the pilots in the 27th had given me confidence. But in the 49th, it seemed the number of missions was a governing issue.

Flt leaders are too often picked by the number of missions flown rather than by total experience, and every one knows that after the first 10 or so missions where the pilot gets familiar with the navigational problems in Korea, experience is what counts.... Not that the fact a pilot has been out of flying school a couple of years makes him a good pilot, but other factors being equal, experience should be given the edge.

Another troubling issue was that everyone in the group seemed to have flown about the same number of missions. That meant all would complete their tours at about the same time and the group

would find itself with a lack of experienced pilots. Something should have been done to stagger the completion of missions.

In early November I moved to Taegu, Korea, and was assigned to the 7th Fighter Squadron of the 49th Fighter Bomber Wing. My duty assignment, however, was as assistant group operations officer, scheduling and briefing the daily combat missions, in addition to flying missions regularly. Why I got that assignment I did not know at the time, but I later learned that it was because Colonel William L. Mitchell, Jr., who had been my squadron commander in the 55th fighter squadron in the 20th Fighter Wing at Shaw Field and Manston, England, assumed command of the 49th group in mid October.

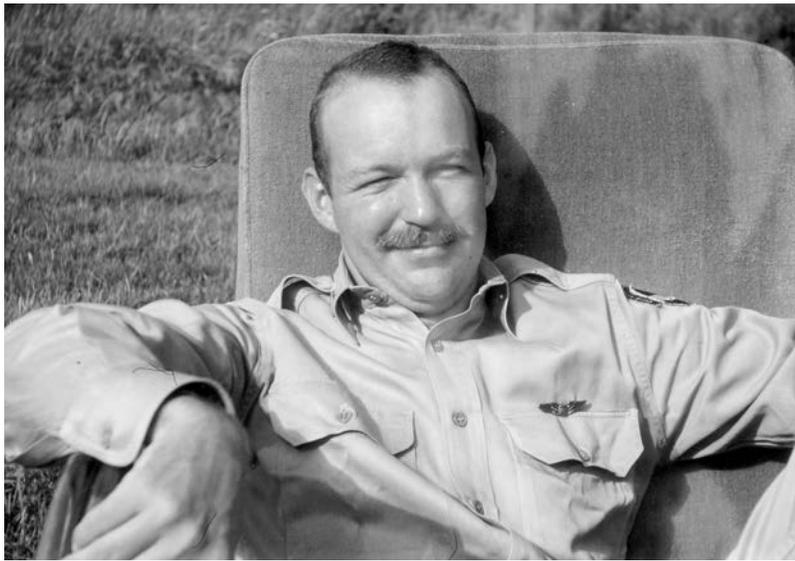
Almost immediately after my arrival at Taegu, the operations officer left for an extended TDY; he did not return while I was in the 49th. So I was, in effect, the senior person in group operations. As such, I was responsible for receiving the mission orders for the day from higher headquarters, then directing the briefing of the pilots on the mission and debriefing them on their return to get their view of their success. The briefing for the mission always started with the weather forecast at Taegu and in the target area. That was followed by the latest intelligence on enemy activity, with emphasis on any air defenses in the area of the rail line we were scheduled to attack. Our daily activities were relatively unvaried, in that the wing was a part of Operation Strangle, which concentrated on destroying the rail lines the Chinese were using to reinforce their ground forces in Korea. The missions were directed from Fifth Air Force headquarters in Seoul and Taegu city. The responsibility for assigning the pilots and aircraft was handled on a rotating basis by one of the three squadrons—the 7th, 8th, and 9th.

My rate of flying missions was quite different in the 49th from that I enjoyed in the 27th. In September and through part of October Operation Strangle had been a fairly simple task because the Chinese air defenses and MiGs were not all that active. But as the fall progressed the Chinese MiGs began flying regularly again and the defenses of the rail lines strengthened considerably. That made interdiction flights more challenging and risky.

On November 23, for example, we encountered small arms fire as we attacked the target; so after our attack we headed for the China Sea as briefed. There was some confusion as we left the target area, but we finally joined in orbit over the water. While there my radio transmitted:

*Flight just out over water, break right!
Flight out over water—break right!
For God's sake—Flight out over water — you better break now!*

By the time of the third transmission, I asked myself "Smith, do you think they may mean you?" But my number 4 man had said nothing. Nonetheless, to do something just in case, I made a shallow



The author at Itazuki Air Field, with the 49th Fighter-Bomber Group Training Detachment, August-October, 1951.

OUR MISSIONS WERE GETTING MORE DIFFICULT AS ENEMY AIR DEFENSES AND MiG ACTIVITY CONTINUED TO CLIMB. OUR LOSS RATE REMAINED TROUBLESOME, BUT NOT OUT OF HAND

break to the right and gratefully discovered the radio warning did not mean me.

I did not see any MiGs that day, but my number 4 man said one came at him while we were joining up over the water. He said I tightened up my turn considerably at this point; he thought I also saw the MiG. I did not, but I was pleased to have made that turn.

I was really looking for a MiG, and I feel I'm going to get one—my chance will come, and I must be ready. We were below 1,000 feet all this time, and once they come that low with us, if we can get other flights in position, we will get some kills. The attitude with which a pilot approaches the situation amazes me—perhaps mine will change once I get shot at—but I figure once he gets below 1,000 feet he's not much smarter than I am, and to make a good pass at that altitude he's going to have to be about my speed. So there's the possibility of getting one; I'm ready. Only I hope I don't lose my head in the process.

The 49th claimed three damaged that day, and one probable.

During this period the 49th regularly attacked targets in the Sukchon and Sianju areas. Sukchon was about 80 miles south of the border with China and some 115 miles north of the 38th parallel. Sinanju was some 10 miles north of Sukchon. Infrequently, the group would hit rail lines in the Sariwon area, much further south, only some 60 miles in enemy territory. The group usually flew two missions a day, one in the morning, one in mid- to late-afternoon. Given the distance from targets, the missions usually lasted about two hours. In view of the increased air defenses, the 49th no longer flew missions in flights of four aircraft but rather flew what were called "group level" missions. But in reality they were more "squadron level" missions, because, given the shortage of aircraft and ground support equipment normally only 24 aircraft were involved.

In December, on a regular rail bombing mis-

sion, one of our aircraft was hit by ground fire. The pilot bailed out and was seen on the ground. A number of us flew top cover over him until we ran low on fuel. We returned to Kimpo airfield to refuel before continuing on to Taegu. While on the ground at Kimpo in a debriefing room, we heard that the air cover could not see the pilot on the ground and they were about to give up. Someone said that he knew exactly where our friend was hiding. I told him to take the first refueled aircraft, fly north and point out the spot to the air cover and rescue helicopters. He did that and the pilot was rescued.

When I reached Taegu later that day, Fifth Air Force headquarters telephoned, advising that I had no authority to send the 49th pilot back north. His life might have been endangered in the combat zone. I should not do that again. I had to agree with the logic of the message, but I was certainly pleased that our friend was with us and not captured, in the hands of the enemy.

Another incident occurred one day when I was in operations and a colonel I had never seen before came in and started a conversation. He asked a number of questions about our combat operations, our maintenance, and about all aspects of group activity. After a fairly long, genial conversation he departed. As soon as I could I went to see Colonel Mitchell. I told him I had just talked to a colonel who knew a lot more about flying, combat, and whatever than I did, and that Colonel Mitchell ought to find out who he was; he certainly seemed a top officer. The question in my mind was why was he there? Friend or foe? Colonel Mitchell asked me to describe the colonel, and when I did told me that the officer was Col. Gordon Blood, who was to replace him as group commander in the not-too-distant future.

As a matter of interest, some years later when my name came before a board for a below-the-zone promotion to colonel, some board members apparently asked why promote a non-flying officer when there were so many qualified pilots. Colonel Blood, a member of that board, later told me he recounted to the board my service in Korea, and they agreed to put me on the list. Blood did take over the 49th group, was an outstanding fighter pilot and commander, and retired as a major general.

In November and December, as shown in the above, I was busy, flying some missions, and doing something useful in group operations. In December I received a spot promotion to captain, and that did not hurt. Our missions were getting more difficult as enemy air defenses and MiG activity continued to climb. Our loss rate remained troublesome, but not out of hand.

Because of the reduced daylight hours, in early January 1952, I received a call from Fifth Air Force advising the 49th Wing that rescue helicopters would no longer be available over North Korea for our afternoon missions. U.S. helicopters at the time were ill equipped for night flying, and with the days being so short, Fifth Air Force headquarters had decided not to risk them over enemy territory in late afternoon. Without pause, I informed the staff

The author (left) with Arlie Sanders at Taegu, Fall, 1951.



I WAS NOT SCHEDULED TO FLY ON FEBRUARY 2, 1952

officer on the other end of the line that if Fifth Air Force was not going to fly those helicopters, the 49th would send some pilots to Seoul, train them as helicopter pilots, and take over the helicopters. We were not going to have our pilots flying missions over North Korea with no hope of being rescued if they were shot down by enemy fire. A short time later I received a second call. Fifth Air Force headquarters would continue the helicopter rescue missions over North Korea.

Winter 1951-1952

I was not scheduled to fly on February 2, 1952. Colonel Mitchell had wanted me to fly my last four missions only as a flight leader, to give me more combat leadership experience. But that morning, the mission briefing called for an attack by 24 aircraft—6 flights of 4 aircraft each—on a rail line in the Sinanju area, where enemy air defenses were improving each day. I was asked to fly as the element leader of the leading flight. The weather report, in addition to the usual cold temperatures, forecast high winds in the target area. I was able to adjust fairly well for the effects of wind on bombing accuracy, and to relay to the other pilots what adjustments they should make to strike the narrow railroad track. We placed great emphasis on our ability to hit our targets.

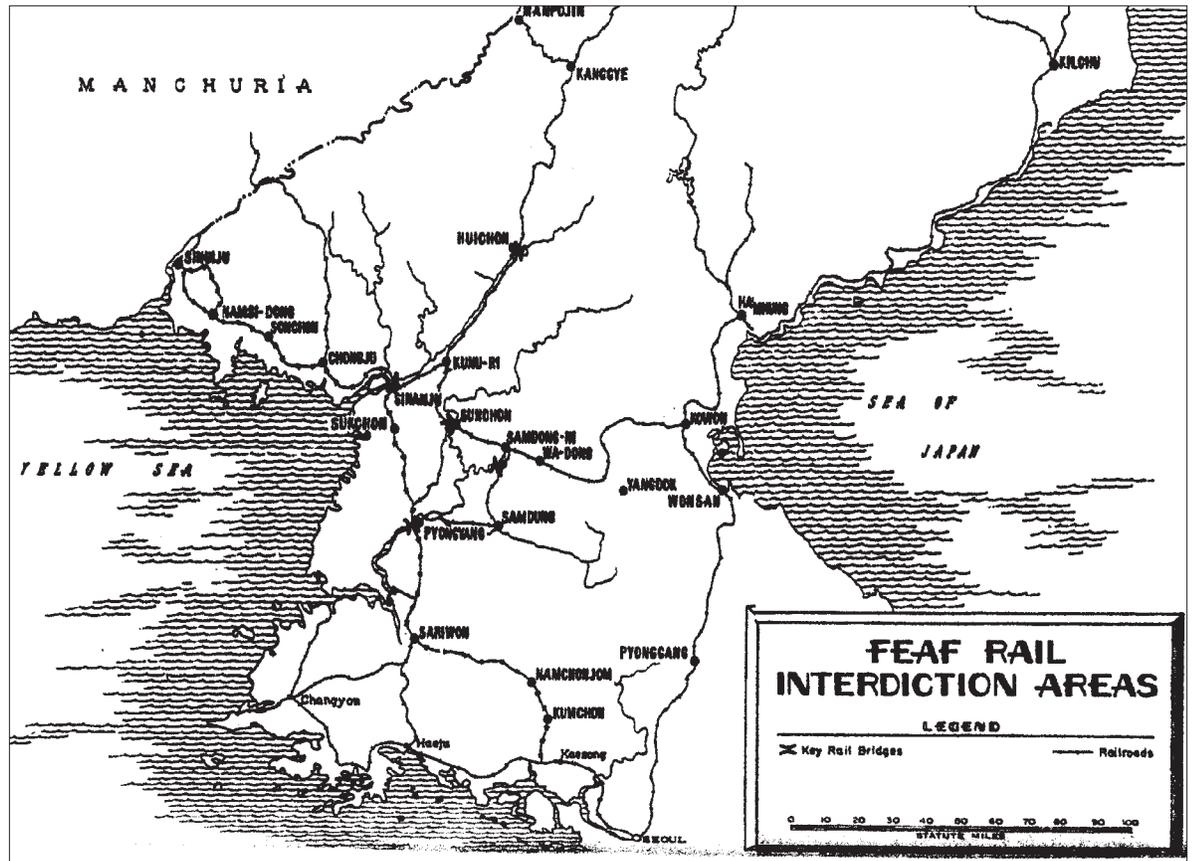
Our effectiveness as a fighting force during this period was best evidenced by the increased enemy ground air defenses we encountered up north. Our loss and damaged rate had climbed during the fall. We had suffered a few fatalities, and several pilots had to be rescued by helicopter behind enemy lines.

I had not before flown with all of the other members of my flight, but I figured that was of little consequence. Our target run surely would follow our usual pattern, and I was comfortable with that. Our normal attack pattern at the time was what I would call something between a dive bomb run—a very high angle of attack not likely to be too accurate given our bombsights—and a shallow glide bomb attack, which assured greater accuracy but left one on a predictable flight path for a longer period of time. That gave gunners on the ground a longer time to track and fire. All pilots on a mission flew the same attack pattern. That avoided uncertainty and confusion. Since there was some distance between aircraft, each pilot presented the enemy only an individual target for a short period of time.

The only time we flew a dive bomb run was when the ground defenses in the area were particularly heavy. The decision to dive bomb or not was made during the briefing for each mission, and we seldom chose that alternative. We did not discuss that alternative on February 2.

Our one-hour flight to the target was uneventful. There was a high cloud cover, but it did not hamper our operations. Once in the area, our flight got into position to make the first attack on the target from northwest to southeast. My job to assess the effects of the wind conditions on bombing accuracy and pass the information on to the flights behind was about to begin. Once we turned on the target and began our descent, I checked to ensure I could see the flight leader and his wingman ahead of me. A cardinal rule of fighter pilots is not to lose sight of members of your flight, particularly those in front of you on bombing runs. After locating my

AS I PULLED SHARPLY UP TO GAIN ALTITUDE ... I FELT AND HEARD SOMETHING STRIKE THE RIGHT SIDE OF THE AIRCRAFT TWICE—ONCE IN THE COCKPIT AND ONCE BEHIND



flight mates, I could concentrate on judging the wind.

I saw the flight leader immediately but did not see his wingman. I glanced up, down, right and left—no luck. All that took valuable time and on a target run I wanted to be on the shortest time possible. I finally looked much higher and saw the number two man. I did not have time to speculate why he was there, but seeing him, I knew we would not collide; so I turned to the wind problem. As I was completing the necessary adjustments for the wind, I received a radio call informing me I was approaching an altitude a little below our normal practice. I knew that, but believed I had at least half a second more. I made rapid adjustments and dropped my two 500 lb bombs. It was reported, I later learned, as a successful attack. As I pulled sharply up to gain altitude and move away from the target, I felt and heard something strike the right side of the aircraft twice—once in the cockpit and once behind. Something struck my right leg and I heard and saw small fragments of something crash into the instrument panel. I looked and saw my right boot dangling, the foot pointing backward; but I did not sense any great pain. I announced over the radio that I had been hit and was heading south. Most of the other pilots on the mission, I later learned, thought I meant that my aircraft had been hit, but I meant more. Almost immediately, some one radioed me that that my aircraft was on fire. About this time my radio went out; I could no longer communicate with anyone. When I ceased communicating, my wingman flew up relatively close and I gave him the signal that my radio was

out. I immediately began taking emergency procedures.

By this time I was heading west for the mud flats of the China Sea, some 40 or 50 miles away, where I intended to make a wheels-up landing and wait to be picked up by helicopter. If the fire did not destroy my aircraft and if it would take me that far I had confidence I had a good chance of being rescued. In those hurried moments, I did not seriously consider ejecting and bailing out of the aircraft for two reasons. Primarily, I believed it would be difficult for me, untrained in jumping, to make a parachute landing without doing further serious damage to myself. Also relevant, many of us at the time believed it often safer to ride the F-84E to the ground and make a belly-up landing—if there was enough landing area available. And in my situation a landing area was available—the mud flats along the China Sea. I also knew my aircraft was a rugged one, having known one the previous spring that had bounced off a mountain top and returned safely to its home base, damaged considerably but still flyable.

In following the approved emergency procedures, I shut down the engine and turned off the fuel lines to reduce as much as possible the chances of the fire spreading. I did so maintaining an air speed and rate of descent that would give me the best chance of reaching the coast. The F-84E, without power, lost altitude at a rapid rate; so I knew that I would not have much altitude or distance to spare.

Given that the aircraft was on fire, that I was wounded and had to make the best use of the air-



Pilots of the 49th Fighter-Bomber Group ready to board aircraft for a combat mission, Taegu, Fall, 1951.

I SENSED MY FIGHTER PILOT DAYS WERE OVER

craft with respect to both speed and altitude to reach the mud flats, I had no time to think of anything other than the situation at hand. Surprisingly, I still did not feel a lot of pain, nor did I feel weak or woozy. I had my full concentration on getting on the ground safely, and that made everything else secondary. The mud flats, I knew, from flying over them a number of times, were fairly extensive and, not too far from the shoreline, for the most part flat and generally unencumbered with debris. Even so, there were occasional large boulders and, in winter, chunks of ice.

I tried to choose a fairly long landing path free of obstacles since I would be touching down at some 90 to 110 mph—a little below our normal landing speed—and would travel some distance down the mud flats. Fortunately I did so, making, under the circumstances, a safe and reasonably comfortable wheels-up landing some 100 or so miles behind enemy lines.

Once on the ground, I opened the canopy, which performed normally, and began to climb out of the aircraft. I had to move fast because I could still see smoke and a small flame from the right side of the aircraft. My first attempt to get out of the aircraft was frustrated when my parachute became entan-

gled with some part of the seat harness. I climbed partially back into the aircraft, got myself untangled, and tried again. Knowing that I could not carry the parachute, I did want to take my survival kit with me. Unfortunately, I could not disconnect it from the parachute harness. I did, however, manage to retrieve several flares, my barter kit, a wool cap, and a pair of socks. Not much, but better than nothing, especially the flares.

Successfully out of the aircraft, I hopped some 20 to 25 yards, ending between two nearby large ice boulders. They gave me some protection from the enemy if and when they fired at me from the shoreline. Once protected, the first thing I did was look to see what condition my aircraft was in. I was on the left side, and it looked perfectly clean, as if no damage had been done. I could not see the right side, where the aircraft had been struck by flak. I was still, so I thought, alert and in full control of my senses. I did not see or feel serious pain or much bleeding from my right foot. I always laced my boots tightly and believe that and the cold temperature helped retard any bleeding. Because of all this, I do not recall applying a tourniquet to my right leg.

I thanked the Good Lord for getting me as far as He had and asked that He get me the rest of the way home. I did that more than once, but I had a lot of other things on my mind as well. First, I fired a flare to identify my position on the ground. The first one did not work, but the second did. Next I made certain my .45 caliber revolver had the safety off and was ready to fire. I then examined the shoreline, some several hundred yards away. There were small hills there with caves. After a short period, I could see some movement in the hills, and several shots were fired in my direction, the bullets ricocheting off the ice boulders. My squadron mates above me apparently saw the same thing because they made several firing passes at the low hills. After that, things were relatively quiet. I saw no movement toward me across the mud flats during these last daylight hours because, I am certain, of the friendly aerial cover that I could see circling high and low above me and that had fired on the enemy on the hillside.

Perhaps surprisingly under the circumstances, I next thought about my future. I sensed my fighter pilot days were over, as probably was my Air Force career. So I concluded that most likely I would become a lawyer, like my brother, and possibly a judge. The largest near term decision I thought I might have to make was what I would do were I not rescued, and the Chinese/North Koreans tried to capture me. I knew, wounded badly, I was not in good physical condition, and wondered what kind of medical treatment I would get if captured. So I asked myself, should I resist, which might or might not end with my being killed, or should I kill myself as the enemy approached? I did not spend a lot of time on that question, quickly concluding that I did not have to make a decision just then. It could wait until the moment of danger arrived. I still expected to be rescued.

F-84E Thunderjets make a Jet Assisted Takeoff (JATO), Taegu, Fall, 1951.



**THE
HELICOPTER
RESCUE
SERGEANT
APPROA-
CHED ME
AND
OFFERED ME
A JIGGER OF
WHISKEY**

After about an hour, the low flying aircraft above me began to disappear; they had to return to base because they were running out of fuel. One aircraft remained at a higher altitude. That, I later learned, was Colonel Mitchell. Then I heard two F-51s approaching as relief for the aircraft that had just departed the area. After about five minutes, I heard and then saw a helicopter land some fifteen to twenty yards away from me. A crew member beckoned me to run for it. I indicated that I could not walk, much less run, and a crew member of the helicopter risked his life and came to help me get to the rescue vehicle. Once I was safely strapped in the pilot made a quick exit from the area. Shortly thereafter, the helicopter rescue sergeant approached me and offered me a jigger of whiskey. I told him I did not drink alcohol, and he replied he thought it would be a good idea anyway. I again declined, and he asked how many shots of morphine I had given myself while on the ground. I replied none, and he gave me one. About then, I began to pass in and out of consciousness. The helicopter crew asked me to stay awake if I could, and I more or less did.

We landed on Chodo Island off the west coast of Korea where I was transferred to a Navy Air Sea Rescue aircraft that happened to be in the area. We flew to Seoul, arriving there at about 1900 hours. I was getting more tired by the minute but managed to stay awake. At Seoul I was taken immediately to the operating room, where X-rays were taken. I remember the medics cutting my clothes off me and in my confused state of mind asking them to be particularly careful cutting off my underwear; it was hard to come by in Korea. I was given a spinal

injection and I was out. I woke up the next morning, my right foot having been amputated.

I do not remember very clearly my first days in the Seoul hospital. They were for me periods of fitful sleeping and periods of being somewhat awake. At one point early on I was given a sleeping pill in the hope that it would provide me a more restful night, but it had the opposite effect—I seemed more active and tossed and turned more. I was alert enough on February 4 to write my first letter home. With shaky handwriting I wrote the letter to my brother, Ray, advising him that I wrote him so that he could break the news to our mother and to assure her that I was all right. Of course, that letter was unnecessary because the War Department had notified my parents via Western Union the day I had been wounded. My letter probably did not reach home until the tenth or twelfth of the month. I gave Ray a brief description of what I thought had happened. I said my aircraft had been hit twice, once in the cockpit and once aft of that section. I briefly recounted how I had managed to get to the mudflats and was later rescued. I told him of the fate of my right foot also. I ended the letter by stating that I was in good spirits, all things considered, and asked him to tell mother not to worry about me, “as it could have been a lot worse.”

A couple of days later, I came down with a severe case of pneumonia and was placed in an oxygen tent. The hospital notified my parents immediately, telling them that I was in deep shock, with pneumonia, and that my survival was questionable. George Thomas, a West Point classmate of mine, was an aide to Lt. Gen. Frank Everest, commander of Fifth Air Force. George later informed



Commander of the 49th Fighter-Bomber Group, Col. William L. Mitchell, Jr., in the Winter of 1952.

me that the doctors said I was in an oxygen tent, and that they had done all they could for me. From now on, it was up to me. Fortunately, the pneumonia passed within a day or two and I was again on the road to recovery. Maj. Frederick Good, commanding officer of the medical group, wrote my parents on February 8, telling them the crisis had passed. He also added some details about my condition.

Bill was brought into the hospital after an enemy shell had exploded in the cockpit of his aircraft. This would ordinarily have been fatal except that Bill's right foot took the entire force of the exploding shell. The foot was completely beyond surgery and it was necessary to remove it in the operating room. He had been exposed to severe weather conditions for several hours before he arrived at the hospital and following surgery developed a rather severe pneumonia requiring an oxygen tent and a fever accompanied his illness.... I am glad to say his crisis is now past....

During that uncertain period, the question of my survival never entered my mind. Of course, nothing much else did either. But one thing did. Every time I awoke—day or night—the same young, attractive nurse was attending me. As evidence that at the time I was contemplating nothing other than continuing to live as normal a life as I could, I concluded that since she seemed by my side virtually all the time, she must be, to some degree, attracted to me. I would have to explore that more thoroughly as my health improved. A few days later I learned that my romantic notions were misguided. I was being attended to by not one but two nurses. Twin sisters were taking care of me! I am very indebted to both of them, although I never saw either again after leaving the hospital in Seoul.

Colonel Mitchell also wrote to the family on February 7. He noted that he was leading the group

on the mission on which I was wounded, stating that I did a “wonderful job” in landing the disabled aircraft and that no one knew that I had been injured. He reported my squadron mates had stayed over me for an hour, waiting for the helicopter. He did include two sentences, one of which may not be completely accurate but both nonetheless made me feel somewhat proud. “I have never seen such courage displayed.... I can only thank God that he is alive.”

Early during my hospital stay in Seoul, probably after my bout with pneumonia, my right leg was placed in traction, with a ten pound weight stretching the skin on the lower part of my leg so that, over time it was hoped, the entire leg would be covered by skin and a prosthesis could be fitted. The first few nights I had to sleep on my back because I could not turn to my side because of the way the traction was applied. But after a few nights I learned that I could turn somewhat and sleep partially on one side or the other. As I recall, my right leg was slightly lofted. I cannot remember how the weight was attached, but it went through a pulley arrangement of some kind. Whatever the arrangement, I was in traction in this manner from early February until April 18, when I had my next and final operation at Walter Reed Army General Hospital in Washington, D.C. I was in traction not only during my hospital stays but also as I was air evacuated back to the United States in late March.

I left the hospital in Seoul in late February and spent the next month in the military hospital in Nagoya, Japan. My time there was longer than anticipated because the stretching of my skin on my right leg did not initially progress as the doctors had expected.

On February 20 I wrote Ray more details of my wounding. I related that at first I did not know that I had been hit, but I soon did—when I tried to use my right foot on the rudder. I thought momentarily that I might go with it. On March 20 I returned to the incident, stating that I could answer at least some questions as to how I survived, my comments apparently based on some questions from one of Ray's letters. I noted:

Self preservation is a stronger force of motivation than any of us realize until we are confronted with a situation that demands resorting to that force. Also as I told Bettie Mildred and Dick, I got mad, and you remember my temper.... I decided I was not going to give up because of a foot.... Of course, back of it all was the Guiding Hand. You would be surprised what you are capable of.... I was.

In the last weeks of March, everything seemed to be on track, and I was told I would be evacuated to the States on March 26. On that day I was air evacuated to Walter Reed, with intermediate stops at the Tripler Army Hospital, Hawaii, and the Presidio Army Hospital, San Francisco. As I left Japan, I noted that my Far East tour was ending fairly close to the day, one year later, that I had arrived in Japan. ■

DAY OR NIGHT—THE SAME YOUNG, ATTRACTIVE NURSE WAS ATTENDING ME. ... I CONCLUDED THAT ... SHE MUST BE, ... ATTRACTED TO ME

READERS' NOTE

Recognizing an Act of Valor Some Sixty Years Later

Frank T. Trippi

In March 2005, a Frenchman named Olivier LeFloch contacted the Air Force Historical Studies Office, at Bolling Air Force Base, Washington, D.C. M. LeFloch was seeking information about Eugene Fleming, a World War II Army Air Forces pilot, concerning an episode connected with the village of Sonzay, about 15 km. northwest of Tours. Occupying the information desk at the time, Col. Frank T. Trippi, USAFR (Ret.), a volunteer researcher at Bolling AFB, answered the inquiry. Thus began a two-year-long correspondence concerning Fleming and other aircrew of the 367th Fighter Group. Using microfilm copies of records stored at the Air Force Historical Research Agency on Maxwell AFB, Alabama, the Air Force's principal documents repository, Colonel Trippi subsequently pieced together the story.

Following the Normandy Invasion, on June 6, 1944, Allied forces went on the offensive. On July 31, four P-38s of the 367th Fighter Group took off from the new airfield at Carentan in La Manche. Their target was an oil facility in Tours. However,

Close-up view of the painting feature in photo on opposite page. (Photo courtesy of the author.)



about half-way to their target, the pilots 1st Lt. Eugene Leroy Fleming, 1st Lt. Clyde Deavers, 1st Lt. Hugh Powell Hallman, and 2d Lt. Donald Erikson spotted a German troop convoy. The Americans decided to strafe the convoy. The Lockheed P-38 "Lightning" carried four 12.7-inch machineguns and a 20 mm cannon. Inexplicably, Lieutenant Erikson dropped his bombs instead of firing his guns. Shrapnel from the bomb blasts tore through Erikson's engines and caused the plane to drop to a dangerously low altitude and it was headed straight for the village of Sonzay. Lieutenant Erikson veered to the left, to avoid hitting houses in the village. Finally, he tried to bail out, but he was flying too low and too late and was killed. Eyewitnesses credited Erikson with an act of valor for saving the village from certain destruction.

Lieutenant Fleming was classified as Missing in Action. Deavers and Hallman completed their combat tours, but both were killed in aircraft accidents after their return to the United States.

Now, more than sixty years after the event, the French government and specifically, the town of Sonzay, decided to honor Lieutenant Erikson for his heroic act on their behalf. Of course, Colonel Trippi was invited along with living relatives of Lieutenant Hallman—Mrs. Gayle Hallman Rees, her son Kyle, and grandson Colton. On July 7, 2007, Mayor Michel Simier dedicated a housing complex on the outskirts of the Sonzay in honor of Lieutenant Erikson. Also, a street was named for him and a static display in the town hall centered on the American's life, military career, and eventual demise. The town's 1,600 inhabitants listened to a speech by M. Phillippe Briand, a deputy of the French National Assembly. Both M. Briand and Mayor Simier stressed the theme of not only honoring Americans who died liberating France from the Nazis, but the hope for more cordial relations between France and the United States.

Colonel Trippi was awarded a medal in recognition of his assistance and all American attendees received an English language edition of the *Loire Valley Sketchbook of Castles*. Colonel Trippi presented Mayor Simier with an American flag that had flown over the U.S. Capitol, obtained from Senator John Warner's office, and a "Letter of Greetings" from Alexandria, Virginia's Mayor William Eullie. Mrs. Rees gave M. LeFloch a "Letter of Appreciation" and commemorative coins from Gen. Kevin J. Sullivan of Hill AFB, Utah. Appropriate remarks were made by members of the Veterans of Foreign Wars Post 605 Richard Vasquez, Arthur Schwartz, and Lt. Col. Eddie Rosier, USAF (Ret.) representing the U.S. embassy in Paris. ■



(Above, left to right): Colonel Trippi, Olivier Le Floch, his daughters, Mrs. Gayle Rees, her son Kyle, grandson Colton, and Mayor Michel Similier pose at the housing complex dedicated to Lieutenant Erickson. (Photo courtesy of the author.)

(Right) Colonel Trippi notes the P-38 Lightning coming in for an attack. The painting, part of a static display in the Sonzay town hall, was created by the local artist Francis Dartois, who had witnessed the flight. (Photo courtesy of the author.)



Rattlesnake Bomber Base: Pyote Army Airfield in World War II. By Thomas E. Alexander. Abilene, Tex.: State House Press, 2005. Maps. Photographs. Notes. Bibliography. Index. Pp. 216. \$18.95 paperback ISBN: 1-880510-90-1

Thomas Alexander's book describes one of the many bases the Army Air Forces opened to train pilots for the Second World War, only to close in the immediate years following the Japanese surrender. In 1942, surviving members of the 19th Bombardment Group, veterans of fighting in the Philippines and southwest Pacific, arrived at Pyote Army Airfield to conduct B-17 (and later B-29) combat crew training. Construction workers carved the base out of the caliche soil in West Texas and nicknamed the facility the Rattlesnake Bomber Base after its large serpentine population.

The book explains the reasons behind the Army's decision to locate the base near Pyote, describes its construction and decommissioning, and analyzes training challenges using a variety of official records, personal letters, and recollections. Among the more interesting sources was the exceptional base newspaper, *The Rattler*, produced by airmen with civilian journalism experience. Alexander describes the publication as an objective, informative, and entertaining publication "devoid of much of the usual inanity that blemished many other airfield journals."

In addition to describing the base, its personnel, and their mission, Alexander also explores the social history of the military and local civilian populations during the war. The book is, therefore, not only useful to local citizens in the Pyote area and enthusiasts of the history of military flying training in Texas, but also is interesting to historians studying the impact of the war on society. The number of base personnel exceeded the combined population of Pyote (which had all but disappeared after an oil boom and bust cycle) and nearby Monahans, an established town of 4000 in 1940. On the one hand, the base and civil leaders worked to build a constructive relationship. Residents welcomed unmarried soldiers to their homes for Sunday dinner, and the base routinely invited local residents to dances and barbecues. On the other hand, the influx of outsiders created friction in the form of regular brawls and disagreements over social mores. For example, Monahans passed the infamous Ordinance Number 137 governing appropriate attire in response to some newcomers' proclivity to wear short pants and bathing suits in the summer heat. Although the book explores in some depth the theme of social change, Alexander does not fully develop the idea into a thesis and

argument of an historical monograph. He introduces an intriguing idea of an "area of dominant influence," a term he borrows from the broadcast and newspaper industry, to suggest that the base socially influenced a certain surrounding area, but does not carefully define that area or specific influence.

The final chapter could serve admirably, however, as a job description for aspiring public historians. A member of the Texas Historical Commission and author of *Wings of Change: The Army Air Force Experience in Texas During WWII*, Alexander's description of present-day historical markers, collectively-reinforced legends and misconceptions, and local historical displays doggedly maintained will seem familiar to many who work to preserve the remnants and memories of an era. They also reveal the author's enthusiastic exploration of both the history and actual grounds of the now demolished, wind-blown base.

Dr. Joseph L. Mason, Staff Historian, Air Education and Training Command, Randolph AFB, Tex.



History of Rocketry and Astronautics: AAS History Series, Volume 27: IAA History Symposia, Volume 18: Proceedings of the Thirty-Second History Symposium of the International Academy of Astronautics, Melbourne, Australia, 1998. By Kerrie Dougherty and Donald C. Elder, eds. San Diego, Calif.: American Astronautical Society, 2007. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xii, 403. \$95.00 Hard Cover ISBN: 0-87703-535-0; \$70.00 Paperback ISBN: 0-87703-536-7

Like several of its predecessors in the American Astronautical Society's History Series, the 27th volume contains papers originally presented at the 1998 symposium in Melbourne, Australia. Editors Kerrie Dougherty, from the Powerhouse Museum in Sydney, Australia, and Don Elder from Eastern New Mexico University, in Portales, have categorized eighteen topically diverse studies as memoirs, organizational histories, or scientific and technical reviews. The result is an intellectually stimulating, three-part compilation of both cutting-edge, scholarly research and unique perspectives of actual participants in memorable events related to rocketry and spaceflight.

Part I, the "Memoirs" section, includes

five chapters that amply demonstrate these characteristics. Fred Ordway describes his advisory role in making the movie *2001: A Space Odyssey*. Professor M. N. Sweeting discusses how he and his colleagues at Surrey Space Centre pioneered modern microsattelites beginning in the mid-1970s. A trio of authors—Claude-Alexandre Timsit, Gérard Chatelier, and Hervé Moulin—detail French space experiments using rats, cats, and monkeys prior to 1968. Marsha Freeman recounts the contributions of Soviet rocket pioneer Fridrikh Tsander, while Jos Heyman outlines Australian space involvement from the late 1940s into the 1990s. Despite the eclectic nature of these "Memoirs," all provide delightful insights to generally unpublicized aspects of space history.

The same can be said for the eight chapters in Part II, "Organizational Histories." Dougherty questions whether members of pre-World War II Australian rocket societies seriously contemplated interplanetary travel or primarily concentrated their efforts on the "sideshow" of rocket mail. Christophe Rothmund tantalizes readers with brief sketches of Louis Damblanc, Robert Esnault-Pelterie, Jean-Jacques Barré, Alexandre Ananoff, and others in France before analyzing why the French undertook so little in the field of rocketry during the 1930s. Two chapters on international cooperation, one by a quartet of authors on NASA-Australian activities and the other by Hervé Moulin on French-U.S. research in the 1960s, appear amidst several others: Jacques Villain recounting the race to the Moon between the Soviet Union and the United States, a quintet of authors reviewing the conservation of German World War II rockets at England's Aerospace Museum in Cosford, and Bruno Augenstein revealing how interaction between RAND and North American Aviation's Aerophysics Laboratory benefited the Navaho missile program in the early 1950s. Finally, Frank Winter and Akira Kubozono present, as a lengthy case study in early technology transfer, their research on festival rockets in Thailand, Laos, Japan, and China.

Equally interesting material fleshes out Part III, "Scientific and Technical Reviews." From Yasunori Matogawa's account of the Japanese Ohka rocket-propelled glider during World War II to Christian Lardier's summary of solid-propellant rockets in the Soviet Union, relatively obscure history comes to light. Sandwiched between those chapters are three others, including one by Philippe Jung on development of the VE 111 Topaze, the first French rocket to use inertial guidance, and another by Christopher Mark Hemsell and Alan Bond on the

rationale behind Britain's development of the Black Arrow launcher. Also in this part is Otfried Liepack's assessment of the Ranger Project, which captured the first high-resolution pictures of the lunar surface in the mid-1960s.

The editors deserve hearty congratulations for their remarkably successful completion of what many would describe as an unenviable task—pulling together a number of disparate pieces of scholarship that vary in quality to produce a reasonably coherent book. Comprised of volumes covering earlier IAA history symposia and specific astronautical topics, the AAS History Series is an invaluable resource for space historians. This latest addition simply whets the appetite for more to come.

Dr. Rick W. Sturdevant, Deputy Director of History, HQ Air Force Space Command



Into That Silent Sea: Trailblazers of the Space Era, 1961-1965. By Francis French and Colin Burgess. Lincoln and London: University of Nebraska Press, 2007. Photographs. Bibliography. Pp. xxvii, 397. \$29.95 Hardcover ISBN: 0-8032-1146-9

After hundreds of books about the early years of human spaceflight, why should anyone be interested in one more? Someone who has read this book might have a positive answer. Rarely, in either the historical or biographical genres is a work so exceptional or so substantively and stylistically enticing, that the average person simply cannot put it down before reading it cover to cover. *Into That Silent Sea*, the first volume in a series titled *Outward Odyssey: A People's History of Spaceflight*, is that sort of book.

It dispenses with distracting technical jargon and nationalistic jingoism to deliver ten superbly composed, thoughtfully balanced chapters about the astronauts and cosmonauts who flew Mercury and Vostok/Voskhod missions. On practically every page, readers confront the unvarnished humanity of these space pioneers. From Yuri Gagarin and Alan Shepard to Gordon Cooper and Alexei Leonov, the authors objectively expose why each individual was selected for a particular spaceflight. With uncommon candor, French and Burgess lay bare astronauts' personal attributes, whether strengths or weaknesses, and cosmonauts' behavioral traits, whether praiseworthy or embarrassing. Academic proponents of collective biography might chide these non-historians for not analyzing more explicitly, or more

extensively, what all of the earliest space adventurers had in common, but avid readers will revel in the authors' masterful compilation of these straight-forward, detailed mini-biographies.

Each chapter deserves careful consideration, but two merit further comment now. The first, titled "The Two Wallys," juxtaposes the experiences of one who made it and another who did not, largely because of gender—Wally Shirra and Wally Funk. Their careers exhibited many parallels, not the least of which involved undergoing astronaut-selection tests at the Lovelace Clinic in Albuquerque, New Mexico. Unfortunately, exclusion of women as U.S. military pilots after December 1944 combined with NASA's stipulation that only military test pilots could qualify as astronauts, derailed Funk's chances of ever flying in space. Another chapter, titled "A Seagull in Flight," focuses on female cosmonaut Valentina Tereshkova. Here, the Soviet Union's daring pursuit of spectacular "space firsts" simply for propaganda value stands in stark contrast to America's methodical steps toward placing a human on the Moon and returning "him" to Earth before the end of the 1960s.

In piecing together the astronauts' and cosmonauts' stories, French and Burgess relied on a variety of sources. Unfortunately, a lack of annotations precludes knowing from whence specific details came. Books, articles, and other materials written by, or about, these first space travelers probably provided most of the basic information. Mission transcripts certainly helped flesh out chapters about the astronauts. Most important to making this book distinctive, however, were interviews or other communication with the spacefarers themselves and their acquaintances. These enabled the authors to portray each cosmonaut and astronaut as uniquely qualified—all as unquestionably heroic, but definitely not flawless.

Regardless of how extensively one has studied the history of early spaceflight, thoroughly reading *Into That Silent Sea* is worthwhile. It might not contain much new information, but its many interesting anecdotes refresh our memories of, and appreciation for, how a few extraordinary humans risked everything in confrontations with the physical and psychological unknowns of entering outer space.

Dr. Rick W. Sturdevant, Deputy Director of History, HQ Air Force Space Command



The Son Tay Raid: American POWs in Vietnam Were Not Forgotten. By John Gargus. College Station: Texas A&M University Press, 2007. Maps. Tables. Illustrations. Photographs. Bibliography. Index. Pp. 352. \$29.95 ISBN: 978-1-58544-622-3

Known initially as Operation Ivory Coast and later as Operation Kingpin, a team of volunteers loaded in one H-3 and three HH-53 helicopters, A-1 Skyraider close-support aircraft, MC-130 Combat Talons, and various other support aircraft. In November, 1970, they performed a meticulously planned and well executed raid on a prisoner of war camp located near the small town of Son Tay, North Vietnam.

The raid's concept originated from aerial reconnaissance photos taken in May 1970 when analysts at the Defense Intelligence Agency concluded approximately 60 prisoners at the camp were sending signals with laundry. The camp, located 23 miles west of Hanoi, was in just the right location for the daring raid. The camp was accessible from the west and was flanked by a river on three sides. The only access came from two directions: one main road and a small bridge which could be destroyed during the raid. These facts essentially limited potential enemy access to one direction, which could be defended.

Colonel Gargus was one of several mission planners and a participant in the raid, serving as a navigator on one of the MC-130s. Detailed with charts, maps, and navigational information, the book's tempo never slows as Gargus guides the reader through the intricacies and difficulties in planning a major raid deep in the heart of North Vietnam in near complete secrecy. In all, fewer than a dozen individuals knew the true mission.

Once the raiding force landed in Thailand, other components were put into action. F-105 Thunderchiefs from the 6010th Wild Weasel Squadron at Korat Royal Thai Air Force Base and F-4 Phantoms from the 13th and 555th Tactical Fighter Squadrons were assigned to provide their expertise. Brig. Gen. Leroy Manor, the raid's overall commander, asked the Navy's Task Force 77 to stage the largest air raid in the history of Vietnam to that point. Three carriers full of naval aircraft were ordered to fly over Hanoi and Haiphong with no offensive weapons because of political considerations at this particular point in the Vietnam War.

The raid was not only a lesson in joint planning and execution, but also a test bed for new technology. Gargus details how crews used untested versions of night vision goggles, forward-looking infrared, and RC-135 Combat Apple signals-intelli-

gence aircraft pushed early off the production line.

Much of the Son Tay story can be found in Benjamin Schemmer's *The Raid*, but Gargus adds volumes of new and previously unpublished information, charts, pictures, and intricate details of ground operations in and around the prison camp during the raid. One very interesting feature of Gargus' book which did not appear in Schemmer's book is the North Vietnamese side of the story. One chapter details how North Vietnam viewed and spun the story to its people. While no US POWs were recovered during the operation, the Son Tay Raid was a major blow to the confidence and esteem of the North Vietnamese army and air force.

Capt. Joshua Pope, USAF, Squadron Officer College, Maxwell AFB, Alabama



Canadian Combat and Support Aircraft: A Military Compendium. By T.F.J. Leversedge. St. Catharines, Ontario, Canada: Vanwell Publishing Ltd., 2007. Tables. Photographs. Bibliography. Pp. xv, 348. \$50.00 (Cdn) ISBN: 1-55125-116-5.

The Canadian Forces flew many hundreds of combat and support aircraft from 1909 to the present. This book contains profiles of these aircraft that include a photograph of the aircraft, its name, the year it entered Canadian Forces inventory, the year it was removed from the active inventory, the total number that saw Canadian service, a description of the aircraft, and specifications of the aircraft. Designed as a reference book, it has an easy-to-use format.

Many of these aircraft rate as hybrids or exotics because the Canadians modified existing aircraft to meet their unique needs. Because of Canada's history as a British Commonwealth country, many Canadian pilots flew with the Royal Air Force (RAF) or Royal Navy (RN) in both world wars; and these aircraft are well represented in the book. The author notes that because Canada is a North Atlantic Treaty Organization (NATO) country, many of its military pilots served liaison duties with other NATO air forces and flew many different types of aircraft while assigned to these foreign units. It proved impractical to include all of these aircraft although many were included. Due to the growing importance of unmanned aerial vehicles (UAVs), the last chapter in the book covers UAVs and drones used by Canadian Forces.

The first section of the book relates Canada's military aviation history from its

beginning in 1909 to the present. About 30 pages in length, this section reveals the slow development of Canadian military aviation in the early years to its growth during World War II as the fourth largest air force in the world. Because of its close association with the RAF, many of Canada's military aviation customs and traditions owe their lineage to the RAF.

The book has no index but the extensive table of contents serves as one. The first section of the table of contents sorts the aircraft alphabetically by manufacturer, and the second section sorts the aircraft alphabetically by name and designation. The unusual structure of the table of contents works well for quick research or selective reading.

The author has included a glossary of abbreviations to assist the reader. Since many of the abbreviations are foreign to American readers, this is a useful addition. Further, good photographs abound in the book and add value.

Canadian Combat and Support Aircraft: A Military Compendium offers researchers nothing new in information but does offer a great deal of information in one source location. I would recommend it as a library addition for that reason. The size of the book and the many photographs make it an excellent coffee table book as well.

David F. Crosby, former USAF history writer and doctrine developer for the U.S. Army Air Defense Artillery School



Gauntlet: Five Friends, 20,000 Enemy Troops, and the Secret That Could Have Changed the Course of the Cold War. By Barbara Masin. Annapolis Md: Naval Institute Press, 2006. Photographs. Notes. Appendices. Bibliography. Index. Pp. xii, 383. \$29.95 ISBN: 1-59114-515-5

Changing the course of the Cold War seems a farfetched dream, but it should be realized that the author is the daughter of one of the five friends in the subject. And that conflict didn't end in *ein gross Gotterdammerung*. It was more of a whimper than a bang! There is something to be said for the Churchillian peripheral strategy. Nibbling away at the foundation may cause the entire edifice to crumble and tumble.

This story is about five young men who crossed the border from Czechoslovakia into East Germany in October 1953. Their goal was to deliver a secret message from a Czechoslovak general to US authorities, join the US Army Special Forces, then return to liberate their country. The trek to

the West was to take three days.

The first chapters are about the birth of Czechoslovakia in World War I, the temporary demise of the country in World War II, and how the history of the Masin family and the new Nation are intertwined. This suggests what formed the character of the actors in this tale and led to their actions. As Abraham Maslow shows in his pyramid on motivation, that is a multi-layered influence, bringing force to bear at different levels. Love of liberty, freedom, and democracy is an abstract idea which may not be as powerful as a more immediate need to protect economic interests or to restore the *ancien regime*. What was considered patriotism by the five friends was terrorism, murder, theft, and treason to the legal establishment.

The inspiration for the flight from home came from a misreading of the propaganda from the Voice of America and Radio Free Europe which led them to believe that Pershing tanks would soon be crashing through the gates of Prague and needed only to be guided. Their odyssey is told in excruciating detail. Ms. Maslin has done an excellent job of reconstructing the conversations that might have happened. The hejira was one of hunger, thirst, danger, pain, and betrayal that extended over a month and 200 miles. Their Garden of Gethsemane occurred when two of the five were captured and revealed (under torture) damaging information not only about their fellows but also those left behind. They still eventually reached their Mecca in West Berlin and provided some useful information. Their later time was spent in the US Army Special Forces.

The lack of adequate maps was a handicap not only to the escapees but to the present reader. A section on "Abbreviations" was handy, but I found little use for the "Guide to Czech Diacritics and Pronunciation."

The work may be of interest to those of Czech extraction, students of the early Cold War, and devotees of great escapes; but it may have limited appeal to others.

Brig. Gen. Curtis Hooper O'Sullivan, ANG (Ret.), Salida CA



Striking First: Preemptive and Preventive Attack in U.S. National Security Policy. By Karl P. Mueller, *et al.* Santa Monica, Calif: The RAND Corp., 2006. Maps. Photographs. Notes. Glossary. Bibliography. Pp. xxxi, 311. \$30.00 Paperback ISBN: 0-8330-3881-8

In the aftermath of 9/11, U.S. National

Security Policy underwent a major change when President Bush embraced the prerogative of “preemptive attack.” Subsequently, the 2002 National Security Strategy (NSS) codified this doctrine for dealing with anticipated threats from terrorists and rogue nations; it was retained in the 2006 NSS. Now commonly called “the Bush Doctrine,” this change to NSS was adopted as a response to what the administration saw as the leading security challenges facing the United States. This was not without controversy because it was feared in different quarters that the new doctrine would make the United States more aggressive, especially in the aftermath of Operation Iraqi Freedom. Thus, it is fortunate that this timely study is now available to the public.

The purpose of this RAND study is to answer three central questions that arise in light of this doctrinal change: 1) under what conditions is preemptive or preventive attack worth considering or pursuing as a response to perceived security threats? 2) What role are “first-strike” strategies expected to play in future U.S. national security policy? And 3) what implications do these conclusions have for planners and policymakers in the U.S. Air Force and the other armed services as they design military capabilities and strategies to support national policy and deal with emerging security threats in the next decade? The study does not examine whether the policy is prudent. It does focus on probable manifestations and implications of the policy and on the demands that the doctrine places on national decision making and on the military.

The authors explain that a preemptive attack is based on the belief that an adversary is about to attack and differs from preventive attack—one launched in response to less immediate threats. An example of a preemptive attack is the Israeli strike against Egypt beginning the Six Day War. In contrast, Israel’s 1981 raid on Iraq’s Osirak nuclear facility was a preventive attack. Conversely, Israel chose not to launch a preemptive strike in October 1973 against Egypt, apparently, according to the authors, because of the political costs that might arise in the international arena. The book goes on to examine a series of case studies where attack was considered and, in some cases, exercised. These include the Cuban Missile Crisis, 1962; Grenada Invasion, 1983; Israeli Sinai Campaign, 1956; Six Day War, 1967; Osirak Raid, 1981; and decisions not to conduct U.S.-initiated preventive war against the Soviet Union or China. This book, perhaps more importantly in light of today’s counter terrorism efforts, examines counter terrorist anticipatory attacks conducted by the

United States, Israel, and other countries.

The authors note that international law recognizes preemptive attack as an acceptable use of force in self-defense; while preventive attacks are usually not. The authors address collectively both strategies as different components of “anticipatory attack.” Both, in the broadest sense, are offensive strategies carried out for defensive reasons. Both are based on the belief that an enemy attack is (or may be) inevitable and it would be better to fight on one’s own terms. In any case, both are distinct from “operational preemption,” that is military action taken within an ongoing conflict. The two variables in “anticipatory attack” are 1) the degree of certainty that an adversary will otherwise strike if an attack is not defensively launched, and 2) what the expected advantage of a “First Strike” will be. The authors go on to state that beyond the military component there are significant political costs in the international arena in initiating a strike.

This book is very useful in that it provides an appreciation for the doctrine, its recent antecedents, its components, the legal issues, the value or lack thereof in diplomatic and military strategy and, finally, its utility. I found this work to be very useful and very readable. However, it would have greater accessibility had an index been included. I wanted to contrast points made in various sections of the book but found it frustrating to again locate the other references.

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



8th Air Force: American Heavy Bomber Groups in England, 1942-1945.

By Gregory Pons. Paris: Histoire & Collections, 2006. Maps. Diagrams. Illustrations. Photographs. Pp. 192. \$39.95. ISBN: 2-915239-82-7

Imagine reading the scrapbook of an Eighth Air Force airman who flew missions from England to Germany and occupied Europe in World War II. A book with personal mementos, pictures, documents, and news clippings from dangerous missions could document the service of one of the thousands who flew those missions or perhaps one of the 47,000 who died in that campaign. Reading the book would be a way to view historical events from the perspective of a person who lived through the combat.

Gregory Pons has greatly improved on the idea of an individual scrapbook. He collected the scrapbooks of fourteen different airmen and added captions, an historical

narrative, color pictures, and drawings. The new materials provide a historical background, explain the items in the scrapbooks, and add modern color photographs of some of the uniforms and equipment. Pons also added lots of unit patches and nose art showing the great designs used to identify units and personalize the bombers.

These materials tell the stories of the individual airmen and the histories of their units and Eighth Air Force. Pons added information about many of the aircraft, including whether or not the bombers were shot down or lost on a mission. The scrapbooks come from pilots, navigators, gunners, bombardiers, photographers, a mechanic, and a member of the Women’s Army Corps. The airmen represented thirteen different bomb groups. The perspectives of different types of people and the histories of different units are presented in the materials.

This book is filled with medal citations, diary entries, and personal flight logs. However, there are some unique things that readers may be encountering for the first time. One section provides details about a flight crew that was interned in Switzerland after a crash landing. Another special item is a copy of a leaflet letter from President Roosevelt to the German people.

The many personal photographs show us these brave men and women posing for pictures, working, resting, and flying. The photographs were taken by the airmen themselves or by unit photographers. The color photographs and drawings of the aircraft, nose art and patches help bring the stories to life for readers used to seeing color photos. The color reconstruction photos are from *Militaria Magazine*. The book is printed on heavy stock paper that really complements the great photography.

Aviation historians will enjoy the many aircraft photographs; however, this book focuses on bomber crews. Most of the aircraft in the pictures are B-17s and B-24s. There are just a few photos of fighters.

Anyone interested in these great bombers and in World War II aviation will enjoy this book. The materials make it fun for all ages. These scrapbooks are special because of the unique perspective they give readers. Battles may be fought by units, but each unit is comprised of men and women using their weapons to the best of their abilities. This book focuses on the basic elements of Eighth Air Force, those brave individuals and the equipment with which they fought the war.

Maj. Herman Reinhold, USAF, Administrative Law Attorney



Ungoverned Territories: Understanding and Reducing Terrorism Risks.

By Angel Rabasa *et al.* Santa Monica, Calif.: RAND, 2007. Maps. Tables. Diagrams. Illustrations. Notes. Appendices. Glossary. Bibliography. Pp. xxxii, 352. \$40.00 Paperback ISBN: 0-8330-4152-4

Ungoverned territories pose a threat to U.S. national security. As safe havens for terrorists and criminal gangs they offer launching pads for direct and indirect attacks against United States interests and the homeland itself. The authors have extensively researched eight ungoverned territories and devised indicators to determine if an area is in fact an ungoverned territory and, if so, the level of non-governance (contested, incomplete, or abdicated). They have also created indicators of an ungoverned territory's likelihood of serving as a terrorist sanctuary. At the end of the book the authors make recommendations for the U.S. Government, Department of Defense (DoD), and USAF to meet the challenges raised by ungoverned territories.

The authors define an ungoverned territory as an area where a state faces significant challenges in establishing control—in fact it may have little or no governmental control. Ungoverned territories include failed or failing states, areas within established states where it cannot exert control, and poorly controlled border areas. An ungoverned territory may include airspace and maritime areas. Drug smugglers and pirates ply their trade in these regions.

The eight ungoverned territories investigated in depth were the Pakistani-Afghan border region, the Arabian Peninsula, the Sulawesi-Mindanao Arc, the East Africa Corridor, West Africa, the North Caucasus, the Colombia-Venezuela border region, and the Guatemala-Chiapas border area. Two basic dimensions provided a framework for the analysis of the territories—level of ungovernability and conduciveness to a terrorist or insurgent presence. To analyze these dimensions, the authors devised and applied variable indicators for each. To determine ungovernability, they studied the level of state penetration into the area, monopoly of force, border controls, and whether the state was subject to external intervention from other states should it assert its governance in the contested area. Variable indicators of conduciveness to a terrorist or insurgent presence included adequacy of infrastructure and operational access, sources of income, favorable demographics, and the ability of terrorists to hide in the area (labeled as invisibility).

In the end, the authors recommend that the US Government reevaluate its

current approach of primarily providing security and defense assistance to states combating ungoverned territories to one of increasing development assistance to states trying to achieve governance in these contested areas. Specifically, programs should increase infrastructure and government institutions in lawless regions.

Many ungoverned territories cross two or three states' borders. Geography allows bad actors to cross borders and obtain sanctuary should one state begin to apply pressure on the lawless region. To overcome this geographic advantage, the authors recommend creation of regional security architectures designed to achieve cooperative action.

No ungoverned territory can exist without official and unofficial corruption. Policies must address and quash governmental corruption before a state can hope to bring a lawless region into the sphere of civilized nations.

Terrorists need good transportation systems, communication systems, and access to banking systems to ply their trade. Security policies must address these areas before a state builds these infrastructures in lawless regions or they will become terrorist havens. Terrorists and insurgents derive their income from criminal and black market activities. States must place a heavy police presence in these areas to reduce crime if they hope to obtain governance. Basing a few underpaid police in a lawless area forces the police to live off bribes and assist criminals rather than enforcing the state's laws.

Terrorists tend to exploit non-governmental aid agencies to obtain both money and supplies. According to the authors, the U.S. government should place governmental aid agencies in lawless areas to shut down this valuable logistical source.

To the extent possible, the U.S. should assist states trying to bring an ungoverned territory back into governance with surveillance tools and new identification technologies. This removes the cloak of invisibility the terrorists and insurgents need to survive.

DoD monitors ungoverned territories because they harbor terrorists, major narcotics operations, and illegal arms trafficking and aid in the proliferation of chemical, biological, radiological, or nuclear materials. DoD strategy has been to address specific problems in specific ungoverned territories to solve only that specific problem. This approach does not deal comprehensively with the macro threat posed by these territories. The authors recommend that DoD deal with ungoverned territories by recognizing what type they are dealing with—is it a contested rule for example—

and then determine its origins. Understanding its origins will then allow DoD to determine potential solutions to bring the area into governance.

The authors contend that the Air Force is generally well prepared doctrinally to handle operations in ungoverned territories. Its primary concern is to train and maintain a sufficient number of airmen in high-demand special operations specialties needed to support US forces in ungoverned areas and establish operating airfields in these regions as needed.

Well illustrated with valuable maps, *Ungoverned Territories* offers readers a geographic look at the areas studied in detail in the text. It also offers tables throughout that impart valuable information and show how breaking down the typology of an ungoverned territory will reveal its origins and solutions to bring it into governance. Notes and a good bibliography and sources section give readers and researchers the information that they need to evaluate the text and further their own study of the problem.

This book is meant for military professionals of all stripes, counter-terrorism experts, senior government officials, researchers, and serious students of modern armed conflict. All will find it useful.

David F. Crosby, former USAF history writer and doctrine developer for the U.S. Army Air Defense Artillery School



Canadair CF-104 Starfighter. By Anthony L. Stachiw and Andrew Tattersall. St. Catharines, Ontario, Canada: Vanwell Publishing Ltd., 2007. Tables. Photographs. Illustrations. Bibliography. Pp. 149. \$29.95 Paperback ISBN: 1-55125-114-0

This is the fourth book in the "*In Canadian Service—Aircraft*" series, the first three being devoted to the Canadair CF-5, Boeing 707, and Handley Page Halifax.

There are seven chapters in this tome, ranging from the design origins of the F-104, to the CF-104 in Canadian service (including charts showing the fate of every Canadian CF-104), aircraft details, squadron usage, color schemes and markings, armament configurations, and a section on modeling the CF-104.

The Lockheed F-104 was a truly amazing aircraft. It's hard to believe this jet was designed in the early 1950s with the prototype first taking to the air in 1954. The F-104 looked so futuristic it was called "The missile with a man in it" by the aviation press of the day. The aircraft would

look “right” sitting on a present-day fighter ramp. All of the other Century Series aircraft had family precedents: the F-86 sired the F-100, the XF-92A the F-102, the F-84 the F-105. The F-104 was created from a clean sheet of paper. Its wings were so thin that protective wooden slats were placed over the wing leading edges of parked aircraft to prevent serious head injuries to the walking unwary.

During its lifetime the F-104 broke numerous speed and climb records. It was also used to train aspiring USAF astronauts (General “Chuck” Yeager almost lost his life when a red-hot ejection rocket smashed into his helmet’s faceplate after an ejection from an out-of-control NF-104).

F-104 folklore can be used towards earning some pocket change via a Happy Hour wager. Question: What’s the only USAF fighter that required its pilots to wear spurs? Answer: the F-104. Pilots wore spurs that were snapped into sockets in the rear of the ejection seat footrests. During the ejection sequence, a take-up reel would yank the pilot’s feet back into the footrests, thus enabling the pilot to eject with both feet still attached to his body.

Sadly, all was not “peace and light” with the Starfighter. The early models had a downward-ejecting seat, which was fine if one had some altitude. But as aviators know, a lot of problems occur in close proximity to the ground, making this seat deadly at low altitude. The F-104 was also rather short-legged, there being no room in those super-thin wings for fuel tankage. It was a rare sight to see an F-104 without wingtip tanks attached; without them a pilot would be wise to keep the airfield in sight at all times after takeoff. The bird’s safety record was rather dismal. After approximately 25 years of Canadian service, 110 of their original allotment of 238 CF-104s were involved in “Class A” accidents, along with a further three being lost in ground accidents. There were 38 aircrew fatalities during this same period.

The book boasts plenty pictures (many in color) featuring both overall and detail shots. Also included are numerous informational charts, while an entire chapter is devoted to the details of the various wing and unit badges and crests involved. I found the color pictures of the various Canadian “Show Birds” to be most appealing. The modeler in me found Chapter 7’s overview of the scale model kits and decals available highly interesting.

I have few nitpicks. In the “Aircraft Description Section” four pages of aircraft drawings are dedicated to “station diagrams” which may have been better used in an engineering textbook, rather than in a general treatise. In the same section are

drawings of the main and sidewall cockpit instrumentation layouts. These are well-done representations, but a call-out of the varied instruments, knobs and switches would have been appreciated. Lastly, in the “Color Schemes” section it seems somewhat strange that the RCAF colors are referenced using the older Canadian “CSGB” color identification system, rather than the FS595 system presently in use in Canada (and the United States). Fortunately, there are several sites available on the Web that can help untangle this color conundrum.

Overall, this book is a worthwhile and interesting easy read for the aviation buff, the modeler, the aero historian, or anyone who as a youth stood in awe next to his Air Force father, mouth agape, as a tight four-some of F-104s howled past (they made a noise like no other), shook the earth, and quickly disappeared over the horizon.

MSgt. Tom Teliczan, USAF (Ret.), Mililani, Hawaii



Replacing France: The Origins of American Intervention in Vietnam. By Kathryn C. Statler. Lexington: The University Press of Kentucky, 2007. Notes. Bibliography. Index. Pp. xii, 378. \$ 45.00 ISBN 0-8131-2440-7.

There I was at 30,000 feet flat on my back at Mach 2 when suddenly....NOT! Anyone looking for a thrilling story about air exploits had better pass up this volume. Rather, it has to do with the much more prosaic but equally involved political maneuvers that led to the United States’ involvement in the Indo China area and, ultimately, into the second Vietnam War. Kathryn Statler, an associate professor of history at the University of San Diego, has written an erudite, well-researched, and deep and penetrating analysis of the process where in the United States replaced France as the “colonial” power in Indo China, however inadvertently. She outlines the manner in which this occurred in great detail. Its political twists and turns mirror a “dogfight” in some respects.

The French returned to Indo China in 1945, having been thrown out by the Japanese conquest of South East Asia in 1941. In the interim between the end of effective Japanese rule and the arrival of French forces, Ho Chi Minh declared a Democratic Republic of Vietnam (DRV) at Hanoi. This didn’t sit well with the newly returned French overlords, and fighting soon erupted. The French government tried to interest the United States in backing its war with the Viet Minh but came up

against a basic anti-colonial American outlook that stemmed from early American history. During the 1945-1949 period, the US was aware that some of the money it contributed to the European Recovery Program was being used to support French involvement in Indo China; but the government flatly refused to directly support the effort to reestablish colonial rule. In this respect the Truman administration mirrored President Roosevelt’s disdain for Western colonial possessions. The US had scheduled Philippines independence for 1942. That event was delayed by the Japanese invasion but finally took place in 1946.

Following the North Korean attack on South Korea in June 1950, France adopted the argument that Communist activities in Indo China were part and parcel of an overall communist strategy to topple non-communist governments. It succeeded, to its ultimate chagrin and dismay, in selling this proposition to the Truman administration. The French made the point that its participation in the European Defense Community, a US goal, was at odds with the cost of the war in Indo China and that it needed financial assistance for Indo China or its EDC participation was in jeopardy. The Korean War tipped the US into providing assistance. Later, when the French tried to involve the Eisenhower administration in direct military support in defense of the isolated outpost of Dien Bien Phu in early 1954, they were not successful.

However, US involvement in Indo China grew slowly economically, culturally, and politically and succeeded in displacing the French. In 1956 Ngo Dinh Diem, the South Vietnamese leader, forced the departure of residual French military forces from Vietnam. In this he was backed by the Eisenhower administration which felt that removing the last vestiges of French colonial rule would lead, under American tutelage, to a free and independent Vietnamese State, one that with American military and economic assistance could defend itself against the communist DRV.

This is a fascinating story, well told, although not all may agree that American goals and methods were somewhat crude and ultimately self-destructive. The implicit point Statler makes—that the US became a neocolonial power in supplanting a starkly colonial power—fails to deal with the problem that a democracy like the United States is highly unlikely to pour tax dollars into another country without wanting to have a large say in how those dollars are spent. Perhaps it is a problem without a solution.

Capt. John F. O’Connell, USN (Ret.)



Winged Crusade: The Quest for American Air and Space Power. By Michael Robert Terry, ed. Chicago: Imprint Publications, 2006. Illustrations. Notes. Index. Pp. xvi, 210. \$24.95 Paperback ISBN: 1-879176-43-2

Orville and Wilbur Wright are well known for their achievements against the complex challenges of powered, controlled, and sustained flight that laid the foundation for future Americans to soar into the clouds. These exploits were highlighted during the United States Air Force Academy's 20th Military History Symposium that commemorated the centennial of the Wright brothers' flight. Out of this symposium grew this compilation of essays by nine leading aviation historians with the goal to enlighten airmen on the "role, impact, abilities, and limitations of air power" along with fulfilling their "quest for understanding and improvement" in the Air Force.

Appropriately, *Winged Crusade* begins with an essay on the Wright Brothers and their "legacy of ingenuity" in American aviation written by Tom Crouch, senior curator of the Division of Aeronautics at the National Air and Space Museum. Dr. Crouch brings to light how two brothers, bicycle makers from Dayton, were able to uncover the problem concerning aerodynamic control. The brothers designed a wing with a twist across the entire wing, lifting one side of the wing and lowering it on the opposite side, thus allowing the pilot to maintain precise control. The fruits of their work were achieved on December 17, 1903, when the world's first airplane took flight. Dr. Crouch asserts that in just six years, the Wright brothers had "produced an invention that would define the course of the twentieth century."

The second essay by Herman Wolk explores the organizational history of the Air Force from the shifting of the Army Air Forces "from low to second gear" in 1939 to the revision of Army Regulation 95-5 in 1941 which was seen as a way to counter the Congressional threat of an independent Air Corps. In March 1942, the Marshall Reorganization plan was seen as the most "drastic and fundamental change" in the War Department to date and granted the Army Air Force basically "de facto autonomy" with Arnold remarking that it helped the Air Force develop into a "coordinated member of the combat team." Wolk continues his essay through the years from the formation of the Twentieth Air Force in April 1944 (a step toward Air Force autonomy) to three years later with the National Security Act of 1947 establishing the US Air Force. He also brings readers up to date on the current

Aerospace Expeditionary Forces concept that provides a "full spectrum" of the Air Force's capabilities to combatant commanders.

Of the remaining seven essays, the most intriguing is Dr. James Corum's "Luftwaffe Intelligence: How It Viewed the United States Army Air Forces." A professor with the US Army Command and General Staff College at Ft. Leavenworth, Dr. Corum is well versed on the Luftwaffe having written three books (*The Roots of Blitzkrieg*, *The Luftwaffe*, and *The Luftwaffe's Way of War*). He effectively discusses the Luftwaffe's intelligence establishment in regards to the air war against the Americans. Following World War I, the German military established the secret Reichswehr intelligence office under the name of T-3 Statistical Section charged with following American industrial developments. Dr. Corum states that professional US military officers considered the German Imperial Army a superior fighting force and yearned to glean any knowledge they could from them concerning battlefield performance. In the early 1930s, German officers visited numerous aviation-related sites throughout the United States with few restrictions. In 1929, a captain with the German Air Staff spent a total of twelve weeks at the Air Corps Tactical School, the Engineering School, the Technical School, and primary and advanced flying schools. He sent back to Germany boxes of U.S. Army Air Corps training and technical documents which gave German's insight into recent aviation developments. However, Dr. Corum points out that America was not the only target of the Germans. Prior to 1939, the Germans possessed a special reconnaissance squadron consisting of civilian aircraft with hidden cameras that helped photograph potential targets throughout Europe with aircraft routinely straying off-course. The most interesting aspect of Dr. Corum's essay was the fact that with this immense German intelligence community, most of the intelligence was uncoordinated or downgraded American potential in order to support Hitler's worldview.

The other six essays are:

"Forging American Air Power: Patrick, Arnold, and Doolittle," by Dick Alan Daso.

"An American Way of War: The Quest for High-Altitude Daylight Strategic Bombing," by Tame Davis Biddle.

"The Aircraft that Decided World War II: Aeronautical Engineering and Grand Strategy, 1933-1945, the American Dimension," by John F. Guilmartin Jr.
"Rolling Thunder and Linebacker

Campaigns: The North Vietnamese View," by Merle L. Pribbenow II.

"Jet Aircraft and Defense Imperatives, WW II to Vietnam," by Thomas A. Keaney
"General Bernard Schriever: "Father of the Air Force Missiles and Space Program," by Jacob Neufeld.

Winged Crusade provides today's airmen an informative and enlightening work that can serve as a basis for further study about the various aspects of our rich history. All in all, it is a quick and informative work which belongs on every Airman's and aviation history enthusiast's bookshelf.

R. Ray Ortensie, Staff Historian, Air Education and Training Command, Maxwell AFB, Alabama



Escape from Hitler's Europe: An American Airman Behind Enemy Lines. By George Watt. Lexington: The University Press of Kentucky, 1990. Maps. Photographs. Index. Pp. 158. \$17.95 Paperback ISBN: 0-8131-9176-9

Books devoted to the escape and evasion of World War II airmen from Hitler's *Festung Europa* are far fewer than the long list of books dealing with bomber operations. This book recounts the experience of one airman and his return to England after his B-17 was shot down in occupied Belgium in November 1943. The book provides some insight into the scope and efficiency of the Belgian and French undergrounds that spirited him from the crash site all the way to Gibraltar in forty-four days.

George Watt was not a typical Eighth Air Force airman. The staff sergeant waist gunner was shot down on his 30th birthday, making him by far the elder statesman of his crew, four years older than the aircraft commander, and more than ten years older than most of the other gunners. He had served the Republican cause during the Spanish Civil War as an infantryman in the Lincoln Brigade and used that experience to explain to his Air Force comrades that he was among the first Americans to take on Hitler and Mussolini. Watt describes himself as a Communist during the 1930s but says he became increasingly disillusioned with the Communist cause after the war.

Although this is certainly not a history of the Belgian or French undergrounds, Watt's experience serves as an example of the risks taken, techniques employed, and extent of the network. It also shines a human light on the network's operatives. Members of the underground were aware if they were caught helping an American or

British airman to freedom, the penalty was execution. Still, significant numbers of ordinary citizens, a majority of them women, risked all to do what they could to bring freedom to their occupied countries. Watt had conversations on idealism and beliefs with some of his handlers during his escape and, while he disagreed ideologically with many of them, he also found out that the resistance was composed of members of all political persuasions, including Communists. Resistance members had to be constantly aware of the possibility of a fluent-English speaking German infiltrating their network, of which there were a number of documented examples. Communicating through England, the resistance had set procedures, to verify an airman's identity; but they had to remain alert to German attempts to circumvent these procedures. No doubt, present day escape and evasion procedures are rooted in lessons learned from this operation.

A poignant moment occurred late in Watt's escape across ostensibly neutral Spain, when he encountered a Spanish soldier escorting the British diplomatic convoy, in which he was being transported in towards Gibraltar. He spoke to the man in English, and found out that he had fought in the Civil War on the Fascist side—they had indeed been enemies during that conflict. Watt didn't let on to his role. He did not want anything to stand in the way of his delivery to friendly territory.

Watt returned to Belgium during the 1980s, meeting several underground members and their families who had helped him forty years before. Surviving members of his crew also conducted a "debriefing" in 1988—their first opportunity to get together to tell each other their individual stories about the shoot down, escapes, and POW experiences.

This is an interesting and exciting account that provides a first person example of the plight of an individual airman, and insights into the scope, risks, and techniques of the Belgian and French underground movements.

Col. Stetson M. Siler, USAF (Ret.)



Right Stuff, Wrong Sex: America's First Women in Space Program. By Margaret A. Weitekamp. Baltimore, Md.: The Johns Hopkins University Press, 2004. Photographs. Notes. Index. Bibliography. Pp. 232. \$25.00 Paperback ISBN 0-8018-8394-6.

In the early days of America's human spaceflight program, space was viewed as

a male domain—one in which there was no meaningful role for women. This book tells the story of a number of individuals who didn't fully embrace that common view. For different reasons, these people came together to explore the possibility of an active role for women in the space program. They then saw the effort wither under the combined pressures of societal expectations and cold war politics. The story has three primary players: Dr. Randy Lovelace, Jerrie Cobb, and Jackie Cochran.

NASA had chosen Lovelace, one of the leading aerospace medical experts in the country, to conduct the medical examinations used to help select America's Project Mercury astronauts. Lovelace thought that women could serve in space, in roles such as technicians and similar support staff aboard orbiting laboratories. To help confirm or refute his idea, he decided to identify a number of highly qualified female pilots and offer them the opportunity to undergo the Project Mercury medical exam. He called the testing program Project WISE (Women in Space Earliest), a name that later evolved into WISP (Women in Space Program).

At about the same time, Lovelace met Cobb at an Air Force Association event. Cobb was a highly accomplished pilot, as evidenced by her 7500 hours of flying time and the aviation records she had set. She accepted Lovelace's invitation to become the first participant in Project WISE and underwent the astronaut medical exam in February 1960. Not only did she pass, but some of the results indicated she might be even better qualified for spaceflight than were the men who had gone through the testing regimen, at least from a physiological perspective. The fact that the tests were conducted by Lovelace and were identical to those given to the candidates for the Mercury program has led to the common misconception that WISP was a NASA program. To the contrary, NASA played no role.

After Cobb had been tested, and while other candidates were being considered, Cochran entered the story. When Lovelace wrote to Cochran asking her views of the program, she responded enthusiastically. Cochran provided vital financial support by paying for each participant's travel and lodging expenses for the week-long stay at Lovelace's clinic. For a program with no government funding, this solved a major problem. She also offered suggestions on expanding the testing program to a larger population and, probably to Lovelace's surprise, began to take on a leading role as the public face of the program.

Eventually twenty-five women were invited to take the astronaut medical examination and 13 successfully completed the exam. For Lovelace this was just the first step in the testing process, because he wanted to put the women through the full battery of medical, stress, and psychological tests the male astronaut candidates had undergone. But he could control only the medical exam conducted at his clinic. For the remaining tests he would need cooperation from the Navy or the Air Force which owned the sophisticated equipment required for the tests.

Lovelace had arranged for testing to be conducted at Pensacola Naval Air Station. But as the WISP received increasing public attention, Navy officials began to question whether expensive facilities should be used to test female astronaut candidates. Rather than make a politically sensitive decision on its own, the Navy passed the ball to NASA, asking the agency if there was a requirement for female astronauts. When NASA said that there was no such requirement, the Navy said it could not support the testing. Thus, for all practical purposes, WISP began and ended with the Lovelace medical exam.

NASA's official rationale for its answer was based on cold war politics. To win the space race with the Soviet Union, President Kennedy had established the goal of landing an astronaut on the Moon by the end of the 1960s. NASA said that investigating the suitability of women for the space program would consume time and resources and would put the 1969 objective in jeopardy. NASA concluded that putting a woman into space would have to wait. As it turned out, the wait lasted until 1983 when Sally Ride became the first American woman in space.

As the National Air and Space Museum's curator for the societal aspects of space history, Whitecap is exceptionally qualified to tell this story. Although the story could be told by focusing on the three key players, she goes beyond this and does so in a way that helps us remember how American society viewed women four decades ago. She also paints vivid pictures of the personalities involved, as when she describes how Jackie Cochran's considerable ego caused her to oppose the program when public attention shifted from her to Cobb. All told, Weitekamp has done a terrific job of capturing a fascinating story.

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



Combat Search and Rescue in Desert Storm. By Darrel D. Whitcomb. Maxwell AFB, Ala.: Air University Press, 2006. Photographs. Maps. Appendix. Abbreviations. Pp. xix, 303. ISBN: 1-58566-153-8 [Free download available from AU Press website]

Combat search and rescue (CSAR) operations have traditionally not received the detailed historical coverage afforded to most other wartime air operations. Perhaps this is because such examination often must deal with complexity, rapidly evolving situations, fate, and luck. Whitcomb's objective for this book is to follow in the footsteps of authors such as Frank Futrell and Earl Tilford who have previously chronicled CSAR efforts during the wars in Korea and Southeast Asia. Drawing heavily upon personal interviews with Gulf War participants and the official records of the Joint Rescue Coordination Center (JRCC), Whitcomb has produced such a chronicle.

This type of work is, perhaps, the perfect book for Air University Press to publish. It is written by an Air Force combat veteran about significant modern military aviation-related events that require a certain personal understanding of operations. Whitcomb neatly sets the stage for this chronicle with a brief historical introduction to rescue operations during the war in Southeast Asia. He discusses how falling budgets and administrative reorganization had a deleterious effect on rescue operations capability after the Vietnam War had ended. The migration of the rescue function to Special Operations Command (SOCOM) as a result of the Goldwater-Nichols Department of Defense Reorganization Act of 1986 was not a satisfactory arrangement and was finally rectified in 1990 when the Twenty-third Air Force was transferred back to "Mother MAC" and eventually redesignated as Air Force Special Operations Command (AFSOC).

Whitcomb establishes precisely why CSAR performance during Desert Storm was lackluster: they were equipped with poor communication tools and untested GPS systems and were soon to be involved in a real war.

It is from this point onward that this book becomes a detailed chronicle of the limited CSAR efforts attempted during the 1991 Gulf War. Laced with abbreviations—a full three pages of them listed in the appendix—the narrative is sometimes difficult to handle for the uninitiated. But with a bit of concentration and a "yellow sticky" on the reference page, it is worth the effort.

From campaign planning in the "Black Hole" to the detailed practice exer-

cises flown in preparation for combat, the CSAR story is one that should make the hair stand up on the neck of every commander and aircrew member who has deployed to the Persian Gulf. Only eight (less than 10 percent) of "shoot down" survivors were rescued. Lack of training in GPS capabilities, poor survival radios, untenable terrain, deadly ground fire, and inadequate command relationships resulted in the ineffectiveness of CSAR during the first few months of 1991. In the end—and there was much blame to go around—commanders agreed that poor chains of command were behind the less-than-stellar performance of rescue assets during Desert Storm. Fortunately, relatively few people required rescuing.

Every coalition flyer and commander should read and heed the lessons from this careful examination of CSAR during Desert Storm. The mission still applies, and the consequences of failure remain as dangerous and uncertain as in 1991.

Dik Alan Daso, Ph.D., Curator of Modern Military Aircraft, Smithsonian National Air and Space Museum, Washington, D.C.



Propaganda Postcards of the Luftwaffe. By James Wilson. UK: Pen & Sword Books Ltd., 2007. Photographs. Appendix. Bibliography. Pp. 224. \$32.95 ISBN: 1-84415-491-2

This book provides a unique look at how Nazi Germany publicized the accomplishments of the *Luftwaffe* before and during World War II. Using a large selection of German picture postcards, Wilson details the men and equipment of the *Luftwaffe* and how these professionally photographed postcards promoted the ideals and objectives of the Nazi state.

Following the end of World War I, the German aircraft industry was severely limited by the Versailles Treaty. However, Germany was able to evade many of the treaty restrictions during the 1920s and continue developing aircraft technology while also promoting civilian flying clubs. With the coming to power of Adolf Hitler and the Nazi Party in 1933, this effort accelerated until the *Luftwaffe* was officially unveiled in 1935 under the leadership of Hermann Goring, a former World War I fighter ace. By the beginning of World War II in 1939 the *Luftwaffe* was considered the most advanced air force in the world. Throughout the war the *Luftwaffe* was able to field some of the most advanced aircraft in the world, including the Messerschmitt Me 262 jet fighter.

The Nazi Propaganda Ministry, under Dr. Joseph Goebbels, used propaganda to a degree not seen before, controlling all forms of mass communication (newspaper, radio, theater, motion pictures, etc.) to advance the Nazi Party, its activities, and its ideology. The *Luftwaffe* picture postcards were but one element in this tremendous propaganda machine.

Wilson details a variety of *Luftwaffe* aircraft, including obscure and secondary models that were part of the inventory in the mid-1930s and served with the Condor Legion during the Spanish Civil War. These early aircraft, often forgotten today, helped the *Luftwaffe* develop into the deadly force that shocked the Allies in Poland and France. His book also provides biographical sketches on many of the commanders and aces of the *Luftwaffe*, including Adolf Galland, Gunther Rall, and Ernst Udet.

Well illustrated, *Propaganda Postcards of the Luftwaffe* will interest readers of World War II aviation looking for a different perspective on the history of the *Luftwaffe*.

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



Born to Fly. By Gene Wink. Bloomington, Ind.: AuthorHouse, 2006. Maps. Photographs. Notes. Appendices. Bibliography. Pp. 223. \$20.00 ISBN: 1-4259-1536-1

During my thirty years as an Air Force historian, I read literally hundreds of personal accounts of military and wartime experiences, including full-blown autobiographies like Gene Wink's *Born To Fly*. This one, however, stands out not so much for his story as for the straightforward, honest, and modest way in which it is written. Not once does Wink proclaim himself a hero or try to paint himself as a bigger-than-life military aviator. But as you read his life story, you'll realize he easily could have.

Gene Wink knows something about the military. His experience began as a young boy in Mississippi. His dad, an officer in the Mississippi National Guard, encouraged the eight-year-old to attend both the monthly training sessions and the two-week long summer encampments. Wink used those opportunities to develop strong self-discipline, a firm work ethic, and excellent military bearing. Such traits helped earn him an appointment to West Point in 1939. Just under four years later, he volunteered for flying school and soon found himself flying combat in Europe during World War II. And he put those same

characteristics to work in a flying career spanning nearly three decades.

His 26-year career took him through World War II, creation of an independent Air Force, the Air Force's first major humanitarian airlift, the Korean War, and the start of Vietnam. In that time he amassed nearly 6,000 hours flying thirty different types of aircraft. Wink flew everything from single-engine fighters to multi-engine bombers to cargo planes to tankers to helicopters. He even managed several hundred hours in the amphibious SA-16 rescue plane.

Wink's story is replete with exciting stories. For example, following a dogfight with the Germans in March 1944, he suddenly discovered his P-47 could not keep up with the rest of the flight. Pushing the stricken aircraft as far as he could, he finally had to bail out. Finding himself in German-occupied France, he evaded capture through the help of French civilians. After an arduous and treacherous journey, often traveling on trains amid the enemy, he walked to freedom via the Pyrenees Mountains into Spain, suffering frostbite on the difficult trip. He was not allowed to return to combat since he'd evaded capture, and authorities feared he might be shot down again and be forced to tell who had helped him earlier. Sent back to the States, Wink volunteered for and began training for combat in the Pacific in the P-38.

Wink's post-war assignments took him to Germany, Japan, Korea, and a half dozen stateside bases. He downplays his actions in the Berlin Airlift just as he downplays the danger he faced in the res-

cue of a downed Navy P2V crew in the Sea of Japan after the Korean War. He discusses these actions like he's talking about another day at the office. Wink's life may not be the stuff of movies and best sellers, but his experiences definitely reveal an honorable, honest and heroic man.

Wink also shares his non-military life with the reader: His chance meeting of a beautiful American girl in France after the war, Irma June, the woman he's still married to; his journey of faith starting with those early prayers for help in the Pyrenees; and his subsequent career as a banker in Texas. Yes, *Born to Fly* is a story like many others, yet it stands apart with its honest, simple tale of a true military man.

CMSGt. Robert J. Davis, USAF (Ret.), Bob Davis Editing, Live Oak, Texas



Take Down: The 3rd Infantry Division's Twenty-One Day Assault on Baghdad. By Jim Lacey. Annapolis, Md.: Naval Institute Press, 2003. Maps. Diagrams. Illustrations. Photographs. Notes. Index. Pp. xiii, 267. \$29.95 ISBN: 1-978-1-458-88

Comparisons among divisions are difficult and invidious. There are separate times and places; and different wars, theaters, campaigns, and commanders. I have a special interest in divisions. For 12 years my father served as G-2 (Intelligence) and Chief of Staff of the 40th Infantry Division

and was commanding general of the 49th Infantry Division for another five. I spent eight years on the General Staff of the 49th Infantry Division, working up to G-2 and G-3 (Operations). In 75 years of reading military history, I've drawn some educated conclusions about relative ranking at that level of command. I think the Rock of the Marne [the 3d ID in World War I in France] is the best!

I'll confess to a certain bias. My great grandfather was a lieutenant in the 15th Infantry Regiment during the Mexican War. I grew up next to the Presidio Wall in San Francisco and was awakened by bugle calls from the 30th and went to school with Army brats from that outfit. While I was with the 45th Division from 1942-1945, we were frequently on the line next to the 3rd. On Anzio, the battalion in which I was serving was briefly attached to our neighbor, giving me eligibility for the life membership I proudly hold in the Society of the Third Infantry Division.

Since its formation in 1917, the 3d has participated in many campaigns: six in World War I (two medals of honor awarded), ten campaigns in World War II (37 MOH), eight in Korea (11 MOH); two in the Persian Gulf War; and then in Iraqi Freedom (with one MOH awarded). The division didn't go to Vietnam, which may be just as well since no division was able to distinguish itself much under conditions there.

In the latest war in Iraq, at one point there was an anticipation on the part of both the troops there and the public that our liberation of the country would be welcomed with flowers. The 3rd Division was soon disabused of this idea, but the American people never quite got the word. The division experienced twenty-one days of fierce fighting that some call among the most vicious in our history.

Lacey paints this picture well. He uses biographies of the principal commanders to bring the story to life—a story which was essentially of battalion and brigade task force battle. He included twenty-eight maps which substantially help the reader's understanding. Lacey drew both on interviews of U.S. soldiers involved and some senior Iraqi officers. The book doesn't pretend to give the big picture (there are many other works for that), but it is valuable for anyone wanting to know how the campaign was won at the division level and below. Finally, the inevitable mistakes that were made aren't glossed over.

Since publication of this book, the 3d Division has returned to Iraq as part of the surge as Multi-National Division Central.

Brig. Gen. Curtis Hooper O'Sullivan, ANG (Ret.), Salida, California



Hell Hawks! The Untold Story of the American Fliers Who Savaged Hitler's Wehrmacht

by
Robert F. Dorr &
Thomas D. Jones

Zenith Press:
Due out June 15, 2008
\$24.95

New publication by our Technical Editor

Books Received

Andrews, Heather, et al., Eds. *That Rough Beast, Its Hour Come Round at Last: The History of Hurricane Katrina*. Huntsville: Texas Review Press, 2007. Tables. Illustrations. Photographs. Appendix. Glossary. Pp. 169. \$18.95 Paperback ISBN: 1-933896-00-0

Brands, Hal. *From Berlin to Baghdad: America's Search for Purpose in the post-Cold War World*. Lexington: The University Press of Kentucky, 2008. Notes. Bibliography. Index. Pp. 416. \$45.00 ISBN: 0-8131-2462-9

Broughton, Jack. *Rupert Red Two: A Fighter Pilot's Life from Thunderbolts to Thunderchiefs*. St. Paul, Minn.: Zenith Press, 2007 [an imprint of MBI Publishing Co.] Photographs. Pp. 352. \$26.95 ISBN: 0-7603-3217-7

Chant, Chris. *Allied Bombers, 1939-45*. [The Essential Aircraft Identification Guide.] Minneapolis, Minn.: Zenith Press, 2008. Tables. Diagrams. Illustrations. Photographs. Appendices. Index. Pp. 192. \$19.99 Paperback ISBN: 0-7603-3450-8

Chant, Chris. *Allied Fighters, 1939-45*. [The Essential Aircraft Identification Guide.] Minneapolis, Minn.: Zenith Press, 2008. Tables. Diagrams. Illustrations. Photographs. Appendices. Index. Pp. 192. \$19.99 Paperback ISBN: 0-7603-3451-5

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Esvelin, Philippe. *Forgotten Wings: Gliders in Normandy and Southern France*. Belgium: Heimdal, 2006. Illustrations. Photographs. Appendices. Bibliography. Pp. 176 \$42.95 ISBN: 2-84048-246-0

Gainor, Chris. *To a Distant Day: The Rocket Pioneers*. Lincoln and London: University of Nebraska Press, 2008. Illustrations. Photographs. Glossary. Bibliography. Index. Pp. xxiii, 216. \$29.95 ISBN: 0-8032-2209-0

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Hall, David Ian. *Strategy for Victory: The Development of British Tactical Air Power, 1919-1943*. Westport, Ct. and London: Praeger Security International, 2008. Illustrations. Photographs. Notes. Glossary. Bibliography. Index. Pp. xvii, 241. \$ ISBN: 0-275-97767-2

Holmstedt, Kirsten. *Band of Sisters: American Women at War in Iraq*. Mechanicsburg, Pa.: Stackpole Books, 2007. Photographs. Index. Pp. xxiii, 327. \$27.95 ISBN: 0-8117-0267-6

Hunley, J.D. *Prelude to U.S. Space-Launch Vehicle Technology: Goddard Rockets to Minuteman III*. Gainesville: University Press of Florida, 2008. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xiii, 469. \$39.95. Paperback ISBN: 0-8130-3177-4

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* Already under review.

- Keijsper, Gerard. *Lockheed F-35 Joint Strike Fighter: Design and Development of the International Aircraft*. UK: Pen & Sword Aviation, 2007. Illustrations. Photographs. Appendices. Glossary. Index. Pp. 320. \$25.00 ISBN: 1-84415-631-3
- Korkuc, Bob. *Finding a Fallen Hero: The Death of a Ball Turret Gunner*. Norman: University of Oklahoma Press, 2008. Map. Photographs. Notes. Bibliography. Index. Pp. xv, 256. \$24.95 ISBN: 0-8061-3892-3
- Lambeth, Benjamin S. *Air Power against Terror: America's Conduct of Operation Enduring Freedom*. Santa Monica, Calif.: RAND National Defense Research Institute 2005. Map. Notes. Glossary. Bibliography. Pp. xliii, 411. \$35.00 www.rand.org Paperback ISBN: 0-8330-3724-2
- Lambeth, Benjamin S. *NATO's Air War for Kosovo: A Strategic and Operational Assessment*. Santa Monica, Calif.: RAND Project Air Force, 2001. Maps. Notes. Photographs. Illustrations. Glossary. Bibliography. Pp. xxxiv, 276. \$28.00 www.rand.org Paperback ISBN: 0-8330-3963-6
- Marrett, George J., *Contrails over the Mojave: The Golden Age of Flight Testing at Edwards Air Force Base*. Annapolis, Md.: Naval Institute Press, 2008. Photographs. Notes. Bibliography. Index. Pp. xviii, 230. \$29.95 ISBN: 1-59114-511-0 www.usni.org
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Best Article Award 2007

A three-member panel of judges chose as “Best Article for 2007” Donald R. Baucom’s “Wakes of War: Contrails and the Rise of Air Power, 1918-1945.” The two-part article appeared in *Air Power History*, Vol. 54, No. 2, pp. 16-31 and Vol. 54, No. 3, pp. 4-21.

The principal factors behind the selection were the new insights into aerial warfighting conditions and problems that this article explores. During World War II, contrails left by the one thousand bombers flying on raids over Germany were so intense at times that they created weather and visibility conditions that affected what the air crews could do and how well they could do it. Significantly, even though the winning article covers the period through the end of World War II, contrails have been observed by defenders on the ground in many wars since, and they have used these aerial ice trail indicators as a way of locating attacking aircraft without the need to reveal their locations and intentions as they prepare to fire anti-aircraft weapons or guide interceptors to attack.

The judges—Ken Alnwick, Albert Piccirillo, and Lawrence Spinetta—praised several other articles published in 2007 for their excellence. The other articles the judges considered covered topics as diverse as the exploits of Howard Hughes and Billy Mitchell, recent air operations over Iraq, flying with the B-36, the Air Force’s service in response to Hurricane Katrina, new women cadets at the Air Force Academy, and preparations for going to the Moon. All of these articles were excellent, and each author ought to be proud of his and her accomplishments.

*John F. Kreis, Chairman,
Publications Awards Committee*

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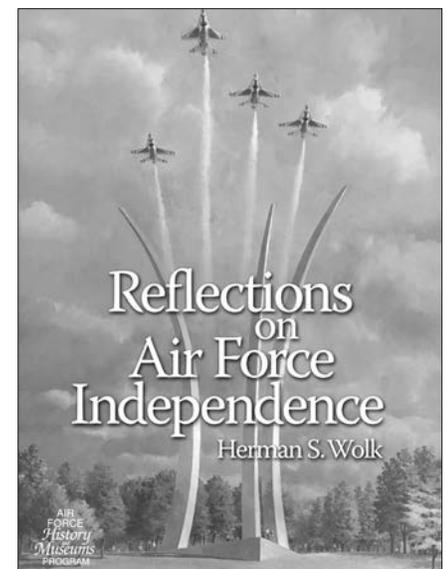
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Letters

B-26 Marauder

I have been prompted to write because of your book review of *Marauder: Memoir of a B-26 Pilot in Europe in World War II* [Air Power History, Vol. 55, No. 1, Spring 2008, p. 54]. I expect to buy the book because we B-26 veterans always want to learn more about the airplane, its operations, and the people involved.

I also want to inform your readers that we have a web site that they might find interesting: www.391stbombgroup.com. I would hope to find a few more of our dwindling numbers. In addition to pictures and crew lists, I describe training deployment, operations (taxi sheets with mission descriptions), operations, incidents, and airplane lists. Of course, I did not develop all of this material. I try to credit all donors of orders, our historian's earlier texts, and the great assistance of my collaborator in England, Dave Garnham.

Because of the low number of healthy members who might attend a reunion, we have joined with the Ninth Air Force for a reunion in St. Louis, May 29-31, 2008. Contact:

Col. George T. James, Jr., USAF (Ret.)

The X-15B

I enjoyed the Spring 2008 edition [Vol. 55, No.1, *Air Power History*], especially the article about the X-15B by Parker Temple. It filled in a bunch of holes from what I remember fondly about tracking that program as a kid back in the day.

Col. Brett Morris, Professor of International and National Security Studies, Air Command and Staff College, Maxwell AFB, Alabama.

LeMay's Missileman Badge?

The Spring 2008 edition of *Air Power History* had a superb feature by Jeff Duford, the National Museum of the United States Air Force, entitled "The Things We Are: Air Force Heritage and History in Artifacts." It includes a photo of Gen. Curtis E. LeMay being sworn in as Chief of Staff on June 30, 1961, and also a photo of General Lemay's service coat. (Both photos are on page 8.) One of the aspects I find particularly interesting is that in neither instance is a Missileman Badge (the "pocket rocket") being worn or displayed. Also, General LeMay's official

USAF biography does not include the Missileman Badge among his ratings.

The Missileman Badge, originally called the Guided Missile Insignia, was established in 1958 at the direction of then-CSAF Gen. Thomas D. White. It was renamed the "Missileman Badge" in 1963 and then renamed the "Missile Badge" in 1979.

General LeMay was CSAF 1961-1965 during a significant part of the USAF ICBM buildup. Prior to that he was Vice CSAF 1957-1961 and CINCSAC 1948-1957. General LeMay's USAF biography states: "The general commanded SAC for nearly 10 years and under his leadership and supervision, plans were laid for the development and integration of an intercontinental ballistic missile capability." (The first U.S. ICBM equipped with a nuclear warhead, an Atlas D, went on SAC alert at Vandenberg AFB on October 31, 1959.) Why did General LeMay not wear the Missileman Badge?

Greg Ogletree's (USAF, Ret.) outstanding AAFM monograph, "The Missile Badge (a not-so-brief history)," updated and expanded June 1, 1997, provides penetrating insights into the criteria for awarding the badge in that era. According to the 1958 regulation:

The missile Insignia has been established to recognize and identify those individuals within the Air Force who, by virtue of their job assignment and attainment of command, operational or technical skills, have a direct, distinctive, and important role in the development, maintenance and/or operation of guided missiles.

Problems arose with interpretations of the criteria for eligibility of the badge. Later in 1958, a HQ USAF message suspended award of the insignia to staff and support personnel above Air Division level. A February 25, 1959, AFCCS message to CINCSAC stated that the "intent (of the policy) was to restrict the award to individuals who are more directly engaged in missile operations than for example the Chief of Staff, Vice Chief of Staff or Major Air Commanders." However, on April 9, 1959, the Chief of Staff (General White) directed that (then-CINCSAC) General (Thomas) Power be awarded the insignia.

As Greg Ogletree has thoroughly documented in his monograph, in ensuing years the criteria and regulation for the badge were revised in detail several more times.

Richard Boverie, USAF (Ret.), Palm Beach Gardens, Florida

Interesting observation! I've just spent

the last two hours in both my private library and online looking for an image of LeMay wearing the missile badge and found nothing. It's possible he didn't wear one because he believed he never really earned it, having left SAC before the badge was authorized. Indeed, the 1962 regulation for the badge, which he approved as CSAF, makes it clear that upper echelon personnel didn't automatically qualify for receipt of the award, though waivers could be requested on a case-by-case basis. The later authorized practice of CINCs and other general officers wearing the badge of a weapon system for which they had command responsibility but never any direct association with always seemed inappropriate to me. The fact that General LeMay apparently never wore the pocket rocket is just one more reason I still have the utmost respect for him. I wonder what he would think of the historic SAC emblem being authorized by the USAF for its new Cyber Command?

Greg Ogletree, USAF, (Ret.), Lompoc, California

However this discussion ends, General LeMay earned the right by virtue of his prescience in approving going forward with the Minuteman ICBM while it was still on the drawing board.

Jacob Neufeld, editor

News

John W. Meyers (1911-2998)

John W. Myers, a businessman and renowned test pilot during World War II died on February 7, 2008 in Beverly Hills, California. He was ninety six.

His exceptional flying skill earned him the nickname "Maestro." Myers was the chief engineering test pilot for Northrop Corporation during the war. He test flew the P-61 Black Widow, the first successful American night fighter. He also tested the Northrop XB-49 flying wing.

In 1944 he went to demonstrate the P-61 in New Guinea in the South Pacific; he was accompanied by Charles Lindbergh. Myers was born in Los Angeles, where his father, Louis W. Meyers became chief justice of the California Supreme Court and co-founder of the law firm O'Melvaney and Myers.

After John Myers graduated from Stanford in 1933, he went east to obtain a law degree from Harvard University. Shortly after graduation in 1936, Myers joined O'Melvaney and Myers and took on

celebrity clients, such as Bing Crosby, Gene Autry, Edgar, Bergen, CBS and Paramount. But Myers' love of flying led him to become a general counsel at Lockheed, where he began ferrying planes for overseas delivery. In 1941 he became chief engineering test pilot at Northrop. After World War II he became senior vice president. In 1954 Myers became chairman of Pacific Automotive Corporation and later sold it to Purex. He formed Airflite, an aviation services facility in Long Beach, California, but sold it to Toyota in the late 1980s/Myers was a phil-anthropist who donated 5,000 acres of land to Merced, California, for a nature conservancy. He also donated to Pomona College and the NASM.

He continued to fly while in his nineties. His wife, Lucia, died in 1999; his son Louis W. Myers II died in 1993. He is survived by his daughter, Lucia "Lissa" Myers Wolff, and three grandsons.

Arthur C. Clarke (1917-2008)

Arthur C. Clarke, the famous science-fiction writer and futurist died on March 2, 2008, at his home in Colombo, Sri Lanka. He was ninety.

He co-authored, with Stanley Kubrick, the screenplay for the film "2001: A Space Odyssey. Clarke wrote more than 100 books and 1,00 short stories, marked by their ability to foresee the possibilities of human innovation. For example in 1945 Clarke proposed the idea of communication satellites in geostationary orbit. His short story, "Dial F. for Frankenstein," inspired Tim Burners-Lee to invent the World Wide Web. In 1941, Clarke enlisted in the Royal Air Force and became a radar instructor and helped develop a means for ground-controlled landings of aircraft in zero-visibility conditions. Although he never went into space, he had a sample of the DNA from his hair flown into orbit, hoping that it might be discovered by some future "super civilization." Who knows?

Gordon M. Graham (1918-2008)

Lt. Gen. Gordon M. Graham, USAF (Ret.) died at his home in Irvington, Virginia on March 22, 2008, after suffering. He was ninety.

Born in Ouray, Colorado, he grew up in Taft, California, and graduated from Berkeley. During World War II he commanded the 354th Fighter Squadron, 355th Fighter Group, Eighth Air Force, at Steeple Morden, England. He logged 73 combat missions in the P-51D Mustang in Europe and 146 missions in Southeast

Asia. Genral Graham was credited with bringing down more than 16 enemy aircraft. Among his military awards and decorations were the Distinguished Service Medal, Silver Star, Legion of Merit, two Distinguished Flying Crosses, and 28 Air Medals. After the war, he earned an MS degree in petroleum engineering and served as the Air Force consultant to the Union Oil Company and Shell Oil Company. As commander of Fifth Air Force and U.S. Forces Japan, he oversaw the planning and signing of the Okinawa reversion treaty.

Before retiring in 1973, he was commander of the Sixth Allied Tactical Air Force. He then worked as president of McDonnell Douglas's Tokyo office. From 1978 to 1983 he served as McDonnell Douglas's vice president. General Graham's autobiography, "Down for Double: Anecdotes of a Fighter Pilot," was published in 1996. His marriage to Dorothy Huntington Graham ended in divorce.

He is survived by his wife of 40 years, Vivian Fox Graham, three children from his first marriage, two stepsons, ten grandchildren, and three great grandchildren.

Frank Piasecki (1919-2008)

Frank Piasecki, who flew the second successful helicopter in the U.S. and built the first technically and commercially viable tandem-rotor helicopter, died on February 11 at his home in Havertown, Pennsylvania. He was eighty-eight.

A leading visionary, in 1945 he developed the "Flying Banana," featuring one rotor in front and one in the back of the helicopter. The helicopter could carry three times the weight of a conventional aircraft. Although the U.S. Navy operated Piasecki's helicopters, they were not deployed to Korea during the 1950-1953 war. His designs led to the development of the U.S. Army Chinook and the Navy Sea Knight. In 1960 he sold his company to Boeing.

He also designed for the U.S. Forest Service the Heli-Stat, a helicopter for harvesting timber in remote areas. A 343-foot-long airship made from a helium blimp, it was propelled by four surplus Sikorski helicopters. In 1986, the project ended in disaster when the Heli-Stat crashed.

Mr. Piasecki was honored with the National Medal of Technology, the National Air and Space Museum's Lifetime Achievement Award, and was inducted into the National Aviation Hall of Fame. He is survived by his wife, Vivian Weyerhauser Piasecki, seven children, and thirteen grandchildren.

John C. Toomay (1920-2008)

Maj. Gen. John C. Toomay, USAF (Ret.) died on March 12, 2008 of peritonitis at his home in Cralsbad, California. He was eighty-eight.

General Toomay was born in Ontario, California, graduated from the University of the Pacific in Stockton, and in 1943 enlisted in the Army Air Forces. Promoted to officer rank, his six-foot, seven-inch stature disqualified him from becoming a pilot. During World War II, he served as a communications officer in Greenland. From 1947 to 1950, General Toomay played professional basketball.

He was recalled in 1950 to serve in the Air Force in Korea. He earned a second BS degree in electrical engineering from USC and later an MBA from George Washington University. He commanded the Rome Development Center, where he supervised two radar programs. From 1972 to 1979 he worked on the Air Staff in strategic and space systems planning and helped formulate nuclear defense systems. His decorations include the Distinguished Service Medal, two awards of the Legion of Merit, and two Meritorious Service Medals. After retiring from the Air Force in 1979 he served on the board of Texas Instruments. His wife of 60 years, Virginia Toomay, died in 2005. Survivors include four children, a brother, and four grandchildren.

Reunions

UPT Class 68-08, Laredo, Texas will hold a reunion in June 2008, location to be determined. Anyone interested contact:

Putt Richards
(808) 638-0268
e-mail: grzlyputt@aol.com

The 485th Tactical Missile Wing (Florennes) will hold a reunion June 5-8, 2008, in Valley Forge, Pennsylvania. Contact:

John Rudzianski
(570) 278-2482
e-mail: jrudz@epix.com

Air Force Materiel Command "Freedom's Call" Tattoo – featuring the Charlie Daniels Band – will be held on Friday, June 27, 2008, on the grounds adjacent to the National Museum of the United States Air Force, Wright-Patterson AFB, Ohio. Contact:

1st Lt. Holly Layer
88th ABW/PA
(937) 522-3528
www.wpafb.af.mil

The 351st Strategic Missile Wing (Whiteman) will hold a reunion June 19-22, 2008, in Warrensburg, Missouri. Contact:

Jeff Wison
or
Don Williams
(210) 481-9849
e-mail: jc.wilson@sbcglobal.com
or
pyro777@embarqmail.com

The 455th Strategic Missile Wing will hold a reunion September 10-14, 2008, in Northeast Harbor, Maine. Contact:

Jack Twigg
e-mail: JKTWigg@worldramp.net

The 11th Radio Relay Squadron (in Europe) will hold a reunion September 15-17, 2008, in Chatanooga, Tennessee. Contact:

John Seifert
(410) 833-0672 or (800)
872-2529
e-mail: bristolboy@peoplepc.com

The 27th Air Transport Group (310th,

311th, 312th, 325th Ferrying Sqdns; 86th, 87th, 320th, 321st Transport Sqdns; 519th, 520th Service Sqdns) will hold a reunion September 18-21, 2008, in Portland, Oregon. Contact:

Fred Garcia
6533 W. Altadena Ave.
Glendale, AZ 85304-3114
(623) 878-7007
e-mail: gar31@earthlink.net

B-47 Stratojet Association will hold a reunion September 25-27 in Marietta, Georgia. Anyone associated with or interested in the B-47 is cordially invited. Contact:

Bob Bowman (703) 826-5562
e-mail: bbowman@northhighland.com
www.B-47.com

The 3rd International Combat Camera Association will hold a conference/reunion in Las Vegas, Nevada, October 1-3, 2008. The theme is "Tempt Fate in 08" and will focus on the impact combat photography has on telling the Army, Navy, Air Force and Marine Corps

story. Topics include the future of Combat Camera as a supporting capability of Strategic Communication, impact of photograph and video imagery during battles in Iraq, and the story of the only combat photographer to win the Medal of Honor. Contact:

Bruce Bender
brucebender@juno.com.

The Association of Air Force Missilers will hold a reunion, October 9-13, 2008, at the Hyatt Dulles, Herndon, Virginia. Contact:

AAFMM
PO BOX 5693
Breckenridge, CO 80424
www.afmissileers.org

Strategic Air Command Airborne Command and Control Association (SAC ACCA) will hold a reunion October 15-19, 2008, in Dayton, Ohio. Contact:

Wilton Curtis
(804) 740-2290
e-mail: Wcurtis135@aol.com

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: jneufeld@comcast.net.

Readers are invited to submit listings of upcoming or reunion 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:

Air Power History
11908 Gainsborough Rd.
Potomac, MD 20854
E-mail: JNeufeld@comcast.net

Donald S. Lopez **1923-2008**



Donald S. Lopez, 84, deputy director of the Smithsonian's National Air and Space Museum, died of a heart attack on March 3, 2008. Mr. Lopez had been with the Smithsonian Institution since 1972, when he became part of the team led by Apollo 11 astronaut Michael Collins responsible for planning the construction and opening of the National Air and Space Museum.

As assistant director for aeronautics, Lopez was instrumental in developing the exhibits that welcomed visitors at the museum's opening on July 1, 1976, and have made it the most visited museum in the world. "The nation has lost a true hero and the Smithsonian has lost a great leader," Smithsonian Institution Acting Secretary Cristián Samper said. "Don Lopez was an American Ace fighter pilot, author, educator, and museum professional beloved by all who came in contact with him." "Don's contribution to the museum cannot be overstated," museum director Gen. J.R. "Jack" Dailey said. "For 35 years, he was the guiding spirit, contributing his vast knowledge of aviation, exceptional leadership skills, unflagging enthusiasm, and a sense of humor that endeared him to all." Lopez became deputy director in 1983, a position he held until 1990. He served as senior advisor to the director before retiring in 1993. From 1993

to 1996 Lopez served as senior advisor emeritus. He was again appointed deputy director in 1996.

Before coming to the Smithsonian, Lopez was already an aviation legend: a fighter pilot in the 23d Fighter Group of the Fourteenth Air Force—successors of the legendary Flying Tigers—in China. He flew Curtiss P-40s and North American P-51 Mustangs, demonstrating his extraordinary flying skills under the leadership of famous war heroes Col. Tex Hill and Gen. Claire Chennault. During his two years in China, Lopez flew 101 missions and tallied up five victories, the required number to be recognized as an "Ace." It was his exceptional skills as a pilot that qualified Lopez to become an Air Force test pilot, which he did after serving in combat. He completed a short combat tour flying North American F-86s in Korea.

Following an assignment to the Pentagon, he earned a bachelor's degree in aeronautical engineering at the Air Force Institute of Technology and a master's degree in aeronautics from the California Institute of Technology. He spent the next five years at the U.S. Air Force Academy as an associate professor of aeronautics and chief of academic counseling. After his retirement from the U.S. Air Force in 1964, Lopez worked as a systems engineer on the Apollo-Saturn Launch Vehicle and the Skylab Orbital Workshop for Bellcomm, Inc. Lopez was a member of the American Fighter Aces Association, the Experimental Aircraft Association and a Fellow of the Royal Aeronautical Society. In 1995, the National Aeronautic Association named him an Elder Statesman of Aviation, and in 1999 he was presented the Federal Hispanic Heritage Month Excellence in Leadership Award. He was also a recipient of the Frank G. Brewer Trophy in Museum Education. Lopez was honored in 2007 as one of the living legends at the Gathering of Mustangs and Legends at Rickenbacker Field in Columbus, Ohio. Lopez's publications include: *Into the Teeth of the Tiger* (Bantam, 1986), *The National Air and Space Museum: A Visit in Pictures* (Smithsonian Institution Press, 1989), and *Fighter Pilot's Heaven: Flight Testing the Early Jets* (Smithsonian Institution Press, 1995). Lopez is survived by his wife Glindel, his son Donald Lopez Jr., daughter Joy Lopez and granddaughter, Laura Lopez.

National Air and Space Museum, Office of Communications

Air Vice Marshal Ronald Dick, RAF (Ret.) 1931-2008

Air Vice-Marshal Ronald Dick, RAF (Ret.) died at his home in Virginia on March 25 2008. He was seventy-six.

Dick served in the Royal Air Force as a fighter pilot and a V-bomber squadron commander before settling in the United States, where he launched a second career as a lecturer and historian.

Ronald Dick was born on October 18, 1931 at Newcastle upon Tyne, but spent his boyhood in London. As a nine-year old he saw his house demolished by a German bomb and watched Hurricane fighters engaging *Luftwaffe* bombers. From that moment he always wanted to be a fighter pilot. He was educated at Beckenham and Penge County Grammar School, and in 1949 was awarded a cadetship to the RAF college, Cranwell, where he trained as a pilot. Dick was commissioned in 1952 and soon established himself as an excellent fighter pilot. He flew Meteors with No. 64 Squadron, becoming a member of its formation aerobatic team. His skill as a pilot was recognized when, in 1955, he won the Clarkson trophy, awarded to the best aerobatic pilot at the Central Flying School; in 1956 he won the Wright Jubilee trophy as the best RAF flying instructor.

After serving on the examining wing of the Central Flying School, Dick spent the next three years as a flying instructor with the USAF in Alabama. Dick's flying career took a new turn in 1962 when he became the flight commander of No IX Squadron, operating the Vulcan nuclear bomber.

In 1970 he returned to command the squadron when it was based at Akrotiri, on Cyprus. During a visit to New Zealand he flew at air shows, displaying the exceptional maneuverability and low-lying characteristics of the big bomber. Dick served as military assistant to the Deputy Supreme Allied Commander Europe and in 1978 was appointed to command RAF Honington, the base for three Buccaneer squadrons. He flew the tactical bomber regularly and led detachments to the USAF "Red Flag" tactical training facility at Nellis AFB, Nevada.

From 1980 to 1982 Dick was appointed air attaché in Washington, D.C. At the time of the Falklands War he played a major role in negotiating support for British air operations. Then, after a brief period at the Ministry of Defence, he returned to Washington as an air vice-marshal in November 1984 in the roles of head of the British Defence Staff and defence attaché, remaining for another three years. During his second term at the embassy he was deeply involved in discussions and negotiations on American-led initiatives on disarmament that eventually led to the end of the Cold War. On his retirement from the RAF, he decided to settle near Washington to pursue his interests in aviation history. He was appointed a Smithsonian international fellow at the National Air and Space Museum and a visiting lecturer at the USAF Air University at Maxwell, Alabama.

Dick's passion for flying never wavered. In 1983 he piloted a restored B-17 Flying Fortress bomber from California across the U.S. and the Atlantic to the Imperial War Museum at Duxford. He also flew American fighters, including the P-40 Warhawk, the P-51 Mustang, and his Tiger Moth until shortly before his death. He retired from the RAF in 1988, when he was appointed CB. He had previously been awarded a Queen's Commendation for Valuable Services in the Air (1973). In 1987 he was elected a Fellow of the Royal Aeronautical Society.

His extensive knowledge of aviation history was quickly recognized. He advised the makers of the film *Memphis Belle*, the story of an American B-17 crew in World War II. Working with the renowned aviation photographer Dan Patterson, he wrote several acclaimed books, including *American Eagles*, a history of the USAF and published to celebrate the service's 50th anniversary. In 2003, Dick published *The Aviation Century*, the first of a five-volume history which was completed in 2006. In addition to accounts of aircraft, pioneering flights and air combat, the work included 400 portraits and profiles of great personalities in aviation. He also wrote numerous books on British aircraft, including the Lancaster and the Hurricane.

In 2005 Dick chaired the 44th annual enshrinement ceremony at the U.S. National Aviation Hall of Fame, widely known as "America's Oscar Night of Aviation". He was in great demand as a lecturer on cruise liners, and for many years led Smithsonian military and aviation heritage tours to Britain and Europe. He was a vice-president of the Vulcan Crew Chiefs' Association.

Dick was a tall, distinguished-looking and gently-spoken man who laughed easily. His leadership style - based on a quiet authority, imposing presence, professional knowledge and caring attitude - was very effective and made him a popular and respected commander. In later life, to those who used his rank when they addressed him, he would respond: "Please, it's just Ron." He was a keen and knowledgeable ornithologist and a supporter of wildlife conservation.

He is survived by his wife, Pauline (Paul) Lomax, and their son and daughter.

Nigel Baldwin



Our Spring mystery aircraft was the German Arado Ar 196 ship-based naval floatplane of World War II.

At war's end, the U. S. Navy seized the German cruiser Prinz Eugen. The warship carried two catapult-launched pontoon planes used for scout duties. The Reich's industry manufactured 526 Arado Ar 196s in Germany and in occupied Netherlands and France. Footage of a catastrophic early sea test of an Ar 196 can be seen on YouTube at:

<http://www.youtube.com/watch?v=bLYJerOwDr0>

The Ar 196 was a two-seater powered by a 960-horsepower BMW 132K nine-cylinder air-cooled engine. It had forward-firing cannons. The Ar 196A-5 model also had two flexible machine guns for the radio operator in the back seat. It carried two 110-pound bombs and flew scout missions up to 175 miles from its ship. It was roughly similar to the American Curtiss SC-1 Seahawk that operated from U.S. battleships and cruisers.

One of the captured Ar 196A-5s, flown for only 14 hours by Germans and four more by Navy test pilots, was transferred to the National Air Museum (now the National Air and Space Museum) in Washington in about 1947. Apparently, it has never been placed on display.

The other Ar 196A-5 was one of half a dozen Allied and Axis warplanes saved from the scrap heap by Lcdr. David Ascher in 1946 and placed on display along Highway 611 at Naval Air Station Willow Grove, Pa. As part of the "Ascher collection," the floatplane was exposed to outdoor elements for four decades.

The two Ar 196s from the Prinz Eugen are among just three that survive today. The third is displayed in Bulgaria.

Although a museum thrives at Willow Grove today, the "Ascher collection's" Ar 196A-5 has moved to the National Museum of Naval Aviation in Pensacola, Fla. It will eventually be displayed.

Fortunately for historians, the Ar 196s were removed from the Prinz Eugen before she became a target ship in 1946 nuclear tests in the Pacific. The Prinz Eugen survived two atomic detonations but became so radioactive she had to be scuttled.

Our follow-up AR 196 photo is from Don Spring/AIR. Our Spring contest winner is Timothy E. Savoie of Valparaiso, Fla. Timothy will receive a copy of *Hell Hawks: The Untold Story of the American Fighter Pilots Who Savaged Hitler's Wehrmacht*, by Robert F. Dorr and Thomas D. Jones, a history of the 365th Fighter Group.

Okay, let's try again. Can you identify our "What is it" aircraft? Once again, as a clue as to where it was taken: This is a photo by Robert F. Dorr

Remember the rules, please:

1. Submit your entry on a postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124, or by e-mail to robert.f.dorr@cox.net.

2. Name the aircraft shown here. Include your postal mailing address and telephone number. It's important that a phone number be included..

3. A winner, picked from among correct entries, will receive a copy of *Hell Hawks*.

This feature needs your help. Do you have a photo of a rare or little-known aircraft? We'll return any photos provided for use here.

This Issue's Mystery Plane

