

# AIR POWER

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# *History*





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# AIR POWER

## History

Spring 2010 - Volume 57, Number 1  
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Features	100 Missions North: History and Traditions <i>Jeff Duford</i>	<b>4</b>	
	“Fiasco” Revisited: The Air Corps & the 1934 Air Mail Episode <i>Kenneth P. Werrell</i>	<b>12</b>	
	Reflections on the Balkan Wars <i>Benjamin S. Lambeth</i>	<b>30</b>	
	“History Makes You Smart—Heritage Makes you Proud” <i>Jacob Neufeld</i>	<b>44</b>	
Book Reviews	<i>If Mahan Ran the Great Pacific War: An Analysis of World War II Naval Strategy</i> By John A. Adams	48	
	<i>Space Shuttle Main Engine: The First Twenty Years and Beyond</i> By Robert E. Biggs	48	
	<i>Embry-Riddle at War: Aviation Training during World War II</i> By Stephan G. Craft	48	
	<i>Clipping the Clouds: How Air Travel Changed the World</i> By Marc Dierikx	49	
	<i>Magnum! The Wild Weasels in Desert Storm</i> By Braxton Eisel and Jim Schreiner	50	
	<i>A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon</i> By Neil Sheehan	50	
	<i>Harnessing the Heavens: National Defense through Space</i> By Paul G. Gillespie and Grant T. Weller, eds.	51	
	<i>Homesteading Space: The Skylab Story</i> By David Hitt, et al.	52	
	<i>LeMay: The Life and Wars of General Curtis LeMay</i> By Warren Kozak	52	
	<i>The Scylla and Charybdis of Strategic Leadership</i> By J.R. McKay	53	
	<i>The Day We Lost the H-Bomb</i> By Barbara Moran	53	
	<i>A Century of Air Power Leadership</i> [Symposium] By Jacob Neufeld, Ed.	54	
	<i>Dowding of Fighter Command: Victor of the Battle of Britain</i> By Vincent Orange	54	
	<i>Shooting the Front: Allied Aerial Reconnaissance and Photographic Interpretation on the Western Front—World War I</i> By Terrence J. Finnegan	55	
	<i>Flying Black Ponies: The Navy’s Close Air Support Squadron in Vietnam</i> By Kit Lavell	55	
	<i>Death From the Heavens: A History of Strategic Bombing</i> By Kenneth P. Werrell	55	
	<i>Forgotten Weapon: U.S. Navy Airships and the U-Boat War</i> By William F. Althoff	56	
	Departments	Books Received	57
		Note from the President	58
		Letters, News, Reunions and In Memoriam	59
		History Mystery	64



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What is the use of history? Some have called it, “Bunk,” others, “A lie agreed upon,” and the less charitable scoundrels, have referred to the past as “The dung heap of history.” On the other hand, a famous general offered the truism that “History is written by the winners.” General George Patton said that reading and learning about the mistakes of others was less painful than not reading history and repeating their mistakes. President Franklin D. Roosevelt also believed that history was useful and in 1942 he directed federal agencies to record their wartime histories. The Army Air Forces (AAF) thus established a Historical Division, while the other military services that had existing history programs, revved up their efforts to meet FDR’s order. If you’ve never consulted an Air Force historian, always wanted to, but were too shy to ask, this is your lucky day. On page 44, in “History Makes You Smart – Heritage Makes You Proud,” I have penned a brief account of the Air Force History and Museums Program. Check it out and log on to the various web sites. I believe that you’ll be pleasantly surprised at how interesting and informative our history can be.

The featured articles in this issue begin with Jeff Duford’s, “100 Missions North,” the story of how and why USAF instituted the 100 combat missions tour for aircrews during the War in Southeast Asia. The article is not only rich in tradition, but also provides the background account of the personalities and events that led to the policy decision.

Ken Werrell, a former airman, a prolific author, and an exceptional historian, revisits the little-known, but important, episode when the Air Corps flew the air mail in 1934. Was it a “fiasco,” as contemporary critics have alleged and most historians have accepted, or was there more to it? And what role did “bathing beauties” play in this story?

In our third featured article Ben Lambeth, the brilliant military analyst at the RAND Corporation, reflects on the Balkan Wars of the early 1990s, to consider their effect on the uses of air power since then. No serious student of air power can afford to miss reading this article about what we learned, forgot, and relearned.

In this issue, we have begun to streamline the book review process to bring you the most current reviews. A few dozen previously unpublished reviews are now posted on our web site archive, thereby liberating space and providing an opportunity to focus on the most recent air power history literature. See the reviews at <http://www.afhistoricalfoundation.org>.

The Air Force Historical Foundation’s President, Major General Dale W. Meyerrose recounts the progress we made in 2009, but looks ahead to meeting the challenges still out there. If you have ideas on how to improve service to members or how to recruit new ones, contact him. See page 58.

The departments section contains some interesting news items that you may have missed or were not reported in the press or over the Internet. Another innovation is our effort to link this journal with the web site in order to animate air power history and thereby optimize the media preferred by both our senior and junior readers.

Sadly, we note the death of General Lew Allen, the former Air Force Chief of Staff. See page 62.



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# 100 MISSIONS NORTH: HISTORY AND TRADITIONS





Jeff Duford

(Overleaf) Two F-105s taxi home after a mission.  
(Except where noted, all photos courtesy of the author.)

(Right) During World War II, the Eighth Air Force's Memphis Belle and its crew became famous as the first to complete a 25-mission tour and return to the United States. The Memphis Belle is currently in restoration at the National Museum of the U.S. Air Force, where it will be put on future display. (Photo from the collection of the National Museum of the USAF, hereafter NMUSAF.)



(Below) Some units celebrated the 100 mission mark during the Korean War. This 18th Fighter-Bomber Wing F-51D pilot has donned a 100-mission "Century Flight" lucky horseshoe. (NMUSAF)



In November 1965, the United States Air Force instituted a 100 combat mission tour for aircrews flying out country over North Vietnam and Laos. Before then, these aircrews rotated in and out of theater on temporary duty. With Operation Rolling Thunder heating up, however, the need to station and replace aircrews in Southeast Asia on a long-term, stable basis became evident. The 100 mission tour policy spawned a rich tradition among Air Force aircrews which included a special patch, elaborate end-of-tour celebrations, and many humorous customs. This tradition provides a meaningful insight into the unique culture of Air Force Airmen who flew over North Vietnam during the war in Southeast Asia.

### History

Mission-based tours date back to the U.S. Army Air Forces' experience during World War II. Initially, a tour was determined by time, typically one year in a combat theater. In late 1942, numbered air force commanders were authorized to determine tour lengths. Commanders periodically raised the

*Jeff Duford has been a historian/curator at the National Museum of the US Air Force since 1998. In that time, he curated numerous displays, including most recently exhibits about Operations Enduring Freedom and Iraqi Freedom, the 100 Mission tradition, and Escape and Evasion in World War II. Mr. Duford has also worked closely with the Museum's Restoration Division on several aircraft projects and interviewed for national and international television productions. He is currently working on a major revision of the Museum's Korean War Gallery scheduled to open in June 2010. Mr. Duford received a B.A. in history from Madonna University in 1995 and an M.A. in history from Eastern Michigan University in 1997.*



(Near right) Capt. Donald Beck exiting his RF-101C after his 100th counter on November 15, 1965. (NMUSAF)



(Far right) Capt. Eldon "Joe" Canady, an RB-66C electronic warfare officer (EWO), who completed his 100th on December 13, 1965. (NMUSAF)



## IN 1951, THE CRITERIA FOR A TOUR WAS ESTABLISHED AT 100 COMBAT MISSIONS

required number, in some cases up to 100 combat missions, to maintain aircrew numbers and because the odds of survival rose as the Axis war machine declined. For some USAAF aircrews, however, tour length depended on time in theater or the number of combat hours flown.<sup>1</sup>

Maintaining combat effectiveness was the most important reason to rotate crews on some fixed basis. Exposure to battle over time eventually led to combat fatigue, rendering an Airman ineffective or incapable of performing his duties. Other reasons included spreading hazards equally and getting combat-trained Airmen back to the States to train new ones. USAAF Airmen appreciated having a fixed tour based on missions, and they felt it improved morale considerably. They preferred having something to work for and look forward to, rather than the hopeless alternative where they would fly in combat until they were seriously injured, captured, or killed.<sup>2</sup>

During the Korean War, the Air Force also utilized a mission-based tour policy. In 1951, the criteria for a tour was established at 100 combat missions for single-engine fighters, forward air controllers, tactical reconnaissance aircraft, and fifty combat missions for twin-engine fighters, bombers, and multi-engine reconnaissance aircraft. In 1952, the benchmark rose to 100 combat missions for fighter and reconnaissance aircrews, 100 missions (or nine months in theater) for forward air controllers, seventy combat missions (or nine months in theater) for all-weather fighters, fifty combat missions for light bombers (B-26s), and six months for medium bombers (B-29s).<sup>3</sup>

During the early part of the Southeast Asia War, from 1961 to 1965, Air Force aircrews based in South Vietnam stayed for one to two years, while those based in Thailand served on a temporary duty basis, typically 90-120 days. By fall 1965, Operation Rolling Thunder strikes against North Vietnam placed higher demands on personnel rotation. In early November, tour length became one year or 100 missions out-country (meaning Laos or North Vietnam), whichever came first.<sup>4,5</sup>

This policy permitted aircrews to count previously flown missions over North Vietnam and Laos, and the first Airman completed a 100 mission tour less than two weeks after the policy began. On November 15, 1965, Capt. Donald Beck, an RF-101C pilot in the 15th Tactical Reconnaissance Squadron, completed his 100th out-country mission (Beck's total included missions over Laos and North Vietnam).<sup>6</sup> The first Airman to fly 100 missions over only North Vietnam was Capt. Eldon "Joe" Canady, an RB-66C electronic warfare officer (EWO), who completed his 100th on December 13, 1965.<sup>7</sup>

Perhaps the most difficult 100-mission tour to complete involved the F-105 Thunderchief aircrews. "Thud" losses represented nearly twenty percent of all USAF combat losses during the war, and most of these occurred during Operation Rolling Thunder. On January 11, 1966, Captains Donald Totten and Benjamin Bowthorpe, 334th Tactical Fighter Squadron, 355th Tactical Fighter Wing, Takhli Royal Thai Air Force Base (RTAFB), became the first F-105 pilots to achieve 100 missions out-country.<sup>8</sup>

Three months into the 100-mission policy, the Air Force made two changes. First, it addressed the

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pilot shortage issue and the fact that aircrews were completing tours faster than expected. Consequently, as of February 1, 1966, only missions over North Vietnam counted. This change in policy caused understandable anger among aircrews who continued to fly hazardous non-counters over Laos. The total USAF wartime losses numbered more than fifty F-105s and 130 F-4/RF-4s, among others, from combat damage over Laos. The second change was a time credit for missions. Aircrews could have their tour length reduced by one month for every twenty *counters* they flew. For instance, an Airman with 80 *counters* would have his year tour reduced by four months, and so he could go home after eight months. But, this time credit did not last, and it was eliminated at the end of October 1966.<sup>9</sup>

Apparently, granting of counters varied slightly among units. In some cases, conflicts arose between leaders of units, who had to maintain aircrew numbers and fulfill command responsibilities, and the aircrews flying the missions, who watched the finish line being pushed back. The experiences of the aircrews in the F-105-equipped 388th Tactical Fighter Wing at Korat RTAFB illustrate how the counter/non-counter policy affected them, their relationship with their commander, and some of the ways in which they coped.

A few weeks after the change in policy, Maj. Robert Krone, 469th TFS Operations Officer, wrote in a letter home, "The morale is sagging a little now with the ruling on counting missions. The last few days have been mostly missions that don't shorten the tour any." Particularly frustrating was the ebb and flow of the Rolling Thunder campaign. When missions over North Vietnam stopped because of weather or peace talks, the missions over Laos (none of which counted) surged. Captain Charles "Clint" Murphy, an F-105 pilot, later wrote "we were scheduled for Laos, which is a non-counter. Our target was in an area worse than most other areas except Hanoi. They have lots of guns, plus they are known for not taking prisoners. When you go on one like that and it doesn't count, it really burns."<sup>10</sup>

To offset the loss of counters in Laos, it became common practice to fly quick "weather checks" over southern North Vietnam on the way to or from a combat mission over Laos, thereby making it a counter. The 388th TFW commander, however, stopped this practice by requiring that for a mission to count, ordnance had to be expended over North Vietnam. In December 1966, F-105 pilot Maj. Edward Kohlmeier wrote in his diary, "wing morale hit rock bottom...the new rule is to drop in RT [Rolling Thunder] or no counter. No more weather checks. This is fantastically bad news." He wrote again a few days later, "The squadron flew 14 missions today and got zero counters. Isn't that nice? The morale is at a worm's belly level here tonight." At the same time, Murphy wrote, "I was madder today than I have been since I arrived here. The rotten system of counters and no-counters got to me."<sup>11</sup>

The importance of counters to aircrews cannot be understated. In fact, for many, time was not mea-

sured by weeks or months, but rather in missions that counted. In October 1966, Kohlmeier wrote, "It amazes me how over here everything is so associated and tied up with that word 'counter'.... Unlike days, each one is a question of survival and the pressure is truly fantastic." The next day he added, "counters are morale raisers."<sup>12</sup>

The anger and frustration grew worse. Some aircrews simply flew across the North Vietnamese border and fired their cannons, thereby filling the new wing requirement of expending ordnance over the North to obtain a counter. In January 1967, the issue exploded after a pilot flying over Laos was killed. Murphy wrote:

*When we returned, the pilots were literally in a boil. One of their friends had been killed on one of [the wing commander's] non-counters...The fact is that one of our friends and an American fighting man's body is lying in a ravine tonight unable to be recovered, and he will not receive credit for having flown the mission because of a silly rule...I have seen morale at a low ebb before, but never to the extent that it has fallen among the pilots here.<sup>13</sup>*

Four days later, the issue was resolved in the pilots' favor when, as Murphy wrote, "We almost had a rebellion over counters versus non-counters" after the wing commander tried to take away counters from some of the pilots. The wing commander, however, "finally backed down and let them count."<sup>14</sup>

The 100-mission policy ended in the summer of 1968, as Operation Rolling Thunder began winding down and Air Force crews flew fewer missions over the North. Personnel leaving the continental United States on or after July 1, 1968, would serve one year in theater regardless of where or how many missions they flew. Those who were already in Southeast Asia before July 1 remained under the old policy—they came home after completing 100 counters or one year in theater, whichever came first.<sup>15</sup>

## Traditions

The traditions that became associated with the 100-mission tour in Southeast Asia did not start with the first completions. Although some recognition was given to the early crews for finishing a tour, there were no parades or special memorabilia handed out. Two of the most significant traditions, the 100-mission patch and formal end-of-tour celebration, began among the 388th Tactical Fighter Wing F-105 aircrews flying out of Korat. In late 1965, planning began to formally celebrate upcoming tour completions in the 388th TFW.

In December 1965, Captains William Koenitzer and Gilbert "Bruce" Holmes were assigned to create a special patch to commemorate the completion of 100 "out-country" missions. Koenitzer and Holmes worked together on many design ideas, including a map of North Vietnam, SAMs, AAA, and an F-105 silhouette. Koenitzer made numerous sketches over several days mixing these elements. In the end, they discarded these complicated designs, and created a

(Left to right) Captains Bruce Holmes, William May, Richard Ely, and William Ramage, flying from Korat RTAFB. This photo was taken on January 15, 1966, during the first formal 100 mission celebration. Note the 100-mission patches on their left shoulders. (NMUSAF)



(Below) Ground crews played an essential role in completing a 100 mission tour. Here, F-105 pilot Maj. Robert Krone gives his crew chief his thanks with the customary case of beer after completing his 100th on June 3, 1966. (NMUSAF)



flares, champagne, Col. Sams [388th TFW Wing Commander], the 100-mission patch, and everyone out to meet him. He was really touched and it did a lot of good for everyone. The morale went up...as everyone could see that people are finishing up.<sup>18</sup>

In the military, there seems to be a patch for nearly everything, and it is easy to overlook any one in particular. The 100-mission patch, however, was unique. Although unofficial, it became a powerful, recognized mark of respect that identified one's place in their culture. Captain (later Brigadier General) Kenneth Bell had these thoughts when he received his ceremonial 100-mission flight suit:

simple patch based the standard Air Force shield using the red, white, and blue colors of the American flag.<sup>16</sup>

On January 15, 1966, the first four 388th TFW F-105 pilots finished their 100-mission tours—Captains Holmes and William May of the 469th TFS, and Captains Richard Ely and William Ramage of the 421st TFS. The elaborate event these pilots enjoyed quickly became a tradition.<sup>17</sup> A few days later, Koenitzer finished his 100th, and Major Krone wrote about his celebration in a letter home:

*When Willy finished up two days ago, we had fire engines to meet him at the end of the runway, smoke*

(Far right) The 100-mission patch.





Capt. William Koenitzer marking his 100th on the mission board, wearing the legendary 100 mission patch he and Bruce Holmes designed. (NMUSAF)

*Instinctively, my eyes found the patch we coveted most....The bold embroidered words read: 'North Vietnam—100 Missions F-105.' It was beautiful and signaled the finale I had dreamed about....My gaze fixed on the patch, and I felt tears well up in my eyes.<sup>19</sup>*

Thud aircrews continued to use the 100-mission patch as Koenitzer and Holmes designed it, but others simply changed "F-105" to their aircraft type, while others created their own unique 100-mission patches. The custom of the 100-mission patch spread to include those who did not fly most (or in some cases any) of their missions over the North. They simply copied the design of the original F-105 patch, but changed "North Vietnam" to

"South Vietnam" or "Vietnam." The 100-mission patch also became the basis for look-alike patches that reflected important cultural aspects of Airmen in Southeast Asia, like humor or family back home.

Another ubiquitous custom of the 100-mission tour was the "go-to-hell" hat, alternately called a "Sierra Hotel" hat or "Boonie" hat. Airmen in Southeast Asia began wearing these bush hats early on, but the 100-mission policy turned them into wearable scoreboards. Aircrews kept a running tally of their missions by scribing hash marks on their go-to-hell hats, and differentiating between counters and non-counters in some fashion. These hats provided a recognizable means to show an Airmen's experience—the "new guy" had a crisp, vibrantly green hat with only a few hash marks, while the "short-timer" had a beat-up, sun-bleached hat covered with hash marks. In addition to individual hats, many units kept 100-mission tallies on scoreboards, plaques, red carpets, and flying scarves, among others.

Even with the end of the 100-mission tour policy in 1968, many of the traditions continued. The 100 mission parade and party became the "end-of-tour" or *Sawadee* (for good-bye in Thai) celebration with the same parades and dunkings. Airmen still wore 100-mission patches and continued to mark their missions on their go-to-hell hats until the war ended.

The significance of the 100-mission tradition was evident in the treatment given to Air Force POWs after they came home. Since misfortune cheated them of enjoying their end-of-tour celebration, 152 returnees received Operation Homecoming "champagne flights" in T-38s at Randolph AFB, Texas. These Airmen were hosed down when they exited the cockpit just as if they were completing a 100-mission tour in Southeast Asia. They also received special patches, called "Three's In." (In a "missing man" formation, aircraft number three pulls up and out as the "missing man." "Three's In" symbolically means number three is back in formation).<sup>20</sup>

The traditions of the 100-mission tour are too

Capt. Richard Hammaker, an RF-4C backseater in the 14th TRS, being thrown into a vat of stagnant water, shark repellent, and anti-freeze kept just for end-of-tour dunkings. Other units hosed down aircrews with fire hoses or threw them in the base pool. (NMUSAF)



From 1971-1972, the 34th and 469th TFS at Korat RTAFB escorted end-of-tour aircraft with the humorous 5-man team called the "Thunderbuzzards." Mimicking the famous Air Force Thunderbirds, this five-man team wore special red, white, and blue suits and rode motor scooters in various formations while leading the parade. Pictured here are three of the five. (NMUSAF)



rich and varied to include all of them here. Even so, what has been described illustrates the unique culture of Air Force Airmen who fought under challenging circumstances, who regularly faced death or capture at the hands of a brutal enemy, and who could yet still find humor and laughter in their surroundings. These traditions demonstrate both the depths of their frustration and the heights of their

elation. Moreover, though nearly fifty years have passed since Bruce Holmes and Will Koenitzer designed the simple patch that described "100 Missions—North Vietnam," this bold symbol remains in artifacts and photographs to remind us of the honor and courage of those who earned the right to wear it, and the sacrifice of those lost on the way. ■

## NOTES

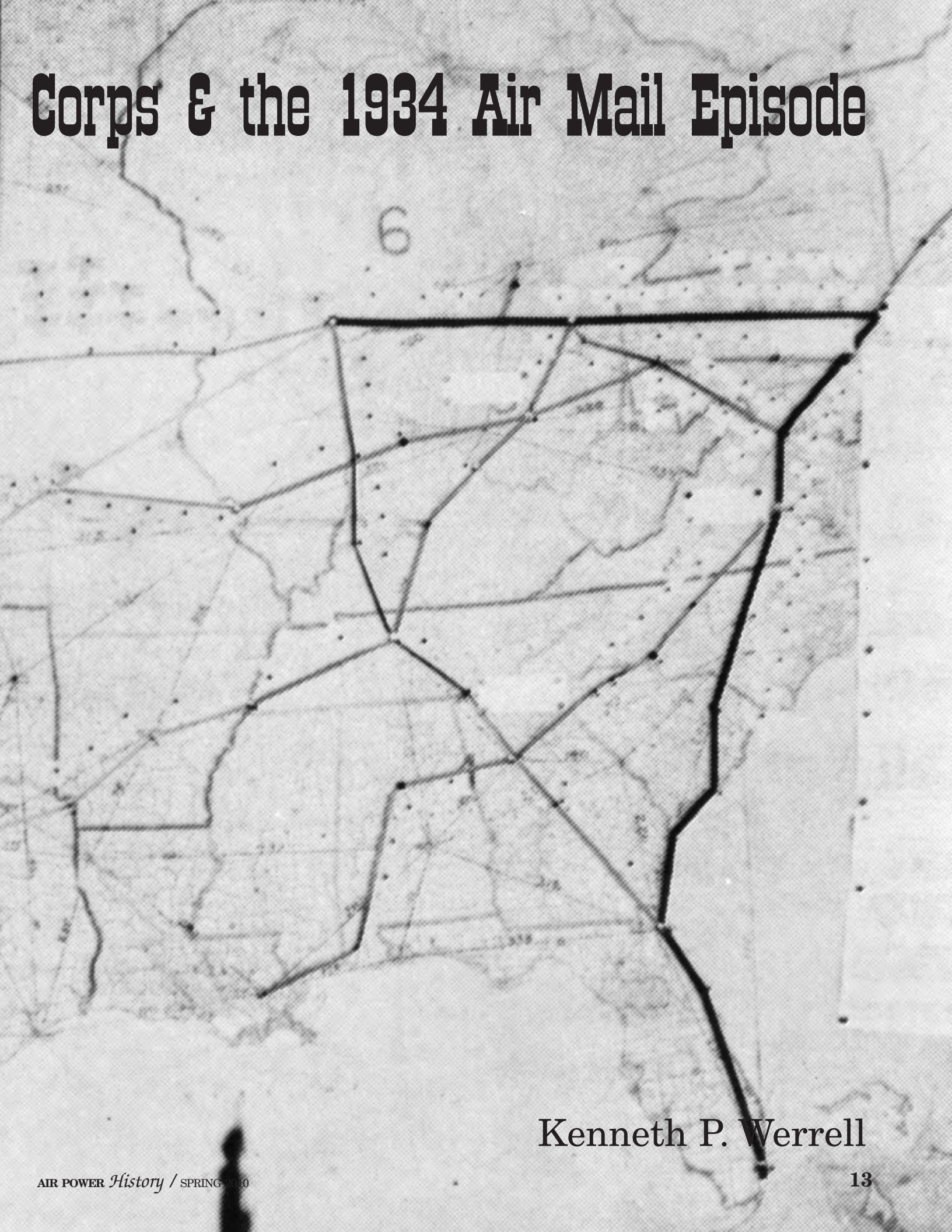
1. *Combat Crew Rotation, World War II and Korean War*, Historical Studies Branch, USAF Historical Division, Aerospace Studies Institute, Air University, Maxwell AFB, Ala., January 1968, pp. 7, 25.
2. *Ibid.*, pp.1-2, 19-20.
3. *Ibid.*, pp. 23-24.
4. Don Little and Barry Spink, *USAF Rotation in Southeast Asia (A Chronology), 1961 through 1968*, Air Force Historical Research Agency, April 2008, pp. 5-7.
5. This policy also covered aircrews stationed in South Vietnam. Those who did not fly missions over North Vietnam served one year, regardless of the number of missions flown. This caused resentment for some Airmen who ended up flying 200+ combat missions in Cambodia, Laos, South Vietnam, and North Vietnam during their one year tour. The 100 mission policy did not apply to Strategic Air Command aircrews, such as those flying in B-52s or KC-135s. These SAC crews typically flew six-month temporary duty (TDY) tours.
6. Donald Beck Collection, AR.2007.156, National Museum of the U.S. Air Force (NMUSAF).
7. Eldon Canady Collection, AR.2007.176, NMUSAF. Determining the first Airmen to fly 100 missions over North Vietnam was problematic, since the mission codes in the flight records did not differentiate between Laos and North Vietnam. But, early RB-66C jammer aircraft had to fly into North Vietnamese airspace to perform their mission, and all combat missions at this time were over the North because there was no need for jamming in South Vietnam or Laos.
8. Donald Totten Collection, AR.2007.162, NMUSAF. Some sources, including newspaper articles and a

9. Little and Spink, *USAF Rotation in Southeast Asia*, pp. 9-11 and 19-20.
10. Howard Plunkett, *469th TFS F-105 History Report/Research Notes*, September 1, 2009, ER.2009.165, NMUSAF, 64, 214. The author would like to extend his thanks and appreciation to Mr. Plunkett for his helpful suggestions and for making his valuable research available for use.
11. *Ibid.*, pp. 212, 215, 220.
12. *Ibid.*, p. 169.
13. *Ibid.*, p. 236.
14. *Ibid.*, pp. 239, 240.
15. Little and Spink, *USAF Rotation in Southeast Asia*, p. 27.
16. William Koenitzer Collection, AR.2008.017, NMUSAF. The 100 mission patch bears a striking resemblance to red, white, and blue U.S. interstate highway signs. Even so, Koenitzer related that these road signs had nothing to do with the design of the 100 mission patch.
17. Robert Krone Collection, AR.2007.032, NMUSAF.
18. Plunkett, *469th TFS F-105 Report*, p. 57.
19. Ken Bell, *100 Missions North: A Fighter Pilot's Story of the Vietnam War* (New York, Brassey's, 1993), xii, p. 281.
20. MSgt Rossi, *Operation Homecoming*, 12 TFW History Office, January 22, 1998.

# “Fiasco” Revisited: The Air



# Corps & the 1934 Air Mail Episode



Kenneth P. Werrell

(Overleaf) Foulis explains air routes covered during Air Corps' operation of air mail in 1934.

WHILE NO NEW MATERIAL ON THIS INCIDENT HAS EMERGED OVER THE PAST FEW DECADES, IT IS LONG PAST TIME TO REVISIT THE EPISODE WITH A CRITICAL EYE

EARLY IN 1934, THE COMMITTEE BEGAN PUBLIC SESSIONS THAT REVEALED APPARENT CORRUPTION

Late on February 19, 1934, a brand new Douglas DC-1 named, "City of Los Angeles," took off from that city and headed east for Newark, New Jersey. The flight was a well-planned and well-covered publicity stunt intending to set a transcontinental transport speed record. It would also show off "the latest word" in air travel, with a plane that incorporated almost all of the aviation technologies for propeller driven aircraft.<sup>1</sup> The proposed flight was daring, as a storm was forecast over its terminus, just twenty minutes after the estimated arrival, if the aircraft took off at its announced departure time and if it made record breaking time. To highlight the event, the sleek, twin engine transport carried an unusual crew and passengers—newsmen and two of the three pilots were airline executives, one of whom was Eddie Rickenbacker, the leading American ace of World War I. Rickenbacker later wrote that "It was taking a great chance, but, in the light of what was happening to the entire air transport industry, it was a chance that we should take."<sup>2</sup>

The flight went well, encountering mostly cross winds until it reached Ohio, where poor weather required the crew to use Columbus rather than Pittsburgh for its third and last refueling. The storms also forced the aircraft to climb above 18,000 feet to get over the weather and as the aircraft was unpressurized, mandated the use of oxygen by passengers and crew. The transport landed in Newark in the early afternoon after a flight (including ground time) of just over thirteen hours, cutting a remarkable six hours off the record set the previous year. Two hours later a fierce storm rolled into Newark.<sup>3</sup>

The flight was important for several reasons. First, the new speed record caught the public's attention and highlighted the dominant position of American commercial aviation. Second, the flight introduced this new aircraft that would evolve into the Douglas DC-3, the most produced and probably the most highly regarded transport of all time, certainly of the propeller era. Third, it provides an introduction to our story, as it was the last commercial transcontinental air mail flight for three months.

Largely forgotten today, the 1934 air mail episode involved U. S. air mail contracts and the subsequent carrying of the mail by the Air Corps, a story that dominated the nation's attention over the first half of 1934. It included the major personalities of the day, including President Franklin Roosevelt, congressmen, aviation heroes Charles Lindbergh and Eddie Rickenbacker, two Postmaster Generals, and the leaders of the Army and the Army's air arm. It is a story of controversy, drama, and death over-

laid with allegations of corporate misconduct, heated congressional hearings, questionable government practices, and inadequate Air Corps performance. The affair handed opponents of the year-old New Deal and the new President a golden opportunity for criticism, produced the administration's first setback, shook the commercial aviation industry, and battered the reputation of the Air Corps.

There are two different, but overlapping, elements to this story. The first involves the commercial carriers and the U. S. mail subsidies, allegations of illegalities, and the political skirmishing over cancellation of the air mail contracts. This was a fiery, partisan tussle that pitted the Roosevelt administration and the Democrats against the outnumbered Republicans and the aviation industry, to which some would add the press. The second element of the story, the focus of this article, was the participation of the Army Air Corps in carrying the mail. The two overlapped because the Air Corps' difficulties contrasted poorly with the airlines' record and gave ammunition to the critics of the contract cancellation and of the Administration. Although it was probably the most important event in Air Corps history between the World Wars, this episode has been neglected in the seventy-five years since.<sup>4</sup>

Most accounts of the affair are descriptive, vary little in detail, but also fail to analyze the subject. And while no new material on this incident has emerged over the past few decades, it is long past time to revisit the episode with a critical eye.

### The Context: American Air Mail

Air mail service in the U. S. was fostered by two major factors. The first was simple geography; the country's great expanse demanded rapid long distance communications. The fastest trains required four days for a transcontinental trip. Better mail service would not only bind the country closer together, but also benefit business. A second factor was psychological. The American public was fascinated by speed, modernity, the future, and cutting edge technology, all of which were wrapped up in aviation, the glamour industry of the day. The fliers, the records, and the promise of the future electrified the country as seen in the response to Lindbergh's epic trans-Atlantic flight in 1927. National pride was also involved for not only was Lindbergh an American, but so were the Wright brothers, who, in the eyes of Americans, invented aviation. The air mail was a part of the advance of aviation.

Army airmen were connected with air mail from the beginning. The Army began air mail service in May 1918, with a New York to Washington

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Gen. Henry H. "Hap" Arnold, at that time a lieutenant colonel, and commanding officer of March Field, California. He was also Commander of the Western Air Mail Zone.

**THERE WERE ALLEGATIONS OF FAVORITISM, POLITICAL PAYOFFS, AND INFLUENCE PEDDLING**

run, but deeply engaged in the European War, quickly handed off the duty to the Post Office Department. Nevertheless, Army influence continued in the years after the war as almost all of the air mail pilots had been trained by the military and flew converted Army bombers. In the mid-1920s, the Post Office contracted out the mail service to private operators. These commercial operators also carried passengers but depended on federal air mail subsidies for their survival. The government further encouraged the air mail service and aviation by providing lighted beacons, emergency airfields, and regular weather reports. By 1928, the air mail routes covered 14,000 miles.<sup>5</sup>

Contractors' abuses and the desire to stimulate passenger service led to a modification of the system.<sup>6</sup> In 1930, Congress changed the basis for fees and gave the Postmaster General broad powers; some said "dictatorial" powers. Armed with this increased authority, Postmaster General Walter Brown met with the major airline executives and redistributed the mail contracts in meetings that would ignite the episode. Brown's efforts were a major factor in the expansion of air mail routes, the consolidation of airlines, and the growth of commercial aviation in the U. S. By the end of the year, transcontinental air mail routes had grown from one to three, and despite the Great Depression, air mail miles increased from 15,000 in 1930 to 27,000 in 1932, while passengers carried rose from 385,000 to 476,000 in these same years.<sup>7</sup> These remarkable achievements made American air transport and the air mail system the envy of the world. In 1934, the editor of the main British aviation periodical wrote that "No other country can show as high a standard

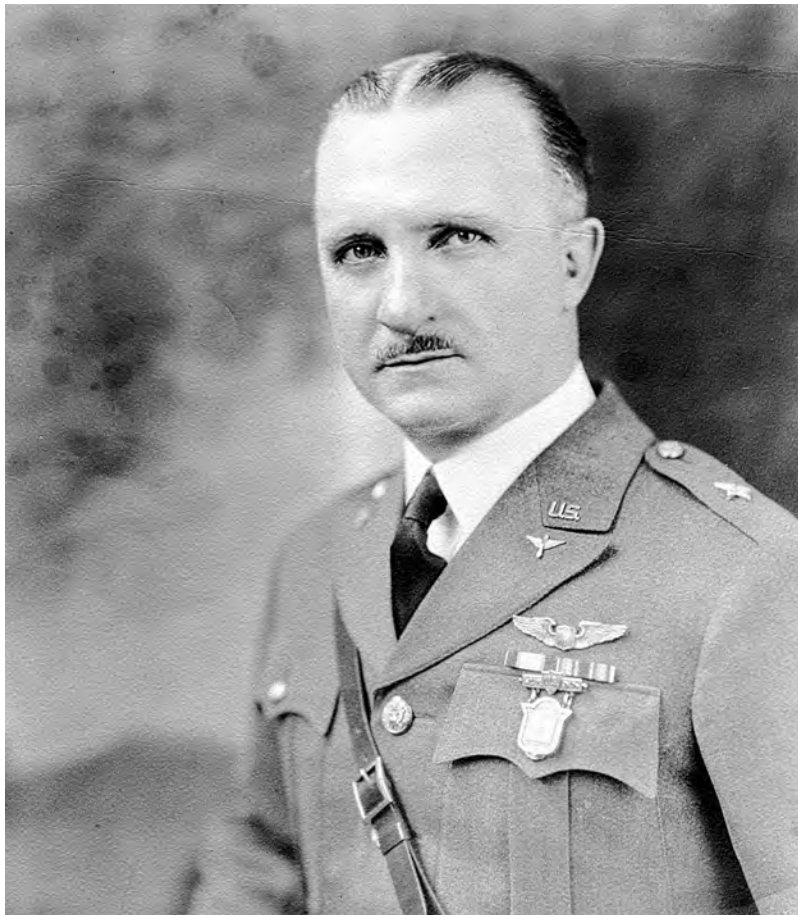
of speed, regularity and safety" as the American air mail system.<sup>8</sup>

**Contracts Cancelled**

There was, however, another side to this glowing picture. In February 1933, in the wake of the Great Depression and the transition of power from the Republicans to the Democrats, the Senate authorized a probe of both air and ocean mail contracts that led the chairman of the investigating committee, Senator Hugo Black (D-Ala) to warn FBI chief J. Edgar Hoover of "a conspiracy to defraud" the government.<sup>9</sup> Early in 1934, the committee began public sessions that revealed apparent corruption, and certainly questionable practices. These revelations were splashed in newspaper headlines across the country and led to charges that the previous administration's Postmaster General, Walter Brown, and the major airlines had colluded to divide up the heavily subsidized air mail routes to freeze out the smaller companies by awarding contracts without competitive bidding. Four companies had received 90 percent of the air mail subsidies.<sup>10</sup> There were allegations of favoritism, political payoffs, and influence peddling. Further, Brown's secretary ordered official documents burned, strongly suggesting a cover up of illegal activity. There were also charges that a favored few made fantastic profits in aviation stocks, with an outlay of a few hundred dollars rising in value to millions of dollars in a short period.<sup>11</sup> To add flavor to these revelations, a number of prominent names were linked to these questionable practices, including Postmaster General Brown, Charles Lindbergh, the sons of former President Herbert Hoover, and some congressmen.<sup>12</sup>

Thus, the aviation industry and specifically the air mail subsidies were vulnerable to the new President's activist's efforts. Franklin Roosevelt, riding a wave of popularity with his aggressively expansive program to combat the Depression, institute reform, and looking to the fall congressional elections, thought that the Black Committee had pinpointed an appropriate target. After discussions with the Attorney General and the President, Jim Farley, the Postmaster General and head of the Democratic Party, decided to cancel the air mail contracts.<sup>13</sup> The Air Corps would fly the air mail temporarily until new contracts were awarded. However, there was some press speculation that FDR intended to return the air mail service to the Post Office Department or to the Air Corps and even that the government was considering taking over passenger service.<sup>14</sup> What is clear and most important, is Roosevelt's direct influence on two key points. First, although Farley wanted the airlines to continue to carry the mail until new contracts could be concluded, he said, "the President favored giving the service [Air Corps] an opportunity to distinguish itself."<sup>15</sup> Secondly, FDR insisted on the immediate revocation of the contracts, whereas the Post Office Department had recommended a June 1st date.

On February 9, 1934, Harlee Branch, Second



Brig. Gen. Oscar Westover, Foulois' deputy as the assistant to the Chief of the Air Corps. He later succeeded Foulois as Chief of the Air Corps.

**MITCHELL WAS A FERVENT SUPPORTER OF ROOSEVELT ...[AND]... HAD TAKEN ON THE AVIATION INDUSTRY IN 1933, CHARGING THEM WITH PROFITEERING AND HINDERING AVIATION DEVELOPMENT**

Assistant Postmaster General, called the Chief of the Air Corps, Maj. Gen. Benjamin Foulois, to a meeting at which Branch asked if the Army could carry the mail. Without contacting anyone outside the Air Corps or even consulting with his deputy, and with minimal preparation and consideration, Foulois answered yes in what his biographer writes was a "rather hasty reply."<sup>16</sup> Three decades later, Foulois insisted he would again give an affirmative answer, although with major changes: "better planes, engines, instruments and airways' aids, and a little more time to get ready."<sup>17</sup> Major changes indeed. On that last point, when Branch asked Foulois how much time the Air Corps required to begin operations, the airman answered in his words, "casually," a week to ten days. Thirty years later Foulois clarified that he "certainly didn't mean ... *from that moment on.*"<sup>18</sup> [original emphasis] Noteworthy is the fact that neither the Post Office nor the Air Corps used the military chain of command. This is significant as the involvement of the Army General Staff, given its conservatism and insistence on maintaining control over the airmen, probably would have tempered the response to the Post Office query.

The Air Corps was caught flat footed by this turn of events. It had done no planning for such a contingency, although it should have seen this task as a real possibility. A year or two before, the Post Office had drafted tentative plans for the Air Corps to fly the mails in the event of an airline pilot strike, although it is unclear when Foulois learned of this.

However, the extensive press coverage of the Black Committee hearings indicated the growing crisis over the air mail contracts. Foulois wrote in his autobiography that he had been following the air mail story in the papers, but "assumed, naively, that when the mail couldn't go by air it would go by rail..."<sup>19</sup>

Foulois' affirmative response may have been prompted by the military's "can-do" attitude, a belief in the obligation to follow orders, as a way to justify larger budgets, organizational pride, or to demonstrate the airmen's capabilities. Certainly, it would have been difficult for a military officer to tell the President that the Air Corps could not do the job. In his autobiography, Gen. Henry "Hap" Arnold wrote, "I think it is doubtful if any other air leader in his place would have answered differently."<sup>20</sup> Although a different answer might have been difficult, it was not impossible. Foulois' deputy, Brig. Gen. Oscar Westover, testified that he probably would not have recommended that the Air Corps carry the mail. And three other officers involved in the affair, all of whom rose to flag rank, later commented that Foulois should have told Roosevelt that the Air Corps was not equipped for the task.<sup>21</sup>

Gen. Douglas MacArthur, Chief of Staff of the Army, publicly supported his subordinate and told the press, "We will start flying air mail...and there will be no delay, no difficulty and no interruption."<sup>22</sup> However, it should be noted that the Army head was not involved in the decision, he first heard of it from a reporter, and despite his words to the press, seemed to be only tepid in support of the decision.<sup>23</sup>

Foulois was confident that the Air Corps could do the job. Less than a week after the decision, the Air Corps chief testified to a House committee that while the Army airmen had no familiarity with the air mail routes, they did have "a great deal of experience in flying at night, and in flying in fogs and bad weather, in blind flying, and in flying under all other conditions...[and] shall experience no difficulty in maintaining the regular schedules."<sup>24</sup> At best this statement was overly enthusiastic and optimistic, misleading, if not grossly incorrect as it badly distorted the airmen's capabilities, which helps explain why the forecast was so tragically inaccurate. In contrast, twenty-five years later Foulois claimed that he had told Post Office officials about the Air Corps' limitations and that the airmen were not equipped for the task.<sup>25</sup>

On February 10, 1934, a front page story in the *Washington Post* began, "Charging fraud and collusion, President Roosevelt yesterday directed the cancellation of all air mail contracts with domestic companies—thus reshaping if not collapsing the Nation's network of private transport concerns." It went on to state that "Faced with disclosures of the Black investigating committee, the President cut a Gordian knot in characteristic fashion, at one bold stroke lopping off all subsidy to air mail transport and projecting the Government into its place."<sup>26</sup> The Army would begin flying the mail on February 19.

The airlines were stunned and reacted with a roar of protest that resounded across the country.



Will Rogers (right), humorist and aviation enthusiast, shown with Secretary of War Patrick J. Hurley. Rogers expressed his apprehension over the Army's flying the mail.

**EDDIE RICKENBACKER... TOLD REPORTERS THAT "LEGALIZED MURDER" HAS JUST BEGUN AND I FEAR THE WORST"**

With about half their earnings generated by the air mail subsidies they faced ruin. The companies cut back schedules, laid off employees, watched their stocks plummet, and cried foul. Although the few Republican congressmen echoed these protests, Charles Lindbergh emerged as the industry's most effective spokesman and foe of the cancellation. His epic flight had catapulted him to fame, fortune, and a position as America's leading aviator and aviation expert and his creditability on this matter was enhanced by his prior experience as an air mail pilot. In addition, he was second only to Roosevelt in popularity across the land, all of which gave him a unique position with the public and therefore with American politicians. It must be noted that Lindbergh was on the payroll of the aviation industry and had substantial aviation stock holdings as well. However, Lindbergh's balanced and measured public statements give no indication that his industry ties unduly influenced his expert opinion.

Two days after the cancellation order, "Lindy" sent a telegram to the President strongly decrying the great damage this action inflicted on the airline industry. He claimed that the order did not discriminate between the guilty and innocent and that its procedures denied the companies a chance to present their case. Lindbergh's protest received front

page coverage in major American city newspapers across the country. An attempt by the Republicans to have the telegram included in the *Congressional Record* disrupted the House of Representatives with two members almost coming to blows. The House was abruptly adjourned. The story was prolonged when the President's secretary publicly criticized Lindbergh for being discourteous and a publicity seeker by releasing the telegram to the press before the President could read it.<sup>27</sup> With the major exception of Billy Mitchell, the flamboyant and outspoken Army aviation advocate, almost all of the civilian aviation community joined the chorus of criticism.<sup>28</sup>

Mitchell was a fervent supporter of Roosevelt. The dashing airman had taken on the aviation industry in 1933, charging them with profiteering and hindering aviation development, which resulted in a libel suit against him in 1934. Mitchell was a delegate to the 1932 Democratic convention, campaigned for Roosevelt's election, and met the President on a number of occasions. Some pushed his bid for a high aviation post in the government. However, Roosevelt did not agree with Mitchell on the controversial, volatile, and high profile issue of a separate air force and was warned that the airman was a "loose cannon." So despite his efforts, ambitions, and qualifications, Mitchell never got a position in the New Deal administration or on any of the committees investigating American aviation.<sup>29</sup>

Along with the criticism of the cancellations came dire warnings. Only days after the cancellation announcement, the *New York Times* reported in a front page story that Lindbergh, a former air mail pilot, agreed with current commercial mail pilots that "the lives of men inexperienced in mail operations, and flying planes not equipped with radio or the blind flying instruments necessary for the service, may be risked."<sup>30</sup> That same day a short, sharp, more direct, and prescient column written by Will Rogers, the aviation enthusiast, film star, humorist, and newspaper columnist also appeared on the front page, asserting that "You are going to lose some fine boys in these Army fliers who are marvelously trained in their line but not in night cross-country flying, in rain and snow."<sup>31</sup> Another aviation luminary, Eddie Rickenbacker, expressed similar concerns focusing on the Air Corps pilots' limited training and their aircraft's lack of bad weather instruments. He opined that "Either they are going to pile up ships all the way across the continent or they are not going to fly the mail on schedule."<sup>32</sup> Perhaps more striking than the foreboding of these aviation celebrities was the view of an Air Corps reserve major who wrote his congressman that "Today the army starts to fly the airmail. I, as an army flier expect to be embarrassed at the poor demonstration that they are sure to make"<sup>33</sup>

To understand the apprehension, the reader must appreciate that flying in the mid-1930s was considerably different that what we experience and expect today. This was much more than just the matter of aircraft performance. There was no ground control, radar, inertial navigation devices, or



**"WITH 25 YEARS OF FLYING EXPERIENCE BEHIND ME," FOULOIS ASSERTED, "I CAN FRANKLY STATE THAT JUST SO LONG AS MAN FLIES THERE WILL BE FATAL ACCIDENTS."**

operational non-visual landing systems. Most flying was conducted in daylight and fair weather conditions. Instrument flying was in its infancy with only a few non-visual instruments in service. Low visibility takeoffs and landings had been demonstrated, but their standardized use was years away. At the same time radio navigation and communication equipment were just appearing, but were both limited in range and reliability. Thus, flying at night and in non-visual conditions was not the norm and was more difficult and more dangerous than daytime, visual flying. Only the major commercial airlines had the necessary equipment and personnel trained in its use. Also, aircraft and weather prediction in the 1930s were much less reliable than today.

### The Air Corps in Action

Meanwhile, the Air Corps prepared to meet its greatest challenge of the interwar years. The Air Corps assigned Brigadier General Westover, Assistant to the Chief of the Air Corps, to command the air mail operation, with the country divided into three zones.<sup>34</sup> The planners cut air mail service by 40 percent from the existing route mileage, but included the more important routes, ensuring the

connection of the twelve Federal Reserve banks.<sup>35</sup>

In the short time it had to prepare for this task, the Air Corps shifted resources to civilian airfields near the cities it would service, installed non-visual flying instruments in aircraft as needed and had its pilots fly over the routes in daylight. Most of the airmen saw the operation as a great opportunity, were excited and confident, although some were cautious.<sup>36</sup> Flying the mails offered the service increased flying time, a break from the peacetime routine, and an opportunity to show the country its value. As the Eastern Zone commander declared, "We'll carry the mail, don't worry about that—unless an elephant drops on us. If it does, we'll cut it up and ship it out as mail."<sup>37</sup> That very day, the elephant landed.

On the morning of February 16, three days before the operation would begin, the Air Corps suffered two fatal accidents connected with the upcoming air mail operation.<sup>38</sup> That morning two young lieutenants flying a training mission between Salt Lake City and Cheyenne encountered snow flurries and stiff winds and inadvertently flew into a canyon, crashed, and died. The Air Corps attributed the accident to an inexperienced pilot who exercised poor judgment.<sup>39</sup> Late that day, another young and inexperienced pilot took off from Salt Lake City on a night training mission to Seattle, encountered dense fog with zero ceilings, and was killed attempting to land at an emergency airfield in Jerome, Idaho.<sup>40</sup>

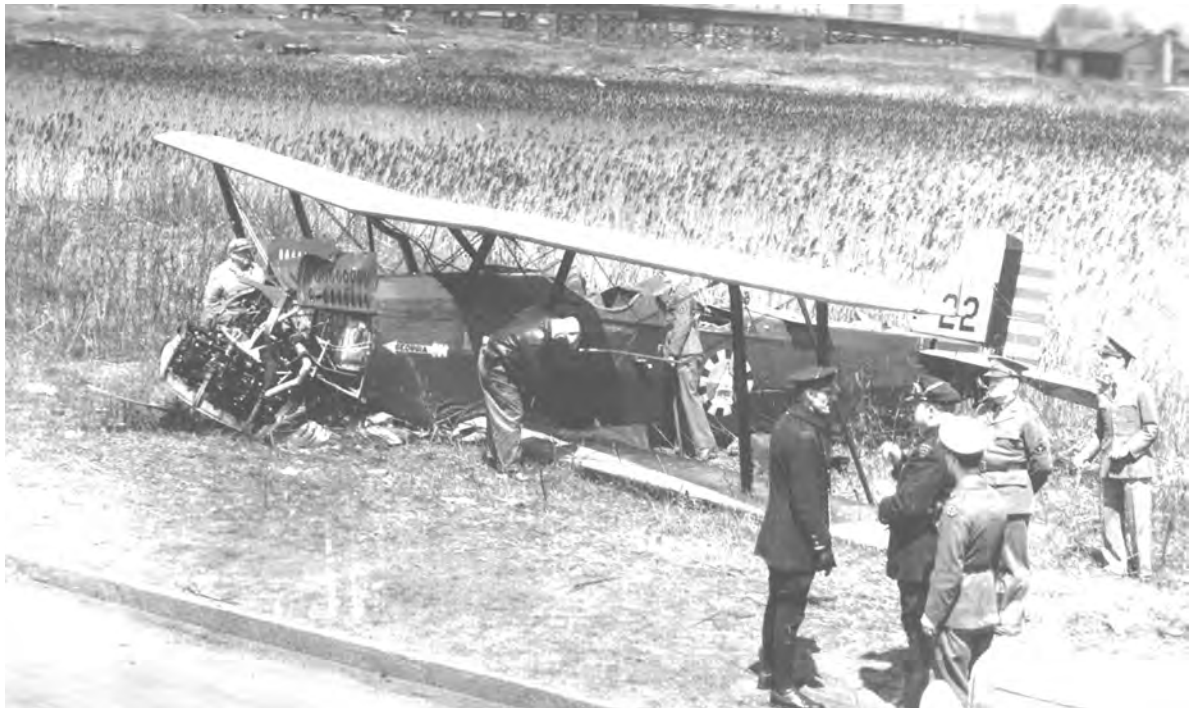
These accidents intensified criticism of the operation. Following these crashes Eddie Rickenbacker uttered the phrase that would resound throughout the affair when he told reporters that "Legalized murder' has just begun and I fear the worst."<sup>41</sup> The critics picked up this phrase and used it to batter the administration in the halls of Congress and in the newspapers.

Despite these apprehensions, accidents, and fierce weather the Air Corps began mail service on February 19. More mishaps followed. Three air mail aircraft crashed on February 22, two resulting in fatalities. A solo pilot took off early in the morning from Chicago, ran into snow storms, and got lost when his navigational radio failed. He was fifty miles south of course when, after throwing a number of mail sacks overboard, he bailed out, but his chute did not clear the empennage and he was killed. To add to the growing clamor, the pilot's mother was quoted by major newspapers across the country deploring her son's death, lamenting that as:

*Good as these Selfridge Field fliers [are, they] shouldn't have had to fly at night through winter storms over unfamiliar courses that it took months for commercial pilots to learn. I can't help thinking that if this government house-cleaning campaign hadn't occurred, this dreadful thing wouldn't have happened to my son.<sup>42</sup>*

Unfortunately, this was not the last accident associated with the air mail operation. Later that

1st. Lt. Arthur Lahman's engine cut out as he was about to land at Newark, N.J. on April 15, 1934. Lahman was not injured, the O-38B was totaled.



**ONLY ONE-THIRD OF THE ARMY PILOTS FLYING THE AIR MAIL HAD LOGGED MORE THAN 1,000 FLYING HOURS, AND FEWER THAN ONE-FIFTH HAD MORE THAN MINIMAL NIGHT AND INSTRUMENT FLYING HOURS**

day, a pilot en route to air mail duty attempted a forced landing when his engine cut out, and was killed when his fighter turned over in the soft ground. The next day, three air mail planes crashed. One of these was an amphibian that took off in the afternoon from Floyd Bennett Field, New York on an administrative flight. Ten minutes later, both engines quit, and the pilot ditched in the ocean a mile from Rockaway Beach, New York. During a prolonged rescue attempt, one of three airmen was washed to his death. Twenty minutes later a Navy destroyer rescued the other two men.<sup>43</sup>

In one week, the Air Corps had suffered six fatalities, all associated with the air mail detail. This was shocking after the previous year in which the fatal accident rate was less than one man a week.<sup>44</sup> The Army's Air Mail Service was not going well!

Despite these problems and setbacks, the airmen kept up their efforts. Foulois asserted in an address at the end of the month that air mail flying was not as dangerous as peacetime military flying, and characterized the critics as partisan and uninformed. He rejected allegations that poor training and equipment were involved, admitting only that there was a lack of numbers. In a radio address, General Foulois stated that his airmen were not weaklings, not looking for sympathy, and not "a bunch of rosy-checked young babies." He declared that "on the contrary, they constitute a corps of highly intelligent, rugged, determined, loyal and fearless young officers." He further stated that safety was the Army's primary concern, but acknowledged that "frequent accidents will still occur."<sup>45</sup>

Before the end of February, even members of the Air Corps were criticizing the operation, most surprisingly, in public. General Westover was blunt: "When you consider how the job was dumped in our

laps, how little warning we had, how little time for preparation, the men have done exceptionally well, particularly with our present equipment. We have had to take what we have had and adapt it to our needs." He noted the lack of weather information and the inexperience with the routes as well.<sup>46</sup> Another key officer, Western Zone commander Lt. Col. "Hap" Arnold, spoke of the "immense handicaps" the Army airmen faced. One of the route commanders also pointed to the short preparation time and the inadequacies of aircraft and training, and called the duty an "impossible task" as the Air Corps had trained for a different kind of flying in better weather.<sup>47</sup>

The sharp cry against the cancellation of the air mail contracts, reinforced by the Air Corps' difficulties, grew louder. The dispute over the contracts paled in comparison with the Air Corps' performance as the legal arguments did not have the dramatic impact of the airmen's problems and casualties. Events confirmed the dire predictions of the critics about the inadequacies of the Army in this type of flying and were amplified by the events, broadcast by the newspapers, and trumpeted by the opponents of the New Deal. Judging from congressional mail, the public was about equally divided on the wisdom of the contract cancellation, but was shocked and upset by the Air Corps' performance. To add fuel to the criticism, two of the leading aviation figures of the day emerged as forceful and effective critics. Although both Charles Lindbergh and Eddie Rickenbacker were closely connected to the airline industry and on their payrolls, their stature and technical credibility generated headlines that were difficult to counter.

The Air Corps' safety record became the major issue. By the end of February, there were twenty major accidents and six fatalities connected with air mail activities. In the first ten days of March, eleven



A pilot is about to embark in a Boeing P-12 pursuit plane from March Field, California.

**THE AIR CORPS CONSIDERED ITS ATTACK AND PURSUIT AIRCRAFT DIFFICULT FOR THE TASK, AND RECOGNIZED THAT ITS BOMBER AND TRANSPORT AIRCRAFT WERE NOT EQUIPPED FOR NIGHT OPERATIONS**

more major accidents and four more fatalities occurred. Four airmen died in three crashes on March 9. One was killed during an early morning flight into a heavy storm near Burton, Ohio. Although more experienced than most others killed in the operation, his crash was blamed on the poor cockpit location of two critical flight instruments. The second accident at Daytona Beach, Florida, involved a twin-engine bomber that lost power on both engines shortly after takeoff, and one of the three-man crew lost his life in the subsequent crash landing. That night, two more officers perished at Cheyenne in an accident attributed to engine failure.

The next day Roosevelt halted the operation citing the high accident rate and fatalities. The President called in the Army Chief of Staff, Douglas MacArthur, and the Chief of the Air Corps, Benjamin Foulois, and forcefully expressed his extreme displeasure. Roosevelt asked when the deaths would end, to which Foulois bluntly and honestly answered “only when the airplanes stop flying.”<sup>48</sup> The overall result, Foulois later recalled, was the worst tongue lashing he had ever endured. The Air Corps thought the President was overreacting, and Foulois noted that only four of the ten deaths actually took place carrying the mail, while the others were in air mail support services (a distinction probably lost on both the President and the public). The next day Foulois grounded the air mail flights. When the Air Corps chief lifted the grounding, he warned that there might be further accidents and casualties. “With 25 years of flying experience behind me,” Foulois asserted, “I can frankly state that just so long as man flies there will be fatal accidents.”<sup>49</sup> When the Air Corps resumed operations on March 19, it cut its schedule from 41,000 miles to 26,000 miles a day and reduced the night flights from thirty-eight to fourteen.<sup>50</sup>

The affair played out in public with pyrotechnics blazing across the pages of the nation’s papers.

In mid-March, the Secretary of War formed a committee to investigate the Air Corps’ performance (it became known as the Baker Committee, named for its chairman, Woodrow Wilson’s Secretary of War, Newton Baker) and announced the appointment of Lindbergh as a member. Much to the embarrassment of the Administration, the aviator twice refused to serve on the board based on his vigorous objections to the annulment of the contracts, a position he repeated in forceful, direct terms to newsmen and congressmen alike.<sup>51</sup> A few days later Rickenbacker regained national attention when in Senate testimony he called upon Roosevelt to fire his “traitorous” advisors who had misadvised him on the air mail. The Democratic Chairman of the Committee would not allow the flier to continue his remarks, upon which the aviator stormed out of the hearing to the applause of hundreds in the audience and a few of the Senators. At seemingly every opportunity Republican congressmen charged the Administration with bungling, politics, and “legalized murder.”<sup>52</sup> The rhetoric was tough, with one congressman declaring that “The summary, autocratic and dictatorial manner of canceling the air mail contracts without a hearing is worthy of Fascism, Hitlerism or Sovietism at their best.”<sup>53</sup> Democratic congressmen defended the President, the Administration, and the air mail decision as best as they could. They parried some of the Republican efforts to embarrass the Administration but attempted in vain to shift the emphasis from the Air Corps’ problems and the appropriateness of the contract cancellation to the corruption and collusion of the contracts.

The air mail episode dominated the news during the first half of 1934, with the major national newspapers running a story on the subject half of the days in February and March and on the front page 30 percent of those days.<sup>54</sup> The coverage centered on the scandals uncovered by the Black Committee hearings, accentuated by the Air Corps’ difficulties and accidents. A *New York Times* editorial pointed out a day before the Air Corps began flying the mail that the storm of criticism was a new experience for the New Deal Administration that had been riding on a wave of public approval. A week later, the New York paper editorialized that for the first time the Administration was on the defensive. It wrote that the public seemed to side largely with the companies, to be critical of the President, and to increasingly believe that the Administration might “be a trifle precipitate in grave matters.”<sup>55</sup> At the same time the *Washington Post* reported that despite the “Overwhelming evidence that the army is not prepared to carry the air mail without a needless sacrifice of life,” the Administration clings to its “hastily adopted and ill-considered policy regardless of the consequences.”<sup>56</sup>

The airmen, and certainly Roosevelt supporters, considered the newspaper’s coverage hostile and negative.<sup>57</sup> Arnold was critical of the press, complaining to his wife in mid-March of the “sensation-hunting, super-critical newspapers.”<sup>58</sup> His views were even sharper a month later when he told the

Arnold pushed to counter bad press and garner favorable publicity for the air mail operation, including the use of girls, some in swim suits, and even a dog.

**“I DON’T CARE WHAT YOU DO. YOU COVER A BATHING BEAUTY WITH AIR MAIL STAMPS, AND SEND HER TO THE GOVERNOR OF CALIFORNIA ...BUT WE’VE GOT TO OVERCOME ALL OF THIS UNFAVORABLE AND UNFAIR PUBLICITY.”**



Baker Committee that “the newspapers from the start were antagonistic, apparently, they seem to think it was their duty to vilify us as callous murderers and everything else...”<sup>59</sup> He wanted good publicity and told his public relations officer, “I don’t care what you do. You cover a bathing beauty with air mail stamps, and send her to the Governor of California....I don’t care what you do, but we’ve got to overcome all of this unfavorable and unfair publicity.”<sup>60</sup> An irony of the situation was that the President’s son, Elliott, was an aviation editor who later admitted that “I wrote some very scathing prose.... and some pretty terrible articles [criticizing]... what my father was doing.”<sup>61</sup>

In fact, the considerable attention to the air mail affair was consistent with the press and public interest in aviation as well as in unusual and bloody stories such as airline and auto accidents, murder and suicide, as well as strikes, kidnapping, riots, and lynching. (The major competing story over this half year concerned the activities of John Dillinger, public enemy number one.) However, it should be noted that the newspapers also defended the airmen and sympathetically reported their problems. The papers revealed a hastily run operation that proved costly in dollars and blood that was certainly less competent than the commercial air mail operation it replaced. Honest reporting could not alter these details.<sup>62</sup>

Meanwhile, the Air Corps persevered, the weather improved, and the accidents declined, but did not stop. Through May 13, the date of the last accident in the air mail operation, the Air Corps had twenty-nine more major accidents and three more deaths. On March 17, a second lieutenant flying a training flight at Cheyenne was killed after he spun

in from 1,500 feet. The accident report attributed the crash to the pilot inhaling carbon monoxide, a conclusion refuted by the Zone Commander who, instead, blamed the load distribution of this type aircraft at high altitude. This fatality contrasted with the others in that the pilot was a laid-off United Airlines copilot who had been recalled to active duty only four days earlier and presumably had more flying time than the average Air Corps air mail pilot. Two weeks later, a mail plane flying 140 miles west from Chicago encountered a low ceiling. The pilot reversed direction and then dove into the ground and was killed. Although the Air Corps had some concern about the pilot’s mental state, it drew no definite conclusions as to the cause of the accident. The last air mail fatality occurred on April 5, when a pilot who had taken off from Middletown, Pennsylvania, encountered poor weather and attempted to land at Duncansville, Pennsylvania. He did not see a ridge in time and was attempting to bail out when the fatal impact occurred.

The Air Corps’ safety record carrying the mail was abysmal. The air mail operation accounted for 12 percent of the Air Corps’ flying hours in 1934, yet it registered 31 percent of the fatal accidents. The major accident rate for carrying the mail was two and a half times the Air Corps’ total major accident rate for 1934, and almost four times the fatal accident rate.<sup>63</sup> A comparison of the Air Corps with the airlines is extremely difficult because of differences in measurement, although it indicates the Air Corps was more prone to fatal accidents.<sup>64</sup> The Army airmen also suffered more fatalities than the commercial mail carriers in the previous year, although the Air Corps flew fewer miles.<sup>65</sup> One conclusion is clear, however, 1934 was a bad year for aviation



Although it was not used regularly, even the Curtiss B-2 Condors were pressed into service.

safety, as the accident rates for both the Air Corps and airlines in 1934 increased over that of 1933, and both fell in 1935.<sup>66</sup>

The weather improved, as did Air Corps performance. One major advance resulted from the Army's acquisition of the Martin B-10, the most advanced bomber flying. It incorporated almost all of the aviation innovations of the early 1930s, and was the first 200-mph bomber in the world. Early on May 8, 1934, a B-10 took off from Oakland, California, carrying mail bound for Newark. But the goal was more than just delivering the mail over transcontinental distances on this the last military mail run from the west coast—the airmen wanted to set a new speed record to mark the completion of their three months service, and thus end their duty on a high note by demonstrating their competence that had been called into question. The great distance (2,700 miles) required five stops during which the mail was transferred sequentially to other aircraft, flown by other pilots. Four of the six legs were flown in B-10s. Fourteen hours after take off, a Martin bomber touched down at Newark. While the overall time was an hour longer than that of Rickenbacker's February flight, the route was some 247 miles longer, and flown at a higher average speed.<sup>67</sup> This was the last memorable flight in this well publicized, highly criticized, and flawed operation. That same day, commercial air mail flights resumed and the Air Corps flew its last mail run on June 1.

The government rebid the air mail contracts in the spring. Although there had been talk of not allowing companies involved in the 1930 arrangements, or those companies suing the government over the matter from bidding on the new contracts, the restrictions were far narrower. To bid on the contracts, the former carriers were forced to reorganize, which entailed a separation of manufacturing operations from the airlines and some cosmetic company name changes.<sup>68</sup> In addition, thirty-one individuals

involved in the infamous 1930 meetings were barred from participation. The air mail subsidy rates were reduced, the mail went through, and U.S. commercial aviation improved and prospered. The air mail episode was wrapped up in 1942, when the Court of Claims found that the Postmaster General was justified in revoking the contracts because there had been collusion, but denied the government any financial restitution. It also held that the companies could recover payments for their services prior to the February cancellation.<sup>69</sup> Tellingly, despite all of the public allegations, no criminal charges were filed.

### Episode Concluded: What Went Wrong?

Clearly the Air Corps struggled to deliver the air mail during this operation. While it is probably true that New Deal critics, aviation partisans, and newspapers exploited the fliers' problems for their own purposes and may have exaggerated by using such terms as "disaster," "fiasco," and "blunder," it was largely from a public relations point-of-view. Certainly, Air Corps performance compared poorly with that of commercial carriers. The Air Corps carried less mail than the airlines, with an inferior safety and completion record. (However, unlike the commercial fliers, the Air Corps proudly claimed that it did not lose or destroy any of the air mail entrusted to its care.<sup>70</sup>) Although the Air Corps' job was done, it was at a high cost to its reputation and personnel. The question that arose was: If the airmen had so much trouble in peacetime, carrying the mail, how would they perform under wartime conditions?

Another question: What had caused this result? Some attributed the airmen's difficulties to the weather, the worst seen in decades.<sup>71</sup> Although this was certainly a factor, more significant was fact that the Air Corps was ill-prepared for the job. One shortcoming was aircraft. Because it had few cargo aircraft,<sup>72</sup> and these were used to ferry men and equipment to its dispersed stations, the Air Corps was forced to use a variety of aircraft and convert them from their combat configuration for air mail duty. This conversion entailed removing guns and seats from aircraft to make room for mail bags and give the aircraft better flying performance, by equipping them with bad weather flying and navigation instruments, and radios. The quality of the Air Corps' aircraft is illustrated by the fact that while the airlines were mainly flying aircraft with closed cockpits, initially only a third of the Army aircraft had that configuration.<sup>73</sup> The Air Corps soon found that few of its aircraft were suitable for the job because of their low speeds, limited cargo space, and lack of stability for instrument flying. In brief, the Army aircraft were not designed to carry mail and, with the exception of the Martin B-10, proved at best marginal, if not unsatisfactory, for the job. The Air Corps considered its attack and pursuit aircraft difficult for the task, and recognized that its bomber and transport aircraft were not equipped for night operations. Specifically the A-12, one of



THE AIR CORPS SHOWCASED ITS NEW EQUIPMENT AND COMPETENCE WITH GREAT FANFARE AND LITTLE PROBLEMS THROUGH A ROUND TRIP FLIGHT OF 8,300 MILES TO ALASKA BY TEN OF ITS NEW MARTIN B-10s

the airmen's newer aircraft, lacked landing lights and was unsuited for the high altitude operations as required at some of the western airfields. The P-12 also lacked landing lights and was considered a bad aircraft for instrument flying. The P-26 was labeled unsuited for air mail operations. The observation aircraft were better; especially the O-38 with its enclosed cockpit, but it lacked the necessary speed and payload.<sup>74</sup>

Aircraft equipment also proved inadequate. In 1934, the Air Corps was a clear weather, daylight air force. It did not anticipate fighting in bad weather, and although it had developed equipment and techniques for bad weather and night flying and played a part in pioneering these technologies. The Army Air Corps had been slow, certainly slower than the airlines, putting this new equipment into the field. The onset of the air mail operation found commercial mail aircraft equipped with modern flying and navigational instruments, while some Army pursuit aircraft lacked even basic instruments. Only a few Air Corps aircraft had instruments considered essential for night and bad weather flying. The neglect of instrument flying capability resulted from a number of factors. Tight funding was a problem, but the airmen bore responsibility as well. Some of the older, more experienced, and senior airmen distrusted instruments and regarded those who advocated them as weak pilots. Believing a future air war would not require bad weather flying, military airmen disregarded instrument flying and proved (as the stereotype would have it) much more conservative than the commercial fliers who saw an economic advantage.<sup>75</sup>

The Air Corps did have a number of these bad-weather instruments, but they were in storage, reserved for new aircraft.<sup>76</sup> This policy denied the airmen their use for training and familiarization, and of course operational use. In the wake of the air mail duty the Air Corps installed these advanced instruments as quickly as possible into aircraft carrying the mail, but in their haste, and due to the restricted space on aircraft instrument panels, located them with little regard for the pilot, making their use difficult if not dangerous.<sup>77</sup> Among the lessons learned from the air mail experience was the need to standardize the instrument location in all its aircraft, install the instruments on shock proof panels, and provide adequate instrument lighting.<sup>78</sup> The lack of this equipment led the Air Corps to neglect training in its use. Although Air Corps pilots were trained with the basic instruments, few were trained with the more advanced instruments that made bad weather flying practical. Beginning in 1930 the Air Corps allocated 10 flying hours of pilot training to instrument training, a figure doubled in May 1934. The airmen also established a six-week bad weather flying, instrument school on each coast in the fall of 1933 intended to produce instructors who were to return to their bases and pass along this knowledge. The schools were in the middle of their second class when the air mail crisis erupted. Therefore it is not surprising that initially only one quarter of the 80

pilots assigned to air mail duty in the Eastern Zone were qualified instrument pilots.<sup>79</sup> Although only a small portion of the actual flying was done in adverse weather, the airmen agreed that their instrument training was inadequate as it only enabled them to climb through the weather to get above it, not fly in it.<sup>80</sup>

Communications followed a similar pattern of neglect. In early February 1934, three quarters of the Air Corps' aircraft lacked radios. The radios finally obtained were inadequate, as some did not work very well, many were receivers only, and the two-way radios had less than one-third the range of those used by the airlines. This situation limited air-to-ground communications and forced the airmen to swap radios from aircraft to aircraft, a practice that continued into late April. The location of radio antennas on the aircraft and radio maintenance presented further woes.<sup>81</sup>

There were infrastructure problems as well. For the most part, the airmen were working away from their bases, on civilian airfields with inadequate facilities. Some of these airfields were just that, open fields hazardous in rain or snow, because hard-surfaced runways were just coming into use. Lighting was not a standard feature. The airmen were forced to use sparse facilities with much of the maintenance done in the open, despite the severe winter weather. In addition, communications were makeshift and parts and tools were in short supply. Despite these problems, along with other difficulties in pay, billeting, and messing, morale was good.

Another problem was that most of the Air Corps pilots flying the air mail had limited flying experience. A significant number of them had only recently earned their wings and were doing brief service before returning to civilian status, while many of the Air Corps' older, more experienced, regular officers were posted to administrative duties. Initially, more than half of the Air Corps air mail pilots had less than two years service. And while the average commercial pilot was logging about 900 flying hours a year, at this point an Air Corps pilot had about 200 flying hours a year because of fiscal constraints.<sup>82</sup>

The Air Corps did not take decisive action to remedy the problem of inexperienced pilots. Unlike the Army policy a year earlier that helped staff the CCC (Civilian Conservation Corps), the Air Corps did not pull regular officers out of the various schools and assignments that took them away from their tactical units. As was expected, the Air Corps used the older, more experienced officers in administrative and managerial positions.

Further, the Air Corps did not fully utilize the pool of considerably more experienced reservists who flew with the airlines. The airmen did borrow fifty-three National Guard aircraft as well as use some of the Guard's airfields, mechanics, and facilities. On February 13, the Air Corps issued a call for experienced commercial air mail pilots who held reserve commissions to volunteer for active duty, as did the Central Zone commander two weeks later. This effort netted only a few experienced and quali-



2d. Lt. John Treher was forced down by weather at Tintic, Utah on March 5, 1934. He survived, the aircraft did not.

**THE AIR CORPS ALSO MERITS CRITICISM ... THE AIRMEN NEGLECTED INSTRUMENT FLYING ... THE AIR CORPS FAILED TO FULLY UTILIZE THOSE EXPERIENCED REGULAR OFFICERS WHO WERE ON DETACHED SERVICE OR IN ADMINISTRATIVE DUTIES OR THE AVAILABLE RESERVE PILOTS, WITH AIRLINE EXPERIENCE**

fied pilots. The men most likely to apply for active service were the newest and least experienced commercial pilots, who had been laid off by the airlines. It was reported, however, that the airlines threatened to blacklist reserve pilots if they took the Air Corps' offer. A mandatory call up would have required an act of Congress or a Presidential proclamation, an action that the Air Corps had considered recommending, but rejected.<sup>83</sup> By the end of April, the Air Corps had recalled fifty-two pilots, but only half had airline experience and those recalled represented a mere 10 percent of the air mail pilots. In general, these men proved a disappointment. Only thirteen of thirty-five recalled reservists in the Eastern Zone proved to be competent instrument fliers.<sup>84</sup> As a result only one-third of the Army pilots flying the air mail had logged more than 1,000 flying hours, and fewer than one-fifth had more than minimal night and instrument flying hours.<sup>85</sup>

Belatedly, the Air Corps took action that recognized the vulnerability of its inexperienced new pilots. On February 24, Foulois issued an order that pilots with less than two-years' experience would fly night runs only if the weather was excellent. The Air Corps took another step on March 10, requiring a minimum ceiling of 3,000 feet at all points along the route. (This proved impractical and was modified on March 25, to a day ceiling of 500 feet and night ceiling of 1,000 feet.) In early April, the Air Corps removed its least experienced pilots from air mail duty, specifically those who had earned their wings in 1933 and 1934. There was good reason for this action as the new men sustained the most accidents in the operation. Pilots who graduated in the years 1932-34 (those with two or less years of experience) were involved in 56 percent of the major accidents, 78 percent of the fatal accidents were connected with air mail operations, while those who graduated in 1933 (no graduates from 1934 were involved in accidents) accounted for 50 and 56 percent, respectively.<sup>86</sup>

A few anecdotes reveal the inexperience of the pilots that showed the slapdash nature of the initial operation. The pilot on the first air mail flight needed three tries and three aircraft to get aloft. Ten minutes later, he returned with a failed gyro compass and cockpit lights, and obtained a flashlight to read the instruments.<sup>87</sup> One pilot took the wrong radio leg and ended up in Buffalo, New York with the Cleveland, Ohio, mail. Another pilot took off and then radioed to ask where the mail was going, as the manifest was locked up with the mail. A third launched without his shipment of air mail.<sup>88</sup> On February 27, a mail plane nosed over, after landing at the Glendale, California, airport. The pilot blamed the lack of 250 pounds of ballast in the rear of the aircraft for the accident, but the Air Corps concluded he had landed fast and tail high and applied the brakes, while the tail was still in the air. To add "insult to (non-) injury," the pilot had landed at the wrong airport.<sup>89</sup> Hap Arnold related, with some caution, that six months after the operation ended, mechanics found a sack of mail tucked away in a former air mail aircraft they were overhauling.<sup>90</sup>

The weather, together with inadequate aircraft, lack of instruments and instrument training, unfamiliar conditions, and limited pilot experience, produced a potentially deadly combination. Billy Mitchell used attention-grabbing hyperbole, when he told a congressional committee, "The Army has forgotten how to fly."<sup>91</sup> More precisely, the Air Corps could not consistently and safely fly cross-country operations at night in bad weather.

## Conclusion

The Baker Committee, established to study and report on "the adequacy and efficiency" of the Air Corps "for the performance of its missions in peace and war," put the best face on the situation and arrived at a more positive conclusion.<sup>92</sup> It focused considerable attention during its deliberations on the air mail emergency, however, its final report barely mentioned it. The report did note that Army aircraft were not easily adaptable to air mail duties, the ground facilities were inadequate, the airmen had had insufficient training, and faced "wholly unprecedented weather." When the weather cleared after the initial period, the Air Corps did well. The report also asserted that the experience was "invaluable" in enabling the Air Corps to test men and equipment. The committee recommended that the Air Corps get more aircraft, more flying time, and increased training to permit "cross-country flights in all kinds of weather, by day and by night, by the use of instruments, and the radio beam, and to efficiently utilize all the types of communications equipment available."<sup>93</sup> Diplomatically, the report did not criticize any groups or individuals. In his annual report, Secretary of War George H. Dern followed this line and went somewhat further claiming that despite the "regrettable accidents," the Air Corps proved it could carry the mail.<sup>94</sup>

The air mail episode had little immediate, if



Political cartoonists had a field day over the air mail episode, a number featuring "the grim reaper" calling attention to Air Corps fatalities. *Philadelphia Inquirer*, Feb. 24, 1934.

any, impact on the airmen. To counter the poor image presented to the public in the air mail emergency, only a few weeks later the Air Corps showcased its new equipment and competence with great fanfare and little problems in a round trip flight of 8,300 miles to Alaska by ten of its new Martin B-10s. But throughout the remainder of the decade, the Air Corps struggled with limited budgets and, in its view, the backwardness of the General Staff. It was not until rearmament began in 1938, that improvement became apparent. And while the airmen acquired new aircraft, it made only scant progress in instrument flying. It entered World War II as a daylight, fair weather air force, and emerged from that war only slightly better off in that regard.

Although the Army airman's safety record improved, it was not until the late 1940s that the newly created USAF demonstrated a true all-weather capability. Just as the Air Corps was tested in 1934, the new Air Force was tested shortly after its inception. What a difference fifteen years made. During the Berlin Airlift, from June 1948 to September 1949, the airmen achieved a tremendous success by supplying food and coal to the blockaded city of over two million people, allowing it to survive and prosper, resulting in a clear and non-violent, western victory in the Cold War. Despite poor

weather, the airlift flyers posted a remarkably low accident record, lower than the entire USAF record in 1948 and 1949, and far below that of the air mail episode.<sup>95</sup> This is attributable to more and better aircraft, more experienced and better trained pilots, and the use of radar.

Over the short term, President Roosevelt and his Administration took a hammering over the air mail episode. It was the first challenge to the New Deal, the Administration's first miscue, an incident that dominated newspapers and the Congress for months. Nevertheless, there was little long term impact. Roosevelt was able to shift the onus of the situation onto the shoulders of others. He also skillfully overcame the popularity, credibility, and outspokenness of aviation giants Lindbergh and Rickenbacker, the ragged Air Corps performance, and the intense and critical press coverage, to emerge unscathed. Farley and Foulis, the scapegoats (or lightning rods, if you prefer) of the affair, were bruised, but kept their jobs, no one was fired or retired, and Hugo Black was rewarded with Roosevelt's first Supreme Court appointment. There was no lasting public reaction, for in the fall 1934 elections, the Democrats increased their already dominant majority.<sup>96</sup> And, just as the air mail operation had no political impact, it should be added that it has received at best scant attention in later accounts of the New Deal and the Air Corps.

Overall, the air mail crisis did not reflect well on any one aside from the airmen who gallantly performed their duties under very difficult conditions. Certainly, the disputed contracts revealed favoritism, high-handed decisions, if not illegalities, on the part of the government and some airlines. Further, the operation demonstrated that the Air Corps was unready for the task as it lacked suitable aircraft, modern night and bad weather equipment, and adequate training. It paid for these deficiencies with a loss of credibility, aircraft, and aircrew. On the individual level, the air mail incident helped advance the careers of two officers. Oscar Westover succeeded Benny Foulis as Chief of the Air Corps, when the latter unceremoniously retired in December 1935.<sup>97</sup> "Hap" Arnold, commander of the Western Air Mail Zone, who had led the Alaskan flight, replaced Westover as Chief of the Air Corps after his death in an aircraft accident in 1938, and commanded the Army Air Forces in World War II.

Any even-handed account of the episode must conclude that the two principals in the operation deserve criticism; criticism they have thus far been spared. President Roosevelt certainly suffered from some bad luck due to the severe weather and the Air Corps' fumbling that turned the air mail operation into a major problem and a public relations disaster. Nevertheless, the President made some decisions, contrary to the recommendations of his subordinates, that led to the mess. First, the very use of the Air Corps is open to question. Roosevelt could have annulled the contracts, made a public stand, and rebid the contracts with other operators, or, as it turned out in the end, he could have employed reorganized companies. Second, FDR erred in insisting

## GOING FOR A RIDE



Roosevelt and his New Deal took considerable criticism over the air mail episode, in both newspaper text and cartoons. Note the stereotyped befuddled New Dealer in academic regalia. *Chicago Daily Tribune*, Mar 19, 1934.

on turning the flying of the mails over to the Air Corps so quickly. This also proved disastrous, for had the operation been delayed a few months, into the spring of 1934, the horrible weather would have been avoided, the Air Corps would have had more time to prepare for the operation, and the airmen would have had more B-10s. Surely this would have improved performance. The affair showed Roosevelt in his typically bold fashion taking quick, unprecedented action, and when these decisions generated problems and resulted in severe criticism, he showed his ability to deflect that criticism away from himself. Clearly his actions and errors were major factors contributing to the failure that followed.

Air Corps chief Foulois also deserves criticism. His too quick acceptance of the task and his assurance to Post Office officials indicate a serious misjudgment of the requirements of the job and the capabilities of his command. Whether his decisions came from over-enthusiasm or ignorance, optimism or ambition, his actions set the episode in motion. At the very least, the Air Corps required more than ten days to prepare for the task. In addition, Foulois should have clearly, if not forcefully, pointed out the risks of the proposed operation to the civilian decision makers. For unlike the public and politicians, the airmen were well aware that in 1934 flying was a risky business under ordinary circumstances, and

that flying the mails with the pilots and equipment available, after minimal preparation, at night, in the winter was much more than ordinary circumstances. It should be noted that unlike later writers, a number of airmen have criticized Foulois' actions.<sup>98</sup>

The Air Corps also merits criticism. While it is true that the Air Corps had limited funding, two of its policies contributed to its poor performance in carrying the mail. First, the airmen neglected instrument flying even though the related technologies and techniques were commercially available. Instead of making the advanced equipment available to its airmen, the Air Corps stockpiled the instruments in warehouses for later use. There was no high-placed individual advocating instrument flying and the case for it was not heard at the top level of the Air Corps. Second, the Air Corps failed to fully utilize those experienced regular officers who were on detached service or in administrative duties or the available reserve pilots, with airline experience. This left the bulk of the flying duty to inexperienced pilots.

With little glory to celebrate, few accomplishments to laud, and yet a cost in lives and reputations, the air mail episode is not a bright spot in the history of the New Deal or the Air Corps. This probably explains why this affair, the most important in Army aviation history during the interwar years, has been relegated to the "trash can of history." It deserves closer examination, for it is a cautionary tale in "overreach" by both civilians and soldiers that demonstrates the consequences of haste, lack of preparation, and overconfidence. It also reveals more. The air mail experience highlights the state of aviation at this point, especially given the hazards of flight, the limitations imposed by bad weather and darkness, and the status of instrument flying. Aviation was in the midst of transitioning from World War I technology and visual flying to more advanced aircraft and instruments that would markedly improve aircraft performance and make flying safer and practical in essentially all weather conditions, day or night. The airlines were in the forefront of this transformation, while the Air Corps lagged behind. The air mail affair also provides a striking and critical assessment, a snapshot if you will, of Air Corps capabilities, and of its aircrews, aircraft, instruments, ground crews, and training at this time.

But history has been kind to the Air Corps and Foulois, the New Deal and Roosevelt regarding this incident. In short order, the Air Corps and the New Deal improved their performance and thus were able to push this affair into the haze of the past. Within a decade, the Air Corps grew to be the most powerful air force in the world and exerted a powerful influence on the conduct and outcome of World War II. Similarly, FDR faced and overcame greater challenges. In this way, the importance of the air mail operation was mitigated, if not negated, relegating it to a minor status. Therefore, the Air Corps and the 1934 air mail episode, if remembered, is seen, not as a blunder or mistake, but as a minor incident. Nevertheless, some called it a fiasco. ■

NOTES

1. C. V. Glines, "The DC-3," *Aviation History*, Nov. 1995, p. 43. Only one DC-1 was built that led to the DC-2 and later DC-3.
2. Edward Rickenbacker, *Rickenbacker* (Englewood Cliffs, N.J.: Prentice-Hall, 1967), p. 15.
3. Rickenbacker, *Rickenbacker*, 216-17; "Air-Mail Mark Set in the Final Flight," *New York Times*, Feb. 20, 1934, 17.
4. The 1934 Air Corps air mail story is covered in detail in one short popular book, a monograph, chapters in two scholarly works and one autobiography, and a number of articles of diverse quality. Norman Borden's *Air Mail Emergency: 1934* (Freeport, Me.: Bond Wheelwright, 1968) is brief (less than 143 pages of text), well illustrated, but lacks citations and a useful bibliography. A detailed and useful monograph is Paul Tillett's *The Army Flies the Mails*, The Inter University Case Program, 1955 USAF Historical Research Agency [HRA call number] 168.68-11A. Both Maurer's *Aviation in the U. S. Army 1919-1939* (Washington: Office of Air Force History, 1987) and John Shiner's *Foulois and the U. S. Army Air Corps, 1931-1935* (Washington: Office of Air Force History, 1983) include a solid, well researched, and valuable chapter on the subject. The Air Corps' chief's autobiography, Benjamin Foulois, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (N.Y.: McGraw-Hill, 1968) defends his position in an uncited chapter. The bulk of remaining books and most of the articles are cited in the following notes.
5. Donald Jackson, *Flying the Mail* (Alexandria, VA: Time-Life, 1982), 24-30, 90-91, 94, 159; Lauren Lyman, "Air Mail Returns to the Old Basis," *New York Times*, Feb. 11, 1934, 38.
6. One account claims that the carriers sent post cards to themselves that cost 9 cents and were paid twice that, and less likely, sent a cast iron stove as well! John Correll, "The Air Mail Fiasco," *Air Force Magazine*, Mar. 2008.
7. Final Report of War Department Special Committee on Army Air Corps, Jul. 18, 1934, 77 HRA 167.66-4. Hereafter cited as Baker Board Final Report.
8. "Briton Lauds U. S. Air Mail Service," *Washington Post*, Apr. 22, 1934, AS10.
9. Tillett, *The Army Flies the Mails*, 3, 4, 17.
10. Raymond Clapper, "Air-Mail Action Viewed as End of Subsidies for Favored Few," *Washington Post*, Feb. 11, 1934, 2.
11. Virginia Van Der Veer Hamilton, "Barnstorming the U. S. Mail," *American Heritage*, Aug. 1974, 34-35.
12. "Gave to Lindbergh \$250,000 in Stock," *New York Times*, Jan. 11, 1934, 1; "Brown is Pictured as Fusing Air Lines," *New York Times*, Jan. 12, 1934, 3; "Check Income Tax of Col. Lindbergh," *New York Times*, Jan. 13, 1934, 3; "Airway Officer Tells of Hiring Young Smoot," *St. Louis Dispatch*, Mar. 1, 1934, 2A.
13. Farley had discussed this with both the Attorney General and the President. It is difficult to believe that FDR did not make, or at least approve, of this move.
14. Thomas Spencer, "The Air Mail Controversy of 1934," *Mid-America*, vol. 62, 167, 172 n34; Tillett, *Army Flies the Mail*, 58; Edward Roddan, "U. S. May Takeover Air Mail Lines on Permanent Basis," *Seattle Post Intelligencer*, Feb. 11, 1934, 1.
15. James Farley, *Jim Farley's Story: The Roosevelt Years* (N.Y.: Whittlesey House, 1948), p. 46.
16. Shiner, *Foulois*, 127; U.S. House of Representatives, 73d Congress, 2d Session, Investigation of Profiteering In Military Aircraft, Under H. Res. 275, Report No. 2060, 15 Jun (calendar day Jun. 16), 1934, 11. Hereafter cited as Rogers' Committee Report.
17. Borden, *Air Mail Emergency 1934*, viii.
18. Foulois, *From the Wright Brothers*, 238.
19. Foulois, *From the Wright Brothers*, 236; U.S. Senate, Subcommittee on the Committee on Appropriations, War Department Appropriation Bill for 1935, Mar. 12, 1934, 46.
20. Henry Arnold, *Global Mission* (N.Y.: Harper and Brothers, 1949), 143; John Shiner, "General Benjamin Foulois and the 1934 Air Mail Disaster," *Aerospace Historian*, Dec. 1978, 223.
21. Rogers' Committee Report, 11; Russell Hoyt, Apr. 7, 1971, HRA Green Collection microfilm 43796; Frank Hunter, Jan. 3, 1970, HRA Green Collection microfilm 43796; Carl Spaatz, Aug. 8, 1969, HRA Green Collection microfilm 43796.
22. "Canceling Foreign Air Mail Pacts Considered," *St. Louis Dispatch*, Feb. 10, 1934, 2.
23. Foulois writes that after learning of the decision MacArthur told him, "You're on your own now, Foulois. Yell when you need help from me—and keep me informed. It's your ball game." Foulois, *From the Wright Brothers*, 239. MacArthur's unhappiness is related in both Correll, "Air Mail Fiasco" and Murray Green, "Benny Foulois' Air Corps Flies the Mail," *Retired Officer*, May 1987 but refuted in Shiner, "General Benjamin Foulois and the 1934 Air Mail Disaster," 227.
24. Shiner, *Foulois and the US Army Air Corps*, 132.
25. Spencer, "Air Mail Controversy of 1934," 165.
26. Leon Dure, "Roosevelt Cancels Air Mail Contracts, Army Planes to Fill Breach," *Washington Post*, Feb. 10, 1934, 1.
27. "Action on Air Mail Unfair, Lindbergh Tells President," *New York Times*, Feb. 12, 1934, 1; "14 Air-Mail Routes Laid Out for Army Against 26 Today," *New York Times*, Feb. 13, 1934, 1; "House in Uproar Over Lindbergh," *New York Times*, Feb. 14, 1934, 15; Carlisle Bargeron, "Along the Potomac," *Washington Post*, Feb. 15, 1934, 8; "Roosevelt Row with Lindbergh Stirs Congress," *Chicago Tribune*, Feb. 14, 1934, 3.
28. Mitchell denounced Lindbergh's position and predicted that the Air Corps operation would be a success. "Mitchell Sides with President on Lindbergh," *Washington Post*, 15 Feb 1934, 5. One other prominent aviator of the day, the now forgotten Clarence Chamberlin, also supported the administration. "Lindbergh to Give Mail Bill Opinion, But Bars Inquiry," *New York Times*, 16 Mar 1934, 1.
29. James Cooke, *Billy Mitchell* (Boulder, Colo.: Lynee Rienner, 2002), 262, 267-68; Alfred Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington, Ind.: Indiana University, 1975), 22-23, 125; Isaac Levine, *Mitchell: Pioneer of Air Power* (N.Y.: Duell, Sloan and Pearce, 1958), 392-95.
30. "Action on Air Mail Unfair, Lindbergh Tells President," 1. Later Lindy commented that the Air Corps had ten days to prepare for an operation that had taken the commercial airlines ten years to build. "Lindbergh Hits Air Mail Rules," *Wall Street Journal*, Mar. 17, 1934, 2.
31. "Mr Rogers is Unhappy Over the Air Mail Affair," *New York Times*, Feb. 12, 1934, 17.
32. "Army Fits Planes for Mail Service," *New York Times*, Feb. 13, 1934, 16. Others echoed these concerns. See "Army Fliers Ride Storm in a Test," *New York Times*, Feb. 14, 1934, 14 and "Official Fears Doom to Army Flying Mail," *Washington Post*, Feb. 14, 1934, 5.
33. The major went on to note the problems that the airmen faced mentioning the young, inexperienced pilots trained only in fair weather flying, inadequate aircraft, and unsatisfactory radios. "Army Ill-equipped For Mail Service, Officer Predicted," *San Diego Union*, Mar. 13, 1934, 5.
34. Lt Col Henry "Hap" Arnold would command the Western Zone, Lt Col Horace Hickam the Central Zone, and Major Byron Q. Jones the Eastern Zone.
35. Borden, *Air Mail Emergency*, 29.

36. Two of the zone commanders were troubled by their pilot's lack of experience. Hickam noted that one-third of the Air Corps pilots had less than 500 flying hours compared with 4,000 flying hours average for the commercial pilots while Arnold expressed concern over lack of experience as well as limited night flying. "Army Prepares to Carry Mail," *Seattle Post Intelligencer*, Feb. 15, 1934, 9; "Army Aviators Take Night Mail Schooling Here," *San Diego Union*, Feb. 15, 1934, 5; "Army Fliers Work Feverishly To Take Over U. S. Mail Routes," *San Diego Union*, Feb. 18, 1934, 2.
37. "Army Mail Chief Lands at Newark," *New York Times*, Feb. 16, 1934, 11.
38. All accidents mentioned are connected with the air mail operation, flying the mail as well as administrative, ferry, and training missions supporting the operation. Accident data is from an incomplete Wright Field series located in HRA 200.3912-1.
39. The pilot had but 436 flying hours and had earned his wings seven months earlier. The sole recommendation of the accident board was that the A-12 aircraft not be used in high altitude air mail service. The accident occurred at 8,000 feet.
40. This pilot had graduated from flying school the previous June and had logged a mere 367 flying hours.
41. "Army Air Mail Plans Flayed By Rickenbacker," *Seattle Post Intelligencer*, Feb. 18, 1934, 5.
42. "4 Army Mail Planes Crash; 2 Pilots Killed; 'Legalized Murder,' Congress Told," *Los Angeles Times*, Feb. 23, 1934. Also see "Army Aviator Killed Flying Mail in Storm," *Chicago Tribune*, Feb. 23, 1934, 4; "Army Mail Pilot is Killed in Ohio," *New York Times*, Feb. 23, 1934, 11; "Two Planes on Way to Washington; Mists Blind Airmen," *Washington Post*, Feb. 23, 1934, 1; "Not Fair to Army Pilots, Bereaved Mother Moans," *Philadelphia Inquirer*, Feb. 23, 1934, 1; "Flyer's Mother Learns of His Death From Newspaper," *St. Louis Dispatch*, Feb. 22, 1934, 2; "Widow and Mother of Flier Condemn Air Mail Orders," *Detroit News*, Feb. 23, 1934, 2; "4 Air Mail Crashes in Day, 2 Dead," *Cleveland Plain Dealer*, Feb. 23, 1934, 3; "Hazards Too Great Says Victim's Mother," *Seattle Post Intelligencer*, Feb. 23, 1934, 2. To add to the tragedy, at the Arlington Cemetery burial the dead pilot's coffin was switched with another aviator who died on the 22nd. "Coffins Switched at Arlington in Rites for Army Aviators," *Washington Post*, Mar. 4, 1934, 1.
43. Borden, *Air Mail Emergency*, 73-75.
44. USAF Flying Accident Safety Bulletin, 1959, 2 HRA K259.3-3 1959.
45. "Radio Address by Major General Benjamin D. Foulois, Chief of Army Air Corps, on the Subject of 'The Army and the Air Mail,' delivered over the Columbia Broadcasting System, Station WJSV, Alexandria, Virginia, at 10:30 P.M. February 27, 1934" HRA 168.3952-165.
46. "Army Crashes Blamed on Lack of Equipment," *Philadelphia Inquirer*, Feb. 24, 1934, 26.
47. "U. S. Fliers Preparing to Start Flying Mail Sunday," *Los Angeles Evening Herald Express*, Feb. 15, 1934, 5. "Says Army Faces 'Impossible Task,'" *New York Times*, Feb. 24, 1934, 6; "Plane Drops in Sea, Army Pilot Killed," *Chicago Tribune*, Feb. 24, 1934, 1.
48. Carroll Glines, "When the Air Corps Carried the Mail," *Air Force Magazine*, Jul. 1968, 87; Borden, *Air Mail Emergency*, 110; "President Orders the Army to Fly Mail Only On Routes That Don't Imperil Fliers," *New York Times*, Mar. 11, 1934, 1.
49. Felix Bruner, "Lindy Spurns Second Pleas to Aid Probe," *Washington Post*, Mar. 16, 1934, 2. Foulois had a hard-nosed attitude about the losses. He was quoted as saying "The fact that 10 fliers died in the course of their duty is all in the day's work." "Lindy Calls Airmail Canceling 'Violation of American Rights,'" *San Diego Union*, 1. Also see Foulois, *From the Wright Brothers*, 253-54; Glines, "When the Air Corps Carried the Mail," 87.
50. Borden, *Air Mail Emergency*, 128; Shiner, *Foulois*, 145.
51. Bruner, "Lindy Spurns Second Plea to Aid Probe," 1.
52. "Rickenbacker Hits Mail Policy, Flays 'Traitors,'" *Washington Post*, Mar. 18, 1934, 1.
53. "Demands Hearing on Lindbergh's Fitness as Reserve Officer," *Cleveland Plain Dealer*, Feb. 14, 1934, 1.
54. The papers surveyed in the largest cities were: *Chicago Tribune*, *Cleveland Plain Dealer*, *Detroit News*, *Los Angeles Evening Herald Express*, *New York Times*, *Philadelphia Inquirer*, *St. Louis Dispatch*, and papers in a number of smaller cities such as the *San Diego Union*, *Seattle Post Intelligencer*, and the *Washington Post*.
55. Arthur Krock, "Air Mail Brings Break in Luck of Roosevelt," *New York Times*, Feb. 25, 1934, sect. 4, 1; Arthur Krock, "Air-Mail Upheaval Fits Philosophy of New Deal," *New York Times*, Feb. 18, 1934, sect. 4, 1; "Air-Mail Change Stirs California," *New York Times*, Feb. 18, 1934, 6.
56. "Errors and Trials," *Washington Post*, Feb. 26, 1934, 6.
57. The only ranking airman that did not see a problem was Eastern Zone commander, B. Q. Jones. Report of the Eastern Zone, Army Air Corps Mail Operations, Feb. 10, 1934 to May 25, 1934, 28 HRA 248.211-69 (Feb.-May 1934, pt. 1). Hereafter cited as Jones Report. A summary of nationwide newspapers conducted in the Air Corps Headquarters concluded that "Sentiment [is] generally critical of [the] President's original cancellation and favorable to [the] Army." "Synopsis of Newspaper Reports Concerning Airmail Contracts and Army Carrying Mail, February 1 to March 15 Inclusive," 5 HRA 168.3952-165.
58. Hap Arnold to Mrs. Arnold, Mar. 12, 1934, HRA Green Collection, microfilm 43796.
59. Transcript of the Shorthand Report of Proceedings, Transactions and Testimony, Before the Special Committee on Army Air Corps and Air Mail, Apr. 24, 1934, 790 HRA 167.66-1. Hereafter cited as Baker Committee Transcript.
60. H. W. Bowman, Aug. 23, 1969 HRA Green Collection microfilm 43796.
61. Elliott Roosevelt, Jan. 15, 1972 HRA Green Collection microfilm 43796.
62. Criticism of the press can be found in: Baker Committee Transcripts, 600-01; Foulois, *From the Wright Brothers*, 246, 255; Van Der Veer Hamilton, "Barnstorming the U. S. Mail," 32, 36; Jackson, *Flying the Mail*, 163-64; David Mets, *Master of Air Power: General Carl A. Spaatz* (Novato, CA: Presidio, 1997), p. 93; Curtis LeMay, *Mission with LeMay* (Garden City, N.Y.: Doubleday, 1965), 104; DeWitt Copp, *A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power* (Garden City, N.Y.: Doubleday, 1980), 192, 203; Borden, *Air Mail Emergency*, 78, 126; Maurer, *Aviation in the U.S. Army*, 306; Carroll Glines, *The Saga of the Air Mail* (Princeton, N.J.: Van Norstrand, 1968), 133-34. A contrary view is in Ronald Rice, *The Politics of Air Power: From Confrontation to Cooperation in Army Aviation Civil-Military Relations* (Lincoln, Neb.: University of Nebraska, 2004), 122. My survey of the major newspapers of the seven largest U. S. cities supports the latter view. See note 54.
63. The major accident rate carrying the mail was 241 per 100,000 flying hours and 35 fatal accidents per 100,000 flying hours while the rate for the entire air mail operation, including the support, ferry, and training flights, was respectively 154 and 23. For all of 1934, the Air Corps' accident rates were respectively 110 and 9. USAF Flying Accident Safety Bulletin, 1959, 2; Baker Committee Final Report, 80. The incomplete Wright Field Accident reports lists 59 accidents while newspapers list as many as 8 more, while 66 is the number used in most secondary accounts.
64. During the period of the air mail operation, the airlines suffered five fatal accidents that killed 21 passengers and crew although presumably the airlines flew many more flying hours than did the Air Corps flying the mails. Planecrashinfo.com.
65. According to the *Washington Herald* (Feb. 24, 1934)

- eight commercial fliers were killed flying the mail in 1933. "Synopsis of Newspaper Reports," 5. Over the past five and a half years the death rate for commercial mail pilots was 12.4 per year. "Air Corps to Call Reserves For Mail," *New York Times*, Feb. 24, 1934, 6.
- 66.** USAF Flying Accident Safety Bulletin, 1959, 2; Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957* (Washington: GPO, 1961), 470.
- 67.** The Rickenbacker DC-1 flight averaged 190 mph compared with the Air Corps flight that averaged 195 mph. "Army Claims Record," *Chicago Tribune*, May. 8, 1934, 1; "Army's Task of Carrying Air Mail Ended with a Record Coast-to-Coast Flight," *New York Times*, May. 8, 1934, 1. The records were falling fast. On May 14, Jack Frye, who had flown with Rickenbacker on the February record breaking flight, piloted a Northrop Gamma with 355 pounds of mail from Los Angeles to New York in 11 hours and 31 minutes at an average speed of 227 mph. However, the fastest cross country flight up to this time was flown by Jimmy Hazlop in a racer in an elapsed time of 10 hours and 19 minutes. "Coast-to-Coast Air Mail Dash of 11 1/2 hours Sets New Mark," *Washington Post*, May 14, 1934, 1.
- 68.** As a result Transcontinental and Western Air became simply Trans World Airlines; American Airways, American Airlines; and United Aircraft, United Airlines. Tillet, *The Army Flies the Mail*, 60, 62.
- 69.** Tillet, *The Army Flies the Mail*, 69. Two other authors write that a mid-1941 ruling by the U. S. Court of Claims found there had been no fraud or collusion and that the charges against Brown were false. Borden, *Air Mail Emergency*, 143; Benjamin Lipsner, *The Airmail: Jennies to Jets* (Chicago: Wilcox and Follett, 1951), 253.
- 70.** "The Operation of the Air Mail," *Air Corps Newsletter*, Jan. 15, 1935, 15.
- 71.** Annual Report Secretary of the War, 1934, 4; Foulois, *From the Wright Brothers*, 244.
- 72.** Borden, *Air Corps Emergency*, 155-57, says 18.
- 73.** Baker Committee Transcript, 2115.
- 74.** Baker Committee Transcript, 504, 572, 637, 768, 793, 835; Borden, *Air Mail Emergency*, 32-37, 82; Jones Report, exhibit 11; 1934 Secretary of War Report, 4.
- 75.** David McIntosh, "The Evolution of Instrument Flying in the U. S. Army," Air Command and Staff College, 1988, 1, 18.
- 76.** Air Corps aircraft also lacked thermometers, deicing and anti-icing equipment, glare shields for night flying, and adequate maps. Foulois, *From the Wright Brothers*, 246; Maurer, *Aviation in the US Army*, 304, 309, 312; Shiner, *Foulois*, 131.
- 77.** In one case the new instruments, a directional gyro compass and artificial horizon, were hurriedly mounted ahead of the windshield of a Keystone bomber. In low temperatures they froze. Leonard Harman, Aug. 2, 1974, Green Collection microfilm 43796.
- 78.** Baker Committee Transcript, 249-51, 255, 505, 803, 1720; Jones Report, 42.
- 79.** Baker Committee Transcript, 320-21; McIntosh, "Evolution of Instrument Flying in the U.S. Army," 16, 20; Jones Report, 6. The Eastern Zone flew one third of the air mail flying hours. Unlike the other two zones, it produced an excellent, detailed account of its service. Therefore it is mentioned more than the other two zones.
- 80.** Jones Report, 9-11.
- 81.** Baker Committee Transcript, 580-81, 655, 699, 804, 836, 1752, 1905; "Ill-equipped Army Flying Mail Under Terrific Handicaps, Says Gen. Fechet," *Los Angeles Examiner*, Mar. 11, 1934.
- 82.** Baker Committee Transcript, 325-27, 335, 347, 3657-58; Jones Report, 6.
- 83.** Foulois did not believe that the Air Corps needed this help. Shiner, *Foulois*, 140-41; Charles Gross, National Guard Historian to author, Nov. 16, 2009.
- 84.** "Chief of Air Corps Reassures All Air Mail Pilots," Feb. 13, 1934, HRA 168.3952-165; Comments by Major General B. D. Foulois, U.S. Air Force, Retired on Case Study Entitled *The Army Flies the Mails*, Mar. 1954, 6 HRA 168.68-11B; Baker Committee Transcript, 343, 482; Eldon Downs, "Army and the Airmail—1934," *Airpower Historian*, Jan. 1962, 45, 48; Foulois, *From the Wright Brothers*, 252; Jones Report, 11, 26; "Army Mail Jobs Offered Pilots," *San Diego Union*, Feb. 28, 1934, 1; "Army Airmail Sabotage Rumored; Denied By Dern," *San Diego Union*, Mar. 3, 1934, 1.
- 85.** Only ten percent of the Army air mail pilots had more than 50 hours of night flying hours and only two had more than 50 hours instrument time. Baker Committee Final Report, 80; Baker Committee Transcript, 3804-05. Of the men piloting air mail aircraft that had fatal crashes, seven had 670 or fewer flying hours, one had 1,023 hours, another had 1,217 hours, and one is unknown.
- 86.** Borden, *Air Mail Emergency*, 84 says Feb. 26. Foulois, *From the Wright Brothers*, 245; Borden, *Air Mail Emergency*, 111, 128; "New Army Pilots Spared Mail Duty," *San Diego Union*, Apr. 7, 1934, 3. Borden writes that in March the Air Corps relieved all pilots with less than two years service from air mail duty. But accident records show that after Mar. 10, ten of the major and two of the fatal accidents were piloted by men with less than two years experience. Borden, *Air Mail Emergency*, 128; Wright Field Accident Reports.
- 87.** Lt. Robert Scott, Jun. 3, 1934, Scott Materials HRA 168.7444-1.
- 88.** Scott Materials, Jun. 3, 1934; Borden, *Air Mail Emergency*, 89.
- 89.** Wright Field Accident Report, Birrell Walsh, Feb. 27, 1934; "Mail Flyer Safe In Forced Landing," *Cleveland Plain Dealer*, Feb. 28, 1934, 1.
- 90.** Murray Green, Arnold mss, draft chap XXII, 12 HRA Green Collection, microfilm 43830.
- 91.** Don Ewing, "Support Given Bill to Allot Mail Flying," *Los Angeles Examiner*, Mar. 22, 1934.
- 92.** Baker Committee Final Report, 1.
- 93.** Baker Committee Final Report, 71, 40, 46, 48, 60, 67; The Baker Committee is best remembered for devoting considerable attention to the issue of separating the Air Corps from the Army and rejecting that proposal. General Foulois joined the majority in this recommendation, while civilian and Air Corps reservist Jimmy Doolittle filed the lone dissent that called for a separate air service, budget, and promotion list. Baker Committee Final Report, 63, 75.
- 94.** 1934 Secretary of War Report, 6.
- 95.** The two operations registered essentially the same number of major accidents and fatal accidents (air mail about 66 and 10 respectively and Berlin Airlift 70 and 11) however the Berlin airlifters logged more than 13 times the flying hours. R.E.G. Davies and John Provan, *Berlin Airlift: The Effort and Aircraft* (London: Airlife, 1998), 66; Roger Launius, "The Berlin Airlift: Constructive Air Power," *Air Power History*, Spring 1989, 17, 19; Bernard Nalty (ed.), *Winged Shield, Winged Sword: A History of the United States Air Force*, vol. I (Washington: USAF History and Museums Program, 1997), 430; USAF Flying Accident Bulletin, 1959, 2.
- 96.** The Democrats increased their margin in congress from 61 percent of the Senate and 71 percent of the House in 1933, to 71 and 74 percent respectively. "Politics: The 1934 Election" www.Encyclopedia.com.
- 97.** There were calls during the affair to fire Foulois, fueled mainly by his connection with non-competitive purchases of aircraft. In a rare unanimous action, on Jun. 15, 1934 the members of the Rogers' Committee called for the immediate relief of Foulois. Rogers' Committee Report, 14.
- 98.** Hoyt interview, Green Collection; Hunter interview, Green Collection; Spaatz interview, Green Collection; Westover's testimony at the Rogers' Committee hearings, Rogers' Committee Report, 11.

# Reflections on the





# e Balkan Air Wars



Benjamin S. Lambeth

(Overleaf) A 53rd Fighter Squadron F-15C Eagle aircraft returns to base after a mission during Operation Deny Flight, the enforcement of the United Nations-sanctioned no-fly zone over Bosnia and Herzegovina. (USAF photo.)

**AIR POWER'S ALL BUT SINGLE-HANDED ACHIEVEMENT IN DESERT STORM WAS A TRULY FIRST-OF-ITS-KIND/ EXPERIENCE—ONE THAT STRUCK MANY AS "THE FIRST TIME IN HISTORY THAT A FIELD ARMY WAS DEFEATED BY AIR POWER"**

**M**uch insight can be gained by looking back at the Balkan air wars of the 1990s, with a view toward considering how they have affected our use of air power ever since.<sup>1</sup> Those three wars began with the badly-mishandled Operation Deny Flight against the Bosnian Serbs in 1993 and 1994 during the ugliest years of the Yugoslav civil war that had erupted three years before. Viewed in hindsight, it was a feckless and ineffective first attempt by NATO to stop the rampant killing that had been unleashed by the end of Tito's rule and the ensuing resurfacing of all the ethnic hatreds that had simmered in the Balkans ever since the reign of Vlad the Impaler during the Middle Ages.

After Deny Flight came NATO's more successful effort to suppress continued Serbian excesses in Bosnia-Herzegovina. That second endeavor, called Operation Deliberate Force, lasted eleven days in September 1995. In that more determined campaign, led by the air commander for NATO's Allied Forces South (AFSOUTH), U.S. Air Force then-Lt. Gen. Michael Ryan, NATO finally got it right in the alliance's first-ever high-intensity air operation, which also was the largest combat action to have taken place in Europe since the end of World War II.

Finally came the capstone seventy-eight-day Operation Allied Force against Serbian strongman Slobodan Milosevic between late March and early June 1999, in which NATO, under the military leadership of the Supreme Allied Commander for Europe (SACEUR) at the time, U.S. Army Gen. Wesley Clark, began by making all of the same mistakes with regard to restrained targeting and concern over "proportionality" that had rendered Deny Flight such an abject waste of effort and that looked, for way too many weeks, like the start of a replay of Vietnam. Fortunately, once Milosevic's ethnic cleansing surge left NATO with no choice but to approve an expanded bombing campaign, Allied Force ended up being the first successful use of coercive air power on a major scale since Operation Desert Storm against Saddam Hussein's Iraq eight years before. Yet that undertaking, by a defensive military alliance that had lost its main mission when the Soviet Union collapsed less than a decade before and that often was divided nineteen different ways over strategy and goals, was not over until it was over. It nearly ended in failure for NATO.

Viewed in hindsight, one of the main contributions of Allied Force, although no one could have anticipated it at the time, was to spotlight some key aspects of an emerging American way of war that have recurred in every subsequent major use of air power by the United States since the first bomb landed in Afghanistan on the night of October 7, 2001, when the nation's military response to the terrorist attacks of September 11, 2001, first got under way. For that reason alone, it is worth reflecting on those themes from the Balkan air campaigns of the 1990s that have so heavily influenced how the nation has conducted aerial warfare ever since.

### **The Recent Sweep of American Air Warfare**

Looking back over the recent history of American air power employment starting with Operation Desert Storm, when the air component of U.S. Central Command (CENTCOM) played such a key role in driving Iraq's forces out of Kuwait in 1991, most of air power's detractors tended to dismiss that achievement as a one-off anomaly. It was, they said, the clear and open desert environment, or the unusual vulnerability of Iraq's armored formations to precision attack from the air, or any number of other unique circumstances that somehow made the first Gulf War an exception to the general rule that it takes "boots on the ground" in large numbers, and ultimately in head-to-head combat, to defeat well-endowed enemies in high-intensity warfare.

Even to observers with no particular stake in the perennial interservice battles over roles and resources, that viewpoint seemed reasonable enough at a time when air power's all but single-handed achievement in Desert Storm was a truly first-of-its-kind /experience—one that struck many as "the first time in history that a field army was defeated by air power," as the campaign was described shortly afterwards by the Air Force Chief of Staff at the time, Gen. Merrill A. "Tony" McPeak.<sup>2</sup> Yet in the twelve years that followed Desert Storm, the world saw air power prevail time and time again in a succession of four otherwise completely different circumstances of combat, starting with NATO's two major air wars in the Balkans in 1995 and 1999 and followed, in turn, by the major combat phases of Operations Enduring Freedom and Iraqi Freedom in 2001 and 2003.

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The B-2 stealth bomber. Used for the first time in combat during Allied Force after having been in line service since 1993, a USAF B-2 prepares to take on fuel midway across the Atlantic Ocean during one of two preplanned tanker hookups en route to target. The low-observable bomber, operating nonstop from its home base in the United States, was the first allied aircraft to penetrate Serb defenses on opening night.

**AIR POWER'S UNBROKEN RECORD OF ACHIEVEMENT BETWEEN 1991 AND 2003, ... [WAS] THE BOW WAVE OF A FUNDAMENTALLY NEW AMERICAN APPROACH TO FORCE EMPLOYMENT**

True enough, in none of those five cases did the air contribution produce the successful outcome all by itself, even though in the two Balkan wars it came very close, in that air power in both instances was the only force element that figured directly in determining the campaign's result. One can definitely say, however, that in each of those five examples, air power was the principal enabler of all else that followed by way of a successful outcome at such a low cost in friendly lives lost on the ground. To put it differently, one can now safely say that air power's unbroken record of achievement between 1991 and 2003, when the three-week major combat phase of Iraqi Freedom finally toppled Saddam Hussein's regime, was *not* a succession of atypical anomalies, but rather the bow wave of a fundamentally new American approach to force employment.

Indeed, that pattern had become so established by the time the major combat phase of Iraqi Freedom ended in April 2003, as to suggest that air power had finally become the tool of first choice by combatant commanders, at least with respect to defeating massed enemy ground forces in high-intensity warfare. Even before the terrorist attacks of September 11, 2001, defense analyst Loren Thompson went so far as to conclude that by the time the administration of President George W. Bush took office in January 2001, "not only did it look like air power could win wars, but there was a new crop of policymakers ready to embrace that message."<sup>3</sup>

Unfortunately for that gathering view, the end of the three-week major combat phase of Iraqi Freedom ushered in a new era of warfare for the United States in not just one way but *two*. At the same time it confirmed the nation's final mastery of high-intensity conventional warfare, it also brought us face to face, for the first time since Vietnam, with a resurgent mode of asymmetric warfare that now seems likely to be the defining feature of global conflict for at least the next decade of the twenty-first century. In that new mode of conflict, air power—or at least precision kinetic air power—has proven less

obviously relevant and consistently decisive as it was during the five wars that preceded it, starting with Desert Storm. One might add here that the Israelis were likewise driven to this same conclusion by their more recent exposure to this new form of hybrid warfare by stateless movements like Hezbollah and Hamas in their operations in Lebanon in July and August 2006 and, more recently, in the Gaza Strip in December 2008 and January 2009. Both operations saw the effective use of Israel's air power, but they also resulted in inconclusive outcomes for Israel because of the resilient and elusive nature of the opposition in each case.

Still in all, looking back over the three Balkan air wars of the 1990s, if we include Operation Deny Flight mainly as a reminder of how *not* to do it, and assessing those wars in light of all that has occurred since by way of American air power use offers us a timely opportunity to extract some of the key unifying themes from those wars that have since become recurrent considerations affecting the nation's employment of air power, at least for the near-term future—considerations having to do with such matters as gradualism, proportionality, noncombatant immunity, collateral-damage avoidance, the need for legitimacy, and what has been called the "CNN [Cable News Network] factor" and the battle of narratives in determining who wins and who loses in the end. That being so, there is value to be had from reviewing those aspects of Deny Flight, Deliberate Force, and Allied Force that warrant our remembering most as milestones for understanding how the use of transformed American air power evolved throughout the first decade of the twenty-first century.

### The Misstep of Deny Flight

To begin with Deny Flight, this was when the nation learned, for the first time, what it truly meant to try to conduct an air operation by committee with eighteen other allies and with the United Nations (UN) setting all the rules. After the outstanding performance by CENTCOM's air component in Desert Storm in 1991—a performance that, for the first time, set the example for what air power can contribute to a joint campaign when used to the limit of its potential by commanders who know what they are doing—Deny Flight will forever stand out as a prototypical retrograde experience. Viewed in hindsight, it was an almost disastrous flirtation with failure over a course of two years of ineffectuality that was reminiscent of every bad strategy choice the United States government ever made in Vietnam. It also offered an effective reminder that however capable American air power may have become in principle since Desert Storm, there is nothing preordained about its ability to produce winning results.

That operation, which began in April 1993, entailed around-the-clock fighter patrols to enforce a no-fly zone over Bosnia, to maintain an air "presence" in the region, and to provide on-call support in response to the killing of innocents that the Balkan civil war had come to represent ever since it was



Heavy players. A venerable USAF B-52H bomber stands parked on the ramp at RAF Fairford, England, as a successor-generation B-1B takes off on a mission to deliver as many as 80 500-lb Mk 82 bombs or 30 CBU-87 cluster bomb units against enemy barracks and other area targets. An AGM-86C CALCM fired from standoff range by a B-52 was the first allied weapon to be launched in the war.

**THE AMERICANS HAD FORGOTTEN NOT ONLY THEIR MOST CARDINAL ERRORS MADE IN VIETNAM, BUT ALSO THE AIR POWER SUCCESSES THAT THEY HAD RACKED UP LATER IN DESERT STORM**

first rekindled in 1991 after more than three generations of having been suppressed under the thumb of Tito's iron rule. Those half-hearted sorties, with pilots mainly spending hours boring holes in the sky to no effect, were a complete waste of effort with regard to any tangible gain they produced on the ground.

To provide just two examples, throughout the two years in which those many sorties were conducted, out of more than a hundred requests for close air support (CAS) "presence" that were received and forwarded up the line by AFSOUTH's Combined Air Operations Center (CAOC) in Vicenza, Italy, only *four* CAS attacks were ultimately approved by the UN and carried out. There also were a grand total of just *five* precision air strikes, one of which caused only a temporary shutdown of a runway at the Udbina airfield in late 1994, in response to a launching of Serb fighters from that base against Croats living in a designated UN safe area. Apart from those events, as far as any practical effect the operation had on Serbian conduct was concerned, Deny Flight was nothing but a costly exercise in converting jet fuel into noise.

At the time, General Ryan, the air commander for AFSOUTH, would only say politely that Deny Flight represented "a use of air power in a way we don't normally use air power," which offered an unmistakable tacit feel for what he *really* thought about it.<sup>4</sup> As just one more example, there was a UN ban against NATO attacks on any Serbian aircraft or air defenses located at Udbina. Moreover, the UN would only allow NATO fighters to attack Serbian surface-to-air missile (SAM) and anti-aircraft artillery (AAA) sites that had actually fired on NATO aircraft. As a result of such constraints, a British Sea Harrier got shot down within the first week of Deny Flight by an enemy SA-7 infrared-guided SAM during the jet's *third* pass in a vain attempt to disable the *one* offending Serbian tank that UN authorities had approved for attack. Because of that restriction, the jet's mission was ineffective, its tactics were predictable, and the manner in which it was used cut against the grain of every common-sense rule of force employment that was consistently honored throughout Desert

Storm.

The next year, in a similar situation, a U.S. Air Force F-16 flown by Captain Scott O'Grady got shot down by a Serbian SA-6 radar-guided SAM while orbiting in a totally predictable racetrack pattern southwest of Banja Luka. (Fortunately, the pilot ejected safely, evaded his Serbian pursuers, and was recovered six days later by a heroic combat search and rescue effort.) An RC-135 Rivet Joint electronic intelligence aircraft that was operating nearby picked up real-time indications of an active SA-6 radar within range of the targeted aircraft, but it was unable to communicate that awareness in adequate time to prevent the shutdown.

From that point onward, in a classic case of shutting the barn door after the horse was gone, all Deny Flight missions were accompanied by defense-suppression escort aircraft. That did not alter the fact, however, that the O'Grady shutdown was a major embarrassment for the United States, as well as a significant setback for air power's reputation for effectiveness that had been so rightfully earned in Desert Storm. For the remainder of that operation, the pattern was consistently one of NATO's leaders pounding the table, wagging their fingers, and sternly threatening "NATO air strikes for sure the next time" in response to any future act of Serbian aggression, only to be followed in each case of Serbian aggression in total defiance by backpedalling and inaction by the UN. That pattern of conduct telegraphed a message to both the Serbs and all others watching that basically said that the Americans had forgotten not only their most cardinal errors made in Vietnam, but also the air power successes that they had racked up later in Desert Storm.

### Getting it Right in Deliberate Force

In sharp contrast, Deliberate Force in 1995 was a different story in every respect.<sup>5</sup> For that reason, it can be remembered as the first successful Balkan air campaign. What prompted that operation was a shelling attack against Sarajevo on August 28 that resulted in thirty-eight civilians being killed. Once Bosnian Serb complicity was established without question, the operation kicked off two days later and continued for eleven days against Serbian targets in Bosnia-Herzegovina. Its intent was to deter any further Serbian attacks against UN safe areas and to retaliate as necessary for any attacks until they stopped.

This was the first serious test for American air power since the Cold War ended. It began at 0200 on the morning of August 30, 1995, with forty-three NATO strike aircraft attacking Serbian command and control nodes, SAM and AAA sites, and their supporting radars. The strike force consisted mostly of Air Force fighters operating out of Aviano Air Base, Italy, with some additional Navy and Marine Corps strikers from the aircraft carrier USS *Theodore Roosevelt* that was operating on station in the Adriatic Sea. Their assigned mission was to take down the Bosnian Serb integrated air defense system (IADS) completely.

Safe recovery. An F-117 stealth attack aircraft lands at Aviano Air Base, Italy, just after sunrise following a night mission into the most heavily defended portions of Serbia. During the air war's fourth night, an F-117 was downed just northwest of Belgrade, most likely by a lucky SA-3 shot, in the first-ever loss of a stealth aircraft in combat. (The pilot was promptly retrieved by CSAR forces.)

**THIS WAS THE FIRST WAR EVER IN WHICH COLLATERAL DAMAGE AVOIDANCE WAS THE MOST OVERRIDING LEADERSHIP CONCERN**



That IADS, it bears noting, was not a rag-tag threat by any means. On the contrary, it was a full-up Soviet-style echeloned air defense consisting of concentrated and internettted AAA and radar-guided SA-2s and SA-6s run by totally professional air defenders. It was deemed sufficiently threatening, in fact, that the CAOC had wanted at first to use F-117 stealth attack aircraft out of Aviano against the most demanding targets, a request that the Italian government disapproved at the last minute out of understandable pique over having been excluded from the so-called NATO Contact Group, despite all that Italy had done to make its bases available to NATO.

This was the first war ever in which collateral-damage avoidance was the most overriding leadership concern, since even one errant bomb that landed on a private residence or schoolhouse and caused civilian casualties would have put an immediate end to the UN's confidence in NATO. For that reason, each and every weapon aimpoint was vetted personally by General Ryan in the CAOC, and uncommonly close attention was paid during each approved target attack to such matters as run-in heading, time of day or night, aircraft system limitations, and possible secondary effects.

In the end, this unprecedented attention to tactical detail paid off. There were no complaints raised about civilian fatalities, and no collateral damage to speak of was inflicted. The only NATO aircraft lost during the operation was a French Mirage 2000 fighter that got shot down by an SA-7 while the aircraft was operating at low altitude on the first day. Looking back in hindsight, one can fairly characterize Deliberate Force as a success by just about any measure one can think of. After four years of horrific killing in the Yugoslav civil war, it paved the way for the Dayton Accords and produced a truce in Bosnia that has persisted ever since. True enough, it was not just air power, but a number of other factors as well, that ultimately drove the Bosnian Serbs to the negotiating table in Dayton. Those factors included, most notably, the threat of an eventual Croatian

ground attack and mounting diplomatic sanctions. Still in all, then-Assistant Secretary of State Richard Holbrooke, who engineered the Dayton Accords, later wrote in his memoirs that the air campaign had made a "huge difference" in helping to bring about the eventual outcome.<sup>6</sup>

#### **Allied Force as a Near Miss**

Fast forwarding to four years later, the third Balkan air war (if one includes Deny Flight as the first) lasted seventy-eight days in the form of Operation Allied Force for Kosovo. As noted above, this one, at least for a time, appeared as though it might end up being another debacle along the lines of Deny Flight, only on a grander scale. In the end, fortunately, that campaign made for the third time in a row after Desert Storm and Deliberate Force when air power proved pivotal, if not decisive, in determining a regional combat outcome during the 1990s. Yet what began as a hopeful effort to get Milosevic to stop his human rights abuses against the Kosovar Albanians ended up, for a depressingly long time, looking like yet another exercise in futility suggesting that those principals most responsible for the operation, both in NATO and in the administration of President Bill Clinton, had forgotten all that they had learned—or should have learned—not only from Desert Storm and Deliberate Force, but also from Vietnam. It was definitely a step backwards in combat efficiency when compared to Desert Storm.

As for the way in which the campaign unfolded, after repeatedly unsuccessful diplomatic efforts by NATO to get Milosevic to desist from his human-rights abuses, the United States presented NATO with a three-phase bombing plan that expressly ruled out any commitment of ground troops. The idea was to start out with a counter-IADS offensive against Serbia's air defenses. If that failed to produce the desired result, a second phase would entail expanded bombing of other military targets, but only below the 44th parallel that lay well to the

**EVEN ONE ERRANT BOMB ... WOULD HAVE PUT AN IMMEDIATE END TO THE UN'S CONFIDENCE IN NATO**

Burner takeoff. An F-15E from the 494th Fighter Squadron home-based at RAF Lakenheath, England, clears the runway at Aviano in full afterburner, with CBU-87 cluster munitions shown mounted on its aftmost semiconformal fuselage weapons stations. Eventually, some F-15E strike sorties into Serbia and Kosovo were flown nonstop to target and back directly from Lakenheath.



**WE WILL MOST LIKELY NEVER KNOW FOR SURE WHAT DYNAMIC FINALLY CAUSED MILOSEVIC TO THROW IN THE TOWEL**

south of Belgrade. Only in the third and last phase would the bombing, if still unproductive, go after military targets north of the 44th parallel and against infrastructure targets in Belgrade. There was no fourth phase in the plan that NATO considered.

The American plan offered to NATO assumed from the start that the air campaign would be a symbolic operation only. Furthermore, General Clark and NATO's leaders genuinely expected that Milosevic would settle quickly. They proved to be completely wrong in that judgment. After a week of desultory bombing that was showing no sign whatever of having any effect on Serbian behavior, there began to be the first rumblings heard from some Americans that the U.S. government's having ruled out a ground option from the very start may not have been such a bright idea after all.

At that point, against a still-totally unsupportive Clinton administration on the home front, Clark began pressing his desire to generate a serious allied ground threat, making the point that even his own CAOC principals believed it unnatural for airmen to fight a ground war without a ground component. Finally, after the fourth week got under way, NATO's targeting began focusing not only on Serbian troops operating in Kosovo, but also on what NATO had come to portray as the four pillars of Milosevic's power—the political machine, the media, the security forces, and the economic system.

During the campaign's last two weeks, the bombing also, for the first time, went after Serbia's electrical power, a target set that CENTCOM had attacked in Baghdad from the first days of Desert Storm onward. In the end, Milosevic agreed to allow a presence of 50,000 international peacekeepers with sweeping occupation powers on the ground in Kosovo in return for an end to NATO's bombing of his most valued assets in Belgrade. He also agreed to withdraw his occupation forces from Kosovo.

Numerous efforts were made by Western analysts in the immediate aftermath to determine why Milosevic relented in the end.<sup>7</sup> The Kosovo experi-

ence also provided ample grist afterwards for the "air power vs. boots on the ground" mill, with airmen insisting that it had been an air-only war from start to finish (which remains true, strictly speaking), and with land-warfare advocates countering that it was really the implied threat of an eventual NATO ground invasion (something that no one can prove one way or the other) that finally got Milosevic to accede to NATO's demands.

After all is said and done, we will most likely *never* know for sure what dynamic finally caused Milosevic to throw in the towel, least of all because he is no longer alive to tell us were he to be so inclined. As a first approximation, however, one can safely say that he probably opted, in the end, to accept NATO's conditions for ending the bombing, whatever his other possible reasons for conceding may have been, simply out of a rational determination that he had nothing to gain by holding out any longer. Even in the continued absence of a NATO ground invasion, he knew for certain that the air war could have continued for many more weeks, and perhaps even indefinitely. On the other hand, giving in to NATO's demands while there was still time allowed him to exploit the face-saving opportunity to claim that his government would retain formal sovereignty over Kosovo, irrespective of whatever *de facto* autonomy might be granted to its Albanian majority. To that extent, two conclusions can be drawn from Operation Allied Force with absolute confidence. First, allied air power was the only force element maintained by NATO that actually figured in the campaign from start to finish, making for a legitimate first in the annals of air warfare. Second, and equally important, the coercive use of air power by NATO did work in the end, even though we may never be able to say for sure exactly *how* it worked.

### **Achievements and Problems in the Kosovo Campaign**

There were other takeaways worth remember-



Final checks. Two Block 40 F-16CGs from the 555th Fighter Squadron at Aviano taxi into the arming area just short of the runway for one last look by maintenance technicians before taking off on a day mission to drop 500-lb GBU-12 laser-guided bombs on "flex" targets of opportunity in Serbia or Kosovo, as directed by airborne FACs and as approved, in some cases, by the CAOC.

**AS BEFORE IN DELIBERATE FORCE, THERE ALSO WAS A REQUIREMENT TO AVOID NON-COMBATANT FATALITIES THAT WAS MORE DEMANDING**

ing as well when it comes to understanding the significance of Operation Allied Force in the history of air warfare. To begin with, it was the first war in which all three currently-deployed American heavy bomber types saw use in combat. On top of that, the campaign's first night saw the long-awaited combat debut of the B-2 stealth bomber, which flew nonstop to its targets in Serbia directly from Whiteman AFB, Missouri on thirty-hour round-trip missions, with each sortie delivering up to sixteen 2,000-pound satellite-aided GBU-31 Joint Direct Attack Munitions (JDAMs) in *their* first combat use. To the surprise of many, the B-2 turned out to have been the most consistently effective performer throughout the entire campaign. In only fifty missions all told, it flew fewer than one percent of the total number of combat sorties. Yet it dropped a full third of all the precision munitions that were expended over the course of the seventy-eight days of bombing. Also, more than in any previous American operation, remotely-piloted aircraft were used extensively for intelligence, surveillance and reconnaissance in Allied Force, with the Air Force's then still brand-new RQ-1 Predators operating sometimes as low as 1,000 feet above ground level to seek out mobile SAMs and to designate any observed enemy troop concentrations for prompt attack by A-10s and F-16s.

There were also, of course, numerous problems associated with the conduct of Allied Force, as one would naturally expect in any such unnatural campaign by committee. For example, because of the absence of a NATO ground threat, NATO analysts were unable, by the end of the campaign's second week, to confirm the destruction of even a single Serbian tank, due to the success of the Serbian Army in dispersing and concealing its armor. That fact plainly underscored the limits of conducting an air war from above 15,000 feet to avoid losing a fighter and possibly its crew to infrared SAMs and AAA and with no allied ground presence to force Serbian commanders to concentrate their troops in self-defense, thereby making them more easily targetable by NATO air power. Instead, the Serbian Army was at complete liberty to hide its tanks and armored personnel carriers and to go about terror-

izing the Kosovar Albanians with trucks full of soldiers working their way through villages in just ones and twos.

Moreover, the counter-IADS campaign did not go as nearly well as expected, and certainly in no way like the remarkably effective air offensive against the Iraqi IADS in Desert Storm, because the more disciplined Serb air defenders kept their mobile SAMs concealed with their radars not emitting, thus making NATO's effort to beat them down a continuing cat-and-mouse game to the very end. The persistence of a credible SAM threat throughout Allied Force meant that NATO had to devote a larger than usual number of strike sorties (around thirty-five percent, all told) to the defense-suppression mission to ensure their ability to operate in hostile airspace.

In addition, Allied Force became the first (and fortunately only) instance thus far of an American stealth platform's having been lost to hostile fire when an F-117 was downed on the fourth night for a multitude of possible reasons, none ever publicly confirmed by the Air Force, that had required its pilot to operate in compact airspace in ways that may have compromised his aircraft's stealth characteristics. Most notable about that incident was the cost that it exacted with regard to losing not just a valuable aircraft, but a combat asset that, up to that point, had been thought to be untouchable, offering it a quality of presumed invincibility that gave American air power a psychological edge that has since been lost forever. It also offered a sobering reminder, which the Air Force's B-2 and F-22 communities have not forgotten since, that stealth equals low observability *plus tactics*. (Fortunately, the pilot ejected safely and was recovered within hours.)

As before in Deliberate Force, there also was a requirement to avoid noncombatant fatalities that was more demanding during NATO's air war for Kosovo than in any previous campaign involving U.S. forces. That requirement truly showed how far air power had come since World War II, when producing civilian casualties in the largest possible number was the overarching *goal* of American and British bombing strategy. Today, now that air power has become so consistently precise and discriminating, airmen can routinely expect to be held accountable in ways that were never so binding on them before. The fact that this rule has now come to be so prepossessing for Western (and also Israeli) airmen is a resounding testament to the extent to which modern air power has become a victim of its own success.

During Desert Storm, for those whose predominant mental image of air power's target-attack capability was rooted in their recollections of the Vietnam experience, the video clips shown on television every night of allied fighter cockpit displays portraying laser-guided bombs homing unerringly down the air shafts of hardened enemy bunkers had people saying: "Air power can now do *that*?" Today, almost two decades later, and precisely *because* of that unerring accuracy, such exacting performance



On the cat. A U.S. Navy F/A-18C assigned to Fighter/Attack Squadron 15 is readied for a catapult launch for an Allied Force day combat mission from the aircraft carrier USS *Theodore Roosevelt* cruising on station in the Adriatic Sea. On April 15, carrier-based F/A-18s figured prominently in a major CAOC-directed air strike on the Serb air base at Podgorica, Montenegro.

**IF ALL ONE WISHES TO DO IS TO "SEND A MESSAGE," CALL WESTERN UNION**

has become the norm to be *expected*—and not just as a desirable goal to be striven for, but as an iron-clad criterion for almost *any* weapon release.

The downside of this development is that once zero collateral damage becomes accepted as a precondition of strategy, air power gets set up to be judged by all but impossibly high standards. When that happens, which is where the United States has been for at least the past decade, *any* collateral damage incurred during the course of an air offensive, as has been the case all too often in Afghanistan since 2008, when allied air attacks ramped up dramatically in response to escalated Taliban aggressiveness, becomes grist for domestic critics and for the enemy's propaganda mill. Even *one* civilian now inadvertently killed in an allied engagement with enemy forces typically becomes front-page news above the fold line. Worse yet, it also prompts ever more outraged complaints against the alleged excesses of "undiscriminating air power"—even though the vast majority of those civilian casualties are actually caused by errant friendly *ground* fire, as well as by sometimes not errant but intentional *enemy* ground fire.

After the Kosovo campaign of 1999, defense analyst Anthony Cordesman rightly noted how the characterization of precision bombing as "surgical" overlooks the fact that patients still die on the operating table from time to time.<sup>8</sup> All the same, there were numerous occasions during the Kosovo campaign when allied sorties were cancelled outright and when planned attacks were aborted at the last minute because targets could not be positively identified or because the assessed danger of collateral damage was too high. The unintended bombing of the Chinese embassy in Belgrade was only the most flagrant example of how just a single instance of that sort can backfire completely on the most disciplined use of force and undo, in one stroke, all of its many positive achievements. That incident was reminiscent of the earlier bombing of the Al Firdos bunker by an F-117 during Desert Storm, which inadvertently killed more than a hundred Iraqi women and children who, also unbeknown to U.S. intelligence, had been sleeping inside in the false belief that it offered them shelter. Both cases caused a huge uproar and

dramatized all too well how such intelligence errors can produce often show-stopping results.

Finally with regard to Allied Force, there were the overwhelming deficiencies in NATO's strategy choice that accounted for the bombing's desultory start and its later slowness to register combat effects that made a difference. Those deficiencies made for a resounding regression in the use of air power by the United States and NATO after its all but flawless performance in Desert Storm.

With the singular exception of Deliberate Force in 1995, a trend toward what had come to be called "cruise missile diplomacy" had taken root during the Clinton administration's tenure in office, thanks to the ability of unmanned cruise missiles to conduct target attacks without risking the lives of American aircrews. That trend made for a situation that inspired Eliot Cohen, who had previously led the U.S. Air Force's Gulf War Air Power Survey, to equate the seductiveness of that easy approach with teenage romance in its propensity to give political leaders a sense of "gratification without commitment."<sup>9</sup> It also prompted skeptics to counter, sensibly enough, that if all one wishes to do is to "send a message," call Western Union.

Before long, the maddening tentativeness of the campaign's initial weeks led senior airmen to complain openly about what they saw as the embarrassingly slow pace of the bombing. One Air Force general frankly called it a "disgrace," adding that "the tempo [was] so disgustingly slow as to make us look inept."<sup>10</sup> Another, harking back to the concept of operations developed for Desert Storm by Col. John Warden, said: "This isn't Instant Thunder; it's more like Constant Drizzle."<sup>11</sup> Still another faulted the war by committee that NATO was conducting by declaring that "the hammer is working just fine. But when the blueprints have to undergo revision each day by nineteen separate architects before it's determined where to drive the nail, one has to wonder what the final product is going to look like."<sup>12</sup>

It was not, moreover, just a matter of maintaining unity of effort in an offensive being conducted by a nineteen-member alliance. As the campaign unfolded, it became apparent that even the American command structure was deeply divided over the most appropriate targeting strategy. General Clark had assumed at first that Milosevic would surrender within three days after the bombing began. Once that proved erroneous, NATO then scrambled for an alternative strategy in a way that soon pitted Clark against his air component commander, U.S. Air Force Lt. Gen. Michael Short, over where the main focus of the air attacks should be directed. Clark, a ground commander, naturally wanted to go after fielded Serbian forces, even though they were largely untargetable because of their dispersion and concealment in small groups. Short, for his part, believed that going after the Third Army in Kosovo entailed a waste of effort because Serbia's fielded forces were not a center of gravity for Milosevic. He argued for ignoring those forces and for concentrating instead on "strategic" targets in downtown Belgrade.



SAM hunter. This Block 50 F-16CJ in the arming area at Aviano shows an AGM-88 high-speed antiradiation missile (HARM) mounted on the left intermediate wing weapons station, with an AIM-9M air-to-air missile on the outboard station and an AIM-120 AMRAAM on the wingtip missile rail. The USAF's F-16CJ inventory was stressed to the limit to meet the SEAD demand of Allied Force.



**GEN. JOHN JUMPER ... SPOKE OUT OPENLY AGAINST ... "CAMPAIGNING BY TARGET-LIST MANAGEMENT," IN WHICH CAOC PLANNERS SIMPLY TOOK A LIST OF APPROVED TARGETS AND ENSURED THAT THEY WERE DULY SERVICED FROM ONE DAY TO THE NEXT**

Naturally, because he wielded the greater leverage as SACEUR, Clark's view prevailed throughout most of the campaign, giving rise to what critics later called "ad hoc targeting." Most of the attack planning was not effects-based, but rather involved simply parceling out sorties by target category, without much thought given to how attacking a particular target might contribute toward achieving the campaign's larger goals. Gen. John Jumper, the commander of U.S. Air Forces in Europe at the time, spoke out openly against this practice that he called "campaigning by target-list management," in which CAOC planners simply took a list of approved targets and ensured that they were duly serviced from one day to the next.

### **The Determining Impact of Personality**

Especially when contrasted to the earlier experience of Desert Storm, NATO's air war for Kosovo really drove home, for the first time, the overwhelming impact of senior leadership personalities in determining the course and outcome of a campaign. If one looks at the wiring diagram for each of the five major wars that the United States has fought from Desert Storm to Iraqi Freedom, one will note that the boxes and lines were exactly the same in each case. In each, there was a president, a secretary of defense, a secretary of state, a chairman of the Joint Chiefs of Staff (JCS), a regional combatant commander, and the latter's subordinate component commanders for land, sea, and air. Yet also in each case (with the conspicuous exception of Operations Enduring Freedom and Iraqi Freedom, which occurred just a year apart and which accordingly saw mostly the same players in both), there were different names in those boxes. And the unique chemistry that ensued from that unique set of personal interactions had a uniquely determining influence on the way that events played out in each campaign's execution.

For example, in the case of Desert Storm, there

was, arguably, a strong Washington team consisting principally of President George H. W. Bush, Secretary of Defense Dick Cheney, and JCS chairman Gen. Colin Powell. In the war zone, there also was a joint force commander, Gen. H. Norman Schwarzkopf, who well understood at some level that he was going to be judged sternly by history and that he would accordingly need to do his best to rise above his parochial instincts as a ground-forces general and do whatever might be most appropriate toward ensuring the best possible outcome. By the same token, there was a seasoned air component commander, Air Force then-Lt. Gen. Charles Horner, who could explain convincingly to a theater commander reared in a two-dimensional operational world all his life what his air assets could do to help win the war most quickly and efficiently if used to their fullest potential. Moreover, he was able to explain that point of view in a way in which Schwarzkopf could be persuaded, in the end, to accept not only as intuitively reasonable, but also as his own chosen approach.

In total contrast, one arguably had in the case of Allied Force a weaker Washington team whose principals in the White House and Pentagon wanted as little as possible to do with the impending campaign. One also had had a theater commander who was of a completely different mindset than his superiors in Washington with respect to preferred strategy and who was physically separated by 600 miles from his subordinate air component commander, the latter of whom held both Clark and his views in open disdain. As a result, the de facto air component commander through the back channel, to all intents and purposes, often ended up being General Jumper because he was a fellow four-star in Clark's area of responsibility who presumably could be implored to lean on the three-star air commander in Vicenza and persuade him to do Clark's bidding. It should hardly be surprising, in light of these contrasts, that Desert Storm and Allied Force should sit at such opposite ends of the

Combat support. U.S. Navy and Marine Corps EA-6B Prowler electronic warfare aircraft, like this one shown taxiing for takeoff at Aviano, provided extensive and indispensable standoff jamming of enemy early warning and IADS fire-control radars to help ensure unmolested allied strike operations, including B-2 and F-117 stealth operations, against the most heavily defended enemy targets in Serbia.



**GENERAL SHORT, FOR HIS PART, WAS ADAMANT IN SAYING AFTERWARDS THAT "AS AN AIRMAN, I'D HAVE DONE THIS A WHOLE LOT DIFFERENTLY THAN I WAS ALLOWED TO DO IT. WE COULD HAVE DONE THIS DIFFERENTLY. WE SHOULD HAVE DONE THIS DIFFERENTLY"**

spectrum as case studies in joint warfare and the use of air power in it.

#### Allied Force as it Really Was

As for the most important "bottom lines" to be remembered from the Kosovo campaign, it is essential, first of all, to understand that campaign for what it actually entailed. Immediately after Milosevic caved in to NATO's demands on Day 78, the first response on the part of many was to portray Allied Force as a watershed achievement for air power. Those so responding included many of the same reporters who, for the preceding eleven weeks, had doubted in print whether NATO would *ever* prevail without a ground invasion. It was not, moreover, just reporters who were so quick to offer that assessment. Not long after the ceasefire went into effect, President Clinton himself said that the outcome "proved that a sustained air campaign, under the right conditions, can stop an army on the ground."<sup>13</sup> He put forward that assessment, moreover, with regard to a situation that had looked only days before as though it was headed nowhere but to a deadlock or to an allied ground involvement of some sort if NATO was really intent on winning. Even General Short, the air component commander, was convinced until the campaign's final days that at its then-existing level of effort, NATO was never going to break Milosevic's will.

Viewed with the benefit of hindsight, it is hard to accept the rosy view laid out above as the right way to remember Allied Force. To begin with, it is not the assessment that was aired afterwards by the most credible professionals who knew best what they were talking about. To offer just a few examples, after the campaign was over, the former AFSOUTH commander during Deliberate Force, U.S. Navy Adm. Leighton Smith, said outright that the Kosovo experience should be remembered as "possibly the worst way we employed our military forces in history."<sup>14</sup> Former Air Force Chief of Staff Gen. Ronald Fogleman likewise said that "just

because it comes out reasonably well, at least in the eyes of the administration, doesn't mean it was conducted properly. The application of air power was flawed."<sup>15</sup> General Short, for his part, was adamant in saying afterwards that "as an airman, I'd have done this a whole lot differently than I was allowed to do it. We could have done this differently. We *should* have done this differently."<sup>16</sup>

At bottom, for all the professionalism of NATO's aircrews and their performance throughout the 78 days of fighting, Allied Force should *not* be remembered as a stellar example of air power's having been put to its best use. For openers, the campaign could have failed miserably in the pursuit of its declared goals. NATO's incremental attack plan, until the very end, risked squandering nearly all of the capital that had steadily accrued in air power's bank account ever since the air component's banner performance in Desert Storm eight years before. That near-fatal flaw in the campaign's starting strategy was captured perfectly in General Clark's early comment that NATO would "grind away" at Milosevic rather than hammer him hard and with determination from the very outset.<sup>17</sup> By being so hesitant in the campaign's opening moves, NATO's leaders overlooked the fact that air power's strengths can also become weaknesses if it is used in a manner that undermines its credibility.

More to the point, the opportunity cost of starting the campaign so anemically and without any accompanying ground threat made for a failure by NATO to exploit air power's shock potential to its fullest extent. It also encouraged Serbian ground forces to disperse and hide while they had time. Perhaps most important, until Milosevic made what turned out to have been the colossal error in judgment on his part in accelerating his ethnic cleansing campaign and forcing NATO to raise the ante in order to retain its own credibility, the underachievement of the bombing effort until its last week *almost* convinced him that he could hunker down and ride out the campaign. On this point, Adm. James Ellis, the AFSOUTH commander headquar-



(Top) Task Force Hawk. A U.S. Army AH-64 Apache attack helicopter flares for landing at the Rinas airport near Tirana, Albania, following a ferry flight from its home base at Illersheim, Germany. In all, 24 Apaches were dispatched to Albania with the intent to be used in Operation Allied Force, but none saw combat in the end because of concerns for the aircraft's prospects for survival in hostile airspace.

(Above) Cramped spaces. This USAF C-17 parked on the narrow ramp at Rinas airport, incapable of accommodating the larger C-5, was one of many such aircraft which provided dedicated mobility service to TF Hawk. In more than 500 direct-delivery lift sorties altogether, C-17s moved 200,000-plus short tons of equipment and supplies to support the Army's deployment within the span of just a month.

tered in Naples, Italy, who oversaw the U.S. portion of the campaign, was uncompromising when he declared afterwards that luck had been the main factor in accounting for the campaign's success. In his words, NATO's leaders "called this one absolutely wrong" through their failure to anticipate and hedge against what might occur once their strategy of hope drew a blank.<sup>18</sup>

As for the matter of the missing ground threat, there is a plausible case to be made that there would never have been any need for NATO actually to *commit* troops to combat. A serious forward deployment of troops along the Albanian and Macedonian borders on the scale of Operation Desert Shield in the Persian Gulf in 1990, however, would definitely have forced a reaction on the part of the Serbian Third Army and made it more easily targetable from the air. It also might have deterred, or at least lessened, the extent of their atrocities against the Kosovar Albanians by giving them something more ominous to worry about. Either way, it could have helped bring about a quicker end to the campaign.

To the extent that this may be true, it suggests an important corrective to the endless argument over the relative merits of air power vs. "boots on the ground." Even though the campaign reconfirmed that friendly ground troops no longer necessarily need to be committed to early combat in wars

against organized and mechanized opponents, it also reconfirmed that air power, in many cases, cannot perform to its fullest potential without the presence of a credible ground component to any campaign strategy. General McPeak keyed on this important point when he wrote afterwards that the *a priori* rejection of any ground commitment by NATO from the campaign's very start had been "a major blunder." He said: "I know of no airman—not a single one—who welcomed this development. Nobody said, 'Hey, finally, our own private war. Just what we've always wanted!'.... Signaling to Belgrade our unwillingness to fight on the ground made it less likely that the bombing would succeed," thereby forcing NATO to explore the limits of air power's coercive potential when working all alone.<sup>19</sup>

### The Balkan Campaigns as a Crucible for the Future

It remains now to consider how the Balkan air campaigns of the 1990s relate to the nation's subsequent air warfare experiences since the start of the twenty-first century. First and foremost, one can fairly suggest that the manner in which the major combat phase of Iraqi Freedom was planned by the second Bush administration without a sufficient prior investment of resources to hedge against the "hereafter" that the United States inherited once Saddam Hussein's regime was toppled bore out, yet again, a major teaching of NATO's air war for Kosovo two years earlier. That teaching, simply put, is that however capable the nation's air weapon may have become in principle since Desert Storm, it can never be more effective than the strategy it is intended to support. That may not be a particularly profound observation, but it offers an important reminder that Americans should never lose sight of.

Other themes also emanated from our Balkan experiences in the 1990s that have since become almost mandatory checklist items for all American campaign planning that has occurred ever since. The first of these themes is that the United States will henceforth always, as a rule, conduct combat operations in a coalition context for the "safety in numbers" that having legitimizing allies naturally allows for. Another, which one might call "the dark side of technology," has emanated from the American defense establishment's ever-more-fused command-and-control network from top to bottom and from the increasing availability, as a natural result, of a common operating picture for all, from the highest leaders to those in direct contact with the enemy at the tactical level.

In this latter respect, as in the case of Kosovo, Operation Enduring Freedom entailed command elements that were widely dispersed geographically. In the case of the Afghan war of late 2001 and early 2002, however, the situation was further aggravated by the fact that the geographic separation this time spanned eight time zones. The six months of major combat in Operation Enduring Freedom saw not only centralized planning, but also a degree of cen-



Night refueling. A USAF F-15C air combat fighter, shown here through a night-vision lens, moves into the precontact position to take on fuel from a KC-135 tanker before resuming its station to provide offensive counterair protection for attacking NATO strikers. With a loss of six MiGs in aerial combat encounters the first week, Serb fighters rarely rose thereafter to challenge NATO's control of the air.

(Below) Help from an ally. One of 18 CF-18 Hornet multirole fighters deployed in support of Allied Force from Canadian Forces Base Cold Lake, Alberta, Canada, is parked in front of a hardened aircraft shelter at Aviano. The aircraft mounts two 500-lb GBU-12 laser-guided bombs on the outboard wing pylons and two AIM-9M air-to-air missiles on the wingtip rails.



tralized execution that was a first in American experience. Greatly-expanded communications connectivity allowed unprecedented real-time situation awareness at all levels. It also allowed sensor-to-shooter links to be shortened, in some cases, from hours to single-digit minutes.

At the same time, however, it resulted in an oversubscribed target-approval process that lengthened rather than compressed the kill chain. As a result, the human factor became the main impediment to more effective time-critical targeting. With respect to this trend, while he was still the commander of Sixteenth Air Force in 2002, then-Lt. Gen. Ronald Keys frankly described the rear-area monitoring of live Predator video feed from Afghanistan by senior leaders sitting back in Tampa and Washington as “cyber-rubbernecking.”<sup>20</sup> General Keys agreed that improved communications lashups have indeed now allowed senior leaders to ask important questions more easily and more quickly. He countered, however, with the important reminder that providing good answers still takes time.

On careful reflection, one can make a cogent case that this kind of hands-on involvement by senior leaders at the tactical level is entirely appropriate up to a point. After all, as in the case of Operation Allied Force, the goals of Enduring Freedom demanded close top-down supervision and control at all levels if the perceived legitimacy of the operation was to be preserved. Otherwise, just a single untoward instance of collateral damage to non-combatant life and property could have caused the campaign effort to fail disastrously.

The ever-closer communications connectivity that allowed that hands-on involvement, however, cut in two directions. Although it was helpful—and even indispensable—up to a point, it also produced gridlock at times, by encouraging senior leaders and their staffs to try to micromanage the fighting. Those leaders often intervened at the tactical level not because circumstances required it, but simply because they *could*. As a result, some important fleeting targets were allowed to get away.

It is often said that an abiding hallmark of American air power's effectiveness is the overarching credo of centralized control and decentralized execution. However, should an American pilot find himself five seconds before his planned weapon release with his joint force commander or, worse yet, the Secretary of Defense figuratively sitting in his back seat and second-guessing his every move, that is *not* decentralized execution. Similarly, should that same pilot find himself five seconds before weapon release with the uppermost concern in his mind being what his lawyer's telephone number is back at home in case his bomb lands short, that is not a comforting place for him to be either. Both hypothetical examples dramatize the extent to which the growing criticality of collateral-damage avoidance at every cost and then some has come to affect the way in which the United States will conduct air campaigns in the future.

Some airmen argued afterwards that the collateral-damage constraints in Operation Enduring Freedom, as in Operation Allied Force two years before, severely hampered the effectiveness of combat operations. For example, on the first night of the Afghan war in October 2001, those constraints may—just may—have helped enable the escape of Taliban leader Mullah Omar while senior leaders at CENTCOM debated whether or not the CAOC's requested attack lay within the accepted bounds of the laws of armed conflict.

On the other hand, there was abundant good reason for the Bush administration's aversion to collateral damage in principle. In its campaign against the Taliban and against al Qaeda elements in Afghanistan, the administration's determination to avoid collateral damage indeed became, at times, more important than mission success. But then again, mission success depended in considerable part on avoiding collateral damage. In sum, the issues of centralized execution and collateral-damage avoidance, both of which the United States really encountered for the first time during the Balkan air wars of the 1990s, remain prepossessing



Splash one Fulcrum. A team of U.S. military personnel examines the remains of an enemy MiG-29 fighter (NATO code name Fulcrum) which was shot down in Bosnian airspace by a USAF F-15C on the afternoon of March 26, 1999. The downed aircraft, which appeared to have strayed from its planned course due to a loss of situation awareness by its pilot, brought to five the number of MiG-29s destroyed in early Allied Force air encounters.

challenges for American warfighters. Those challenges will not be going away any time soon.

To conclude, it is worth noting that the many instructive lessons that emanated from the Balkan air wars of the 1990s may not necessarily apply to all players in all circumstances. To cite just one example, the Israel Defense Forces (IDF) “went to school” on the Kosovo air war in a major way in that campaign’s early aftermath, and that case study has figured prominently in their professional military education curriculum ever since. It also has been said that the IDF’s Chief of Staff during Israel’s war against Hezbollah in 2006, Lt. Gen. Dan

Halutz, who also, by the way, was the first air force general ever to command the Israeli armed forces, was consciously guided by the Kosovo precedent as he sought to apply a concept of operations that would somehow leverage precision standoff firepower, rather than ground maneuver, as the centerpiece of his strategy so as to avoid incurring intolerable friendly losses by committing to a major push into Lebanon on the ground.

Yet, insofar as they internalized lessons drawn from the precedent of Kosovo, the IDF may have overlooked or excessively downplayed the possibility that those lessons may not necessarily have been directly transferable to Israel. After all, Allied Force was a campaign conducted by a superpower half a globe away that was not subject to the same time and financial constraints as was Israel and, more important, whose civilians’ lives were not disrupted on a daily basis by relentless rocket fire into a home front that was coextensive with the war front while the military was attacking the enemy from the air over a course of many weeks. That point of contrast should serve as a useful reminder that although the many precedents established in the two successful Balkan air campaigns of the 1990s marked the way ahead for American air warfare during the first decade of the twenty-first century, they may, in the end, not always apply to our friends and allies around the world who face different challenges emanating from their unique security circumstances. ■

## NOTES

1. This article is a development of remarks prepared for delivery as the morning keynote address to a symposium on “The Balkans Air Campaigns in the 1990s and Their Influence since 2001” sponsored by the Air Force Historical Foundation, Arlington, Virginia, Oct. 8, 2009. Any views expressed in it are solely those of the author and do not necessarily reflect the views of the RAND Corporation or of any of its U.S. governmental or private research sponsors.
2. Gen. Merrill A. McPeak, USAF (Ret.), *Selected Works 1990-1994*, Maxwell AFB, Ala., Air University Press, Aug. 1995, p. 47.
3. Richard Whittle, “U.S. Air Force Loses Out in Iraq War,” *Christian Science Monitor*, Dec. 19, 2006.
4. Lt. Gen. Michael E. Ryan, USAF, “Deliberate Force: The Bosnian Air Campaign—Lessons for the Future,” briefing at a conference on “Canada’s Air Power in the New Millennium” sponsored by the Canadian Forces Air Command, Winnipeg, Manitoba, Canada, Jul. 30, 1997.
5. For the best assessment of it by far, see the outstanding collection of essays edited by Col. Robert C. Owen, USAF, *Deliberate Force: A Case Study in Effective Air Campaigning*, Maxwell AFB, Ala., Air University Press, 1999.
6. Richard Holbrooke, *To End a War*, New York, Random House, 1998, p. 104.
7. See Stephen T. Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, Santa Monica, Calif., RAND Corporation, MR-1351-AF, 2001 and Benjamin S. Lambeth, *NATO’s Air War for Kosovo: A Strategic and Operational Assessment*, Santa Monica, Calif., RAND Corporation, MG-1365-AF, 2001, pp. 67-86.
8. Anthony H. Cordesman, “The Lessons and Non-

- Lessons of the Air and Missile War in Kosovo,” unpublished draft, Center for Strategic and International Studies, Washington, D.C., Jul. 20, 1999.
9. Eliot A. Cohen, “The Mystique of U.S. Air Power,” *Foreign Affairs*, January/February 1994, p. 109.
10. Rowan Scarborough, “U.S. Pilots Call NATO Targeting a ‘Disgrace,’” *Washington Times*, Apr. 1, 1999.
11. John D. Morrocco, David Fulghum, and Robert Wall, “Weather, Weapons Dearth Slow NATO Strikes,” *Aviation Week and Space Technology*, Apr. 5, 1999, p. 26.
12. William M. Arkin, “Inside the Air Force, Officers Are Frustrated about the Air War,” *Washington Post*, Apr. 25, 1999.
13. Pat Towell, “Lawmakers Urge Armed Forces to Focus on High-Tech Future,” *Congressional Quarterly Weekly*, Jun. 26, 1999, p. 1564.
14. “Reporters’ Notebook,” *Defense Week*, Jul. 19, 1999, p. 4.
15. William Drozdiak, “Allies Need Upgrade, General Says,” *Washington Post*, Jun. 20, 1999.
16. *Ibid.*
17. Eric Schmitt, “Weak Serb Defense Puzzles NATO,” *New York Times*, Mar. 26, 1999.
18. Briefing by Adm. James O. Ellis, USN, commander in chief, U. S. Naval Forces, Europe, and commander, Allied Forces Southern Europe and Joint Task Force Noble Anvil, no date given.
19. Gen. Merrill A. McPeak, USAF (Ret.), “The Kosovo Result: The Facts Speak for Themselves,” *Armed Forces Journal International*, Sep. 1999, p. 64.
20. Conversation with Lt. Gen. Ronald Keys, USAF, Commander, Allied Air Forces South, at Maxwell AFB, Alabama, Aug. 14, 2002.

# EDITOR'S NOTE

## “History Makes You Smart— Heritage Makes You Proud”<sup>1</sup>

Jacob Neufeld

### In the Beginning

When the Army Air Forces (AAF) Historical Division was established in 1942, Brig. Gen. Laurence S. Kuter, Air Staff Director of Administration, wrote, “It is important that our history be recorded while it is hot and that personnel be selected and an agency set up for a clear historian’s job without axe to grind or defense to prepare.”<sup>2</sup>

During World War II, many academic historians joined the Army Air Forces (AAF) as officers or enlisted men and women to practice their profession. These military historians produced myriad studies, monographs, and reports, many of which were archived in-house because of security classification. The massive demobilization at war’s end returned most of the historians to their campuses, leaving the services struggling to complete the historians’ work. It took years, in some cases decades, to finish the projects. Not until 1958 did the United States Air Force publish the seventh (and last) volume of its centerpiece history of the AAF in World War II, better known as “Craven and Cate.”<sup>3</sup> The U.S. Army pressed on for decades to complete its superb multi-volume World War II “Green Books” series, so-called because of the color of the book covers. The U.S. Navy commissioned the famed historian Samuel E. Morison, of Harvard, to join the Navy and write the service’s wartime history.

Over the next decade, the Air Force history program underwent numerous name changes, was subordinated to several functional entities (operations, intelligence, and information), and shuttled between Washington, D.C. and Maxwell Air Force Base, Alabama. None of the arrangements worked.

THE ABILITY  
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IMPARTIALLY  
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IS THE TRUE  
MEASURE OF  
THE HISTORICAL  
PROFESSIONAL.

DR. JEFFREY  
J. CLARKE,  
CHIEF OF  
MILITARY  
HISTORY

### The Office of Air Force History (AFCHO)

It did not help that some academic historians sneered at the concept of contemporary history, asserting that a complete record can emerge only after the passage of “adequate” time. In Great Britain, for example, “modern history” refers to events that transpired a few hundred years ago. However, a few visionary military and civilian leaders believed in the value of studying and applying contemporary military history. Air force historians were granted extraordinary access to “key decisions, processes, and actions,” and could thereby identify, collect, preserve, and interpret important documents and to interview key military leaders and officials as events unfolded. The result of applying history would be a management and decision-making tool. Commanders at all levels could learn about the major decisions their predecessors made and, more importantly, *why* they made them. Thus, although history rarely repeated itself, Air Force leaders who consulted history would be better equipped to confront the challenges facing them by becoming “history minded.”

Consequently, in January 1969,—a high-level panel of Air Force civilian and military leaders, and scholars, chaired by Dr. I.B. Holley, a highly-respected history professor at Duke University, and Reserve brigadier general—recommended the establishment of a separate Office of Air Force History (AFCHO), reporting to the USAF Chief of Staff. Its mission was to publish books, studies, and reports on the role of the United States Air Force and air power in national security. Topics included wartime operations, policies, technology, doctrine, and organization. The AFCHO period, from the early 1970s until 1991 witnessed a profusion of books, studies, and monographic literature

### U.S. Air Force History and Museums Program

The second major reorganization of Air Force history took place at the end of the Cold War, in 1991, and resulted in the separation of AFCHO’s policy-making and production elements. In 2003, Col. C. R. “Dick” Anderegg, USAF (Ret.), the Director of Air Force History and Museums Policies and Programs, since 2003, oversees a worldwide program of historians and curators. He rightly believes that his is one of the most interesting and challenging jobs in the United States Air Force.

The mission of the History and Museums Program (AFHMP) is to enhance the Air Force’s institutional memory, preserve its heritage, promote a better understanding of the present, and plan for the future. The program helps the Air Force to formulate strategy, plans, and doctrine; to conduct operations; and to educate students at professional military schools.

*Mr. Neufeld is the editor of Air Power History.*



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THUCYDIDES,  
THE FIFTH  
CENTURY  
GREEK HIS-  
TORIAN AND  
GENERAL**

### **Field History**

Historians serve worldwide in the command sections and on the staffs of major command headquarters, centers, and wings (the Air Force’s basic war-fighting echelon). Since nearly seventy percent of the historians hold advanced degrees in history, they are well-qualified to conduct research and write periodic histories.

Air Force historians are also assigned to serve with their combat units—a practice that began in World War II and has continued through Desert Storm in 1991, and beyond. Traditionally, however, the historians were “blue suiters,” that is, either Air Force officers or enlisted personnel. In January 2005, the Air Force deployed its first civilian historian and since 2006, all have been civilians. At the start of this year, fourteen historians served in each Air Expeditionary Force (AEF) rotation to cover the many bases in the AOR participating in Operation Iraqi Freedom and Operation Enduring Freedom. Appointments to AEF’s are for four months, and historians are instructed to gather data, conduct interviews with key personnel, collect significant documents, and write a narrative history of their unit’s activities.

Historians provide yet another service by advising their commanders on all matters concerning lineage and honors to help determine a unit’s priority for activation or inactivation. A point value formula—devised during the tenure of Gen. Merrill

A. “Tony” McPeak, as Chief of Staff—is used to determine the highest rated units. This formula assigns points for longevity, awards, victories, and so on. Legacy points go to select units with significant historical records, such as the Tuskegee Airmen and the Round the World airlift squadron. Pre-World War II units are heavily weighted, as are Vietnam War and Korean War combat units.

### **The Air Force Historical Research Agency**

All of the documents and transcripts, deemed by the historians to have intrinsic historical value, are attached to the unit history and then archived at the Air Force Historical Research Agency (AFHRA) at Maxwell Air Force Base, Alabama. Air University students and other qualified researchers may be granted permission to study these documents. The AFHRA stores and manages some 150 million pages of documents, which date from the beginning of military air power in the U.S. in 1907. Additionally, historians and archivists at the AFHRA research and compile the invaluable series of Air Force reference volumes and select monographs. And they answer a huge number of inquiries for information.

Besides serving as the USAF’s documents repository, the AFHRA also holds the lineage and honors for all Air Force organizations at squadron level and above. Contact: [www.afhra.af.mil](http://www.afhra.af.mil)



**The Air Force Historical Studies Office (AFHSO)**

The Air Force Historical Studies Office (AFHSO), located at Bolling AFB, Washington, D.C., prepares a variety of historical products, including chronologies, monographs, special studies, and books as time, staffing, and budgets permit. The location of the AFHSO in the National Capital Region (NCR) affords historians unique access to a great many historical research facilities, most notably the Pentagon, the National Archives, and the Library of Congress.

Last year, Mr. Anderegg assigned the AFHSO to prepare a seven-volume history called *Airmen at War*. In broad outline this is a major undertaking, that when completed, will have great enduring value to all airmen in operations and headquarters staffs:

- Volume I *Operation Desert Storm to 9/11*
- Volume II *Operation Noble Eagle*
- Volume III *Operation Enduring Freedom*
- Volume IV *Operation Iraqi Freedom*
- Volume V *Master Chronology*
- Volume VI *Statistical Digest*
- Volume VII *Extracts from 2,200 interviews with Airmen*

Besides publishing historical studies, the AFHSO responds to about 3,500 inquiries, including 300 from Congress, annually. Contact: [www.airforcehistory.hq.af.mil](http://www.airforcehistory.hq.af.mil)





### The Air Force Museums System

Mr. Anderegg provides guidance to the Air Force Heritage Program, formerly known as the museum

system. Atop this pyramid is the National Museum of the United States Air Force (NMUSAF). Located just outside the gate at Wright-Patterson Air Force Base, near Dayton, Ohio, it is the oldest and largest military aviation museum in the world, welcoming 1.3 million visitors annually. In 2009, the education program served more than 145,000 student, youth and family programs. The NMUSAF has 400 aerospace vehicles on display and possesses approximately 76,400 artifacts (at NMUSAF only) or nearly 126,000 (total artifacts both at NMUSAF and on-loan to all sites), ranging from the uniform worn by the late General Bernard A. Schriever to the famed World War II B-17 bomber Memphis Belle. In addition, the Museum has signed more than 700 loan agreements with national and international museums and organizations worldwide.

There are twelve other USAF museums, with the Air Force Space and Missile Museum at Patrick AFB, Florida, being the smallest. Generally the museums are accessible to the public and free of charge to visitors, Contact: [www.nationalmuseum.af.mil](http://www.nationalmuseum.af.mil). ■



1. This title comes from a recent power point briefing by Dick Anderegg.
2. Craven, Wesley F. and James L. Cate *The Army Air Forces in World War II: Vol I: Plans and Early Operations, January 1939 to August 1942*, p. ix.
3. Edited by James Lea Cate, a professor at the University of Chicago, and Wesley F. Craven, who taught at New York University in 1948, when Volume I appears, and at Princeton University in 1958, when volume seven was published.

**If Mahan Ran the Great Pacific War: An Analysis Of World War II Naval Strategy.** By John A. Adams. Bloomington: Indiana University Press, 2008. Maps. Bibliography. Index. Pp. 458. \$34.95 ISBN: 978-0-253-35105-0

This is a truly outstanding book. Although Adams indicates it is an analysis of naval strategy of World War II in the Pacific, the lessons he presents apply to more than purely naval warfare. He discusses the main strategy to be pursued in war and the allocation of resources to that end, along with a refusal to expend resources on relatively minor strategic objectives, no matter how tempting they may seem.

Alfred Thayer Mahan was a Naval War College instructor in the 1880s and 1890s. His lectures on strategy were the basis of *The Influence of Sea Power on History*, a seminal work illustrating how great nations depended upon sea power to build and maintain empires. Mahan's main focus was on the line-of-battle ships. Given the technology of his day, Mahan posited the concept that a nation with a powerful Navy could impose an economically crippling blockade on its foe, while hunting down and destroying enemy seaborne commerce. His ideas "struck fire" in several nations, most prominently the UK, U.S., Germany, and Japan. The airplane and the submarine had not yet entered the picture.

The U.S. and Imperial Japanese navies both studied Mahan and his concepts. They also viewed each other as natural rivals in the Pacific, and their war colleges repeatedly war-gamed a clash of enemy fleets to determine which could defeat the other. The Japanese were one up on the Americans in that they had met and defeated a major enemy fleet, the Russian Baltic Fleet, which had sailed half way around the world in 1905, during the Russo-Japanese War. In the Battle of Tsushima Straits, Admiral Togo destroyed the Russian Fleet and brought Japan into new-found international prominence.

Adams reviews the military actions of Japan and the U.S. during World War II, looking at their strategies, campaign plans, and operations through a Mahan-type prism. He carefully notes whether they stuck with Mahan's concepts or deviated from them, and looks at actual outcomes.

By 1941, the aircraft carrier had replaced the battleship as the main fleet component. The Imperial Japanese Navy task force of six fleet carriers attacked Pearl Harbor on December 7, 1941, and brought the reluctant United States into the war. It was a smashing operational

and tactical success, but a strategic disaster for Japan. The U.S., whose isolationist House of Representatives earlier that year had approved extending the draft law by only one vote, was suddenly thrust into what became a war of annihilation against Japan.

This book steps through the Pacific campaigns, closely examining application of Mahanian theory. There were two major competing strategies in the Pacific: MacArthur's return to the Philippines, and the Navy's Central Pacific amphibious campaign. Adams examines each and discusses how and why decisions were made. He also notes that although Mahan dismissed a *guerre de course* campaign (attacking merchant ships) as the strategy of a lesser naval power, the U.S. Submarine Service destroyed the Japanese Merchant Marine by December 1944, and successfully completed a distant blockade well before B-29s fire bombed Japanese cities.

Fast forward to the future: Iraq 2003. The Bush administration's focus on *economy of force* overrode *security* considerations and led to a protracted guerrilla struggle. If Mahan was looking on, he would probably frown and point out that inadequate application of resources was a major failing.

*Capt. John F. O'Connell, USN (Ret.),  
Docent, National Air and Space Museum*



**Space Shuttle Main Engine: The First Twenty Years and Beyond.** By Robert E. Biggs. San Diego, Calif.: American Astronautical Society, 2008 [AAS History Series, volume 29]. Diagrams. Illustrations. Photographs. Notes. Appendices. Bibliography. Pp. xiv, 256. \$70.00 ISBN: 0-87703-546-6

The Space Shuttle Main Engine (SSME) is arguably the most ambitious, most successful liquid rocket engine program in history. However, this book is not the definitive history of the program. It very narrowly focuses on only the SSME development testing program. It is far from light reading—even for an experienced aerospace engineer.

Each space shuttle has three identical main engines which use liquid hydrogen fuel, combusted with liquid oxygen. Each engine produces thrust variable from 305,000 pounds to 470,000 pounds. Under certain circumstances, the thrust could be increased to 512,000 pounds. When the Space Shuttle program was launched by NASA in 1971, producing the SSME was a major challenge. Again, this book does not

cover why NASA selected this engine or how it was designed by Rocketdyne, its producer.

The core of the book is a description of the extensive ground testing performed to demonstrate that the engine would produce the required thrust under all operating conditions, while also meeting many other requirements, including fifty-five starts and an operating life of 7.5 hours. To those not familiar with high-thrust liquid rocket engines, these parameters may not seem demanding. In fact, they required an enormous pioneering engineering, manufacturing, and testing effort to achieve. To illustrate, here is the design performance of the high pressure oxidizer turbo pump: operating at 30,000 rpm to produce 28,000 horsepower, in order to deliver 750 gallons of liquid oxygen per minute at a pressure of 7,500 psi! This is not rocket science. It is the most demanding rocket engineering imaginable.

Engine testing started in 1975, and proceeded intensively to enable the first launch of the space shuttle orbiter *Columbia* on April 14, 1981. Extensive ground testing continued for many years to verify performance of continuing series design changes to correct problems, many of significant magnitude.

Biggs, who started at Rocketdyne in 1957, has written an unusually detailed book about a critical, but unromantic, aspect of rocket engine development. Technical histories of aerospace projects are often the "cleaned up" versions of what happened. This book is not. It is about life in the test-engineering trenches over a long period of time, written by a dedicated, experienced engineer. It reflects well on the deep commitment both NASA and Rocketdyne to safety and reliability of the SSME.

The book will be of limited interest, even to aficionados and historians of manned space flight. Newly graduated aerospace engineers would find it a fascinating, sobering introduction to the real world never found in their textbooks or classrooms.

*Sherman N. Mullin, retired President,  
Lockheed "Skunk Works"*



**Embry-Riddle at War: Aviation Training during World War II.** By Stephan G. Craft. Gainesville: University Press of Florida, 2009. Photographs. Maps. Notes. Pp. xv, 313. \$34.95 ISBN: 978-0-8130-3299-3

This book is one volume in the Florida History and Culture Series. Stephan Craft

is an associate professor of social science at Embry-Riddle University who presents the development of Embry-Riddle prior to and during World War II and its support of the effort of the United States and Great Britain to wage and ultimately win that war. Aspects of inclusion of women and instructors in all areas, workers on the overhaul lines, and in the office are also discussed.

As the United States moved toward World War II and away from the Depression, the Government implemented several plans to raise awareness of aviation and enlarge the potential pool of pilots and mechanics. Craft traces the efforts of one of the lesser known pioneers of flight, John Paul Riddle, as he recognizes the possibilities of Florida as a hub of aviation. Miami, with its good weather and proximity to South America and the Caribbean, was particularly attractive. The book follows Riddle and his partner, entrepreneur T. Higbee Embry, from the start with one J-3 Cub through development of a technical training school with five bases in Florida and Tennessee and one in Brazil.

Riddle joined the U.S. Army late in World War I and learned to fly at Carlstrom Field in Arcadia, Florida. After leaving the service in the early 1920s, he went through the typical aviation related jobs of the era—barnstormer, crop duster, flight instructor—at various locations. After selling the initial version of Embry-Riddle Flying School, he moved to Florida, which he viewed as the next hub in the coming aviation boom.

As war loomed, few doubted the probable impact of aviation on the course of the war and the race was on to expand the small American military air arm. The military quickly realized that they did not have the capacity or ability to train the numbers of pilots and support personnel that would be necessary. The only possible alternative would be to employ the paradigm used during World War I: extensive use of civilian training schools. Within the civilian aviation community the numbers of schools and instructors was exceedingly small. Riddle was perfectly placed at the right place and the right time.

He started Embry-Riddle Aviation with six Piper J-3 Cubs and a Stinson Reliant 105. From there, he secured contracts under the Roosevelt administration's Civilian Pilot Training Program (CPTP). The United States' entry into World War II then opened the training flood gates. At the height of the wartime operations, Embry-Riddle was training mechanics in three large operations in Miami; training pilots for the Army Air Forces and RAF in Florida and Tennessee; and overhauling engines, propellers,

instruments, and other aircraft parts. The rapid contraction which began in mid-1944 and resulting impacts on the company are also detailed.

Craft does an excellent job of describing how Riddle and those he surrounded himself with dealt with the oft-changing Army rules and regulations. He is not shy about discussing the company's trials and tribulations in accomplishing its mission, chief among which were loss of experienced training cadre to transport operations and differing requirements of the USAAF and RAF. The parade of people frequently makes it difficult to follow who is doing what and in-charge of what. The text is dense in facts and figures and heavily footnoted. As a source of historical information, the book is first rate. It is not an easy read, but is an excellent addition to a library dedicated to World War II aviation.

*MSgt Al Mongeon, USAF (Ret.), Burke, Virginia*



**Clipping the Clouds: How Air Travel Changed the World.** By Marc Dierikx. Westport, Ct. and London: Praeger, 2008. Notes. Appendices. Bibliography. Index. Pp. ix, 202. \$49.95 ISBN: 978-0-275-98910-1

Veteran aviation author Mark Dierikx's goal was to write a short book that showed the interaction of aviation with geography, politics, war, economic trends, industry, social development, culture, arts, literature, music, environment, and people. That he reached this goal is an admirable achievement. However, putting all that information into 144 pages of narrative means that this book is very dense reading.

*Clipping the Clouds* is divided into four main chapters that cover a few decades each. These chapters cover what Dierikx sees as the main phases of aviation development, starting in 1919. He presents good evidence for the themes of each chapter.

Chapter 1 (Heroics) covers the period from 1919 to 1945, when aviation was viewed as an icon of modern technology and national achievement. Although 19th-century visionaries and World War I are mentioned briefly, the author starts his focus with 1919, because the first commercial airline flights began that year. The entwining of aviation and national prestige made air races and technological advances more prominent. Aviation was also a powerful symbol and weapon for ambitious men in Germany, Italy, and Japan. Symbolism did not make air travel

comfortable or inexpensive, however. By the early 1940s, advertising, technical advances, and the exposure of average people to new places (usually because of World War II) made air travel more acceptable to millions.

Chapter 2 (Technology) focuses on air transport around the world from 1945-1961. Better global aeronautical agreements, lower fares, and the introduction of long-range American passenger jets at the end of the 1950s led to more convenient and faster links between more modern airports, especially on both sides of the North Atlantic. Due to the division of Europe by the Cold War, countries on the western side of the Iron Curtain cooperated and developed much more thoroughly than the occupied Soviet satellites on the eastern side. Further, the process of decolonization in Africa and Asia encouraged international air service in another direction.

Chapter 3 (Usage) chronicles the rise and fall of the jet set from 1961-1977. During this period jets brought about revolutionary changes in appearance, size, and capability that strengthened the links between aviation and tourism. Two key factors in the changes in airline operations were the new jumbo jets (especially the Boeing 747) and broader public acquaintance through television with tourist destinations. All of these factors led to the rise of the jet set, people flying more often and over longer distances. The air passenger total in 1977 was almost five times that of 1960. The fall of the jet set, or down side of increased air travel, was the inability of airport facilities to keep up with the rush of passenger traffic, as well as the explosion (sometimes literally) of sensational airliner hijackings.

Chapter 4 (Effects) continues the story of the expansion of air travel into a global network open to increasing numbers of people from 1977 to the present. 1977 is the starting point for this final chapter because it was then that the U.S. began its domestic air transport deregulation effort. The decline of national government controls and subsidies led to strong cost-cutting competition, as well as airline mergers, "hub and spoke" routing, new budget airlines, and more air cargo. Above all, in spite of crowding and business turbulence, passenger totals increased nearly five times from 1977 to 2000.

It is unfortunate that Dierikx provided no photographs or maps to illustrate some of his topics. American readers will also notice the omission of the strong link between the Air Force and commercial aviation. Nonetheless, this book can prompt brief flashes of recognition as it runs through aviation history. However, the average reader or undergraduate student

will not read this book at a fast clip, unless they have a lot of experience in the subject matter.

Dierikx is obviously a scholar of aviation, as shown by the quality and variety of his endnote sources and multinational bibliography published over several decades in twelve countries. The format of this book seems to indicate that the book is intended to be a broad refresher or reference for aviation experts and researchers. *Clipping the Clouds* fills a gap on aviation travel for business or college libraries, because few books have been written on the topic during the last decade.

*Dr. Robert W. Allen, Lt. Col., USAF, (Ret), Historian, 352d Special Operations Group, RAF Millennium, United Kingdom*



**Magnum! The Wild Weasels in Desert Storm.** By Braxton Eisel and Jim Schreiner. Barnsley, South Yorkshire, UK: Pen & Sword Books Ltd, 2009. Maps. Photographs. Appendices. Bibliography. Index. Pp. viii, 274. \$50.00 ISBN: 978-1-84415-907-9

The authors of this “combat from my diary” book are retired U.S. Air Force officers with very different backgrounds. Schreiner, a Weasel pilot in the F-4G Phantom during Desert Storm, contributes his verbatim diary accounts of daily activity, forming the primary substance of the book, plus his knowledge of “weaseling” in general (the Wild Weasel mission employs special aircraft to defeat enemy radar-based threats so that strike aircraft may attack at reduced risk). Though they do not so state, I assume Eisel, a former ICBM commander, weapons controller, staff officer, and published historian, is the glue that is meant to tie the diary entries together and to lend the occasional strategic and historical perspective to the story.

Those interested in the Wild Weasel mission as it was practiced in Iraq in 1991, and perhaps life as a deployed crew in Bahrain at that time, will find this account fascinating. The authors intentionally do not reflect on the larger issues of that conflict (though they do point out what was going on in the ground campaign during the time of Schreiner’s journal). Rather, they fashion from the accounts of Schreiner and other selected Weasels a from-the-trenches view of the tactics, dangers, successes, failures, and annoyances of daily life. It’s a very personal tale, a look inside the mind and cockpit as Schreiner lived it.

There are pluses and minuses to their

book concept. Most important, I doubt there is anywhere an account of Wild Weasel activity at the operator’s level in this war that is as enlightening. They cover operations from deployment to redeployment, primarily from Schreiner’s perspective, of course. Particularly exciting events in the air are covered well. Also included are living accommodations, food, bosses, lack of booze and women—all reported in first hand, plain language that would be familiar in a squadron bar. Very credible stuff.

But the book’s strengths are also its weaknesses. It is so narrow in its focus that it is almost a niche book. There are better books (e.g., Chuck Horner and Tom Clancy, *Every Man a Tiger*) for a more comprehensive treatment of that air war. And the frank coverage of life on deployment prompts a personal annoyance of mine. Schreiner comes across (wrongly, I hope) as something of a whiner and perhaps even a bit of a dramatist. Yes, every person in combat is scared (or should be); no one likes living in overcrowded conditions with lousy chow; many bosses are seen as boobs; and some missions (very few, in fact) are shorts-soilers; but these realities are by no means news and hardly make for good literature. What he and his colleagues did was magnificent and vital—and often dangerous. That is enough of a story—a noble story—in itself.

The book includes 63 pages of appendices covering facts about the principal weapons mentioned and, curiously, the entire record of anti-radiation missile shots taken by the Weasels in Desert Storm. Photographs, both black and white, are plentiful, helpful, and appealing.

*Lt. Gen. Michael A. Nelson, USAF (Ret.), National Air & Space Museum docent*



**A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon.** By Neil Sheehan. New York: Random House, 2009. Photographs. Notes. Bibliography. Index. \$32.00. ISBN 978-0-679-42284-6.

In 1989 Neil Sheehan received a Pulitzer Prize for *A Bright and Shining Lie*, an engrossing history of the Vietnam War as told largely through the efforts of counter-insurgency expert John Paul Vann. Now, twenty years later, Sheehan has used a similar technique to describe the development of ballistic missiles. He does this by focusing on the extraordinary role played by Bernard “Bennie” Schriever, an Air Force officer who came to exemplify the application of science and technology

in defense of the United States.

Unlike with Sheehan’s previous books on the Vietnam era, where his many years of reporting gave him a wealth of first-hand knowledge, he knew little about missiles, space, and nuclear weapons when he began this project. In view of that, his new book acknowledges the debt he owes to various Air Force historians, “particularly to Jacob ‘Jack’ Neufeld, author of the definitive documentary history...*Ballistic Missiles in the United States Air Force*,” for educating him on the subject and helping in his research. Although Sheehan only provides brief summaries of the major sources used for each chapter, the book does include an extensive bibliography and a list of 118 people, both participants in the story and subject matter specialists, whom he interviewed. Chief among them was the late Gen. Bennie Schriever himself, who lived conveniently near Sheehan in northwest Washington, D.C.

The author explains in the back matter that “this book is a work of history written for the lay reader. It seeks to convey the essence of ... the Soviet-American arms race through the human story of the men caught up in one of the Cold War’s great dramas—the building of the unstoppable weapon, the intercontinental ballistic missile” (ICBM). From an academic standpoint, the book could be criticized for some omissions, over-simplifications, and exaggerations as well as its lack of specific source citations. On the other hand, it does meet his intention to write a popular history. Organized into seven sections subdivided into numerous short chapters, the story moves the reader along quite nicely, despite the technicalities and bureaucratic details inherent in the subject.

True to its title, the heart of the book is a biography of Bernard Adolph Schriever. A young German immigrant who grew up in Texas, he was a star golfer in college before becoming a pilot in the Air Corps in 1933. Bennie’s intelligence and work ethic—as well as favorable connections with higher ranking officers gained partly as a result of his golfing talents—helped his early career. After impressive achievements in the Pacific during World War II, he became a protégé of Gen. “Hap” Arnold, who convinced him of the importance of science to the future of the new U.S. Air Force.

Sheehan enlivens his account of how Schriever became the father of the Air Force’s ballistic missile program with vivid biographical sketches of the many people he dealt with along the way. These include the brilliant Hungarian mathematician John von Neumann, the hard-driving (and hard-drinking) Air Force executive Trevor Gardner, systems engineering guru Simon

Ramo, and the brilliant but troublesome technical genius Ed Hall, creator of the Minuteman ICBM (whose younger brother was later identified as a key Soviet spy at Los Alamos). After various intrigues in the Pentagon and White House to gain enough funding priority and independence for his new Western Development Division (later Ballistic Missile Division) in Los Angeles, Schriever faced intense inter-service rivalry with his colorful Army counterpart, John Medaris, whose Redstone Arsenal employed the most renowned of all rocket scientists, Werner von Braun. But Schriever's chief antagonist was a legendary Air Force leader, Curtis LeMay. The author depicts LeMay as a great combat commander who aged into an egotistical bully—one who rejected most proposals that did not promote ever more bombers and nuclear megatons until he recognized the revolutionary advantage offered by the Minuteman ICBM.

As a book written for a general audience, it provides just enough information on the acquisition management procedures employed by Schriever, such as “concurrency,” to give readers an idea of how innovative and risky they were. It also avoids presenting too many technical details on the various missiles involved in the story, although an illustration comparing their sizes and shapes would have been very helpful. The book should also have included maps, such as of the Southwest Asia campaign of World War II and the Atlantic missile range.

Thanks in large part to Schriever and his colleagues, what had been considered a fearful “missile gap” with the Soviet Union in the late 1950s soon became an overwhelming American missile advantage by the early 1960s. This was verified by reconnaissance satellites first planned by the Western Development Division and orbited using the Air Force launch vehicles and facilities developed under Schriever's leadership. Sheehan ends the main portion of his book on this triumphant note. A short epilogue barely mentions Schriever's seven years as the leader of Air Force Systems Command before summarizing his life in retirement. The epilogue closes with a detailed account of his 2005 funeral at Arlington, where Schriever was buried near Hap Arnold with the pomp and ceremony usually reserved for an Air Force chief of staff.

Although many readers of *Air Power History* may already be familiar with much of its subject matter, *A Fiery Peace* reveals new details and fascinating anecdotes on how the Air Force and its industry partners were able to design, build, test, and field a formidable force of ballistic missiles in less than ten years. The

book probably will not be a best-seller like *A Bright and Shining Lie*, but it will convey an important part of aerospace history to a wide audience.

*Lawrence R. Benson, retired Air Force historian*



**Harnessing the Heavens: National Defense Through Space.** By Paul G. Gillespie and Grant T. Weller, eds. Military History Symposium Series of the United States Air Force Academy, Vol. 10. Chicago: Imprint Publications, 2008. Notes. Index. Pp. xii, 235. \$29.95 Paperback. ISBN: 1-879176-45-9

*Harnessing the Heavens* blends historical scholarship with discussion of contemporary policy, strategy, and theory governing the application of military power. This well-edited volume has three purposes: 1) emplace space history within the broader literature of history, related humanities, and social sciences; 2) “establish a completely new sub-discipline of military history”; and 3) contribute to the “intellectual nimbleness” of future military leaders. The editors received fourteen essays, many from field leaders. With the exception of three that discuss the Soviet Union and China, the essays are American-centric. The editors organized these diverse essays into four major sections

“Space and the Cold War: Prime Motivations for Space” admixes history and contemporary policy. Roger Launius's “National Security, Space, and the Course of Recent U.S. History” describes American space regime continuities from the Eisenhower to George W. Bush administrations. Launius then introduces broadly the realist and idealist schools of space-power thought before closing the discussion with a useful summary of the six schools as classified by RAND's Karl P. Mueller. Readers seeking the historiographical terrain of space history and policy should consult this essay. The next three essays contextualize within the Cold War early American lunar-base concepts, the Moon race, the Trinitarian structure of the American space program, and the early Soviet program. Of these, through his excellent analysis of the importance of idealist vision and military pragmatism in developing American space power, Howard McCurdy's “The Race to the Moon: Imagination and Politics as Shaping Forces in Space Policy” reflects well Launius's historiography.

“Doctrinal Faith: Strategic Dimensions of the War Fighter and Space” cate-

gorizes the next three essays. For those new to space history, Dwayne Day's essay enlightens lesser-known early plans for military human spaceflight, but the essay pairs incongruously with David Spires's analysis of policy themes and even more so with Everett Dolman's theoretical discussion of strategic and operational theory. Day's essay fits better in the previous section. Nonetheless, readers of *Air Power History* will enjoy each. Dolman's essay is not an historical piece. It is historically informed, of course, but as readers familiar with Dolman will realize, the essay discusses strategic and operational theory, as well as policy recommendations. He argues for specific actions that the United States as a benign hegemon must take to control space. His essay provides a barometer against which readers can evaluate the direction of contemporary American space efforts described in other essays.

In “U.S. Space from the ‘Other Side of the Fence’,” experts Asif Siddiqi and Dean Cheng present respectively on “Soviet Space Power during the Cold War” and “The Long March Upward: A Review of China's Space Program.” Siddiqi and Cheng use these programs as prisms to analyze how American actions influenced the Soviet and Chinese. Speaking to the gender fence, Amy Foster's “Coping with Celebrity: Women as Astronauts and Heroes” is the volume's sole essay looking beyond programmatic and policy history to illuminate readers with an analysis of the interaction of gender and identity within the human spaceflight community. The frustration that Foster reveals was not that of the women astronauts as much as that of those seeking to idolize them because of their gender. Her contribution reminds us that space history must encompass the broader themes of historical scholarship.

The title “Technological Change and the Transformation of American Space Power” suggests an encounter with ideas central to the history of technology, but the essays reflect better the wider themes of the symposium. Roy Houchin's essay on Dyna-Soar places better with contributions on early American programs, particularly Day's essay on early military spaceflight. Rick Sturdevant describes the programmatic evolution of military satellite communications from 1966 to 2007, providing a description of major programs that historians, policy analysts, and new Air Force Space Command staff officers will find useful. The last essay, Alex Roland's “Silo-Sitting in Space,” is a wonderful capstone. He touches themes ranging from autonomous and command technology to the rationality and irrationality of human-machine interaction in a techno-

logical world. His essay should enliven those concerned about technological determinism within military thought.

What audience will find this volume most useful? Readers well versed in space history and policy debates will find little new material; however, those fresh to the topics will find the brief essays useful starting points. Educators may find them useful for teaching classes, particularly undergraduates. Those seeking to improve their contextual understanding of “why are we doing what we are in space” will sate their desire.

Given the above, it is fitting to ask whether the volume satisfied the desire of Series Editor Mark Wells. Wells contends that mainstream military historians have too long ignored the history of military space operations. The contributions within this slim volume call heed to the importance of space power history, strategy, and theory. Judging by the rationale and evidence presented, military space operations assuredly deserve a place within the edifices of not only military history but also American and world history. Clearly, space history is another prism through which to refract understanding; and, as Foster’s essay reminds, broader historical questions fruitfully apply to these topics. This is not to say that all historians have ignored the subject. Within the history of technology, contextual historians have recognized the topic’s importance, and theorists, including Everett Dolman, have ignited meaningful debate on space issues within multiple humanities and social sciences disciplines. Because of this, the reader of *Harnessing the Heavens* will realize that not only does history teach and inform the professional judgment of military officers and others but that, in equal measure, those fields inform history.

*Dr. Steven A. Pomeroy, Deputy Head, Department of Military Strategic Studies, United States Air Force Academy*



**Homesteading Space: The Skylab Story.** By David Hitt, Owen Garriott, and Joe Kerwin. Lincoln and London: University of Nebraska Press, 2008. Illustrations. Appendix. Bibliography. Pp. xxvi, 522. \$29.95 ISBN: 0-8032-2434-6

Savvy consumers of space history have come to expect high quality in the “Outward Odyssey—A People’s History of Spaceflight” series edited by Colin Burgess. This fourth volume definitely does not disappoint. It opens with a foreword by NASA rocket engineer and inspirational author Homer Hickam, and it

closes with Skylab III Commander Alan Bean’s previously unreleased in-flight diary. Sandwiched between are more than 450 pages of sometimes gripping, always interesting, narrative on the history of Skylab and its missions written by a veteran NASA editor-journalist and two Skylab scientist-astronauts.

Drawing heavily from NASA books, reports, mission transcripts, and other official documents, the authors flesh out the incredible story of how engineers transformed a spent Saturn V rocket stage into America’s first space station. Although design and development of Skylab subsystems necessarily receive attention, the focus remains consistently on the actions, experiences, and feelings of the astronauts who occupied the station and their relationship with crews on the ground. The stories of each mission unfold through the interspersed historical explanation and mission-tape transcriptions. Consequently, the Skylab participants, through these talented authors, share with readers a fantastically rich, vicarious experience, one not unlike what good fiction might generate. But *Homesteading Space* is factual in every detail.

Three trios of astronauts called Skylab home for increasingly lengthy stays between May 1973 and February 1974. Each crew faced its own set of unique challenges, but all contributed significantly to proving humans could adapt to living and working for weeks, even months, in space. From repairing cantankerous technology to performing valuable scientific experiments, the Skylab astronauts established standards of excellence on orbit for future dwellers in outer space to emulate. The contributions of Skylab to solar physics and space medicine, particularly the study of weightlessness, revolutionized both disciplines. Engineers at NASA learned a substantial amount about designing a space station for habitability so its occupants could live and work effectively. Often forgotten is the tremendously successful Skylab Student Program—a model for similar endeavors up to the present day—that cultivated youthful interest in science and engineering during the early post-Apollo period. A great amount of science was accomplished on Skylab at relatively low cost.

For all the astronauts’ serious efforts to maximize the success of the Skylab missions, there was a lighter, playful side seldom revealed in official records but unabashedly exposed in *Homesteading Space*. Anecdotes range from Pete Conrad’s “unfortunate addiction” (butter cookies) to Alan Bean’s surprise when a Polaroid snapshot of Jack Lousma developed into a pre-exposed image of a recent

*Playboy* centerfold. Then there was Houston ground controllers’ puzzlement when Owen Garriott’s wife addressed them from the orbiting Skylab, not to mention the mysterious case of the “purloined pee bags.” Even the ingenious use of a Swiss army knife becomes part of the story.

Sadly, every reader will sooner or later turn the last page of this addition to the “Outward Odyssey” series, place the copy next to its predecessors on the bookshelf, and hungrily await the rest of the story. If the series remains true to form, volume five shall be worth the hopefully not-too-long wait.

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



**LeMay: The Life and Wars of General Curtis LeMay.** By Warren Kozak. Washington, D.C.: Regnery Publishing, 2009. Pp. 434 \$27.95 ISBN: 1-596985-69-0

Curtis LeMay is perhaps the best known military airman of all time, and probably the most famous individual identified with strategic bombardment. He had a long, successful, and dramatic career including navigating the interception of the liner *Rex*; leading B-17s in combat most notably as commander of the Regensburg portion of the famous Schweinfurt-Regensburg bombing mission; making the daring and successful military air decision to shift to low-level fire-bombing of Japan; building Strategic Air Command into the most formidable military force in history; and serving as USAF Chief of Staff. To this must be added his last major public appearance in the disastrous campaign as George Wallace’s running mate in the 1968 election. A man easily stereotyped because of his stern appearance, propensity to speak bluntly, and hard-line positions on the use of military force, he was a complex man usually painted in black or white by authors. His career has been well covered in his autobiography (*Mission with LeMay*, 1965) and two decades later in a well done biography by Thomas Coffey (*Iron Eagle*, 1986).

After another twenty years, we have this third book on LeMay. Journalist Walter Kozak’s effort is based mainly on secondary sources, with literally 40 percent of the citations from the two previously mentioned LeMay books, some use of the author’s correspondence with about two dozen individuals, and brief use of LeMay’s letters to his wife, and the LeMay papers in the Library of Congress. Unlike the other books on LeMay, this one is foot-

noted, although it lacks a bibliography. Kozak's effort reads well despite its length and some gross cases of overwriting. The book is marred by the author's unfamiliarity with aviation. He makes some glaring gaffes that will amuse or annoy aviation readers. While these may somewhat erode Kozak's credibility, none is significant.

However, there are more serious problems. The potential reader should be warned that Kozak takes a line that is at times, at the very least, disputable. For example, his statement that LeMay studied the reports of the Dresden raid prior to his fire bombing decision is not footnoted. My own primary source research on the bombing of Japan and, specifically, the origins of the firebombing decision, found no such indication. That the British could have concluded a study on the raid and gotten it to LeMay in less than three weeks is highly unlikely. Likewise his treatment of strategic bombing in Korea and Vietnam leaves much to be desired. Kozak also shortchanges the hardware, which is part of the essence of the air force and central to its history. Amazingly, strategic missiles are not mentioned. And most disappointedly, after almost 400 pages of text the author gives the reader no conclusion or summary. Certainly this biography required more, and LeMay deserved better.

What then is the contribution of this long and detailed book and what does it add to what we already know? Kozak's treatment of World War II adds next to nothing to what already exists, however he does a better job covering the next twenty years of LeMay's career. The major "value-added" results from Kozak's correspondence with LeMay's daughter and others, various interviews, and LeMay's letters to his wife that reveal the man's previously unexplored personal aspect. This personal side, along with the citations, are the only advantages this effort has over the previous LeMay books. Therefore, unless the reader is seeking to know more about LeMay the man, the reader would be as well served by reading the earlier accounts of LeMay.

*Kenneth P. Werrell, Christiansburg Virginia*



**The Scylla and Charybdis of Strategic Leadership.** By J.R. McKay. Kingston Ontario: Canadian Defense Academy Press, 2008. Tables. Diagrams. Notes. Bibliography (part of notes). Pp. xi, 126 ISBN: 978-0-662-47815-7

This book gets it. To the point, knowl-

edgeable, and well written, it is an excellent primer for anyone looking for a place to start learning more about this topic. It provides sources and provokes thought in ways I wish I saw more often in other books devoted to leadership. It is part of the academy's Strategic Leadership Writing Project series that looks at leadership, what constitutes it, and how to develop it.

While I could find nothing on the author himself, that shouldn't deter anyone from taking the time to read this excellent little book. McKay did his homework and his sources include a wide range of books and articles on the subject of leadership. There is an academic focus, but the lack of jargon for jargon's sake coupled with an engaging writing style makes this an enjoyable and worthwhile read.

This book is written for a Canadian audience interested strategic leadership development. The project was created to generate thought and discussion within the Canadian military about how to approach training future strategic leaders. McKay acknowledges that Canada is often overshadowed by its larger and more powerful southern neighbor but argues key differences in the relationship between the government and the military require Canada to define its own course rather than just plagiarizing from the Americans.

Scylla and Charybdis of the title are monsters of Greek mythology. Scylla, a multi-headed monster known for plucking its victims from their ships as they passed, is the five U.S. military services (including the Coast Guard) and their theories overwhelming the smaller and less robust Canadian forces efforts. The business community is Charybdis, a chaotic whirlpool of thought opposite Scylla sucking in all who stray too far seeking to avoid Scylla's grasp. McKay sees the possibility for Canadian thinkers to succumb to prevalent theories and fads from both but still feels these two monsters can contribute to Canada's search—if carefully navigated between.

All of this might leave one wondering what there is to gain from reading a book about developing Canadian strategic leaders. A lot. The book is decidedly Eurocentric, but that is one of its few flaws. It is full of visuals illustrating concepts (making this an excellent teaching tool), and the author is very careful to define terms (something he feels is woefully lacking in business-community discussions of this area). He is very candid about not having all the answers; this book is an effort to generate the right questions. He discusses various strategic leader development theories quickly but thoroughly; and this, by itself, is worth the read. McKay's sources

provide an excellent bibliography for someone looking to read further on the subject. One drawback is there is no bibliography as such. The sources are all listed in the notes so you have to dig through them to create your reading list.

As a military officer and ROTC instructor, I am always interested in new viewpoints on the training and development of leaders. This book deals with leadership development beyond the level of ROTC cadets, but there is still a wealth of information for anyone interested in the subject. I highly recommend it.

*Lt. Col. Golda Eldridge, Commander, AFROTC Det. 845, Texas Christian University*



**The Day We Lost the H-Bomb.** By Barbara Moran. New York: Ballentine Books, 2009. Photographs. Notes. Bibliography. Index. Pp. xi, 321. \$26.00 ISBN: 978-0-89141-904-4

Barbara Moran's new book on the Palomares Incident—the release of four unarmed thermonuclear bombs in a midair collision between a B-52 and a KC-135 over Spain in 1967—is about more than that. It is a concise and readable history of the Cold War, the events that led up to the accident, and the reaction to, and handling of, the incident.

Three of the four bombs came down on land near the small fishing village of Palomares in southeastern Spain, with varying degrees of damage and resulting contamination. This made up one half of the book—the accident investigation, salvage of wreckage, management of the radiation problem, physical clean up, and local and international public relations aspects. The fourth bomb dropped into the Mediterranean Sea, off the coast. The search for, and eventual recovery of, that weapon is the other, and for many readers, probably most intriguing half. The entire operation is a study of the difficulties of recovery from a major accident—assembling resources, bringing together manpower and expertise, and managing priorities and logistics. In this case, the already difficult job was made more so by international antinuclear efforts, the propaganda opportunity for the Soviet Union, and pending Spanish-American negotiations for basing rights.

Interwoven with the main narrative is a great deal of background. Included as sub-plots are the origins of the Air Force and its roots in strategic bomber doctrine, the birth and development of the Strategic Air Command, the mechanics of nuclear

and thermonuclear devices, procedures of rendezvous and in-flight refueling, and the capability of underwater recovery operations at that time. All of these background elements are covered with brevity and accuracy and give the lay reader the context to appreciate the complexities faced by participants.

Anyone who has been in or near a command position has to sympathize with Adm. William Guest, the equivalent to an on-scene commander during the recovery. He was a career aviator who had to coordinate the efforts of a pickup team of military and civilian personnel including, but not limited to, nuclear physicists, medics, underwater divers and explosive ordnance disposal experts, lawyers, mathematicians, diplomats, local politicians and citizens, and hundreds of airmen living in rough field conditions. Throughout it all, he got plenty of "help" from the Departments of Defense and State.

Moran's research is impressive, relying heavily on primary sources and participant interviews. There have been three previous books on the accident: two were published within a year of the event, relying of necessity on press reports and immediate reactions or impressions. The third, published in 1997, was written by a participant. Moran had access to a wide range of now-declassified sources, and the result reflects this in-depth research and independent approach.

Yes, there are a few little glitches that readers with an Air Force background will pick out, but these are nit-picks and few in number. What is refreshing in this day of computers and spell-check proofing is that it's obvious that a human being actually read the proofs. Gone are those confusing syntax errors, incorrect word substitutions, and punctuation mistakes we've come to expect from many publishers today.

Moran is a widely published science journalist and has done many television documentaries. A graduate of Notre Dame and Boston University, she began her research for this book while a Knight Fellow at MIT.

*Col. Wayne C. Pittman, Jr., USAF (Ret.), founder and editor, B-52 Stratofortress Association*



**A Century of Air Power Leadership: Past, Present, and Future [Symposium Proceedings at the George Bush School of Government and Public Service, Texas A&M University, October 29-31, 2003].** By Jacob Neufeld, Ed. Washington, D.C.: Air Force History

and Museums Program, 2007. Photographs. Notes. Appendices. Index. Pp .ix, 279. www.gpo.gov

In 2003, the George Bush School of Government and Public Service at Texas A&M University and the U.S. Air Force History and Museums Program (USAF-HMP) jointly sponsored a symposium on air power leadership from the early twentieth century through the then-present. The symposium brought together a variety of personalities including professional historians from the USAFHMP, USAF Chief of Staff General John Jumper, Secretary of the Air Force James Roche, and even a talk by President George H.W. Bush. The symposium offered an opportunity for scholars of air power leadership to discuss some of the factors of military leadership that contribute to success or failure. The USAFHMP published selected portions of the symposium to provide support to those who might want to learn more about impact of leadership.

Some sections of the book offered comments by introducers and speakers and did not directly relate to air power, but served as necessary wordage to convey the spirit of the symposium to the printed word. One section that proved particularly interesting was a keynote address by General Jumper along with an accompanying question and answer session. The section proved interesting from the perspective of very recent history in the sense that the speaker was the chief of staff twice removed (before Generals Moseley and Schwartz) speaking six years ago. In the intervening years, much has changed in the Air Force.

The articles contained in the book range from treatments of Billy Mitchell and Mason Patrick to more recent events like the Mount Pinatubo eruption in the Philippines and the aftermath of the Khobar Towers bombing. One visually appealing section was a showcase of Keith Ferris' life. In addition to photographs of and by the author, images of some of his Air Force Art Program art appeared in the book.

Overall, besides the aforementioned, this book offers some worthwhile articles on air power leadership, including: Generals "Hap" Arnold, George Kenney, "Tooy" Spaatz, and "Bennie" Schriever; Robert Lovett; and the Tuskegee Airmen; and more recent leaders, who fought in Gulf Wars I and II.

*David J. Schepp, Seventh Air Force Historian, Osan Air Base, Republic of Korea*



**Dowding of Fighter Command: Victor of the Battle of Britain.** By Vincent Orange. London: Grub Street Press, 2008. Photographs. Notes. Bibliography. Index. Pp. 320. £20.00 ISBN 978-1-096502-14-0

This New Zealand professor, sometime RAF, 1953-1956, has now completed a brace of biographies of the leaders of the RAF in World War II. His *Dowding* complements his *Park, A Biography of Air Chief Marshal Sir Keith Park* (Methuen, 1984), both researched studies of the victors of 1940s Battle of Britain. They did their jobs by preventing the defeat of the RAF in the critical summer when Europe fell to Hitler's *blitzkrieg*.

But the Air Staff at the Air Ministry were inbred with the fallacious Trenchard doctrine that Britain's best defense was the bomber. They failed to prepare their service for the realities of modern war, judging what an enemy would do by their own blinkered views. On the contrary, air defense was continuously being developed from that of 1918. Dowding as the Air Member responsible for scientific and technical developments at the Air Ministry from 1930 to 1936, immersed himself in the subject. When he became Air Officer Commanding-in-Chief (AOC-in-C) of the new Fighter Command in 1936, he was able to graft radar onto the existing system.

Dowding was not a popular officer and suffered for his knowledge and arguments; his unsocial, teetotaler character; and his devotion to duty. He was denied promotion when the Air Defence of Great Britain Command was broken up, and the RAF no longer had an executive war fighter. Dowding should, as the senior Air Chief Marshal, have become AOC-in-C of the RAF but was put in command of Fighter Command instead. Then he was kept on six times after being told he was to be retired, even during the critical summer of 1940. Orange makes very clear that there was animosity at the Air Ministry which was overstuffed with not-very-competent officers, whom Dowding offended once again in 1942 as the appointed inquisitor into RAF establishments.

Air Vice Marshal Keith Park, AOC of the critical No. 11 Group, was quickly shunted off to Training Command, while, after their victory, Dowding was sent to the United States. He was denied Marshal of the RAF status for pettifogging bureaucratic reasons. True, he was not the Chief of the Air Staff, but his successor at Fighter Command, Sholto Douglas, and Sir Arthur Harris of Bomber Command, were both so honored. At least Churchill gave him a barony in 1943. As Orange notes, Dowding's treatment by his service was shabby, to say the least.



This is an excellent biography based upon the archives and published materials as well as the author's extensive knowledge from his other works. *Dowding* is not about the Battle of Britain, but about the man who, like Admiral Nelson, saved England.

*Dr. Robin Higham, Professor Emeritus, Kansas State University*



**Shooting the Front: Allied Aerial Reconnaissance and Photographic Interpretation on the Western Front—World War I.** By Terrence J. Finnegan. Washington, D.C.: National Defense Intelligence College Press, 2006. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xiii, 508. \$66.00 Paperback. ISBN: 1-932946-04-7

Every so often, a book comes along that is destined to be *the* sourcebook in its field. Terry Finnegan has written such a volume. When I flipped open the cover for the first time, I immediately knew this book was something special—far and above the quality of most military histories. So, what makes the book worth all this praise?

First, the author is a retired USAFR colonel who spent his career in the intelligence business. He brings to the subject an eye for what is important to understand about the development and use of the newly invented airplane in providing useful information to ground commanders.

Second, Finnegan's layout of the material is superb. One cannot tell the story of the development of aerial reconnaissance without providing a history of what was going on in the war that the reconnaissance had to support. The first part of the book is a chronological history of World War I in Europe overlaid with the work being done in the air and on the ground to make aerial reconnaissance relevant. Once the overview is understood, Part Two addresses the architecture of how the British, French, and Americans set up their interpretation and exploitation operations. Part Three looks at the challenges faced by the allies in selecting and building cameras, aerial platforms, communications, and the like, and also in overcoming what the enemy was learning about camouflage and deception. The final part addresses the enduring professional legacy. Through it all, Finnegan well understands that it was people who made all of this happen. He expertly weaves in the stories of Ed Steichen in the U.S.; Moore-Brabazon, Campbell, and Laws in

Great Britain; Capitaine Bellenger in France; and many others whose insights and tenacity forged a tool of inestimable value to the Allied commanders.

Third, I believe one cannot tell war stories without maps. Unfortunately, many books published these days try to do just that. This book is laden with maps. Some are copies of maps made as a result of aerial reconnaissance—particularly in the first part of the book where he lays out the war's history; Finnegan has used many plates from the *West Point Atlas*. When one reads about some particular military operation, there is a map close by to aid in following the narrative.

Fourth is the research. This is not a stale summary of works printed before. It is largely the result of a great deal of research into primary sources—eight pages of them! That is supported by five pages of contemporary sources such as diaries and autobiographies, and over three pages of secondary sources. Much of the material presented in this book is new. The two original appendices list all of the cameras used by the Allies and all of the platforms arranged by year, country, and the type of camera(s) employed.

Finally, one cannot say enough about the role of the NDIC Press. They must have some “old school” person on the staff who hasn't gotten the word that footnotes have to be inconveniently aggregated at the back of a book to ease the publisher's work and reduce costs. Rather, the hundreds of footnotes in this book appear at the bottom of the page or column of text to which they apply! NDIC printed this—the first of their publications—on glossy paper. All 306 of the clearly labeled figures (photos, maps, tables, etc.) are of the highest quality.

This is a “must-have” book for anyone interested in the First World War or in the early development of one of the key facets of modern warfare. It is worth every penny of the cost.

*Col Scott A. Willey, USAF (Ret.), Book Review Editor*



**Flying Black Ponies: The Navy's Close Air Support Squadron in Vietnam.** By Kit Lavell. Annapolis, Md.: Naval Institute Press, 2009 [originally published in 2000]. Map. Photographs. Notes. Appendices. Bibliography. Index [include all that apply]. Pp. xv, 331. \$21.95 Paperback ISBN: 978-159114-468-7

U.S. Navy Light Attack Squadron Four (VAL-4)—the Black Ponies—had a short, but an action-filled life, between

1969 and 1972. During that period, its mission was to provide air support for the river-patrol forces in the Mekong Delta of South Vietnam. These included Navy SEALs as well as South Vietnamese armed forces. A brown-water navy had to be created for Vietnam operations, and VAL-4 was a key part of it.

The squadron was equipped with the North American OV-10 Bronco, a turbo-prop aircraft that had a twin-boom arrangement similar to the famed Lockheed P-38 Lightning of World War II. It was slow enough to find jungle-hidden targets, and it had good loiter time. In short, it was a good anti-guerilla weapon.

This is not a history in the regular navy style. It is a running account of a series of actions rather than a total story. It starts with a dramatic Black Pony flight that captures the reader's attention at the outset. The book continues with a series of actions and incidents that maintain the reader's interest. However, while these “adventure stories” make the book worth reading, they don't contribute much to an understanding of the doctrine for close air support under the conditions of the time.

For anyone who has experienced the activation of a new organization (as I did on two occasions), the birth of VAL-4 is a fascinating story. I'm sure it was a tremendous experience for the “plankowners” of the Black Ponies who went through those times.

Lavell included only one map, but it is adequate for the series of small actions he describes, given the limited operational area. The pictures are a mixture of stale group shots and some better ones that show a bit of the squadron's activities. The main drawback of the book, however, is the absence of a glossary. There is far too much jargon and nomenclature that is not universally known. Some of it is covered in the text, but that is not always convenient to a reader.

Although the vehicles, weapons, combat conditions, and technologies will change, the vital mission of close air support will always be there, and this book contains “lessons” for anyone interested in that facet of modern warfare.

*Brig. Gen. Curtiss H. O'Sullivan, ANG (Ret), Salida California*



**Death From the Heavens: A History of Strategic Bombing.** By Kenneth P. Werrell. Annapolis, Md.: Naval Institute Press, 2009. Photographs. Bibliography. Index. Pp 400. \$49.95 Hardcover ISBN 978-1-59114-940-8.

Kenneth P. Werrell is the author of the well-received *Blankets of Fire: U.S. Bombing Over Japan during World War II*. He has now written *Death from the Heavens: A History of Strategic Bombing*, a technological treatise on how strategic weapons were employed. He does not deal much with strategic or political issues. Werrell attempts to answer the question, as he puts it: "Has strategic bombardment fulfilled its promise?" This loaded question has had historians fulminating for decades.

Werrell notes that in the late 1930s the Air Corps Tactical School emphasized precision bombing. While this is true, instructors simultaneously pointed out the potential importance of "morale bombing." Maj. Muir Fairchild, a future four-star general and Air Force Vice Chief of Staff, emphasized population bombing in his lectures at the Tactical School. Tactical School doctrine always pre-supposed that if precision bombing failed to produce the anticipated results, it might well be necessary to attack civilian morale.

In Werrell's view, the idea that strategic "bombing would break civilian morale and force a nation to capitulate was shattered despite the horrendous hardships and heavy losses inflicted on civilians. Although the fliers made great efforts and considerable cost, with a few notable exceptions (Hamburg, Dresden, Tokyo, Hiroshima, and Nagasaki), they could not inflict quick, extensive punishment, instead they meted out various degrees of death, pain, damage, and suffering that was diluted by time and geography, which lessened its impact. And while authors continue to argue whether the bombing increased or decreased the morale of the populations, this is irrelevant for under authoritarian regimes people complied and worked to survive and thus the economies and societies in Germany and Japan continued to function."

Of course, as far as "a quick, extensive punishment" was concerned, the dropping of atomic bombs by B-29s on Hiroshima and Nagasaki ended the Pacific war. An invasion of Japan was not necessary. In Japan in the spring and summer of 1945 the B-29s burned out Japan's major cities, resulting in enormous numbers of work-force evacuees, severely impacting war production. During this period, Japan's society and economy did not continue "to function." After the dropping of atomic bombs by B-29s on Hiroshima and Nagasaki, Emperor Hirohito emphasized that the enemy possessed "a cruel new weapon" that could destroy civilization. The Japanese did not know how many atomic bombs the United States had in its possession. The emperor feared that Japan might

be on the verge of extinction. In fact, the specter of starvation loomed.

The fact is that World War II was won by the combined arms of the United States and its allies. Air power—strategic, tactical, and support—was an important part of the combined force.

Perhaps the greatest value of Werrell's book is his chronological survey of the evolution of strategic weapon systems from World War I to the present. "Although technical obstacles have been largely overcome," according to Werrell, "strategic bombardment remains shackled by political restraints and intelligence inadequacies. In fact these handicaps appear greater today as modern communications make every bomb blast instantly known throughout the world and as governments and populations have become much more sensitive to the use of military force and especially to civilian casualties."

This is certainly true and has resulted in a revolution in the development of UAVs. There still remains a critical need for the United States to be able to strike precision targets at long range—bomber drones? This is something that was foreseen by General Henry H. "Hap" Arnold when after World War II he wrote that aircraft could well become "obsolete" and that unmanned vehicles might become the backbone of the strategic force.

*Herman S. Wolk, retired Senior Air Force historian emeritus*



**Forgotten Weapon: U.S. Navy Airships and the U-Boat War.** By William F. Althoff. Annapolis, Md.: Naval Institute Press, 2009. Maps. Notes. Bibliography. Index. Pp. x, 411. \$49.95 ISBN: 978-1-59114-010-8.

Mr. Althoff has written a comprehensive study of the U.S. Navy airship's role in World War II. The book covers all aspects of the Navy's lighter-than-air program. Included are chapters on the Navy's preparations for war, technical developments in ASW sensors and weapons, and its wartime expansion. Additional chapters cover squadron histories and their operations in the Atlantic, Pacific, and Mediterranean theaters. Althoff's research is well documented, and he provides extensive footnotes. In addition to the 300 pages of text, the book contains a number of detailed appendices that provide additional information on airship deliveries, a pilot's checklist, construction costs, and a statistical summary of operations and training exercises. The text is well illustrated by a number of excellent

photographs that have been carefully selected.

Unfortunately, readers, such as I, who are interested in the development and application of technology in warfare, will be disappointed in this book. Although thoroughly researched and packed with details, it lacks a profound theme or thesis. Althoff is an airship enthusiast who has produced two previous books about U.S. Navy airships. He claims that "it is easy to dismiss the airship as a military aberration," but he has failed to convince me otherwise. To my regret, Althoff has missed a great opportunity to make an important contribution to our understanding of the dynamics involved in the selection and employment of an interesting and little-covered weapons system.

As to style, the historical perspective offered by Mr. Althoff can be rather trite for those who are knowledgeable about the naval aspects of World War II. The text can also be tiresome to read, as it is overly packed with extensive quotations—many of which have been lifted from the official documents that Althoff reviewed during his research. This fact, coupled with the arrangement of the subject matter and the large number of subheadings—some of which are discontinuous—leaves the reader feeling as if he is looking at a collection of research notes rather than a well structured monograph.

This book will obviously appeal to lighter-than-air buffs. It will also make an excellent reference source for the serious historian interested in this subject. However, other readers who want a good, general coverage of the subject may find *Blimps & U-boats* by J Gordon Vaeth (Naval Institute Press, 1992) more to their liking.

*Thomas Wildenberg, Burtonsville Md.*



**Have you read a very good or very bad book in air power history recently? Send your review to Col. Scott A. Willey, address on the right.**

# Books Received

Boyes, John. *Project Emily: Thor IRBM and the RAF*. Stroud, Gloucestershire, UK: The History Press, 2008. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Index. Pp. 160. Paperback £17.99 ISBN: 978-0-7524-4611-0

Breu, Mary. *Last Letters from Attu: The True Story of Etta Jones, Alaska Pioneer and Japanese P.O.W.* Photographs. Notes. Bibliography. Index. Pp. 291. Paperback \$16.95 ISBN: 978-0-88240-810-1

Ehlers, Robert S. Jr. *Targeting the Third Reich: Air Intelligence and the Allied Bombing Campaigns*. Lawrence: University Press of Kansas, 2009. Maps. Photographs. Notes. Bibliography. Index. Pp. xii, 422. \$20.00 ISBN: 978-2952-638159

Giangreco, D.M. *Hell to Pay: Operation Downfall and the Invasion of Japan, 1945-1947*. Annapolis, Md.: Naval Institute Press, 2009. Maps. Tables. Photographs. Notes. Appendices. Index. Pp. xxiii, 362. \$36.95 ISBN: 978-1-59114-316-1

Immelmann, Franz. *Immelmann: The Eagle of Lille*. Philadelphia and Newbury, UK: Casemate, 2009. [orig. pub. By John Hamilton, 1935/ 1936; reissued by Greenhill books, 1990]. Photographs. Notes. Pp. 340. \$29.95 ISBN: 978-1-932033-98-4

Jones, Ira. *King of Air Fighters: The Biography of Major "Mick" Mannoek, VC DSO, MC*. Philadelphia and Newbury, UK: Casemate, 2009. [orig. pub. By Ivor, Nicolson and Watson, 1934; reissued by Greenhill books, 1989]. Photographs. Notes. Pp. 340. \$29.95 ISBN: 978-1-932033-99-1

Killebrew, Tom. *The Royal Air Force in Texas: Training British Pilots in Terrell during World War II*. Denton: University of North Texas Press, 2003. Photographs. Notes. Appendices. Bibliography. Index. Pp. xii, 182. Paperback \$19.95 ISBN: 978-1-57441-272-7

McCudden, James Byford. *Flying Fury: Five Years in the Royal Flying Corps*. Havertown, Pa. and Newbury, UK: Casemate, 2009. [orig. pub. in 1918; reissued by Greenhill books, 1987]. Photographs. Notes. Pp. 304. \$29.95 ISBN: 978-1-935149-10-1

Mersky, Peter B. *U.S. Marine Corps Aviation since 1912* [4th ed.]. Annapolis, Md.: Naval Institute Press, 2009. Maps. Photographs. Notes. Appendices. Index. Pp. xvi, 405. \$49.95 ISBN: 978-1-59114-516-5

Quang Thi, Lam. *Hell in An Loc: The 1972 Easter Invasion and the Battle That Saved South Vietnam*. Denton: University of North Texas Press, 2009. Maps. Diagrams. Illustrations. Notes. Appendices. Glossary. Bibliography. Index. Pp. ix, 282. \$29.95 ISBN: 978-1-57441-276-5

\* Sheehan, Neil. *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon*. Random House, 2009. Photographs. Notes. Bibliography. Index. \$32.00. ISBN 978-0-679-42284-6.

Werner, Johannes. *Knight of Germany: Oswald Boelcke, German Ace*. Havertown, Pa. and Newbury, UK: Casemate, 2009. [orig. pub. In 1932; reissued by Greenhill books, 1985 and 1991]. Photographs. Notes. Pp. 277. \$29.95 ISBN: 978-1-935149-11-8

\* Wright, Jim. *The Flying Circus: Pacific War, 1943, as Seen through a Bombsight*. Guilford, Ct.: The Lyons Press, 2005. [An Imprint of the Globe Piquot Press] Photographs. pp. ix, 214. \$22.95 ISBN: 1-59228-656-9

\* Under review.

## PROSPECTIVE REVIEWERS

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

Col. Scott A. Willey, USAF (Ret.)  
3704 Brices Ford Ct.  
Fairfax, VA 22033  
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## From the President

Thanks to our sponsors, members, and officers, the Foundation enjoyed an eventful 2009.

We published a strategic plan for 2009-2011 aimed at improving and growing our organization. We made significant progress of which we can all be proud—but there remain plenty of challenges for us to address.

Foremost among these efforts over the past year was our membership drive. First, we tightened our accounting process to make sure that we could properly serve our existing membership. Second, we set out on an aggressive program seeking to double our ranks over eighteen months. To help us to toward that end we hired a direct mail company and adopted their methods for increasing membership and revenues. We enjoyed more success than we had in recent years. However, we are falling short of our goals and will need to recruit significantly more members if we hope to sustain the Foundation.

The Foundation came within ten percent of maintaining our corporate level of participation. This was difficult given the manner in which the economy adversely affected our industry partners and their ability to support non-profit organizations, such as ours. We will need to redouble our efforts in this vital area to ensure that Foundation benefits of membership appropriately reward continued participation by our constituency.

We established a Foundation web site and matured it nicely through several milestones over the past year. It is clear that we need to continue leveraging this capability for outreach and serving our membership, patrons, and supporters.

In October we held our biennial symposium and annual awards dinner. The first event was a successful showcase of presentations, debates, and discussions by noted historians, authors, and military experts centered on the Balkan Air campaigns of the 1990s. The latter featured an address by our Air Force Chief of Staff, General Norton A. Schwartz. I was honored to join the Chief in presenting the Dr. I. B. Holley Award “for significant research, documentation, and interpretation of Air Force History” to Herman S. Wolk. We also presented the Foundation’s premier award, the Gen. Carl A. “Tooley” Spaatz Award “for significant contributions to the making of Air Force History” to airman and astronaut Lt. Gen. Thomas P. Stafford, USAF (Ret).

As we look toward 2010, our Foundation faces many difficult circumstances. In order to remain viable we must broaden our appeal and re-examine the value proposition to our members and industry partners. Further, we must adjust our business practices to ensure that we carry the torch borne for so long and so well by those who have gone before. In that vein, we ask for your ideas on how to make our Foundation better. Feel free to contact me through our web site <http://www.afhistoricalfoundation.org>.

Thank you for your support of the Air Force Historical Foundation as we seek to promote and preserve the history of our United States Air Force and its predecessors.

Sincerely,



Dale W. Meyerrose  
Major General, USAF (Retired)  
President and Chairman of the Board

## Zegenhagen Hits a “Grand Slam”

Congratulations on Evelyn Zegenhagen’s important piece on German women pilots in your last issue. [Evelyn Zegenhagen, “German Women Pilots at War, 1939-1945, *Air Power History*, Winter 2009, Vol. 56, No. 4, pp. 10-27.]

*Dr. Arnold D. Harvey, London*

*Dr. Harvey’s concise statement well summarizes the sentiments expressed by about a dozen readers, who took the time to express their appreciation.*

*- JN, Editor*

## Armchair Author?

While I thoroughly enjoyed reading the subject article, written by W. Howard Plunkett [“When the Thunderbirds Flew the Thunderchief,” *Air Power History*, Fall 2009, Vol. 56, No. 3, pp. 14-25,], I felt that the author did not personally visit Nellis AFB, nor the Thunderbirds hangar as he would have discovered some more interesting information and unpublished Air Force photos that could have been enclosed in his story. As I have personally collected aerobatic team information for the past forty years and traveled to the home bases of most of the teams around the world, I hoped that Mr. Plunkett could have added some more insight than what has already been published in other articles. For example, at the Thunderbirds hangar, in their own museum open to the public, is a color photo of the Thunderbirds solos in the F-105B flying in the “dead ant” formation. This is where one aircraft is flying inverted with the landing gear extended and the other solo is flying along side, right side up with the gear also extended. The solo pilots performed this maneuver during the practice build up. But due to safety concerns, the team decided not to incorporate into their final show. Furthermore, the Thunderbirds were still flying their F-100C’s through February 1964, in practice sorties while transitioning to the F-105B’s. As such, the impression from the article was that the Thunderbirds relinquished their F-100C’s in January 1964, when they received their first F-105B from the Republic factory. On one such F-100C practice mission flown on February 3, 1964, Captain Clarence Langerud, flying in formation with Major Paul Kauttu and Captain Reder, had to eject from his aircraft (F-100C-10, tail number 55-2717), when his engine flamed out during a maneuver. Successful Thunderbirds ejections are also identified in the Thun-

derbirds’ egress shop. There are several more individuals who have more insight on the 1964 Thunderbirds team than I do, and I while I liked Plunkett’s rehash of open source history, I was disappointed that I didn’t learn anything new, yet felt compelled to add more to this article.

*Lt Col Steve Hoernlein, USAF (Retired)*

## Plunkett’s Rebuttal

I’m glad Lt Col Hoernlein enjoyed my Thunderbird article and I appreciate the additional details that he provided in his letter. However, his detail regarding the “dead ant” maneuver needs to be corrected. Brig Gen Paul Kauttu commented this way:

*The dead ant maneuver was not deleted because of safety concerns. It was as safe as any of the other maneuvers we performed. When flying our first official show at Langley before Sweeney (and Creech, his aide at the time) Bill thought ‘it looked graceless’ and it was unfortunately dropped— simple as that.*

While I would not expect someone who has spent forty years studying aerobatic teams to learn much more about the Thunderbirds from what I wrote, I would also hope that he will publish his research so that others could benefit from his work.

*W. Howard Plunkett*

## Polmar v. Dorr, Redux

Reference Bob Dorr’s “Letter,” Winter 2009, *Air Power History*, Winter 2009, Vol. 56, No. 4, p. 64.

Mr. Dorr may wish to cite his sources for fighter aircraft production as they differ from most accepted and definitive sources. For example, the official *United States Naval Aviation 1910-1995* lists Corsair production at 12,570, while the definitive *United States Navy Aircraft since 1911* by Messrs. Swanborough and Bowers—which provides a model breakdown—lists 12,630 aircraft. Other sources support these numbers as well as higher production qualities. None match Mr. Dorr’s numbers.

With respect to Mustang and Thunderbolt production, the definitive volume, *The Army Air Forces in World War II*, volume VI by Messrs. Craven and Cate lists Mustang production at 14,490, and Thunderbolt numbers at 15,579. Again, these and numbers from other authoritative sources differ from those used by Mr. Dorr.

My own aircraft numbers were derived from the files of the National Air and Space Museum, when I held the Ramsey chair of naval aviation history.

Unfortunately my comment, “by the end of the war in Europe all but one AAF fighter group was flying the P-51,” was in error; it should have read, “all but one AAF fighter group in the Eighth Air Force....”

*Norman Polmar*

# News

## The Cold War Museum to Locate at Vint Hill

Vint Hill, Virginia - December 11, 2009

Francis Gary Powers, Jr., the founder of The Cold War Museum, announced today that the museum had found a physical home. The Cold War Museum will lease a modest sized, two story building and secure storage facility at Vint Hill, located in Fauquier County, Virginia, less than 30 miles from Washington Dulles International Airport. The lease was signed on December 1, with the Vint Hill Economic Development Authority, the owner of the 695-acre former U.S. Army communications base. The former Vint Hill Farms Station was used during the Cold War, by the National Security Agency, the Central Intelligence Agency, and the U.S. Army to safeguard the United States against a surprise nuclear attack.

Powers is the son of Francis Gary Powers, a CIA pilot whose U-2 spy plane was shot down over the Soviet Union in May 1960. The senior Powers was held in Soviet custody until 1962, when he was traded for Rudolph Abel, a Soviet KGB agent who had been captured by the United States.

According to Francis Gary Powers, Jr., “We are excited about our new home and look forward to opening the museum to the public in 2010. We have been seeking a location for the museum for several years in which to display our unique collections of international Cold War related artifacts.” The Cold War Museum will fill a substantial void in the interpretation of post-World War II history. The Museum’s goal of educating current and future generations about this critical period in international relations will provide a tangible setting to explore this topic within historical contexts.

Powers said, "We are currently looking for volunteer/s and other interested parties to assist with the work that needs to be done.

In addition to offering the Museum nine months of free storage space for its collection of unique and rare Cold War artifacts, the Vint Hill EDA will contribute \$50,000 for building renovations. The Fauquier County Industrial Development Authority (FCIDA) agreed to match the \$50,000 provided by the Vint Hill EDA. "This \$100,000 contribution will not only enable the Museum to house, care for, and archive its collection, but more importantly will be used to renovate a 2,000 sq ft building for museum use," Powers said. Upon completion in 2010, the Cold War Museum will use this modest sized space to exhibit key items from its collection, open a reference research library, operate a gift store, and run day to day museum operations. Ultimately, the Museum plans to construct a larger facility to house its artifacts, reference library, education center and operations.

For more information or to subscribe to the quarterly newsletter, contact:

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The Cold War Museum  
P.O. Box 178 - Fairfax, VA 22038  
P-(703) 273-2381 / F-(703) 273-4903  
www.coldwar.org / gpowersjr@coldwar.org

### In Memoriam Maj. Gen. John J. Pesch 1921- 2010

Maj Gen John J. Pesch, the Director of the Air National Guard from 1974 to 1977, died on January 10, 2010. He was eighty-eight. Born in Maspeth, New York, he joined the Army Air Forces in 1942. A B-17 pilot, he flew deep penetration missions over Europe, including the first shuttle mission from England to Poltava, USSR. By war's end, he had logged thirty-one combat missions and was awarded the Distinguished Service Medal, Legion of Merit, two Distinguished Flying Crosses, the Meritorious Service Medal, and five Air Medals. In 1946, he joined the Maine Air National Guard and was recalled to active duty in 1950. He split time at the Pentagon in USAF operations and at Hq., Air Defense Command in Colorado Springs. His wife of forty-seven years, Gloria, died in 1992, and his son John Jr., an F-105 pilot, died in an aircraft accident. General Pesch is survived by four children, three sisters, a brother, seven grandchildren, and three great-grandchildren.

### USAF v. CAF

Dayton, Ohio – December 30, 2009. In a published opinion, the U.S. Sixth Circuit Court of Appeals ruled that an historic plane must be returned to the National Museum of the U.S. Air Force from a private organization because the latter violated the terms of the loan agreement it had signed with the USAF. Carter M. Stewart, U.S. Attorney for the Southern District of Ohio announced the opinion today. Assistant U.S. attorney Patrick Quinn represented the Air Force.

In 1966, the Air Force had loaned an F-82 to the Commemorative Air Force, with the understanding that the CAF would display the aircraft as part of its collection. The agreement further specified that the CAF had to return the plane to the USAF if the CAF no longer wanted it.

The CAF had restored the plane to flying condition and flew it numerous air shows until 1987, when it crash landed. The CAF entered into an agreement with a private organization, NPA Holdings, to exchange the F-82 for two other aircraft. CAF and NPA swapped planes in 2002.

When the USAF learned of the deal, it requested the return of the F-82. NPA refused and the USAF filed suit in U.S. District Court here in April 2006. On July 1, 2008, U.S. District Court Judge Thomas M. Rose granted a ruling for summary judgment to the Air Force. The Sixth Circuit Court's opinion affirms the order.

For more information, contact: Fred Alverson, (614) 469-5715

### Errata

In the winter issue of Air Power History, Vol. 56, No, 4, pp. 57 and 58, three photos should have been credited to INFOWEST GROUP. They are; both photos in the left column on page 57 and the photo of Maj Gen Dunlap on page 58, left column, in the middle.

## Reunions

### Doolittle Tokyo Raiders Reunion Planned

Dayton, Ohio – The Doolittle Tokyo Raiders are in the final stages of plan-

ning their 68th reunion at the National Museum of the U.S. Air Force, April 16-18. The reunion will include a free public autograph session, educational event and memorial service at the museum. In addition, a free public concert honoring the Raiders will take place at Wright State University's Nutter Center. Of the nine living Doolittle Tokyo Raiders, five are currently able to travel and plan to be on-hand for the reunion events.

According to museum director, Maj. Gen. (Ret.) Charles D. Metcalf, "The Doolittle Tokyo Raiders are living legends and their story is a fascinating part of American history." As a possible special tribute to the Raiders during the reunion, the Doolittle Tokyo Raiders Association, Inc. hopes to secure enough sponsorship funding to fly in and land 25 B-25 Mitchell Bombers on the runway behind the museum. If their efforts are successful, this aviation event would be the largest gathering of B-25s since World War II. Those interested in helping to make this flight of B-25 bombers possible should contact Tom Casey with the Doolittle Tokyo Raiders Association, Inc. at (941) 921-7361 or by email at: tomcat911@comcast.net. (*Federal endorsement is not implied.*)

For more information on the Doolittle Tokyo Raiders Reunion, please contact the National Museum of the U.S. Air Force at (937) 904-9881.

For more information on the National Museum of the U.S. Air Force, please contact: Rob Bardua at Public Affairs Division at (937) 255-1386.

The **435th OMS** will hold a reunion May 13-16, 2010, in Fairborn, OH. Contact:

Ernesto Goenaga  
3060 King James Drive  
Beavercreek OH 45432  
(937) 429-5232

The **455 SMW/91 SMW** Minot Minuteman I Reunion will take place May 19-23, 2010, in Dayton, OH. Contact:

Dave Schuur  
djschuur@verizon.net

The **6th Bomb Group** will hold a reunion June 23-26, 2010, in Dayton, OH. Contact:

Jane Reagan  
646 McCauley St  
Williamston MI 48895  
(517) 655-2739  
janeellenreagan@gmail.com

The **551st AEW Wing** will hold a reunion August 12-15, 2010, in Fairborn,

OH. Contact:  
John Loftus  
420 Jefferson Ave  
Edgewater NJ 08010  
(609) 386-1318  
jloftus@comcast.net

**The Strategic Air Command** reunion will be held August 25-29, 2010, in Tucson, AZ. Contact:  
J. T. Romero  
520-203-8809  
866-260-9302  
jtrome-25@excite.com

**The 58th Fighter Association** reunion will be held September 13-19, 2010, in Dayton, OH. Contact:  
Jean Kupferer  
2025 Bono Road  
New Albany, IN 47150  
(812) 945-7649  
jkupferer@insightbb.com

**The 307th Bomb Wing (B-29)** reunion will be held September 15-18, 2010, in Fairborn OH. Contact:

David White  
722 County Road 32N  
Bellefontaine OH 43311  
(937) 593-3950

**The 308 SMW** reunion will be held September 18-19, 2010, in Little Rock, AR. Contact:  
William Leslie  
william.leslie2@wpafb.af.mil

**The 317th Troop Carrier/46th Troop Carrier Squadron** reunion will be held September 22-25, 2010, in Fairborn, OH. Contact:  
Jim Timmons  
758 221st Street  
Pasadena, MD 21122  
(410) 255-2735  
jimt0708@aol.com

**The 487 TMW (Comiso)** reunion will be held October 6-10, 2010, in Tucson, AZ. Contact:  
Chuck Vickery  
915-760-4673  
chuckvickery@sbcglobal.net

**The 579 SMS (Walker Atlas)** reunion will be held October 6-10, 2010, in Tucson, AZ. Contact:  
William Leslie  
william.leslie2@wpafb.af.mil

**The Association of Air Force Missiles** will held a reunion October 6-10, 2010, at the Radisson Airport in Tucson, AZ. We are encouraging units or other groups looking at a reunion to consider joining us—we make all the arrangements, help you get the word out and make sure you have meeting space or fill any other special requirements. Registration in each newsletters and at [www.afmissileers.com/nmreg10.pdf](http://www.afmissileers.com/nmreg10.pdf)  
Contact:  
Col. Charlie Simpson, USAF (RET.)  
Executive Director  
Association of Air Force Missiles  
PO Box 5693, Breckenridge, CO 80424  
970-453-0500  
[www.afmissileers.org](http://www.afmissileers.org)  
[afmissileers@msn.com](mailto:afmissileers@msn.com)  
[aafm@afmissileers.org](mailto:aafm@afmissileers.org)

## The TEST: An Exhibition



In September 1940, shortly before the entry of America into the Second World War, the War Department announced the formation of an aviation unit of "colored personnel." This effort would become known as the "Tuskegee Experiment." The ultimate test of this experiment would take place in the bloody skies over war torn Europe. *The TEST: an exhibition* tells the incredible story of the "Tuskegee Experiment" and the first African-American aviators in the U.S. military. Through the use of colorful and exciting new graphics, models, vintage photographs and an easily understood narrative, this history is wonderfully presented. See it for yourself on our website: <http://www.afhistoricalfoundation.org>.

## **General Lew Allen Jr. 1925-2009**



Gen. Lew Allen Jr., USAF (Ret.), the former Air Force Chief of Staff and head of the Jet Propulsion Laboratory, died on January 4, 2010. He was eighty-four.

Born on September 30, 1925, in Miami, Florida, he grew up in Gainesville, Texas, and went on to attend the U.S. Military Academy at West Point, New York. Allen graduated in 1946, with a BS degree and a commission as a second lieutenant. During summers at West Point, he took primary flying training at Chickasha, Oklahoma, where he flew the PT-17 and the Stearman, and completed advanced training at Stewart Field, in Newburgh, New York. He was awarded pilot's wings at graduation from West Point.

After completing multiengine flight training in November 1946, Allen was assigned to Strategic Air Command's (SAC's) 7th Bombardment Group at Carswell AFB, Texas, where he flew B-29s and B-36s and served in various positions related to nuclear weaponry. He was among the first class of qualified nuclear weaponeers in the Air Force. Allen attended the Air Tactical Course at Tyndall AFB, Florida, and returned to Carswell as an instructor and assistant special weapons officer for the 7th Bombardment Wing. In his four years at SAC, he witnessed its astounding dramatic change from a very poor and unprofessional entity to a very disciplined and professional organization under the leadership of Gen. Curtis E. LeMay.

In September 1950, Allen entered the University of Illinois for graduate training in nuclear physics and earned an MS in 1954, upon completing a thesis on high-energy photonuclear reactions. Captain Allen was then assigned to the Atomic Energy Commission's Scientific Laboratory at Los Alamos, New Mexico, as a physicist in the test division. At this assignment he conducted experiments in several of the nuclear test series at Bikini and Nevada. At Los Alamos, he gained a reputation for competence and was involved in testing the vulnerability of nuclear weapons to other nuclear weapons.

From June 1957 to December 1961, Major Allen was stationed at Kirtland AFB, New Mexico, as a science adviser to the physics division of the Air Force Special Weapons Center. His work involved the military effects of high-altitude nuclear explosions.

At Los Alamos and Kirtland, he worked alongside the most prominent people in the nuclear weapons community, including Dr. Harold Brown, the director of the Livermore Laboratory. In 1961, when Brown was named the Director of Defense Research and Engineering, he tapped Allen to join his space technology office.

In 1965, Allen was assigned to the Air Force Los Angeles division, as deputy director for advance plans, moving to the Pentagon in June 1968 as deputy director of space systems and becoming the director the following year. Allen returned to Los Angeles in September 1970 as assistant to the director of special projects and in April 1971 became director of special projects, with additional duty as deputy commander for satellite programs, Space and Missile Systems Organization. He witnessed the demise of the Dyna-Soar program and became involved with the Manned Orbital Laboratory program. He also participated in the Blue Gemini program, devising experiments for a version of the space vehicle.

When he was at the Office of Management and Budget, Dr. James Schlesinger, had reviewed Allen's space programs. In March 1973, Schlesinger invited Allen to join him as a deputy at the CIA. When Schlesinger became Secretary of Defense, in August, he named Allen to head the National Security Agency.

In August 1977 Allen was named commander of Air Force Systems Command, a comfortable fit, given his background in research and development. At Systems Command, Allen focused on acquisitions stemming from the upgrade of the tactical forces following the Vietnam War, including the C-5, A-10, and F-16.

Allen left Systems Command in April 1978 to become the Air Force Vice Chief of Staff and then Chief of Staff, three months later. His appointment as Chief was entirely unexpected because he had followed an unusual career path: he never had an overseas or a combat assignment, and most of his jobs were in highly specialized activities rather than in the basic line of the air force. Characteristically, Allen looked forward to the challenge.

Among the dominant issues with which he dealt during his first two years as Chief were the attitudes, morale, and discipline of Air Force personnel. It was the era of the "Hollow Force," when gross underfunding across the range of USAF activities—from operations and maintenance to morale, welfare, and recreation—adversely affected the entire Service. For exam-



ple., budgetary retrenchment had limited flying hours, causing disgruntlement among pilots. Pilots charged they were not receiving the necessary training and experience to warrant the Air Force's definition of them as "fully proficient defenders." Working with his commanders, Allen succeeded in securing funds to increase flying hours, especially for the Tactical Air Command, and to turn around the pilot retention issue. General Allen got along well with all three of the Air Force Secretaries with whom he worked—John C. Stetson, Hans M. Mark, and Verne Orr. As chief, Allen worked closely with the Army on doctrinal issues, attempting to improve the rationalization of the approaches of the two services into a common doctrine."

Throughout his tenure Allen advocated improvements to national combat capability, including survivability of strategic forces, enhanced combat readiness and sustainability of all-purpose forces, and expanded airlift capacity. Essential to these goals was having adequate numbers of experienced, motivated people to staff and maintain those weapon systems. While stressing the rebuilding of the nuclear deterrent forces, Allen pursued the improvement of general-purpose forces to counter the steadily expanding Soviet conventional capabilities.

Like the other services in the early 1980s, the Air Force "rode the crest of President Ronald Reagan's wave" of support for defense spending. By the end of his tour as chief, General Allen could point to some significant progress in correcting long-standing deficiencies in the forces and in improving defense capabilities. "We must stay the course" even though it would not be easy, he said. "We can and must afford the cost. We cannot afford the weakness and loss of credibility that a failure to stand up to the Soviet challenge in the dangerous decade" would entail.

After retiring from the Air Force in June 1982, Allen became director of the Jet Propulsion Laboratory at the California Institute of Technology in Pasadena, California, and remained there until 1990. His proudest achievement at the JPL, according to the current JPL Director Charles Elachi, was stimulating the development of new imaging technologies that were used in virtually all satellites and planetary probes.

From 1989 to 1995, Allen served on the President's Foreign Intelligence Advisory Board and the Intelligence Oversight Board. In 1990, he led a NASA investigation into the defective mirror on the Hubble Space Telescope. The investigation concluded that a faulty test instrument was responsible for the problem.

General Allen is survived by his wife of sixty years, the former Barbara Frink Hatch; two sons, Lew III of Anchorage and James of London; three daughters, Barbara Miller of Annandale, Virginia. Marjorie Dauster of North Haven, Connecticut, and Christie Jameson of the Woodlands, Texas; thirteen grandchildren; and eleven great grandchildren.

*George M. Watson, Jr., Senior Historian, Air Force Historical Studies Office*

## 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](mailto:jneufeld@comcast.net).



Our Winter 2009 mystery aircraft was the North American B-45 Tornado. Everyone who identified the aircraft with the generic term B-45 was credited with the correct answer.

Our photo in the last issue depicted a JB-45A (47-049) used as a jet engine testbed for Westinghouse, with a retractable engine under its fuselage. A different aircraft, a JB-45C (48-008) tested engines for General Electric.

The B-45, which was the first operational American jet bomber and made its maiden flight in 1947. A B-45A squadron was formed at Barksdale Air Force Base, La., the following year. A proposed B-45B version was never built and only a handful of B-45C models served as bombers, including the aircraft depicted in our follow-up photo by David W. Menard.

In atmospheric nuclear tests in the Pacific in 1951 and 1952, the B-45 dropped real atomic bombs twice. The B-45 made the first-ever European deployment of tactical nuclear weapons 1954.

But an early decision was taken to shift the plane's job to reconnaissance. Most Tornados were RB-45C models. They were powered by four General Electric J47-GE-13/15 turbojet engines, reached a maximum speed of 570 m.p.h., and were armed with two .50-cal. M-7 machineguns in a tail turret.

In September 1950, three RB-45Cs reached Yokota Air Base, Japan in a detachment of the 91st Strategic Reconnaissance Wing. On December 4, 1950, an RB-45C became the first aircraft of any kind to be shot down by a MiG-15. Details, and the fate of the four Americans aboard have never been resolved.

All 28 readers who submitted entries in our "name the plane" contest had the right answer. Our "History Mystery" winner, chosen at random, is Dave Sterling of McLean, Va. He'll receive as his prize a copy of the book *Hell Hawks*, a history of a P-47 Thunderbolt fighter group in combat in World War II.

Can you identify this issue's "mystery" aircraft? Remember the "History Mystery" rules:

1. Submit your entry on a postcard. Mail the postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124. Entries may also be submitted via e-mail to robert.f.dorr@cox.net.

2. Name the aircraft shown here. Include your address and telephone number. Entries not accompanied by both an address and a phone number will be disqualified.

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

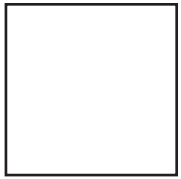
And do you have a rare photo of a little-known aircraft? We'll return any photos sent by readers for use on this page.

## This Issue's Mystery Plane





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