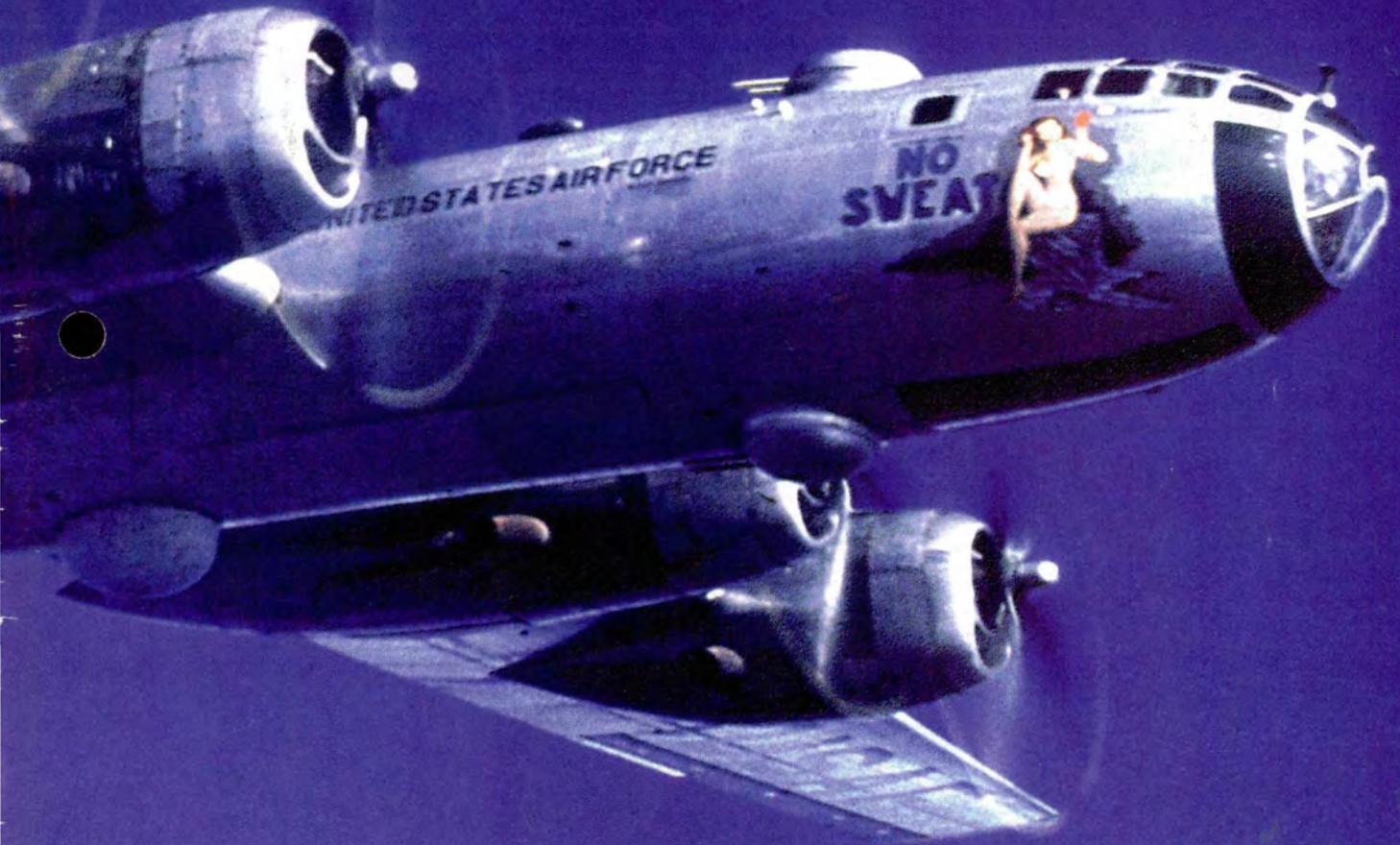


SEPTEMBER 1997

FLYING SAFETY



UNITED STATES AIR FORCE

50 Years of
Excellence



First Anniversary Message

This month the new United States Air Force celebrates its first anniversary.

Last year was a history-making period for the Air Force. On 18 September 1947, the Air Force became an autonomous branch of the nation's armed services with equal status to the Army and Navy. This marked the realization of a dream and ambition of America's military airmen which began to take form when air power was established as a major weapon and molder of destiny in World War I.

Close on the heels of the birth of this new independent military arm, the Air Force was able to announce that in October 1947 it experienced the best worldwide safety record ever achieved since the Air Service recorded its first accident in 1908. When the Air Force totaled its accident statistics for 1947, it found that its major accident rate was the lowest of any year for which records are available. This was indeed an enviable accomplishment when it is remembered that in the previous year the Air Force—beset by rapid demobilization, dwindling resources, and deteriorating equipment—suffered an accident rate that rose higher than in any wartime year. Indications are that in 1948 this safety record will be continued—possibly improved.

Realizing that the best defense against accidents was an attack on the causes, the Air Force launched a frontal campaign against costly and tragic aircraft accidents which resulted in the new low accident rates achieved coincidentally with the establishment of the Air Force's

independence. Although the Air Force can be proud of turning the accident tide, the war on this scourge of the Nation's peace power is far from won. It will not be won until the Air Force no longer has to suffer expense, injury, and death as a result of human and mechanical frailties.

We have had much accident experience for which we have paid a high price. What we must do is translate that accident experience into accident prevention. If we couple that experience with increased training and a higher degree of proficiency in everything we do connected with flying, we will eliminate the needless waste of lives, aircraft, and money. Winning this war against accidents is a challenge to each man on the line and in the hangars to work as though his own life depended upon the quality of maintenance. It is a call to action for each commander to assemble all his forces and fight against inefficiency and haphazard practices. It is an opportunity for each airman to live—by learning how to operate his aircraft safely and to cope with emergencies.

The course ahead for all of us lies in recognizing the presence of problems in safe flight still to be overcome and in using all available experience to solve them. Then we shall be doubly proud of our service to the nation.

HOYT S. VANDENBERG
Chief of Staff, United States Air Force



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Front Cover: B-29A "No Sweat" over North Korea. From 19th Bomb Gp, 28th BSq
Photo courtesy David Menard

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CONTRIBUTIONS

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Flying Safety... We've Come a Long Way

LT COL JIMMIE D. MARTIN (RET)

The first U.S. military aviation mishap involving powered flight occurred before the Army even owned an airplane. The crash was at Fort Myers, Virginia, on 17 September 1908. The occasion was the final flight in the acceptance trials of the first aircraft purchased from the Wright brothers.

Lt Thomas E. Selfridge was flying with Orville Wright. After they had been airborne about 3 or 4 minutes, the aircraft suddenly nosed over and crashed at a steep angle. Lt Selfridge was fatally injured and died several hours later. Orville was seriously injured and hospitalized for 7 weeks. Thus, the first powered flight of a mil-

itary man ended in his death—not a very auspicious beginning for military aviation and flying safety.

The Army ordered an investigation to learn the cause of the mishap. The investigation consisted of observing the remains of the crashed aircraft and taking witness statements. The board found a new, longer propeller contacted a rudder guy wire and eventually caused the wire to come out of its socket. This allowed the rudder to fold sideways, and the pilot lost control.

This first mishap investigation was very unsophisticated when compared to our investigations today. But so were the aircraft. The purpose was the same—to find out what happened so it could be prevented from happening again.

And it worked. The Wright brothers designed an



Official USAF Archive Photo

improved version of their aircraft with structural changes which ensured the propellers could not hit any guy wires. This marked the beginning of the flight safety program so familiar to us today.

Early Safety Program

The safety record of the early military fliers was dismal to say the least. Fortunately, they usually walked away from the crashes uninjured, or at least not seriously injured. The first serious mishap occurred during training at Fort Sam Houston, San Antonio, Texas, on 10 May 1911.

Lt G. E. M. Kelly took off on his primary pilot qualification flight in the Army's second aircraft, a Curtiss. The aircraft crashed during landing, and Lt Kelly died a few hours later due to a skull fracture.

This was the final straw for the commanding general of the Maneuver Division. He was fed up with the many crashes which had been occurring. He took the first positive action to solve the flying safety problem—he prohibited further flying at Fort Sam Houston. Problem solved.

The fliers were not satisfied with this solution. They moved the flying school back to College Park, Maryland, where it had started. The instructions and rules they operated with were much simpler in those days. For example, the instructions issued with the 1911 Curtiss aircraft included the following gems.

★“When the mechanism is facing into the wind, the aeronaut should open the control valve of the motor to its fullest extent, at the same time pulling the control pole toward his middle anatomy.

“When sufficient speed has been attained, the device will leave the ground and assume the position of aeronautical ascent.

★“Should the aeronaut decide to return to terra firma, he should close the control valve

of the motor. This will cause the apparatus to assume what is known as the ‘gliding position,’ except in the cases of those flying machines which are inherently unstable. These latter will assume the position known as ‘involuntary spin’ and will return to earth without further action on the part of the aeronaut.

★“On approaching closely to the chosen field or terrain, the aeronaut should move the control pole gently toward himself, thus causing the mechanism to alight more or less gently on terra firma.”

The Army didn't track mishap rates in those days. But in 1914 the War Department issued a memorandum recapping the mortality record in army aviation. Between 1908 and 1914, there were 11 fatal mishaps. These cost the Army 12 commissioned officers, 1 noncommissioned officer, and 1 civilian.

In 1921, the Army began keeping track of mishap rates. That year the Army flew 77,000 hours and had 361 major mishaps. When converted to the type of rate we use today, this equates to 467 mishaps per 100,000 hours. If we

continued on next page



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**DEPARTMENT OF THE AIR FORCE —
THE CHIEF OF SAFETY, USAF**

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flew like that today, we'd crash 1,350 aircraft per month and use up our entire inventory in 7 months!

The following year (1922) gave us our highest mishap rate on record—506 per 100,000 hours. But as our aircraft and our training improved, the mishap rate also slowly improved. By 1934, when the Army was involved in carrying the mail, the rate was 110 per 100,000 hours, but we lost 54 pilots.

Oscar Westover, the Army's Chief Aviator, tried to solve the problem with an approach similar to the one used at Fort Sam Houston in the early days. He sent a message to all his zone commanders saying: "There will be no more accidents." B. Q. (Barbeque) Jones put things in proper perspective when he wired back: "There will be no more flying."

The War Years

The history books are full of stories of the combat losses of men and aircraft during World War II, but you don't read much about the noncombat losses. We lost more aircraft and crews in training and routine flights than in combat.

The worst year for total numbers was 1943. In that year, we had 20,399 major mishaps in the CONUS alone, killing over 5,600 aircrew. We lost 1,100 more people and destroyed 1,200 more aircraft due to noncombat flying mishaps than we lost in combat.

Since we flew over 32 million hours, the rate didn't look all that bad at 64, but it worked out to be 56 aircraft per day. The slogan that year at B-25 conversion training in Tampa, Florida, was "One a day in Tampa Bay." This was also the year a formal flight safety program was begun.

In 1944, Flying Safety magazine began as a part of the Army Air Force's flying safety program. A few of the excerpts from "Letters to the Editor" in 1948 attest to the magazine's effectiveness:

★ "The November issue of the magazine Flying Safety is the first copy which I have been privileged to receive. I believe this magazine has more to offer of interest to the pilot than any magazine which I have ever read. Every article is well written and easy to read.

"Although flying safety should always be foremost in a pilot's mind, a story which tells what happened to some other pilot, who did not keep this thought foremost, always 'sticks' a little better. (February 1948)

★ "Having been a devotee of Flying Safety since its initial issue, I'm one of your most avid readers and I'm certain the effect of your excellent and hard-hitting publication on my piloting has been beneficial."

★ "The officers in this Command Headquarters read with immense interest copies of Flying Safety.

"This publication has done much to enhance the Flying Safety and Accident Prevention Program of the RCAF Air Transport Command." (October 1948)

The flying safety program continued after the war with slow but steady improvement in our mishap rates. By the time the Air Force became a separate service in 1947, we were down to a little over 1,500 mishaps a year

and a rate of 44 per 100,000 hours.

Major Change

The next major turning point came in 1949 when Maj Gen Victor E. Bertrandias took charge of the Air Force's safety program. Prior to this time, the safety program had mainly consisted of keeping records and investigating major mishaps. Under his leadership, the emphasis shifted from reacting to mishaps to preventing them. Investigators used information from mishaps to discover patterns and common causes. Then they took action to prevent similar mishaps.

Gen Bertrandias also stressed building safety into our aircraft and systems. The Directorate of Flying Safety was moved from Langley AFB, Virginia, to Norton AFB, California, to permit close liaison with the aircraft industry. He also recommended the name of the directorate be changed to Flight Safety Research to better describe its expanded role.

As a result of the improved methods of investigating, reporting, and analyzing aircraft mishaps established by



the Director of Flight Safety Research, it soon became apparent a systematic technical inspection system was necessary to improve the caliber of aircraft maintenance in the Air Force. On 21 September 1950, the Vice Chief of Staff approved the creation of a Directorate of Technical Inspection at Norton AFB.

Gen Bertrandias was named the Deputy Inspector General for Flight Safety Research and Technical Inspection. His two directorates complemented each other.

The Directorate of Technical Inspection made inspections and recommendations for improving the effectiveness and economy of aircraft, equipment, and weapon systems maintenance to provide increased aircraft utilization and safety. The Directorate of Flying Safety Research analyzed all aircraft mishap information to develop basic mishap cause factors and made recommendations for expediting corrective action.

You Can't Do That

The mishap rate continued to fall. By 1950, the rate had

been reduced to 36 and by 1955, to 17. But we had 800 fatalities in 1955. There was obviously more work to be done. During this postwar period, the Air Force developed a penchant for solving mishaps by regulation. When there was a mishap, they regulated against whatever the pilot was doing at the time. During this period, we developed many of the aircrew "be no's" we live with today.

Obviously, some of these "be no's" were badly needed—"There will 'be no' buzzing," and similar prohibitions. But there is a limit to how far this can be carried without interfering with combat capability.

Continued indefinitely, the mission will be sacrificed to safety like the "There will be no more flying" approach used at Fort Sam Houston in 1911. It was this type of approach which gave Safety the "black hat" image still lingering in some minds today. "Don't let Safety get involved or you'll never get anything done."

Safety Training

The Air Force recognized an effective safety program



needed trained people. Therefore, in March of 1953, a special school for flight safety officers was opened under contract at the University of Southern California. This was the only school of its kind in the world. It soon attracted the attention of civilian aviation organizations as well as foreign governments.

The school's purpose was to train flying safety officers in how to impress pilots, crews, and maintenance people with a greater realization of the importance of safe practices and also to foster a sense of flying safety consciousness. The subjects covered ranged from aeronautical engineering and aviation physiology to accident investigation and prevention.

Graduates of the school quickly established very effective programs which were instrumental in lowering the Air Force mishap rate. Today the Safety Education and Development Division at Kirtland AFB, New Mexico, manages many safety education courses. Flying safety courses are taught under contract by the Southern California Safety Institute.

In July of 1965, a unique outdoor classroom opened at

Norton AFB—the "Crash Lab" (now located at Kirtland AFB). In it, the wreckage from actual aircraft crashes is laid out in the same pattern as the original crash. Students at the aircraft safety schools then use the investigative techniques learned in the classroom to discover the causes of the mishaps. It is their first chance to put theory into practice, and it is done under controlled conditions which greatly increase the effectiveness of their training.

A New Ally

From about 1956 to 1960, we went through another transition period looking for a new approach to the flying safety problem. We began to concentrate on more efficient and effective ways to do the mission. Flying safety picked up a new ally—standardization. (Let Stan Eval wear the black hat.) As standardization became a way of life, safety improved. In 1960, the rate was down to 5.8—a remarkable achievement in a few short years.

Commanders began to be charged more directly than they had in the past for their responsibility and role in safety. During the 1960s and 1970s, the function of safety grew and flourished as never before as a result of all the attention it received and the number of trained professionals available.

The Cost of Doing Business

By the late 1970s, the rate had dropped to—and appeared to have stabilized at—around 3.0. Some were saying 3.0 was a reasonable rate if we were to continue to "train the way we fight." It was just the cost of doing business.

Fortunately, this philosophy did not prevail, and safety and ops continued to work together. Safety had evolved from the "be no" approach to trying to find ways to accomplish the mission more effectively and safely. Ops had discovered "making safety part of the planning" not only reduced aircrew fatalities but also resulted in more effective mission accomplishment and increased combat readiness.

The Air Force's mishap rate has continued its overall decline. In FY96, the Class A mishap rate, based on 100,000 flying hours, stood at 1.25, our second best rate behind the 1.11 rate in FY91 during Operation Desert Shield and Operation Desert Storm.

Is this the cost of doing business? Our safety and ops professionals are not willing to accept this premise, and they continue to work to improve our safety record.

What's the Point?

Are we expending all this effort so we can produce ever more impressive rates for all the world to see? No. The rates are only a measurement of how well we are doing in what's really important—saving lives, equipment, and money while increasing our combat capability. It's a way of keeping score in a game we all win—the fliers, the Air Force, the Nation, and the free world. ✈

Golden Legacy, F



GENERAL RONALD R. FOGLEMAN
Chief of Staff, USAF

For the past half century, the United States Air Force has been responsible for controlling and exploiting the air and space environment to meet the needs of the nation. We are the nation's Air Force—the only service that provides air and space power across the spectrum, from science and technology, to research and development, testing and evaluation, and fielding and sustaining forces. The accomplishments recorded by the men and women of the Air Force during the past 50 years represent a proud legacy of airmen demonstrating the role the Air Force has played in supporting our nation's objectives.

This year we commemorate 50 years of service to the nation. The theme for this celebration is "Golden Legacy, Boundless Future," chosen both to honor and remember those who have done so much for our nation in the

past while at the same time looking forward to the future.

One of our major accomplishments lies in our safety record. We take great pride in the fact that our mishap rate has continued its downward trend over the years. In FY96, the Class A mishap rate of 1.25 was second only to the 1.11 rate of FY91, a rate achieved during the demanding operations supporting Desert Shield and Desert Storm. Through diligence and professionalism, our Total Force has made this outstanding safety record a reality.

It is difficult to briefly describe the experiences of the Air Force over the past five decades. Technological changes alone make the experience of each individual different. We've moved from props to jets, taken the first steps into space, and developed aerial refueling, stealth technology, and laser-guided bombs.

Despite these many changes there has been one constant over this half century: the quality of people of the Air Force. Whether they

Boundless Future



Photo courtesy Mr. Dave Menard

choose to stay for a full career and consider it a life-long calling or serve only a few years, quality people provide the backbone for all of the Air Force's accomplishments.

Although we are celebrating our fiftieth anniversary, we can trace the idea of an independent air force back to our forebears in the Army Air Service, Air Corps, and Army Air Forces. Visionaries like Billy Mitchell, Benny Foulois, Hap Arnold, and Frank Andrews saw the promise of air power in allowing nations to avoid the slaughter that took place in the force-on-force ground battles of annihilation in World War I. They argued that the value of airpower could only be realized through an independent air force led by airmen.

The United States Air Force was truly forged in the crucible of combat during World War II. Airpower played a major—sometimes decisive—role in helping our nation win the war. When the Allies could not mount an invasion of the European continent, airpower opened a second front to drain the resources

of the Axis powers. It brought the economy which sustained the enemy's armed forces to virtual collapse. Airpower had fundamentally changed the way that wars would be fought, the nature of commerce, and relations between nations.

Based on this new reality, President Truman submitted legislation for an independent air force to Congress in February 1947. On 26 July, he signed the National Security Act of 1947, establishing the United States Air Force as part of a new defense establishment. On 18 September, W. Stuart Symington was sworn in as the first Secretary of the Air Force, and a week later General Carl "Tooey" Spaatz became the first Air Force Chief of Staff.

Not long afterwards, the Air Force responded to the first challenge of the Cold War. When the Soviet Union closed the railroads and highways into Berlin in June 1948, the United States responded with the Berlin Airlift. Flying alongside our allies, we kept the city supplied with food, coal, and other necessities for 15 months. This successful

continued on next page

application of nonlethal airpower demonstrated the commitment of the United States to support our European allies and face down Soviet coercion.

The late 1940s were marked by growing tension between the West and the proponents of international communism, which broke into open conflict in June 1950, when North Korea attacked its neighbor to the south. Within a matter of hours, our nation found itself engaged in a land war in Asia.

In November we were challenged in the air by MiG-15s. Fortunately, there were people in the Air Force who possessed the foresight to focus on air superiority. As a result, we had developed the F-86, which racked up a 10:1 kill ratio against the Soviet-built MiGs, destroying 786 while losing only 78. Without the F-86, and our highly trained pilots and dedicated maintenance people, we would not have been able to control the skies over the peninsula, safeguarding UN forces, both on the ground and in the air, from attack by North Korean forces and providing the UN units freedom to attack. Ultimately, airpower was a crucial factor both in stabilizing the ground war and in encouraging the communists to enter truce negotiations. Air Force airmen played a key role in preserving an independent South Korea.

During the early 1950s we began transitioning to the jet age in long-range bombers, bringing the B-47 and the venerable B-52 into service. The "Buff" first flew in 1952, became operational in 1955, and has been a workhorse for the Air Force and the nation ever since.

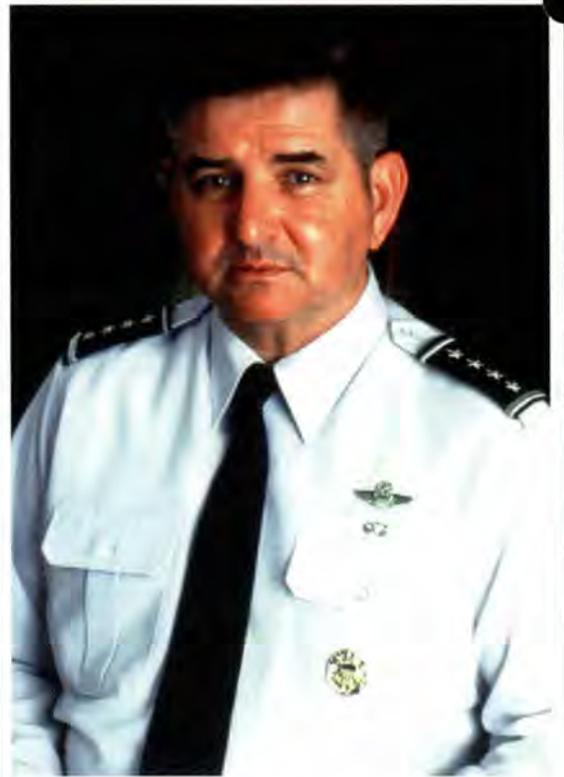
Our nation was also beginning to take its first steps into space, as we started to develop the Atlas, Titan, and Minuteman missiles which would become the second leg of the nation's strategic nuclear triad. We also began exploring the use of satellites, establishing a satellite development program in 1955 that produced the Corona photo reconnaissance satellites and Midas early warning satellites. In 1958, we launched the first active communications satellite, and in 1961, the Air Force was named the lead agency in space by Secretary of Defense Robert S. McNamara.

The 1960s and 1970s were characterized by deepening involvement in Vietnam. Our involvement there covered all aspects and uses of airpower. In 1969, at the height of American participation, over 775,000 men and women were serving in the Air Force. The 1960s also saw Air Force aviators among the first contingent of U.S. astronauts. We

even planned for routine access to space by Air Force airmen with the Dyna Soar project—the forerunner of the Space Shuttle, before the program was canceled for budgetary reason.

After the Vietnam War, we took a hard look at the Air Force's performance and then applied the lessons we learned. We realized the value of precision munitions. It had taken hundreds of sorties to drop pivotal bridges until the Air Force employed laser-guided bombs, and we pressed to make them better. We also saw the need for a fighter that was optimized for air superiority, so we invested in the F-15. We knew that we had been constrained by the inability to operate in the weather and at night, so we set out to improve those capabilities in order to own the night in future conflicts. We developed a night precision delivery capability with the low altitude targeting infrared for night (LANTIRN) system.

General Ronald R. Fogleman



Your comrades in blue salute you
upon your retirement.
Hail and farewell!

We also began looking for ways to defeat surface-to-air missiles and saw the promise of stealth technologies. We invested in them, and in 1982, the F-117, the world's first stealth fighter, was delivered, followed more recently by the B-2 bomber.

We also undertook initiatives to improve the quality of our training. We formed the aggressor squadrons to provide dissimilar air combat training and established the Red Flag exercises to provide aircrews realistic combat training before they went to war.

The importance of space continued to grow as we fielded more advanced communications, weather, navigation, and intelligence and missile warning systems.

During the late 1970s and early 1980s, the Air Force was continually involved in contingency operations. In 1976, we had squadrons on their way to Korea within 24 hours after the ax murders of two Army officers in the DMZ. In 1983, the Air Force supported the rescue of American citizens from Grenada. The attack on Libya in 1986 drove home to terrorists the price they would pay for their actions. And in 1989, Air Force airmen led the way for Operation Just Cause in Panama.

In 1990, the USAF and the nation benefited from the convergence of advances in technology, realistic training, astute tactics, strong leadership, and bold concepts of employment in Desert Shield and Desert Storm. The result was a 38-day air campaign that decisively weakened Iraqi forces, making possible the 100-hour ground operation that ejected the Iraqi army from Kuwait with a minimum of coalition casualties.

During the late 1980s and early 1990s, we also saw the fall of the Berlin Wall and the collapse of the Soviet Union. These events marked the end of the Cold War—a victory for democratic, free market ideals—and a victory for Air Force people who had contributed enormously to this achievement.

With the end of the Cold War, the nation began a return to its militia roots and the Air Force began to demobilize. As a result, since 1990 we've reduced our major installations, cut fighter wings, downsized our bomber forces, and reduced our ICBMs. At the same time we've seen our involvement in contingency operations increase nearly fourfold since the fall of the Berlin Wall. We've continued to make history and build upon our Golden Legacy. We've maintained an air occupation of Iraq for more than 6 years, compelling Saddam Hussein to accept the most intrusive UN inspection regime in histo-

ry.

But it hasn't all been lethal operations over the past 50 years. As the United States has seen the need to provide humanitarian assistance, support an ally, or convey commitment, the Air Force has been heavily involved moving supplies, food, equipment, and medicine. These humanitarian missions started with flights bringing cholera vaccine to Egypt in October 1947 and have continued every year since.

Since the Gulf War we've provided humanitarian relief and protection to half a million Kurds in Turkey and northern Iraq. We delivered hundreds of tons of relief to Bangladesh. We built air bridges to rapidly provide humanitarian relief to starvation-riddled Somalia and brought in tanks and armored vehicles when the situation turned sour in Mogadishu in the fall of 1993. And in the Balkans, the Air Force took part in the longest humanitarian airlift and airdrop in history—over 3½ years—to sustain Sarajevo and other safe havens in the face of Bosnian Serb pressures.

These are just a few of the highlights of our Golden Legacy. This year we celebrate the 50 years of hard work and dedication displayed by the thousands of men and women who served their nation in the Air Force. With the past challenges in mind, and remembering the lessons and achievements of the people who built the Air Force, we look forward to a boundless future.

As we look into the future, it's clear that global and strategic capabilities of the nation's Air Force will play an even more important role than in the past. We believe that in the first quarter of the twenty-first century it will be possible to find, fix, or track, and target, in near real time, anything of significance that is stationary or moves on the surface of the earth. This capability, coupled with the speed, flexibility, and precision of air and space power, will ensure the rapid delivery of supplies, dominate the battlespace, prevent an enemy from finding sanctuary, and permit freedom of action for joint and combined forces to meet political and military objectives.

Our new strategic vision of Global Engagement will guide the development of our Air Force to ensure that we continue to provide our great nation the full range of air and space capabilities into the first quarter of the twenty-first century...and the men and women of the Air Force will make it a reality. ✈





FSM Archives

CMSGT ROBERT T. HOLRITZ (Ret.)
Contributing Writer

On 26 July 1947,

on board his plane, "Sacred Cow," President Truman signed the National Security Act of 1947 which dissolved the War Department and united all branches of the armed services into one agency, the Defense Department. This legislation also created the Air Force as a separate and independent branch of the armed forces. That stroke of the president's pen ended a 30-year military and political battle for an independent Air Force.

For nearly 20 years after the Wright Brothers' first flight, the United States government and its military failed to realize the value of air power as a weapon of war. To the War Department, an aircraft was merely an observation platform. When the United States entered World War I in 1917, the Army had only 55 operational aircraft—all trainers and most of them considered obsolete. In combat in the skies over Europe, U.S. aviators flew mostly foreign-manufactured aircraft such as Nieuports Breguets, Salmsons, and the famous Spad.

The governments of Europe, however, were

fully aware of the viability of the airplane as a weapon of war. While America was ignoring proponents of military aviation, the British, Germans, French, and even the Russians already had squadrons of combat aircraft. In fact, by the spring of 1917, German twin-engine Gotha bombers were conducting bombing raids against Britain. In retaliation, the British "Independent Force" was attacking German munitions plants with their four-engine Handley Page O/400 bombers capable of carrying 2,000-pound bombloads.

While the War Department and Congress lacked enthusiasm for military aviation, Gen "Blackjack" Pershing, Chief of the American Expeditionary Force (AEF), World War I, learned that the worth of the airplane went beyond not mere reconnaissance. Pursuit squadrons took on the missions of bombing and strafing ground targets and destroying enemy aircraft over the battle area. It soon became apparent to Pershing that whoever controlled the skies over the battle would probably emerge victorious. It was these pursuit missions which made heroes of pilots such as America's top ace, Capt Eddie Rickenbacker, and the infamous Red Baron Von Richthofen.

As one might expect, the flying officers were strong supporters of air power. Their

voices, however, were considered by Washington to be nothing more than parochial rhetoric. The most notable of these aviators were Brig Gen Billy Mitchell, Chief of the Air Service, First Army, and Assistant Chief of the Air Service AEF Brig Gen Benjamin Foulois.

Generals Mitchell and Foulois were complete opposites. In fact, the only thing they shared in common, besides their zeal for air power, was a mutual dislike of each other. Mitchell resented Foulois' appointment by Pershing to be Chief of the Air Service AEF since Mitchell technically outranked him. While Foulois respected Mitchell's leadership qualities, he considered Mitchell a pain in the neck.

Mitchell was the son of a U.S. senator. Foulois, on the other hand, was the son of a plumber. Often described as audacious, Mitchell was an outspoken, eloquent speaker. Foulois, however, had difficulty with public speaking, a weakness which would later hinder his effectiveness in getting his point across to the War Department and Congress.

Mitchell

Billy Mitchell's interest in the aircraft as a tool of war began long before the Army purchased its first airplane. From 1907 to 1914, he made in-depth studies of the need for Army aviation. In 1915, he was asked to prepare a pamphlet on the subject.

Although he was not yet a pilot, he was now considered the United States' foremost expert on air power. At the age of 36, and now a major, Mitchell was too old and too high in rank to be selected for the Army's flight school, so he learned to fly at his own expense.

Mitchell's credentials garnered him the ear of Congress and the press, and he became notorious for his convincing speeches. Most Air Service officers favored an independent Air Service. One exception was Gen Charles Menoher, the nonflying Chief of the Air Service. The Army was vehemently opposed to an independent Air Service because the war had proven the value of air superiority to a commander, and the commanders did not want to lose operational control of the air

over the battlefield. Although Mitchell and his supporters were outnumbered and outgunned, they did enjoy support from some members of Congress. In June 1920, Congress passed the Army Reorganization Act. While the act did not give the air arm independence or autonomy, it did formally recognize the Air Service as a combat arm.

Mitchell was not satisfied with the Army Reorganization Act. He continued to champion air power and often addressed Congress on its behalf. Before the House Military Affairs Committee he stated that military aviation's foremost mission was to maintain air superiority, a task which could be best accomplished through the creation of a distinct air mission.



When he made the bold statement that the airplane would soon bomb the battleship into obsolescence, he was given a chance to prove his theory. In July 1921, three of the Air Service's Martin bombers sank the "unsinkable" ex-German battleship Ostfriesland, anchored in Chesapeake Bay.

The results of the tests impressed Congress and the War Department, but the Navy immediately cried foul, pointing out that the ship was at anchor and was not taking evasive maneuvers nor was it defending itself. Actually, all Mitchell had accomplished was to increase the U.S. interest in naval aviation. In 1922, the Navy converted a collier, the USS Jupiter, to an aircraft carrier and renamed it the Langley. In the final analysis, the Navy was clearly the winner.

Mitchell's trial lasted 7 weeks. He was found guilty of insubordination and was sentenced to suspension without any allowances for 5 years. When he offered to resign, the War Department quickly accepted.

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Disappointed and impatient, Mitchell's tone became almost bitter. While his boss, Brig Gen Mason Patrick, agreed with him on most points, he warned Mitchell against antagonizing the senior officers of the War Department and the Navy by criticizing the Army and Navy for failing to develop mili-

much attention to his remarks—except perhaps the Japanese.

The irony was that our battleships were sunk, as with the *Ostfriesland*, while at anchor. Pearl Harbor and the massive use of air power to destroy the enemy's cities bore out Mitchell's theories, and 10 years after his death he was awarded the Congressional Medal of Honor.

Foulois

When he returned from France in 1919, Foulois, like other aviators, was distressed by the General Staff postwar aviation policy. While the legislation provided for an Air Service strength of 1,923 officers and 21,753 enlisted men, none were to be permanently assigned. Instead, all Air Service personnel would be temporarily assigned and would return to the Army's other branches after a period of time. Foulois, like Mitchell, vigorously protested before Congress. In numerous meetings before the House

Military Affairs Committee, he charged that the policy would result in a service with constantly shifting personnel who could scarcely be trained before they would be returned to their regular duties.

He also attacked the General Staff as ill-suited to administer control over military aviation. He went on to condemn the General Staff's prewar lack of concern for aviation which resulted in a practically nonexistent air arm when the U.S. entered the war in 1917. Unlike Mitchell, his rhetoric fell short of what could be considered insubordination.

President Coolidge, a fiscal conservative, was not a proponent of military aviation, but the investigation of aviation was a political necessity. Foulois joined Mitchell (who was in the process of being court-martialed) and Gen Patrick, Chief of the Air Service, in defending the need for an independent air arm. Largely as a result of the investigation, Congress passed the Air Corps Act of 1926.

The 1926 act left Army aviation under the control of the General Staff, but it authorized a 5-year expansion program increasing the personnel strength to 1,600 officers, 15,000 enlisted men, and 1,800 aircraft. It also created an additional assistant Secretary of War for

continued on page 19

The bombing trials of the USS INDIANA



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tary aviation. However, Gen Patrick's warnings fell on deaf ears, and Mitchell continued his campaign. When the Navy plane disappeared on a flight between San Francisco and Hawaii and the Navy dirigible *Shenandoah* crashed a few days later, Mitchell charged these mishaps were "the direct result of the incompetency, criminal negligence, and almost treasonable administration of our national defense by the Navy and the War Departments." These accusations so infuriated President Coolidge that he appointed a board to investigate aviation and ordered the court-martial of Col Mitchell.

The trial lasted 7 weeks. Mitchell was found guilty of insubordination and was sentenced to suspension without any allowances for 5 years. When he offered to resign, the War Department quickly accepted.

Mitchell continued his campaign, writing articles and books and making the lecturing circuit until his death in 1936. In his book, "The Wild Blue Yonder," he predicted the Japanese attack on Pearl Harbor 6 years before it happened. He wrote: "Hawaii is swarming with spies...As I have said before, that is where the blow will be struck, on a fine, quiet Sunday morning." No one paid

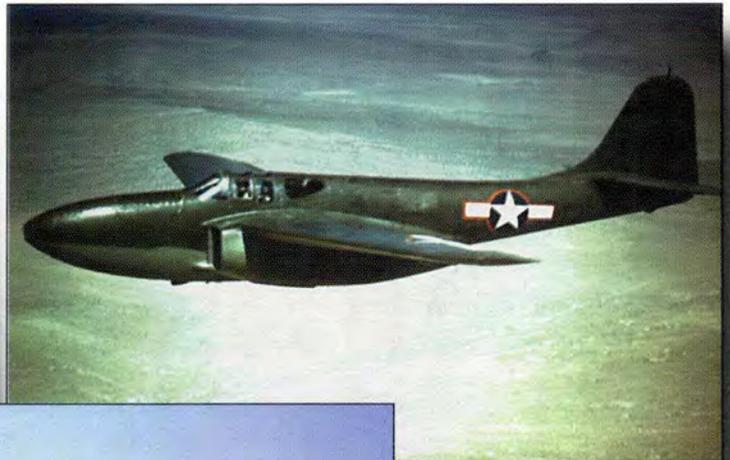
1947 A Look Back at the METAL We're Made Of 1997

Lest we forget the talented men and women who envisioned, designed, crafted, and flew the magnificent METAL machines that helped assure us our place as planet Earth's finest Air Force. Celebrating our Fiftieth Anniversary would not be complete without at least a brief look back at some of those proud birds.

All photographs courtesy Mr. Dave Menard unless noted



North American
F-51D *MUSTANG*



Bell Aircraft YP-59
AIR COMET



North American
F-86A *SABREJET*

Boeing SB-17G (ARS)
FLYING FORTRESS



Lockheed F-80
SHOOTING STAR



continued on next page

Boeing B-50
STRATOFORTRESS

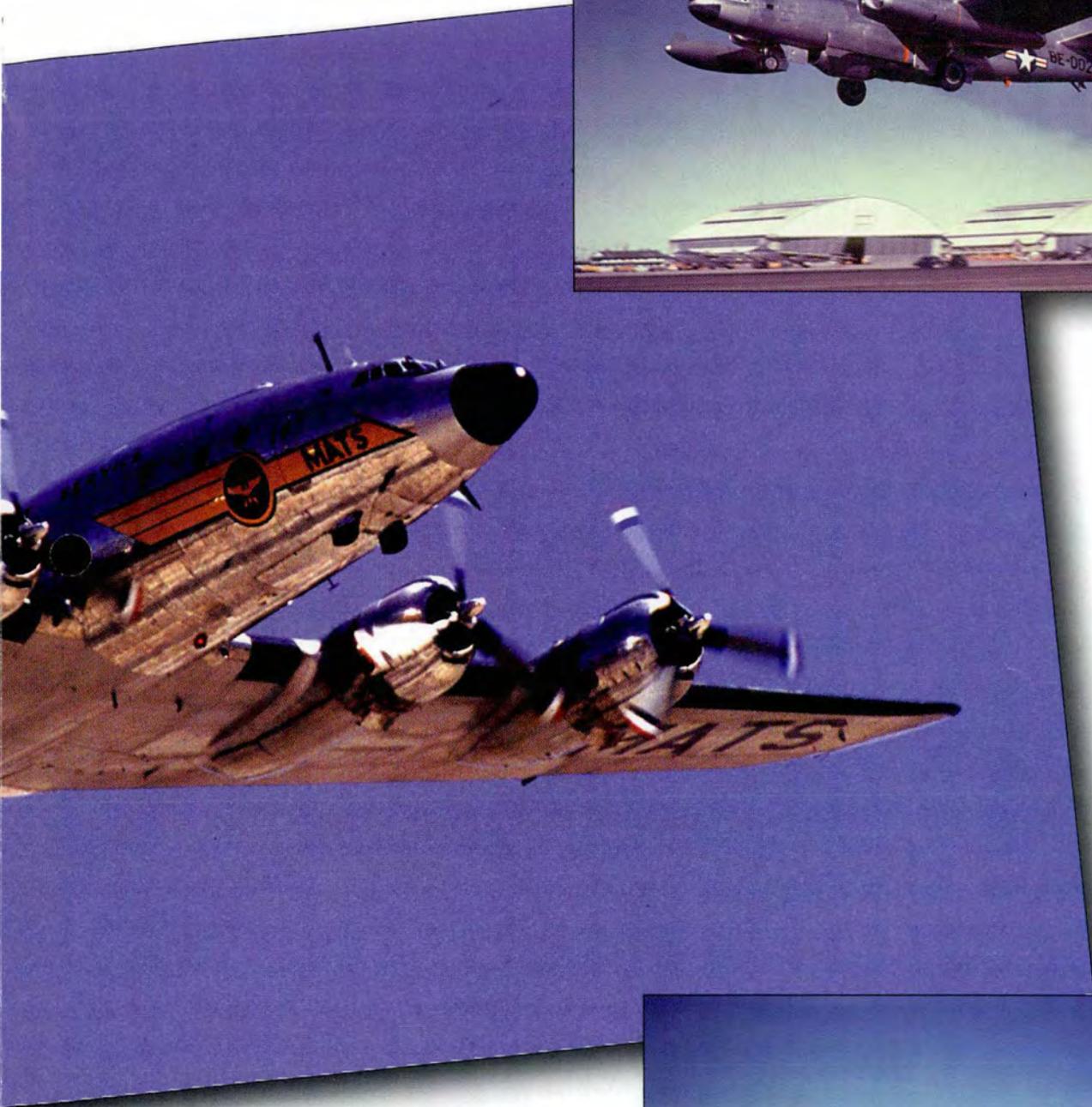


Lockheed C-121
CONSTELLATION



Boeing B-47
STRATOJET

North American B-45
TORNADO



USAF Photo by MSgt Perry J. Heimer

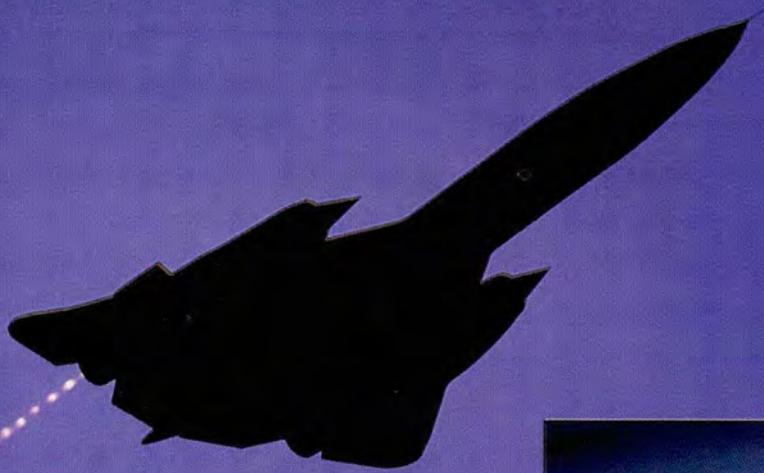


Douglas C-54
SKYMASTER

Douglas C-118
LIFTMASTER



Fairchild C-82
PACKET



USAF Photo by MSgt Perry J. Heimer

Lockheed SR-71
BLACKBIRD

Convair B-36J *PEACEMAKER*



Republic F-84G
THUNDERJET



Douglas C-74 *GLOBEMASTER*

military aeronautics and changed the name of the Air Service to the Army Air Corps.

In 1931, just 10 years before the attack on Pearl Harbor, the Air Corps was still flying fabric-covered aircraft and still did not have a clearly defined mission. Most Air Corps aviators believed the primary mission of military aviation should be strategic, striking at the enemy's war-making capability. But, as yet, there were no aircraft capable of flying long distances with heavy bombloads. Conversely, national policy and President Hoover believed the air mission should be strictly defensive. When Foulois took command of the Air Corps in December of that year, he and many other supporters of an independent air corps began to tone down their rhetoric. They saw what happened to Mitchell. And the careers of many of Mitchell's supporters were damaged after Mitchell's court-martial.

While the Air Corps Tactical School still clung to the strategic bombing doctrine as the basic arm of the Air Force, Foulois officially stated that defense was the ultimate mission for the Air Corps—specifically, defense of the coasts and possessions of the United States.

This doctrine angered the Navy and frequently caused conflict between the services. On one occasion, it required Chief of Staff Gen Douglas MacArthur and the Chief of Naval Operations Admiral William Pratt to mediate and define the roll of the services in defense of the coasts.

In 1932, Gen MacArthur gave Foulois the chance he was waiting for. He requested inputs from Foulois for the use of air power for the four army war plans. The plans were contingencies for conflicts between the U.S. and Mexico, Japan, England, and a combination of Japan and Britain. Oddly, there was no contingency for a conflict with Germany even though Hitler was already rattling sabers in Europe. Foulois' response was pessimistic. He stated the U.S. would find it difficult, if not impossible, for the Air Corps to defend simultaneous attacks on both coasts. He also pointed out that if Britain massed its troops and aircraft in Canada prior to the hostilities, the U.S. would be overwhelmed in the air.

The Air Corps simply did not have enough aircraft. He concluded by saying the number of aircraft needed to defend the U.S. and its possessions was (precisely) 4,459.

When the report reached the General Staff they became furious. Fearing retaliation from MacArthur, Foulois tried to regroup by saying his plan was only tentative and was prepared hastily due to time constraints. But it was too late. Foulois had made his first mistake as Chief of the Army Air Corps. MacArthur directed Deputy Chief of Staff Maj Gen Hugh H. Drum to review and revise the Air Chief's proposal. As a result, the Drum Board concluded the number of aircraft required to defend the U.S. and its posses-



Barling Bomber

sions was (precisely) 2,320, or almost exactly half of the amount Foulois recommended.

In February 1934, President Roosevelt canceled all mail delivery contracts with commercial airlines on the grounds they were made through "collusion and fraud." Later the same day, Gen Foulois met with Second Assistant Postmaster General Harlee Branch. The topic of the discussion was the ability of the Air Corps to fly the mail. Foulois' answer was that he could see no reason the Army could not fly the mail. Perhaps he had two reasons for giving this answer. For one, it would get the Air Corps a lot of publicity and help Foulois garner increased funding. For another, if President Roosevelt wanted the Army to fly the mail, the Army would fly the mail. As it turned out, the Army's takeover of

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The Army's takeover of the airmail route was such a disaster, it was called the "Army Air Mail Fiasco of 1934." It lasted 101 days. In that time, 12 pilots were killed and 66 planes were lost.

the airmail route was such a disaster, aviation historians have dubbed it the "Army Air Mail Fiasco of 1934."

As it turned out, the Army was ill-equipped to carry the mail. Most Army aircraft did not have the instruments needed for blind flying. Further, the pilots were not trained in the navigation skills needed to fly the mail routes. Pursuit and bomber pilots had no need to fly in the treacherous weather the airlines were accustomed to. And the few radios the Army planes had were of limited range.

The fiasco lasted 101 days. In that time, 12 pilots were killed and 66 planes were lost. It was of little consolation to the dead pilots that not a single pound of mail was lost during the time the Army flew the mail. The good that came of the disaster was it brought to the attention of Congress, the President, and Gen MacArthur the need for funds to better train and equip the Air Corps.

Gen Foulois never recovered from the mail disaster. Hounded by Congress, the General Staff, and most of all the press, he quietly retired in December 1935.

GHQ Air Force

A board was convened to investigate the mail disaster. Chaired by Newton D. Baker, former Secretary of War for President Wilson, one of its many suggestions was to create a General Headquarters Air Force (GHQ) which would report directly to the Chief of Staff. The Chief of the Air Corps would provide training and logistic support for the GHQ Air Force.

On 1 March 1935, the GHQ Air Force was activated with Brig Gen Frank Andrews in command. Gen Foulois was replaced by Maj Gen Oscar Westover as Chief of the Air

Corps. Over the next year, a rift developed between Andrews and Westover. Westover believed that as Chief of the Air Corps he should be Chief of Aviation General Headquarters, placing himself between Andrews and the Chief of Staff of the Army. The rift would continue throughout Westover's tenure.

During the Foulois years, neither Presidents Hoover or Roosevelt did much to benefit the Air Corps. But things were different for Westover. Things were heating up in Europe, and the Japanese seemed determined to conquer all of Asia. Also, Westover was well liked by the Army and President Roosevelt. And in 1936, Congress increased the authorization for planes. The B-17s began rolling off the production line in 1937, and the Air Corps finally had the long-range bomber it needed for both coastal defense and strategic bombing.

The Air Corps was now getting delivery of new pursuit planes and was quickly growing in strength. During Westover's tenure, the officer strength increased 82 percent and the number of airplanes nearly doubled.

Westover kept his thumb on the pulse of the Air Corps, flying an A-17AS on inspection trips to various bases across the States. On 21 September 1938, his plane crashed at Burbank, California, 300 feet short of the runway. Westover and his mechanic were killed instantly.

Winds of War

Maj Gen Henry "Hap" Arnold replaced Westover as Chief of the Air Corps. Because it was obvious the United States would become involved in the war in Europe, Congress and President Roosevelt began to allocate the

funds needed for a massive military buildup. This time the Air Corps received its share of the fiscal pie. In 1939, Arnold placed orders for squadrons of new aircraft such as A-20s, P-40s, B-17s, and B-24s. He also ordered the development of new aircraft such as the P-38 Lightning and the B-29 long-range bomber.

Arnold, who was exiled early in his career for his support of Billy Mitchell, still believed in the need for an independent Air Force. But he had a war to fight, so he made a pact with the Army for the duration of hostilities. He believed—and correctly so—that air power would prove itself a formidable force. His patience was rewarded when in June 1941 the War Department created the Army Air Force, placing all air power resources under the command and control of Arnold. The Army Air Corps was still under the Army, but it was one more step toward independence.

In the years 1941 to 1945, the planes of the Army Air Force constantly pounded the enemy's war-making capabilities. B-17s, escorted by the new P-51 Mustang long-range

fighters, boldly flew precision daylight bombing missions, destroying military targets such as aircraft plants and ball bearing factories. By 1944, the allied air forces operated with impunity over the skies of Europe, breaking the back of the German war effort.

In the Pacific, Naval aviation pushed the Japanese fleet back to the Philippines, leaving the Mariana Islands of Guam and Tinian to be used for the newly developed B-29s with Tokyo easily within their 5,600-mile range. Under command of Gen Curtis LeMay, the B-29s fire-bombed Japanese cities nightly, causing fire storms and leaving many, including Tokyo, in ashes.

At 9:15 a.m. on 6 August 1945, a B-29 piloted by the commander of the 509th Composite Group, 30-year-old Col Paul Tibbets, dropped a single atomic bomb which destroyed the entire Japanese city of Hiroshima. This laid to rest any argument about the effectiveness of strategic air power. The door was now opened for the formation of an autonomous Air Force 2 years later. ✈

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Breaking Through



Photos courtesy General Yeager

CMSGT ROBERT T. HOLRITZ (Ret.)
Contributing Writer

Fifty years ago next month, the Bell X-1, an experimental rocket-powered aircraft, was launched from the belly of a B-29. Minutes later, its pilot became the first human to break the dreaded sound barrier. Next month, an F-15 will fly past the crowd at the air show at Edwards AFB, California, at Mach 2. The pilot will be Brig Gen Chuck Yeager celebrating the fiftieth anniversary of his historical Bell X-1 flight.

Gen Yeager is a World War II ace and holder of the Collier and Harmon trophies. He was awarded the Peacetime Congressional Medal of Honor by President Gerald Ford. When the general retired in 1975, he was the Commander of the Air Force Safety Center. At 74, his hairline is somewhat higher than it was in 1947, but he is still slim and trim, and he doesn't wear eyeglasses. He is a consultant with the Air Force and still flies jet fighters regularly.

In an interview with *Flying Safety*, Gen Yeager speaks on aviation safety.

Flying Safety: General, you were the commander of the Air Force Safety Center in 1973. How have things changed?

Brig Gen Yeager: Quite a bit. When I took over as Director of Safety, I noticed that all accident investiga-

tion boards would come up with a primary cause as well as contributing causes. And as time went on, we'd correct the primary cause and leave the contributing causes hanging in the wind. I initiated a system and asked Gen Ryan, who was then the Chief of Staff, to approve it to make an "all cause" accident investigation. This gave all causes, whether contributing or primary, the same emphasis.

FS: How effective is the new generation of flight simulators?

BG Yeager: Simulators are a cheap way of getting experience. Today's simulators are extremely realistic. I'll trade six hours in the simulator for one hour flying in an airplane and get just as much experience. If you go back a long way and remember the Link trainer of my era, it was very crude. It taught procedures. But the simulators of today are very realistic, and they are almost like flying an airplane with the exception of the G forces.

FS: There seems to be some debate on how the complexity of the new technologies, such as fly-by-wire, affect safety.

BG Yeager: The new technology adds to safety. With the computer enhancement of all the systems in aircraft like the F-15E and F-16, a lot of things are done for the pilot that he doesn't have to worry about. It enhances the safety of flight.

FS: You are one of the few pilots who have made the transition from World War II aircraft, such as the AT-6 and P-51, to the state-of-the-art F-15. Are the new aircraft more difficult to fly?

BG Yeager: I've flown F-15s, F-16s, F-18s, and the F-20. I stayed on top of things because when I retired in 1975, Edwards [Air Force Base] gave me a consultant test pilot job, and I've worked on all the test programs that came through Edwards. The old aircraft are harder to fly. When I get into a P-51, I say to myself, "Boy, Yeager, be careful!" They are a lot harder to fly than modern airplanes. They are less complex, less effective, and a lot harder to fly.

FS: You frequently address the students at the Air Force Test Pilot School. What do you tell them?

BG Yeager: Basically, integrity and duty above all—because being a test pilot today is a very difficult role compared to the old days when it was pretty cut-and-dried in what we had to do. Today if someone works on a new airplane, which are few and far between, he has to start out with computer models for the flight control system and simulators. It is a very demanding and interesting life.

FS: Looking back at the X-1 program, how much emphasis was placed on safety compared to today?

BG Yeager: There were a lot of things people didn't understand or know about the X-1. Number one, the military, like myself and all military test pilots, had never been allowed to do research flying. That was all done by NACA with civilian pilots. When the civilian pilots backed down because the bonus money wasn't big enough, we stepped in and took over the X-1 project. It was our first chance at research flying. And it was very important that we succeed. That was what Colonel Al Boyd, who was Chief of the Flight Test Division, was very emphatic about. He said, "Don't foul up" and "Make it work because our whole future in research flying depends on the success of the X-1 program."

Yes, there was a great deal of emphasis placed on safety because the British, of course, had killed a couple of pilots in their DH Swallow and stopped all research fly-

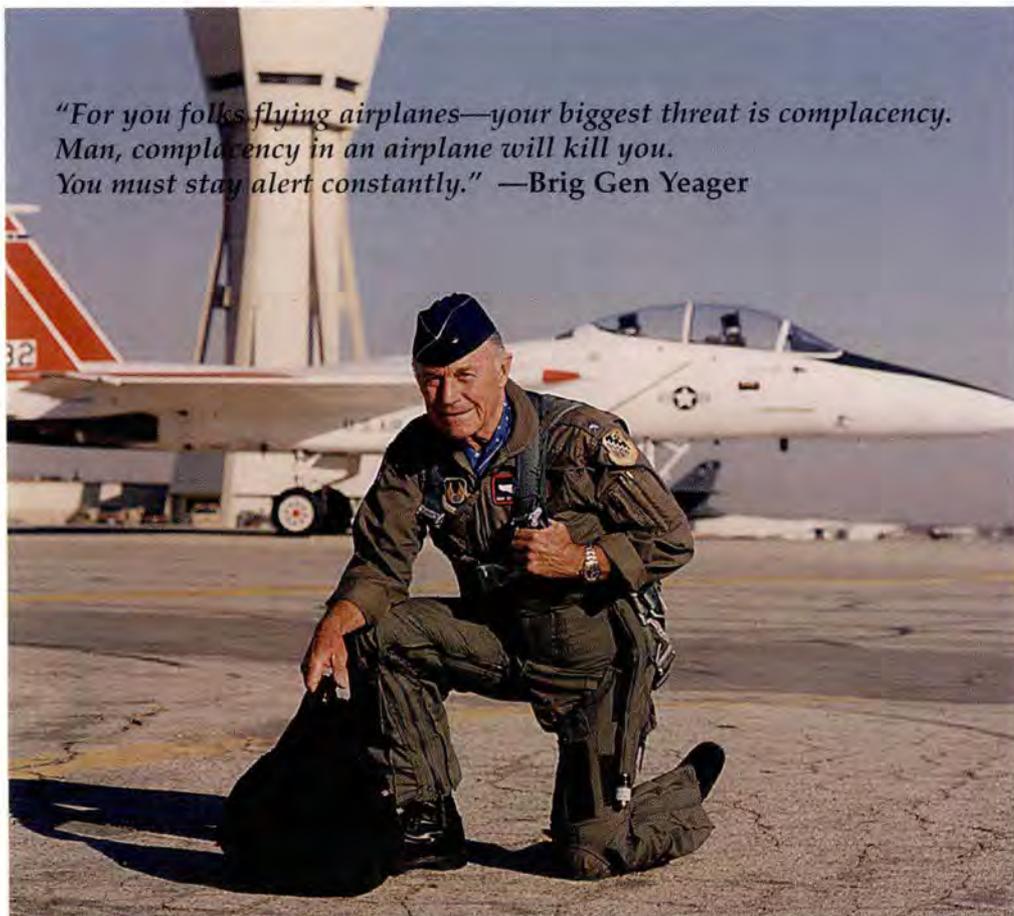
ing. And we didn't want to get caught in that ball game.

FS: Did the X-1 have any kind of an escape system?

BG Yeager: No. Once you're in, you're pretty well locked in. There is no ejection system. But that's part of the game. One word—DUTY!

FS: What are some of the most significant changes in safety in the past fifty years?

BG Yeager: Basically, computers played a big role. And because the emphasis placed on safety is constant, it is bound to have an effect. Airplanes are becoming extremely expensive. You cream an F-22 and you've tossed 125 million bucks down the tubes, and that's a lot of money. Look at 1943. In that year alone, the Air Force had 22,800 aircraft accidents totally unrelated to combat. That tells me the emphasis we place on safety is paying off.



FS: Is there anything you would like to tell the new pilots of today?

BG Yeager: I fly with all the test pilots at Edwards. They can fly and fight with these machines. I can only fly them. These guys are very, very good—I really admire them. They do an outstanding job. I also admire the maintenance people. With their skills and computers they can fix an airplane in five minutes. In the old days, it would take a week. ✈

Losing a

MAJ TONY KERN
USAFA, Colorado

I was in a deep sleep in one of the newly refurbished rooms of the Visiting Officer's Quarters (VOQ) at Ellsworth AFB, South Dakota, when the phone rang. I was on temporary duty from my job as an instructor pilot/flight examiner at the B-1 bomber Combat Crew Training Squadron (CCTS) at Dyess AFB in Abilene, Texas. I was working with a group of scientists from Armstrong Labs on a special fatigue study using the crews and simulators at Ellsworth. I'd been gone a week, and I already missed my family, the camaraderie of the squadron, and the comfortable feel of the jet. I was losing proficiency, and I knew it. But this was my one chance to get the real research done that I needed for my doctoral dissertation, so I couldn't pass up the opportunity.

It was a cold night—dark and cold—30 November 1992. Actually, I guess it was the morning of 1 December when the phone rang. I remember seeing the silhouettes of blowing snow in the orange glow of the mercury-vapor street lamps shining in from the parking lot outside my window when I sat up abruptly, like one always does when the phone rings in the middle of the night. Where was I? Who could be calling at this hour? This can't be good news, I thought. Maybe it's a wrong number.

"Tony?" I recognized my wife's voice at once. "Hi, darling, what's goin' on?" I asked quickly, not really wanting to know.

"There's been an accident."

My heart sank. I took a deep breath and let it out slowly. I was wide awake now. As the father of two boys, then 4 and 2, I feared the worst. "What kind of accident?" I replied.

"A bomber crashed last night. I just heard it on the radio."

I looked at the clock. It was 4:33 a.m. I remember wondering why my wife was up so early but quickly put this out of my mind and started the rapid-fire series of mandatory questions. "Where did it happen?" "Who was on board?" "Which squadron?" "Was it a student and instructor team?" "Has anyone called you?" "Have you talked to Jay?" (Jay was my best friend at the squadron.)

She didn't know many details, only that the aircraft had gone down somewhere down south, about 30 miles from one of those tiny little Texas towns with a funny name. That told me a lot of things. They must have been low level, probably on IR-165, our "backyard" training route. It was mountainous terrain which meant the crew—whoever they were—was probably practicing mountainous night terrain following (TF), a currency requirement for all B-1 crews.

"Something must have gone wrong with the aircraft," I said, immediately doubting the validity of my words. I had flown the "Bone" long enough to know that the TF system had a fail-safe fly-up system that was reliable to a fault, often trying to "save" you when there was no danger to either life or limb, usually caused by a renegade electron burp in the system. No, it must have been the crew, I thought. They must have done something wrong down there. At 540 knots and 500 feet, there isn't much time to recover if you screw something up.

"Tony, are you still there?" she interrupted my thought string. "Yeah, I'm here, sweetheart. I'm sorry—just lost in thought. Listen, thanks for calling. I concluded the call by assuring her I was okay and reminded her of the importance of not feeding the rumor mill.

It's an unwritten Air Force rule that has been followed for decades. When someone goes down, you stay off the phones. The unfortunate families will find out soon enough, when the commander and chaplain

Student

appear at the door, usually in dress blues. Until then, you just wait. At least Shari didn't have to go through it this time, I thought. With me away, she didn't have the same agonizing wait as the other wives whose husbands were on the schedule that night. I didn't know why, but I was already feeling guilty.

I found out all too soon. The mishap crew—how I hate that term!—was made up of four close friends of mine, two of them former students. Zen, Paul, Tim, and Scott, a fully qualified crew from our sister squadron, had impacted a cliff at nearly 600 knots on a moonless night. I had flown with Zen, the aircraft commander, when he had first gone through the initial qualification program almost 2 years before. He was a great guy, a superb officer, and a steady aircraft commander.

Paul, the copilot, had just qualified in the aircraft, and I knew him very well. I had flown with him on several of his early training sorties, instructed him in the simulator, and had given him his flight evaluation which had qualified him to fly night TF. He was a super kid, a great student, and a former member of the Air Force Academy's parachute team, the "Wings of Blue." Paul had graduated at the top of his pilot training class and had picked the B-1, his dream jet. I was impressed with everything I knew about Paul. As one of the first "straight from UPT" copilots into the weapon system, I had taken a special interest in his training. Where had I failed him?

I immediately started second-guessing myself. What hadn't I taught him? Or worse, was there something I had taught him that caused him to misinterpret an in-flight cue? I replayed every training flight, simulator, and debrief in my mind. Had I left anything out? Had I shortchanged these guys in any way? "Wait a minute," I told myself. "You don't even know what happened yet." But some-

where inside I did know, and it hurt—badly.

The legal investigation confirmed my intuition—crew error. They also determined that it was likely that Paul had disconnected the automatic fly-up and pushed over into the ridge line to cause the crash. There was some legalistic mumbo-jumbo about incomplete training paperwork, etc., but I knew, or at least I thought I knew, that somewhere I had missed an opportunity to provide one more critical piece of information—one life-saving technique or procedure. I remembered the often-quoted poem about the "troop who rode one in."

Flight instruction has never been the same for me since then. No, I did not choose to hang up my wings like the mythical Daedalus. I still wear my silver wings proudly, and flying is still fun. But instructing—the teaching and mentoring of the next generation of fliers—has forever changed for me.

Paul and Zen are buried at the USAF Academy cemetery, just down the road from where I live today. I stop by often, to renew the pledge I made to them then.

I will stay, or at least do my best to stay, at the peak of my instructional game. I will debrief thoroughly and look up every student question I do not know the answer to. I will do my homework and come prepared to instruct. I will never willingly bend the rules (and I used to), and I will speak out against those who do. I will sternly critique every safety-of-flight issue I observe. I will "call 'em as I see 'em" and not be pressured by timelines, syllabus flow, or outside pressures to pass or fail a student, for I—and I alone—am responsible for the quality of product I place into the cockpit as a qualified pilot. I will not pass a marginal student on to the next level for someone else to deal with. I will use my God-given talents in research and education to promote positive flight discipline and airmanship for as long as I'm given the privilege to play this game. And I will never second-guess myself again. ➔

On the

LT COL JOYCE TETERS
Chief Aviation Psychologist
Alaska ANG

Often you hear pilots say they are sure glad to be flying because the problems at home are so bad they need to get away. They say flying is their therapy. Does that idea scare you? If it doesn't, it should.

For many years, we in the Air Force have known that operational and personal problems can overwhelm pilots and negatively impact performance in the aircraft. We have also been able to identify pilots who are not handling their problems. They bring their problems into the aircraft, thus degrading their ability to perform duties. Consequently, they are a serious safety-of-flight issue.

How can personal problems interfere with performance? Pilots preoccupied with personal issues will:

- ◆ Channelize their attention.
- ◆ Become easily distracted in the cockpit.
- ◆ Exhibit sloppy or poor aircraft control (get off glide slope, have difficulty in making contact with the refueling boom).
- ◆ Make poor radio calls.
- ◆ Display a breakdown in communication (talk too

much/don't say enough).

- ◆ Exhibit incomplete planning before and during the flight.
- ◆ Make errors of omission because they are forgetful.
- ◆ Make checklist errors because they are unable to concentrate.

Essentially, the pilot has lost situational awareness and is mentally behind the aircraft.

These behaviors directly impact the mission. However, there are other behaviors observable in the squadron that tell you when someone is in trouble and may have difficulty flying a challenging mission. The troubled pilot may exhibit one or all of the following:

- ◆ **Easily angered**—little things that usually don't bother him or her suddenly do.
- ◆ **Temper outbursts**—at family, friends, you (an inability to control the anger).
- ◆ **Defensiveness**—if you suggest they need to take time from flying to deal with the issue, they will tell you they are just fine and can fly.
- ◆ **Argumentativeness**—if you push the issue, they will argue.
- ◆ **Oversensitivity to criticism**—"touchy" about how well they are handling the circumstance or the suggestion they may not be handling the situation well.
- ◆ **Projecting blame for mistakes**—whatever happens will not be their fault. It will be the fault of the spouse,

Edge

children, relatives, or crewmembers. Remember this if you have any doubt as to whether they should fly, because if something goes wrong, you will be the "bad guy" who should not have allowed them to take off.

◆ **Preoccupation/withdrawal**—(very dangerous for fliers if they have previously been outgoing and social). This indicates serious problems. Friends and coworkers in the squadron will usually see this first. The individual is struggling with the concept of being a failure and would rather die than be perceived as one.

◆ **Projects not completed in a timely fashion**—usually pilots are meticulous, detailed individuals, and this is essential to flying safely. However, if they are having memory lapses or are forgetful or overwhelmed with problems, they are unable to complete tasks assigned to them.

◆ **Fatalistic remarks**—crewmembers not handling their problems make an attempt at humor with caustic remarks. An example from a few years ago is the F-16 pilot who stepped to his aircraft, and while doing his walkaround said to his crew chief, "This airplane is going to kill me tonight." Guess what! He didn't return home that night.

The human behaviors in this article are usually not talked about because people think of them as touchy-feely stuff—but they aren't. They are contributing factors in the majority of the aircraft mishaps in the civilian

and military world. In reality, these behaviors are concrete and observable. Everyone wearing wings needs to be aware of them and their ability to kill in the sky.

Often pilots, when facing a significant life event, feel helpless. Generally, these situations are not within their control which makes them very uncomfortable. Therefore, they will look for familiarity in an effort to regain equilibrium. For them, this is flying. The rationale is usually that flying is their therapy, and it probably appears to be because it is routine and familiar, thus allowing them to feel in control. They feel "stronger" and better able to cope. However, they are still on the edge and capable of handling only the routine duties of flight. Anything out of the ordinary now adds to the problems and highlights their inabilities making them a liability in the aircraft. Often, pilots complete their routine duties during the flight but find their minds wandering to their problems. If an emergency occurs during this mind-wandering, they may lose valuable time.

In today's changing Air Force, it is even more imperative to be aware of one's capabilities and limitations. Use the above information to assess whether the relentless stress currently being experienced is affecting you or your crewmembers' performance. Preflight yourself and your crew just like you would preflight your aircraft. It could mean the difference between life and death. ➔

The FAR / AIM Issue



MAJ KEVIN JONES
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I'm not sure how many of you heard about it, but the Air Force recently concluded an Air Force-wide instrument training review. Based on some of the recent instrument-related mishaps, the Air Force asked ARINC, a corporation based in Annapolis, Maryland, to do a top-to-bottom review of our instrument training from the "outside looking in." The ARINC team was busy throughout the summer collecting data from 21 Air Force bases located in Europe, the Pacific, and the CONUS as well as two major air carriers. The ARINC team interviewed and tested a cross-section of our

Air Force (including ANG and AFRES). The final report and briefing will be presented to CSAF during early September.

I was picked to oversee the ARINC study, and it was my pleasure to travel with the ARINC team to visit all of you out there in the "real Air Force." Some of the things we learned during the study are fascinating, and I'll be sharing the results with you in a future article (since they have not been released at the time of this writing). Even so, there is one burning issue that I'd like to address right now. I'll just call it the "FAR/AIM Issue."

As the guy responsible for the Air Force's flight directives (primarily AFI 11-206 and AFMAN 11-217), I'm certainly sensitive to the "FAR/AIM Issue." Prior to the study, I realized there was some confusion regarding the FAA publications, but I had no idea! If I heard these questions once, I heard them a million times: "Why did you change AFI 11-206 and make us responsible for the FARs?" "Why don't we do away with 11-206/11-217 and just use the FAR/AIM?" "If we're responsible for the FAR/AIM, shouldn't they be issued to us?"

And so on. Hopefully, this article will shed some light on these questions.

"Why did you change AFI 11-206 and make us responsible for the FARs?"

The words changed slightly, but the most recent AFI 11-206 (December 1996) did not change the Air Force policy regarding pilot compliance with the FARs. Paragraph 1.2.1 says the "PIC will ensure compliance with...the FARs when operating within the United States including the airspace overlying the waters out to 12 miles from the U.S. coast, unless the FAA has excluded military operations."

Anyone have a guess as to how long that policy has been in effect? If you guessed 41 years, you are correct. AFR 60-16 (ah, the good old days...), dated 23 July 1956, says, "...Civil Air Regulations [FARs] govern the operation of Air Force aircraft within the continental United States and United States Territories and Possessions." The words changed to what we are accustomed to hearing in the 15 November 1966 version of AFM 60-16, "Air

Force pilots...are governed primarily by FARs and nothing expressed or implied in this manual relieves the pilot of that responsibility..."

Let's face it—we fly in the National Airspace System with lots of other aircraft. We are required to abide by the FARs unless the FAA exempts us or the wording specifically excludes military operations. I'll give you an example in my answer to the next question.

"Why don't we do away with 11-206/11-217 and just use the FAR/AIM?"

Believe me, this question comes up at least once a year, and if it were possible, we would have done it long ago. However, there are several good reasons we have not taken this approach.

We have a worldwide mission. The FARs and the AIM only apply in airspace under the jurisdiction of the FAA. Obviously, our missions take us around the world, and the techniques and procedures we use must work everywhere—not just here at home. Let's use the AIM's procedure turn guidance as an example. ICAO procedure turns must be flown exactly as depicted, and they have strict entry parameters because the protected airspace is much smaller than what FAA TERPs criteria allows. If you were to use the AIM's guidance, which essentially states "...the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot," you could find yourself in trouble—at best you could expect a violation; at worst, you might run into something. AFMAN 11-217's guidance is thorough, and it provides specific procedures to be used at home and abroad.

Have you ever read the FARs? The FARs are not easy to read—they seem to be written and organized more for lawyers than for pilots. (And there are a lot of "jailhouse" lawyers out there! "Where does it say...") Here's a good excerpt from FAR Part 91:

91:503 Flying equipment and operating information.

(a) The pilot in command of an airplane shall ensure that the following flying equipment and aeronautical charts and data, in current and appropriate form, are accessible for each flight at the pilot station of the airplane:

(1) A flashlight having at least two size "D" cells, or the equivalent, that is in good working order."

So, how many of you have a flashlight with at least two size "D" cells? Doesn't this apply to us? The answer is "No," but it's not easy to figure out. In order to discover that 91.503 does not apply, you must first read the "applicability" section for Subpart F:

Subpart F—Large and Turbine Powered Multiengine Airplanes

Source: Docket No. 18334, 54 FR 34314, Aug. 18, 1989, unless otherwise noted.

91.501 Applicability.

(a) This subpart prescribes operating rules, in addition to those prescribed in other subparts of this part, governing the operation of large and of turbojet powered multiengine civil airplanes of U.S. registry.

Did you find the magic word? In the last line, the key word is "civil" which takes us off the hook. This is just one example of hundreds. Trust me, you don't want to have to go through Part 91 to figure out your flying rules—that's my job.

By the way, even though this FAR does not apply to us, we changed the words slightly and placed it in AFI 11-206's paragraph 2.6.4, "Each crewmember must carry an operable flashlight." Why? Because it makes sense.

"If we're responsible for the FAR/AIM, shouldn't they be issued to us?"

Here's another way to look at this question. When you go to get your driver's license, do you actually study the state's laws to pass the test or do you study the summary of the laws you get from the DMV? AFI 11-206, AFMAN 11-217, and FLIP condense thousands of pages of information into a manageable format. Our Air Force flight directives will keep you out of trouble most of the time, but they can't possibly cover everything. If you want to be "issued" the FAR/AIM, then all you have to do is order what you need through your squadron's FLIP account. While you're at it, you might also want to order some of the ICAO documents like PANS-OPS and PANS-RAC—they are also available through the same source. You can never learn too much about flying.

I know this was just a quick response to serious concerns about our flight directives, but I hope it answered some of your questions. If you have further questions about flight directives, ours or theirs, please don't hesitate to get in touch. My e-mail address is "jonesk@cmb.aon.af.mil." FLY SAFE! ✈



Who Needs ORM?

MAJ DALE T. PIERCE
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Over the years, the Air Force has made significant progress in the reduction of mishaps and the loss of mission-essential personnel, equipment, and capability. Looking at figure 1, you can see the 1922 Army Air Corps Class A flight mishap rate was 506. In today's Air Force, we would have to destroy 208 aircraft per week to sustain that mishap rate!

Since 1922, the flight mishap rate has dropped and the Army Air Corps became the Air Force. However, in 1985, mishap reduction leveled off and the 1996 mishap rate of 1.26 is not significantly different from the 1.49 of 1985. During the past 10 years, our mishap prevention efforts continued to increase while return on that investment remained essentially unchanged. The gap between current performance and the goal of zero mishaps continues to haunt us at the rate of 27 to 30 aircraft per year, and the ground safety story is about the same.

Our history of learning from mishaps, correcting deficiencies, and preventing future mishaps continues to serve us well and will continue to do so in the future. While this paradigm continues to serve us well in maintaining our historically low rate, it appears to have plateaued. Conventional efforts seem incapable of reducing the gap that represents the destruction of significant operational capability.

So what can we do? We've already tried harder. We've invested more. With reduced budgets and manpower, innovation is both costly, risky, and doesn't always pro-

vide the desired results. Benchmarking can work well, but you must have someone to benchmark from.

So where might we look? Figure 2 shows a comparison of the Class A mishap rates for the Army, Navy, and Air Force over the 1990 to 1995 time frame. Notice in 1990 the Navy rate was 25 percent higher than the Air Force, and the Army was 95 percent higher than the Air Force. These relationships are typical of history. However, over the next 5 years, the relationships changed. In 1995, the Air Force rate was 60 percent higher than the Army, and the Navy rate was 140 percent higher than the Army. What caused the change?

In the late 1980s the Army began applying operational risk management (ORM) to their activities. ORM required adopting a new proactive paradigm emphasizing prevention, while the Navy and Air Force clung tenaciously to the old reactive paradigm of investigating mishaps and fixing the problems.

With diminishing budgets and resources, losses of operational capability tend to remain permanent. In the current environment, we cannot afford to continue destroying over two dozen aircraft per year. We can and must learn from the Army. If the Army can use ORM to reduce their mishap rate by 70 percent, I suspect we can too. ORM is not rocket science—it's a systematic approach to managing risk and optimizing operational capabilities. We must apply the lessons of ORM we've learned from the Army. I suspect as long as the data in figure 2 remains a reality, Air Force leadership will not rest until we have done so.

Who needs ORM? We do—to reestablish the downward trend we sustained through the years prior to 1985. ✈

CLASS-A FLIGHT MISHAPS

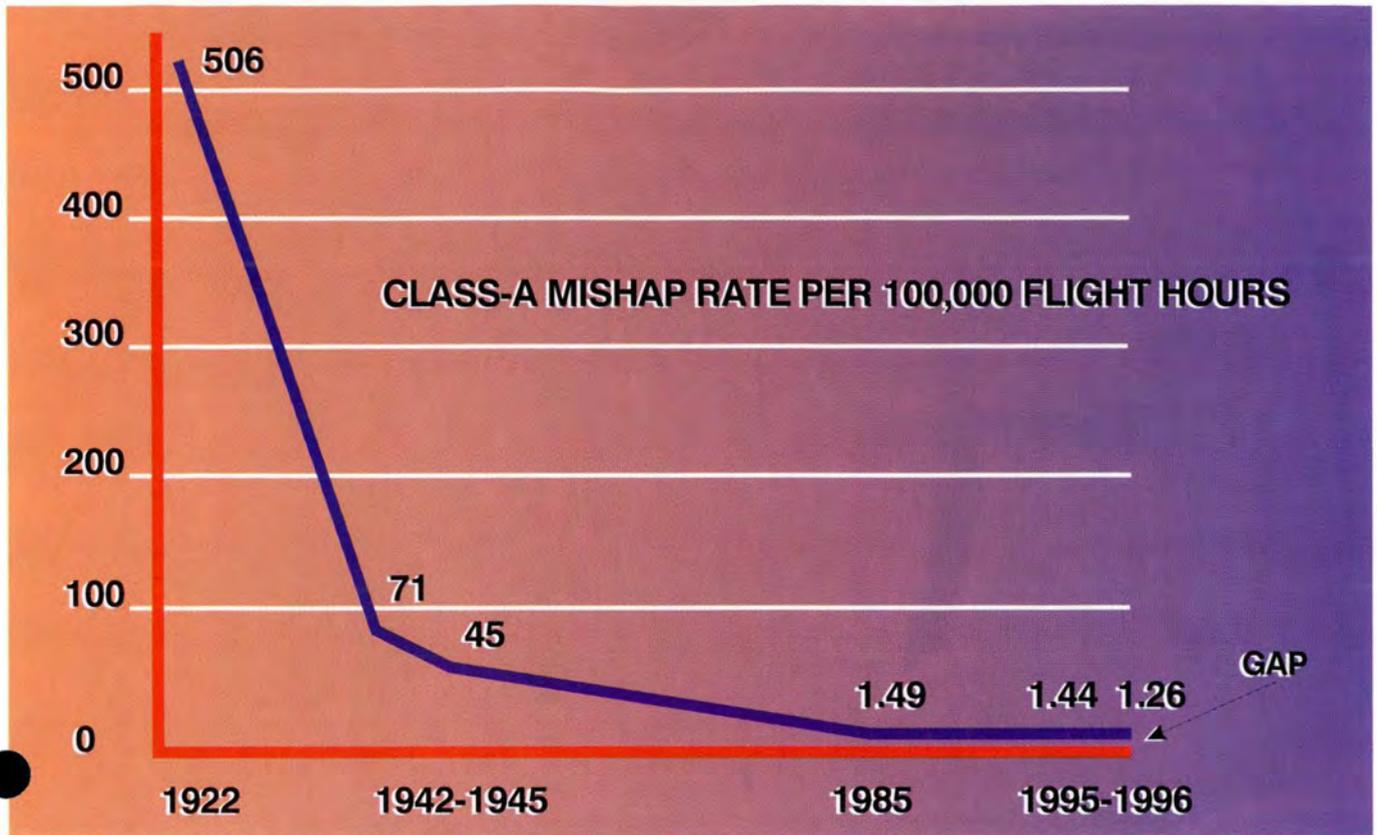


Figure 1

COMPARING CLASS-A FLIGHT MISHAP RATES

(1990-1995)

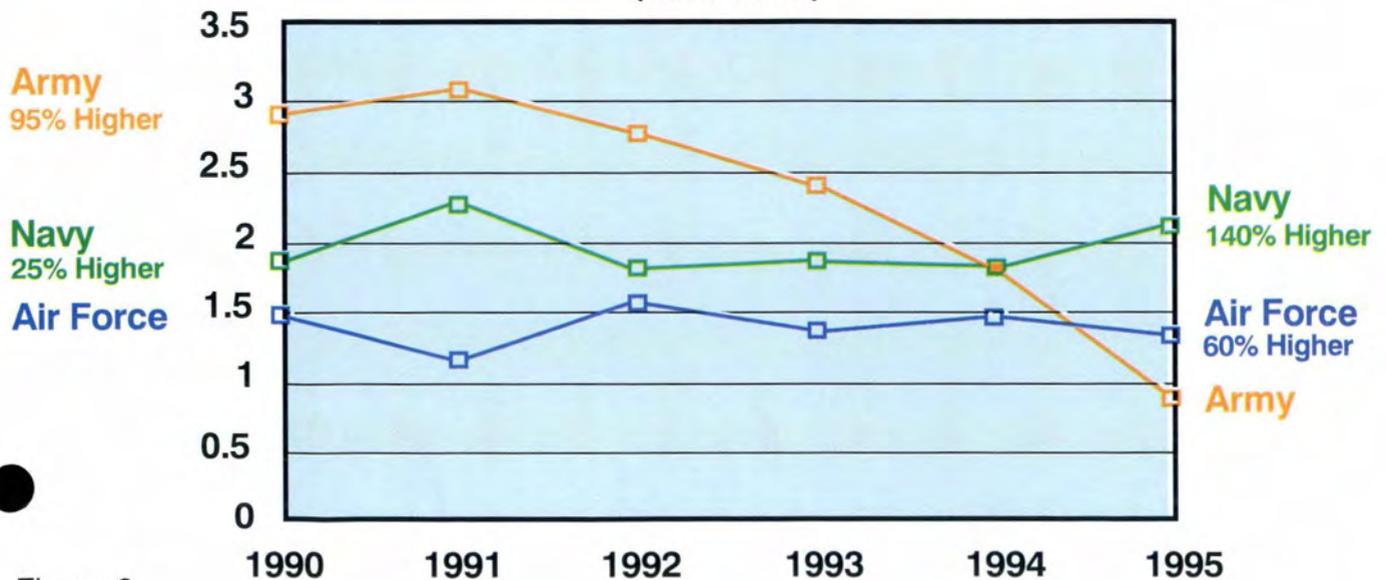


Figure 2

