Most people in the general population haven’t heard of the USAF Weapons School. Some say we need a catchy moniker, like *Top Gun*. But that’s not our style. We would rather be known in terms of our value to the US Air Force. The fighter world has always known who we are and what we do.

—Col. Bentley Rayburn, commandant, USAF Weapons School
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The space shuttle orbiter enjoys smoother landings thanks to a Convair 990 jetliner. For more on the NASA/Convair connection, see page 20.

CODE ONE
USAF Weapons School

Code One visits the US Air Force’s premiere schoolhouse for weapons officers.
Gradsgraduates of the United States Air
Force Weapons School are easy to
spot. Their shoulders are marked by
yellow-and-black bull's eye/crosshair
patches that read “graduate” on the top
and “US Air Force Weapons School”
across the bottom. The fact that the
emblem is the only exception to
flightsuit patch regulations says a
lot about the school and about how
well the Air Force regards it. The
patch also says a lot about the people
wearing it. They have completed the
most comprehensive and rigorous course
of study the Air Force has to offer. They are
wepons officers.

“The patch identifies our graduates and gives
them instant credibility,” explains Col. Bentley
Rayburn, the commandant of the school. “Most people in
the general population, though, haven’t heard of the
weapons school. Some say we need a catchy moniker, like
Top Gun. But that’s not our style. We would rather be
known in terms of our value to the US Air Force. The fighter
world has always known who we are and what we do.”

For those who don’t know, Rayburn, who has been in
charge of the school for over two years, is happy to pull out
a slide projector and inform. “After we slap a patch on
these students, they return to their units and become chief
instructor pilots for flying and for setting up academics,”
Rayburn says. “They are the technical experts. They
advise their commanders on weapon systems and tactics.
They are role models, too. They set standards for excellence
in the air and on the ground.”

Producing exemplary instructors is one of three inter-
related missions of the school. A second mission is to
improve the general combat capability of the entire Air
Force. “We return our most recent graduates to the field
with the latest and greatest information,” Rayburn con-
tinues. “The school’s instructors get out and spend time
with the units, teaching and flying with them. We also
improve capability through our textbooks and other
course materials and through our quarterly journal,
USAF Weapons Review.”

The third mission relates to the school’s reputation.
“We’re seen as a repository of information and expertise,”
Rayburn says. “Whenever the United States has faced a
difficult situation, senior commanders will call us for help
with planning.” As examples, the school sent people to
Saudi Arabia to be on the planning staff during the Gulf
War and has assisted in planning subsequent actions
against Iraqi radar installations and potential military
options for operations in Haiti. The school was called when
Iraqi Republican guards once again threatened the Kuwaiti border last fall.

“We also are often one of the first places a contractor
calls when there’s something wrong with a system,” says
Lt. Col. Don Ross, the deputy commandant at the school.

“They call us first for a number of reasons. We
have the subject experts here, and we have
the highest level of aggregate experience.
Because we’re not directly tied to an
acquisition system, we can be more up
front and not guard our words.”

The weapons school is organized
in nine divisions of which seven are
flying divisions pertaining to specific
aircraft—the A-10, F-15C, F-15E,
F-16, F-111, B-1, and the B-52. The other two divisions instruct
intelligence officers and command and control officers. F-111 students attend class
at and fly from Cannon AFB in New
Mexico. B-1 and B-52 students are located
with their aircraft at Ellsworth AFB in South
Dakota. All other students and aircraft go to class and
fly from the school’s headquarters at Nellis AFB in
Nevada. Everyone goes to Nellis for the final two weeks of
the school and graduation. The school supplies its own aircraft,
so squadrons do not have to sacrifice air assets to send a student.

Getting to the school is as difficult as the coursework.
Prospective students must be nominated by their commanders. They must meet minimum requirements for flying hours in their particular aircraft, including time as an instructor pilot. They must have no more than nine year’s service in the Air Force (most students are captains with five to six years of service). “We’re looking for applicants who are old enough to have proven their basic capabilities yet young enough for us to get a good payback from them,” Rayburn explains.

Once nominated by their squadron, applicants compete
for a limited number of slots at the wing level. Wing commanders select and rank applications and forward them to a selection board headed by the commandant of the school. The board works much like a promotion board. The selection process usually takes a year. Rarely does an applicant make it through the process and to the school on the first try.

“Before applicants are nominated by a commander to
come here, they have to be highly regarded,” Ross points
out. “The first level of the application process reflects what
their peers think of them. Once the applicants get to
the board level, they are judged solely by their personnel
files.” Only seven percent of the USAF fighter pilot com-
community ever attends the school. Interestingly, though, in
the past, up to fifty percent of fighter squadron command-
ners have been graduates of the weapons school. “Our
graduates generally do very well,” Rayburn adds. “You can
debate whether it is a function of their coming here or a
function of our picking the best people to come here.”

Only the best of these best are invited back to the
school to be instructors. The three-year assignment is
about the only one left in the Air Force that is done by
name, rather than by anonymous accomplishments in a
personnel file. Few former graduates decline the invitation. The school has a staff of about 160, fifty to sixty of which are instructors. For the flying divisions, every instructor flies. The classroom work, however, is split among the instructors’ areas of expertise.

Many of those teaching at the school took part in the Gulf War. Maj. Mark Miller, an F-16 pilot who has taught at the school for almost three years, was one of the school’s first instructors with Gulf War experience. “The experience is definitely useful,” Miller says, “We can teach maneuvers to defeat SAMs and AAA threats on the chalkboard, but the best explanations don’t compare with actual experience in combat. To say that something works from our own experience carries an extra value.”

Weapons school lasts five and a half months with classes beginning every January and July. The school graduates about sixty-five students in each of two classes a year. For flying students, the coursework consists of 236 to 337 academic hours, depending on aircraft type. Sorties range from fourteen for B-1 students to forty-one for F-16 students (flying time is about the same across aircraft types). Radar controllers and intelligence officers go through about 400 hours of academic instruction and will normally receive some flying time as well. For crew members, the academics are front-loaded in the course. After three months, the book work is mostly finished and the flying becomes much more demanding.

“We could keep all the students here a year and not teach them everything that we could teach them,” Ross says. “We have to cut the subject matter at some point. The multirole pilots have a tougher job because there’s an inherent desire to do more air-to-air flying. People like to talk about aces, not about the guys that hit a ground target ten times in a row. But the US Air Force’s primary business is to get bombs on target. We’re constantly trying to strike the right balance between air-to-air basics and getting pilots mission oriented, which is dropping bombs. F-16 students face a big challenge because they can do so much with their airplane.”

Ross points out that, though air-to-air skills are treated as a building block for air-to-ground operations for the multirole pilots, the skills are still operationally essential. “F-16s

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Time has never been a luxury here. We could add another six months and not get it all. Weapon systems in the early 1980s were fairly simple machines by today’s standards. As our airplanes have advanced over the last ten years, it takes more time to absorb all the information to use them properly.

—Lt. Col. Don Ross, deputy commander
and F-15Es may have to defend themselves air-to-air when going into the target even though they are carrying bombs,” Ross says. “Air-to-air maneuvering also teaches them about the airplane itself because it explores the entire envelope. So we always begin with air-to-air maneuvering even though it may be only a small part of their job. We give students a solid understanding of what their airplane is supposed to feel like—what it is telling them when it is at the edge of the envelope or when it is at optimum maneuvering.”

Students also get a feel for dropping and firing live weapons during the course. F-16 pilots, for example, will typically drop Mk-82s, Mk-84s, a laser-guided bomb, a cluster bomb, and shoot either a Sidewinder or an AMRAAM missile.

“If we had our way,” Ross says, “every student would drop or shoot everything that could come off his aircraft. Live fire has hidden benefits. Every time we fire a weapon, we learn something new about it. We often feed this information back to the engineers. Expending live weapons represents a significant cost, so it indicates the commitment the Air Force has to this school.”

The syllabus for flying builds from simple 1-v-1 aerial engagements and basic bombing missions to intricately planned and coordinated attacks on ground targets defended by large packages of adversary aircraft, helicopters, ground forces, and ground-based defense systems. Up to seventy aircraft participate in these latter missions of what is called the mission employment phase. These missions and every encounter within them are watched, reviewed, and analyzed on a one-of-a-kind electronic tracking system the school borrows from Red Flag operations at Nellis. The system, called the Red Flag measurement and debriefing system, is an advanced relative of air combat maneuvering instrumentation (ACMI) used on several ranges around the United States. The Red Flag system can track every flight parameter of thirty-six high-activity aircraft as well as the movements of sixty other aircraft.

The USAF Weapons School traces its origins to 1949 when the USAF Air Training Command established a fighter gunnery school at Nellis. The school was created to train instructors, develop training methods and techniques, and set standards for training. The first aircraft at the school were F-51 Mustangs and F-80 Shooting Stars. The F-86A replaced the F-51 in 1952. The school became the Fighter Weapons School in 1954. Through the years, the school has adapted to aircraft adopted by the Air Force. F-100 fighters came in 1955; the F-4 and F-105 in 1965; the F-111 and A-7 in 1974; the F-15 in 1977; the A-10 in 1978; and the F-16 in 1982. (The school began instructing radar controllers and intelligence officers in the 1980s.)

“We don’t get into testing of new systems,” Ross explains. “But as soon as something has been blessed, we want to work it into our syllabus.” That something may be a new gizmo, like night-vision goggles for a particular airplane, the latest intel system for getting immediate imagery from satellites, or a new airplane. “Once Lockheed starts producing the F-22,” Ross continues, “the Air Force will first send it to a training unit and the first operational unit and, simultaneously, to operational testing squadrons and to the weapons school. It takes about two years to build up in the field so we have a place for weapons officers to go and

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The time management problems students face here teach them how to get a lot of things accomplished in a small amount of time and how to delegate work to others.

—Maj. Steve Dingee, instructor
some time to come up with a syllabus. The Air Force, for example, started flying the F-16 in 1979. The airplane became operational in 1980 at Hill AFB in Utah. It came here in 1982.”

Aircraft and technological improvements have lengthened the course through the years. “Time has never been a luxury here,” Ross explains. “We could add another six months and not get it all. When I went through the school in 1981, it was three months long. It went to four months in 1986. After the Gulf War, it went to its present five and a half months. Weapon systems in the early 1980s were fairly simple machines by today’s standards. As our airplanes have advanced over the last ten years, it takes more time to absorb all the information to use them properly. A capability like LANTIRN adds a brand new dimension to flying. Precision-guided munitions are another new facet. Those new systems require more time to teach.

“We can’t produce someone who is proficient with every weapon a particular airframe can carry,” Ross continues. “The Air Force does not have enough training dollars and flying time for that. We strive for a weapons officer who can instruct all of them because he has been exposed to them here and has kept his notes. No one can become, and remain, totally proficient.”

Perhaps the biggest change at the school occurred in 1992 when it began instructing B-1 and B-52 bomber crews. The integration of bombers followed the consolidation of Strategic Air Command with Tactical Air Command to form Air Combat Command. To recognize its expanded scope, the school dropped Fighter from its title and became formally known as the USAF Weapons School. The school’s reputation in the fighter world, however, has not automatically transferred to what used to be the SAC world. “As we bring in the bombers and, possibly, other airplanes, we have a larger educational job,” explains Rayburn. “These units must go through a cultural change as they get these weapons officers. They need to understand how to use them properly and how to take advantage of them.”

For students, the weapons school represents an ultimate mental challenge. If all their work during the course could be transferred to that patch they receive on graduation, they would walk around in tight counterclockwise circles from all the weight on their left shoulders. “It’s been a long five and a half months,” admits Capt. Lee Elsarelli, an A-10 student. “We average two to three flights per week. We have academics three to four days a week for several hours a day. The training is to such a higher level than I’m used to. I get a lot more out of each sortie and learn more about the airplane and how to be a better instructor.”

Elsarelli, who flew night missions in the A-10 during the Gulf War, came to the school as an A-10 instructor pilot from Davis-Monthan AFB in Arizona. Normally, graduates return to their units. Since the Air Force tries to disperse graduates among its wings and since Davis-Monthan sent three students, Elsarelli is going to Spangdahlem AB in Germany from the school.

Elsarelli credits some weapons officers who were his role models and an urge to improve upon what he has experienced from weapons officers for his desire to come to the school. “Weapons officers often have a reputation of getting bogged down in minutia, of being overly concerned with things the average pilot doesn’t care about,” he explains. “Some may deserve that reputation. They leave here with a lot of excitement about everything they’ve learned and that can be a trap. They may, for example, want to analyze every lift coefficient and every move in part of a particular maneuver in a debrief. The person across the desk wants to debrief to bombs on the target, the big items, and go have a beer. The better weapons officers understand the technical aspects, but they keep a grip on the larger picture.”

Elsarelli understands the big picture as well. “I’ll leave the course with an ability to speak on the finer details,” he says, “but I know this ability will not necessarily be important on a daily basis. There will be times when the operational guys may want to analyze a maneuver down to those small details. Everyone who graduates from here can do the detailed analysis and instruction. Knowing when to do it is more of a personal style that comes with experience. We have to remember that everyone is not training to a weapons school level. A weapons officer must be able to integrate into a particular level of training and bring those people at that level up. We can’t expect people to train to our level.”
I didn’t expect the level of my own flying proficiency to go up as much as it has. I’m flying with top-level instructors on a daily basis. With everyone here being 1,500- to 2,000-hour instructor pilots, we achieve a higher level of training and see fewer basic mistakes.

—Capt. Lee Elkarelli, A-10 student

The weapon school’s high standing within the Air Force often creates exaggerated expectations for incoming students. “The school has a reputation as being a rite of passage—a haze of constant academics, intricate flying, and detailed debriefings,” Elkarelli explains. “The perception is that instructors put their students through an ordeal because they themselves had to endure it to get the patch. Everything they say about the intensity level is true, but the instructors have a helpful attitude. There’s no antagonism. I have really enjoyed the experience. The instructors set up some obstacles. But they’re doing it to make us think and learn more. If someone is having trouble getting over those obstacles, the instructors tend to help them get around.”

The school’s reputation may have something to do with graduates’ memories of its sustained intensity level. No one calls it easy. “I can never explain to people what this school is like,” says Karen Stevens, an air weapons controller student from Elmendorf AFB, Alaska. “I can spell out how many hours they are going to spend during certain phases of the course and describe the types of missions they will be involved with, but I can’t convey a true sense of the course to people who have not been through it. The experience has been so foreign to anything else I’ve done in my career.

“For one thing,” she continues, “students are under constant evaluation. Someone is always watching us. We never do anything in isolation. Having everything we do evaluated for six months is difficult. We may be critiqued only once or twice a year at home. The school is somewhat like a training exercise, but the level of training is very high. And the standards are even higher. If we make a mistake, we may have to redo an entire mission. Then we may get way behind because everything is on a strict timeline.”

For Capt. Kirk Kinnem, an intelligence officer from Dyess AFB, Texas, the weapons school is equally intense. “I’ve already proved myself just to get through the selection process,” he explains. “I couldn’t be completely sure what to expect. I knew it would be tough. I was 100 percent right about that. This is harder than anything I’ve ever done in
my life. But when I reach the end of the road and realize
how much I have learned, I can understand it was worth
the price. The biggest surprise is the constant pressure
and observation once here. I have a week and a day left,
and the pressure is the same as it was five months ago.”
Capt. Mike Clark, a B-1 student also from Dyess, says
the intensity level was the toughest aspect of the course
for him as well. “It is a challenge to take care of the little
things,” Clark says, “like getting a haircut, because we’re
in class all the time. The schedule is most challenging.
I can’t compare what I knew when I came in with what
I now know going out. It’s not quantifiable. I’ve developed
a whole new mindset on how to approach my job and how
I am going to help others in the squadron do their job.”
“I didn’t expect the volume of information to come my
way in such a short period of time,” says Capt. John
Bernier, a B-52 student from Ellsworth AFB. “It was a
shock to my system. I’ll leave knowing much more about
my weapon system and how to employ my aircraft with
everybody else. I’ve gained an appreciation for the big pic-
ture. My knowledge base wasn’t as good as I thought it
was when I came here. There’s so much out there to be
learned. Everyday I think of something new I can use back
in my unit. I should keep a log.”
Elsarelli reiterates what most students say about a large
amount of work squeezed into what ends up seeming like
a small amount of time. “The academics are time consum-
ing and demanding,” Elsarelli says. “Our responsibilities
as students are well defined. The most difficult part of
the course is managing time. We have so much to do and only
so much time in which to do it. But the course is designed
that way.”
Maj. Steve Dingee, one of the F-15 instructors at the
school, compares the school to a moving sidewalk. “When
the students show up, the sidewalk is already moving at
a quick clip,” he says. “They get on and they stumble back-
wards a little. After two or three weeks, they are up to
speed. They learn to do things at ninety miles per hour,
twenty-four hours a day, for five and a half months straight.
When they go back to the field, they may shoot off the end
of the sidewalk. Someone at their unit invariably grabs
them and tells them to slow down.”
Dingee, who put his skills as a weapons officer to work
during the Gulf War, says the intensity and pacing of the
course have some benefits that few people immediately
recognize. “I was a walking zombie during the first seven
days of Desert Storm,” Dingee admits. “I was working
what seemed like twenty-four hours a day planning
missions, flying, debriefing. The time management prob-
lems students face here teach them how to get a lot of
things accomplished in a small amount of time and how to
delegate work to others. We certainly put a lot of pressure
on them with the syllabus. And they put a lot of pressure
on themselves—we get a few overachievers. But that is the
type of person who makes a good weapons officer. These
students are already accomplished instructors in their
own right.”

The fact that students are already accomplished when
they enter the school accounts for what may be the
biggest surprise from the course—improvements in their
own flying abilities. “I didn’t expect the level of my own fly-
ing proficiency to go up as much as it has,” says Elsarelli,
who has flown attack aircraft since 1986. “I viewed this as
another set of training with better training assets than
I was used to. It has been that and more. I’m flying with
top-level instructors on a daily basis. A group on one train-
ing sortie without one low-hour new guy flies and fights to
a different level than a group assembled from a normal
operational unit. With everyone here being 1,500- to 2,000-
hour instructor pilots, we achieve a higher level of training
and see fewer basic mistakes.”
Being surrounded by highly proficient pilots is one
part of the training equation at the weapons school.
Improvements also come from a well-measured balance of
time devoted to flying and debriefing. “Operational units
have so much other stuff piled on them that the student
doesn’t have here,” Rayburn explains. “That is one of the
biggest advantages of the course. The students can put
everything else aside for a few months and concentrate on
their basic jobs. They have the time to learn as much as
they possibly can to a degree and depth they can’t achieve
in regular operations.”
Most pilots understand that too much flying can be as
detrimental to their proficiency as too little flying, Rayburn
uses economic theory to illustrate this point. “The Laffer
curve in economics explains that if you tax at a zero rate,
you get zero revenue,” he says. “And if you tax at a higher
rate, you get more revenue—to a point. If you tax at a 100
percent rate, you get zero revenue because no one can
care money. The same concept applies to training. If you
never take off, you can’t practice even the most basic
skills. If you fly five sorties a month, you are better off.
Ten, even better. But forty or fifty sorties a month can
diminish pilot skills. You never have a chance to figure out
what you did wrong or to think about how to do it better
before you go out and fly again. When I went through the
school, it was a four-month course and I flew thirty-two
times. So that is eight sorties a month, which was proba-
Through the years, the weapons school has adjusted to the larger needs of the Air Force. These adjustments are evidenced not only by the aircraft on the ramp but also by the syllabus, number of instructors and students, new divisions, course materials, and countless other items that constitute a school.

Bly half of what I was flying at my home squadron. But so much effort goes into planning, thinking, and practicing each sortie and then debriefing it. I was more proficient when I walked out of the school than I have been ever since.”

Bernier backs up Rayburn’s observation with his own experience in the B-52. “Back home, I don’t have the day after the sortie to talk about it,” he says. “Instead, I am getting ready for the next one. Here I have a good four or five hours the next day to talk about it. We’re dissecting everything we do and analyzing it.”

Most positions in the Air Force are highly compartmentalized. Fighter and bomber crews fit this description. They rarely come into contact with crews from another airframe. And when they do, the contact is brief. The weapons school exposes students to a variety of aircraft and capabilities. The exposure gives aircrews an appreciation for the capabilities of other aircraft that they may have to fly with as part of a composite force. The exposure, however, is most important for the intelligence and radar controller students who, by the nature of their jobs, interact with aircrews from a variety of aircraft.

“Aircrews will tell you that intel officers hide behind a green door where they keep all their secrets,” says Kimmet,
who looks forward to applying what he has learned at the school's intelligence officer division to a composite force. “Here, we interact daily with all the different airframes to show what we can provide. And we learn from them. Such a concentration of system knowledge exists nowhere else in the Air Force. If I have a question on the A-10, I can get an answer down the hall. Two doors down, there’s an F-16 pilot I can talk to.”

Working with crews from a variety of aircraft has been the highlight of Kimmet’s instruction. “I’ve always wanted to work with fighters,” says Kimmet, who comes from a B-1 bomber unit. “This course has prepared me to go to a fighter unit or to a composite wing that has both fighters and bombers. Whether I eventually go to a composite force or not, chances are that, if I am deployed, I will be working with a variety of airframes. So I need to know about their capabilities.”

“In the E-3 community, we have very limited opportunities to do face-to-face debriefs,” says Capt. Kevin Jost, an E-3 AWACS radar controller from Tinker AFB, Oklahoma. “Debriefs and the briefings are a big part of the learning process for us here. We spend forty minutes briefing for a twenty-minute vulnerability time. Then we debrief extensively. Normally in an E-3 operation, we take off in the morning. We might call the guys that we are going to control beforehand and get a ten-minute plan from them. We talk to them from the airplane and control them. By the time we land that evening, they have completed their debrief and gone home for the day.

“I now have a better understanding of what I need to get out of a briefing and what to take away from a debrief,” continues Jost. “I will take back this experience to the students I will be teaching. As a weapons officer, it will be my job to bridge the gap between the weapon director sitting on a scope and the pilots in the cockpit.”

“The benefit of this exposure works both ways,” says Capt. Greg Guillot, a ground controller from Luke AFB, Arizona. “Not only do we get to see the pilots, but they get to see us. We are normally a faceless voice on the radio. Aircrews show up, check in during the mission, and then say ‘good job’ afterwards. Even if we didn’t do a good job, saying we did is easier than giving constructive criticism. Here, pilots are forced to consider what our limitations are, what a ten-second sweep on the radar can do. I don’t think they had to consider that before.”

Unless we’re stationed with other aircraft, this is one of the few places where we’ll have any contact with them unless we’re in a major exercise,” says Bernier, who rarely sees fighter aircraft at his B-52 base in South Dakota. “It’s tough to get a face-to-face debrief with other airframes. They are just not located together. We won’t find the exposure to other weapons as great as it is here anywhere else, especially during the mission employment phase.”

Working together provides side benefits. “It is important for our graduates to walk out of here knowing how to build a composite strike package, how to use other capabilities to enhance their own situational awareness,” says Dingee. “For a number of reasons, including a shrinking defense budget, we may not have enough F-15s to get the job done. So aircraft have to work together. We’re finding out that this cooperation makes us a more potent force as well.”

Through the years, the weapons school has adjusted to the larger needs of the Air Force. These adjustments are evidenced not only by the aircraft on the ramp but also by the syllabus, number of instructors and students, new divisions, course materials, and countless other items that constitute a school. “We have been influenced by a lot of things,” Rayburn explains. “The Gulf War changed the way we operate to some extent. We now teach more night operations and concentrate more on precision-guided munitions. We have always been sensitive to the field and relevant to what they need. The concepts of battle command, control, and intelligence data collection have changed. J-Stars, for example, will do for the air-to-ground war what AWACS did for the air-to-air war.” (J-Stars is a Boeing 707 that carries an advanced synthetic aperture radar below its fuselage. The aircraft can detect, locate, track, and classify enemy ground formations at a long range.)

“The Air Force talks a lot about integrating airpower,” Rayburn continues. “We’re not quite there yet. We do a superb job of coordinating airpower. We integrate it to a degree, but we need to take more steps in that direction. The collective works more effectively, but it is more complex. Chances are that someone wearing one of our patches will perform a major role in working through those complexities.”

Eric Heks
Soon after Defense Secretary Les Aspin announced in 1993 that women could be placed in US military combat roles, the New York Air National Guard offered Maj. Jackie Parker an F-16 assignment. Throughout her Air Force career, she had been the first female in a number of traditionally male assignments. She was Reese AFB’s first T-38 instructor pilot and the first female graduate of the USAF Test Pilot School. Parker will tell you that being first has not always been pleasant. The opportunity to fly the world’s best fighter, however, was too good to pass up. Parker is the first woman in the United States to be assigned to an F-16 fighter squadron.

Before setting out on a career of female firsts, Parker spent her earlier years being the youngest. This designation goes back to her birth as the youngest of five sisters. At age fourteen, she was the youngest student to attend the University of Central Florida and then, at seventeen, the youngest graduate. She took her bachelor’s degree in computer science to NASA where she became the agency’s youngest space flight controller. She was the Air Force’s youngest instructor pilot for the T-38 and for the C-141. Parker has accumulated over 3,000 flying hours in over twenty-five types of aircraft, including the F-16, F-111, F-4, A-7, C-130, C-141, KC-135, T-38, OH-58, and UH-60.

After KC-135 Aircraft Commander School at Castle AFB, California, she was assigned to the 4952nd Test Squadron of the 4950th Test Wing at Wright-Patterson AFB, Ohio, where she was program manager and test pilot for the T-38 head-up display program. She was also program manager and test pilot for the testing of the C-27. She was elected as outstanding T-38 academic instructor at Reese five times. She received the Air Force Commendation Medal in 1985 and 1988 and the Meritorious Service Medal in 1993. Parker doesn’t relish media attention. The fact that one photo of her gets extended play in the media, however, often creates the opposite impression. In reality, she accepts very few interview requests and usually only after she has established credibility at an assignment. Code One’s Eric Hehs interviewed Parker in Syracuse, New York, where she is now one of two female F-16 pilots flying for “The Boys from Syracuse,” the 138th Fighter Squadron of the 174th Fighter Wing of the New York ANG.
How did you come to graduate from Florida University at age seventeen? I did well on an IQ test in the fifth grade. I ended up skipping grades nine and twelve and then completed ten and eleven in one year. College was wonderful after that year in high school. My family was moving around a lot, so I had no high school social life to sacrifice by finishing at a young age. I wasn’t passing up any friends, and the stability of going to one school for three years was a blessing for me. I received a good education at an early age and participated in a lot of the social events. I dated and played tennis and soccer.

How much do you credit your IQ for your achievements? My IQ helped, but my tenacity and persistence played a much larger role. IQ scores can be overrated. To say you are a genius really doesn’t mean much if you don’t do anything with your ability. When I talk before school groups, I try to emphasize that self-confidence is the real key to success and that you don’t have to go to college at fourteen or be a genius to be successful.

How did you come to be the first woman in many of the roles and positions you held during your Air Force career? It was purely accidental. I didn’t want to be the first and certainly did not plan my career this way. When I showed up at Reese AFB, Texas, in 1981 with the desire to be a T-38 instructor pilot, I didn’t realize that Reese didn’t have any female T-38 instructor pilots. By the time I applied for test pilot school, I was surprised that a woman pilot had never attended. The first year that women entered Air Force pilot training was 1976. I came in 1980. I can only guess that the women who came before me either weren’t interested in becoming test pilots or they didn’t qualify. Test pilot school seemed rather open to the idea of having women pilots. They already had several women engineer graduates. And the Navy’s test pilot school had both women pilot and engineer graduates.

As far as being the first female fighter pilot in the Guard, I owe that opportunity to Gen. Mike Hall, who was then the wing commander at Syracuse. I had met him when I was at test pilot school in 1989. When the law changed allowing women into combat roles in 1991, he called and wanted to know if I was interested. We didn’t know it wasn’t going to be until 1993 when women were allowed to assume combat roles. On 28 April 1993, I literally woke up to the news report on my alarm radio announcing that Secretary of Defense Les Aspin was allowing women to enter combat. I was called that afternoon by General Hall, sold my house on the 30th, and was sworn into the New York Guard on the first of May. It was a difficult decision to join the Guard knowing that, again, it would mean another first for me.

What made the decision so difficult? It is difficult to operate under the enormous visibility and pressure of being the first and many times the only. When you are one woman out of 100 men, it is like working in a fishbowl. I am under incredible scrutiny every day. People who think I am treated like one of the guys are kidding themselves. Up until now, the rules for women pilots were different. When the rules are different, you will be treated differently, which leads to discrimination. The funny thing is that I really am just like the other pilots. I would give anything to blend in. But that isn’t possible, so I just have
to do the best I can. I have to fly well and be patient until I am accepted. I can't wait until the day when interviews like this are no longer newsworthy and a woman in a flightsuit can walk around virtually unnoticed so she can just concentrate on doing her job and not constantly have to defend her right to do it.

It's not a deep dark secret that females as fighter pilots have not yet been fully accepted. However, I have been in this field long enough to know that people do come around in time. It is human nature to resist change even if it is for the good. Change is always accompanied with a certain amount of turbulence. But once people adjust, they are better for it. Women in combat is a monumental event and will have a significant impact in society. It will be a few years before most people understand that this is a very positive step forward and will eventually improve the relationship between men and women.

**Did you pursue your flying career because you viewed yourself as blazing trails for other women?** No. I just wanted to fly airplanes.

**How have you been received from one assignment to another?** After college, I was at NASA for two years. I worked with astronauts, mission controllers, and some of the brightest people I have ever met. They treated me with tremendous respect even though I was very young. Then I joined the Air Force and went through pilot training at Reese. Student pilots aren't treated with much respect to begin with. The timing was bad, too. I was in a class full of academy graduates who had been in the first class with women cadets. They all knew each other and were close. On top of that, many had bad experiences with the way women were integrated into the academy.

My experience at Reese was rather difficult. Reese was one of the last training bases to have women T-38 instructors. They didn't even have a women's restroom in the building. We had to use a toilet in a closet. The fear of sexual harassment charges wasn't prominent in the early 1980s. Fifteen years ago our society was very different. Women were not accepted as well as they are today. The mentality in the Air Force was more to tolerate women. It wanted women to know that we were lucky to be there. It was a brutal environment.

After Reese, I went to Charleston, South Carolina, and flew the C-141. In the heavy world [flying larger cargo and transport aircraft], women are more easily accepted because we've been there longer. We aren't novelties. The pilots were not as competitive, and we had great working relationships as well as great social relationships.

Test pilot school was positive as well. I was once again a novelty but was well accepted. Most of the people there are very secure with themselves. My being a woman wasn't as big an issue. It did not monopolize my time as it had earlier. I was also getting more accustomed to being in a high-visibility environment.

**People who think I am treated like one of the guys are kidding themselves.**

As a test pilot at Wright-Patterson AFB, I was treated very well. I was in a squadron that had several women pilots and navigators. I was well respected. The unit had only a few test pilots. The people I worked with knew how difficult it is to get through test pilot school and they seemed to look up to me for having the ambition and drive to complete it. Wright-Patterson was a great assignment and helped give me the confidence and strength to enter the tactical community later.

In the fighter world, I am not looked at as Jackie Parker, but rather as the woman who may be taking something away. However, I have been accepted relatively fast. It takes time for the community to be comfortable working with women peers. The rest of the country has gone through the learning process of integrating women into the workplace. Both women and men have learned to make adjustments. The tactical world has not had a chance to deal with this extensive transition. They have been virtually isolated and can't be expected to adjust over night.

**Has your experience been different in the Guard?** Yes, because, on average, they are older and older people have been around long enough to know that change is a part of progress. The Guard has some other advantages as well. By staying with a unit, members become very close by working together over many years. Once new members break into this group, it's great. They don't have to worry about moving and starting all over again.

**Does the experience at Syracuse spill over to other units?** To some extent. But it is like any learning experience. You can't learn to ride a bike by watching an instructional video. You have to fall off a few times before you figure out how it works.

The fact that Syracuse was the first unit to actively seek women sends many signals. First, they are saying they believe this is right. It also brings the reality that it is just a matter of time until all units will have women. The "boys" get a lot of calls from units from other bases all over the world asking how the "girl" is doing. I hope the informa-
When male pilots first heard about women pilots entering combat, many thought about their mothers, sisters, aunts—people who are not pilots.

But don't fighter pilots have an image to uphold? Sure we do. But is it considered weak to be shot down by a woman? I think it is fair to assume that this is implied. We all want to be respected and revered as strong. People look in the mirror and see somebody they want to see. Some see a hero, but that doesn't mean they are one. Sometimes a pilot wears a flightsuit like it is medal of honor and seems to forget that flying airplanes is a privilege. Although it is dangerous, we pilots love it and we do it voluntarily. We shouldn't expect the rest of the world to place us on a higher level because we chose to live more dangerously. The pilots I look up to are the ones who can look
in the mirror and see something closer to reality. They are so secure about themselves that they can depart from what is considered “manly” and just be themselves.

**How does your personality compare with the personality of other fighter pilots?** Very similar. I think that is what surprised the guys. When male pilots first heard about women pilots entering combat, many thought about their mothers, sisters, aunts—people who are not pilots. It scared them into thinking that the Air Force was going to allow just *anybody* in pilot training. Studies have shown that pilots have very common personality traits. Female and male pilots have more in common with each other than with other people, even with those of their own gender.

**Are you familiar with the presidential commission on the study of women in the military?** Yes. Along with the combat exclusion law being repealed, there was another bill sponsoring a study of women in combat. Although the study was not a prerequisite for allowing women in combat positions, it became a prerequisite. Many of the issues the commission studied were the same issues examined in the 1970s when women first became pilots, issues like strength, g-tolerance, and logistics. Women have been flying high-performance aircraft since 1973 in the Navy and since 1976 in the Air Force. The only new issue was whether we should be allowed to be in combat.

**Were you asked to testify?** I heard they were having one of their sessions in Chicago. So I jumped in my car and drove there from Dayton to see if they could interview me. At the time, I was one of only two women who had flown the various Air Force fighters. Neither one of us had been contacted by the commission. [Eileen Collins, who completed her first flight in the Space Shuttle the week before Parker was interviewed, is the other.] Unfortunately, interviews had to be scheduled in advance.

But my effort was not wasted. After seeing me in Chicago, the commission put me on the anthropometrics panel. I was one of the smallest pilots in the Air Force and I’d flown almost thirty different aircraft in the Air Force inventory. My height and weight put me in the 0 to 1 percentile for pilots. I ended up testifying in Dallas, Texas.

**What did you have to say about size and strength?** My testimony lies in what I have flown. I have experience flying many different types of aircraft, including the F-16, the F-4, the F-111, and the heavies—the C-141 and the KC-135. One of the prime concerns with women flying fighter aircraft has been associating g-tolerance with physical strength. Apparently, I have the size and the strength to do it. I’ve never had a problem in any airplane.

To prepare for my testimony, I discussed this very issue with the expert who did the actual testing in the 1970s. He was stationed at Wright-Patterson. After looking at different programs and studying how strength is measured, the expert indicated that strength is almost impossible to quantify accurately. Too many factors are involved, including motivation, leverage angles, and body position. I took the strength test and did better than sixty-five percent of the USAF Academy students in upper body strength. What does that result say? That I am stronger than sixty-five percent of a bunch of twenty-two-year-old men?

If strength is an issue, it is not a gender issue. If strength is a realistic standard for a particular job, measure strength. Don’t say I can’t perform a particular job simply because I am a woman.

**Did your testimony influence the commission?** There’s no way to tell. The results came out against women in combat roles by a vote of eight to seven. Given the composition of the commission, the vote was not a surprise.

**Should standards based on height or strength be lowered or be done away with?** Standards should not be lowered, but they should be realistic. If you want to eliminate women, you can by creating height standards...
If strength is an issue, it is not a gender issue. If strength is a realistic standard for a particular job, measure strength. Don’t say I can’t perform a particular job simply because I am a woman.

and strength standards. Many combat jobs don’t require a 250-pound brute. You may need a small quick person to go behind enemy lines, under fences, and in tiny places in aircraft fuselages. Not every country in the world has a population as big as America’s. But their military forces fly our airplanes. It is important that we open up our minds and take advantage of the majority of the population to do the job. If you incorporate the variety of talents that both small and large people offer, you end up with a diverse team that can do a greater variety of jobs rather than a limited, but physically larger, force. Admission standards need to be determined on the basis of real needs of the mission, such as passing a centrifuge evaluation for flying high-performance aircraft.

What about pregnancy and increased time off for medical reasons? Most women plan their pregnancy around flying. It is not like a cold that they just catch. You won’t find many women getting pregnant during their flying tours because they want to fly. Studies have shown that men actually take more time off due to athletic injuries. As far as the rules go, for fighter aircraft, women can’t fly and be pregnant because of the forces involved with the ejection seat. In cargo aircraft, they can fly in their second trimester. If they can’t fly, then they perform ground duties and still contribute to the unit.

Women are coming into these combat positions as the forces are cutting back. Is this the best time for the Air Force to go out of its way to accommodate women? Even in a period of a drawdown, the military still recruits and should continue to recruit both women and men. There are some changes that need to take place, of course, now that many predominately male units will have more women. Restrooms and uniforms are two examples. It makes sense that aircraft, uniforms, and buildings have been designed around the male population because, for years, those designs reflected the military population. Now that the population has changed, we need to consider requirements based on the average individual as opposed to the average male. At some time, we have to incorporate a more representative area of the selected population. The sooner we get through this, the closer we will be to unit effectiveness. This is the perfect time to change because there is no large crisis looming out there. Relative peace is a great time to make these changes.

How do combat roles relate to opportunity in the Air Force? They are critical. The people who succeed in the Air Force are those closest to the mission, and that mission is dropping bombs and shooting down airplanes. The closer you get to that mission, the better off you are going to be. Fighter and bomber pilots are at the top of the pyramid. And they are above C-141 and KC-135 pilots, who are above people in the office. That arrangement may not seem fair, but that is the way it is. Most leaders and commanders in the Air Force are pilots.

Has the electronic nature of warfare made it any easier for combat forces to incorporate women? Technology has certainly made it easier, but it has made it easier for all of us.

Why did the New York Guard choose you? I think they wanted a person with an extensive background. Being the first woman in anything is not an easy job. It may be a little easier for me because I’ve done it before. So choosing me offers some extra security. They know I am the kind of person who is going to try to make the transition as smooth as possible.

Have most pilots given the gender issue much thought? I would venture to guess that most pilots have entered a debate on this issue. Many men have told me that they were really against this change and that now they are defending my position.

Is the integration of women a subject of debate? The issue of whether women are coming to a unit is not debatable. The policy is set. Questions on how the policy will be implemented are a different story.

Say I’m a squadron commander and a female pilot has just been assigned to my unit for the first time. Give me some advice on handling the situation. First, you should talk to my commanders. The commanders that have been most successful with this transition have told me they truly believe that anyone who can meet the demanding standards of qualifying as fighter pilot should have the opportunity, regardless of gender. They are firm in their position that this opportunity is right and that the issue should not be one open to debate or left
to popular decision. It takes a very strong leader to handle this situation well. You can’t be one of the boys. Trying to play both sides can lead to disaster because no one respects you. During the transition, of course, there will be problems with unit effectiveness, but they are only temporary. The problems can be minimized with aggressive and positive leadership.

**Can you offer any advice for first females in a squadron?** The toughest thing to accept is that she is different. This difference isn’t always good and it isn’t always bad. The fact remains, no matter how much she might try to be one of the guys, she can’t be.

It took me a long time to learn from some of my experiences. I am really stubborn. I really thought that I could change someone if I was nice enough or smart enough or funny enough. But I realized after a while that not everyone was going to accept me. It is a tough lesson.

**Is being the second woman pilot in a squadron any easier?** Somewhat. The newness has worn off. A lot of it depends on how the first one handled the situation and if she performed well as a pilot. For some reason, women are compared with each other.

**What are some of the techniques you use?** I try to do my best at everything that I undertake. To be respected as a pilot is one of the most important things that I can accomplish. I try to be myself. I use humor a lot. I don’t get on the defensive. If other people try to put me on the defensive, I get on the offensive.

I have been very fortunate to have had so many opportunities. This is the best job in the world, and I want to continue flying as long as I can. I have had a tremendous amount of support in every assignment. I couldn’t have made it so far without this support. In the last eight months, we have made phenomenal changes in Syracuse. The unit has been receptive to the change. I am lucky. I get along with most of the guys really well. I don’t have all the answers. I just do my best.

I don’t hide my femininity and that sometimes drives the guys crazy. My first day at Syracuse, I walked in with a pink pubs bag. [Editor’s note: “pubs bags” are cloth satchels in which pilots carry flight-related publications.] The test pilots from NASA at Edwards [California] gave it to me. They had it made special with the brightest pink fabric they could find. Most women wouldn’t come into an all-male squadron with something so abrasive. At first, the Syracuse pilots were in shock, but now they understand. I don’t try to be someone I’m not. I don’t try to behave like a guy. I am what I am—a fighter pilot.

I don’t try to be someone I’m not. I don’t try to behave like a guy. I am what I am—a fighter pilot.
NASA'S

FLYING BIG WHEEL

BY JOHN CHEVEDDEN

APRIL 1995
In their heyday in the early to mid-1960s, the Convair 880 and 990 were the sleekest jetliners around. As lingering proof that function can follow form, the aircraft still hold eighteen speed records over commercial airline routes. Today, though, you are not likely to see a 990 zipping passengers from Los Angeles to Nashville in record time. Very few of the aircraft are still in operation. NASA, however, is keeping one 990 aloft as a unique test platform for an unlikely subject—the space shuttle orbiter.

The Convair 990 goes back a long way in jetliner history and enjoys a history with NASA. It was built by the Convair Division of General Dynamics Corporation in 1962. Through the years, NASA has operated several 990s as research vehicles. In 1964, it acquired the first Convair 990 built. The aircraft, called Galileo, was flown as an airborne laboratory for celestial research after special windows were cut in its upper fuselage for telescopic observations and photography. Galileo was lost in a midair collision in 1973 and was subsequently replaced with another 990, dubbed Galileo II. This Galileo, coincidentally, was the last of thirty-seven 990s built by Convair.
Today, NASA engineers are using the 990 in a variety of tests for improving the safety and effectiveness of the space shuttle's landing gear system. The converted jetliner is called the "landing systems research aircraft," or LSRA for short. The LSRA is NASA's last operational 990. This particular aircraft, which like many of the other 990s built, originally carried passengers for American Airlines. It was first used by NASA for medium-altitude atmospheric research at the Ames Research Center at Moffett Field, California, in 1975. The airplane is now based at NASA's Dryden Flight Research Center at Edwards, California.

As the LSRA, the 990 is now used to produce data on tire, wheel, and system failures for the space shuttle orbiter. Bob Baron, the program manager at Dryden, said the 990 was selected for the space shuttle testing because of its strong structure and because it was already in the NASA inventory. "Besides," Baron said, "we can't fly an actual orbiter for these tests."

NASA engineers are using the 990 to evaluate new tire compounds and landing surfaces to raise the crosswind landing limit of the space shuttle from the current fifteen knots to a more desirable twenty knots. This five-knot increase may not sound like much, but it could translate into millions of dollars in savings. It would reduce the number of days in which crosswinds are too high for the orbiter to land on the runway at the Kennedy Space Center if an emergency occurred immediately after launch. "If we can save the space shuttle program eight days of delay, we will have paid for the entire LSRA program," said Christopher Nagy, chief Convair 990 engineer.

The key to the LSRA space shuttle tests is the duplication of landing forces produced by the space shuttle itself. To duplicate these forces, the LSRA carries a space shuttle main landing gear mechanism in its underside. During the latest series of tests at Kennedy, the LSRA team studied three different runway surfaces to determine the best one for the orbiter. The test results showed that the current orbiter tires have a twenty-knot crosswind capability on a smoothened runway surface. Consequently, the entire 15,000-foot runway at Kennedy was smoothed with a machine called a Skidabrader that pulverizes the rougher surface with tiny steel shot. In addition to increasing the likelihood of shuttle takeoffs, the smoother surface will also improve safety for end-of-mission landings for the orbiter at Kennedy. Previous LSRA tests have led to improvements in design and materials for the orbiter's tires.
Sandair, a San Diego engineering consulting firm, designed the special equipment for testing the shuttle landing gear. Many of Sandair's employees have direct 990 experience dating back to the late 1950s. Sandair's design incorporates a space shuttle landing gear retraction system in the 990's lower fuselage, between the aircraft's main landing gear.

To make room for the test fixture, the centerline keel of the Convair 990 was removed and replaced by two auxiliary keels on each side of the lower fuselage. Heavy metal plates and three new bulkheads were installed to increase structural integrity and to protect the aircraft from debris during tests. Two 100-gallon water tanks installed in the forward cargo hold supply a shower system that can be used for fire suppression during tests. Power to operate the hydraulically controlled test fixture and to apply the test pressures to the orbiter landing gear come from a system of forty-eight nitrogen bottles and sixteen hydraulic accumulators that can produce a hydraulic pressure of 5,000 pounds per square inch. The high pressure is needed to deploy the hefty test gear at its design rate of fifteen inches per second. Additional supporting modifications were made in the cargo area and passenger cabin.

The test pallet can accommodate a complete landing gear as big as the space shuttle's or a steerable fixture for testing a single tire or brake assembly. The steerable fixture can yaw seven degrees in either direction to imitate side skid forces. The aircraft can land at speeds up to 230 knots on its re-qualified Convair 990 main gear tires and newly designed nose gear tires.

The modifications and test article add more than 40,000 pounds to the aircraft, which now weighs about 200,000 pounds. The landing capability of the 990 is unaffected by the shuttle test components. However, the aircraft's top speed and maximum altitude are restricted by the modifications. Since the test gear occupies space normally taken up by the 990's main landing gear, the 990's main gear stays

KENNEDY SPACE CENTER’S 15,000-FOOT RUNWAY WAS RESURFACED LAST YEAR BY SKIDABRADER MACHINES. THE SKIDABRADER CREATES A SMOOTHER SURFACE BY PROPELLING TINY STEEL SHOT ONTO THE RUNWAY TO PULVERIZE THE SURFACE. AN ELECTROMAGNET SEPARATES THE STEEL SHOT FROM THE CONCRETE AND A VACUUM/FILTER SYSTEM CLEANS UP ANY REMAINING DEBRIS.
The runway at the Kennedy Space Center was originally designed to clear a three-inch-per-hour rainfall. The susceptibility of the shuttle’s heat-resistant tiles to rain damage made this requirement moot and paved the way for the smoother surface.

locked down for the tests. (The nose gear still retracts.) The extension of the gear actuator into the passenger cabin also prevents the passenger cabin from being pressurized. The drag from the hanging main gear limits the 990’s maximum speed to 275 knots. The unpressurized fuselage keeps the aircraft below 13,000 feet. The additional drag and reduced ceiling forces the 990 to stop to refuel on trips between California and Florida.

The crew of six includes two pilots, two flight engineers, and two control system console operators. The 990 project pilot is Gordon Fullerton, who flew on two space shuttle missions before leaving the astronaut corps in 1986 to become a research pilot at Dryden. Fullerton was also a member of the NASA flight crews that carried out the space shuttle approach and landing tests at Dryden in 1977 with the prototype orbiter Enterprise.

A typical test begins after the LSRA has landed and de-rotated. Flaps and spoilers are set to develop an adequate amount of aircraft download on the shuttle gear. Tests consist of full-stop speed profiles, constant speed touch-and-go’s, and low-speed taxing. The 990 is “flown into the ground” at 230 knots, accelerating to land. When the test gear is extended after the main gear touches down, the entire aircraft lifts up.

Shuttle landings are rough on tires. The rubber experiences an initial “spike” load when the tires first meet the runway. The spike is followed by a lesser load as the spacecraft aerobrakes with nose gear above the ground. Each tire of the main landing gear experiences a maximum load of about 140,000 pounds per wheel when the nosewheel finally touches the runway. Steering inputs add extra loads on the tires. The LSRA simulates such load profiles and maintains test parameters with on-board computers connected to the powerful hydraulic system. Once a preprogrammed test profile is selected, the computers generate commands for vertical load, tire slip angle, and desired velocity. Instrumentation of the landing gear system and high-speed video and film cameras are used to record tests.
John Chevedden is a freelance aviation writer based in Southern California.

PHOTOS NASA
The first FS-X prototype rolled out of the Mitsubishi Heavy Industries Komaki Plant in Japan on 12 January. The rollout was preceded by a Shinto sacred right and speeches by industry representatives.

The 8th Fighter Wing from Kunsan AB, Republic of Korea, won top honors at Combat Spirit '94. The wing's 80th Fighter Squadron finished first in the PACAF-wide event hosted at Osan AB in Korea. Its 35th Fighter Squadron finished second. The competition tests pilot skills in a timed first-run attack followed by four passes in a conventional bombing pattern and two strafe passes. The 51st FW from Osan AB and the 432nd FW from Misawa, Japan, also took part in the competition.

Captts. Don Butler, Greg Dodson, Kevin Kelly, and Jed Morton (clockwise from left) of Kunsan's 80th FS took first place in Combat Spirit '94.
The US Ambassador to Egypt, Ned Walker, made his first flight in an F-16 in February during a delivery of four aircraft to Gianaclis Air Base in Egypt. Walker, who flew in the backseat of an F-16D piloted by Lt. Col. Van Chatraw, referred to his flight as a pleasure and thrill. "The delivery of four jets with no malfunctions is a tribute to the quality product that is being assembled in Turkey," Walker said after the flight. "Likewise, the arrival and acceptance of the F-16s in Egypt was an impressive demonstration of the strides the Egyptian Air Force has made in the modernization of their force structure."

F-16s from the USAF Reserve's 419th Fighter Wing from Hill AFB, Utah, are being flown by other Reserve pilots in Operation Deny Flight over Bosnia. The aircraft were originally deployed from Utah to Incirlik AB in Turkey to participate for sixty days in Operation Provide Comfort over northern Iraq. The aircraft were subsequently moved to Aviano AB, Italy. Personnel from the 924th Fighter Wing at Bergstrom AFB in Austin, Texas, began maintaining and operating the aircraft in Aviano in February. The 924th was replaced by personnel from 926th Fighter Wing (AFRES) in New Orleans, Louisiana, in March. The Reserve units are providing assistance to USAFE active-duty squadrons, which are facing an ever-increasing number of peacetime missions.

The 419th Fighter Wing's deployment to Turkey allowed Spangdahlem's F-16 units (the 22nd and 23rd FS) to return to Germany for the holidays in December.
Congratulations to the 162nd Squadron of the Republic of Korea Air Force’s 19th Fighter Wing for winning that country’s 1994 Boramae Gunnery/Bombing Competition. F-16 pilots from the 162nd finished ahead of F-16 pilots from the 161st Squadron (also of the 19th Wing) in a competition that includes ROKAF units flying the F-16, F-4D, F-4E, F-5, and A-37 aircraft.

Maj. Heung-Seop Kim garnered Top Gun honors in the ROKAF competition.

Capt. Jae-Hoon Yoon, Maj. Jang-Kyu Bang, Maj. Sung-Don Hwang, and Capt. Tae-Sub Song (left to right) won top overall honors at the Boramae Gunnery and Bombing Competition.

Maverick Mitchell Flies F-16

Tom Cruise took time during a visit to South Korea last December for a backseat ride in an F-16 of the 51st Fighter Wing at Osan. Cruise and Capt. Tom Abbott of the 36th Fighter Squadron flew a tactical mission and a variety of flight maneuvers, including a combat descent from 15,000 to 1,000 feet. Cruise was in Korea to promote the movie Interview with the Vampire. Reports indicate that Abbott returned from the flight with no mysterious puncture wounds on his neck.
A large-scale aerodynamic and propulsion model of the X-32 was recently tested at Pratt & Whitney’s West Palm Beach facility. Lockheed is working with Pratt & Whitney, Allison Engine Company, and Rolls-Royce in the demonstration, which is part of the recently merged ASTOVL and Joint Advanced Strike Technology programs. The model’s main propulsion system is powered by a Pratt & Whitney F100-PW-220+ engine. The engine has a PW-229 fan and a low-pressure turbine with a PW-220 core. The engine, which can develop 30,000 pounds of thrust, also drives a vertical lift fan located just behind the model’s cockpit. The engine uses a two-dimensional lift/cruise exhaust nozzle featuring thrust vectoring and a variable area control. The lift fan has a vectoring nozzle that provides pitch and yaw control. Although an F100 engine is being used for the demonstrator model, the powerplant for the X-32 aircraft will be a derivative of Pratt & Whitney’s F119, the engine slated for the F-22 air superiority fighter.

After these tests, the model was returned to Palmdale, California, where thirty-foot wings, canards, and tails will be installed. “Successful accomplishment of the initial propulsion test gives the Lockheed team a good start in our pursuit of the next program phase,” said David Wheaton, Lockheed’s JAST program manager. “These tests will lead to an extremely cost-efficient, highly capable next-generation strike warfare system.”

The VISTA/F-16, after completing a rigorous flight test program at Edwards AFB, California, returned to Fort Worth in January before being flown to Wright-Patterson AFB, Ohio, where it was delivered to the Air Force. In the front seat on the Fort Worth leg was James Sergeant, flight test engineer and author of two Code One articles on the multi-axis thrust-vectoring F-16 for which the VISTA/F-16 was used. Maj. Bob Wilson, USAF project pilot for the VISTA/F-16, flew from the back seat.
Ben Rich Remembered

Ben R. Rich, who achieved international acclaim for innovative aircraft design, development, and production during a forty-year career at Lockheed Corporation, died on 5 January in California following a lengthy illness. Rich headed the Lockheed Skunk Works until his retirement in 1991. He was honored last year with the Distinguished Service Medal, the Pentagon’s highest civilian award, presented by Secretary of Defense William Perry. In recent years, he served in an advisory capacity on several government intelligence committees. Most recently he published with Leo Janos a book about his career, Skunk Works: A Personal Memoir of My Years at Lockheed.

“All of us at Lockheed are deeply saddened to learn of Ben Rich’s death,” said Daniel M. Tellep, chairman and chief executive officer of Lockheed. “Ben made many significant contributions to our nation’s defense and to Lockheed throughout his long and distinguished career. We will remember—and sorely miss—his wit, wisdom, and sage counsel.”

F-16XL No. 1 Goes To Dryden

NASA’s F-16XL No. 1 headed back to Edwards, California, from Hampton, Virginia, in January for a series of high-speed flights with NASA’s SR-71. The aircraft are being used to study the characteristics of sonic booms as part of the agency’s high-speed civil transport program. Speeds during these flights will range from Mach 1.25 to Mach 1.8. During the flights, engineers will record how sonic booms are affected by atmospheric conditions. The data will help aerospace scientists learn how to predict the intensity of sonic booms. The information could help designers contour the shape of future supersonic aircraft to reduce sonic boom noise levels. Sonic boom intensity is governed by several factors, including aircraft weight, size, and speed as well as altitude, flight path, and atmospheric conditions.
In 1983, South Carolina’s 169th Fighter Group was the first ANG unit to receive F-16s. The 169th flew their F-16As to victory in the Gunsmoke ’89 bombing competition. The unit also flew its F-16s during the Gulf War.

Last November, the 169th sent its F-16As to Israel without one maintenance problem. Soon after, the unit began receiving the latest F-16C Block 52 aircraft. “We’ve anxiously awaited the arrival of this aircraft ever since we returned from the desert,” said Col. Jerry Risher, former commander of the 169th.

Maj. Mark Miller became the first active USAF pilot to surpass 3,000 hours in the F-16 last December. Miller, an instructor at the USAF Weapons School at Nellis AFB, Nevada, credits his high flight time to his love of flying. “Whenever I get a chance to fly, I will,” he explained after the flight. “I wanted to learn as much as I could. I never got out of the cockpit. I even lost some leave every year.” Miller, who is featured on our cover and quoted in this issue’s article on the weapons school, has flown the F-16 for the last twelve years straight. He joins two other 3,000-hour F-16 pilots, Maj. Mike Brill (USAF Reserve) and Cmtd. Jean-Marie Toussaint (Belgian Air Force).

Lockheed completed flight testing of an F-16 modified to represent the F-16ES version in January. A total of twenty-one flights were made to gather aerodynamic data concerning various external elements, including two twenty-four-foot conformal fuel tanks attached to the fuselage of the aircraft and upper and lower ball turrets for an internal forward-looking infrared system. The aircraft also flew with two 600-gallon tanks, a centerline tank, two 2,000-pound bombs, and AMRAAM and AIM-9 missiles during various flights in the tests. Test results were encouraging. “Unlike conventional external fuel tanks, the conformal tanks were not noticeable at all in flight,” said Joe Sweeney, who manages flight operations in Fort Worth. Sweeney was also the pilot for nine of the tests. “The flying qualities and ride qualities of the F-16 throughout the clean aircraft flight envelope were unchanged,” he said. “Operationally, if you are going to carry external fuel, the conformal tanks allow much greater configuration flexibility and a potentially expanded flight envelope.”
Sparrow Songs

We here in the Sparrow Missile Program Office read your article, “Fargo Wins William Tell 1994,” with interest and enthusiasm. The article expressed two very important facts: one, that the squadrons of the Air National Guard are a ready and capable component of the national defense system; and, two, that the Sparrow guided missile is still the most effective missile in our air-superiority inventory.

As you may be aware, the Sparrow was developed in 1948 as an iteration of the Lark missile and was introduced into the Air Force inventory in the early 1960s. It was successfully used in Viet Nam and, more recently, in Desert Storm, where it proved itself highly reliable and extremely effective.

All of us here at Warner Robins enjoy your magazine and look forward to each new edition. Keep up the good work.

E.T. Evans
Sparrow Missile Program Manager
Robins AFB, Georgia

Editorial Accolades

I have enjoyed receiving Code One for some time now. I have little time for outside reading in addition to my editing Aviation History Magazine on a part-time basis while holding a full-time position elsewhere. Consequently, I have to be quite selective with magazine reading and usually restrict what I can read in Code One and others I receive.

All issues of Code One are fine—good subjects, good reading, well illustrated—but your January issue is one I found especially interesting. I personally got hooked on the USAF Museum piece because aviation history, naturally, is my primary interest. But then I proceeded to the P-38, the F-16 model, and the William Tell pieces. I even read the letters, in which I found one from Capt. S.M.A. Hussaini, who I just heard may be featured in the “Art of Flight” department in my magazine.

As one aviation editor to another, I want to congratulate you on what I consider an exceptional issue among consistently fine ones.

Arthur H. Sanfelici
Editor, Cowles History Group
Leesburg, Virginia

P-38 Parts

Your article, “The P-38 Lightning: Lockheed’s First Fighter,” evoked memories of action photos from World War II. It also brought back memories of one Johnny Law, an LC/AC [Lockheed Aircraft Corporation] Spares Division employee in Burbank I met and worked with during my F-104 time. Johnny had purchased oodles of P-38 parts when LAC surplused them. His aim was to provide for Lightnings still flying. When I visited his home, he opened his garage door and there we were—face to face with the business end of a pair of Allisons he had “in stock.” The remainder of the space was crammed with other P-38 pieces. I hope Johnny is one of your readers.

David Dobson
Chesapeake, Maryland

Missing Dive Brakes

I was very fortunate to have a friend send me your January issue. I was particularly happy to read Neil Anderson’s article on the P-38. Having been involved with the P-38 as a pilot and instructor both in combat and in training, I was surprised to note Anderson’s comment on page 26 about the P-38’s dive brakes.

I thought I had flown every P-38 model from the D’s through the L’s, and I cannot remember a P-38 with dive brakes. Possibly, the P-38 in the article had been modified?

Lack of dive brakes on the P-38 was its greatest weakness, although the plane’s maneuvering flaps helped a lot in combat. As soon as I flew the P-80, I realized how much dive brakes would have helped the P-38’s I had flown.

Did I miss something?

Col. George L. Ross (USAF, ret.)
Port Huron, Michigan

Model Improvements

First of all, let me congratulate you on an outstanding publication. My squadron finds Code One to be interesting and informative. We look forward to its arrival every quarter. Your January 1995 publication had an excellent article, “Building the Model F-16.” This squadron particularly enjoyed it because the example aircraft, F-16C SN 90-0910, belongs to the 4th Fighter Squadron.

The model is superb, down to the finest detail, including the tail flash and the squadron patch under the left strake. Jim Barr is obviously very talented.

The text of your article refers to the “markings of the 388th Fighter Squadron from Hill AFB.” In fact, the model has the markings of the 4th FS, which is part of the 388th Fighter Wing from Hill. As the first operational F-16 fighter squadron in the world, the 4th’s “Fighting Fuzjins” are obviously very proud of our heritage in the F-16 and would like to see this error corrected.

Lt. Col. Daniel Runyan, Commander
4th Fighter Squadron
Hill AFB, Utah

Model Shapes

Thank you for picking our 1/48th-scale F-16 kit in your article featuring the modeling process. We are quite honored. Needless to say, we are very impressed with your article and we are even more impressed with your magazine. We have circulated your magazine among our staff and the following comment came from our design section: “We are very fond of the F-16. We feel the shape of the F-16 is the nicest among the modern aircraft designs. In our opinion, the F-16 heavily influenced the designs of some other aerospace companies in the world.”

Yoshiro Takada, Manager
Overseas Business
Hasegawa Seisakusho Co., Ltd.
Japan

Editor’s note: According to our technical source at the P-38 National Association (PO Box 1816, Burbank, CA 91507), dive brakes were installed on late-model production P-38L aircraft in 1944. They were located on the lower surface of the main beam of the wing and electrically actuated from a switch mounted on the control wheel. The accompanying photo shows test pilot Tony LaVier (left) and Kelly Johnson holding one of the flaps below the wing of a P-38L equipped with the same.

Model Doctor

As a flight surgeon attached to the 307th Fighter Squadron, I was quite interested in reading your October issue. The article on scale models of the F-16 by Eric Hehs was especially interesting as I have a long-standing interest in modeling. Please accept my congratulations on an interesting and well-produced publication.

Mark D. Kriskovich, M.D.
Moody AFB
Valdosta, Georgia
Suitable For Framing

I've viewed thousands of photographs, as research for artwork, but those found in your magazine are unparalleled. I've used several other magazines as a source for details of the weapons hung on the racks as well as for other components, but none of them compare to what you send in each publication. The photograph shown on page 30 of your January issue is one of those outstanding examples. SrA. Ammons of Eglin AFB has done well in depicting the power and beauty of the Fighting Falcon. That's one masterpiece that I'd like to hang in my office.

Jeffrey C. Aiken
Aerospace Graphics
Glendale, Arizona

Worth The Wait

I recently picked up your October 1994 issue in a college waiting room. I flipped through it until I got to the section on the model F-16. I was impressed by the coverage you gave it—many modeling magazines don't go into such depth. I also devoured the article on the Su-35, surely the most capable fighter in the world today. Not nearly enough was written about this breathtaking warplane until your article.

Joseph Welke
Verona, Italy

Strength To Strength

Keep up the good work with the magazine. I like the mix of professional and enthusiast content and, I guess, many of your readers are a mix of the two themselves. The F-16 seems to go from strength to strength. At $20 million per new copy, don't see how the MIG-29 (or the Su-27/35 for that matter) is going to make much progress in world markets.

Chris Pocock
Uxbridge
United Kingdom

Excellent Printing

I recently had the opportunity to obtain a copy of your Code One Magazine. The material is printed in an excellent way. As head of the Institute of Aeronautical Engineering at the University of the Armed Forces in Munich, I concentrate on the preliminary design and development of fighter configurations. Most of the material in your magazine would provide excellent background information and would be helpful in my lecturing. Please put me on your list for future issues of Code One.

W. Staudacher, Professor
Universität Der Bundeswehr
Munich, Germany

Engine Shop Reading

I was working in the engine shop at Grissom AFB, Indiana, and found a copy of your July 1994 issue. The articles and photography are some of the best I have seen. I particularly enjoyed the article on the F-16/MATV. I am a jet engine mechanic and work on the CFM56 engines for KC-135R tankers. I plan to use your magazine for my Civil Air Patrol cadets here in the South Bend Squadron. I'm looking forward to reading more Code Ones.

TSGT. Steven W. Austin
Mishawaka, Indiana

Well-Trained Youth

F-16s were first introduced to the Turkish Air Force in 1986. Until only recently, no second lieutenants have been accepted for F-16 training. We, as the first eight second lieutenants to be accepted for F-16 training, are proud to announce that we have successfully completed our combat training and are now the youngest pilots flying the F-16 in Turkey. We would really appreciate it if you would publish this happy and proud event in Code One.

LtS. Ali Ayarıs, Ergün Tüürünci, Tunc Sözen, Bülent Mucurolu, Mehmet Yalınalp, Sinan Seger, Günay Aktaş, Levent Yılmaz
Balıkesir, Turkey

Old Squadron, New Airplanes

The 181st Squadron celebrates a new era.

We're the pilots of the 181st Squadron, 8th Main Jet Base in Turkey. Each of us enjoys reading Code One and appreciates the professional work it takes to publish such a beautiful magazine. We look forward to each new issue and the unique opportunities it offers for advancing ourselves in the ever-expanding horizons of aviation technology.

The 181st Squadron, known as Pars Fito or leopard squadron in English, was activated in 1947 and has flown a wide spectrum of aircraft, including the Hawker Hurricane, P-47 Thunderbolt, F-84, F-100, F-104, and, now, the F-16 Fighting Falcon.

Until July 1994, Turkey had three F-16 bases, all under the 1st Tactical Air Command in western Turkey. A new era began in 1994 when the 181st transitioned to the F-16—it is the first squadron in the 2nd Tactical Air Command, which operates from southeastern Turkey, to modernize with the TAF's most advanced aircraft. Süleyman Demirel (Turkey's president), Mehmet Golhan (minister of defense), L. Hakkı Karadayı (the commander of the Turkish armed forces), and Gen. Halis Burhan (commander of the Turkish Air Force) were all in attendance for the unit's transitional ceremony. As the first F-16 pilots of the 2nd Tactical Air Command, we are determined to build a perfect squadron and to stand by our motto: We are ready for the difficult and will do our best for the impossible.

The pilots of the 181st Squadron
Diyarbakır, Turkey