An F-16 pilot from the 120th Fighter Wing, Montana Air National Guard, supports an Operation Iraqi Freedom mission on 6 July 2004.
RAPTOR TRAINING AT TYNDALL
Florida Panhandle Preps F/A-22 Pilots

JUST ASK. WE CAN DO IT.
RAF C-130Js In High Demand

WILLIS HAWKINS
AND THE GENESIS OF THE HERCULES
C-130 Designer Reflects On His Work

NORTHERN LIGHTNING '04
Wisconsin Hosts Large Force Exercise

EXERCISE COMBINED STRENGTH
Worldwide C-130J Operators Unite In England

EVENTS
“WE’VE BEEN KICKING EVERYONE’S BUTT WITH THIS AIRPLANE,” SAYS LT. COL. MIKE STAPLETON IN AN ANIMATED BRIEFING ON THE F/A-22 RAPTOR. STAPLETON IS THE OPERATIONS OFFICER AT THE 43RD FIGHTER SQUADRON AT TYNDALL AFB, FLORIDA, THE RAPTOR SCHOOLHOUSE. AS A SENIOR MEMBER OF THE FIRST TRAINING SQUADRON FOR THE F/A-22, HE DOESN’T ATTEMPT TO HIDE HIS ENTHUSIASM FOR THE AIR FORCE’S LATEST FIGHTER.

BY ERIC HEHS
“Maneuverability with this airplane is unmatched in its entire envelope,” he says. “We can put on rapid g onsets and rapid pitch rates. We can hold very high angles of attack up to sixty degrees. At slow speeds, we can get nose yaw rates that exceed thirty degrees per second. No one else can fly like we can in the post-stall environment. But even in the pre-stall environment and at full combat weight, we enjoy exceptional maneuverability and thrust-to-weight ratios. We takeoff in afterburner, and we are airborne in about 800 feet. If we don’t pull the nose up quickly to slow the airplane down, we can be flying supersonic during climb-out. Fighter pilots love that kind of power. I’ve never flown a fighter that is so much better than the airplanes I’m flying against.”

Stapleton spends most of his days preparing to spread his Raptor knowledge, as well as his enthusiasm. “We are focused on getting the F/A-22 operational,” he says. “Our part of that is to train the pilots, maintainers, and air battle managers. When students leave Tyndall, they will have very few things to do before they take the jet into combat. We are defining the leading edge for the global strike concept, for how we train to a larger picture of coalition and joint warfare. A lot of people walking around this squadron are wearing B-2, F-117, Rivet Joint, Joint STARS, AWACS, and Space Command patches. We are working a lot of integration issues with these other platforms and commands. We want to make sure our tactical ties are tight.”
RAPTOR EVOLUTION IN FLORIDA

Personnel at Tyndall began preparing for the F/A-22 well before the first Raptor was flown to the base in September 2003. The 43rd Squadron was stood up in October 2002 and moved into its own building two months later. The 43rd is one of four training squadrons that fall under the 325th Fighter Wing at Tyndall. The other three—the 1st, 2nd, and 95th—provide initial F-15 qualification training for new fighter pilots as well as conversion and recurrency training for existing pilots. As the designated instructional center for active-duty F-15 pilots, the 325th FW was the obvious training location for the Air Force’s new air dominance fighter.

Lt. Col. Jeff Harrigian, the commander of the 43rd, came to the unit from Tyndall’s 95th FS, where he was the operations officer. “We had a total of twenty-two people in the 43rd when our first F/A-22 arrived last September,” he explains. “Our initial seven instructor pilots came a few months earlier so we could get a head start on building a syllabus. These initial pilots had to learn how to fly the new jet as well as become subject matter experts in specific areas of employment and instruction.”

The first two F/A-22 pilots at Tyndall (Harrigian and Maj. Steven Luczynski) received their flight instruction at Nellis AFB, Nevada, where F/A-22 tactics development is taking place. Then they began producing their own Raptor pilots. Maj. Michael Hoepfner, an experienced F-16 pilot, became the first Tyndall graduate of this training last January.
“Our first challenge was to understand the airplane,” notes Harrigian. “Starting a new squadron with an existing airframe has its challenges, but I can borrow those procedures because it has been done before. Starting a new squadron with a new aircraft is much more difficult. No one gave me a playbook.”

Harrigian approached his task by handpicking his immediate personnel. The first seven instructor pilots are all graduates of the Air Force’s Fighter Weapons School. Four of these were former Weapons School instructors. Five come from the F-15, and two from the F-16. The squadron will grow to an initial staff of seventeen instructor pilots by the end of 2004, with ten of the total coming from the F-15C community, three from F-15E, and four from F-16. The 43rd will have a full complement of twenty-eight F/A-22s and about an equivalent number of instructor pilots when fully staffed. Ten to fifteen students will be enrolled in the training at any one time.
MAINTENANCE TRAINING, TOO

Pilot training, however, accounts for only one factor of the Raptor instructional equation at Tyndall. Future Raptor maintenance technicians receive their training here as well. The 372nd Training Squadron Detachment 4 (an AETC unit attached to Sheppard AFB, Texas) offers sixteen different courses that comprise four main maintenance training branches—avionics, crew chiefs, engines, and weapons.

“Most of our students are transitioning from the F-15 and F-16,” says TSgt. Kelly Martin, an F/A-22 maintenance instructor at Tyndall. “The students arrive highly motivated. Most of them have signed up for the Raptor. They want to see the airplane up close. They’ve seen all the high-tech Air Force ads on television, and they want to work on this fighter.”

The expectations of the high-tech television ads are met with a high-tech, paperless instructional approach. Students take their courses in classrooms equipped with flat-panel monitors that display instructional material in full color and high graphical detail. Animated graphics allow students to disassemble an engine on the screen. “The computer-aided instruction reduces the time we need an actual aircraft for training,” notes Martin. “We can show students the location of assemblies and how to access them before they see the airplane.”

Much of the training centers around a rugged and weather-resistant laptop called a portable maintenance aid. “The PMA replaces a library of technical data with a seven-pound laptop computer,” Martin says. “We use it in the classroom, on the aircraft, and for any task the maintainer performs.”

The PMA can be used separately or integrated with the classroom computer system. Maintainers can perform operation checks on the aircraft without climbing into the cockpit. Pilots fill out the aircraft forms on the computer. PMAs will eventually have RF capability so crew chiefs can transmit information directly to expediters or maintenance control from the ramp. They will be able to order parts while standing by the aircraft without going to the support sections. The maintenance status of a particular airplane can be checked just by logging on to the system.

“The F/A-22 is very easy to work on,” notes Martin, an experienced maintainer who has been working on the advanced fighters for about two years. “The jet tells us what is wrong with it after it lands. It tells us what part needs to be replaced. The biggest challenge we face involves the access panels. We have to be more careful with them so we don’t damage the stealthy coatings. Still, this airplane is a huge step forward in terms of maintenance.”
the better part of the next two decades. We can’t forget about it or give it some second-class status.”

New also realizes that while the F/A-22 may enjoy a high profile within the Air Force, many are relatively unaware of the new fighter.

“We need to educate people about the Raptor,” he says. “A lot of people in high places around the country don’t even realize the F/A-22 is flying. We are well into fielding the weapon system. We need to remind them why we are building the Raptor and what the aircraft means to the future of the United States in terms of our warfighting capability and our ability to defend our interests.”

The Raptor’s appearance at Tyndall has generated more curiosity than envy from F-15 pilots at the base. “Many Eagle pilots have flown against us and they want to understand the performance of the airplane—how it maneuvers,” explains Harrigian, who ferried the first Raptor from the factory to Tyndall. “The next biggest question I get relates to avionics. F-15 pilots want to know what the cockpit looks like and how the airplane presents information to the pilot. They ask if it is easy to fly, if it flies like an F-15.”

Harrigian’s own first impressions? “This airplane is incredible,” he says. “The performance is awesome. The first time I rolled the airplane I thought, ‘wow this thing is responsive.’ It is like flying a Cadillac that reacts like a Porsche. The cockpit is very comfortable. The F/A-22 is a heavy airplane that flies like a small airplane. The takeoff roll is impressive. A standard military power takeoff in the Raptor feels like an after-burner takeoff in the Eagle. I got used to the side stick placement after about two rides. A more significant difference is the sensitivity of the controls. Ever so slight of a movement with the stick and the flight controls react immediately. My stick is constantly moving when I fly an Eagle, especially when flying close formation. The stick is dead still in the Raptor unless I’m maneuvering aggressively.”

Brig. Gen. Larry New, commander of the 325th Fighter Wing

RAPTOR ENVY?

More than $60 million of new construction related to the Raptor at Tyndall so far translates into new squadron buildings, maintenance hangars, a low-observable repair facility, and additions and updates to existing training buildings. With all the spending and attention focused on the F/A-22, Tyndall leadership is quick to emphasize that it takes an entire team to accomplish the air dominance training mission.

“When we added the Raptor side to our academic and simulation building, for example, we refurbished the Eagle side,” explains Brig. Gen Larry New, the commander of the 325th Fighter Wing. “We took the same approach with our maintenance facility. We renovated the entire building instead of just the F/A-22 section. We want everyone who works at Tyndall to feel that they are part of the same team. We are going to be operating the Eagle in the Air Force for...
Instructor pilots at the 43rd, aside from learning the F/A-22, must deal with a clash of cultures of sorts as those with differences in reflexes, thought patterns, and terminology ingrained from years of flying either the F-15 or the F-16 work together to form a common syllabus for a completely new aircraft type.

“We see some terminology differences between F-15 and F-16 pilots,” notes Harrigian. “They have differing mindsets about what mutual support means. The F-16 is a small airplane and F-16 pilots need to stay closer together to keep each other in sight. Eagle drivers, on the other hand, with their larger airplanes, tend to get farther away from each other.”

“An F-16 pilot thinks differently about tactical problems than an F-15 pilot,” Stapleton adds. “As an F-15 pilot, I don’t have as many limits on aircraft identification or weapons. I rely on beyond-visual-range identification and lots of AMRAAMs. My biggest tactical problem involves airborne threats defeating my missiles. F-16 pilots, who didn’t have identification capability until recently, are more concerned with getting their bombs on target and getting out unscathed.”

“The Raptor enjoys the best of both worlds,” says Harrigian. “F-16 and F-15 pilots might recommend different approaches for a given scenario. We ask if either approach applies to the Raptor. We have found that bits and pieces from each are appropriate. We also often take completely different approaches thanks to this airplane’s capabilities. We want to use lessons learned from legacy platforms, but we don’t want to hang onto them for no reason. We try to get all of these mindsets on the table and create something that we can call the F/A-22 paradigm.”

The foundation of that new paradigm relates to doing away with sensor management tasks that demand a lot of time and effort in current fighter platforms. “F-16, F-15, and F/A-18 pilots spend a lot of time working sensor management, that is, making sure their radar search volumes are located in the right airspace,” says Stapleton. “They have to work mutual support issues with the sensors and populate their datalinks with the right information. Seventy-five percent of their effort goes into sensor management and twenty-five percent goes into actually employing the systems—getting the airplane where it needs to be and putting the weapon on a target.

“The Raptor is 180-degrees different,” Stapleton continues. “The airplane does so much of the work at a digitized level behind the screen that I, as a weapon system operator, can sit back and think about the kind of operational effects that the commanders want to achieve. I have time to consider how to provide the right amount of mutual support to the other joint coalition forces. Not spending all my time thinking where the radar should go, in and of itself, is going to break open a whole new dynamic in air warfare. We will see this airplane reach its true potential as soon as some of our younger guys start operating it. They will come up with stuff that we haven’t even considered.”
NEW AIRFRAME, NEW SKILLS
Instructor pilots at the 43rd have to build a syllabus for generating new pilots who will break those old paradigms. “We’re not just flying a new airplane,” Harrigian explains. “We are determining the skills required to fly the airplane. We have to create a building block approach for teaching someone to operate the Raptor. The F/A-22 performs significantly different from an F-15 and an F-16. So we spend some time in the early training to get the pilots accustomed to these differences. We show them how the airplane reacts to inputs and how it flies throughout the envelope. Then we fly one against one against a dissimilar aircraft. We’re using the same generic training philosophy that we use for the F-15 and F-16. We build upon what the student has already learned and then add another task each step of the way.”

Tyndall pilots are working on syllabi as they prepare for the summer arrival of their next seven instructor pilots, as well as for the fall arrival of the first students who will form the first operational F/A-22 squadron at Langley AFB, Virginia. The basic course, called the B-course, will last about six months and is designed for a pilot right out of a T-38 and lead-in fighter training. Experienced fighter pilots take a three-month transition course. (The unit will also offer a separate transition course, basically instrument rating instruction, for senior officers.) A separate two-month course, upgrading instructor pilots, prepares instructors for teaching at the 43rd. All student pilots go through about eight 1.5-hour sessions in an F/A-22 simulator before strapping into the Raptor cockpit.

“That first flight can be fairly intimidating,” Stapleton says. “Working through the PMA, instead of touching actual Air Force forms with grease on them, can put off your sense of balance. But I quickly found the F/A-22 to be a forgiving, powerful, and capable airplane.”

The superior capability of the F/A-22 will have a dramatic effect on training. “When I prepare a wingman to go to war in an F-15, I have to face the fact that the F-15 is at parity with some existing aircraft. None of them can beat the F-15 in all performance dynamics, but a lot of potential adversaries have two or three advantages that I have to take into account. We can beat them because we have better training. An F/A-22, on the other hand, gives me vastly superior capability. So my job as an instructor is to make sure our pilots perform the Raptor to its full potential.

“Getting a new airframe is an event to be celebrated,” Stapleton concludes in his briefing. “As you can see from our 1978 vintage F-15s sitting out here, new airframes don’t come around very often. Their software, however, evolves. The Raptors you see on the ramp today are awesome. Even with an elementary version of the software that we are flying, we are still kicking everyone’s butt. That tells me that this airplane will only get better.”

Eric Hehs is the editor of Code One.
The Royal Air Force C-130J fleet notched its 50,000th flight hour last February, an achievement celebrated at the aircraft’s home base at RAF Lyneham, Wiltshire, about ninety minutes west of London. The 50K mark fell about a year after the RAF prepared to go to war for the first time in the C-130J during Operation Telic, the British contribution to Operation Iraqi Freedom.

At the start of 2003, few would have foreseen that the RAF C-130J crews would approach, let alone break, the 50,000-hour total within a year. But the C-130Js—like their engineers and crews—have been kept extremely busy. Seventy-five percent of the 50K total involved operational flying in Iraq. The C-130J has proved doubters wrong and shown itself to be an extremely capable tactical workhorse.

As they prepared for combat action in early 2003, RAF crews at Lyneham needed the all-important clearance to allow low-level tactical operations while flying with night vision goggles. Before the clearance was given, the aircrews of the Hercules Operational Evaluation Unit as well as 24 and 30 squadrons practiced NVG flying and procedures in state-of-the-art simulators. Simulation gave way to actually flying with NVGs when the clearance finally came through on 14 February 2003.

Eight days later, six RAF C-130J crews were fully trained and ready to take part in low-level night insertion missions in Iraq should they be required. The crews were capable of flying a six-ship formation to a designated drop zone to dispatch paratroopers and drop loads from the ramp of the aircraft. Although a six-ship formation night insertion mission was not needed, many of the crews honed their newfound skills operating behind the Iraqi front lines at night and at low level.

The British crews consisted of experienced operators who had all flown NVG sorties before. However, completing such an involved training regimen in such a short period of time was a tribute to the ease of operation and total integration of the C-130J’s glass cockpit and the drive of its pilots, particularly members of the evaluation unit who taught the other crews.

The RAF’s C-130Js have been in Iraq ever since. The RAF now has crews and aircraft permanently based in Basra, flying daily resupply and communication flights in and around Iraq. With Hawker Siddeley HS125 transport aircraft of 32 (Royal) Squadron, the C-130J is one of only two fixed-wing RAF assets permanently based in Iraq.

HERCULEAN FEATS

The Royal Air Force has operated the Lockheed Martin C-130 Hercules since the first C. Mk. 1s (C-130Ks) entered service in April 1967. Heavy workloads and more than thirty years of flying have taken a toll on these original aircraft, however.

To ensure service for the Hercules well into the current millennium, twenty-five next-generation C-130Js were ordered from Lockheed Martin in the early 1990s. The RAF acquired two versions of the C-130J: fifteen of the longer fuselage aircraft, known by the RAF as the C. Mk. 4, and ten of the standard C-130J, known as the C. Mk. 5. The arrival of the first C-130Js meant the return of some early C-130Ks to the manufacturer for refurbishment and redelivery to new customers. The remaining examples retained in RAF service are now used for tactical, special, and some strategic operations.

ARTICLE AND PHOTOS BY JAMIE HUNTER

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The introduction of the C-130J has resulted in some major restructuring plans for RAF Lyneham’s operational squadrons. The first C-130J unit, 24 Squadron, is responsible for strategic transport and training. The second C-130J unit, 30 Squadron, which became operational in 2002, is now responsible for tactical training.

Initially, 24 Squadron had a number of constraints on the new airplane. Therefore, strategic missions instead of tactical missions became the normal tasking. C-130Js supported British troops in the Persian Gulf with twice-a-week flights staging through Cyprus. However, as tactical workload trials progressed in the United States and at the Boscombe Down test center in England, the C-130J began to spread its tactical wings.

An early RAF C-130J pilot commented: “The C-130J necessitates such a different method of operation over the previous-generation Hercules. Instead of a four-man flight deck, for example, we use a three-man crew. This means that the crew operation is very different. The airplane provides a mass of information, and we need to manage it. Apart from the control column, the cockpit is almost completely different.”

Eighty-eight crews have been trained by 24 Squadron so far, in twenty-four courses. The unit is training two crews per course at the moment. At eight courses a year, 24 Squadron is producing sixteen crews annually. The squadron was training four crews per course at its peak (thirty-two crews per year). Ten pilot instructors are dedicated to initial conversion training, and the squadron is steady with twenty-five crews. There are a similar number of crews in 30 Squadron.

“The C-130J has proven to be much more effective than the older C-130K in some areas, particularly areas warranting hot and high operations,” says Flt. Lt. Dave Stewart, the current executive officer for 24 Squadron. Operations in Afghanistan during 2002 provide a good example. The high altitude of Kabul and the relatively large amount of fuel required to get to Thumrait restricted
the C-130K to a seven-ton payload. The C-130J carried twelve tons. These figures for the C-130J were derived using normal operating standards. The C-130K, on the other hand, had to use military operating standards to justify its smaller payload. In short, the C-130J was flown at lower risk for more capability."

The most noticeable changes to the fleet have come as the RAF has increased its experience and received clearances to match. The whole arena of tactical, NVG, and low-level operations has been constantly developing. To a large extent, the improvements in navigational accuracy and ease of operation in a two-pilot flight deck with a flight management system are now taken for granted by the crews. Everyone comments on the relative quiet on the flight deck at high-workload times, when the K-model flight deck would have been buzzing with a constant drone of information being passed between the navigator and the pilots. The throttles and carefree engine handling are normal for RAF C-130J crews now, and a head-up display is considered a standard and necessary instrument.

**WORKHORSE GOES TACTICAL**

The operational tempo at 24 and 30 squadrons is as busy as ever. With just eight squadron crews trained, the new C-130J wing was able to carry out more than fifty percent of the whole of Lyneham’s route tasking, mainly supporting operations in the Persian Gulf. In addition to its strategic transport role, the RAF C-130J is now busy with tactical operations.

Squadron Leader Mark Pearce is officer commanding of the tactical training flight at 30 Squadron. His unit conducts tactical flying and postgraduate training for the C-130J. “We are aiming to train an equal number of crews on the tactical side of flying the C-130J on both 24 and 30 squadrons,” he explains.

“I have worked partly with the guys at Boscombe Down (the UK Ministry of Defence’s aviation research center) but mainly with the Hercules Operational Evaluation Unit, which is an asset of the Air Warfare Centre based here at Lyneham,” Pearce notes. “We’ve worked hand in hand with them for two years developing tactical procedures. The C-130J has great situational awareness for pilots; it has so much equipment to let crewmembers know exactly what is going on at any one time. For example, we can effectively have one pilot off doing a lot of work on the radios and the other pilot will be flying, knowing exactly where the aircraft is and how the mission is going. We are taking the C-130J into combat theaters, and twelve aircraft in the fleet will soon have the full defensive aids system installed. Many of our operating locations need these defensive systems. We have reviewed a lot of the threats and worked out how we are going to fly against them.”

Flt. Lt. Steve Forster is also on the tactical team at 30 Squadron. “I flew nine years on the C-130K,” he says.
“The C-130J has great situational awareness for pilots; it has so much equipment to let crewmembers know exactly what is going on at any one time. For example, we can effectively have one pilot off doing a lot of work on the radios and the other pilot will be flying, knowing exactly where the aircraft is and how the mission is going.”

— Squadron Leader Mark Pearce

“The C-130J is more of a pilot’s airplane; we don’t have a navigator so it really concentrates the mind. The tactical flying is outstanding in the C-130J. When we start the mission planning phase, we have a lead crew and a follower, and maybe more with a bigger formation. One of the lead crews will plan the mission and brief it. JAMPA, a PC-based C-130J Advanced Mission Planner, downloads to a ruggedized PC card and the card is then plugged into the aircraft. The loadmaster has picked up a lot of what the navigator and the engineer used to do in the cockpit, certainly in terms of lookout and managing the fuel panel.”
“We have never flown with navigators on the C-130J and don’t have any in the squadrons,” notes Stewart. “When it comes to tactical training, our guys start at a much higher workload to get them used to the demands put on them by changing routings and tactical scenarios. Indeed, the first flight on the tactical course involves airborne re-routes and changes in targets and timings. The computers make such on-the-fly changes much slicker than the old pen on a map. We could have an occasional role for a third person on the flight deck for a mission-specific task. This person would not replace the navigator, but would more likely be used for high-workload missions. The extra crewmember might be a signaller or a mission commander with specialist knowledge of the ground situation.”

FUTURE OPERATIONS

Wing Commander Kev Groves, 24 Squadron commanding officer, is extremely positive about operations with the C-130J. RAF C-130J crews are operating from rough strips around the world. The aircraft’s defensive aids system is being updated to meet theater-specific threats. C-130J crews are putting in a lot of hours to support the frontline forces, and the Hercules continues to be the workhorse of the Royal Air Force.

Jamie Hunter is an aviation photojournalist based in England.
On The Fiftieth Anniversary Of The First Flight Of The YC-130, A Special Tribute To

Willis Hawkins And The Genesis Of The Hercules

BY JEFF RHODES
With these words, Willis Hawkins convinced his boss, Hall Hibbard, then vice president and chief engineer of Lockheed Aircraft Corporation, to submit the proposal for the aircraft that would become the C-130 Hercules. It was 10 April 1951. Hawkins was thirty-seven years old and in charge of the Advanced Design department for Lockheed. He led the team that in a little over two months had come up with the design for what was being called the Model 82 in response to a US Air Force request for proposal for a new transport.

The idea for this new transport came at the end of a hastily called budget meeting a week after the Korean War broke out in June 1950. Participants at the meeting formulated ideas for spending additional research and development money. An Air Force colonel, whose name is lost to history, remarked that the service needed an extremely rugged medium transport that could land on unprepared airstrips. The aircraft, to be used primarily for freight transport, needed to carry about 30,000 pounds to a range of 1,500 miles. It also needed the capability to carry troops.

The additional funds stayed in the budget, as did most of that colonel’s proposed requirements. The Air Force issued a general operational requirement on 2 February 1951 to Boeing, Douglas, Fairchild, and Lockheed for a transport able to: (1) carry ninety-two infantrymen or sixty-four paratroopers on a mission with a combat radius of 1,100 nautical miles or, alternatively, a 30,000-pound cargo more than 960 miles; (2) operate from short, unprepared airstrips of clay, sand, or humus soil; (3) slow down to 125 knots for paradrops and even slower for assault landings; (4) have both a rear ramp operable in flight for heavy equipment drops and side doors for paratroop drops; (5) handle bulky and heavy equipment including bulldozers, artillery pieces, and trucks; and (6) fly with one engine out.

Hawkins, now ninety and still mentally sharp and physically active, recalls that the Air Force’s request for proposal contained only seven pages. “We got the RFP and set up teams to look at performance, develop a description of the aircraft, and determine weight. We also had to estimate development cost.”

A Short Meeting

“Our proposal was bigger than the Air Force’s seven-page RFP, but still only about 130 pages and maybe three-quarters of an inch thick. We took it to Hibbard so he could sign a letter that committed the company to our estimates. We also brought a design model, which had a wingspan of about fifteen inches. Hall looked at the model, thumbed through the proposal, and asked a few questions. Then he asked, ‘Has Kelly seen this?’ We said, no, we haven’t seen Johnson for a couple of months. He’s working on something secret (which turned out to be the F-104) and hasn’t been around. Hibbard said, ‘Well, Kelly ought to look at it.’

If this design is really as terrible as Kelly Johnson says it is, the Air Force will think that, too, and they’ll give the contract to somebody else. I think we ought to submit the proposal.”
“Hibbard was Johnson’s boss. So when Hall called, Kelly had to come. Kelly looked at the model and thumbed through the performance part of the proposal. He then said, ‘Hibbard, if you sign that letter, you will destroy the Lockheed Company.’ And with that he walked out of the office.

“Kelly wasn’t much interested in the transport. It didn’t carry bombs, didn’t have machine guns, and didn’t fly Mach 3. After an awkward pause, Hibbard finally said, ‘Well, Willy, that model has a lovely finish.’ I went back to work on Hibbard. I said, look, the Air Force expects us to submit a proposal. We told them we would, and we have to get it in the mail today.”

Hibbard signed the letter and Johnson did, in the end, sign off on the proposal. Lockheed was informed that the company had won the competition on 2 July 1951. Nine days later, the Air Force awarded the formal contract for two prototypes to be designated YC-130.

A Long Association
That encounter in Hall Hibbard’s office was probably the biggest disagreement between Willis Hawkins and Kelly Johnson. But it was not the first time the two engineering geniuses had not quite seen eye to eye.

“In the late 1930s, Kelly knew that the P-38 needed counter-rotating propellers,” Hawkins recalls. “But he was convinced they needed to rotate toward the pilot with the blades coming over the top. Several of us had to convince him they needed to rotate away from the pilot with the blades coming up from the bottom. We tried it both ways in flight test and our choice better counteracted the torque and was a little safer for the pilot. The P-38 became a more docile, pilot-friendly flying machine after that.”

The two men first met in 1933, when Johnson, then assistant to Hibbard, brought the Lockheed Model 10 to the wind tunnel at the University of Michigan in Ann Arbor. Hawkins, then an undergraduate, ran the wind tunnel.

“The original Electra design had a single vertical tail, which didn’t have enough area. So the aircraft had stability and dead engine control problems,” Hawkins notes. “Kelly came up with the idea of putting end plates on the horizontal tail. The plates not only provided enough area, they put the tails into the slipstream behind the engine, which made for better control.” Johnson and Hawkins fabricated the new verticals for the model in the tunnel shop and the design change worked. The Electra was a huge success; 148 aircraft were built. The Electra became a direct ancestor to the storied Hudson patrol bomber in World War II.

“We faced a similar stability problem with the Constellation a decade later,” Hawkins adds. “The original design had two tails, but they didn’t provide enough stability for the big airliner. We couldn’t make the twin tails taller because then the design wouldn’t fit in TWA’s hangars. We couldn’t extend them from the bottom of the stabilizer, because they would scrape the runway when it landed. I came up with the idea of the third vertical.” The triple tail became the Constellation’s most notable design feature.

Hail To The Victors
Hawkins, the only child of a divorced mother, attended an experimental high school established by the head of a summer camp where he had worked. “Five of us were in the school’s first graduating class,” Hawkins recalls. “Unfortunately, the school was not accredited anywhere in the world.

“I decided to go to the University of Michigan, but I was told I had to take fifteen exams and then I still might not get in. Well, I didn’t want to do that. I enrolled in a little college in Illinois that had about 1,200 students. I took all the math and physics courses there I could. Then I transferred to Michigan.

“I had taken years of advanced physics courses at Michigan and passed them all. But I hadn’t taken one particular transfer student physics
course. The physics department wasn’t going to let me graduate because I hadn’t taken the course. I left and took a job in industry. After a year, I came to my senses, went back to school, and took some graduate courses. Only then did I get special dispensation to finally get my degree.” Decades later, Hawkins received an honorary doctorate, but only after the university chancellor had smoothed things over with the physics department about that Physics 101 course missing from his transcript.

Hawkins, his college roommate, and a mutual friend all received telegrams from Lockheed Aircraft in 1937. “I was probably hired on the basis of Kelly’s recommendation,” Hawkins says. “That telegram noted my starting salary of $1,500 a year. All three of us lived out our professional lives at Lockheed, and we were all quite successful.”

Coincidentally, after Hawkins moved to California, he would later buy a house from Allan Lockheed, one of the brothers who had started the company in 1913. After Lockheed Aircraft had gone into receivership for a week in 1932, Allan became so disgusted with the airplane business, he took up real estate as a career.

Designing The Hercules

A number of Lockheed legacy aircraft carry Hawkins’ fingerprints. He was a structural component designer on the P-38, Hudson, and Lodestar. In 1947, he organized and headed the team that developed the X-7 ramjet test vehicle. He was the head of the preliminary design group that produced the Constellation, P-80, XF-90, F-94, and F-104. Then came the C-130.

“Doing things for the US government is always a little bit complicated,” Hawkins observes. “The C-130 program was a little simpler. The RFP had a list of payloads the Air Force needed to carry in the new plane. That set the height and weight of the cargo hold. It is a great compliment to the Air Force that the people who wrote the requirements did it right the first time. They had no predisposition to what the aircraft should look like. The Tactical Air Command guys who were going to get the airplane knew what the requirements were, and how it looked was up to us.”

“We basically took the dimensions of the biggest piece of equipment the Air Force had specified, drew a circle around its cross section, and turned the circle into a tube about the length of a railroad boxcar. We put wings, a nose, and a tail on it, and we had the design,” Hawkins adds. “We put the aircraft low to the ground so we could use the ramp to get cargo on and off easily.”

The design team recognized that this was the first tactical cargo

Hawkins owns Hawkins Airport (a grass strip in northern Michigan where he has never landed), and drives to the Van Nuys Airport every day to work on his latest project—a kit plane he is building “out of habit,” he says.
aircraft the Air Force had designed from scratch. “Even though Kelly didn’t agree, we thought the C-130 might have a good span of production for the Air Force,” Hawkins notes. “As soon as the Air Force started flying the aircraft, other air forces came to us and started asking questions about it.”

Lockheed built a full-scale mock-up of the complete fuselage, one engine, and a section of wing. The government held its first mock-up board review session in the mock-up itself. “We put the tables and projectors on the cargo floor,” Hawkins says. “After the review, the Air Force didn’t change much with the design aside from some detail changes in the cockpit. We didn’t mind making those changes since we had not built the prototypes.”

In the days when the C-130 was conceived, all the commercial transports—DC-4, DC-5, Stratoliner, and Constellation—had a flight engineer. “Pilots thought the aircraft had too many engines to keep track of, so the planes couldn’t have a two-pilot operation,” observes Hawkins. “The copilot and the flight engineer ran the aircraft, and the pilot flew it. The C-130 came at a transition time. Nobody was used to turbine engines, and the Allison T56 engine was complicated for its day. No one was certain how much equipment to put in the flight engineer’s station to keep those engines running.”

Dick Pulver, who had been a project engineer on the P-38 and Constellation, was chosen to be the lead engineer on the C-130. “We set up a separate organization for those two prototypes and set aside a piece of the factory for production. Dick Pulver did a beautiful job of running it,” Hawkins adds. “The two aircraft were delivered on schedule and on cost. The test pilots gave the aircraft a good wringing out. The performance matched our estimates.”

The first flight of the YC-130, which was the second aircraft built, came on 23 August 1954 with company test pilots Stan Beltz and Roy Wimmer at the controls. Dick Stanton was the flight engineer, and Jack Real was the flight test engineer. During the sixty-one minute flight, the aircraft was flown from Burbank to the Air Force Flight Test Station at nearby Edwards AFB. Johnson, whose thinking on the C-130 had changed dramatically as the aircraft was being built, flew in the chase aircraft, a P2V Neptune.

The second YC-130 prototype, the first aircraft off the line, was used in the ground-based static test program, and was finally flown for the first time on 21 January 1955.

With production of the T-33, Constellation, and Neptune in full swing, Burbank facilities had no space for an additional production line. Shortly after Lockheed won the contract for the YC-130s, officials decided to move the program to the company’s new factory in Georgia if the C-130 went into production.

“We had just reopened Air Force Plant 6 in Marietta, mainly for license production of the B-47 Stratojet,” notes Hawkins. “Lockheed and Douglas had won the right to be the second-source producers for the bomber. We were already cleaning up the Marietta plant and decided it had plenty of room for C-130 production.

“We sent the whole design team to Georgia, as they were in charge of working up the production proposal to the Air Force,” recalls Hawkins. “Most of them went kicking and screaming, because they didn’t want to have anything to do with Georgia. Two years later, we tried to bring them back to California, and they were kicking and screaming again because they liked Georgia so much that they didn’t want to come back. The Hercules has been in Georgia ever since.

“The design team changed some things to make the C-130 cheaper to produce, but not too much. The visual differences between the production aircraft and the prototypes are not noticeable,” Hawkins
notes. “What has happened with the C-130 since those early days has been absolutely remarkable.”

On To Other Things

After working on the XFV experimental vertical takeoff and landing aircraft, Hawkins was tapped to start the new Lockheed Missiles and Space Division in Sunnyvale, California, near San Francisco.

“I was one of the founders of Missiles and Space and eventually ended up running the space half,” Hawkins recalls. Among other things, he headed the X-17 reentry test vehicle and the UGM-27 Polaris sea-launched ballistic missile program—the US Navy’s first SLBM—for which he was awarded the Navy’s Distinguished Public Service Medal.

“One of my projects while at Missiles and Space was declassified about three years ago,” Hawkins notes. “We were taking pictures of Russia from space, and if you don’t think the Corona satellite program had some adventures... .” Some of those adventures included having one entire satellite crash in Antarctica and another one lost in Finland.

The first successful Corona mission came on the thirteenth try, but the ejected film canister was lost when it came down 1,200 miles from where it was expected. After the fourteenth launch, the film canister, known as a bucket, was recovered. “A presidential aide mentioned to Eisenhower that it was the first object to have ever been recovered from space. The president picked up on that and insisted that the bucket be presented to the Smithsonian,” Hawkins recalls. “So there was Eisenhower, Gen. Bernard Schriever (the architect of the Air Force’s ballistic missile program), and half a dozen Washington big wheels at the Smithsonian for a formal ceremony. I have never figured out what story they told to explain how that bucket got to the museum.” The JC-130, a modified Hercules, was used for midair recovery of the photographic buckets from later missions.

Hawkins served as assistant secretary for research and development for the Army from 1962 to 1965, where he was instrumental in starting development of the M1 Abrams main battle tank. He then returned to Lockheed and took Hibbard’s spot on the board of directors, and retired from day-to-day activity in the early 1980s. Lockheed chairman Roy Anderson brought Hawkins back to run the Lockheed – California Company on an interim basis in the 1980s. Hawkins retired for good in 1986.

Even in retirement, Hawkins was called on as a consultant. During flight test on the C-130J, test crews got the aircraft down to what should have been the stall speed, but it kept on flying. “At that point, the crew started wondering what the actual stall speed was,” notes Hawkins. “They slowed down and slowed down some more and nothing. Suddenly, at a very slow speed, the C-130 did a snap roll, and it scared the hell out of the crew. It looked like we had a problem. The aircraft would not stall.

“Engineers determined the new six-bladed propellers on the C-130J cleaned the boundary layer of air off the root of the wing. I spent a couple of months in Georgia helping them work that out. A better boundary layer control system could not be designed intentionally,” Hawkins adds. “We tried vortex generators, rakes, fences, and leading-edge stall strips, but could not get it to stall. We ended up installing a stick pusher, just like in a fighter, that takes over and pushes the nose down. You still can’t stall that aircraft.”

Today, though Hawkins describes himself as “ninety and fat,” he is still trim, owns Hawkins Airport (a grass strip in northern Michigan where he has never landed), and drives to the Van Nuys Airport every day to work on his latest project—a kit plane he is building “out of habit,” he says.

He views the C-130 as one of his greatest successes: “The C-130 is not exactly an attractive aircraft. It is still in production and still doing the job it was designed for. Originally, some questioned who would want to buy such an aircraft. Irv Culver, one of our engineers, said that if we made it right the first time, we could sell it to anybody. I think we must have done it exactly right.”

Jeff Rhodes is the associate editor of Code One.
Good and bad guys filled the airspace and covered the ground in the Midwestern United States last June in a joint force exercise hosted by Volk Field Combat Readiness Training Center in central Wisconsin. Six Air National Guard F-16 units, ANG and Air Force Reserve Command A-10 units, command and control operators flying in E-3 AWACS and E-8 Joint STARS aircraft, a B-52 bomber unit, Army National Guard UH-60 Blackhawk helicopter units, and ANG KC-135 tanker units participated in realistic warfare scenarios in the exercise dubbed Northern Lightning ’04.

“Many of the participants will be deploying to Iraq and Afghanistan as part of Air Expeditionary Force rotations,” explains Maj. Bryan Cook, the air combat training system weapons and tactics officer at Volk Field. “Our major objective was to create a war scenario with missions and tactics similar to what they may encounter overseas. We included realistic time-sensitive targeting and combat search and rescue missions.”
"Northern Lightning presented a tremendous opportunity for airborne controllers in AWACS and JSTARS to work with actual fighters, not with computer simulations of fighters," adds Lt. Col. Ray Peterson, the director of training at the training center. "They assumed the role of air mission commander for some of the CSAR missions in this exercise—a role they rarely practice in their standard training."

The Wisconsin ANG operates the Volk Field Combat Readiness Training Center. Northern Lightning ’04 was their response to requests from many Midwestern tactical air units for a more intensive, realistic, and relevant training experience. Most of the participating units took part in the exercise from their home bases, using tanker support as well as midday turns at Volk Field. The Iowa Army National Guard and 132nd Fighter Wing, the Iowa ANG unit based in Des Moines, actually deployed, as did the Wisconsin’s own 147th Army Aviation Battalion.

Realistic scenarios form a foundation for effective training, and training center personnel relied on their close ties to local units to pump up the realism for Northern Lightning. "We have an outstanding relationship with the Army just down the road at Fort McCoy," notes Lt. Col. Brendan Smith, director of operations at Volk Field. "We can use the Army’s ranges as well as our own. The support we get from the Army really makes the difference. Instead of a Joint STARS aircraft tracking a simulated convoy or telling an F-16 pilot to visualize a convoy, the Army runs a heavy truck convoy down a dirt road on a hostile part of the range. JSTARS operators benefit by detecting an actual truck convoy, and the F-16 and A-10 pilots they are directing benefit by having to find an actual convoy."

Other assets and relationships increased the realism of the training as well. Replica mobile Scud missile launchers dotted hostile territory as did multiple radar threat emitters, which accurately simulated radar-guided surface-to-air missile sites. The Federal Aviation Administration provided airspace coordination. Even local landowners contributed to the training. "Farmers offered the use of their land for the combat search and rescue exercises," adds Smith. "They love to watch the Army helicopters. Their interest opened up a lot of territory for us to insert downed pilots. Every CSAR mission we practiced took place at a different location."

**Combat Search And Rescue**

One of the major training objectives for Northern Lightning was to qualify selected F-16 and A-10 pilots to be on-scene commanders for combat search and rescue missions. CSAR, also called Sandy mission, is one of the more complex missions flown by F-16 and A-10 pilots. "During a CSAR mission, the situation can go from bad to worse in a heartbeat," explains Lt. Col. Mark Hammond, the operations group commander of the 132 FW. "Ground threats may be involved in the area. For example, bad guys might be driving down a road to get your downed pilot because they saw his parachute."

"Sandy’s have many responsibilities from authenticating the survivor, establishing visual contact with the downed pilot, taking inventory of available air assets and munitions to neutralize threats, and judging whether those munitions may put the downed aircrew or rescue helicopters in jeopardy," Hammond continues. "When that CSAR call comes in, the responding pilot has only one chance to do it right the first time. That’s why we select our most competent and most capable pilots to be Sandys."

Northern Lightning also gave pilots already qualified for the Sandy mission an opportunity to practice their skills. CSAR is primarily an Air Force mission that involves specialized HH-60 Pave Hawk helicopters tailored for the CSAR environment. The nature of Army aviation often requires its UH-60 Blackhawk drivers to be jacks-of-all-trades, but their missions did not include CSAR until very recently.
“The Air Force HH-60 is a very specialized platform, while Army UH-60s perform more general support missions” says CWO3 Troy Bittner, an Army Guard pilot with the 147th Aviation Battalion. “Our proximity to the front lines raises the odds of extracting a coalition pilot before the enemy can locate him or organize coordinated opposition. CSAR is really not an Army mission. The changing nature of warfare, however, has made it a mission that the Army needs to develop.

“The best part of the exercise was the opportunity to work closely with Air Force F-16 and A-10 assets,” Bittner adds. “The two services speak different languages on a lot of things. Working with the Air Force Sandys and training in this realistic environment were invaluable.”

Time-Sensitive Targeting

Another major objective of the exercise was to practice time-sensitive targeting, a relatively new joint force tactic. “Typically, an F-16 strike mission involves several hours of planning, intelligence briefings, targeting information, and threat analysis. The mission is then flown according to this carefully laid out plan,” explains Lt. Col. George Stillman, the operations officer of the 124 Fighter Squadron for Iowa’s 132nd FW. “Time-sensitive targeting, however, usually involves being retasked to a higher priority target during a planned mission. The target can run the gamut from a convoy to an enemy column or a terrorist threat. We have to hit that target before it can seek refuge in a bunker, scatter, or hide in a cave. We may have as little as thirty minutes to put the bombs on target.” Intelligence plays a very large role in TST in that the targeting information can come from a variety of sources such as a Joint STARS aircraft, unmanned air vehicles, ground-based Special Forces units, Air Force forward controllers, or local Army/Marine commanders.

“Real-time intelligence coordination expands our offensive capability over what we had just a few years ago,” Stillman continues. “Time-sensitive targeting represents a cross-service capability because we may be employed by Army or Marine ground forces as well as JSTARS or Air Force forward controllers. This is a huge capability, not just for the F-16 community. It has also been used with B-52 and B-1 aircraft as well.”

Another related objective of Northern Lightning was the integration of Air Force tactical air control parties, called TAC-Ps, with forward Army ground forces. In one scenario, TAC-Ps would communicate with Army ground forces to halt artillery and small arms fire so the TAC-Ps could call in and direct close-air support strikes from various aircraft. Of the two TAC-P units involved in Northern Lightning, one had recently returned from Afghanistan and the other was due to deploy to Afghanistan shortly after the training.

“We tend to practice the basics from our home base,” Stillman says. “We go to the local range with a four-ship and drop some bombs. Those training missions don’t allow for the many variables we can encounter in actual combat. Large-scale exercises give us the opportunity to work other aircraft, such as A-10s, into strike packages. Northern Lightning is absolutely relevant to what we will do when we deploy overseas. We cannot get this sort of training anywhere else in the country except perhaps at Red Flag or in Canada at Maple Flag. Even then, we are not dealing with the elaborate command and control structures we have here.

“I would like to see this exercise occur twice a year,” Stillman notes. “This training is hugely beneficial for the young pilots heading overseas and about to perform these same missions for real. We need the support of the Guard Bureau and the Air Combat Command to turn Northern Lightning into something even bigger than it is now.”

Joe Oliva is a photojournalist based in Wisconsin.
The exercise, called Combined Strength, was hosted by the two Royal Air Force C-130J squadrons at RAF Lyneham, England. Some C-130J operators, including the US Coast Guard and the Royal Danish Air Force, sent observers. All but one worldwide C-130J operator either participated with an aircraft and crew or sent observers to the exercise. The US Marine Corps was unable to attend in order to prepare for its upcoming operational deployment with the KC-130J tanker.

Combined Strength involved symposia, a flying program, and an airlift competition on the last day. The exercise coincided with two regularly scheduled meetings—the C-130J operations working group and the International J Maintenance User’s Group. The operations working group is a joint steering committee that includes senior pilots and members of the command staffs from each of the C-130J operators. The IJMUG is the maintenance organization counterpart to the operations working group. The two meetings, held separately, allow the operators and maintainers from each of the units to gather in one location to highlight recent operations, discuss issues common to all and use the collective brainpower to develop a means to resolve any problems, and serve as a general lessons learned session.

“We had often discussed doing something like a Combined Strength exercise when we worked and trained with other units,” notes Squadron Leader Phil Atkinson, the director of the exercise. “Historically, HerCs operate multinationally. British C-130 crews worked with the Australian crews in East Timor, for example.
COMBINED STRENGTH INVOLVED SYMPOSIA, A FLYING PROGRAM, AND AN AIRLIFT COMPETITION ON THE LAST DAY.
GETTING OPERATORS TOGETHER ON AN ANNUAL BASIS SHOULD IMPROVE FUTURE JOINT OPERATIONS.
“We need to make sure we can integrate with other operators, and they with us. Getting operators together on an annual basis should improve future joint operations. Furthermore, the timing was right to bring everyone together since C-130J units worldwide have reached a certain level of capability to operate tactically.”

LEARNING TO FLY TOGETHER

The flying program at Combined Strength served two main purposes for the participants: to see and learn firsthand how other C-130J units fly their aircraft and to fly in formation with unfamiliar groups. “This exercise provides an opportunity to look at maintenance, operations, and logistics,” says Lt. Col. Greg Jones, the team chief for the 146th Airlift Wing at Channel Islands ANGS, California. “We must plan our own maintenance support when we deploy since the J models are still relatively few in number. We need to get experience operating with the British, Australians, and the Italians.”

The exercise opened with a mandatory mass crew briefing to go over local area flying rules, how to coordinate with British air traffic control, low-level flight rules, and other basics. “Many of these crews have never flown together and many have never flown in the UK,” says Atkinson. “Flying safely is of primary importance. Flying in England is tough in itself, and we are adding formation flying. For this first gathering, we would rather have a basic exercise and competition that goes well than a highly technical one that doesn’t.”

After the mass briefing, the crews adjourned to the building shared by 24 and 30 squadrons, the RAF’s two C-130J units, for mission planning. Unlike the once-typical scene of a mountain of paper maps, plotting boards, and crew members drawing routes, all of the C-130J crews carried laptop computers.

“The RAF uses a different mission planning system than the one we use,” notes Jones. “We have to use the
mission planning system that most platforms in the Air Force use, and we have to use a separate program to put data in the aircraft. The two systems are not integrated. The RAF system simplifies planning since the mission planning data goes right into the aircraft via the data transfer card.

The first day of the exercise, Squadron Leader Dave Cranstoun, one of the RAF’s tactics experts, gave several demonstrations of JAMPA, short for J Advanced Mission Planning Aid. By the end of the week, seven of the eight teams were using this computer-based system to plan their flights.

JAMPA emulates the communications, navigation, and identification function of the C-130J’s computers. The system is derived from the RAF’s Harrier and Tornado Advanced Mission Planning Aid. With just a few keystrokes, the program figures computer-aided release points for airdrops, includes data on landing zones, and calculates refueling points. It can plan a mission for up to twenty aircraft for which it can determine splits and rejoins and can deconflict routes. It even calculates joker and bingo fuel.

“We download information to the data transfer cartridge and then upload it to the aircraft,” notes Cranstoun. “All we need for a mission is a couple of charts and the DTC and life should be good.”

The first flights of the week were single-ship familiarization flights over the low-level route and practice landings at Keevil, an auxiliary field near Lyneham that was used as a glider assembly point during World War II. Each flight carried an RAF observer for safety as well as observers from the other teams.

“Out flying, we can see how other air forces operate their C-130Js,” notes Flight Lt. Michael Crooks, the chief of the Royal Australian Air Force team. “Reading a pile of standard procedures can give us an idea, but seeing these procedures in action makes a big difference. We are getting upgraded countermeasures in our aircraft soon because we are going into Iraq in a couple of months. Talking to an RAF pilot who has been there and used these systems benefits us greatly.”

“The flights we are executing here are building blocks,” says Atkinson. “First, we have to hit a target on time, accurately. That is relatively simple. We work up to formation flights and tactical landings during the exercise.”

Attesting to the success of this incremental approach, two flights of two teams and one three-ship formation took off together on the last day of the exercise.

**LAST DAY RODEO**

The events for the competition on the last day of the exercise, the first-ever C-130J rodeo, were confined to basic airlift operations since each of the competing units had achieved different levels of experience with their aircraft. The teams flew a low-level navigation route and air-dropped either a small bundle or a container delivery system load for accuracy, flew to Keevil, and finished with a spot landing, an important skill in delivering supplies to very small, confined landing strips in combat areas.

“The competition is based on airdrop accuracy,” says Squadron Leader Simon Brewis, the competition’s chief umpire. “Even though the spot landings are pretty much pure piloting skill, they are just as important. We deal with limited strip lengths around the world in combat situations. Here, they practice in a benign environment and can work on getting it right.”

Like golf, the lowest score wins the competition. Although the Australians made an average landing, their airdrop was very close to the bull’s-eye in the drop zone, and that allowed the RAAF to claim the trophy. Second place went to the 815th Airlift Squadron, an Air Force Reserve Command unit from Keesler AFB, Mississippi. Third place went to the 314th AW, the Air Education and Training Command unit from Little Rock AFB, Arkansas, which had only received its first assigned C-130J a few weeks before the exercise. The crew from the 46th Air Brigade at Pisa, Italy, touched down only two feet from the white line during the spot landing competition and finished fourth overall. The two US Air National Guard units, the 146th AW and the 143rd AW from Providence, Rhode Island, finished sixth and seventh, respectively. The two RAF host units finished fifth and eighth.

“Next year, the baseline skill level at tactical low-level flight will be a lot higher,” predicts Squadron Leader Mike Wilson, the chief of flying operations for the exercise. “We will change the procedures to match those improved skills. We will also be flying the new Block 5.4 software. Combined Strength will become a more technical tactical meet.”

Lt. Cmdr. Tom McDonald, one of the US Coast Guard observers who flies the HC-130J from CGAS Elizabeth City, North Carolina, summed up the exercise. “We got a lot out of being here. The drop procedures we saw certainly apply to what we do. We got our first experience in flying on the night vision goggles, which is something we will be doing, in the sim. We shared a lot of valuable information. The Italians, for example, have an automated search and rescue drop mode that could be very useful for us. JAMPA would be valuable. This was a great opportunity for us.”

“The competition at Exercise Combined Strength was a fun add-on and now we’ve got bragging rights,” adds Crooks, whose team won the competition. “The primary reason we were here, though, was to get to know the other J operators, fly with them, and learn from them. From that perspective, the exercise was a huge success.”

Jeff Rhodes is the associate editor of Code One.
THE RAAF 37 SQUADRON CLAIMED FIRST PRIZE IN THE C-130J RODEO.
Bombs And Tanks Away

Certification testing of the F/A-22’s primary air-to-ground armament began on 15 April at Edwards AFB, California. Following successful ground jettison tests of 1,000-pound GBU-32 satellite-guided Joint Direct Attack Munitions, the first JDAM separation test took place during a Raptor 03 flight on 23 April. The day before, in-flight separation testing of the F/A-22’s 600-gallon external tanks began. A total of sixteen tanks will be dropped during eight in-flight tests. The tanks will be used on long-range ferry missions or when stealth is not essential. [Editor’s note: These photos were inadvertently misidentified in the last issue of Code One.]

Gas For Show, Gas To Go

More than 150 aircraft from more than twenty nations were on display at this year’s Royal International Air Tattoo, held at RAF Fairford, UK, in mid July. The Hercules was well represented at the three-day show, as an MC-130P Combat Shadow crew demonstrates the aircraft’s refueling capabilities with an MH-53 Pave Low special operations helicopter during the flying display. This LC-130H from the 109th Airlift Wing won the prize for best-kept military aircraft. It was the second time the 109th AW had earned the award. The Ski-Herc is shown at Lajes Field, the Azores, after a refueling stop as the crew was returning home to Stratton ANGB, New York.

Denmark Orders Fourth C-130J

Denmark announced during the Farnborough International Air Show in July that it has decided to exercise a contract option for a fourth C-130J Super Hercules. The Royal Danish Air Force has already taken delivery of three of the airlifters since placing its first order in December 2000. The Danish aircraft, which are the long-fuselage version of the C-130J, feature a strengthened cargo ramp, improved airdrop system, and the Enhanced Cargo Handling System, as well as RDAF-specific items including a tailored electronic warfare suite. The RDAF is expected to be operational with its C-130J fleet later this fall. The new aircraft will likely be delivered in 2007.

T-50 Begins High Angle Of Attack Testing

The Republic of Korea Air Force began high angle of attack flight testing in July on the T-50 Golden Eagle, the supersonic jet trainer being developed by Korea Aerospace Industries with technical assistance from Lockheed Martin. The initial high AOA flight testing uses basic air-to-air loadings and includes planned departures from controlled flight. Testing is being conducted at the test facility at Sachon AB, Korea, using the second of four test aircraft. As a safety feature, a tail-mounted spin recovery parachute assembly is available for use in the event the aircraft cannot be recovered normally. Approximately forty-seven high AOA flights over four months are planned.

PHOTOS BY KEVIN ROBERTSON

PHOTOS BY MSGT. JOHN LASKY

PHOTOS BY TSGT. ROBERT VALENCIA

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F-35 Forward Fuselage Assembly Begins
Lockheed Martin began assembling the forward fuselage for the first F-35 Joint Strike Fighter on 12 July, as workers loaded a structural bulkhead into an assembly tool in Fort Worth, Texas. Principal team partner Northrop Grumman began assembly of the first center fuselage in May at its Palmdale, California, factory. The F-35 team’s other principal partner, BAE SYSTEMS, will begin assembling the aft fuselage and tails later this year in Samlesbury, England. Those subassemblies will be shipped to Fort Worth, where they will be mated with the wings and forward fuselage for final assembly. The first flight of the F-35 is planned for 2006.

F-35 Chief Wins Manufacturing Award
The Society of Manufacturing Engineers awarded its prestigious Donald C. Burnham Manufacturing Management Award to Tom Burbage, Lockheed Martin executive vice president and program integration general manager of the F-35 program, in ceremonies on 11 June. The award recognizes Burbage “for exceptional success in the integration of the infrastructure and process manufacturing.” Burbage was cited for his management success in integrating innovative design and manufacturing technologies into a unique airframe to meet the requirements of a multiservice, supersonic stealth fighter and for his role in integrating prime contractor Lockheed Martin with principal program partners Northrop Grumman and BAE Systems.

C-5 AMP Kit Installations Begin
A Lockheed Martin field team began installation of production Avionics Modernization Program kits into the US Air Force’s fleet of C-5 Galaxy strategic airlifters on 4 June at Dover AFB, Delaware. Once installation on the first aircraft, a C-5B, is completed in late summer, it will be flown to the Lockheed Martin facility in Marietta, Georgia, where it will then become the first aircraft to undergo the modifications for the Reliability Enhancement and Re-engining Program. The second AMP-modified Galaxy, also a C-5B, will be used by the Air Force to conduct operational test and evaluation of the AMP hardware and software, which is scheduled for later this year.

Not A Seahawk
A new bird of prey appeared over Seattle for the first time on 13 May, as Boeing test pilot Randy Neville flew Raptor 05 over the Puget Sound region before landing at Boeing Field. The Raptor, flown from Edwards AFB, California, remained on static display for two days and was seen by hundreds of F/A-22 and Boeing Integrated Defense Systems employees and their families. The display was the Air Force’s way of recognizing the more than 1,000 Boeing employees in Seattle who work on the F/A-22 Program. Boeing has lead responsibility for the F/A-22’s training system, manufacturing the wings and aft fuselage, and integrating and testing the Raptor’s advanced avionics.
**Marines Approve KC-130J**

The US Marine Corps announced in late April that the commander of Operational Testing and Evaluation has “recommended full-fleet introduction of the KC-130J for operational use.” In its Operational Evaluation Report, the Marine Corps notes, “The KC-130J possesses a significant capability increase over the legacy KC-130 fleet and outperformed the KC-130T in five mission-representative profiles, including aerial refueling missions, rapid ground refueling missions, and aerial delivery cargo missions.” Operational testing was conducted from October 2003 to January 2004 and assessed the operational effectiveness and suitability of the KC-130J. The KC-130J will replace aging KC-130F/R tankers in the active Marine Corps fleet, some of which have more than forty years of service.

**Twice The Smarts**

The new BRU-57 multiple weapon rack was approved for use on the F-16 in late April, enabling the fighter to carry four, instead of two, 1,000-pound-class smart weapons. The BRU-57 has two stations, each with MIL-STD-1760 interfaces for smart weapons so flight and targeting data can be transferred to the weapon immediately prior to release. The US Air Force recently certified use of the CBU-103/104/105/107 Wind-Corrected Munitions Dispenser series using the BRU-57 on its fleet of Block 40/42/50/52 F-16 aircraft. The rack is also compatible with 500-pound and 1,000-pound GBU-38/32 Joint Direct Attack Munitions. All these weapons are integrated with only a software change to the F-16.

**Majestic Eagle**

During an airpower demonstration performed for visiting Moroccan military officials as part of Majestic Eagle ‘04, a multinational exercise conducted off the coast of Morocco in July, an S-3B Viking crew assigned to VS-32 Maulers releases flares near the USS Enterprise (CVN-65). The exercise demonstrated the combined force capabilities and quick response times of the participating naval, air, undersea, and surface warfare groups. Countries involved in the exercise included the United Kingdom, Morocco, France, Italy, Portugal, Spain, and Turkey. In addition to all the seaborne assets, Portuguese F-16 pilots and P-3 crews as well as US Orion crews based in Spain took part in this NATO-sponsored exercise.

**5K Fighting Falcon**

A Royal Norwegian Air Force F-16 passed the 5,000-flight-hour plateau on 14 July. Lt. Col. Dag Simastuen, the squadron commander of 331 Squadron at Bodø, was the pilot on the milestone flight. The aircraft had 4,999.3 flight hours at takeoff and passed 5,000 hours forty minutes into the flight. Simastuen has more than 3,000 flight hours in F-16. The aircraft was delivered to Bode on 17 December 1982 and has spent most of its career with 334 Squadron. The F-16 has been through the Mid-Life Update Program and is scheduled for M3 and Falcon Star updates. It is believed to be the first non-US F-16 to reach 5,000 hours.
C-5 Surgery

Technicians from the 653rd Combat Logistics Support Squadron at Robins AFB, Georgia, began removing the wings of a C-5A Galaxy transport in late July as part of an engineering study of the aircraft’s airframe viability. A ten-member team of aircraft battle damage repair specialists began work last November on the aircraft, one of fourteen C-5As selected for retirement by the Air Force. The team’s goal is to get all of the major components removed from the aircraft by the end of the year. The request to tear down the C-5 airframe came at the request of Air Mobility Command to determine if the aircraft’s structure is meeting its original design life predictions.

Understanding Begins With Lunch

Former enemies joined for lunch in the spirit of friendship at Balad AB, Iraq, on 20 July. Six Iraqi Air Force pilots and ten American pilots shared stories at a dining facility and then took pictures in front of an F-16. Despite speaking different languages, the pilots had no problems understanding each other. Like pilots everywhere, the Iraqi pilots used hand gestures to describe their flying. Lunch was the idea of Col. Khaled Khadem, the former deputy commander at Balad AB before Operation Iraqi Freedom began, who approached Col. Blair Hansen, 332nd Air Expeditionary Wing commander, about the possibility of bringing a few Iraqi pilots together with the American pilots.

Still Viable

With avionics and engine upgrades, the Air Force Fleet Viability Board assessment shows the C-5A Galaxy has at least twenty-five years of service life remaining. While the aircraft is among the oldest in the inventory, Air Force officials noted in the 15 July report that it had no major structural life issues. The assessment focused on technical issues and the cost of continued ownership. The viability board considers cost, aircraft availability, and operational health as top-level indicators of a fleet’s viability. The two upgrade efforts already under way, the Avionics Modernization Program and the Reliability Enhancement and Re-engining Programs, will significantly improve C-5 mission capable rates.

X Marks The Spot

Maj. Bill Peris, a 416th Flight Test Squadron test pilot at Edwards AFB, California, fired the latest version of the Sidewinder air-to-air missile, the AIM-9X, from an F-16 in July, successfully acquiring and scoring a kill against a Navy subscale drone. This third AIM-9X shot from an F-16 was the first guided launch from the aircraft. During the test mission, Peris was flying at medium altitude in an operationally representative engagement. A DC-130 Hercules crew, taking off from NAS Point Mugu, California, released the target drone over the nearby China Lake Naval Air Weapons Center range where the test mission took place.
Red Griffins, Dragonfires Stand Down

Two of the US Navy’s West Coast S-3B squadrons, VS-29 and VS-38, were disestablished in ceremonies at NAS North Island, California, on 17 April. The Navy’s S-3B Sundown Plan calls for the gradual disestablishment of Viking squadrons as the number of operational carrier-based squadrons flying the F/A-18E/F increases. The F/A-18 will take over the aerial tanking role from the S-3. The Viking is scheduled for retirement in 2009. VS-38, known as the Red Griffins, was established in 1950 and later became the first designated carrier-based antisubmarine warfare squadron. The unit transitioned to the S-3 in 1973. VS-29, known as the Dragonfires, was commissioned in 1960 and had flown the Viking since 1975.

Last Vietnam War POW Retires

Reserve Maj. Gen. Ed Mechenbier, the Air Force’s last Vietnam-era former prisoner of war still serving, retired on 30 June, ending more than four decades of active-duty, Guard, and Reserve service. In June 1967, Mechenbier, flying an F-4C, was shot down over North Vietnam on his 113th combat mission. He would not return until 1973, enduring almost six years as a POW. When the Vietnam War ended, Mechenbier returned to the US on a C-141 StarLifter, affectionately named the Hanoi Taxi. On 29 May of this year, he flew that same aircraft back to Hanoi on his final flight, bringing home the remains of two service members listed as missing in action.

Good Housekeeping Award

Capt. Christina Hopper, an F-16 pilot with the 524th Fighter Squadron at Cannon AFB, New Mexico, was recently presented Good Housekeeping magazine’s Woman in Government Award for 2003 and was featured in the magazine’s July edition. The award is given to a woman who “has made a significant contribution toward the advancement of women in government.” The Good Housekeeping honor comes with a cash award of $25,000. Hopper was deployed with her squadron in March 2003, when the war in Iraq started. She and the other squadron pilots bombed targets the second day of the war. She will soon head for a tour as an instructor pilot at Luke AFB, Arizona.

Aloha

Sailors assigned to VP-47 carefully placed a flower lei on the nose of the first squadron P-3C Orion to return home to MCAS Kaneohe, Hawaii, on 5 June, after a six-month deployment supporting operations in the 5th Fleet Area of Responsibility in Southwest Asia. The squadron was involved in direct support of Operation Iraqi Freedom and Operation Enduring Freedom by flying surveillance missions over Iraq and Afghanistan. The aircraft and aircrew were forward deployed to Bahrain with a detachment in Diego Garcia in the Indian Ocean. The squadron chalked up nearly 3,000 flight hours in combat support during the deployment.
**Anniversary Jump**

In a recreation of the airborne assault on France on the night of 5 June 1944, more than 700 of today’s paratroopers, combat controllers, and pararescuers jumped into the same drop zone near Sainte Mère Eglise that many of the hundreds of veterans jumped into sixty years ago. Then the soldiers of the 82nd Airborne Division and the 101st Airborne Division jumped from C-47s at altitudes as low as 300 feet. The current soldiers and airmen jumped from Air Force C-130s, MC-130s, and C-17s from a safer altitude of 1,000 feet. During the ceremonies, the transport crews made three passes and every time the US paratroopers began jumping, the honored vets applauded.

**Geronimo For The Last Time**

Army Pvt. Jason Stewart now holds a unique distinction. He is the last paratrooper to ever jump out of a C-141 StarLifter. Stewart, eighteen, was the last to jump from the last flight of the day during a training session on 13 May at Fort Benning, Georgia. Providing the jump platform for the historic event was a C-141C (serial number 65-0229) based at March ARB, California, with more than 41,860 flying hours. The C-141 was the first jet transport from which US Army paratroopers jumped. The StarLifter can hold 155 paratroopers, but the remaining C-141 units will no longer train for paradrops. The StarLifter is scheduled for retirement in 2006.

**Crowded Ramp**

As a result of the runway renovation at RAF Mildenhall, England, many of the transports that typically are seen at that base, such as this MC-130H Combat Talon special operations airlifter, have been moved temporarily to RAF Lakenheath, a fighter base located relatively close to Mildenhall. The flightline construction at RAF Mildenhall began in March and was scheduled for completion by the end of August. The flightline at RAF Fairford is also being used as an alternate location for some of RAF Mildenhall's aircraft. The Air Force reports the ramp space management has proven to be a challenge, but operations have continued normally.

**Commando Sling**

Airmen from the 36th Fighter Squadron at Osan AB, South Korea, deployed to Singapore in June to train with the Republic of Singapore Air Force during exercise Commando Sling 04-3. The exercise provides both a US presence in Southeast Asia and realistic dissimilar aircraft air-to-air combat training for the forces of both nations. The exercise included F-16s from Osan and Singapore F-5s, A-4s, and F-16C aircraft. The initial exercise sorties were dedicated to orientation missions pitting one aircraft against another in basic fighter maneuvers to help pilots familiarize themselves with the new airspace and procedures. The exercise quickly evolved into more complex air combat maneuvering with flights of up to eight aircraft for each force.
Imagine sitting for 416 consecutive days in exactly the same place. Chief Aviation Mechanic Raul Addoms doesn’t have to. Addoms, a flight engineer with VQ-2, the EP-3E ARIES II unit at Rota, Spain, reached the 10,000-flight-hour milestone in April. Although flight engineers garner more flight hours than most other crew members, the milestone is still a rarity. Flight engineers also act as the senior maintenance person and generally the senior air crewman aboard. With well over twenty-four years of service to his credit, Addoms has been around the world as a P-3 flight engineer, from Hawaii to Guam, Whidbey Island, and Jacksonville, before reporting to Rota.

**Air Combat Simulator Certified**

Following two days of four-ship evaluation and trials in dense, advanced threat scenarios, a team from the Air Force Operational Test and Evaluation Center at Kirtland AFB, New Mexico, reported that the Air Combat Simulator at the Lockheed Martin facility in Marietta, Georgia, was highly representative of actual aircraft performance and was acceptable for use during Initial Operational Test and Evaluation. Based on the team’s recommendation, AFOTEC and the Defense Department have formally approved the use of the ACS for IO&E. The ACS was originally developed as a software laboratory and was later used to test the overall user-friendliness of the Raptor’s cockpit before the laboratory’s charter was expanded to include evaluating mission effectiveness.

**Five Eagles In Three Minutes**

A single Raptor pilot from the Combined Test Force at Edwards AFB, California, launched four guided AIM-120 missiles against four separate targets on 24 July. The Raptor's integrated weapons system successfully identified, tracked, and linked each target’s data to the AIM-120s and each missile passed within lethal range of its target. During a press conference at Andrews AFB, Maryland, in May, Secretary of the Air Force Dr. James G. Roche told reporters that in one test “We had five F-15 Eagles against one Raptor and the engagement was over in three minutes. None of the F-15s even saw the Raptor. The Raptor simply went down the line and, in simulation, took out all five of the F-15s.”

**Roll With The Punches**

Testing of the F/A-22’s ability to roll and launch AIM-9 heat-seeking, short-range missiles was completed on 10 June, with a Raptor pilot successfully launching a Sidewinder at 1.7 M at 21,000 feet, while pulling 4 g’s at the Naval Air Warfare Center Weapons Division range near Point Mugu, California. The F/A-22 rolling AIM-9 separation test program, a first for any flight test effort, included a total of seventeen launches across a wide range of conditions. None of the test launches had to be repeated. The F/A-22 is designed to fire either the AIM-9M or the new AIM-9X version of the Sidewinder from its two side weapon bays.
**IOT&E Begins**

The Air Force announced the start of Initial Operational Test and Evaluation of the F/A-22 Raptor at the Air Force Flight Test Center at Edwards AFB, California, on 29 April, with a two-ship formation flight. IOT&E will evaluate the Raptor’s lethality, survivability, deployability, and maintainability in a variety of operational missions. “Today marks an important milestone for the Raptor,” said Dr. Marvin Sambur, Assistant Secretary of the Air Force for Acquisition. “The Raptor’s advanced stealth, supercruise speeds, remarkable maneuverability, and highly integrated avionics ensure absolute air dominance in the coming decades.” The Air Force expects to complete IOT&E later this year. Initial operational capability of the F/A-22 is scheduled for December 2005 at Langley AFB, Virginia.

**Coming To America**

Medical teams from the 791st Expeditionary Aeromedical Evacuation Squadron at Ramstein AB, Germany, assisted with the medical evacuation of a critically ill eight-month-old Iraqi girl last May. Fatemah Kalil Hassan was transferred to the Children’s Hospital in Columbus, Ohio, to undergo specialized treatment for an abnormal growth of a blood vessel on the right side of her face and neck. The life-threatening growth was obstructing her airway. The process started when Fatemah’s twenty-one-year-old mother, Beyda’a Amir Abdulk Jabar, contacted an Army doctor at a US medical clinic in Iraq. An Air Force Reserve Command aircrew from the 89th Airlift Squadron at Wright-Patterson AFB, Ohio, flew the mission on a C-141 StarLifter.

**Hover Power**

Pratt & Whitney’s short takeoff and vertical landing propulsion system for the F-35 Joint Strike Fighter demonstrated 39,700 pounds of thrust, the level required for the unique combat aircraft to hover, on 24 May. This demonstration confirmed pretest predictions established for the F135 propulsion system and provided strong evidence that the production configuration of the F135 will achieve specification requirements for hover thrust. The completion of this demonstration marked a significant milestone toward qualifying the F135 engine. At the same time, weight reduction initiatives will result in a STOVL engine weight at three percent to six percent below the contracted target. The weight achievements are critical for F-35B performance.

**Large Package Week**

Pope AFB, North Carolina, witnessed a week of paratroopers and heavy equipment drops on its ranges in mid-May, as crews flying six C-130Es from Pope, six more C-130s from Little Rock AFB, Arkansas, and two C-17s helped prepare the Army’s 82nd Airborne Division’s incoming Ready Division. Ready Division soldiers are typically on alert for six weeks and must be capable of deploying anywhere to conduct combat operations within eighteen hours. More than 800 soldiers parachuted out of the aircraft during the week, with most of the jumps occurring at night. In addition, a number of vehicles, such as this 105 mm Howitzer, were dropped during the exercise.
**Hercs To The Rescue**

HC-130 crews were busy at opposite ends of the country in late spring. On 2 June, Alaska Air National Guard HC-130 rescue tanker and HH-60G Pave Hawk helicopter crews from Kulis ANGB outside of Anchorage rescued a young woman in medical distress in bad weather from an altitude of 9,000 feet near the Canadian border. The helicopters refueled in the air four times during the mission. In the Atlantic, airmen from Moody AFB, Georgia, were credited with saving a civilian’s life in late May when they rescued a stranded boater about 450 miles from Jacksonville, Florida. The mission took more than eleven hours with five aerial refuelings. The boater had been floating for a week.

**Relief Missions To Yap**

After the island of Yap in Micronesia was devastated by Typhoon Sudal on 10 April, two C-130E transports, four aircrews and six crew chiefs from Yakota AB, Japan, spent five days flying humanitarian missions to the island. Flying out of Andersen AB, Guam, they flew eleven missions and delivered thirty-one passengers and 102.4 short tons of cargo supporting Federal Emergency Management Agency relief efforts. One of the crews flew in 56,000 pounds of cargo, including four industrial generators to get the island’s power running again. Relief supplies included water, juice, baby food, and other nonperishable foods the islanders needed.

**Without Echoes**

An F/A-22 Raptor from the Combined Test Force at Edwards AFB, California, was tested at the Air Force Flight Test Center’s Benefield Anechoic Facility for the first time in July. The testing was done to ensure the aircraft’s defensive systems didn’t interfere with its communications, navigation, and identification systems.

**Fire Brigade**

California Air National Guardsmen from the 146th Airlift Wing at Channel Island ANGB launched two C-130Hs outfitted for aerial firefighting on 5 May to help fight wildfires in Southern California. Twelve missions were flown, dropping more than 32,000 pounds of flame retardant on the region. The unit’s C-130s are equipped with the modular airborne firefighting system, or MAFFS, and joined air and ground units fighting wildfires in several Southern California counties. The 146th AW has been flying aerial firefighting missions since the 1970s. Today, three Air National Guard and one Air Force Reserve Command C-130 units fly eight MAFFS-equipped planes to assist federal and state forestry and fire protection agencies to battle wild fires.
Out Of Baghdad

US Ambassador Paul Bremer and Iraqi Deputy Prime Minister Barham Saleh bid farewell to each other at Baghdad International Airport before the ambassador makes his final departure from Iraq on 28 June. Before leaving for the airport and boarding the C-130H, Bremer signed the Iraqi sovereignty document, which gave full governmental authority to the Iraqi interim government.

Hunting For Ships

Lt. Ryan Alderson views an S-3B Viking carrying an AGM-84 Harpoon missile from the port side of his own S-3B. The Harpoon missile is an all-weather, over-the-horizon, antiship missile. Both Vikings are assigned to VS-33, known as the Screwbirds, currently embarked aboard the USS Carl Vinson (CVN-70). The Vinson and Carrier Air Wing Nine were operating off the coast of Southern California when this photo was taken in late June, conducting carrier qualifications and training in preparation for the next deployment.

Subscription Incentive

This quarter we are giving away thirty F-35 lithographs signed by the artist Price Randel at a random drawing of new and existing Code One subscribers. An envelope is attached to this issue for gift subscriptions. For those who want a chance to win a poster without subscribing, send your name, address, and telephone number to Code One/F-35 Poster Giveaway/PO Box 748/Mail Zone 1503/Fort Worth, TX 76101. Entries must be received before 1 November 2004.

Jamming

An EC-130H Compass Call aircraft lands at a forward-deployed location in Southwest Asia on 29 June. These modified C-130s are used to jam enemy communications and for information warfare. The aircraft and crew are from the 43rd Expeditionary Electronic Combat Squadron and are deployed from Davis-Monthan AFB, Arizona.

PAC-ing It In For The Day

A US Navy P-3C Orion approaches MCAS Kanehoe, Hawaii, for a landing during the recent Rim of the Pacific exercise. RIMPAC is an international maritime exercise designed to enhance the tactical proficiency of participating Pacific Rim nations. RIMPAC ‘04 included participants from Australia, Canada, Chile, Japan, South Korea, the United Kingdom, and the United States.

The Final Frontier

Air Force Maj. James Dutton, an F/A-22 pilot assigned to the Combined Test Force at Edwards AFB, California, was one of four service members selected on 10 May to join the newest class of Space Shuttle astronauts. Dutton, thirty-five, is one of two selected to be Shuttle pilots. He was raised in Eugene, Oregon, and has degrees from the US Air Force Academy and the University of Washington. Training for the newest astronauts began this summer at NASA’s Johnson Space Center in Houston, Texas.

Jolly Good Show

A 48th Fighter Squadron F-16 Fighting Falcon pilot from Spangdahlem AB, Germany, comes in for a landing after a flying demonstration during the biennial Farnborough International air show in England on 21 July. The F-16 has been a regular participant at major international air shows like Farnborough, Paris, and many others since the late 1970s.

Now That’s A Talon

SSgt. Camden Stewart (right) shows A1C Brian Hansen the proper way to prepare an AIM-120 for loading onto an F/A-22 Raptor at Nellis AFB, Nevada. Nellis recently became the first base in Air Combat Command to have certified F/A-22 weapons load crews. Stewart is a weapons load crew chief for the 57th Aircraft Maintenance Squadron. Hansen is a weapons loader with the squadron.

In A Sling

SSgt. Brian Bankowski launches a Force Protection Airborne Surveillance System, also known as Desert Hawk, at a forward location in late July. Operators slingshot the unmanned aerial vehicle into the air with a fifty-foot-long bungee cord. Bankowski is assigned to the 380th Expeditionary Security Forces Squadron and is deployed from Dyess AFB, Texas.