AIR FORCE MATERIEL COMMAND
LEADING EDGE

August 2002

Agile Acquisition takes off

"The changes Agile Acquisition will demand are revolutionary! Our world has changed radically... we must change with it to ensure we provide the warfighter a responsive and effective acquisition system that meets its changing needs."

Gen. Lester Lyles
Commander AFMC

LEADING EDGE

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Cover photo of F-22 in flight by Mr. Derk Blanset, AFFTC. Cover design by Ms. Libby VanHook, AFMC/PAI.

4 - 18 Agile Acquisition: Increasing warfighter capabilities

Secretary of the Air Force James Roche challenged the Air Force to increase speed in delivering products to the warfighter. Turn the page to read how AFMC and SAF/AQ have met that challenge by inventing a truly agile acquisition system.

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Read why Senior Airman Arturo Dominguez admits to "being hooked" on boxing's addictive allure on page 22.

Airborne Laser ready for airworthiness testing

KIRTLAND AIR FORCE BASE, N.M. — The first Airborne Laser, a highly altered Boeing 747-400 series freighter, is ready for airworthiness testing following a 2 1/2 -year modification program at Boeing's Wichita, Kan., facility.

Shown here where the modification work was done, complete with its distinctive 11,500-pound nose turret, the aircraft will be tested to prove it can still fly like a 747 despite the structural changes.

Once those tests are completed this summer, the aircraft will be flown to Edwards AFB, Calif., where its megawatt-class laser system and unique optical components will be installed and tested.

The testing is scheduled to culminate with the shootdown of a ballistic missile in December 2004.

— Information provided by AFRL Public Affairs

F-22 achieves 2,000 flight test hours at Edwards

EDWARDS AIR FORCE BASE, Calif. — After successfully reaching the 2,000-hour mark in the skies above Edwards recently, the F-22 flight test program is pushing ahead toward the start of operational testing. The 2,000th flight hour came with two Raptors in the sky and two more in preparation for flight tests later that day.

Raptor 4006 was airborne on an avionics electronic warfare mission with Col. Chris Seat, F-22 Combined Test Force director, at the controls, while Boeing F-22 test pilot Mr. Randy Neville was in the air with Raptor 4003 flying an envelope expansion mission.

With the 2000-hour mark behind it, the test force is poised to successfully complete the F-22 development flight test program, said Col. Seat. The director added that Air Force Operational Test and Evaluation Center is a growing member of the test team and is also readying for initial operational tests.

— Information provided by the F-22 Combined Test Force

Hypersonic Aerothermal THAAD test set for AEDC

ARNOLD AIR FORCE BASE, Tenn. — Upcoming testing will help the U.S. Army evaluate thermal-structural survivability of the thermal protection materials developed for the Theater High-Altitude Area Defense, or THAAD, missile.

Testing will be conducted in the Arnold Engineering Development Center's H-1 Arc Heater Test Facility. The materials, supplied by prime contractor, Lockheed Martin under an Army Space and Missile Defense Command THAAD program contract, will undergo aerothermal testing to simulate the extreme thermal environment within which the hypersonic interceptor missile must operate.

The test plan calls for testing 40 2-inch square samples at temperatures up to 2,500 degrees Fahrenheit simulating up to Mach 8. A variety of kill vehicle and booster candidate materials will be tested.

Of particular interest to Lockheed Martin engineers are the results of removal tests on material samples previously exposed to high-voltage electrical arcing. After testing, the samples will be returned for post-test evaluation.

Lessons learned from testing will be applied to improve production processes and techniques for operational THAAD thermal protection components.

— Information provided by AEDC Public Affairs

B-52 modification updates defensive system

TINKER AIR FORCE BASE, Okla. — The hulking B-52 is no small target for surface-to-air missiles, but a new modification being installed here is making it harder for the enemy to get America's workhorse bomber in its scope.

The Electronic Countermeasures Improvement Program is updating the 30-year-old defensive system now on the B-52 that lets aircrews know when they are threatened by an enemy surface-to-air missile.

"Before, there used to be two ALQ-172 scopes at the electronic warfare officer's position. One would tell what frequency the threat was at and the other would give an approximate distance and direction of the threat," said Mr. Jim Thomits, who provides contractor support to the ECMI program for the Program Management Division of the B-52 System Program Office.

The new system displays the threat information on a single scope that will tell aircrews what type of threat it is, its relative distance and whether the threat's signal is being jammed by the B-52.

— Information provided by OC-ALC Public Affairs

Next generation Tomahawk missile engine tested

ARNOLD AIR FORCE BASE, Tenn. — Recent engine testing confirmed the Tactical Tomahawk as the next generation of the Navy's Tomahawk long-range cruise missile system.

Tests were conducted in the Arnold Engineering Development Center's Engine Test Facility Propulsions Test Cell T-11 here. A one-year test program to certify the Tactical Tomahawk's engine performance was conducted.

For the tests, employees modified T-11, a former Navy test cell, to provide better data and more efficient operations, and added new test capabilities to support future cruise missile testing.

According to Mr. Gary Meuer, AEDC test project manager, these cell modifications provided improved real-time mission simulations and data acquisition.

— Information provided by AEDC Public Affairs

Agile Acquisition

Opening the door for meaningful change

— Gen. Lester Lyles
AFMC Commander

When Secretary of the Air Force Jim Roche said, "it takes too long to buy and field Air Force weapon systems," he reached to the very heart of the issue that agile acquisition is meant to address. He was echoing what we also hear from our "warfighting" customers.

When you see the historical data, it's hard to dispute his observation. With a few exceptions, we are buying weapon systems that were designed even before the creation of AFMC. On average, it takes 12 years from the time a customer identifies a specific need until we have a working solution coming off the production line for major weapons system requirements.

Acquisition and sustainment processes we used in the past served us well, but if we rely on yesterday's practices, we will handicap the warfighter's ability to defend the nation. What once was state-of-the-art no longer meets the evolving needs of the warfighter in facing a new variety of threats to our nation and our allies.

Today's technology today

We know that the pace of developing new technology will continue to accelerate. With that thought in mind, Dr. Marvin Sambur, Assistant Secretary of the Air Force for Acquisition, and I have established an initiative to invent a truly agile acquisition and sustainment system. Our objective is to field today's technology today, not yesterday's technology tomorrow.

An effective approach

Agile acquisition and sustainment is exactly what its name implies: a leaner, more effective approach to designing, building, testing, fielding and supporting the weapon systems that warfighters need, so they can fight and defeat any foe on any front.

As we begin to implement this effort there are several challenges we must overcome:

The first is to adapt to and enable changing doctrine. An acquisition system burdened with an excessive development timeframe lacks the ability to adapt to a rapidly changing environment. Through the introduction of AFPD 63-1, **Reality-Based Acquisition System**, Secretary Roche is introducing the strategies needed to rapidly develop and implement system capability.

It takes teamwork

One concept being expanded across our acquisition environment is **spiral development**. This acquisition strategy, when adopted, forces the user and developer to collaborate to determine reasonable, bite-sized increments of capability that the warfighter needs.

When acquisition strategies are framed this way, our ability to adapt to and enable changing doctrine is much greater. The "pathfinder" programs we have identified to examine spiral acquisition approaches will be especially useful in benchmarking this development strategy for all acquisition programs.

The second challenge is to embrace innovation. Every day, the members of our Air Force acquisition team are living up to the challenges that come with supporting America's warfighters, and you are doing it extremely well. Operations in Kosovo and Afghanistan have been a proving ground for the innovative weaponry we provide and in many cases the innovative ways we can link old and new weapons to create an effect for the warfighter.

Seizing opportunity

We need to continue to seize every opportunity to provide innovative solutions to our warfighters. Our responsibility through the agile acquisition initiative is to ensure that our acquisition processes support both the innovation and the innovators. As you see the Acquisition Centers of Excellence take effect, you will see our ability to embrace innovation improve dramatically.

The third challenge is to keep pace with the accelerating technology cycle. Our nation's scientific and engineering talent is largely responsible for our achieving its current preeminence in the world.

This talent is critical to helping the Air Force exploit rapidly emerging technology to its greatest potential.

We are developing several exciting initiatives to improve our scientific and engineering skills within AFMC and across the Air Force. We have also initiated a senior level review process, in cooperation with the using major commands, for all our advanced research efforts.

We are closely scrutinizing our investment in technology to ensure we are closely linked with the programs needing that technology. Technologies deemed critical to a priority program will receive more funding to reduce technical risk, while others could be slowed or canceled to free up funding. This will allow us to better align precious research dollars with warfighting requirements.

An integrated approach

Before a new system can be fielded to meet warfighter requirements, it goes through two evaluation processes: developmental testing and operation testing. Dr. Sambur and I, working with the Developmental and Operational Test communities, have pursued an integrated test and verification process, seamless verification, which will allow AFMC to accelerate that capability to the warfighter.

Equally importantly, we are embarking on initiatives to ensure we support the vital human resource — our acquisition managers, scientists and engineers — without whom our other efforts will not succeed. Recruiting and retentaining these talented people is a top priority!

As we overcome the challenge facing us, we create a legacy of greater effectiveness and efficiency and state decisively that we are warfighters supporting warfighters.

Agile acquisition provides an exciting opportunity for all of us in the business of developing, acquiring, testing and sustaining the weapon systems our Air Force uses to defend America's freedom.

Agile acquisition opens the door for real, meaningful change — change that will enable us to do our jobs better and, most importantly, provide the best weapon systems to our customers, the nation's warfighters, as they defend America and its interests!

New acquisition policy stresses speed, credibility, flexibility

Speed and credibility are enshrined as top priorities for all acquisition programs in a new policy the Air Force's senior acquisition official approved June 4.

The new policy memorandum marks a new philosophy in regulating Air Force acquisition, according to Air Force officials. Unlike the 1993 policy it replaces, which was highly prescriptive, the new one challenges managers to find better ways to do their business without telling them, step-by-step, exactly how.

Primary objectives

"The two overarching objectives of this policy are to shorten the acquisition cycle time and to gain credibility within and outside the acquisition community," wrote Dr. Marvin Sambur, assistant secretary of the Air Force for acquisition. "Every action and decision by individuals responsible for program execution must map directly to, and further these two primary objectives."

Warfighters are demanding faster delivery of new capabilities to meet unexpected and unpredictable threats, Dr. Sambur said. At the same time, Air Force leaders, Congress and others are insisting that Air Force acquisition programs deliver what they promised, on time and on budget. The new policy, which replaces Air Force Policy Directive lays the foundation for meeting both requirements, he said.

A huge step

The new policy, developed jointly by Air Force acquisition headquarters and Air Force Materiel Command officials, is one of the cornerstones of the Air Force's Agile Acquisition effort launched in late 2001.

"This is a huge step toward freeing our managers to manage," said Gen. Lester Lyles, commander of Air Force Materiel Command. "We are going to get out of the checklist mentality and eliminate from our processes all the steps that add time but are of little value."

The new policy memorandum, which will be followed soon by a formal, permanent policy directive, makes clear that all acquisition programs must continue to conform to federal law and Defense Department regulations. But it also directs program managers and others to find the best way for their programs to meet those requirements.

"One size does not fit all," said Gen. Lyles.

Collaborative spiral development

"All activities, reports, plans, coordination, or reviews except those mandated by statute or previously approved by a person in the execution chain, must buy their way into the program. The benefit gained must clearly equal or outweigh the resources expended," the memorandum states.

The memorandum also established collaborative spiral development as the preferred way to acquire systems.

Dr. Sambur said too many programs get into trouble because they try to deliver everything the warfighter wants all at once.

"There programs are very complex and we have to stop trying to 'eat the elephant' in one bite," Dr. Sambur said. "If we work with our partners — the warfighters, testers, technologists, budgeters and logisticians — and develop these in systems increments, we'll break these complex programs into manageable 'bites.' That will allow us to deliver capability more quickly and give us a much better chance of meeting our cost and schedule goals."

The new policy also underscores the importance of strong systems engineering up front in every program, particularly in the first spiral.

Laying the foundation

"Systems engineering lays the foundation for success," Dr. Sambur said. "When you look at programs that get in trouble, you usually find weaknesses in systems engineering at the outset. This new policy makes clear that we're going to attack that."

The text of the newly approved policy memorandum is available at http://www.safaq.hq.af.mil/ACE.

— Mr. Jim Wolffe, SAF/AQ

B-1 closes in on mission upgrades

The backbone of the U.S. bomber fleet has become even stronger in the past few months thanks, in part, to Aeronautical System Center at Wright-Patterson Air Force Base, Ohio, B-1 System Program Office.

Agile acquisition practices by the SPO have allowed the B-1 to take giant steps forward in the Air Force's plan to increase the bomber's lethality, survivability and sustainability, collectively called the Conventional Mission Upgrade Program, according to Col. Mike Miller, B-1 system program director.

Earlier this year, B-1 team members here accelerated an upgrade of the aircraft's central flight computers. This upgrade allows the B-1 to take full advantage of the aircraft's new weapons flexibility, which completed flight testing June 13.

These tests, part of the B-1 Block E Computer Upgrade Test Program, showcased the B-1's new capability to carry and employ three different types of weapons on the same sortie; the first time in Air Force history that an aircraft's on-board weapon system has allowed simultaneous employment of multiple weapon types against multiple, separated targets.

"By starting manufacturing of the computers prior to the final production decision for the rest of Block E, we will be able to field the production version of the upgrade 12 months earlier than anticipated," said Lt. Col. Gordie Neff, the Block E program manager. "Also, by accelerating computer production and incorporating their testing into flights that were already scheduled, we actually saved three test sorties and six weeks of test time — or about $1.5 million."

The Block E computer and software improvements included replacing six central flight computers with four newer, more capable models, upgrading the avionics flight software and adding several new radar targeting modes. This additional capability improves reliability and maintainability as well as provides weapons flexibility.

The modifications allowed a Global Power Combined Test Force Crew at Edwards AFB, Calif., to achieve three Air Force "firsts." On May 2, a B-1 CTF crew successfully targeted and released three different "unguided" weapons on a single 20-second bomb run. This was followed by sorties releasing three different versions of the Wind Corrected Munitions Dispenser — an inertially-guided family of cluster bombs — in a single pass on June 6 and a mixed load of two guided weapons and one unguided weapon on June 10.

The final test sortie culminated the program by flying an operational-type sortie, which included defensive work at the China Lake Echo range and releasing three different weapon types — Joint Direct Attack Munitions, WCMD CBU-103, and MK-82 — on a Petroleum Oil and Lubricant-type complex at the Utah Test and Training Range.

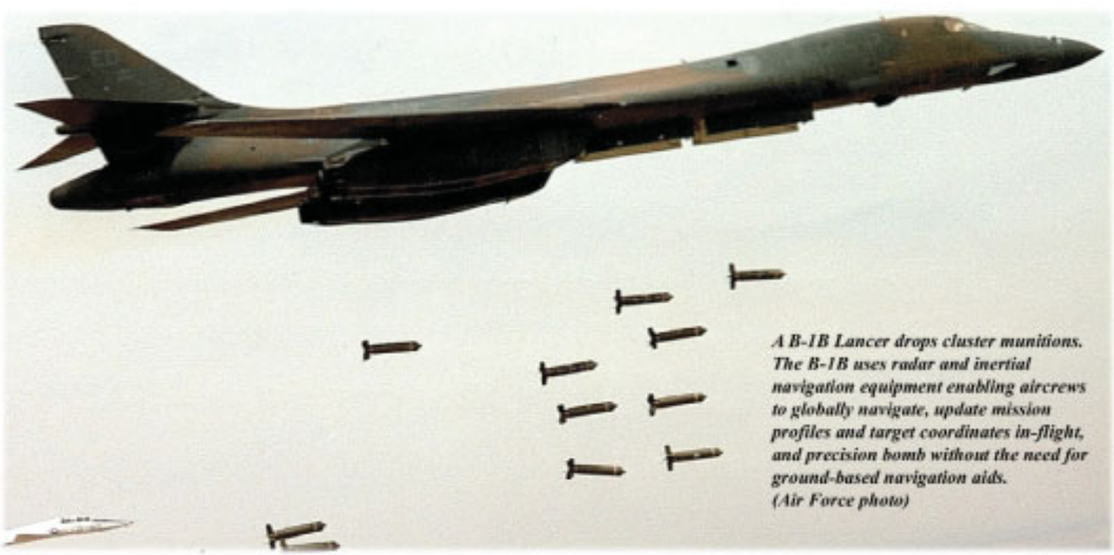
"The earlier non-precision weapons flexibility test allowed employment of multiple weapon types against three, separated targets, but the aircraft was still required to fly over each of those targets," said Lt. Col. Arnie Bunch, Global Power Bomber Combined Test Force director, "and each weapon type was limited to a relatively small target area.

With guided weapons, however, the crew was able to release the weapons 'off-axis,'" Col. Bunch added, "and the weapons were able to spread out and strike a larger number of targets over a wider area."

"The next step in the Block E program is to continue with dedicated initial operational test and evaluation, which is scheduled to begin September 2002," said Col. Neff.

Future tests, in the summer of 2003, will begin to integrate the Joint Standoff Weapon and Joint Air-to-Surface Standoff Missile, which will give the B-1 precision standoff capability.

— 2nd Lt. Tracy Bunko and Ms. Sue Baker, ASC Public Affairs



A B-1B Lancer drops cluster munitions. The B-1B uses radar and inertial navigation equipment enabling aircrews to globally navigate, update mission profiles and target coordinates in-flight, and precision bomb without the need for ground-based navigation aids. (Air Force photo)

Air Force has 'ACE in the hole' for changing program acquisition

Secretary of the Air Force James Roche recently challenged the Air Force acquisition program to increase the speed in which products are delivered to the warfighter.

Headquarters Air Force Materiel Command established its Acquisition Centers of Excellence, or ACE, in February 2002, placing them in the field at the product, logistic and test centers and more recently in the laboratories.

"The ACE offices were established to change the way we do acquisition and sustainment," said Col. Robert Lyons Jr., AFMC deputy director of the Acquisition Center of Excellence.

A new approach

ACE provides a multi-disciplinary approach to acquisition and sustainment by using senior leaders in the fields of program management, contracting, logistics, testing, engineering, finance and law to help acquisition teams in the field streamline the process of procurement to make it faster, cheaper and better quality, said Col. Lyons.

Senior leaders from the SAF, AFMC and field ACEs will help programs with source selection, risk management and analysis, among other essential processes of acquisition, to find the best possible solution to issues throughout the entire lifecycle of a program, he said.

This new approach to acquisition involves the development of partnerships with industry and the government working together to provide goods and services to the warfighter.

"The goal of ACE is to get products to the warfighter four times faster than the normal procurement process takes," he said.

Radical changes

Starting at the SAF level to the field, ACEs are prepared to radically change the way the Air Force does acquisition. "The idea is to start with a clean sheet of paper as much as we can to try out new initiatives. One such initiative is called 'collaborative requirements development' which coordinates acquisition and sustainment processes with the warfighter," Col. Lyons said.

"We also plan to try innovative approaches to inserting science and technology to keep weapon systems concepts and acquisitions more current with new technology," he said.

"Another initiative the ACE works with is called seamless verification, where the development and testing community which tests product performance to specifications, and the operational community which test the operation of a product in a warfighting condition, can do their work more closely as opposed to working in a serial fashion," said Col. Lyons.

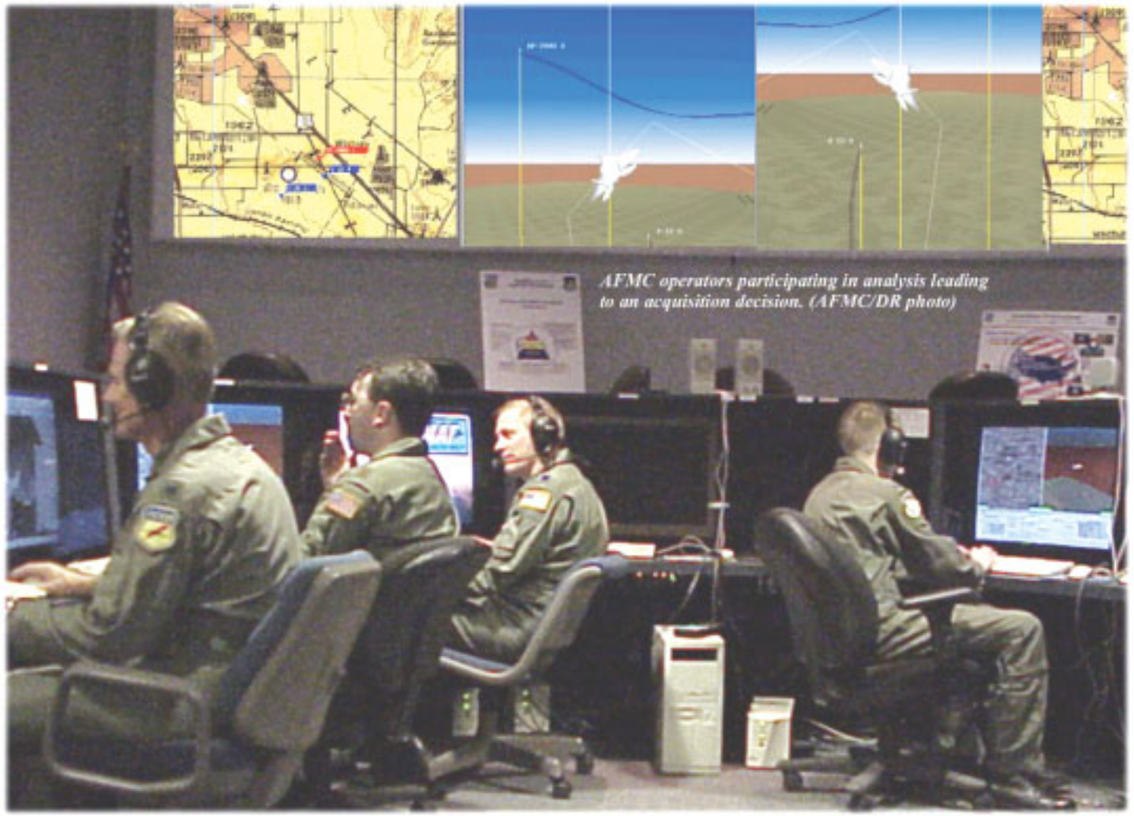
"The job is to reduce the time it takes to get a product to the warfighter," he said.

"ACE is about helping the programs in all phases of the lifecycle by getting stuff to the warfighter faster, better and cheaper. We are here to help and we're from the government," Col. Lyons said.

"Our job is to make the acquisition job in the field easier and better by providing senior leader support to the acquisition and sustainment processes," he said.

— 2nd Lt. Gailyn Whitman, AFMC Public Affairs

The ICBM System Program Office at Hill AFB, Utah, develops, acquires and supports silo-based ICBMs and provides program direction and logistics support for the lifecycle of the program as the single face to the customer. (Air Force photo)



AFMC operators participating in analysis leading to an acquisition decision. (AFMC/DR photo)

New Tools enable agile acquisition

Using modeling, simulation and analysis tools to expedite new capabilities

Air Force Materiel Command is capitalizing on a full range of new tools enabling agile acquisition. New modeling, simulation and analysis tools and promising collaborative technologies are supporting business and systems engineering processes across the acquisition life cycle, thereby expediting the delivery of new warfighting capabilities.

Agile acquisition is the objective — enabling Air Force installations and industry to cooperate on a new scale and fielding technologies in one-quarter of the time it has traditionally taken.

Improving processes

"AFMC is integrating policies, people, processes and tools to deliver better weapon systems, faster, with greater confidence and at less cost to the taxpayer," said Col. Tom Di Nino, chief of AFMC Modernization Planning Division.

Examples of past and current successes illustrate the value of these. Using modeling and simulation with repeated collaborative requirements definition effort, the team that integrated the Hellfire missile onto the Predator platform completed that task in three months instead of the traditional nine months for similar tasks.

The flight test originally programmed at 75 hours was reduced to 50 hours. Additionally, the overall cost of the effort was reduced by approximately 12 percent.

"We can do better analysis earlier in the acquisition chain," said Col. Thurmon Deloney II, deputy for the Modeling and Simulation and Analysis Facility, Wright-Patterson Air Force Base, Ohio. "We can also study alternatives in earlier phases of deployment which may determine which path to take during development and can affect design decisions."

In another example, the F-22 program realized significant cost savings in their live fire test effort by using modeling and simulation to perform smarter tests — that is, performing the correct tests the first time, according to Col. Deloney.

The Joint Strike Fighter program used several virtual strike warfare events — underpinned by a wide suite of models and simulations — to progressively get closer to the requirements for the fighter. Additionally, distributed simulations demonstrated the value of concepts like the virtual test range — especially important in critical system-of-systems testing where test range support is at a premium.

Integrating government and industry collaborative processes and tools empowers acquisition team members to work from a common knowledge base, in near real time and from distributed locations.

Difficult tasks

"As downsizing trends continue in both government and industry, organizations increasingly require more effective collaboration and knowledge sharing for personnel across multiple application domains to solve complex problems and accomplish difficult tasks," said Mr. Bill McQuay, technical advisor of collaborative simulation technology and applications branch at the Air Force Research Laboratory.

"Collaborative communications, such as chat, instant messaging, desktop conferencing, forums and threaded discussion groups can provide a partial impetus for cultural changes enabling the flow of tacit knowledge among an organization's personnel, and it is critical for management to encourage such interchange as part of the workforce culture at all levels," he said.

By improving the online visibility of acquisition management and engineering information, programs have accelerated the acquisition process, reduced costs and provided better products to the warfighter. In addition, reusing validated, or pedigree, data can halve the time and cost associated with analyzing concept and technology options, according to Mr. McQuay.

Also, there have been successes in using collaborative enterprise technology together with modeling, simulation and analysis to conduct analyses of alternatives.

Historically, these analyses have taken approximately two years to conduct at an average cost of approximately $3 million.

> ***"AFMC is integrating policies, people, processes and tools to deliver better weapon systems, faster, with greater confidence and at less cost to the taxpayer."***
>
> **Col. Tom Di Nino, AFMC Modernization Planning**

Recent results show that these tools allow many of these analyses to be conducted in as little as six months time and at one-third the cost.

Working together

Through their joint development of new tools and integration of existing tools, AFRL and the Aeronautical Systems Center at Wright-Patterson have been leading organizations in identifying complementary technology investments that address the full range of Air Force task force capabilities.

Some of the more visible applications include AFRL's use of tools to identify a range of aerodynamic, propulsion, structural material, sensor and information technologies for the SensorCraft concept, and ASC's use of modeling and simulation tools to perform an analysis of component alternatives for the Joint Strike Fighter Program.

Likewise, AFMC's test and logistics centers are finding ways to bring these tools to bear to allow them to complete their missions more effectively and efficiently. These collaboration and analysis tools have been applied to a wide range of concepts spanning AFMC and the four Air Force enterprises.

The Aeronautical Enterprise has focused these tools on initiatives like the Unmanned Combat Air Vehicle and the Long Range Strike Capability, as well as on new special operations and air mobility concepts.

Additionally, the Aeronautical Enterprise is using a mix of these tools to perform a baseline assessment, and to frame investment recommendations, for the Air Force's Global Strike Task Force.

The Command and Control Enterprise has used these tools to pursue the new Aerospace Operations Center of the future, the AFMC-wide Multi Mission Command and Control capability study, the Air Force-wide Joint Synthetic Battlespace and the Joint Distributed Engineering Plant.

The Air Armament Enterprise has applied these tools on a wide variety of concepts to include the Small Diameter Bomb and the Common Aerospace Vehicle.

The Space and Missile Enterprise uses a full range of these tools in numerous evaluations, to include concepts like the space-based laser and the space-based radar.

Timing is everything

"Time is paramount to success in agile acquisition," said Col. Di Nino. "We must get products to the user much faster — our goal is to reduce delivery times by 75 percent.

"Use of digital simulations drove a 50 percent reduction in Joint Strike Fighter assembly time," he said. "And that's just one process. Savings of that magnitude across numerous processes will drive agile acquisition. In addition, these tools leverage the expertise of today's highly skilled workforce into the future."

Success has bred success — with AFMC and industry personnel discovering innovations using collaborative enterprise technology and modeling, simulation and analysis tools. This increased technical capability, in combination with today's increasing fiscal constraints, means the value of these new tools and processes will continue to expand.

These innovations are a testimony to AFMC's ingenuity and commitment to agile acquisition.

— Ms. Sarah Anne Carter, AFMC Public Affairs

The new RQ-4A Global Hawk unmanned aerial vehicle is designed to provide battlefield commanders with near real-time, high-resolution, reconnaissance imagery. Flying at extremely high altitudes, Global Hawk can survey large geographic areas giving military decision-makers the most current information. (Air Force photo)

Forging new paths in acquisition

One of the primary challenges of agile acquisition is to reduce development time for new systems by 75 percent. The Pathfinder initiative promises to be the principle way to make that happen according to Col. Robert Lyons of AFMC's Agile Acquisition Office.

Individual program managers are being given the flexibility to devise plans unique to their own acquisition program, rather than being locked into a set of guidelines for the effort. That's why this effort is called "pathfinders" rather than the more regimented "pilot programs."

Assistant Secretary of the Air Force for Acquisition Dr. Marvin Sambur has selected five of the Air Force's highest priority modernization programs to be pathfinders. Those programs are: B-2 Radar, Global Hawk, Space-Based Radar, Unmanned Combat Air Vehicle and Small Diameter Bomb. Several other programs may also become pathfinders in the future, Col. Lyons said.

Pathfinder programs will test several initiatives intended to improve the acquisition process, according to Col. Lyons. The first of these involves technology transition. The goal is to more closely link research efforts in Air Force laboratories to the capabilities desired by warfighters. The labs will bring unique ideas to the warfighters while the warfighters will communicate their needs to the labs. This closer linkage will assure an understanding of the current state of critical technologies in new acquisition efforts. It will also help direct the efforts of the labs to the need of the warfighters to meet evolving threats. This will allow the right technologies to be matured in the lab quickly and transitioned into existing acquisition programs.

A second initiative will change the way requirements for new weapon systems are developed. The collaborative requirements process will bring together users, developers, testers, logisticians, trainers and others with a stake in the system development to draft the requirements for new systems. The emphasis is now on the capabilities that are needed rather than the traditional list of specifications for a new system.

The Interim Requirements Document, drafted early in a program, establishes the broad capabilities and needs of the new weapon system and provides an estimated timeline for development, Col. Lyons said. Other documentation and plans for the program are based on this foundational document.

New programs will employ spiral development where the program is broken into small development spirals of two to three years, guided by the long-term vision in the IRD. The first spiral will probably not provide what the user wants for an end capability, but will get some capability into the field much more quickly than the traditional process.

The following spirals will increase the capability of the system while incorporating lessons learned from deployment of the early spirals. Warfighters will get new equipment every few years rather than having to wait extended periods for a leap in technology. The greater flexibility of spiral development also allows for changes in the program as new technologies mature and operational priorities change.

The third initiative will change the way systems are tested and their performance verified, Col. Lyons said. Seamless verification will bring the warfighter, the tester, the budget expert and the scientist all together and keep them together throughout the life of the program. This major change in the mindset of the entire acquisition team will provide early and continuous operational tester involvement in the program. The scope of the test program will be determined early in the development of the system. Testing will be synchronized with the spirals of development. Operational testing must remain independent, but continuous feedback from the user is a great advantage inherent in seamless verification.

It will take several years to fully evaluate the success of the pathfinder effort, but as the spiral development proceeds, the Air Force will learn lessons. Mr. Terry Little, director of the Air Force Acquisition Center of Excellence at the Pentagon, said he expects to see early results in as little as six to 12 months.

— Mr. Dave Levingston, AFMC Public Affairs

Brooks dealt 'ACE' in acquisition game plan

Part of Air Force Secretary James Roche's game plan for greatly enhanced warfighter support in the post-9/11 era has taken shape with the establishment of the Air Force Acquisition Center of Excellence, or ACE, at Brooks Air Force Base, Texas.

The 311th Human Systems Wing, Brooks Air Force Base, Texas, mission is to improve combat power and efficiency in human performance, protection and support through many facets such as ACE, recently established at Brooks. (Courtesy Photo)

A revolutionary idea

Earlier this year, the 311th Human Systems Wing's ACE was officially created as a separate organization committed to revolutionizing Air Force acquisition. Directly reporting to 311th HSW Deputy Director Dr. Brendan Godfrey, ACE replaces the contracting directorate's acquisition support team.

"Dr. Marvin Sambur, Assistant Secretary of the Air Force for Acquisition, came up with the idea for ACE," said ACE facilitator Mr. Dean Carsello. Dr. Sambur's initiative to establish ACEs at Air Force product and logistics centers supports one of Mr. Roche's goals to improve Air Force acquisition efforts aimed at fulfilling wide-ranging customer requirements through contracts that provide the goods and services needed to meet national defense objectives.

A new attitude

"The old mindset was 'this is the way it's always been done.' The ACE mindset is 'everything is subject to improvement and change,'" said ACE facilitator Mr. Mike Mullen, referring to the cultural shift within the acquisition community called Agile Acquisition.

This new, flexible and streamlined approach to analyzing business practices and identifying and mitigating problems affecting the acquisition process is the core of the new organization's mission, said Ms. Carol Machacek, ACE facilitator. She said the ultimate goal is to provide customers with faster, more efficient delivery of products and services that will enhance warfighter capability.

Toward excellence

Mr. Carsello said the creation of ACE represents a milestone in Air Force acquisition history, noting that its evolution has moved beyond acquisition reform to acquisition excellence.

"We'll be focusing on results rather than blind adherence to policies and procedures," Mr. Carsello noted. The results-oriented ACE staff, headed by interim director Ms. Lorraine Massie, has already built a foundation for success. During the past year, they have supported 22 acquisitions at Brooks representing about $2.3 billion. The current eight-member staff supports all Brooks organizations.

For information on acquisition excellence initiatives search the SAF Web page at http://www.safaq.hq.af.mil.

— Mr. Rudy Purificato, 311th HSW Public Affairs

AFRL: Keeping pace with accelerating technology

From virtual reality to laser-propelled space vehicles, the Air Force Research Laboratory strives to lead the discovery, development, demonstration and delivery of technologies that will keep the Air Force the best in the world. AFRL continues to implement processes to assure warfighters maintain their position of indisputable worldwide preeminence.

AFRL recently adopted a new program management process called transformation management for accelerated technology transition, or TMATT, to keep pace with the accelerating technology cycle and create collaborative environments where AFRL works closely with their customers.

An example of this is when a systems program office is tasked to provide technology to the warfighter in a timely fashion. This adaptation of sound program management practices improves the value and timeliness of technology research and development products by relying on sound systems engineering and quantitative metrics.

The Air Force Research Laboratory is using transformation management for accelerated technology transistion as a new process to implement agile acquisition. One technology this process is being used with is the next generation transparency, shown above. (AFRL photos)

Being proactive

As agile acquisition evolves, AFRL intends to respond in a proactive fashion. Insertion of technology will not be in pre-canned blocks but will evolve from lessons learned along the way, defining future needs. TMATT fosters communication and teaming to ensure that technical programs are flexible and able to readily change, and that they respond to evolving user needs.

This program brings all the stakeholders together to agree on technology transition options based on demonstrated best value. In addition, it establishes transition expectations including performance, schedule and cost, ensuring rapid transition of a usable capability to the warfighter. The end result is a realistic technology development and transition process.

It's about customer service

"This process drives AFRL closer to the science and technology customer, and sensitizes program managers to transition issues, and to cost and risk drivers earlier in the development process," said Mr. Gary Waggoner, TMATT director. "These methods are proven in industry and now have been tailored, and are being used in AFRL to make technology more affordable, to achieve a more effective technology transition process and to enhance the relevance of S&T to its customers." TMATT emphasizes customer involvement from the beginning of a program by forming integrated product teams to define requirements that will guide the research and development of technology.

Weighing benefits

Thresholds and objectives are established for each step of the research and development process, and processes measured regularly against the desired outcome. The user and the technologist are able to weigh the benefits of current capabilities against other alternatives and outline key transition elements. All of the technology alternatives that could lead to successfully achieving a desired capability are explored. The team analyzes each alternative quantitatively to determine the technologies that provide the best value and are worth pursuing further.

Program support

The next generation transparency, or NGT, program is an example of using TMATT principles to develop affordable, performance-enhanced canopy assemblies. Currently, manufacturing an F-16 canopy involves 30 separate processes, specialized equipment and extensive assembly. The program uses new processes, including direct injection of plastic resin at low pressure into molds to create improved windshield or canopy assemblies for next generation Air Force aircraft.

The NGT affordability pilot program embraced many of the same principles as today's TMATT initiative. These principles have helped guide the decisions required to reach the objectives of the NGT program. From its beginning, the NGT program has focused on demonstrating the successful integration of technologies that meet customer needs, and satisfy emerging mission requirements for next generation systems.

A windshield-sized next generation transparency test article is injection molded to demonstrate the ability to produce pristine optics. These parts exceeded F-16 and F-22 requirements for optical distortion by a large margin, as much as three times better according to AFRL officials.

It takes teamwork

From the onset, NGT had multiple potential customers. As one of the first affordability pilots, the program teamed with industry stakeholders, including equipment and process suppliers and molders, Air Force centers and major commands, and the Navy Aviation Supply Offices. As a result, the NGT program aligned its exit criteria with multiple customer needs, and developed formal, "living" technology development and transition plans.

"The NGT program demonstrated the ability to revolutionize the way in which aircraft windshield and canopy assemblies are manufactured and provide the Air Force with significant cost savings," said Mr. Bob McCarty, NGT program manager. "It was crucial to have all of the stakeholders providing input, outlining their needs, and taking each of the steps through technology development and maturation with AFRL."

As program requirements for each system evolved, the NGT teams carefully analyzed technology and design alternatives, while managing risks associated with system supportability, producibility, cost and schedule.

In keeping with affordability principles, the NGT program maintained two-way communication with all its stakeholders. As program requirements changed and lessons learned, the program transformed its objectives to meet new challenges.

Transitioning with technology

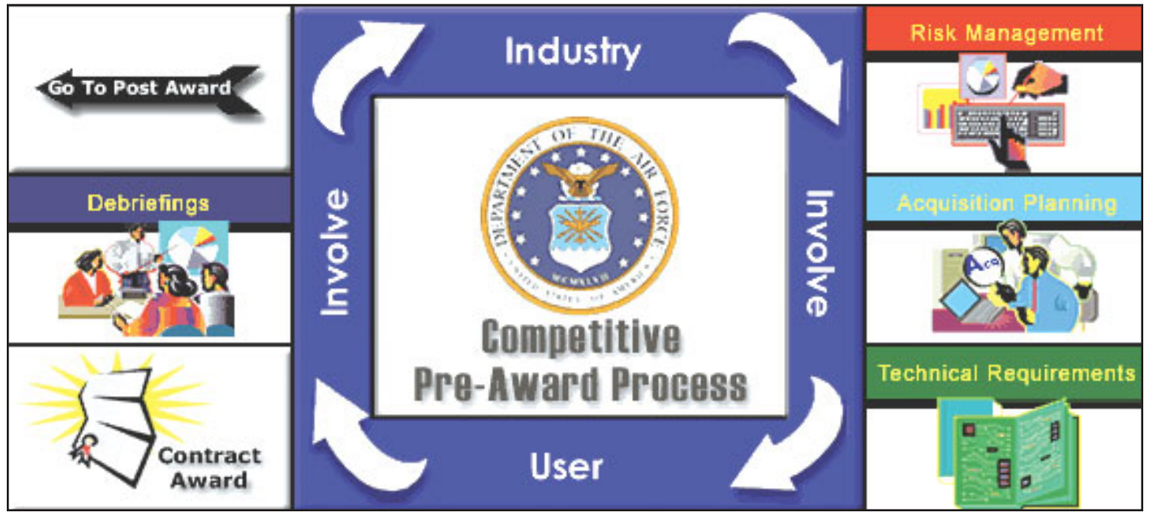
In fact, as the likelihood of transitioning to one aircraft platform diminished, the program quickly shifted its technology emphasis to meet the needs of a different system, which had been a member of the team from the beginning. As a result, the technology is in line for transition to a number of acquisition programs.

TMATT principles applied to the NGT program are responding to changing customer requirements and increasing the likelihood of transitioning a technology. AFRL's TMATT initiative will balance requirements, technology options and risk on the road to successfully delivering valuable, affordable and sustainable capabilities to the hands of the Air Force warfighter.

— Mr. Timothy Anderl and Ms. Elizabeth Ristich, AFRL Materials and Manufacturing Directorate Public Affairs

Agile acquisition continually searching for 'best practices'

Finding 'best' way to train, negotiate, keep to schedule



Web-based gameboards provide centralized database

It may not be as exciting as playing one of the new electronic entertainment games, but the Air Force Acquisition Center of Excellence community has developed interactive, Web-based gameboards to help them be more effective throughout all acquisition processes.

"The purpose of the gameboard is to provide a single tool to use for both training and reference material," said Mr. Dan Fulmer, procurement analyst for the ACE at Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. Mr. Fulmer was on the team that designed the gameboard.

A user-friendly system

The gameboards walk program teams through the competitive and non-competitive pre-award processes where requests for proposal are developed, source selections are conducted and proposals are built in an integrated product team environment. Processes, references, training, tools, best practices, lessons learned and other focused information are provided through the tool.

"It's very user friendly," Mr. Fulmer said. "If you want to know about the basic process of acquisition, it enables you to find that information without getting engrossed in all the details. However, this same tool allows professionals to dig down several layers and find the details."

Avoiding duplication of effort

In the fall of 2001, Acquisition Centers of Excellence were established across the Air Force. A typical ACE is comprised of personnel from all the acquisition disciplines. Its mission is to provide process and planning expertise to program offices at all stages of the acquisition process, searching out and institutionalizing most innovative practices and approaches throughout the Air Force. Their task is to improve acquisition and sustainment processes through the use of new tools, policies and initiatives.

In an effort to minimize duplication of effort and to capitalize on commonalties among the Centers of Excellence, the ACE at Air Force Materiel Command recommended that a database be established to centrally locate all relevant information. This led to fabrication of a common Air Force gameboard.

Providing consistency

"This tool allows people to have a consistent reference database as they move from location to location," Mr. Fulmer said.

Capitalizing on a concept developed by the Ogden Air Logistics Center Acquisition Support Team, Hill AFB, Utah, AFMC Product, Logistics and Test Center Acquisition Center of Excellence personnel developed a common process description for the competitive and non-competitive pre-award acquisition process. The associated sub-processes were defined for each of these acquisition procedures.

One of the most promising applications of the gameboard is in the area of disseminating lessons learned and best practices. Since the boards link the entire network of Acquisition Centers of Excellence, the tool lends itself to the sharing of ideas across AFMC Centers.

— Maj. Al Helm, AFMC Acquisition Center of Excellence

Alternative Dispute Resolution method resolves conflicts faster

In a perfect world every contract awarded by the Air Force would be performed timely and efficiently, the contractor would be paid the agreed-upon price and there would be no differences of opinion. However, in the real world, contract disputes are commonplace, and are expensive in terms of manpower, time and money, and quick resolution is of paramount importance.

"We need to make sure we avoid wasting time and resources on useless posturing," said Col. Al Perdue, Air Force chief trial attorney. "We're trying to tailor the processes to the case."

A plan with results

With that in mind, and in an effort to avoid lengthy litigation, the Air Force adopted an "Alternative Dispute Resolution First" policy in late 1999, and it has proved an unqualified success. Results have been so impressive that the Office of Federal Procurement Policy presented the Air Force with the 2002 Award for the Federal Government's Outstanding New ADR Program in May.

ADR has developed into an integral part of the Air Force's agile acquisition philosophy. Acquisition personnel need to remain focused on providing goods and services as expeditiously as possible. Avoiding disputes and quickly resolving those that do arise furthers this goal.

"We're allowing program managers and contract managers to be more focused on acquisition, rather than spend time dealing with contract disputes," Col. Perdue said.

The statistics compiled by the Directorate of Contract Dispute Resolution for fiscal years 2000 and 2001 reflect a striking comparison between case resolution using ADR and those cases that were fully litigated at the Armed Services Board of Contract Appeals. For cases closed in those two fiscal years, an average of approximately 22 months elapsed between docketing and trial, with another 14 months waiting for a decision. It took only 18 months to resolve cases through ADR. The resolution rate has far exceeded 90 percent.

Highly-used program

Many contractors have embraced the concept of ADR and the number of Air Force cases resolved through ADR has increased steadily since the start of the new policy. Whereas in 1998 only six cases were resolved using ADR, there were 36 in 2000 and 50 in 2001. At the same time, the number of litigated cases has sharply declined; in 1998, 34 cases resulted in trial, there were 12 in 2000 and only two in 2001.

The quick resolution of issues in controversy translates not only into less disruption to the program, but into dollars saved. While it is impossible to determine the monetary savings with fidelity, it is conservatively estimated that in fiscal year 2000 about $1.2 million was saved in cost of time and $148,000 in interest. For fiscal year 2001, the approximate savings were $1.6 million in cost of time and $255,000 in interest.

Avoiding conflicts

ADR has primarily been used when traditional negotiations have reached an impasse. That is the point at which formal claims are typically submitted and the interest clock begins to run. Over the last two years, however, there has been an effort to involve Air Force trial attorneys directly in the negotiations and to use ADR even before a claim is submitted — "Early Involvement." In light of these perceived benefits, the Air Force is now working on a plan to institute joint government-industry training in early issue identification and resolution.

— Mr. John M. Taffany, AFMC Acquisition Center of Excellence

Brooks sticking to its schedule

The Acquisition Center of Excellence at Brooks Air Force Base, Texas, found a consistent problem — the inability to manage the effort of sticking to a schedule in meeting milestones. In too many instances, acquisition schedules are nothing more than a way of documenting slippages.

"Just putting together a schedule doesn't guarantee you'll meet it," said Mr. Mike Mullen, 311th Human Systems Wing Acquisition Center of Excellence acquisition facilitator.

The Brooks ACE has responded by developing "Acquisition Schedule Management," and successfully applied it on several acquisitions over the past year, as well as training acquisition personnel across the Brooks community on the process. "Every acquisition that has used this process completely has met every pre-award milestone on schedule, and a few have even met it ahead of schedule," Mr. Mullen said.

This process first establishes a realistic schedule and then provides the acquisition team an ability to manage acquisition tasks to meet the scheduled milestones. "When you have everyone on your team working on the schedule, you add realism to the process," Mr. Mullen said.

Scheduling is critical to successful program execution. Consequences of failing to meet milestones can include funding expiring before the end of the fiscal year, funding being pulled back due to failure to obligate in time or customers looking elsewhere if the acquiring organization cannot provide support in a timely manner. However, the most serious consequence of all is failure to get capability in the warfighter's hands as fast as possible.

— Ms. Sarah Anne Carter, AFMC Public Affairs

AMARC improves requisition process

The No. 1 job at the Aerospace Maintenance and Regeneration Center at Davis-Monthan Air Force Base, Ariz., is to support the warfighter. Employees are constantly looking for ways to enhance processes, to "work smarter, not harder" and respond as quickly as possible to the customers' needs. One way they do this is by streamlining the process for submitting requests for materiel stored at AMARC.

Requests come in via a special form, according to Ms. Judy Ouillette, a management analyst for the center. "Previously, people submitted the forms by fax or hand-carried them, and both methods created a variety of problems. They were always getting 'lost' and it was difficult to verify the signatures on faxes.

"Moving the forms through the various offices that needed to coordinate on their approval was time-consuming, and it was nearly impossible to track their progress," she said. "All this left everyone involved in the process frustrated. In April 2001, the AMARC commander and the center director tasked me to look at how the process could be improved," she said.

A team effort

Ms. Ouillette put together a "Tiger Team" made up of AMARC planners, reclamation controllers, communications experts, the webmaster and others who were involved in the requisition process. "We were all familiar with the roadblocks and bottlenecks in the old way of doing business. We decided the best way to streamline the process would be to use modern technology and go online," she said.

She worked with the AMARC web developer, Mr. Jayme Jenkins, to design an electronic version of the form and a user-friendly Web page that allowed customers to submit requests directly to the reclamation controllers.

"He's a genius. He made the page password protected so only authorized users could access it, and all the inputs on the requests are time and date stamped. That lets us verify, not only when the requests come in, but also who has provided inputs on them and where they are in the approval process."

Transitioning

For the first three months, officials accepted requests from both old and new sources. Now, however, all requesters must use the online format. "There are exceptions, for example, if the Internet goes down," Ms. Ouillette said, "but we are working almost entirely from the online Web page now."

Another benefit from going high-tech is that requests are now more complete and accurate, she added. Previously, many forms were faxed in with vital data omitted, requiring employees to expend man-hours tracking the missing information. "Now, anyone who incorrectly completes any section of the form is automatically sent back to the problem area and prompted on how to correct the error," she said. "The system simply won't accept the forms until they include all the necessary information."

Improving customer service

The new method is receiving kudos from the customers. Ms. Donna Dodd, the KC-135 system management specialist at Tinker AFB, Okla., said she thinks the new system is great.

Top: Mr. Dennis Hess, aircraft worker, removes the trailing edge flap from a Navy F/A-18A. AMARC recently upgraded its requisition process to facilitate getting parts to the warfighters who need them. Bottom: Ms. Judy Ouillette, a management analyst for AMARC, talks a customer through the process of the verifying the status of a requisition on the center's new online system. (Air Force Photo by Tech. Sgt. Rian Clawson, AMARC Public Affairs)

"Before, we had no way to verify where our requests were in the system. We faxed them in, and then waited for a response. If we didn't hear back and called to find out when we might expect a response, we couldn't get an answer. Now, we track the progress of our request all the way through the process."

Better tracking system

With the new system, responses are sometime cut to hours, as opposed to weeks under the old system, and after hitting the "enter" key, customers can track their orders. "Both internal and external users can see exactly where the request is in the system, where it's been and where it still needs to go," said Ms. Ouillette.

However, as good as the system is, the process owners are continuing to make improvements, she said. "We're approaching Phase II of the process," she concluded, "and we'll be continuing to fine-tune and upgrade it, and gather customer feedback so we can give them what they need to get the job done."

— Tech. Sgt. Rian Clawson, AMARC Public Affairs

CV-22 'suspended' for countermeasures testing

EDWARDS AIR FORCE BASE, Calif. — The CV-22, the U.S. Air Force variant of the V-22 Osprey, began testing its electronic countermeasures in the Benefield Anechoic Facility here July 2. The aircraft will spend about three months suspended from the ceiling of the facility while the CV-22 Integrated Test Team checks out the electronic countermeasures package, called the suite of integrated radio frequency countermeasures. The aircraft in the BAF, called Ship 9, is one of two Ospreys at Edwards.

— Information provided by AFFTC Public Affairs

Air Force and industry sign development agreement

KIRTLAND AIR FORCE BASE, N.M. — Exploring the feasibility of using high-energy lasers on fighter aircraft is the aim of an agreement recently signed between the Air Force Research Laboratory here and Lockheed Martin of Fort Worth, Texas.

Under a cooperative research and development agreement, the laboratory's directed energy directorate and Lockheed Martin's Aeronautics Company will pool their resources. The Air Force laboratory will contribute its expertise in high-energy lasers, laser beam-control technology and laser vulnerability data.

Lockheed Martin will use the Air Force's information and examine the integration and optimum performance of high-energy lasers and beam-control technology on various fighter aircraft such as the F-15, F-16, F-22 and F-35 Joint Strike Fighter. The company will assess the military value and potential of lasers on tactical platforms and evaluate related aero-optic issues. Both organizations are expected to benefit from the cooperative effort and information transfer.

— Information provided by AFRL Public Affairs

Base support key to flight anniversary celebration

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — As the birthplace, home and future of Aerospace, Wright-Patterson will be a key location as the Air Force celebrates the 100th anniversary of powered flight next year.

Air Power 2003, the pinnacle base event in May 2003, will invite the public to view many Air Force aircraft that will be on display here.

Many base organizations will add their touch to the celebration. The ASC History Office is producing several publications to include a revised and expanded two-volume update to the previous "From Huffman Prairie to the Moon." The Educational Outreach office will visit local schools with specially tailored programs.

Air Force Research Laboratory will be sponsoring the "Century of Flight Award," with cash awards and a trip to Dayton for five students with outstanding science fair projects in aerospace research from across the nation.

Many organizations on base will contribute something to the commemoration. The U.S. Air Force Museum will be the site of a RE/MAX Balloon Celebration, a blimp event and the Dawn Patrol Rendezvous World War I Fly-In, among many other events. In addition, the base is partnering with the community for several events. Support from Wright-Patterson will be provided to the Dayton Air Show, and several U.S. Air Force Museum events are partnered with Inventing Flight, a local organization dedicated to celebrating the region's rich aviation heritage. Huffman Prairie Flying Field, a unit of Dayton Aviation Heritage National Historical Park, will be one of several sites for a Living Heritage festival in July 2003.

— Information provided by ASC Public Affairs

Renewable earth-friendly fuel makes Tinker debut

TINKER AIR FORCE BASE, Okla. — From the frying pan to the fuel tank, a new fuel is making it possible to gas up Tinker's diesel vehicles in a more earth-friendly way. A domestically produced, renewable fuel that can be manufactured from vegetable oils or recycled restaurant grease was recently delivered to the base fire department.

Base officials plan to use approximately 50,000 gallons of biodiesel fuel, or "B20," per year in all diesel vehicles on base, including the installation fire engines. The cleaner burning, biodegradable fuel reduces emissions of some of the major contributors to air pollution such as sulfur dioxide and sulfates.

Tinker is the first Air Force Materiel Command base to use boidiesel fuel. The National Biodiesel Board study results show that biodiesel reduces cancer-causing air toxics by 75 to 90 percent when compared to its petrodiesel cousin.

— Information provided by OC-ALC Public Affairs

Kirtland transportation gets new deployable loader

KIRTLAND AIR FORCE BASE, N.M. — The 377th Transportation Squadron recently gained a Halverson "Next Generation" K-Loader, a 25,000-pound loader that can load wide- or small-bodied aircraft here or can be taken elsewhere to aid in loading for non-peacetime use like Enduring Freedom or Desert Shield.

The new loader can be more quickly prepared — in 30 minutes — to be put on an aircraft for shipping. It has a longer service period and needs maintenance servicing after as many as 400 hours. The new loader is a joint-use asset that will be used on a daily basis for readiness unless needed for wartime deployment.

— Information provided by 377th ABW Public Affairs

Process saves time, money on AWACS repairs

Hill Air Force Base, Utah, engineers recently developed a process to repair rather than replace E-3A Sentry aircraft fan housings that saves the Air Force more than $2,000 each and cuts turnaround time from months to days.

The housing covers the aircraft's cooling fan for the electronics in the radome, the familiar rotating dome mounted on the top of E-3A. The AWACS aircraft provides all-weather surveillance, command, control and communications that U.S., NATO and other allied air defense forces commanders need.

Time is money

The new process cuts costs by 85 percent and returns the part to the supply chain 97 percent faster than before, said Mr. Ron Smith, who along with Mr. Richard Griffin oversees the process.

"Replacement fan housings cost $2,800 and have an eight-to-nine-month lead-time," Mr. Smith said. "With this new process we can repair them for around $400, and get them out the door in a week."

The money-saving process was prompted by a growing inventory of damaged E-3A fan housings that were to be condemned.

"The fan housings are expensive, and also have an eight-to-nine-month lead time for purchase," Mr. Smith said.

The main problem, according to Mr. Smith, is the lid-mounting surface of the fan housing often falls below operational standards. To avoid the housings being condemned, the team planned to sandblast the mounting surface, then flame spray it, a process where a metal wire or rod is heated and sprayed onto another metal surface.

"The flame spray process builds up the lid mounting surface," Mr. Griffin said. "It can then be ground back down to exact specifications and extremely tight tolerances."

Worker buy-in

To get the process started, engineering team members first approached workers in the rubber shop who made custom rubber plugs to protect the fan housing while the lid-mounting surface was sandblasted and flame spayed. Next, workers in the center's commodities directorate process engineering branch identified the proper metal wire to be used in the flame spray procedure and carried out the process.

"Grinding the surface back down to tolerances proved to be quite an obstacle," Mr. Griffin said. "During the grinding procedure, the unique nature of the lid surface made it impossible to measure using current tools."

Faced with finding and purchasing an expensive measuring device, the team brainstormed with landing gear division workers to find a better way.

Practical reuse

Together they developed a reusable metal disk that allows them to measure the lid-mounting surface during the grinding process — a simple solution to a potentially expensive problem.

— Mr. Mark Oleson, OO-ALC Public Affairs

Mr. Ralph Ramos flame sprays an E-3A fan housing to build up the lid mounting surface. The new process cuts costs by 85 percent and returns the part to the supply chain 97 percent faster than before. (Photo by Mr. Mark Oleson, OO-ALC Public Affairs)

The Air Force Raptor 4004 shown here at its summer home, the McKinley Climatic Laboratory at Eglin Air Force Base, Fla. The F-22 will remain inside the laboratory through mid-August for a series of weather tests designed to forecast how it will stand up to the elements. (Photo by Mr. Kevin Robertson, AFFTC)

F-22 faces off with elements

The Raptor is taking on a new enemy at Eglin Air Force Base, Fla., this summer — Mother Nature.

Raptor 4004 is making its home inside the McKinley Climatic Laboratory at Eglin for a series of weather tests designed to forecast how the F-22 will stand up to the elements.

According to Mr. Brent Poulson, the F-22 Combined Test Force climatic test lead engineer, the Raptor will be tested at extreme temperatures and in different kinds of precipitation while inside the climatic hangar. Mr. Poulson said the test temperatures will range between minus 65 degrees and plus 120 degrees Fahrenheit, and include rain and snowstorms.

It takes a team

While Mr. Poulson is assigned to the combined test force at Edwards AFB, Calif., he and a team of nearly 50 people including engineers, maintainers and instrumentation experts, are working at Eglin during the climatic testing.

All total more than 80 Air Force and contractor personnel from lead government contractor Lockheed Martin supporting the unique testing.

The big event

According to Mr. Kirk Velasco, chief of the McKinley Climatic Laboratory, having a major program like the F-22 in the facility is "a big event" for his team. The lab sees a customer like the Raptor only about once every two or three years, he said.

In preparation for the F-22 testing, Mr. Velasco said his team built an additional room to give support personnel adequate office space.

In addition, a unique engine exhaust duct system was built specifically for the F-22 to rid the laboratory of engine exhaust generated during testing. Because of the Raptor's unique security requirements, he said the laboratory also received an extensive amount of security upgrades before the start of testing.

For Mr. Velasco and his team, the "special treatment" the Raptor is receiving is worth the effort.

Latest and greatest

"There is nothing more exciting than testing the Air Force's latest and greatest aircraft," he said. "Being one of the first teams to be involved in the testing of the F-22 is a welcome experience for us."

The jet, valued at $85 million and hosting the most highly advanced avionics technology, will reside in the climatic hangar through mid-August, said Mr. Poulson.

— Ms. Leigh Anne Bierstein, AFFTC Public Affairs (2nd Lt. James Madeiros from the AAC Public Affairs Office also contributed to this report)

Pilots train with high-tech games

Playing computer games may not be detrimental to your child's well-being after all. The coordination skills acquired may be the basics needed for a career in fighter aviation.

The Air Force Research Laboratory's Directed Energy Directorate at Kirtland Air Force Base, N.M., is currently funding and developing a High-Energy Laser, or HEL, fighter simulator, a highly sophisticated computer game, in conjunction with the Theater Aerospace Command and Control Simulation Facility, or TACCSF.

The HEL Fighter is an F-16 simulator platform modified to integrate a high-energy laser weapon model into an F-16's program. Lockheed Martin, the TACCSF subcontractor performing the model development, is currently investigating the use of the HEL on the Joint Strike Fighter. The 150th New Mexico Air National Guard Wing, "the Taco Air Force," actively participates in the simulator development by providing feedback. The pilots' comments and suggestions on a variety of issues facing this new weapon system are integrated into the development.

An artist's rendition of a functional high Energy Laser Fighter.

Hitting the target

The HEL Fighter Simulator, on an F-16 simulator platform, is located in the Theater Aerospace Command and Control Simulation Facility. Here, an operator can simulate aiming and firing a laser against airborne targets while flying the aircraft.

One model is capable of air-to-air engagements; the other encompasses air-to-ground target engagements. The models include atmospheric transmission losses, target lethality engagement parameters, laser system limits and ranges. The simulator evaluates design parameters for an actual high-energy laser weapon system and assists an operator in getting familiar with a directed energy weapon system. The system can be used to develop tactics and a concept of operation.

Only the best will do

"It is imperative to have a better understanding of what lasers can do for our fighter pilots," said Col. Mark Stephen, AFRL deputy director of development estimate. "By providing the warfighter with the best technology, we ensure the protection of the flyer and better defense for our national interests."

In May, the Colonel was provided an opportunity to get a real world fighter pilot's perspective. Mr. Rudy Martinez, strategic planner for the Directed Energy Directorate, arranged an aircrew flight physical, altitude chamber training and egress training on the F-16 for him, so that he could have an orientation flight with the "Taco Air Force."

First-hand experience

According to Mr. Martinez, the Colonel's aircraft was part of a red force, two-ship formation. They did a training ingress in the military operating area at White Sands Missile Range and engaged a blue force, four-ship for air-to-air combat. Zeroing in, Col. Stephen's F-16 destroyed a ground target with a laser guided bomb. Col. Stephen was able to experience firsthand the capability and mission workload of the aircraft and realized the training required of an Air Force fighter pilot.

Ultimately, the goal is to participate in war games to determine the utility of using a high-energy laser, an advanced weapon system, against conventional warfare weapons. The HEL fighter simulator is scheduled for completion this year to be used in Air Force war-gaming for system evaluation.

— Ms. Deb Mercurio, AFRL/DE Public Affairs

Left: Pilots use the high energy laser fighter simulator, displayed above, to train. (Air Force photo) Right: Col. Mark Stephen gives a "thumbs up" as he prepares for an orientation flight in an F-16. (Photo by Ms. Deb Mercurio, AFRL/DE Public Affairs)

AFMC's squadron commanders acquire 'leadership' lessons

A group of new squadron commanders took part in a week-long training session at Headquarters Air Force Materiel Command to prepare them for their new roles as leaders.

The squadron commander training course was created to give new commanders all the tools they will need to take charge. The course focuses on programs covering survivor benefits to media training and military justice.

The leadership curriculum, which takes place on the first day of training, was established to develop a common approach to leadership training, said retired Major Gen. Charles Link, director of the Developing Aerospace Leaders office in Washington, D.C. The Air Force leadership initiative was developed by officers across the Air Force and approved by senior leaders at CORONA in fall 2000 for required use in the squadron commander training course at all major commands, he said.

Gen. Link also noted this was the first time the Air Force has defined unique airman leader and follower behaviors and the preferred leadership style for our Air Force.

Experienced commanders in each MAJCOM teach the leadership portion of the course. The program was designed to be facilitator based to promote discussion among the new commanders, said Gen. Link.

Focused discussion

According to the course outline, each instructor facilitates discussion and study in six focus areas — management, leadership and command; creating strong units; airmen unique leader and follower behaviors; leadership vision; creating inspired followers and leadership responsibility. The facilitators for the AFMC course were Col. Cherie Zadlo, 95th Air Base Wing commander at Edwards Air Force Base, Calif., and Col. David Eichhorn, Arnold Engineering Development Center commander at Arnold AFB, Tenn.

"Sitting commanders are at the pulse of what the Air Force needs from a squadron commander," said Col. Zadlo. "Our experience as commanders 'sets the stage' to facilitate positive discussion about what to expect as a future squadron commander and what is expected of you as a commander."

"Your command is not a statement about you but one about your unit," Col. Eichhorn said. "The purpose of this training is to help new commanders learn the tools to better their units."

"We as facilitators are able to provide good and bad examples from real life experiences. These examples prepare squadron commanders for the 'fire hose treatment' they can expect when they take command," said Col. Zadlo. Leadership is a combination of three jobs. You must be a commander, manager and leader to be able to handle the "crisis du jour," Col. Zadlo said. Effective command depends on both effective leadership and management.

"A commander can't flourish in an environment characterized by poor management," Gen. Link said. "A commander's ability to balance leadership and management will influence mission

Col. Cherie Zadlo, 95th ABW commander at Edwards AFB, Calif., illustrates a new approach to Air Force leadership to new AFMC squadron commanders at a recent AFMC squadron commander's training course. (Photo by 2nd Lt. Gailyn Whitman, AFMC Public Affairs)

success. There's no checklist or cookbook that tells you how to lead. Leadership is a skill unique to each commander."

"To lead you must be able to make value-based individual judgments using experience and have a willingness to ask for help when you need it," said Col. Eichhorn. "We encourage new squadron commanders to see their airmen as a seeing, acting, thinking part of the enterprise. Establishing a partnership between you and your airmen will help you make decisions that are best for both the mission and your people."

Col. Zadlo said she and her fellow commanders encourage new squadron commanders to take the time to learn from their airmen, about their job and worksites.

"Paying attention to people and being open to their suggestions is essential to making informed decisions and the lesson we hope these new squadron commanders take with them," Col. Eichhorn said.

Leading by example

Lt. Col. Michael Lamb Sr., future 66th Mission Support Squadron commander at Hanscom AFB, Mass., took part in the recent course. He said the Air Force leadership initiative was timely and usable. "The facilitators provided direct application examples that have helped me understand what to expect when I get to my new unit."

Experience has shown that the foundations of success in this leadership training are advanced preparation and passionate facilitation, said Gen. Link. In the future, the leadership themes presented in this core curriculum will be presented at wing and group commander's courses and incorporated throughout all levels of professional education and command training.

— 2nd Lt Gailyn Whitman, AFMC Public Affairs

Capt. Jeff DeJaonnie, standing, briefs his fellow U.S. Air Force Test Pilot School classmate Capt. Lance Henderson (rear) and TPS staff member Mr. Jim Payne on the next test point in the L-23 glider. The "Zoomie Spin" test management project is not only a graduation requirement for the TPS students, but it is also meeting a real-world need for the U.S. Air Force Academy's glider replacement program. (Photo by Maj. Doug Dodson, AFFTC)

Test Pilot School students test drive academy gliders

Students at the U.S. Air Force Test Pilot School are putting the finishing touches on a test report aimed at helping the U.S. Air Force Academy determine the practical limits of its three new gliders.

The "Zoomie Spin" test management project is not only a graduation requirement for the TPS students, but it is also meeting a real-world need for the academy's glider replacement program. The program seeks to replace the academy's older glider aircraft with newer models.

Three gliders, one spin

Over the last six months, a team of six students have been investigating spin recovery procedures for three different gliders recently acquired by the academy.

The students were asked to compare the spin recovery procedure defined in each of the glider's flight manuals to the single, generic recovery procedure the academy uses for its existing fleet.

Initial indications show the same, generic procedure used by the academy works well for all three of the new gliders, said Capt. Jeff DeJoannis, a flight test engineer and student at the school. This means cadets can learn one recovery process that they can use in each of the three gliders rather than learning three separate procedures.

"In every case, the academy's recovery process was equal to if not better than what was defined in each of the flight manuals," Capt. DeJoannis said. "This is good news for the academy and for cadets."

Testing the winds

In addition to the spin tests, the students performed numerous takeoffs and landings in high crosswinds. Testing the gliders at various crosswinds allowed the students to determine if the three gliders could perform safely in crosswinds that were higher than those dictated in the flight manual.

According to Maj. Mark Hoelscher, an experienced fighter pilot and TPS student, all three of the gliders' flight manuals limit flying to relatively low crosswinds. This means when the academy is hit with high winds, glider sorties are canceled and training days are lost, he said.

Through a rigorous series of takeoffs and landings, the students determined that one of the gliders would safely perform in nearly double the crosswind set forth in its flight manual, bringing it to the same crosswind limits as the other two gliders.

"While we may be fulfilling a requirement for the school, the information we are reporting will also give the academy an opportunity to train more cadets and simplify their glider flight operations," said Maj. Hoelscher.

Safety led to success

Capt. DeJoannis added that the students' success with the project can be attributed to the comprehensive test planning process taught at the yearlong Test Pilot School. The team approached the project in an organized, methodical way and always with an emphasis on safety, he said.

"This was a very challenging project from a safety perspective, but the school prepared us well to deal with the challenges that arose during testing," Capt. DeJoannis said. "When we get to our next job, we will be able to hit the ground running."

The "Zoomie Spin" test management project was one of four real-world projects students wrapped up in time for graduation June 7.

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs

Brooks cop learns ropes in boxing ring

The more blood smeared from his nose across his battered face, the more aggressive Senior Airman Arturo Dominguez became. Repeatedly backing his much taller opponent into the ropes, the Brooks Air Force Base, Texas, cop-turned-boxer did not back away from the ensuing wild punches.

In his third amateur fight, the 311th Security Forces Squadron patrolman showed the San Antonio Regional Golden Gloves Tournament crowd why he was a member of the Air Force Boxing Team.

"I wasn't intimidated by him. He was intimidated by my punches. That's why he was dancing away from me," he said of Mr. Danny Ramon who was fighting for San Antonio's Heavyweights Gym.

While Airman Dominguez lost the light middleweight Novice Division championship bout that late February night, he took solace in knowing that with every fight he improves by learning to make adjustments in the ring.

Preparing for a fight

The 22-year-old El Paso, Texas, native has recently made major adjustments in his life. In November 2001, he began training under the guidance of then Air Force Boxing Team coach Mr. Osmar Alanis. "He worked with me on my movements, jabs, stance and basic techniques."

A year earlier, his interest in boxing was rekindled by his friend Airman Omar Saenz, then with the 311th Communications Squadron. Airman Dominguez watched his buddy win a bout at the San Fernando Gym. "I said to myself, 'I can do this.' Airman Saenz hadn't been boxing for very long and had won his first two fights."

Airman Dominguez reflected on his youth when he first felt a boxing glove's sting. His three uncles would instigate "boxing matches" pitting him against his cousin. "We wore gloves in those backyard brawls. My uncles would get a kick out of seeing little kids beating on each other."

Getting hooked

Airman Dominguez enjoyed those family "fights" and became a boxing fan. However, he had no outlet for pursuing his interest in the sport because his high school did not have a boxing program.

He joined the Air Force in October 1998 and became active athletically as a competitor in the Air Force Security Forces "Defender Challenge" competition. The metamorphosis into a boxer began shortly after seeing his friend compete.

"I dropped a lot of weight for boxing," he admits. At 5'10" and 190 pounds he was originally going to fight as a light heavyweight. His coaches convinced him to slim down to be more competitive.

His first amateur fight as a middleweight occurred in January during the 27th Annual Air Force Boxing Championships held at the Kelly Field Annex in San Antonio. Mr. Dominguez experienced a "David vs. Goliath" mismatch when he fought 6'4" Airman 1st Class Terrence Graves from Osan AB, Korea. He did not know prior to the bout that Airman Graves was a seven-year boxing veteran with more than 50 fights.

"I came out in a rage. I wanted to end it quickly," he said. He landed the first punch, won the round and nearly depleted his energy. The fight was stopped midway in the third round due to Airman Dominguez's fatigue.

"I learned patience. Two minutes is a long time in boxing," he confessed. He also learned not to underestimate the length of an opponent's reach.

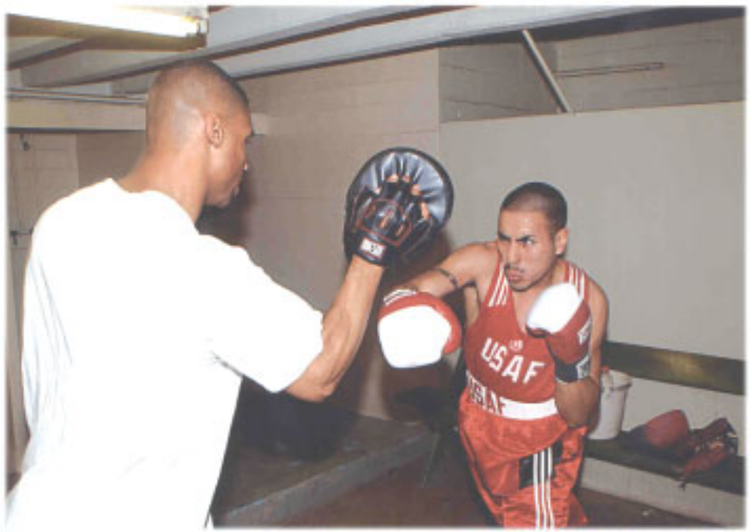
He won his next fight as a novice in the San Antonio Regional Golden Gloves preliminaries. By then, he had made the Air Force Boxing team, and now trains seven days a week.

Boxing shape

"Boxing is by far the hardest thing I've ever done," he said. His daily training regimen includes running four to five miles, a one-hour aerobics session and boxing drills featuring speed and heavy bag, jumping rope and shadow boxing. His training day ends with a round-robin sparring session.

"I get into the ring. Seven boxers take their turn jumping into the ring with me for one minute each. They work on offense. I have to block and duck. I can't hit them back. I work on my defense. I've never trained like this for any sport."

Airman Dominguez truly loves boxing. He admits being hooked on the sport's addictive allure. "You can hear the cheering. You're entertaining people."



Senior Airman Arturo Dominguez, a new member of the Air Force Boxing Team from Brooks AFB, Texas, warms up with team coach Tech. Sgt. Ronald Simms, for a San Antonio Regional Golden Gloves bout. (Photo by Tech. Sgt. Pedro Ybanez, 311th HSW)

Reservist saves woman's life, limb

Technical Sergeant Kurt McKean, an Individual Mobilization Augmentee on active duty with the 72nd Security Forces Squadron at Tinker Air Force Base, Okla., doesn't consider himself a hero. But after being awarded the Southern States Boating Law Administrators Association Officer of the Year award for Oklahoma in Knoxville, Tenn., that's a label he will have to live with.

This comes after he and his Oklahoma Highway Patrol partner Trooper Tony Nelson were credited recently with saving a woman's life. "People have come up to me and told me I'm a hero," he said, "but I look at it as just doing my job. I did exactly what the taxpayers of Oklahoma pay me to do."

Ms. Tamra Carpenter chats with her "hero," Tech. Sgt. Kurt McKean, an Individual Mobilization Augmentee on active duty with the 72nd Security Forces Squadron at Tinker AFB, Okla. Sgt. McKean responded to an emergency call after she got a boat's propeller blade lodged in her right thigh.

The call of duty

Sgt. McKean said he was thrust into service when he and his partner were on patrol at Lake Thunderbird and received a call that Ms. Tamra Carpenter had been struck by an engine propeller. "Right then, we knew it was bad news," he said. "Anytime you get a call like that, everything just stops. It's full blast. Propellers do the most unspeakable amount of damage to the human body imaginable."

Ms. Carpenter had planned to spend that afternoon on the lake with family and friends. As they put the boat in the water, the vessel got stuck on the ramp and she jumped into the water to help push. The prop was spinning and one of the propeller blades got lodged in her right thigh near the femoral artery, forcing the engine to stall. She also had severe lacerations to other parts of her body and was fighting to keep her head above water.

"When we drove up, it looked like a shark attack," Sgt. McKean said. "The water was just blood red and her color was terrible. She was bleeding profusely." The local ambulance service was en route, but was still 30-45 minutes away. That meant Sgt. McKean and his partner had to do everything they could to keep the woman alive.

Using available resources

Realizing he needed to act quickly, Sgt. McKean located a boat strap and used it as a tourniquet on the severely damaged leg. "I tied the boat strap around her right thigh, busted a boat paddle and tied it off to stop the bleeding," he said. "I told Tony for God's sake whatever the emergency crews do, don't let them remove that prop from her leg because if they do she's going to bleed out on us or have a heart attack."

Sgt. McKean said the two officers did what they could to keep the woman calm. Luckily the water temperature helped because it was still relatively cold, he said. "Honestly, I thought she was going to die right there in the water. She kept passing out, so I tried to carry on a conversation."

At one point, Sgt. McKean said the waves from other boaters and passersby got so bad he issued an ultimatum to the drivers to either help out or receive a citation.

"The waves were bouncing her off the bottom and she was going in and out of consciousness, so we improvised and ended up forming a human barricade around her," he said. "Pretty much everyone cooperated and it did help."

Sgt. McKean retrieved tools from a nearby vehicle and remove the prop from the boat. The officers then helped load the woman and the prop into the ambulance.

The will to live

"When it was over with, I told Tony I'd be surprised if she makes it to the hospital," he said. "I've been working the roads for nine years and I've seen a multitude of fatalities. Her will to live is what saved her."

Ms. Carpenter was rushed by ambulance to Norman Regional Hospital, where doctors spent eight hours to remove the prop from her right leg and repair her right calf muscle that was almost completely detached. She also suffered a broken right kneecap and femur.

She underwent four more hours of surgery the next day and has undergone 17 surgeries to date. She still has two more surgeries to go to repair a large hole in her right leg, yet she considers herself lucky to be alive.

"You don't really plan for accidents to happen," Ms. Carpenter said. "I'm very grateful to Sgt. McKean and his partner. They're probably the reason I'm still here today."

The doctor who treated Ms. Carpenter later wrote a letter to the department stating if Sgt. McKean and his partner hadn't made the decision to leave the propeller in the leg, she probably would have died.

"A lot of guys lose sight of the fact that in law enforcement our No. 1 goal is to help people," Sgt. McKean said. "Putting bad guys in jail is only part of my job and when I have to do it, I won't hesitate.

"But, my goal is to take a proactive approach to prevent someone from making a bad decision. I'd much rather save a life, or help in an emergency situation to benefit somebody's family and the victim."

— Mr. Darren Heusel, OC-ALC Public Affairs

Edwards man completes California AIDS ride

A 575-mile road trip can seem like a really long time in a car. Covering the same distance on a bicycle can feel like an eternity.

One Edwards Air Force Base, Calif., man recently completed such a journey, traveling seven days from San Francisco to Los Angeles as part of the California AIDS Bicycle Run.

Mr. Allan Webb, a 412th Test Wing flight test engineer, took on the grueling task to raise funds that will be used to provide critical services, such as medication, treatment and consultation, to HIV-positive people and those stricken with AIDS. The fund-raiser also helps provide education and prevention services.

"This was a tremendous opportunity to fight this terrible disease," he said. "The average person doesn't get much of a chance to participate in the fight, but this is one thing I can do. It's tough, but being able to help people is the reward, and that is worth it."

Mr. Webb was among approximately 715 riders and 300 crew members who participated in the event that took to the roadways. During their southward journey, the riders stopped in Santa Cruz, King City, Paso Robles, Oceano, Lompoc and Ventura where they camped overnight.

He started riding bicycles in 1997 and said he was looking for a challenge. He was in a cycle shop one day and saw a brochure for the AIDS bike ride.

"The idea of riding all the way from San Francisco to Los Angeles and participating in the fight against AIDS at the same time intrigued me," he said.

Mr. Webb said he decided to make this his cause because AIDS affects everyone. He wanted to make a difference and felt the bike ride was a great way to do it.

"I can't do much in the fight against AIDS," he said. "I'm not a doctor. I can't build a hospital or take care of sick patients, but this is one thing I can do."

To participate in the ride, each rider was required to raise $2,700. Mr. Webb raised $3,200 from his church and community.

"I'm extremely grateful to everyone who supported me in this event," he said. "I hope others at Edwards can participate next year."

Mr. Allan Webb, a 412th Test Wing flight test engineer at Edwards AFB, Calif., rides down the Pacific coast during the AIDS ride. (Photo by Michael Storc)

This is his second time riding in the event, although he has been participating since 1998. He said he worked as a crew member for the past two years so he wouldn't have to hit up the same people for contributions every year. He also wanted to give something back to the riders who were participating.

This was the ninth annual California AIDS Ride. Nationwide, AIDS rides netted more than $150 million for AIDS relief. Webb said this particular ride made approximately $3 million that will be distributed to the AIDS Project Los Angeles as well as many other AIDS organizations across California.

— Airman 1st Class Wes Auldridge, AFFTC