



# Aerospace World

By Marc V. Schanz, Associate Editor

## The Raptor Steps Out

The F-22 Raptor, USAF's front-line air superiority fighter, chalked up numerous successes at its first Red Flag exercises, held Feb. 3-16 at Nellis AFB, Nev.

According to the Air Force, the F-22 forces made quick work of skillful "Aggressors" flying F-15s and F-16s and demonstrated they can coordinate and augment coalition air forces as well.

The exercises marked the first time the F-22 has flown alongside British and Australian strike aircraft. In nearly two weeks of twice-daily combat, the F-22s didn't miss a single mission. (See "Red Flag Raptors," p. 18.)

## Panel Says, "No Guard on JCS" ...

An influential blue-ribbon panel has turned thumbs down on the idea of giving the National Guard a seat on the Joint Chiefs of Staff.

The Congressionally appointed Commission on the National Guard and Reserves announced in a March 1 report that it opposed the JCS idea, which has been forcefully promoted by various lawmakers and state governors.

The panel was commenting on proposed legislation known as the National Guard Empowerment Act, which was first introduced in 2006 and again this year.

Panel members argued that such a move would complicate the military chain of command. Air Force and Army officers have similarly claimed that the move would have the effect of creating a new military service.

"Our chief goal was to strengthen the role of the Guard Bureau, not create



USAF photo by S/A. Larry E. Reid Jr.

*The first operational MQ-9 Reaper, built by General Atomics, began training missions with the 42nd Attack Squadron on March 19 at Creech AFB, Nev. The unmanned turboprop vehicle has three weapons pylons under each wing and can carry up to 3,000 pounds of ordnance; it is a larger, faster, and more powerful version of the MQ-1 Predator. The unit will eventually receive 18 of the aircraft.*

a separate and independent service," said commission member Patricia L. Lewis.

## ... But Endorses Other Changes

The commission did say that the chief of the National Guard Bureau should be elevated from three- to four-star status.

The panel is chaired by Arnold L. Punaro, a retired major general in the

US Marine Corps. Its deliberations have been closely watched by the defense community.

The commission said that small changes could help increase the Guard's influence on the JCS, and that no alterations are needed in Title 10, the rules outlining how the Guard answers to service Chiefs and civilian Secretaries. A final report is due next January.

The panel also suggested that the Guard send its homeland defense budgets to the Department of Homeland Security—which would vet them and send the request to the Pentagon.

## Airborne Laser Shot Delayed

The key test of the Airborne Laser—the shutdown of a representative tactical ballistic missile—has been postponed slightly from late 2008 to Fiscal 2009, marking yet another technical delay for the program.

It's taking longer than expected to integrate the beam control and fire-control systems on the ABL, which is carried in a 747 airframe, Boeing ABL

## C-17s Headed for Dover

Dover AFB, Del., will receive the first of a planned 13 C-17 airlifters next month. It has not hosted a new aircraft system on the base since 1973, when it received its first C-5 Galaxys. The base will continue to operate 18 C-5s.

Dover's 326th Airlift Squadron, an Air Force Reserve unit, flew its final C-5 mission on March 10, while the active duty 3rd AS of Dover's 436th Airlift Wing flew its last Galaxy mission on March 14. Both squadrons will operate new C-17s that will start to arrive in June.

Lt. Col. Craig LaFave, AFRC 512th Airlift Wing program integration chief, said "Team Dover" will now be able to serve two missions: hauling heavy loads to forward bases with the C-5 and going directly to more austere locations with the C-17.

program director Greg Hyslop explained to reporters in March. As recently as last fall, the 2008 shot was considered likely. (See “The Airborne Laser Narrows its Beam,” December 2006, p. 30.) The critical test will now take place seven years after its originally scheduled goal of 2002.

The program continues to achieve milestones, however, Hyslop reported. Recently, the target illuminator laser was fired during a test mission at Edwards AFB, Calif. It marked the first in-flight external laser firing and measured the aircraft’s ability to track airborne targets and measure atmospheric turbulence.

### Will the F-35s Fall Out?

All signs in mid-spring were that two F-35 fighters requested in the 2007 emergency supplemental would be withdrawn from the bill, after the Pentagon took Congressional heat for the way it asked for them.

The aircraft were included as an “in kind” replacement of F-16 fighters the Air Force has lost in combat or used up in heavy taskings overseas. The F-16s are being replaced with F-35 fighters, now in development.

However, various Congressmen charged that the fighters are not an “emergency” item, or that the Pentagon was trying to fund them by an end-run around the normal budgeting process. Congress allowed the Marine Corps to replace lost or worn-out helicopters with brand-new V-22 tilt-rotors, however.

Making the case for the Pentagon’s emergency spending priorities to the House Budget Committee in early March, Deputy Secretary of Defense Gordon England conceded that DOD officials were reconsidering the F-35 request.

England pushed back, though, noting that when equipment is lost or consumed, it often can’t be replaced with identical gear if it is no longer in production. In those cases, the designated replacement should be acquired.

“It’s true it won’t affect us this year or next year,” England said of delaying the F-35 buys. However, “at some point in the future, we will be short equipment and we’ll have another problem in terms of our asset base.”

### USAF Rethinks Flying Hour Cuts

Air Force Chief of Staff Gen. T. Michael Moseley admitted to lawmakers in February that he’s having second thoughts about proposed cuts to flying hours in the FY 2008 budget and beyond. The cuts were meant to free up funds for programs.

“I’m at the verge of not being comfortable with this, and I’ve asked our folks to look at [if there is] not some way to



USAF photo by A1C Timothy Chacon

**Tuskegee Airmen cut the ribbon at the dedication ceremony of a room in their honor at Bolling AFB, D.C., on March 28. They received the Congressional Gold Medal at the US Capitol the next day.**

### Tuskegee Airmen Receive Congressional Gold Medal

Surviving members of the famed World War II Tuskegee Airmen on March 29 were awarded the Congressional Gold Medal, the highest honor Congress can bestow on civilians.

President Bush presented the award in a ceremony held in the Capitol Rotunda. He said that the airmen fought two wars: one against the Nazis and the other against bigotry in their own country.

Bush added his hope that the award would in some way help “atone for all the unreturned salutes and unforgivable indignities” suffered by the pioneering African-American aviators more than 60 years ago.

Other dignitaries at the ceremony included Speaker of the House Rep. Nancy Pelosi (D-Calif.) and House Majority Whip Rep. James Clyburn (D-S.C.), who is the highest-ranking black member of Congress. About 300 of the Tuskegee Airmen, spouses, and relatives attended the ceremony.

The award was the result of legislation authored by Sen. Carl Levin (D-Mich.) and Rep. Charles B. Rangel (D-N.Y.), signed by President Bush last year.

In the segregated US Army Air Corps of the 1930s, blacks were not permitted to fly. President Franklin D. Roosevelt overruled his generals and ordered a program set up to recruit black men for a flying program. Just under 1,000 airmen received their wings after training at Tuskegee AAF, Ala., between 1942 and 1946. The name “Tuskegee Airmen” stuck.

Of the graduates, 450 served overseas in the European Theater in the 99th Pursuit Squadron and the 332nd Fighter Group, flying bomber escort, patrols, and strafing attack missions in Europe and North Africa. Many were killed and others were captured and held prisoners of war.

The unit attained fame as dogged fighter escorts to bomber missions over Nazi Germany. Benjamin O. Davis Jr., who later became USAF’s first African-American general, was the commander of both the 99th and the 332nd. He died in 2002.

“What we accomplished hasn’t always been recognized for, really, what it meant to the country,” Tuskegee Airman Charles E. McGee told the *Washington Post* prior to the ceremony. He added that the airmen pioneered civil rights for blacks before “what we know as the civil rights movement.”

Congress has awarded the medal to more than 300 individuals and groups since the first award in 1776, given to George Washington.

migrate money back,” he told the House Armed Services Committee on Feb. 28. He’s not sure simulators can substitute for real flying time to the degree the service anticipated.

Moseley added that funding is only part of the problem—the other being the age of aircraft and their availability for training. Maintainers simply can’t generate the number of sorties needed

to produce combat-rated pilots, he said. The Air Force has had to “dumb down” the standard to a level of concern, Moseley admitted.

In the same vein, USAF vice chief Gen. John D.W. Corley told the same committee on March 13 that Air Force readiness has since 2001 declined 20 percent, while it’s flying 1,300 fewer aircraft.

**Boeing Sounds C-17 Alarm Again**

Boeing has begun to shut down long-lead production for the C-17 airlifter and will continue the process unless it gets some new orders soon, the company said in March.

The move is the first step in an “orderly shutdown” of the supply chain for the airlifter, company officials said. Boeing claimed that without further orders, layoffs will begin in early 2008 and the line will close completely by mid-2009.

Air Force Secretary Michael W. Wynne considers the announcement a hardball attempt to coerce more orders from the service, for which funds are lacking. (See “Washington Watch: More Mobility Twists,” p. 14). When Boeing made the

same pitch last year, Congress added 10 C-17s to the Air Force’s budget.

Including the Congressional adds, USAF is buying a total of 190 C-17s. Firm orders are on the books from Australia, Britain, and Canada and NATO. Other nations, such as Sweden, have indicated a desire to buy C-17s, but have not appropriated the money to do so.

Boeing maintains that with a 34-month lead time to build one of the airlifters, they need a commitment now to ensure that no gap in production will occur. The company wants to continue building the airplane at 15 per year, which is considered the most efficient rate.

The Air Force included just two

C-17s in its Fiscal 2008 “unfunded priorities” list.

Deputy Secretary of Defense Gordon England was pressed on the C-17 issue in February budget hearings. He said, “At some point, we do have to stop the production of the airplane.”

**Two F-16s in Unrelated Crashes**

Two F-16s crashed in separate incidents on March 12, one in Nevada and one off the coast of Florida. Both pilots survived.

In Nevada, an F-16 assigned to the 16th Weapons Squadron at the Air Force Weapons School crashed at the end of a runway while on approach to the Tonopah Test Range airfield. The pilot ejected safely and there were no injuries or damage to property on the ground. The fighter was on a night training mission over the Nevada Test and Training Range, and the cause of the accident is under investigation.

On the same day, an F-16 from Air Force Reserve Command’s 482nd Fighter Wing at Homestead ARB, Fla., crashed about 75 miles southeast of the base into the Florida Straits. The fighter was from the 93rd Fighter Squadron and at the time of the accident was flying a routine training mission. The pilot ejected safely and was rescued.

**Combat-Ready C-130J Delivered**

The first combat-ready C-130J that will serve an Air Mobility Command active duty unit was delivered by AMC chief Gen. Duncan J. McNabb in March. The aircraft went to the 463rd Airlift Group at Little Rock AFB, Ark.

Previous J model Hercules have all gone to Air Education and Training Command and the Guard and Reserve, in a variety of roles including transport, weather reconnaissance, training and psychological operations.

The 463rd AG currently operates a fleet of 13 C-130Es and 14 C-130Hs and has flown a high tempo of tactical airlift missions. They have been credited with taking 5,200 US convoys off the roads of Iraq.

**“City in a Box,” By 10:30 Tomorrow**

Air Mobility Command in February packed an Army “city in a box” into a C-17 and flew it from Dover AFB, Del., to a forward area in the Middle East.

The “Force Provider” package was developed by the Army to get an entire 150-soldier tent city into one C-17—improving on a unit developed after Operation Desert Storm that set up a 550-soldier tent city. The original version took 60 personnel a week to put together, but the new one can be

**Red Flag Raptors**

The F-22 extended its winning streak at its first all-up Red Flag combat training exercises, where the Raptor-led “Blue” forces scored a lopsided victory over Red Air “Aggressor” forces using their best tricks.

Fourteen F-22s of the 94th Fighter Squadron at Langley AFB, Va., flew daily from Feb. 3-16 at the Nellis AFB, Nev., wargame, which included more than 200 US and coalition aircraft. The F-22s didn’t miss a single scheduled mission—unprecedented for a fighter so early in its operational status and a tribute to the skill of its maintainers, according to Col. Thomas Bergeson, 1st Operations Group commander. Bergeson and 94th commander Lt. Col. Dirk Smith discussed the exercise with reporters at the Pentagon in a March teleconference.

The event marked the first time the F-22s have flown with coalition aircraft. Australian F-111s and C-130 tactical transports flew in the wargame, as did British GR-4 Tornados and C-130s. Participating types from the US included stealth B-2 bombers and F-117 attack aircraft, as well as F-15s, F-16s, F-5s, and Navy EA-6B Prowler jammer airplanes.

Smith said the F-22s, augmented by F-15s, typically protected a strike package of about 50 aircraft against a numerically superior defending force. The 94th—most of whose pilots have less than 100 hours in the F-22—consistently defeated the F-15s and F-16s of Nellis’ Aggressors, the 414th Combat Training Squadron. The 414th quickly upped the ante of their tactics, and by the third day, “we were seeing their ‘A’ game, if you will,” Bergeson reported. Only one F-22 was “lost” in the wargames.

Bergeson noted that “very few, if any” Red Air survived the F-22-led Blue force attack.

Red Flag provided an opportunity to explore the “synergies” of combining stealth aircraft with a variety of nonstealthy types in a number of scenarios, Bergeson added. The F-22s helped “open up a lane” for the nonstealthy aircraft to get past Red defenses.

As they did in Operation Northern Edge last year, the F-22s remained in the fight after expending their weapons, providing forward-area eyes for the rest of the Blue force, and directing comrades around or toward Red threats. (See “The Raptor in the Real World,” February, p. 32.)

They also performed close air support and “dynamic retargeting,” which involves changing a ground target well into the mission, Smith reported. “Time critical” targets were also struck.

The F-22s went against ground threats simulating real-world air defenses, including communications jamming, networked surface-to-air missiles, and anti-aircraft artillery. The Aggressors attempted to lure the F-22s into “SAM-bushes,” trying to get the Raptors to pursue them into areas densely defended by surface weapons.

Each day of the exercise involved two “wars”—a daytime fight and one at night, with eight Raptors flying during the day and six at night, Smith reported. Red Air was permitted to “regenerate”—sometimes four or five times—after being “killed” in the exercise, but Blue forces were not. That in itself represented a tougher situation than the real world, since an enemy would likely lose his best airplanes and pilots early and offer a diminishing defense as a real war proceeded.

Bergeson described the Nellis units as “probably the best Red Air on the planet” and said the F-22 pilots are now “better than we were [before] ... because of the fantastic training” the Aggressors provided.

# ***AD SPACE***

assembled in less than four hours with the same personnel.

The newer kit was designed as a modular system of housing, food service, laundry, water and fuel storage, waste water collection, electrical power, showers, and latrines, according to Army officials.

Airmen and civilians at Dover's 436th Aerial Port Squadron worked 24-hour operations supporting the transport of the tent city deployments. Three additional 550-soldier kits were diverted from sea transport and sent aboard C-5s and contract aircraft, according to 436th AW officials. During a 10-day period, the Dover port received and airlifted 1,500 tons of equipment.

### **Fuel Substitution Gathers Steam**

The Air Force plans to certify its entire fleet of B-52s to run on a new synthetic fuel blend by the end of the year, the service's top civilian logistics official told a Senate Finance Committee hearing in February. The move is hoped to shave down USAF's \$7 billion annual energy bill.

Use of the synthetic fuel will be approved for unrestricted flight operations across the B-52 fleet as soon as analysis is done of tests on the type at Edwards AFB, Calif., and Minot AFB, N.D. Michael A. Aimone, the Air Force's logistics, installations, and mission support chief, said. Inspections showed no damage to the engines from the synthetic fuel.

Aimone explained that a domestic producer of synthetic fuel was chosen by the Air Force to manufacture the new fuel from natural gas. However, the gas-to-liquid process doesn't assure the Air Force of a dependable supply of jet fuel yet, due to the vagaries of domestic natural gas production. Production from coal, oil shale, and biomass sources would solve the constraint.

### **Penetrator Bomb Test Succeeds**

The Defense Threat Reduction Agency reported success with the first explosive test of the Massive Ordnance Penetrator (MOP) conventional weapon in March. The weapon was exploded within a tunnel at the White Sands Missile Range, N.M.

The conventional 30,000-pound penetrating bomb is designed to defeat hard and deeply buried targets such as bunker and tunnel facilities. It is designed to be carried in B-2 and B-52 bombers and employed from high altitudes using GPS navigation for guidance. The weapon contains more than 5,300 pounds of explosives.

The planning for the test began nearly three years ago, and the test was not related to the recently canceled "Divine Strake" experiment slated for

## **The War on Terrorism**

### **Operation Iraqi Freedom—Iraq**

#### **Casualties**

By April 6, a total of 3,260 Americans had died in Operation Iraqi Freedom. This total includes 3,253 troops and seven Defense Department civilians. Of those fatalities, 2,634 were killed in action by enemy attack, and 626 died in noncombat incidents.

There have been 24,476 troops wounded in action during OIF. This includes 13,545 who returned to duty within 72 hours and 10,931 who were unable to quickly return to action.

#### **Air Strikes Destroy IED Cell, Other Threats**

Coalition air strikes in early March killed key enemy fighters and destroyed a large cache of materials used for making improvised explosive devices. Similar attacks destroyed several vehicles equipped with anti-aircraft artillery weapons and heavy machine guns.

On March 2, an air attack west of Taji targeted several members of a terrorist cell who were gathered at an area known for anti-coalition activities, according to Multinational Force-Iraq officials. The air strike killed several key terrorists and destroyed vehicles equipped with AAA and ammunition. The next day, another strike in Arab Jabour led to the rescue of four Iraqis and the death of seven terrorists hiding inside a building with another piece of AAA and rocket-propelled grenades.

On March 5, air strikes destroyed a building that housed a large cache of materials used to build roadside bombs in the city of Mosul. Ground forces called in an air attack to destroy about 50 IEDs, 200 bags of fertilizer, blasting caps, and grenades.

### **Operation Enduring Freedom—Afghanistan**

#### **Casualties**

By March 31, a total of 373 Americans had died in Operation Enduring Freedom, primarily in and around Afghanistan. The total includes 197 troops and one DOD civilian killed in action and 175 who died in nonhostile incidents such as accidents.

A total of 1,148 troops have been wounded in Enduring Freedom. They include 462 who were able to return to duty in three days and 686 who were not.

#### **Emergency Gas Delivered**

A C-130 aircrew answered an urgent call for supplies on March 12, rushing 24 55-gallon drums of fuel and other supplies to the 1st Battalion, 508th Parachute Infantry Division. The supplies were air-dropped within eight hours of the request for resupply.

Elements of the 508th were fighting Taliban forces in the Ghorak Valley when they started running out of fuel. They were engaged in Operation Achilles, a campaign in the Helmand Province run by the International Security Assistance Force.

The airdrop was performed with low-velocity parachutes from less than 5,000 feet above ground. The 9,000 pounds of cargo landed within 38 yards of the desired point of impact.

#### **Leaflets Discourage Spring Offensive**

An Air Force C-130 dropped some 30,000 leaflets over the mountains of southeastern Afghanistan on March 7 in a campaign to deter Taliban activity. The airdrop was in direct support of Operation Achilles, an ongoing mission by the International Security Assistance Force to secure the southeastern region of the country.

The leaflets warned Taliban militants not to interfere with coalition activities. The Taliban has consistently launched spring offensives through the porous border region between Pakistan and Afghanistan. According to ISAF, operations such as the leaflet drop will focus on improving security by helping village elders take charge of local communities without the influence of extremists.

The mission was performed by an aircrew with the 379th Air Expeditionary Wing.



**Index to Advertisers**

Affinity Financial Corp. ....	49
Armor Holdings.....	57
AT&T .....	53
Aviation Nation .....	Cover III
Bell .....	9
Boeing .....	41, 84-85, Cover IV
C-27J Team .....	33
Cast Navigation .....	29
Commemorative Air Force .....	6
General Atomics.....	45
General Dynamics.....	5, 11, 31, 61
Gulfstream.....	117
In	
Lockheed Martin.....	Cover II, 65
Northrop Grumman .....	3, 109, 165
Oregon Aero .....	7
Panasonic.....	6
Pratt & Whitney .....	163
Raytheon.....	21
Siemens..	37
SymbolArts .....	7
TEAC .....	23
Textron....	19
USAA....	159
AFA Annual Fund .....	161
AFA Air & Space and Technology Exposition .....	167
AFA Original Tees .....	164
AFA Resume Assistance Service.....	164

Nevada, according to DTRA. The Air Force Research Laboratory Munitions Directorate at Eglin AFB, Fla., is executing the MOP contract and providing management and technical support.

**Grand Forks Eyed as KC-X Base**

Grand Forks AFB, N.D., should be studied as a possible basing location for the service's next generation air refueling aircraft, Air Force Chief of Staff Gen. T. Michael Moseley said during a recent visit there.

During a tour of the base March 13, Moseley met with base officials and airmen to discuss the base's follow-on mission after the 2005 Base Realignment and Closure round—which takes away Grand Forks' KC-135s—is implemented. While Grand Forks is slated to get a joint mission operating Global Hawks and Predators along with the Air National Guard, Moseley told the North Dakota Congressional delegation that the base is a top-tier candidate for the new tankers.

Sen. Kent Conrad (D-N.D.) announced that plans called for a site review team from Air Mobility Command to visit the base in late March to inspect infrastructure and facilities and decide what improvements would be needed for a new tanker mission.

**Illinois Wing Gets New C-40**

Air Force Reserve Command re-

ceived a new aircraft type in February, when the C-40C was delivered to the 932nd Airlift Wing at Scott AFB, Ill. The aircraft, which is a variant of the

Boeing 737 airliner, will augment the unit's C-9Cs as a VIP transport.

The C-40 can fly for 10 hours or so, which will broaden the unit's capabilities. The aircraft feature upgraded avionics that handle classified communications and auxiliary fuel tanks that allow nonstop flight to Hickam AFB, Hawaii, or Ramstein AB, Germany.

The wing is the only Reserve unit in the state. The aircraft delivered is one of three that the unit will receive.

With the new C-40, the 932nd will once again be partnering with the active duty 375th AW at Scott through an active associate unit.

**Pratt Engine Chosen for KC-767**

Boeing has selected the Pratt & Whitney PW4000-94 engine to power the KC-767—Boeing's entry in the USAF KC-X tanker competition. The choice marks the first military application for the PW4000 engine family, which has logged many hours on civilian airframes such as Boeing's 767 and the Airbus A300/310.

The PW4000 family includes models with thrust ratings from 52,000 pounds to 98,000 pounds. The engine meets all current and anticipated emission and noise regulations, according to a Pratt & Whitney statement.

Pratt & Whitney engines equip several Boeing-USAF heavy types. The

**Air Force Likely To Seek 20 Additional F-22s**

It looks like the Air Force will request at least 20 more F-22 Raptors, and the tide may be turning to get even more, service Secretary Michael W. Wynne told *Air Force Magazine*.

Wynne has argued since 2006 that the Air Force mustn't close down the F-22 line until the F-35 line is up and running at a substantial build rate. However, Congress has not moved to bring the F-35 into production in the desired timeline, and that may force the F-22 issue, Wynne said.

"The way the Joint Strike Fighter is going, we may yet need another tranche of F-22s simply to continue to bridge the gap and make sure the President has a fifth generation fighter line available for expansion if he needs it," Wynne maintained. The F-22 is being bought at 20 airplanes a year through 2009.

"It looks to me like that argument could take us at least into '10 and ... get you some deliveries in the '12-'13 time frame," he added. That would get close to overlapping the F-35 production at the current schedule.

Wynne confessed that, given the stellar performance of the F-22 in recent wargames, "I don't know what the total quantity required is," even though USAF has verified 381 as its hard requisite. However, he noted that he sees "a growing consensus that 183 doesn't give you the breadth you might need."

He said, "More and more of the think-tank articles and the influencers ... are starting to consider that 18-[Raptor] squadrons are ... not what you really want, and it's just another demonstration that the Air Force is getting thinly spread."

Moreover, he believes the service can make some headway toward getting F-22s restored in the future if USAF uses the Navy's aircraft carrier justification: presence and deterrence. "Presence has an impact. ... You really don't want to be called on to use your might. You want the presence of it to be sufficient."



## CSAR-X Bidding Reopened

The Air Force will reopen the bidding for its new combat search and rescue helicopter program to the original three competitors now that the Government Accountability Office has completed its review of the award.

The Air Force had selected Boeing for the CSAR-X program last November, but the GAO found merit in the formal protests of losing competitors Lockheed Martin and Sikorsky. They argued that the Air Force ignored its own guidelines and requirements in making the award to Boeing.

At stake is a contract to build about 141 aircraft valued at more than \$15 billion.

After initially rejecting the GAO's recommendation to reopen the bidding, the Air Force agreed to rephrase and clarify some of its award criteria in an amended request for proposals. Only those companies that competed for the original contract can resubmit bids.

In a March 22 statement, the Air Force said its amended RFP would "clarify its intent with respect to the evaluation of operations and support costs."

In choosing Boeing's twin-rotor HH-47 as the winner of the CSAR-X contest last fall, the Air Force said the aircraft offered the best value and fastest in-service date among the competing aircraft, which included Lockheed Martin-Agusta Westland's US101 and Sikorsky's S-92 Superhawk. (See "Aerospace World: Boeing Wins CSAR Contract, but Competitors Protest," January, p. 15.)

Boeing said the reopened competition allowed the other companies "an undeserved second chance" and competitive edge, now that they have access to some of Boeing's cost data through the protest process.

F117 engine equips the C-17, and the venerable TF33 powers the B-52 and the KC-135.

### Cadet Satellite Reaches Orbit

A satellite built by US Air Force Academy cadets was launched into

orbit March 8 aboard an Atlas V rocket from Cape Canaveral AFS, Fla.

The FalconSat-3 launch culminates three years of work. A launch failure last year destroyed FalconSat-2.

Cadets will operate the satellite via the academy's ground control station.

They will use FalconSat-3 to gather scientific data for the academy's Space Systems Research Center. The center runs an astronautical engineering course in which cadets design and build microsats for Pentagon research programs.

FalconSat-3 contains five military experiments that are the work of the academy's physics and atmospheric research center and other government agencies. Included are experiments on spacecraft-induced turbulence and on ionospheric plasma bubbles that can affect space-based communications. Also being investigated is micropropulsion: a low-thrust electric pulse system that could power future satellites. FalconSat-4 and 5 are already in development.

### Denmark Signs Up for JSF

Denmark signed the Joint Strike Fighter production, sustainment, and follow-on development memorandum of understanding Feb. 27—marking the completion of nearly three years of multilateral negotiations, reviews, and approvals by each of the nine partner nations.

The signing ceremony was held at the US Embassy in Copenhagen. Danish

## News Notes

■ The Air Force in March renamed its Air Mobility Warfare Center at Ft. Dix, N.J. The new name is the Air Force Expeditionary Center. It will be the focus of expeditionary training activities such as Eagle Flag exercises. First established by former Air Force Chief of Staff Gen. Ronald R. Fogleman in 1994, the center has become a clearinghouse for air mobility training, geared toward expeditionary deployments.

■ An Air Force C-130 from Homestead ARB, Fla. flew a planeload of relief supplies to Bolivia in March, to aid victims of floods caused by heavy rains. Coordinated with US Southern Command, the US Agency for International Development, and the Navy, the effort helped deliver more than 4,800 water containers, 2,300 hygiene kits, and four water pumps. The C-130 crew came from the 156th Airlift Wing in Puerto Rico, with members of the 70th Aerial Port Squadron at Homestead helping to load the supplies.

■ The Air Force awarded Northrop Grumman \$12.5 million to start engineering work on replacement engines for the E-8C Joint STARS. In February, the Air Force announced the selection of a Pratt & Whitney team to supply a propulsion pod system that includes the JT8D-219 engine. The new engines are

expected to sharply improve reliability and reduce sustainment costs on the Joint STARS.

■ After serving more than twice as long as expected, the oldest GPS satellite on orbit will soon be taken offline. Air Force Space Command said SVN-15 had orbited for 16 years as of October 2006. The satellite has begun to develop trouble with its operational clocks, however, and on March 14, control authority for the satellite moved from the 2nd Space Operations Squadron to the 1st SOPS for "end of life" testing. After the month-long testing process, the satellite will be boosted into a disposal orbit.

■ Lockheed Martin received a \$40.4 million contract in March to finish engineering on the A-10C Precision Engagement program. The work, including software updates and flight tests, will continue through May 2008. The program upgrades the A-10 to the A-10C. It allows the fighter to use precision guided weapons such as Joint Direct Attack Munitions and the Wind-Corrected Munitions Dispenser and improves situational awareness, target identification, and information displays.

■ A new satellite communication system will give the B-2 stealth bomber the ability to send and receive battle-

field information nearly 100 times faster than it can today, Northrop Grumman said in May. The Air Force gave the company the green light to begin developing the first part of the extremely high frequency satellite communications program for the B-2. The first increment will replace the B-2's flight-management computers with a single processing unit developed by Lockheed Martin. The next increment will give the aircraft the ability to send and receive on EHF frequencies. The final increment will integrate the new EHF capabilities into the bomber's controls and displays.

■ The 366th Fighter Wing's sole F-16 unit flew its last mission from Mountain Home AFB, Idaho, on March 16. The 389th Fighter Squadron has given up its F-16 mission as the wing transitions to the F-15E mission exclusively. The last five F-16s went to the 157th Fighter Squadron at McEntire ANG, S.C., under dictation from the 2005 Base Realignment and Closure process. About 40 of the squadron's 107 F-16 aircraft maintenance airmen will remain in Idaho and retrain on the Strike Eagle—all of which are scheduled to be in place by 2011.

■ The Air Force gets one of the Defense Department's most power-



**The C-130 Hercules, shown here, is coming to the end of its service at Elmendorf AFB, Alaska. The base is scheduled to receive its first C-17 next month.**

Minister of Defense Soren Gade added his signature to the agreement already signed by Australia, Britain, Canada, Italy, the Netherlands, Norway, Turkey, and the US.

The agreement follows the model of the early F-16 program, in which multinational partners bore shares of development cost and enjoyed some share of production.

### JSF Second Engine Studied

Developing a competitive “second source” engine for the F-35 Joint Strike Fighter wouldn’t yield any savings, according to a study funded by Pratt & Whitney, which builds the fighter’s F135 engine.

The consulting firm of Whitney, Bradley, and Brown conducted the study for Pratt. It found that a second JSF engine would increase the cost of ownership of the F-35, and that any savings from regular engine procurement competitions would be offset by the inefficiencies of smaller production runs.

The WB&B group also said that engines account for only a small number of fleet groundings, suggesting that it’s not necessary to have a backup source in the unlikely case that the primary engine develops technical problems. The F135, based on the F119 used in the F-22, has performed well in tests so far.

The Pentagon has twice tried to kill the alternative engine program, claiming it’s not needed and that the money is required elsewhere. Last year, Congress restored the funds. The GE-Rolls Royce team is developing the F136 power plant. (See “Aerospace

ful supercomputers this month—the SGI Altix 4700—and expects to have it running by October. The computer will be used for a range of duties, from designing new aircraft, weapons, and aircraft upgrades to simulating huge battles with thousands of independent elements. Added to existing processors, it will be capable of 85 trillion floating-point operations per second, or 85 teraflops. Its 4,608 dual-core processors will be water-cooled. The device will be housed at the Aeronautical Systems Center Major Shared Resource Center, Wright-Patterson AFB, Ohio.

■ Aviano AB, Italy, faced mobs of protesters, a bomb, and a road full of casualties in March—as part of a simulated contingency run by NATO. The exercise tested the base’s ability to deal with large and simultaneous crises. The evaluation is designed to push the units tested to and beyond their limits by forcing them to deal with many incidents in a short period of time.

■ The C-130 Avionics Modernization Program will begin fielding aircraft in 2010, and crews are training now to get ready for it, Boeing said in March. Flight crews and maintenance personnel will get more than 50 hours of

classroom instruction and 12 hours in the company’s system integration laboratory, focusing on the procedures for the new avionics technology. More than 100 airmen had received the intensive training as of March 7, Boeing said. Flight-test personnel, instructors, and initial cadre from operational units will train over the next several years. Boeing is conducting ground and flight testing on the first modernized aircraft, a C-130H2 model, and flew the second aircraft for the first time in late March.

■ The Cooperative Avionics Test Bed, a modified 737 designed to prove out the design of the F-35 fighter’s avionics suite, flew from California to Lockheed Martin’s Fort Worth, Tex., facility on March 2 to prepare for airborne mission systems testing later this year. The “CATbird” will integrate and help validate the performance of all sensor systems before they are flown on the F-35. During second-phase modifications at Fort Worth, the company will install a series of test stations in the CATbird’s main cabin, along with instrumentation to monitor and measure the flight performance of sensors. The nose of the 737 airliner has been modified to simulate the F-35’s nosecone and a 13-foot canard

has been attached to the fuselage to stand in for the F-35’s wings.

■ Air Force announced March 15 that Barksdale AFB, La., and McGuire AFB, N.J., will be the test bases for the service’s new energy initiatives pilot test program. The two bases were selected due to geographic location and operational and facility characteristics. The program will review buildings, offices, hangars, and other facilities on the base and examine fuel efficiencies. The program will also monitor the introduction of alternative fuels in the ground vehicle fleet and in aviation operations and suggest ways to improve efficiencies through flight planning and loading practices. The best ideas from the two bases will be shared across the Air Force.

■ Airmen with the 376th Air Expeditionary Wing at Manas AB, Kyrgyzstan, visited a local school in March to help teach English and give the students a view of American culture. The group met with about 30 students and fielded a range of questions, such as the difference between schools in America and Kyrgyzstan, the economics of both countries, and how each of their governments work. The program is a joint effort by the US Embassy and Manas Air Base under the Public Diplomacy Outreach Program. ■

World: Second F-35 Engine Has a Cost," October 2006, p. 14.)

**Jay Zeamer Jr., MOH**

Jay Zeamer Jr., a Medal of Honor recipient and bomber pilot with the US Army Air Corps in World War II, died at a Maine nursing home on March 22. He was 88 and was the only living recipient of the nation's highest military honor from the World War II AAF. Zeamer was also one of 36 living Medal of Honor recipients from that war, according to the Congressional Medal of Honor Society.

Zeamer was a captain when he volunteered for a mapping mission over an area near Buka in the Solomon Islands, a Pacific chain that was heavily fortified by the Japanese. While photographing the airdrome on Buka, Zeamer's crew spotted about 20 Japanese fighters—some of which were taking off to intercept the bomber. Zeamer continued with his run, even after an attack where he suffered gunshot wounds to both arms and legs.

Despite his significant injury, Zeamer maneuvered the damaged airplane so his gunners could fight off enemy fighters, resulting in a 40-minute pitched battle where five enemy airplanes were destroyed. According to his citation, he refused medical aid until the enemy had broken combat.

Zeamer, who was promoted to lieutenant colonel, was a Carlisle, Pa., native who grew up in Orange, N.J. He graduated from the MIT with bachelor's and master's degrees in engineering. After the war, he worked at Pratt & Whitney, Hughes Aircraft, and Raytheon. He retired in 1968 to Boothbay Harbor, Maine.

**Chase Nielsen, 1917-2007**

Retired Lt. Col. Chase J. Nielsen, one of the "Doolittle Raiders," died March 23 at his home in Brigham City, Utah. He was 90 years old.

Nielsen was navigator of Crew #6 on April 18, 1942, when B-25 Mitchell bombers led by Lt. Col. Jimmy Doolittle launched from USS *Hornet* and struck the Japanese homeland for the first time in World War II. Nielsen's airplane was one of those forced to ditch off the coast of China. He was one of eight who were captured by the Japanese and spent the next 40 months as prisoners of war.

After the war, he remained in the Air Force until his retirement in 1961, after which he worked as an engineer at Hill AFB, Utah.

Of the 80 men who participated in the Doolittle Raid, 60 survived the war and 14 are living today.

**B-52s Fly "Koa Lightning" Raid**

Four B-52s made a mock attack on Hawaii in February, practicing a long-distance Pacific bombing run and possibly paving the way for use of a bombing range on the Big Island.

Exercise "Koa Lightning" involved B-52s that flew from Guam and back. Attacking a point on the island of Oahu, the B-52s were intercepted by Hawaii Air National Guard F-15s and practiced their defensive tactics.

The bombers are deployed to Guam from Barksdale AFB, La. The 18-hour round-trip missions from Guam to Hawaii were comparable to flying from Washington, D.C., to Sweden and back without landing. Two aerial refuelings were needed for the mission.

Similar exercises—during which no munitions are dropped—are held every quarter, but this one was a dry run for possibly dropping inert ordnance on the Pohakuloa Training Area on the island of Hawaii. The Air Force wants to change regulations so it can use nonexplosive rounds at Pohakuloa. Current rules say aircraft must fly low enough to eyeball targets, but B-52s typically release satellite guided bombs from 25,000 feet. ■



USAF photo

*An airman and a soldier jump into a tub of cleaning solution after entering a bunker housing a simulated chemical weapons lab April 12 at Ramstein AB, Germany. Army and Air Force members are training together in a chemical response exercise so that they may respond as a single unit if needed.*

**Senior Staff Changes**

**NOMINATIONS: To be General:** Victor E. Renuart Jr. **To be ANG Major General:** Shelby G. Bryant, Howard M. Edwards, Norman L. Elliott, Steven E. Foster, Robert D. Ireton, Emil Lassen III, George T. Lynn, Robert B. Newman Jr., Timothy R. Rush, Stephen M. Sischo. **To be ANG Brigadier General:** Craig W. Blankenstein, William J. Crisler Jr., Johnny O. Haikey, Rodney K. Hunter, Jeffrey R. Johnson, Verle L. Johnston Jr., Jeffrey S. Lawson, Bruce R. Macomber, Gregory L. Marston, James M. McCornack, Deborah C. McManus, John E. Mooney Jr., Daniel L. Peabody, Kenny Rickett, Scott B. Schofield, John G. Sheedy, John B. Soileau Jr., Francis A. Turley, James R. Wilson, Paul G. Worcester.

**CHANGES:** Maj. Gen. Chris T. Anzalone, from Deputy, Test & Assessment, MDA, Arlington, Va., to Deputy, Test, and Deputy, Logistics & Fielding, MDA, Huntsville, Ala. ... Brig. Gen. Burton M. Field, from Cmdr., 1st FW, ACC, Langley AFB, Va., to Cmdr., 332nd AEW, ACC, Balad AB, Iraq ... Brig. Gen. Maurice H. Forsyth, from Dep. Dir., Global Ops., Jt. Staff, Pentagon, to Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar ... Brig. Gen. Jonathan D. George, from Cmdr., 55th Wg., ACC, Offutt AFB, Neb., to Dep. Commanding General, Combined Security Transition Command-Afghanistan, CENTCOM, Kabul, Afghanistan ... Brig. Gen. Blair E. Hansen, from Vice Cmdr., 9th AF, ACC, Shaw AFB, S.C., to Dir., ISR Capabilities, DCS, Intel., USAF, Pentagon ... Brig. Gen. Bradley A. Heithold, from Vice Cmdr., Warner Robins ALC, AFMC, Robins AFB, Ga., to Dir., Plans, Prgms., Rqmts., & Assessments, AFSOC, Hurlburt Field, Fla. ... Brig. Gen. (sel.) Francis L. Hendricks, from Study Dir., DARPA, Pentagon, to Vice Cmdr., AAFES, Dallas ... Maj. Gen. William L. Holland, from Dep. Combined Forces Air Component Cmdr., CENTCOM, Al Udeid AB, Qatar, to Vice Cmdr., 9th AF, ACC, Shaw AFB, S.C. ... Brig. Gen. James M. Kowalski, from Cmdr., 552nd ACW, ACC, Tinker AFB, Okla., to Dep. Dir., Global Ops., Jt. Staff, Pentagon ... Brig. Gen. Susan K. Mashiko, from PEO, Environmental Monitoring, National Polar-Orbiting Operational Environmental Satellite Sys., Integrated Prgm. Office, Silver Spring, Md., to Cmdr., Mil. Satellite Comm. Systems Wg., SMC, AFSPC, Los Angeles AFB, Calif. ... Brig. Gen. William N. McCasland, from Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif., to Dir., Space Acq., Office of the Undersecretary of the AF, Washington, D.C. ... Brig. Gen. Ellen M. Pawlikowski, from Cmdr., Mil. Satellite Comm. Systems Wg., SMC, AFSPC, Los Angeles AFB, Calif., to Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ... Brig. Gen. John I. Pray Jr., from Cmdr., 89th AW, AMC, Andrews AFB, Md., to Sr. Dir., White House Situation Room, NSC, Exec. Office of the President, Washington, D.C. ... Brig. Gen. Katherine E. Roberts, from Spec. Asst. to the Dep. Dir., NRO, Office of the Undersecretary of the AF, Chantilly, Va., to Dir., Signals Intel. Sys. Acq. & Ops., NRO, Office of the Asst. SECAF for Space, Chantilly, Va. ... Brig. Gen. Lawrence L. Wells, from Dep. Dir., Air & Space Ops., ACC, Langley AFB, Va., to Cmdr., 380th AEW, ACC, Al Dhafra AB, UAE. ■