

AEROTECH NEWS



Journal of Aerospace and Defense Industry News

and Review

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Marines host annual air show at Miramar



Photograph by John Battey

One of the many aircraft performing at MCAS Miramar, Calif., during the Marine Corps' bases annual air show Oct. 3-5. For more on the air show, and the aircraft participating, see Page 10.

October 10, 2008
Volume 23, Issue 36

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Brazil picks three finalists for fighter jet contract

Brazil's air force will choose among American, French and Swedish fighter jets to revamp its fleet.

The short list includes Boeing's F-18 E/F Super Hornet, Dassault Aviation's Rafale and Saab's Gripen NG, the air force said in a statement.

Brazil will buy 36 new planes to replace its current Dassault-made Mirage fighter jets, with the first deliveries set for 2014. The air force did not say when it will make a final choice or how much it plans to spend, but Brazil's private Agencia Estado news service estimated it would pay about \$2.5 billion for the planes.

Each of the three finalists offers "engineering of the highest sophistication," Defense Minister Nelson Jobim said, according to Agencia Estado.

Russia's Sukhoi SU-35, the Eurofighter Typhoon and Lockheed Martin's F-35 were eliminated from the candidate list, the air force said.

Brazil is seeking to link its purchases of fighter jets and other defense upgrades to broader partnerships that will help the country develop its own state-of-the-art weapons industry, Strategic Affairs Minister Roberto Mangabeira Unger told The Associated Press.

"We will not simply be buyers or clients, but partners," he said. "Any arrangement into which we will enter must, in principle, contemplate a significant element of research and development in Brazil." AP

ATK, Elbit conduct successful GATR flight test

Alliant Techsystems and Elbit Systems Ltd. have successfully conducted flight tests of the Guided Advanced Tactical Rocket at White Sands Missile Range, N.M.

Targets were engaged at ranges up to six kilometers when the GATR semi-active laser seeker guided the rockets to within one-meter accuracy, resulting in "direct hits." All rockets were fired from an M261 launcher.

The rocket benefits from a robust design, which combines combat-proven performance, a minimum smoke signature, and

the reliability of an ATK-produced propulsion system, similar to a system employed on millions of rockets produced for the U.S. Army. GATR contains a guidance and control system built with the experience of Elbit's heritage in high-performance laser seekers for the United States and international customers. It employs advanced acquisition, tracking, and guidance algorithms to achieve one-meter accuracy against stationary and moving targets. In its tactical configuration, GATR will incorporate an Insensitive Munitions rocket motor and a family of IM warheads to include blast/fragmentation and penetration. GATR will be a low-cost, precision strike weapon that minimizes collateral damage, while providing stand-off deployment against a wide array of target sets.

Northrop Grumman to build Virginia facility

Northrop Grumman is breaking ground on a new facility at Wallops Island in Accomack County on Virginia's Eastern Shore.

The building will be the first in the Wallops Research Park, which is a joint effort to attract science, technology and educational organizations and provide high-tech jobs to the region.

The company says the one-story, 15,000-square foot building can house up to 55 Northrop Grumman employees supporting the U.S. Navy's Surface Combat Systems Center and NASA.

Northrop Grumman provides the Navy with systems engineering, planning, installation, operations and maintenance services. AP

Boeing announces new rotorcraft program

Boeing has announced a new rotorcraft program, the AH-6 light attack/reconnaissance helicopter.

Designed on a combat-proven platform with a heritage of successful service with Special Operations, the AH-6 is designed to meet the current requirements of international military customers while maintaining flexibility for future growth.

"Boeing has been approached by several potential customers seeking light attack and reconnaissance capabilities in a flexible rotorcraft platform," Dave Palm, director of Boeing Rotorcraft Business Development, said at the Association of the United States Army's annual convention in Washington, D.C. "We be-

lieve this system is a perfect fit for those customers seeking long endurance, proven performance and 2,000-pound payload within an affordable helicopter."

The AH-6 features an Electro-Optical/Infrared forward-looking sight system as well as a mount for weapons that have been qualified on the aircraft, including Hellfire missiles, the M260 seven-shot rocket pod, a machine gun and a mini-gun integrated with a sensor system. A communications package allows the AH-6 to connect to other aircraft and to ground stations.

Boeing will produce the AH-6 at its Rotorcraft Systems facility in Mesa, Ariz., and will draw on that organization's existing secure supply base to ensure on-time, on-cost delivery.

SpaceDev completes third milestone

SpaceDev, Inc. recently completed its third significant milestone under the Space Act Agreement signed with NASA in June 2007; the Internal Space Vehicle Propulsion Module Preliminary Design Review.

Milestone completion was approved after submission of materials to the NASA COTS office.

SpaceDev entered into the Space Act Agreement with NASA to facilitate its development of reliable, safe and affordable transportation of passengers and cargo to and from Earth orbit. As part of the agreement, NASA is providing support regarding ISS visiting vehicle requirements and processes as well as ongoing quarterly milestone review meetings.

"We are pleased to have completed our third milestone on schedule," said Mark N. Sirangelo, SpaceDev's chairman and CEO. "SpaceDev, in passing another significant technical step, continues to enhance the development of the Dream Chaser™. It also affirms the real value of NASA's Space Act Agreement program. We are very appreciative of the ongoing support provided by NASA to our program and plan to continue to forward our development schedule."

The SpaceDev Dream Chaser™ Space Vehicle is a derivative of the HL-20 Launch System developed by NASA Langley. The vehicle has on-board propulsion utilizing SpaceDev's patented and patent pending hybrid motor technology.

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Northrop tests ASTAMIDS on new unmanned helo

Northrop Grumman has flown its new Airborne Surveillance, Target Acquisition and Minefield Detection System for the first time aboard an unmanned air vehicle.

ASTAMIDS, which is in development for the U.S. Army, flew on Northrop Grumman's new, company-owned MQ-8B Fire Scout Vertical Unmanned Air System helicopter, designated as "P6."

The ASTAMIDS-P6 flight took place at an Army test facility on September 12. There were two flights that day. Using a tactical common data link, the company team at the developmental Tactical Ground Segment, a ground-based payload control center, successfully operated the Payload Command and Control and Imagery Data Collection systems in ASTAMIDS while it was airborne.

"ASTAMIDS itself is important because of what it will do to alert our ground combat soldiers of ap-

proaching threats," said Bob Klein, vice president of Northrop Grumman Maritime and Tactical Systems integrated product team. "What makes this sensor-vehicle combination so significant is that Fire Scout can carry ASTAMIDS far beyond the point of U.S. ground forces to detect the presence of minefields and sight enemy locations without putting a single soldier at risk."

"In a programmatic sense," said Klein, "we believe ASTAMIDS will make a profound contribution to the Army's coming Brigade Combat Teams, giving them unmatched situational awareness in the remote, asymmetric combat environments they will face."

Northrop Grumman has been flight testing ASTAMIDS for several months aboard a modified U.S. Army UH-1H "Huey" helicopter. Those tests were designed to characterize and measure the performance

of the system in an operational type environment.

The ASTAMIDS program, now in system design and development, has an estimated total value of \$123 million. The program is being developed for the U.S. Army/PM-CM&EOD/PM-CCS.

ASTAMIDS is part of a growing line of airborne mine detection systems being developed by Northrop Grumman for the military services. The others are the Airborne Laser Mine Detection System and its mine-destroying counterpart, the Rapid Airborne Mine Clearance System, being developed for the U.S. Navy, and, the Coastal Battlefield Reconnaissance and Analysis system being developed for the U.S. Marine Corps. ALMDS is in low-rate initial production. The others are in development.



Northrop Grumman photograph

The gimbal multisensor that is the visible component of Northrop Grumman's new Airborne Surveillance, Target Acquisition and Minefield Detection System as mounted below the nose of Northrop Grumman's MQ-8B Fire Scout Vertical Unmanned Air System helicopter. ASTAMIDS is being developed for the Army under its Countermeasures and Explosive Ordnance Devices and Command and Control Systems program offices.

Lockheed announces team for JAGM program

Lockheed Martin has announced the industry team it will lead to execute its recently awarded \$122 million technology development contract for the Joint Air-to-Ground Missile system, the next-generation missile that will be carried on U.S. Armed Forces rotary-wing, fixed-wing and unmanned aerial system platforms.

The 27-month contract is for a competitive risk reduction phase of the Armed Forces' next major missile program. Total production for six initial U.S. Army, Navy, and Marine Corps platforms is expected to be approximately 35,000 rounds.

"We are proud to announce our team for this extremely important program," said Rick Edwards, vice president for Tactical Missiles and

Combat Maneuver Systems at Lockheed Martin Missiles and Fire Control. "Together, we will provide the lowest-risk and most affordable solution to get this much-needed capability to the field as soon as possible."

- The team includes:
- Aerojet of Camden, Alaska - rocket motor;
 - Roxel of Summerfield, United Kingdom - propellant;
 - General Dynamics Ordnance and Tactical Systems of Niceville, Fla. - multi-purpose warhead;
 - Lockheed Martin of Orlando, Fla. - tri-mode seeker;
 - Honeywell of Minneapolis, Minn. - inertial measurement unit;

- L-3 of Cincinnati, Ohio - focal plane array;
 - EMS Technologies of Atlanta, Ga. - millimeter wave antenna;
 - Marvin Engineering of Inglewood, Calif. - JAGM launchers;
 - Alliant TechSystems of Woodland Hills, Calif. - aircraft integration;
 - Moog of Aurora, N.Y. - control actuation system; and
 - PerkinElmer of Miamisburg, Ohio - warhead firing module.
- "There is no question in my mind this is an outstanding team," Edwards said. "With respect to our competition, this is a challenge we welcome and are prepared to meet. We are eager to get down to the task at hand - orking with our

U.S. Navy, Army and Marine Corps partners to get this vital new capability into the hands of our nation's Warfighters," he concluded.

JAGM will replace the Hellfire II and Longbow Hellfire missiles on the U.S. Army's Apache attack helicopter, the Warrior extended-range multi-purpose UAS, the Arapaho armed reconnaissance helicopter, the Marine Corps' Super Cobra attack helicopter and on the U.S. Navy's Seahawk armed reconnaissance helicopter. JAGM will also replace the Maverick missile on the F/A-18 Hornet jet fighter.

Potential extension to other platforms, such as the F-35 Joint Strike Fighter, and future international sales could push the total number of rounds much higher.

Raytheon completes successful intercept tests

Raytheon, working in partnership with the Army, the Future Combat Systems Lead Systems Integration team of Boeing and Science Applications International, and BAE Systems, has passed a major milestone by completing successful stationary and moving target intercept tests for the FCS Active Protection System.

The tests represent a significant step in design verification testing for the system, which includes defeating multiple incoming projectiles simultaneously and while on the move — a unique capability of the APS.

"The successful testing of this system is a top priority for

Raytheon and our FCS One Team partners," said Glynn Raymer, vice president of Raytheon's Network Centric Systems Combat Systems business. "It will provide a powerful force protection capability to our warfighters."

The APS will provide active protection for FCS manned ground vehicles.

"We are looking forward to completing validation testing of this system for the Army and getting it to our soldiers as soon as possible," said Raymer. "This vertically-launched system is the FCS solution that will meet current and future force requirements."

FCS is a joint networked family of manned and unmanned ground and air platforms and sensors that enable ground combat forces to conduct their missions safely and more effectively.

Boeing and partner Science Applications International function as the lead systems integrator for the program, managing a best-of-industry team of more than 500 partners and suppliers.

Vertical launch technology refers to an engagement technique that defeats direct or indirect incoming threats to a vehicle by physically destroying or deflecting them in flight.

Talks to resume in Boeing machinists' strike

by Gene Johnson
Associated Press

Boeing and its striking machinists union have agreed to return to the bargaining table, both sides said Oct. 8.

Approximately 75 Boeing workers are on strike in the Antelope Valley.

A federal mediator will help hammer out details of the resumed negotiations. Union members walked out Sept. 6 in a contract dispute.

"We've been keeping the lines of communication open since the strike, and we've agreed to pursue additional talks through a federal mediator," company spokesman Tim Healy said. "We're interested in exploring whether

there's a path forward to resolve the strike."

The International Association of Machinists, which represents about 27,000 workers in Washington, Oregon and Kansas, walked out after rejecting a contract offer over concerns about job security, pay, health care and retirement benefits. The electricians, mechanics, painters and other hourly workers represented by the union assemble Boeing commercial jets.

"We hope this meeting marks a major step forward," the union said in a statement to its members. It urged them to "stay strong on the picket lines. That's how we're going to secure a contract that will settle this strike."

On Oct. 5, an analyst said the strike is expected to cost Boeing about 21 aircraft deliveries and up to 15 cents per share in earnings for every two weeks it continues.

Boeing reported last week that deliveries are way off, largely due to the strike. The company delivered 84 737s, 747s, 767s and 777s in the third quarter, down from a pre-strike forecast of 119 planes.

Boeing's commercial airplane operations, based in the Seattle area, have led a resurgence by the company over the past two years amid heavy orders for the much-awaited and increasingly delayed 787 jetliner. Even before the walkout, Boeing was scrambling to meet a revised schedule to begin test

flights of the new plane late this year. That timetable has now become virtually impossible to meet.

The agreement to resume talks followed a meeting in Everett, north of Seattle, between lead negotiators for Boeing and the machinists.

Tom Wroblewski, president of Machinists District 751, said the union told Boeing Commercial Airplanes President Scott Carson at the meeting that it was concerned the company didn't understand its positions on job security and outsourcing.

Wroblewski declined to discuss other specifics of the talk, saying he didn't want to negotiate through the media. But he said, "they listened and it was agreed that we meet" to resume

negotiations.

Boeing Chief Executive W. James McNerney sent a memo to employees this week that said strikes by the Machinists union — this is the third since 1995 — have hurt the Chicago-based company's reputation for reliability and threatened the nation's aerospace industry with a fate similar to that of automakers in Detroit.

He said it would be unwise for Boeing "to agree to terms in any contract that would fundamentally restrict our ability to manage our business."

The union has acknowledged the need for Boeing to be able to outsource, but it argued that a "vast amount" of outsourced work could be done more efficiently by its members.

Sky Warrior completes first automatic takeoffs, landings

General Atomics Aeronautical Systems, Inc., a leading manufacturer of unmanned aircraft systems and tactical reconnaissance radars, along with its "Team Sky Warrior" partners AAI Corporation and L-3 Communication Systems-West, recently announced the successful first-attempted automatic takeoffs and landings of a Sky Warrior® UAS controlled from the AAI-developed Extended Range/Multi-Purpose

One System® Ground Control Station.

Three automatic landings were successfully executed at GA-ASI's El Mirage Flight Operations Center in Adelanto, Calif., on Aug. 29, followed by three successful automatic takeoffs on Sept. 26.

GA-ASI's Sky Warrior aircraft was under full line-of-sight command and control through the L-3 Communication Systems-West

Tactical Common Data Link. Automatic takeoff and landing utilizing TCDDL represents a significant technical advancement in ER/MP UAS Program development and an important step in the maturation of diverse technologies prior to fielding the system, which is expected in July 2009.

"Control of Sky Warrior from the ER/MP One System GCS marks another successful milestone in the fielding of the aircraft system and in meeting the Army's requirement for increased autonomous operation," said Thomas J. Cassidy, Jr., president, Aircraft Systems Group, General Atomics Aeronautical Systems, Inc. "GA-ASI's prior ATLS [automatic takeoff and landing system] testing on our own Predator aircraft and GCS paved the way for these first successful takeoffs and landings using the OSGCS and TCDDL."

In related news, the Team Sky Warrior partners also announced

the first successful flight of Sky Warrior from the OSGCS via over-the-horizon Ku-Band satellite communications. The flight was completed on July 24 at El Mirage and is a major move forward in providing the Army with multiple data link options.

Team Sky Warrior continues to make progress towards successful implementation of the Systems Development and Demonstration phase of a multi-year contract for the ER/MP UAS Program, which calls for 17 Sky Warrior aircraft and seven OSGCS. The total program, including potential follow-on production, is estimated to be worth more than \$2 billion. Team member contributions to the program are as follows: GA-ASI, Sky Warrior UAS; AAI Corporation, OSGCS; L-3 Communication Systems-West, TCDDL and SATCOM communications; and SPARTA, Inc., logistics support services.

Raytheon's laser guided rocket completes wind tunnel test

Raytheon has completed a Laser Guided Rocket wind tunnel test that produced both high fidelity flight simulations and data for development of the aerodynamic model required for autopilot design.

The LGR program is part of a cooperative development agreement with Emirates Advanced Investments of the United Arab Emirates. The agreement is for the development of a semi-active laser guided 70 mm (2.75 inch) rocket designed to provide increased precision and lethality compared with conventional, unguided rockets.

The four-day wind tunnel test included 542 runs in the Calspan Transonic Wind Tunnel in Buffalo, N.Y. The test was the first of many upcoming design verification events in the 24-month development and qualification program.

"This program is a potential model for Ray-

theon's global business template," said Richard Janik, Raytheon Missile Systems' LGR program director. "It has important financial, engineering and manufacturing ramifications for our international business efforts, our UAE partner and our customers."

The Raytheon-EAI cooperative development agreement includes a follow-on production proposal to manufacture LGR in both the U.S. and UAE.

"The Laser Guided Rocket program is an important venture for both our company and the UAE," said Hussain I. Al Hammadi, Emirates Advanced Investments' chief executive officer. "We're very pleased that the test results were so positive, as it has allowed us to progress on schedule and meet the next milestone objectives."

Boeing awarded initial phase of C-17 support contract

Boeing has been awarded the initial phase of a new three-year U.S. Air Force contract to continue the C-17 Globemaster III Sustainment Partnership program following a decade of comprehensive logistics support of C-17 fleets around the world.

The Air Force awarded Boeing \$514 million of the estimated \$3 billion performance-based logistics contract on Oct. 1, covering the beginning of fiscal year 2009.

Boeing's proposal included a significant decrease in dollars per flight hour that will save the Air Force more than \$200 million over three years compared with the previous GSP contract.

Through the GSP program, Boeing and the Air Force work together closely to manage a full range of C-17 sustainment activities, from field support to depot-level maintenance to supply-chain management, as well as aircraft modifications and upgrades. The PBL-style contract allows customers to pay for a specified level of readiness versus individual parts or services.

International C-17 customers in the United Kingdom, Australia, Canada, Qatar and a consortium of NATO countries also participate in the GSP program. They benefit from Boeing's ability to purchase materials in large quantities for the global C-17 fleet as well as the emphasis on aircraft readiness.

"This contract marks the end of a very successful decade of C-17 support and the beginning of a new chapter in the GSP program's life," said Gus Urzua, vice president of Boeing's Air Force Integrated Logistics division.

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Inspections ordered for A-10s

Air Force officials have issued a time compliance technical order requiring immediate inspection and repair of wing cracks for a portion of the A-10 Thunderbolt II fleet.

This action impacts approximately 130 A-10 aircraft with thin-skin wings installed during original manufacture and is being taken to ensure the continued operational safety of the aircraft.

Such action has become necessary due to an increase in fatigue-related wing cracks currently occurring in aircraft assigned to Air Combat Command, Pacific Air Forces, the Air National Guard, Air Force Reserve Command and Air Force Materiel Command.

The inspections are a necessary step in addressing the risk associated with A-10 wing cracking, specifically those aircraft with thin-skin wings. This risk is of great concern to Air Force leaders and is representative of a systemic problem for the aging Air Force fleet.

Taking immediate action is necessary for the safety of aircrews and to bring the A-10 fleet back to health. Accordingly, AFMC officials are working closely with those in ACC and the other combat Air Force major commands to address all of the thin-skinned winged A-10s, with a priority focus being on the A-10s currently in the U.S. Central Command area of responsibility.

The A-10 is a valuable asset to joint warfighters because of its unique capabilities. It can deliver precision guided weapons at high altitudes, as well as surgical close-air support at low altitudes.

Army task force key to FCS integration

by **Jacqueline M. Hames**
Army News

Soldiers are now testing Future Combat Systems equipment at Fort Bliss, Texas, and making recommendations for improvement, said a 1st Armored Division NCO Oct. 6 at the Association of the United States Army annual meeting and exposition.

The Army Evaluation Task Force is testing and evaluating FCS Spin Out 1 systems and identifying the best way to use the equipment, explained SFC Joseph Hardy.

Hardy, assigned with 5th Brigade Combat Team, 1st Armored Division, began the Warrior's Corner presentation, "A Future Combat Systems Embedded Army," with a video of Soldiers in theater commenting on the use of FCS in day-to-day operations. Having FCS in the field would be like "having an extra man in your squad," the video proclaimed, giving soldiers the confidence to go into unknown territory.

But without feedback and the evaluations from the AETF, those FCS technologies and would not be able to evolve and adapt to the current environment in theater, Hardy said.

Spin Out 1 systems include Unattended Ground Sensors, the Non-Line of Sight Cannon, Small Unmanned Ground Vehicles, and an Unmanned Air Vehicle currently being evaluated by the AETF.

The capabilities of these systems "will deliver enhanced situational awareness," Hardy said. The equipment, like the SUGV and UGS, makes it easier to clear an objective because a unit can focus on completing a mission instead of worrying about the soldiers on rear-guard, he said.

"You don't have to leave a squad behind,"

Hardy said.

The AETF mission of testing and evaluation is vital in determining where soldiers want to go with the FCS equipment, Hardy said. Soldiers, both in the field and in AETF, provide valuable feedback on how to improve and better use existing FCS equipment.

Hardy used the example of the SUGV. Soldiers recommended a camera be put in the body of the robot, in addition to in the head, so in the event the head was damaged, the robot could continue to operate.

Those recommendations were taken into consideration and the SUGV was soon updated with a camera in-body.

In addition to evaluation and testing, an assignment with the AETF gives soldiers hands-on training.

Soldiers with experience can go to the next unit, the next assignment, already knowing how to use the SUGV, Hardy said, and can teach their commanders how to use FCS equipment.

"These soldiers will have less of a learning curve," Hardy said, and can immediately use FCS equipment.

The experience that non-commissioned officers gain at AETF allows them to see how the myriad of FCS systems are connected, and helps them to understand how everything will relate in the field, he said.

"ATEF helps these leaders understand what they are going to be facing," Hardy said.

"How to go through and find the information that's most important, and then get that information set up as quickly as possible."



Army photograph by Jacqueline M. Hames

A Small Urban Ground Vehicle on display at the Program Manager Future Combat Systems display during the AUSA exposition October 6, 2008.

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by Raphael Jaffe
staff writer

Forest fire fighters love the idea of being able to douse huge amounts of retardant fluid at one pass. But unique issues such as mountainous terrain, low ground level flights, turbulence and wind shear make using large aircraft into a delicate operation.

Typically, the drops are made from 200 to 500 feet over the target, at a speed of 140 to 150 knots.

Thus, NASA is partnering with the U.S. Forest Service on a project to examine the mission suitability of Boeing 747 and McDonnell Douglas DC-10 fire retardant delivery aircraft. The aircraft under study are a DC-10 belonging to 10 Tanker Air Carrier LLC of Victorville, Calif., and a 747-200 owned by Evergreen International Aviation, Inc of McMinnville, Ore. The DC-10 tanker already has been successfully used by the California Department of Forestry and Fire Pro-

tection for past wildfire suppression missions. The DC-10 carries 12,000 gallons of retardant; the 747 reports about 20,000 gallons.

NASA's Dryden Flight Research Center at Edwards, Calif., is working with the Forest Service to help determine the safe flight envelope for these very large air tanker aircraft for both the Forest Service and the U.S. Department of the Interior. Additionally, Dryden will recommend operational usage regimes, policies and procedures for the aircraft. The Forest Service and the Interior Department approached NASA for help because they provide the range and depth of necessary flight test planning skills to develop and conduct the assessment.

Mark Dickerson, Dryden project manager, calls this important work.

"The entire team is very excited about helping the Forest Service with this effort. It is a bit different from our typical research projects, but we all enjoy being able to help find new tools to

fight wildfires," Dickerson said.

As project lead, NASA Dryden is performing operational test and evaluation assessments. Project engineers will report findings and recommendations on these aircraft in cooperation with NASA's Ames Research Center. NASA Ames' engineers are supporting the effort with pilot-in-the-loop simulations and are coordinating simulator models, flight profiles and data analysis with project staff at NASA Dryden.

Engineers at NASA Dryden will also develop, implement, and direct an evaluation test plan for use in flight test and in simulation. The test plan will be designed to evaluate the suitability of large tanker aircraft for the firefighting mission environment. Based on this analysis, NASA will propose appropriate interim flight envelope limitations to enhance safety and operational utility in the fire retardant delivery mission.

NASA Dryden personnel are working with the crews of the large tanker



Photograph courtesy of 10 Tanker Air Carrier LLC

Tanker 10, a DC-10 jetliner converted into an air tanker for fighting wildfires, drops its 12,000-gallon load of retardant over a recent California wildfire.

aircraft to capture flight validation data, assess the effectiveness of proposed procedures, and refine those as required. The final project report will include initial recommendations

for such factors as flight over various terrain types, density altitude limits, turbulence, and horizontal wind shear limits.

Photonic modulation

An advance in quantum information processing

by Maria Callier
Arlington, Va.

Researchers at Stanford University have potentially advanced quantum cryptography, information processing, and memory storage by being the first scientists to modulate the time profile of a single photon.

Air Force Office of Scientific Research-funded Dr. Steve Harris and his co-researchers at Stanford University have demonstrated a new technique for modulating the wavepacket of a single photon.

Harris' team created an entangled photon wave packet nearly a microsecond long, using "slow light" and "electromagnetically induced transparency." Prior to this, wave packets were too short to allow their modulation.

With wave packets, it is important to know when

the photon is inside the modulating device. The particle can be located by generating two photons in rubidium gas at slightly different frequencies and letting the slow (speed of light) moving one, signaling the faster (1/10,000 speed of light) moving one's arrival in the pulse-shaping device (electro-optic modulator)."

"Single photon physics provides secure communication. If I do coding with photons, eavesdropping is not possible. A person who tries to eavesdrop, destroys the photon in the process," said Harris.

In the past, single photons were created in "cavities" to have particular wave packet forms, but the modulator makes it possible to both modulate much faster and also to modulate the phase. The present work demonstrates amplitude modulation, and the

next phase of Harris' research will focus on phase modulation. This has the advantage that it does not cause the loss of photons. In fact, it should be possible to show that many bits of information may be transmitted as part of the phase of a single photon.

Harris' research makes use of what is termed as "cold atoms." The technique for cooling atoms was invented by Dr. Steve Chu and colleagues, earning a Nobel Prize in 1997, and was also supported by AFOSR.

Photograph courtesy of Dr. Steve Harris

Researchers at Stanford University have potentially advanced quantum cryptography, information processing, and memory storage by being the first scientists to modulate the time profile of a single photon.



NASA awards future vehicle aircraft research contracts

NASA has awarded research contracts worth a total of \$12.4 million to six industry teams to study advanced concepts for subsonic and supersonic commercial transport aircraft that could enter service in 25 to 30 years.

NASA's Aeronautics Research Mission Directorate selected teams led by Boeing, GE Aviation, Lockheed Martin, Massachusetts Institute of Technology and Northrop Grumman to receive separate 18-month study contracts valued at approximately \$2 million each.

The focus of the studies is on commercial transports that can overcome significant performance and environmental challenges for the benefit of the general public. The work is intended to identify key technology development needs, such as advanced airframes and propulsion systems, as well as breakthroughs that will enable such vehicles to enter service in 2030-2035. The vehicles represent a research and development generation known as "N+3," denoting three generations beyond the current commercial transport fleet.

"The future of air transportation is all about protecting the environment and responding to increasing energy costs in a balanced way," said Juan Alonso, director of NASA's Fundamental Aeronautics Program at NASA's Headquarters in Washington. "We will need airplanes that are quieter and more fuel efficient, and cleaner-burning fuels to power them. We are challenging industry to introduce these new technologies without impairing the convenience, safety and security of commercial air transportation."

The studies constitute the first phase of a two-phase acquisition involving a competitive down-selection process. Participants who successfully complete the first phase will be asked to submit propos-

als for Phase 2, which provides additional funds for initial research on the enabling technologies identified in Phase 1.

The Phase 1 research projects are listed below, including team members and award amounts.

Development of Subsonic Ultra Green Aircraft Research: Boeing, Georgia Institute of Technology, GE Global Research and GE Aviation; \$1.9 million.

Small Commercial Efficient and Quiet Air Transportation for 2030-2035: GE Aviation, GE Global Research, Georgia Institute of Technology and Cessna Aircraft Company; \$1.97 million.

Aircraft and Technology Concepts for an N+3 Subsonic Transport: Massachusetts Institute of Technology, Aurora Flight Sciences, Aerodyne Research Inc., Pratt and Whitney and Boeing Phantom Works; \$2.13 million.

Air Force funding enables artificial photosynthesis

by Molly Lachance
Arlington, Va.

The news media has paid a great deal of attention to Daniel Nocera's breakthrough research in artificial photosynthesis, and with good reason.

This technology has the potential to power an entire building for one day using only a few gallons of water and light energy from the sun.

Solar energy could be a powerful solution to the energy needs

Advanced Concept Studies for Subsonic Commercial Transport Aircraft Entering Service in the 2030-2035 Time Period: Northrop Grumman Systems Corporation, Tufts University, Sensis Corporation, Spirit Aerosystems and Rolls-Royce North America Inc.; \$1.97 million.

Advanced Concepts Studies for Supersonic Commercial Transport Aircraft Entering Service in the 2030-2035 Time Period: Boeing, Boeing Phantom Works, GE Global Research, Georgia Institute of Technology, M4 Engineering Inc., Pratt and Whitney, Rolls Royce and Wyle Labs; \$2.28 million.

NASA N+3 Supersonic, Three Generations Forward in Aviation Technology: Lockheed Martin, GE Global Research, Purdue University and Wyle Laboratories; \$1.96 million.

of the future for both military and commercial entities, but as Nocera points out, power is needed all the time, not just when the sun is shining.

Therefore, he and his research team at the Massachusetts Institute of Technology are investigating new methods to store solar energy. Nocera is the first to admit that this is not a new concept, but the key to his research has been finding a technique that is cheap, efficient and easy to manufacture.

After ruling out several lower energy options, Nocera's team

See PHOTO, Page 9

Phoenix confirms water, carbonates in Martian soil

by **Raphael Jaffe**
staff writer

At a Sept. 29 news conference, Mars Phoenix personnel confirmed the probe has found water-ice, calcium carbonate, and perchlorates in the soil near Mars' North Pole.

Nature and NASA funding have now extended the mission until the middle of November, at least. Nature's role is that the power generated by the solar arrays will be sufficient to operate the analysis and communication equipment despite the shorter periods of sunlight, as winter comes. But the robot arm cannot be operated past the end of October, according to Barry Goldstein, the Jet Propulsion Lab project manager.

Doug McCuiston, director of Mars Exploration Program, NASA headquarters, said that Phoenix had already accomplished its Level 1 requirements in late August, and funding will continue for "the great additions" now going on.

"We are still collecting data and have lots of analysis ahead, but we are making good progress on the big questions we set out for ourselves," said Phoenix Principal Investigator Peter Smith of the University of Arizona, Tucson.

Since landing on May 25, Phoenix already has confirmed that a hard subsurface layer at its far-northern site contains water ice. The robotic digging arm has confirmed that there's a "skating rink" of water ice a little more than 2 inches below the red soil, said Smith. Determining whether that ice ever thaws would help answer whether the environment there has been favorable for life, a key aim of the mission

The evidence for calcium carbonate in soil samples from trenches dug by the Phoenix robotic arm comes from two laboratory instruments called the Thermal and Evolved Gas Analyzer, or TEGA, and the wet chemistry laboratory of the Microscopy, Electrochemistry and Conductivity Analyzer, or MECA.

"We have found carbonate," said William Boynton of the University of Arizona, lead scientist for the TEGA. "This points toward episodes of interaction with water in the past."

Both TEGA, and the microscopy part of MECA, have turned up hints of a clay-like substance. "We are seeing smooth-surfaced, platy particles with the atomic-force microscope, not inconsistent with the appearance of clay particles," said Michael Hecht, MECA lead scientist at the Jet Propulsion Lab

A laser instrument designed to gather knowledge of how the atmosphere and surface interact on Mars has detected snow from clouds about 2.5 miles above the spacecraft's landing site. Data show the snow vaporizing before reaching the ground. "Nothing like this view has ever been seen on Mars," said Jim Whiteway, of York University, Toronto, lead scientist for the Canadian-supplied Meteorological Station on Phoenix. "We'll be looking for signs that the snow may even reach the ground."

There are perchlorates present. That may account for the somewhat surprising finding that the soil above the ice is rather dry. Perchlorates are known desiccating (water absorbing) chemicals.

There has not yet been an attempt to detect organic materials. If the Phoenix minilabs con-

tinue to function, both an "organic blank" and soil samples will be analyzed for carbon-hydrogen compounds.

"We are still collecting data and have lots of analysis ahead, but we are making good progress on the big questions we set out for ourselves," said Smith.

The Phoenix mission, originally planned for three months on Mars, now is in its fifth month. However, as it faces a decline in solar energy, the Lander's activities will end by about mid-Novem-

ber. At that time the instruments will start cooling, possibly to minus 150 degrees Fahrenheit, and the entire lander will be encased in solid carbon dioxide ice. The temperature will be lower than the glassification temperature of the circuits, and they will likely crack, according to Goldstein. Optimistically, a Lazarus mode has been built into the computer, to wake up the lander and radio back to earth if power returns to the lander next year. "But I don't think that's really possible," he said.

PHOTO, from 8

chose to pursue photosynthesis, which naturally stores energy when splitting the bonds of water to produce oxygen and nature's chemical equivalent of hydrogen, NADPH. Using this model, he sought to develop an artificial photosynthesis that split water molecules into oxygen and molecular hydrogen (rather than NADPH) without the costs and harsh conditions that accompany existing commercial electrolyzers.

Support from the Air Force Office of Scientific Research has enabled Nocera to conduct the basic research necessary to make this possible.

Using cobalt as a catalyst and phosphate as a proton acceptor, Nocera is able to demonstrate a method for splitting water into hydrogen and oxygen molecules under environmentally friendly conditions.

In a presentation at AFOSR, he expressed great pride in how easily this method can be prepared, saying that he often invites reporters and other interested parties into his lab to perform the experiment themselves.

In the water-splitting experiment, the team places an electrode in phosphate-buffered water containing cobalt. When they apply electricity, oxygen evolves from one side in a thin amorphous film containing phosphate and cobalt while hydrogen evolves simultaneously from the other side.

Because the catalytic film forms in situ, or in the reaction mixture, a self-repair mechanism is implied. In this case, meaning that as oxygen evolves, cobalt is thought to cycle through different oxidation states as it attaches to phosphate and then to the electrode. The results indicate that any cobalt that falls off the electrode appears to reattach to another phosphate, activating it for another catalytic cycle.

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The screenshot shows the Aerotech News and Review website. At the top, there's a navigation menu with links for 'About us', 'Contact us', 'Advertising', 'Links', 'Multimedia', 'Job Fair', and 'Archives'. Below the menu is a 'Click HERE to See and Buy Photos' button. The main content area features a 'National End Filter School' advertisement, a 'Top stories' section with a link to 'Aerotech News and Review: News Briefs, US 2008', and a 'Direct Flight - Edwards AFB' article. There are also several smaller advertisements and a sidebar with 'Aerotech News and Review' logo and contact information.

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MCAS Miramar hosts 2008 air show

by John Battey
staff writer

Marine Corps Air Station Miramar in San Diego, California home of the 3rd Marine Aircraft Wing hosted its annual air show "A Salute to Marine Corps Aviation" Oct. 3-5.

The air show advertised by the Marines as the largest military air show in the world proved once again to be an absolutely spectacular event.

Last year's air show received the International Council of Air Shows award for the best military air show in the country.

The world famous U.S. Navy six airplane Flight Demonstration Team - The Blue Angels - was the headline act and flew its entertaining performance all three days much to the delight of the hundreds of thousands of air show fans in attendance. The team flies the F/A-18 Hornet and return after the Thunderbirds had performed last year at Miramar. The teams C-130 known as Fat Albert also flew.

The Blue Angels were formed in 1956 and have performed all over the world for more than 427 million people including over 15 million last year.

The Marine Ground Task Force demonstration is the one portion of the air show that separates the Miramar show from all others. The four-element firepower demonstration features a simulated combat assault attack from the air as well as on the ground. The explosive display of Marine Corps capabilities includes F/A-18 Hornet attack jets, AV8-B Harrier jump jets, KC-130 Hercules refueling planes, CH-53E Super Stallions, CH-46E Sea Knights, AH-1 Super Cobras and UH-1 Huey helicopters. The ground elements included several tanks, assault vehicles and ground troops.

The U.S. Air Force was well represented at the event by their newest fighter jet the F-22 Raptor with Maj. Paul "Max" Moga performing an incredible demonstration of the high speed and low speed capabilities of the fighter that made several passes each day while getting some incredible vapor around the aircraft.

A full demonstration was also performed by the U.S. Air Force West Coast F-16 Demonstration Team. Capt. Russ T. Piggott is commander of the team. Piggott grew up in Lafayette, Calif., and learned to fly at Livermore Airport in a Pitts special.

A three ship heritage flight with the F-22, F-16 and a P-51 Mustang was also performed.

The U.S. Navy was represented by an F/A-18 F Super Hornet from VFA-122 that performed a full tactical demonstration that included an awesome 700-mph high-speed pass that produced a rarely seen vapor cone. The U.S. Marine Corps showcased their AV-8B Harrier jump jet from MCAS Yuma, Ariz., that demonstrated its ability to take off and land vertically and the U.S. Army showcased their precision parachute team the "Golden Knights".

Civilian aerobatic performances were a big part of the air show with



Photographs by John Battey



demonstrations by Bill Reesman in his Russian MiG 17, Sean D. Tucker in his Oracle Challenger; John Collver in a AT-6 Texan; Dan Buchanan in his hang glider; The Patriots Jet Team Flying 4 L-39s; Les Shockley in his 300-mph, three-engine jet truck; and Brett Willat flying a sailplane. The Red Bull Helicopter the Silver Wings Wing walkers in a Stearman bi-plane and Ed Hamill in his Pitts rounded out the civilian acts.

The flight line included more than 100 static displays of military and civilian aircraft and Marine Corps Vehicles

and weapon systems. Highlights of the static display area included the F-22, F-18F Super Hornet, B-52 Bomber, NATO E-3 AWAC, C-5 Transport, MV-22 Osprey, F-16, T-38, F-5, B-25, Navy F-16, Apache helicopter, E-2, Bob Stambovsky's Provost T-5, a KC-130 Hercules and several CH-53 and CH-46 helicopters and F-18 Hornets from the home based squadrons at Miramar Marine Corps Air Station.

Oct. 1, 2008, marked the 11-year anniversary of the Marines and the 3rd Marine Aircraft Wing arriving at Mi-

ramar and there are more than 10,000 Marines that support the 23,000-acre facility. The 3rd Marine Aircraft Wing's primary mission is to provide combat ready expeditionary aviation forces capable of short notice deployment. During 2006 the 3rd MAW flew more than 150,000 sorties accumulating more than 100,000 hours of flight time in Operation Iraq Freedom and its operations transported more than 230,000 personnel and 75 million pounds of cargo throughout the theater.

The 2008 Miramar air show once

again was one of the elite flying and static displays to be demonstrated in the United States during this year's air show season and Marine Corps Air Station Miramar, commanded by Col. Christopher E. O'Conner, was once again given a chance to show the public its fixed wing aircraft and helicopters along with its state of the art equipment and the public was given the opportunity to meet its brave and courageous men and women in uniform as they train to support the United States Global War on terrorism.

AFMC civilians among Presidential Rank Award winners

President George W. Bush announced recipients of the prestigious Presidential Rank Awards for 2008 Oct. 6, and the list includes nine civilians currently or recently assigned to Air Force Materiel Command.

Included in the nine is David C. Bond who is executive director of the Air Force Flight Test Center at Edwards Air Force Base, Calif.

There are two categories of rank awards: distinguished and meritorious. Award winners are chosen through a rigorous selection process. They are nominated by their agency heads, evaluated by boards comprised of private citizens, and approved by the President. The evaluation criteria focus on leadership and results.

Specific categories and recipients include:

2008 Distinguished Senior Professionals

• **Dr. Donald B. Paul**, the Chief Scientist, Air Vehicles Directorate, Air Force Research Laboratory, Wright-Patterson AFB.

2008 Distinguished Executives

• **Barbara A. Westgate**, a member of the Senior Executive Service. Currently she is Assistant Deputy Chief of Staff for Strategic Plans and Programs, Headquarters U.S. Air Force, Washing-

ton, D.C. From July 2005 to September 2008, Mrs. Westgate served as Executive Director for AFMC at Wright-Patterson AFB.

• **Patricia J. Zarodkiewicz**, a member of the Senior Executive Service. Currently she is Deputy for Budget, Office of the Assistant Secretary of the Air Force for Financial Management and Comptroller, Headquarters U.S. Air Force. She served from June 2002 to June 2005, she served as Deputy Director of Financial Management at Headquarters AFMC at Wright-Patterson AFB. From July 2005 to September 2005, she served as Director of Financial Management at Headquarters AFMC.

2008 Meritorious Senior Professionals

• **Dr. Alok Das**, a member of the scientific and professional cadre of senior executives. He is the Senior Scientist for Design Innovation for AFRL at Wright-Patterson AFB.

• **Barry L. Farmer**, Chief Scientist for AFRL's Materials and Manufacturing Directorate, at Wright-Patterson AFB.

2008 Meritorious Executives

• **David C. Bond**, a member of the Senior Executive Service. Currently he is Executive Director, Air Force Flight Test Center at Edwards AFB, Calif. He

was selected for reassignment as Director, Engineering and Technical Management, Headquarters AFMC. He will assume that position in late October.

• **Patsy J. Reeves**, a member of the Senior Executive Service. She is the Director of Contracting for the Aeronautical Systems Center at Wright-Patterson AFB.

• **Joe Sciabica**, a member of the Senior Executive Service. He is Executive Director for AFRL at Wright-Patterson AFB.

• **Dr. Larry B. Simpson**, a member

of the Senior Executive Service. He is Director, 308th Armament Systems Wing at Eglin AFB, Fla.

Each year, the president selects an elite group of career members of the Senior Executive Service, Senior-Level and Scientific and Professional corps for their exceptional leadership, accomplishments, and service over an extended period of time.

Michael Hager, acting director of the U.S. Office of Personnel Management, which administers the Presidential

Rank Award program, said the winners represent the cream of the crop within the Federal executive ranks.

"Their professional dedication and commitment to excellence is helping to advance President Bush's agenda for enhancing Federal Government performance and creating a more effective civil service," Hager said.

The honor carries with it a cash award for recipients. In addition, each winner receives a signed certificate from the president and a lapel pin.

Boeing names director of state, local government relations

Boeing has named longtime Washington State legislative staffer David Schumacher as director of State and Local Government Relations.

Schumacher reports to Fred Kiga, vice president for State and Local Government Relations and Global Corporate Citizenship for Boeing.

"David Schumacher brings a wealth of experience as an analyst and senior advisor on fiscal legislation and budget items as well as his work helping to formulate overall budget structures and strategies," Kiga said. "He has worked closely with Washington State legislators, local and state government officials and three governors. His 18 years of service both in and outside of the legislative process will serve Boeing well in the coming years."

Schumacher is responsible for fostering and maintaining relationships with state and local government officials on public policy affecting Boeing in the states of Washington, Oregon, Montana, Hawaii and Alaska.

Schumacher most recently was the nonpartisan staff director for the Washington State Senate Ways and Means Committee. Before that assignment, he served as the committee's capital budget coordinator and tax policy analyst. Schumacher also worked as an executive policy analyst in the Office of Financial Management for the State of Washington and as an economic analyst for the Washington State Department of Revenue. He holds both a bachelor's and master's degree in economics from the University of Washington.

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Northrop receives group achievement award from JPL

NASA's Jet Propulsion Laboratory has recognized Northrop Grumman with a Group Achievement Award for a deployable antenna flown on the Mars Reconnaissance Orbiter.

The JPL Group Achievement Award is given in recognition of an outstanding accomplishment through the coordination of numerous individual efforts that has contributed substantially to the accomplishment of a NASA mission.

The award was presented to 20 employees including four retirees, from Astro Aerospace, a business unit of Northrop Grumman's Space Technology sector. Astro Aerospace built the antenna for the Italian Space Agency's SHARAD instrument flown on the NASA spacecraft. The MRO continues the search for liquid or frozen water in the first few hundreds of feet of Mars' crust.

Weighing less than three kilograms (6.6 pounds), SHARAD's antenna successfully deployed to a length of 10 meters (32.8 feet) to provide the geometry required once the spacecraft reached its circular, two-hour orbit around Mars. SHARAD probes the Mars subsurface with radar waves using a 15-25 MHz frequency band to get the desired high-depth resolution.

The radar wave return is sensitive to changes in the reflection characteristics of the rock, sand, and any water present in the surface and subsurface. Changes in the reflection characteristics of the subsurface,

such as layers deposited by geological processes in the ancient history of Mars, will also be visible.

This antenna, which was developed and tested with on-time delivery under the constraint of a short development cycle, continues Astro Aerospace's 100 percent success record on hundreds of space deployables. It uses a similar technology to the MARSIS antenna built by Astro Aerospace for the European Mars Express spacecraft. The MARSIS antenna successfully deployed to 40 meters (131 feet) length onboard the Mars Express

once it entered the desired orbit around Mars.

Northrop Grumman Astro Aerospace, based in Carpinteria, Calif., is a leader in the development of space, defense and electronics systems. For more than 50 years, Astro Aerospace has pioneered the technology of space deployable structures including AstroMesh furlable reflectors, antennas, truss masts, telescopic booms, storable tubular extendible members, solar array and planar radar-array deployments.



Hometown Heroes

Army Pfc. Thomas J. Mann has graduated from basic combat training at Fort Jackson, Columbia, S.C.

During the nine weeks of training, the soldier studied the Army mission, history, tradition and core values, physical fitness, and received instruction and practice in basic combat skills, military weapons, chemical warfare and bayonet training, drill and ceremony, marching, rifle marksmanship, armed and unarmed combat, map reading, field tactics, military courtesy, military justice system, basic first aid, foot marches, and field training exercises.

He is the nephew of Jerry Goodman of Acton, Calif., and grandson of Helen Goodman of Bishop, Calif.

Mann graduated in 2001 from Valencia High School, Calif., and received an associate degree in 2005 from College of The Canyons, Valencia.

Army Pvt. Clifford L. Hunt has graduated from basic combat training at Fort Jackson.

He is the son of Dara English of Boron, Calif.

Hunt is a 2001 graduate of Boron High School.

Army Pvt. Jonathan J. Johnson has graduated from basic combat training at Fort Jackson.

Johnson earned distinction as an honor graduate.

He is the former ward of Leo and Mary Gainey of Boron, Calif.

In 2005, the private graduated from Boron High School.

Army Sgt. Alex D. Green has graduated from basic combat training at Fort Jackson.

Green is the son of Linda Ruth of Palmdale, Calif. The sergeant graduated in 2001 from the John H. Francis Polytechnic School, Sun Valley, Calif., and received a bachelor's degree in 2006 from Boise State University, Idaho.

Army Pvt. Shenada N. Solomon has graduated from basic combat training at Fort Jackson. Solomon is the former ward of Eddie Solomon of Palmdale, Calif., and sister of Felicia Solomon of Chatsworth, Calif.

Army Pfc. Michele M. Tinoyan has graduated from basic combat training at Fort Jackson. Tinoyan is the daughter of Suezanne Grove of Lancaster, Calif.

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Ad Council Play60

Air, space port okays IT contract

by **Raphael Jaffe**
staff writer

At the bimonthly meeting of the East Kern Airport Authority (Mojave Air and Space Port) on Oct. 7, contracts were approved for a single IT consultant, High Desert Wireless Broadband Communication, to handle system integration, network administration, upgrades and troubleshooting for wireless, security cameras, VOIP, and access control.

It calls for an initial survey at \$2,500, and then continuing service as a base payment of \$2,500, with additional charges for additional needs. High desert is located at the airport.

Other contracts on the consent calendar were approved - for liability insurance, about \$26,000; and for advertisements - a Flight Test Historical Foundation program ad for \$250, and an ad in the forthcoming Creative Industry Handbook costing \$5,400.

The Creative Industry Handbook is used by film industry location scouts. Mojave rents use of airport facilities for filming. With the current tightening of credit, it is hoped that more studios will opt for nearby film locations. Employees Debbie Roth and Erika Westawski will attend a spring meeting of location scouts. Airport tenant P and M Aircraft provides aircraft for film studios usage. The owner, "Captain Mike," commended Debbie for her cooperation as a liaison with studios, bringing them back.

General Manager Stu Witt and Operations Manager Bob Rice spent almost two days with FAA auditors, reviewing all aspects of operations.

"It was the most extensive audit in the six years that I've been here," said Witt.

The auditors took back with them many Mojave Space Port documents. Witt hopes these will assist FAA in setting up standards and procedures for commercial space port operations, and that FAA will

be pleased by this cooperation.

The Legacy Park Memorial Plaque committee issued its first draft for comments.

The committee includes Director Dick Rutan; Chair; Director Marie Walker; Witt; and community leader Bill Deaver. The criteria would include three types of plaques. Anyone who lost their lives in aerospace research or aircraft envelope expansion would be honored. The three Scaled Composites employees killed last year are already commemorated.

A second type of plaque, at a different location on the Memorial Wall, would posthumously honor those who made a significant contribution to the development of the airport or to aerospace development while working at Mojave Air and Space Port. An obvious nominee is Dan Sabovitch. A third type of "plaque" would be a "Memorial Brick" area, as a fundraiser. These would bear the names of whomever the donor wishes to honor.

There was extensive discussion at the meeting of ways to provide a softball field as a service to the community, and further as a recreational perk for tenant and staff employees.

Witt has been approached by the Mojave Unified School District and the Mojave Public Utilities District about possible cooperative means to provide a softball field for use of the Mustangs JV. The school district currently has a lease for airport land, which is now used for Sabovitch Field. The district owns a plot of land adjacent to the airport, along Highway 58, between the courthouse, and a county park, upon which there is a baseball field.

The sense of the board seemed to be to cooperate with the community, but it was wary about proper use of district resources. District Deputy Council, Scott Nave, thought that by proper amendments to the existing lease, such problems could be worked out. Witt was instructed to continue discussing the matter.

October 2008

Oct. 11-15 - 40th Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, Ithaca, N.Y.

<http://dps08.astro.cornell.edu/>
Oct. 12-15 - Workshop: Hot Massive Stars - A Lifetime of Influence, Flagstaff, Ariz.

www.lowell.edu/workshops/Contifest/
Oct. 12-15 - New Vision 400: Engaging Big Questions in Astronomy and Cosmology Four Hundred Years after the Invention of the Telescope, Beijing, China

www.nv400.org
Oct. 13 - GIOVE Workshop, Noordwijk, The Netherlands
www.congex.nl/08m37/

Oct. 13-17 - IAU Symposium 258: The Ages of Stars, Baltimore, Md.

www.stsci.edu/institute/conference/iau2008

Oct. 13-17 - 2nd Indo-Brazilian Workshop on Gravitation and Cosmology, Natal, Brazil

www.ccet.ufm.br/ibwg/

Oct. 13-17 - I-Science Workshop on Data Mining, Distributed Computing and Visualization for Astronomy, Leiden, The Netherlands

www.lorentzcenter.nl/1c/web/2008/321/info.php3?wsid=321

Oct. 14-17 - Workshop: Classification and Discovery with Large Astronomical Surveys, Ringberg Castle, Germany
www.mpia-hd.mpg.de/class2008/

Oct. 15 - 3rd Future Launchers Preparatory Programme Industrial Workshop, Noordwijk, The Netherlands
www.congex.nl/08m35/

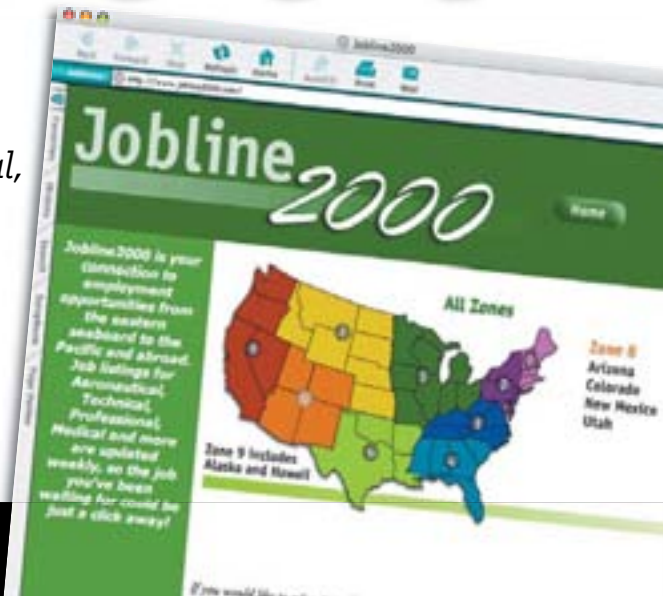
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COMMON SENSE

And in other news ...

by Oliver North
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The potentates on the Potomac have been so busy ranting about an imminent financial "catastrophe," dissecting Sarah Palin's debate debut and prognosticating John McCain's political demise that other news - particularly about the war being waged against radical Islam - has been hard to find.

Here are some facts about the campaigns in Iraq and Afghanistan that haven't captured the attention of our so-called mainstream media:

First, and most importantly, the campaign in Mesopotamia is all but won. Last week, the 2nd Battalion, 9th Marines arrived in Anbar province - once the bloodiest place on the planet - to assume the mission of honing the skills of Iraqi forces, who are now responsible for security in the largest of Iraq's 18 provinces. Iraqis - instead of Americans - now are conducting most combat operations against al Qaeda remnants and Shiite militias throughout the country.

Second, despite predictions that "it couldn't be done," the al-Maliki government has announced plans for provincial elections before year's end. The Iraqis also are completing an oil-

revenue-sharing plan and quietly are concluding a status of forces agreement with the U.S. on the disposition of American troops. Though Iranian interference in Iraq's internal affairs continues, U.S. and Iraqi special operations forces quietly have been rolling up terror networks set up by Iran's Islamic Revolutionary Guard Corps.

Gen. Ray Odierno, the new U.S. commander in Iraq, demurs from describing the current situation a "victory" because bloodshed still occurs. This week, Sunni suicide bombers in Salahuddin province and Baghdad killed 28 and wounded more than 30 Shiite worshippers celebrating Eid al-Fitr - the end of their Ramadan fast. Rather than pushing the country toward "civil war," events such as these increasingly have alienated insurgent groups from the civilian population. Despite these attacks, violence is at a four-year low. Though widely unreported, U.S. military and diplomatic officials express quiet confidence that Iraq is well on its way to becoming our closest ally in a part of the world where we need reliable friends.

There is also good news from Afghanistan that generally is ignored by our political and media elites in their

efforts to find only gloom and doom in the campaign against a resurgent Taliban and the remnants of al Qaeda. On Sept. 30, U.N. Secretary-General Ban Ki-moon reported that this year, 30 aid workers have been killed, 92 have been kidnapped and 22 World Food Program convoys have been attacked. Oct. 1, President Bush met with Gen. David McKiernan, the senior U.S. military commander in Afghanistan. Both men acknowledged the current spike in violence in Afghanistan, which was precipitated by cross-border activity from Pakistan and Iran.

Though they also observed that there have been improvements in health care, education and transportation, press reports of the meeting emphasized that 2008 has been the bloodiest year for U.S. troops in Afghanistan since 2001.

McKiernan made clear that he needs more troops, military hardware and reconstruction aid "as quickly as possible" in order to prosecute an effective winter campaign against a "surge" in foreign terrorists, which includes Pakistanis, Chechens, Saudis, Uzbeks and Europeans. It is a point we made repeatedly in our Fox News Channel reports from Afghanistan in August and

September.

We also noted that relying on our "NATO partners" - the consequence of a United Nations resolution - has not worked. Today there are 33,000 U.S. troops in Afghanistan, but only 20,000 of them are under direct U.S. operational control. The rest report to NATO's International Security Assistance Force - 31,000 personnel from 39 other countries. With the exception of the British and Canadians, most ISAF troops have so many "national caveats" on how and where they can be employed that they are effectively noncombatants.

Unlike Mesopotamia, where U.S. troops have trained and equipped more than 400,000 members of the Iraqi security forces since 2003, the Afghan National Army and Afghan National Police - supposedly advised and outfitted by ISAF - still number fewer than 60,000. None of this is good news, but it is about to change.

Gen. David Petraeus has ordered Central Command to review the disposition of U.S. forces in his theater and - equally important - NATO roles and missions in Afghanistan. In the aftermath of the Sept. 20 suicide bombing at a Marriott hotel in Islamabad, Pakistan, the Pakistani government is renewing

efforts to rein in Islamic radicals. Last week, Afghan Defense Minister Abdul Rahim Wardak called for the creation of a combined Afghan, Pakistani and U.S. security force for the porous, mountainous and largely ungoverned Afghan-Pakistani border region, where 10,000-15,000 al Qaeda and Taliban insurgents have havens. Pakistan's new president, Asif Ali Zardari, apparently likes the idea, as do U.S. commanders in the field.

Meanwhile, Baitullah Mehsud, titular head of the Taliban in Pakistan, is dead, and the Pakistani army is prosecuting a successful campaign against al Qaeda militants in Bajaur agency, in Pakistan's Federally Administered Tribal Area. Though Defense Secretary Robert Gates predicts that it will be springtime before an additional 10,000 U.S. troops will arrive in Afghanistan, Gen. McKiernan already has received some of the aviation assets he needs to support his planned winter offensive.

In their constant effort to paint a dismal picture of the war, the masters of our media failed to report all this. Perhaps they will do better next week.

Kremlin closely watches U.S. elections

by Douglas Birch
Associated Press

As the U.S. presidential contest enters its final weeks, the Kremlin has grown increasingly upset with what it regards as Russia-bashing by both candidates at a critical time in relations between Washington and Moscow.

A Russian government official close to the leadership told The Associated Press this week that Moscow is disturbed by the rhetoric coming from both Democrat Sen. Barack Obama and Republican Sen. John McCain.

President Dmitry Medvedev and Prime Minister Vladimir Putin "are watching what is going on in the campaign in the United States very closely," said the official, who spoke on condition of anonymity because he was not authorized to comment on the record.

A change in administration normally signals the chance for new dialogue for two countries that find themselves in diplomatic gridlock.

But the U.S. campaign may have widened the split between the two former Cold War rivals, who in the past few years have gone from sounding like cordial competitors to surly antagonists.

"Right now we are locked in this vicious circle of angry exchange and there's barely a day without another very angry statement on this hand or that hand," said Masha Lipman, an expert with the Moscow Carnegie Center, a Moscow-based think tank.

While relations between Moscow and Washington no longer divide the world into two camps, as in the Soviet era, both countries are still vying for political influence and economic advantage in Europe, Asia, Africa and South America.

"I think that there is a very strong concern on the American elections because it could be decisive for Russia-U.S. relations and moreover for international relations as a whole," said Vladimir

Ryzhkov, a former deputy speaker of the Russian parliament and a critic of the Kremlin.

Ryzhkov and other political analysts in Moscow say the Kremlin will prefer an Obama presidency, because the Democrat seems more

open to compromise and dialogue. "A symbol of the Bush administration is unipolarity, unilaterality," Ryzhkov said.

Putin appeared to signal his preference for Obama shortly after Russia's war with Georgia.

In an interview, he implied that the Bush administration had provoked the conflict as part of an election-year gambit to help McCain. The White House dismissed the charge as "patently false."

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Stable Iraq could influence Mideast

by Robert H. Reid
Associated Press

As violence in Iraq recedes, neighboring states are pondering how to deal with an unwieldy country that could re-emerge as a key player along with Saudi Arabia and Iran in one of the world's most strategic regions.

The role of regional power broker may seem far-fetched for Iraq - a devastated land best known for car bombs, death squads and suicide attackers.

Still, countries of the Middle East cannot ignore the potential role of a resurgent Iraq, a nation of 28 million people, bordering Iran to the east, Syria and Jordan to the west and sitting on one of the world's major pools of oil.

For those reasons, the United States cannot afford to lose focus on Iraq, which will remain a strategic and important country even after the last of the 140,000 American soldiers have gone home.

Clearly Iraq is a long way from re-establishing itself as a major force in the region. In a first step, however, representatives of 35 international oil companies are to meet this month with Iraq's oil minister in London to discuss improving Iraqi gas and oil fields. Fellow Arab countries are talking about upgrading their relations with Iraq.

Iraq is likely to play a significant role in America's Middle East policy for decades - even as the Pentagon scales down military operations here and ramps them up in Afghanistan.

The Middle East has long confounded forecasters, and the rosy predictions from the Bush administration that Iraq would emerge as a beacon of Western-style democracy in the Arab world have been long discredited.

However unlikely it may seem today, a relatively stable Iraq would have all the cards necessary to emerge as a major player in the Persian Gulf, where Saudi Arabia and Iran are competing for leadership.

Those three countries account for most of the population and most of the oil in the Gulf, which has about 60 percent of the world's proven re-

serves.

How the three deal with one another will shape the Middle East for decades.

Iraq's vast oil reserves alone should guarantee the country a major regional role.

Current estimates put Iraq's proven oil reserves at 115 billion barrels. But many experts believe that figure could rise by another 70 billion to 80 billion barrels once better security allows for renewed exploration.

If those estimates prove accurate, Iraq would have the world's second-largest proven oil reserves behind Saudi Arabia and ahead of Iran.

As Iran and Saudi Arabia compete for influence in the region, each has a strong interest in using Iraq as leverage against the other.

Neither Iran nor Saudi Arabia can afford to have Iraq throw itself solidly behind the other. Each wants a stable Iraq - but not one strong enough to threaten its neighbors as when Saddam Hussein invaded Kuwait in 1990.

In competing for influence in Iraq, Iran would seem to have the advantage. Most of Iraq's nearly 70 million people are Shiites, the Muslim sect that includes about 60 percent of Iraq's population.

Iran offered asylum to thousands of Iraqi Sunnis who fled Saddam's Sunni-dominated regime. Many of them returned home to assume positions of power after the U.S.-led invasion of 2003.

Iran has also cultivated close ties with the Kurds, who along with the Shiites have dominated political life in Iraq since the fall of Saddam.

Despite those advantages, Iran faces major obstacles in building influence in a country with bitter memories of the eight-year Iran-Iraq war of the 1980s and a legacy of centuries of rivalry between Arabs and Persian Iran.

U.S. and Iraqi officials remain convinced Iran is financing and training Shiite extremists, although Tehran denies the allegation. Many Iraqis - both Shiites and Sunnis - view their Iranian neighbor with deep suspicion.

At the same time, Iran sees Washington's ties to Prime Minister Nouri al-Maliki and others in

the Shiite religious parties as a potential threat.

Other Arab countries fear that Iraq will fall under Iranian domination once the Americans have gone.

Arab pessimists see a dark vision of a Middle East with Iranian clients ruling Iraq, Iranian-backed Hezbollah as the dominant political force in Lebanon and Tehran's Hamas clients running the Palestinian entity.

Nowhere are those fears stronger than in Saudi Arabia, whose geriatric leadership has faced problems in responding to the political changes in Iraq, its northern neighbor.

The Saudis and other Sunni-dominated Arab governments maintain close ties to the United States. But their natural allies in Iraq - minority Sunnis - were fighting the Americans for most of the U.S. occupation.

Other Arab governments found it difficult to support the Shiite leadership in Baghdad while Iraqi Sunnis and Shiites were slaughtering each other in the streets.

Sectarian fighting has eased, and thousands of Sunni insurgents turned against al Qaeda and joined forces with the Americans.

Still, Arab governments have been slow to develop full diplomatic relations with Iraq, despite intense American pressure. Iraqis face enormous problems in seeking refuge elsewhere in the Arab world.

Many Iraqis resent the Arab attitude and fear that shunning them only enhances the influence of Iran, which embraced the new Iraqi government.

All these uncertainties will probably encourage Washington to pay close attention to Iraq for years.

"All Americans should be and are proud of the achievements in Iraq and the American role in bringing about the change," U.S. Ambassador Ryan Crocker said recently.

Losing interest in Iraq, he warned, risks paying "a major long-term price."

RUSSIA, from 14

During last week's presidential debate, McCain, a longtime Kremlin critic, accused Moscow of trying to rebuild the Russian empire and charged that "Russia has now become a nation fueled by petro-dollars that is basically a KGB apparatchik-run government."

Until Russia's war with Georgia, Obama emphasized that the United States need to work with Moscow on non-proliferation and other issues. But in the debate, he adopted his toughest tone yet, saying "a resurgent and very aggressive Russia is a threat to the peace and stability of the region."

He also warned the Kremlin that "you cannot be a 21st-century superpower, or power, and act like a 20th-century dictatorship."

Both McCain and Obama have come out in favor of admitting Georgia and Ukraine to NATO, infuriating Moscow, which has accused the United States and Europe of trying to encircle Russia and weaken it in its former sphere of influence.

McCain has long advocated expelling Russia from the Group of Eight club of advanced industrial democracies.

In recent Congressional testimony, Stanford Professor Michael McFaul, Obama's top adviser on Russia, raised the possibility the United States may seek "reconsideration" of the decision to grant the 2014 Winter Olympics to Russia.

The Games are scheduled to be held near Russia's Black Sea resort of Sochi, and Moscow has committed billions in public and private money to developing the city.

There is no clear bias in the Russian media for one candidate or another. McCain's criticism of the Kremlin is well known here. But Kremlin officials and experts alike point out that, historically, Russia has often found it easier to reach agreements with Republican presidents than Democrats - perhaps

because Democrats fear being labeled soft on Moscow.

No one here is predicting a significant improvement in U.S.-Russia relations, at least in the short-term, no matter who wins.

"In practical terms it's not going to make a great difference who the president is, it will only be in the tone that we start off with," said Chris Weafer, chief strategist for Uralsib Bank in Moscow.

"It will be a tough line but a conciliatory tone from Obama. From McCain, you'd expect a tough line, without the conciliatory tone."

McCain and Obama may be forced to pursue similar policies toward Moscow, several Russian experts said, because there is a consensus among U.S. policy makers that Washington needs to oppose Moscow on a number of fronts.

Whoever prevails, the next U.S. president isn't likely to develop a relationship with any Russian leader as warm as that which once existed between Putin and outgoing U.S. President George Bush.

Bush has been widely criticized for saying, at his first meeting with then-President Putin in 2001, that he had looked Putin in the eye and had gotten "a sense of his soul."

The U.S. president went on to meet with Putin more often than with any other world leader except former British Prime Minister Tony Blair; in 2007 he took the extraordinary step of inviting then-President Putin to visit the Bush family compound in Kennebunkport, Maine.

During the presidential debate, McCain repeated his quip that when he looks into Putin's eyes he sees three letters: "K-G-B."

Obama took a swipe of his own, saying that "you don't deal with Russia based on staring into his eyes and seeing his soul."

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For information on Aerotech distribution, call Chris Ramos, Circulation Manager, at (661) 949-7293.

Aerotech News and Review is published every Friday serving the aerospace and defense industry of Southern California, Nevada and Arizona. News and ad copy deadline is noon on the Tuesday prior to publication. The publisher assumes no responsibility for error in ads other than space used.

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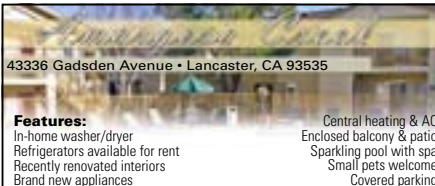
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Scaled Composites is an aerospace and specialty composites development company located in Mojave, California has the following positions:

COMPOSITES DESIGN ENGINEER
Seeking experienced, US persons who are well-rounded Design Engineers with a good knowledge of all stages of composite structural design, including: conceptual design, layout, sizing, detail design, fabrication instruction writing, and shop liaison. Problem solving and good communication skills are required. Hands-on experience with composites part fabrication and assembly processes required. Stress analysis skills (hand analysis or FEA) and proficiency in CATIA V5 a plus. Pilot, aircraft homebuilding and rapid prototyping experience a strong plus.

MECHANICAL DESIGN ENGINEER
Seeking US persons who are hands-on experienced Mechanical Engineer proficient in mechanical design, materials selection, kinematics, troubleshooting and analysis. Problem solving and good communication skills are required. Experience designing mechanical hardware for aircraft, such as landing gear, manual flight controls or similar mechanisms, is desired. Proficiency in CATIA V5 and/or SolidWorks a plus. Pilot, aircraft homebuilding, and rapid prototyping experience a strong plus. A background in composite construction is a plus, but not a requirement.

MANUFACTURING ENGINEER
Seeking experienced Manufacturing Engineer with a good understanding of composite part tooling, fabrication, and assembly. Applicant will be helping transition prototype structures to low-rate production. Problem solving and good communication skills are required. Hands-on experience with composite part fabrication and assembly processes required. Applicants should be US persons with a working knowledge of configuration management practices and liaison engineering skills are required. Basic stress analysis skills are a plus. DOD Secret Clearance is a strong plus.

GROUND SUPPORT EQUIPMENT MECHANIC
This position includes: Maintenance, repair, and modification of all ground support equipment, company vehicles, and some facility equipment. Applicants should have a working knowledge, and theory of operation, in the following areas: Hydraulics, vacuum systems, electrical troubleshooting, propane, gasoline, and diesel combustion engines, generators, and electric power units. Applicant should be US persons with a working knowledge of turbine powered start carts.

MATERIALS AND PROCESS ENGINEER
Seeking hands-on composite M&P Engineer with a good understanding of materials selection and characterization, qualification testing, specification writing, process development and troubleshooting. Should have a strong background in composites construction (wet lay-up, prepreg, etc.), composite bonding and assembly, and tool construction/utilization. Pilot, aircraft home-building and rapid prototyping experience a plus. DOD Secret Clearance a strong plus.

AVIONICS ENGINEER
This position involves:
• High level and detailed design of hardware and software
• Writing software for embedded systems.
• Debugging software
• Performing hardware/software integration
• Performing software unit and high-level functional testing
• Systems Integration and Test
Candidates should have experience with Linux, VxWorks, or other embedded O/S. They should be proficient in C and C++. Some hardware development experience is strongly desired. Microcontroller or embedded processor programming experience is desired. This position will require simultaneous design of multiple projects. Experience with a complete product development cycle is desired. Avionics software development experience is a plus. Pilot experience is a definite plus. We are looking for US persons who have a passion for aviation/ space applications, and can solve complicated problems with simple software/hardware solutions. Programs are fast paced, and each individual is given significant responsibility.

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