Military Business News and Technology Notes

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Military systems have been a major market force for high frequency technologies since the onset of World War II. In recent years, some of the large platforms (ships, aircraft, etc.) have had reduced impact, but the overall use of RF, microwave, optical and high speed digital technologies continues to grow. Today's military relies on fast, high capacity communications, effective radar, imaging and sensor systems; highly capable intelligence gathering and countermeasures systems; plus advanced navigation, weapons systems, and other applications of the technology.

The requirements of near-future military systems include the following:

- Portability, including controlled energy usage and energy harvesting techniques.
- High bandwidth availability, using terrestrial and satellite microwave radio and optical links.
- Adaptive use of that bandwidth, using cognitive radio technology, reconfigurable antennas, self-organizing networks, etc.
- "Lots of unmanned platforms," according to several defense industry executives, which will require robust data and control links.
- Intelligent munitions, with internal and GPS guidance, appropriate sensors, and sufficient onboard computing power.
- Network management with response speeds only seen "in the movies." This concept includes the entire chain of personnel and unmanned resources, allowing a commander to respond to an individual soldier's request, almost immediately acquire the data necessary to assess the situation, then quickly disseminate and execute a command decision.
- More sensor technologies, including radar, "visual" imaging over many wavelengths, spectrum monitoring, and threat avoidance—all tied into the command and control network.
- Continued efforts in secure communications, enemy communications intercept, anti-jamming and anti-detection technologies, plus system survivability for individual installations as well as for maintaining network operation.

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Harris Corporation (www.harris.com) has received a $139 million order for high-frequency radio systems to equip mine resistant ambush protected vehicles. The order will provide additional Falcon II® AN/VRC-104 high-frequency (HF) tactical radio systems for the U.S. Department of Defense (DoD) Joint Mine Resistant Ambush Protected (MRAP) Vehicle Program. The radio systems will be installed in new standard-size MRAP vehicles and MRAP All-Terrain Vehicles (M-ATVs).

The AN/VRC-104 system is a vehicular transceiver/amplifier that includes the AN/PRC-150(C), a Type-1 certified HF radio. In addition to the AN/VRC-104 and AN/PRC-150(C), Harris radios systems in a range of configurations have been installed in MRAP vehicles across the DoD's fleet. Harris' Falcon family of software-defined tactical radio systems encompasses manpack, handheld and vehicular applications. Falcon III is the next generation of radios supporting the U.S. military's Joint Tactical Radio System (JTRS) requirements, as well as network-centric operations worldwide.

Boeing (www.boeing.com) has acquired the first on-orbit signals from the Global Positioning System (GPS) IIF-1 satellite, the inaugural spacecraft in a 12-satellite constellation that the company is building for the U.S. Air Force. The signals indicate that the spacecraft bus is functioning normally and ready to begin orbital maneuvers and operational testing. A United Launch Alliance Delta IV rocket launched the GPS IIF-1 satellite at 11 p.m. Eastern time on May 27, 2010, from Cape Canaveral Air Force Station. At 2:33 a.m., the satellite separated from the rocket's upper stage, and a ground station on Diego Garcia in the Indian Ocean received the first signals from the newest member of the Air Force's GPS satellite constellation. The Air Force 19th Space Operations Squadron and Boeing's Mission Operations Support Center in El Segundo, Calif., confirmed that the satellite is healthy. GPS signals from the spacecraft payload will be turned on for test purposes in the coming weeks.

GPS is the U.S. Department of Defense's largest satellite constellation, with 30 spacecraft on orbit. The new GPS IIF satellites will provide more precise and powerful signals, a longer design life, and many other benefits to nearly 1 billion civilian and military users worldwide.

Lockheed Martin (www.lockheedmartin.com) has developed a ruggedized, tactical handheld device for dismounted Soldiers. The Tactical Digital Assistant (TDA) provides unprecedented situational awareness, command

and control, and blue force tracking capabilities to brigade and below forces. Lockheed Martin's TDA allows dismounted Soldiers to maintain secure communications and exchange vital position and situational awareness data with mounted forces in an operational environment. Its intuitive user interface supports shared full motion video and sensor command and control. Unlike similar commercial technology, the TDA's ruggedized design can withstand harsh operational environments.

The TDA interfaces with both fielded U.S. Army Force XXI Battle Command Brigade and Below (FBCB2) and emerging Joint Battle Command-Platform systems. An open architecture provides flexibility for future growth, including new applications and increased memory requirements. Lockheed Martin is developing numerous applications for the TDA to support battlefield challenges. The TDA is compatible with current FBCB2 software and provides the flexibility to host the Google Android operating system. The TDA builds on the company's experience with ground Soldier technologies, including the Common Controller Device, TacScene, and industry-leading production programs like the Apache M-TADS/PNVS.

A solar-energy array at **Nellis Air Force Base**, is saving money for the **Air Force** (www.af.mil) and decreasing reliance on fossil fuels. The solar array, which debuted in 2007 as North America's largest renewable venture, is composed of more than 72,000 solar panels containing 6 million solar cells, and represents an enormous step toward energy efficiency, Colonel Belote said. It supplies 28 percent of the base's power, saving about $83,000 a month and 24,000 tons of carbon dioxide emissions a year.

U.S. Air Force photo / Paul Ridgway

The array's solar panels are produced and supplied by four companies, and officials have been keeping data on which are most effective. Data-collecting devices on the grid report real-time system performance information to each of the four companies and the main corporation. That information has led one of the companies to start creating a more energy-efficient bifacial solar panel after seeing the added efficiency was worth the cost.

The panels are located in an industrial portion of the base. Of the 140 acres of land used for the array, 33 acres are a capped-off landfill. Over its 2+ year lifetime, the system has required almost no maintenance.

Raytheon (www.raytheon.com) has received an $89.5 million contract award from the U.S. Navy for the continued production of its ALR-67(V)3 digital radar warning receiver. The contract includes systems and spares for the U.S. Naval Air Systems Command as well as international customers. The ALR-67(V)3 is the U.S. Navy standard for digital radar warning receiver technology, installed on all its frontline, carrier-based F/A-18E/F tactical aircraft. This contract represents the 12th full rate production lot awarded to Raytheon as part of an original contract that began in the late 1980s with the initial development of the radar warning receiver. Deliveries for this lot will begin in January 2012 and are expected to be completed by December 2012. A total of 681 ALR-67(V)3 systems plus spares have now been ordered.

The second ComSatBw satellite, designed, built and integrated by **Thales Alenia Space** (www.thalesaleniaspace.com) on behalf of EADS Astrium, the space segment prime contractor, was successfully launched on May 21 by an Ariane 5 ECA from Kourou spaceport. ComSatBw military communications satellites deliver key services for the German armed forces. They provide a secure broadband network guaranteeing uninterrupted communications between the government, military authorities and armed forces deployed anywhere in the world.

ComSatBw multimission geostationary satellites are based on the Thales Alenia Space Spacebus 3000B2 platform, and carry payloads comprising SHF (Super-High-Frequency) and UHF transponders (Ultra-High-Frequency) provided by EADS Astrium. Weighing about 2,500 kg at launch, ComSatBw satellites offer 3.5 kW of power and a design life estimated at 15 years.

BAE Systems (www.baesystems.com) and **Cobham** (www.cobham.com) have formed a strategic alliance on a proposal for the U.S. Navy's Next Generation Jammer system, designated to replace the ALQ-99 tactical jammer currently installed on the EA-6B Prowler and EA-18G Growler aircraft. The Next Generation Jammer program seeks to develop new ways to jam enemy radars, using the EA-18G as the target platform.

The joint offering will combine the companies' expertise in electronic warfare, electronic attack, suppression of enemy air defenses and irregular warfare support to ground forces. The BAE Systems-Cobham solution will offer increased reliability, availability and supportability, ultimately reducing the total cost of ownership to the Navy.

Photofabrication Engineering, Inc. (www.photofabrication.com) has been registered as a manufacturer and granted certification by the United States Department of State, Bureau of Political-Military Affairs, under ITAR (the International Traffic in Arms Regulation). This certification allows PEI to provide weapon systems components and accessories in accordance with the Code of Federal Regulations implemented by the Department of State, and reflects Photofabrication Engineering's on-going commitment to meeting the highest quality and manufacturing standards for both the domestic and international marketplace. PEI was also recently awarded certification under AS9100, quality standards established by the aircraft and aerospace industry. The company manufactures photochemically etched metal parts and components.