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MilsatMagazine

The Urgencies Of MILSATCOM—from the Battlefield to Piracy

The difficulty of planning for the unexpected—analysis by Euroconsult
Karl Fuchs on....
Hosted Payloads—ready and able
Meeting the criticial comms challenges of the multinational counter-piracy coalition
Mission-critical communications demands satellite connectivity

MilsatMagazine

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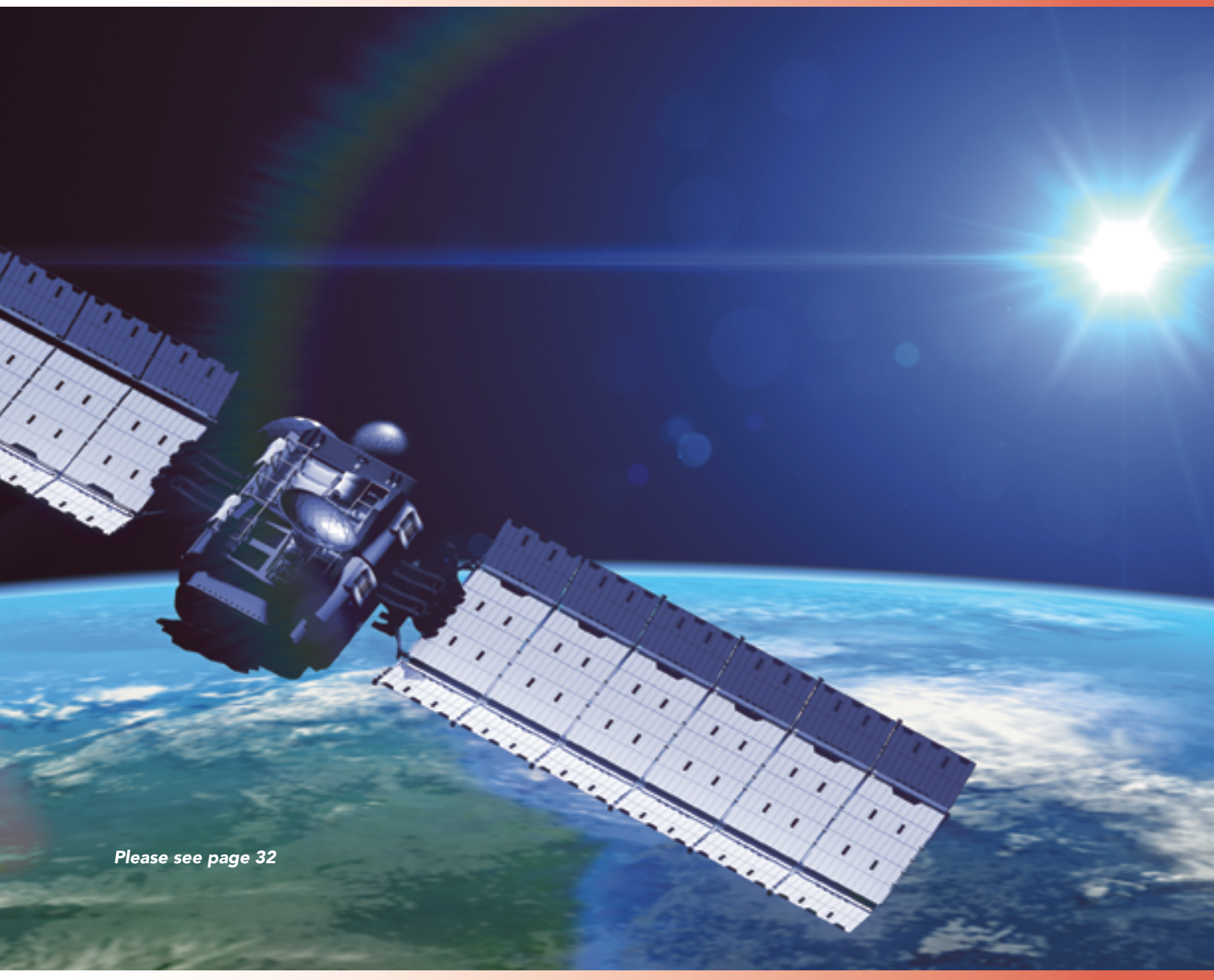

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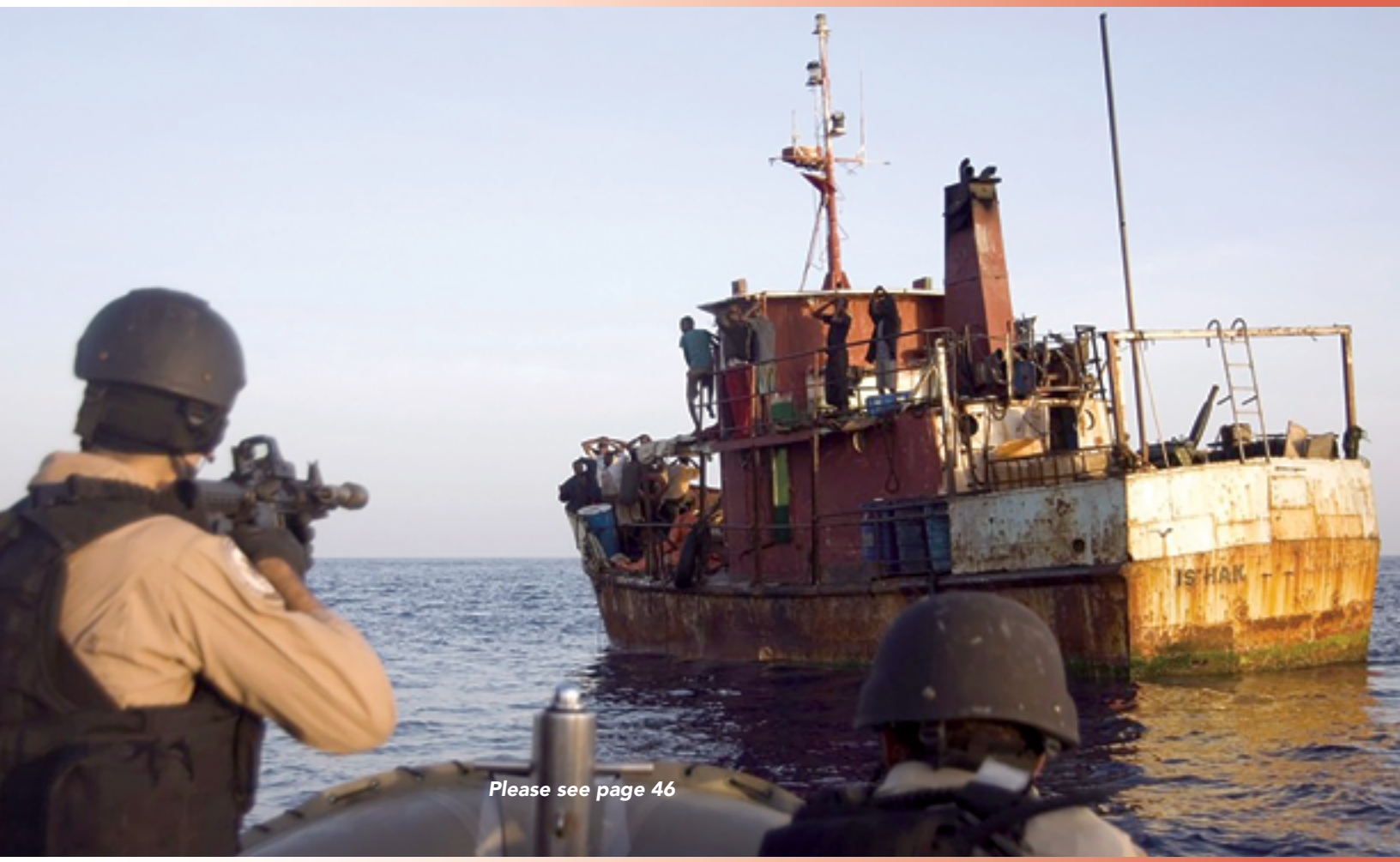

Please see page 46

FEATURES

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Please see page 40...

Advantech Wireless accredited products and advanced technologies have provided leading-edge innovations for over 20 years. We provide diverse and extensive technologies and products for video and data transmission and proven flexibility for specialized solutions.

The Raptor series of transportable DVB-RCS hubs are turn-key systems which can be deployed in less than 1 hour, to enable a wide range of public and/or private network topologies with satellite interactive terminals.

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www.AdvantechWireless.com/gov

DISPATCHES

NORTHROP GRUMMAN DROPS OFF THIRD SBIRS PAYLOAD @ LOCKHEED MARTIN

A Space-Based Infrared System payload was delivered by Northrop Grumman Electronic Systems to Lockheed Martin Space Systems Company in Sunnyvale, California.

This is the third payload delivered on the SBIRS Follow-on Production contract in 15 months.

The payload will be integrated with a SBIRS geosynchronous spacecraft in preparation for its projected launch in the summer of 2016.

The GEO payload features a pair of infrared sensors which operate in multiple bands and provide expanded capabilities over the Defense Support Program satellites that it replaces.

The scanning sensor is paired with a staring sensor to support strategic and theater missile warning, battle-space awareness, and technical intelligence.

"Delivery of the payload is a major accomplishment in the life of the program, and I would like to congratulate our entire team, contractor and Air Force, on reaching this milestone," said Maj. Jon Seal, GEO-4 vehicle manager. "It takes a tremendous amount of work and dedication to bring these systems together, but it pays off when we deliver new capabilities to the warfighter."

SBIRS during the build process. Photo courtesy of Lockheed Martin.

The fourth GEO satellite is the last production unit required to complete the geosynchronous portion of the SBIRS constellation.

The fifth and sixth GEO satellites, which were placed on contract earlier this year, will replace the first two GEO satellites at the end of their mission lives.

The SBIRS program is led by the Infrared Space Systems Directorate at the U.S. Air Force Space and Missile Systems Center. Lockheed Martin Space Systems Company is the SBIRS prime contractor.

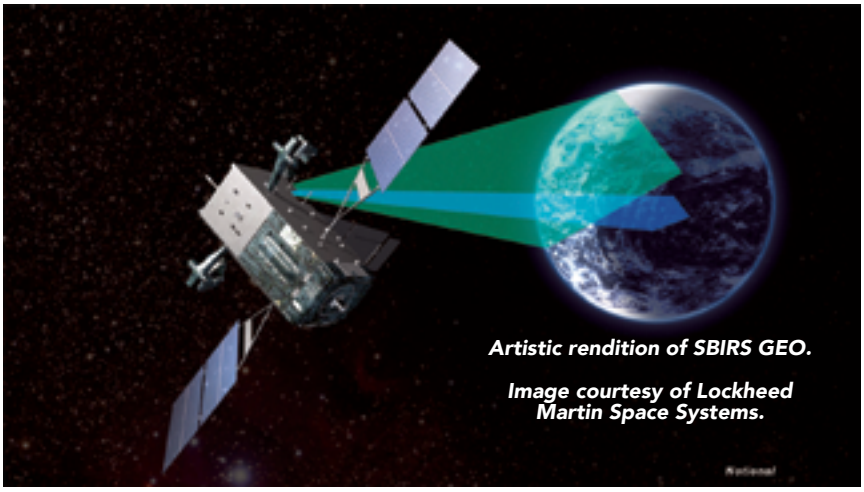
Northrop Grumman Electronic Systems, Azusa, California, is the payload integrator. The 460th Space Wing at Buckley AFB in Aurora, Colorado, operates the SBIRS system.

The Air Force Space Command's Space and Missile Systems Center, located at Los Angeles Air Force Base, California, is the U.S. Air Force's center of acquisition excellence for acquiring and developing military space systems.

SMC's portfolio includes GPS, military satellite communications, defense meteorological satellites, space launch and range systems, satellite control networks, space based infrared systems, and space situational awareness capabilities.

The Northrop Grumman SBIRS infosite is accessible at:
http://www.northropgrumman.com/Capabilities/SBIRS/Pages/default.aspx

The Lockheed Martin Space Systems infosite may be accessed at
http://www.lockheedmartin.com/us/ssc.html



Artistic rendition of SBIRS GEO.

Image courtesy of Lockheed Martin Space Systems.

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DISPATCHES

THE DOD AWARDS SIERRA NEVADA CORPORATION A NEW SATELLITE CONTRACT

Sierra Nevada Corporation (SNC) has been competitively selected to develop and build a next generation science and technology demonstration satellite.

Known as STPSat-5, the satellite is for the Department of Defenses (DoD) Space Test Program (STP).

The satellite will carry a total of four scientific payloads to LEO in order to further the DoDs understanding of the space environment. This mission enables and supports the development of future national security space systems for the United States.

STP will coordinate delivery of the payloads to SNC's Space Systems manufacturing facility in Colorado where SNC will integrate the payloads into the spacecraft and prepare it for launch. The STPSat-5 satellite is planned for launch in late 2016.

The Space Test Program has a rich history of providing support to continue our Nation's leadership in delivering enhanced space capability to protect our military men and women, which is in perfect alignment with our goals at Sierra Nevada Corporation, said John Roth, vice president of business development for SNCs Space Systems. "

The STP, managed by the U.S. Air Force's Space and Missile Systems Center (SMC), is headquartered at Kirtland Air Force Base in Albuquerque, New Mexico.

STP has played a foundational role in the development of new space systems since 1965. STP conducts space test missions for the purpose of accelerating DOD space technology transformation and lowering development risk.

To date, the program has launched nearly 150 experiments and demonstrations into space.

The ORBCOMM Generation 2 program during their build at SNC's Louisville, Colorado, manufacturing facility.

Photo courtesy of Sierra Nevada Corporation.

The STPSat-5 contract is administered by NASA's Ames Research Center in Silicon Valley, California.

SNCs STPSat-5 award follows the successful July 14, 2014 launch of six advanced asset tracking satellites for the ORBCOMM Generation 2 (OG2) constellation.

The satellites have completed initial on-orbit and operational testing. The remaining 11 OG2 spacecraft in the constellation are undergoing final testing in preparation for launch, which will provide a significant capability boost to ORBCOMMs current on-orbit fleet.

For further information, please visit the SNC infosite at
http://www.sncspace.com/index.php


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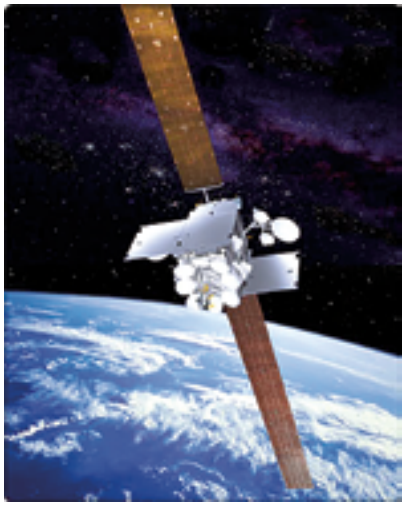
DURING MILCOM 2014, A PLETHORA OF PROMISED PRODUCTIVITY FROM INMARSAT



Artistic rendition of the I-5 satellite.

Inmarsat, in partnership with its VARs, has started to provide wideband communications capability to U.S. government customers through its Global Xpress service which will be carried over the first Inmarsat-5 satellite.

Using 72 fixed beams in commercial Ka-band, along with military Ka-band capacity available on its high-capacity steerable beams, Global Xpress is now supporting aeronautical and land terminal operations in the Indian Ocean Region with high-throughput connectivity. The steerable beams are designed to complement military Ka-band capacity provided by the Wideband Global SATCOM system (WGS) in areas of high demand, while the fixed beams enable consistent and reliable service across nearly all of the visible earth.

Global Xpress exceeded expectations during extensive user evaluations and tests. Users indicated that terminals were highly reliable under all operational conditions, providing seamless wideband SATCOM connectivity crucial to their mission requirements. The Inmarsat-5 military Ka-band steerable beam technology efficiently supports very high data rates and very small apertures enabling the completion of previously unmet key mission requirements. Plus, the iDirect evolution-based Global Service Beam (GSB) performance met or exceeded data throughput available on older Ku-band services using satellite terminals of equal or smaller size.

Inmarsat-5 F1 achieved commercial service introduction (CSI) for U.S. Government users in the Indian Ocean Region coverage area on July 1, 2014, after successful launch and activation of the satellite and related redundant ground infrastructure. The service is currently supporting users across its footprint, including in Europe; the Middle East, Africa; and southwestern Asia.

Additionally, Inmarsat and TECOM, a part of Smiths Microwave, have established a Memorandum of Arrangement (MOA) to manufacture Global Xpress® aviation terminals for the government market.

TECOM's initial offering for the government aviation market is the recently-developed Ka-5000 SATCOM antenna system. This terminal will allow government aeronautical customers access to the high-speed wideband capabilities of the Inmarsat-5 Global Xpress satellite constellation in both the military and commercial Ka-bands. The Ka-5000 features a special thermal management solution that enables government users to operate in a wide variety of operational scenarios. Additionally, the system's multi-modem capability allows customers to use any desired network infrastructure, providing maximum flexibility.

Inmarsat is also expanding the availability of mobile tactical Beyond-Line-of-Sight (BLOS) communications to actively deployed U.S. and coalition forces through the skills of its partners and the capabilities of its powerful Inmarsat-4 satellite constellation.

The company's L-band Tactical Satellite (L-TAC) service delivers an 'Ultra High Frequency (UHF)-like' tactical satellite capability to existing military and commercial radios used by the U.S. government. L-TAC uses the significant spectrum resources of the Inmarsat-4 constellation to seamlessly augment UHF capacity on military satellites. It fully enables interoperable SATCOM using existing radios, waveforms and cryptography. In addition to adding much needed channels where UHF SATCOM is restricted, degraded or unavailable, L-TAC can also be used with VSATs. This allows the service to support secure BLOS Push-to-Talk voice and data networks for both encrypted and non-encrypted terminals, whether man-portable or installed in vehicles, helicopters, ships or other mobile platforms.

To access the L-TAC service, users require only an easy-to-install antenna adaptor for their existing tactical radios. With the simple addition of this adaptor, no additional training, certification or infrastructure is needed. The L-TAC antenna is also significantly smaller than most UHF SATCOM antennae, providing the added benefit of a lower profile terminal.

This interoperable augmentation capability allows tactical users to meet their security and reliability requirements affordably and cost-effectively through L-band spectrum leases for durations as short as one month.

In addition to the U.S. military and defense agencies, L-TAC will also support the civil government market for activities such as emergency response and border protection. By enabling interoperability between UHF and VHF radios on the same network, federal agencies, National Guard units and civilian personnel will be able to coordinate more effectively in the event of a major incident or civil emergency.

Inmarsat's infosite may be accessed at ***http://www.inmarsat.com/***

The TECOM infosite is accessible via ***http://www.tecom-ind.com***

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DISPATCHES

THE AIRMEN OF NOAA—GIVING THE WARFIGHTER "A LEG UP"

Tucked away in the cavernous NOAA Satellite Operations Facility, four airmen work together to oversee the operation of America's weather satellite constellation.

Captain Tyson Johnson talks about his day-to-day duties and the critical information he and his team (which includes some 40 NOAA engineers) provide for our nation's military and civilian population in an informative video that is available at the Air Force TV YouTube Channel:

http://science.dodlive.mil/2014/10/10/watching-the-weather-the-airmen-of-noaa/?source=GovDelivery

ROCKWELL COLLINS EARNS A MUOS FIRST

The Rockwell Collins ARC-210 radio recently became the first airborne radio to operate over the U.S. government's newest satellite constellation—the Mobile User Objective System (MUOS).

The MUOS system is based on cellular phone technology and represents a paradigm shift for Department of Defense satellite communications. The U.S. Air Force Research Laboratory (AFRL) conducted two weeks of MUOS ground and airborne testing.

During the first week of testing, the ARC-210 was deployed in a ground environment for system operational tests that included conducting Over-the-Air-Provisioning of the radios and passing of IP data.

During the second week, airborne MUOS operations were conducted from a system installed in a C-17 Globemaster III aircraft to a communications base station at Joint Base Lewis-McChord Air Force Base located near Tacoma, Washington.

Testing also included voice and data operations, with the ARC-210 becoming the first airborne radio to successfully transmit over the full MUOS satellite system.

In addition to supporting Air Force planned testing, the Rockwell Collins team completed successful interoperability testing with the government's ground MUOS radio, the AN/PRC-155.

The ARC-210 currently contains Demand Assigned Multiple Access (DAMA) and Integrated Waveform (IW) satellite communications capabilities. With the implementation of the MUOS waveform, the ARC-210 will provide all expanded and modernized Department of Defense UHF Beyond Line-Of-Sight (BLOS) capabilities, and enables the use of new warfighter applications for increased situational awareness and connectivity.

The Rockwell Collins infosite:
http://rockwellcollins.com/

AN AFRTS AGREEMENT

Intelsat General Corp., an indirect, wholly owned subsidiary of Intelsat S.A., has been awarded a complete one-year contract renewal to deliver radio and television programing to U.S. military forces serving around the world.

The original one-year contact was signed in 2011 and had six, one-year renewal options. Under the contract with the American Forces Radio and Television Service (AFRTS), Intelsat General provides a global distribution network that delivers multi-channel, broadcast-quality radio and television programs to military forces and their families stationed outside of the United States as well as to military personnel aboard United States Navy ships at sea.

The service, which incorporates on- and off-network capacity, reaches more than 200,000 people using 307MHz of bandwidth carried over 9 satellites, 6 teleports, and the IntelsatOne^{sm} terrestrial network.

"AFRTS is a lifeline for U.S. service members and their families stationed around the globe," said Skot Butler, Vice President, Satellite Networks and Space Services. "In many cases, it is the only American media broadcast content available to them while they are deployed overseas for long stretches of time."

In addition to a wide range of American news, entertainment and sporting events, the service carries the Department of Defense (DoD) News channel.

The Intelsat General infosite may be accessed at
http://www.intelsatgeneral.com

THE FIRST IN THE WORLD... AS FAR AS A DIGITAL TROPOSCATTER MODEM IS CONCERNED...

Comtech Systems, Inc. has released the world's first 50Mbps Digital Troposcatter Modem, the CS67500A.

This modem takes advantage of Comtech's more than 40 years of continuous troposcatter research and innovation to provide unmatched throughput for point-to-point, over-the-horizon communications.

The CS67500A incorporates Comtech's advanced troposcatter features including troposcatter-specific Forward Error Correction (FEC) with embedded Turbo Product Coding, Automatic Code Rate (ARC) and Adaptive Link Power Control (ALPC) to maintain performance even under adverse conditions. CS67500A 50 Mbps Troposcatter Modem highlights include...

- ***The CS67500A provides high-speed, low-latency transmission for over-the-horizon communications, without the need for satellites or multiple line-of-sight relays.The CS67500A is the latest generation of Comtech's CS-series digital troposcatter modem platform, which is fielded in over 90% of the high data rate troposcatter systems throughout the world***

- ***The CS67500A is the first troposcatter modem to be deployed capable of achieving 50Mbps throughput***

- ***The CS67500A incorporates Forward Error Correction, Automatic Link Power Control, and Automatic Code Rate to maintain levels of availability that match or exceed that of satellite or line of sight communications***

The first CS67500A modems have been integrated into the TSC-198V3 system and fielded to a US Army Expeditionary Signal Battalion for test and evaluation as a replacement for the legacy AN/TRC-170 troposcatter systems.

The TSC-198V3 terminals have also been purchased by the US Army Integrated Air and Missile Defense program for use with Patriot Missile Battalions during global deployments.

Comtech troposcatter systems play a vital role in the US Military C4I operations, providing intra-theater high-bandwidth range extension over beyond-line-of-sight distances, thereby reducing the demand on limited satellite bandwidth.

The very low latency characteristics of these troposcatter systems are ideal for the critical, time-sensitive information used in missile defense.

An international version of the CS67500 platform will also be available in the near future. This will bring the CS67500's increased throughput benefits to the commercial sector as well, providing essential high data rate, over-the-horizon communication links for offshore oil platform networks, arctic communications, remote power generation, and other communications applications.

The Comtech Systems infosite offers additional information at ***http://www.comtechsystems.com/***

DISPATCHES

SPANISH MOD IS SPOT ON WITH GLOBALSTAR

Globalstar Europe Satellite Services Ltd., a wholly owned subsidiary of Globalstar Inc. (NYSE MKT: GSAT) has announced that the Spanish Ministry of Defence has approved the GSP-1700 satellite phone for use by its personnel and also has extended its use of SPOT Gen3 GPS tracking and safety devices with an order for a further 300 units.

By selecting Globalstar's satellite devices to communicate with the troops and track their whereabouts, the Spanish Ministry of Defence is increasing its ability to control deployment, logistics and safety of its personnel. Users of Globalstar solutions benefit from the world's only second generation satellite network in orbit, offering latency-free, crystal clear call quality.

Spanish Ministry of Defence personnel, operating in remote locations with no cellular coverage, started using SPOT devices in 2012. These included the low-cost, rugged, pocket-sized SPOT Gen3s. Now with over 500 SPOT devices deployed in the field, wherever they may be, Ministry of Defence personnel can communicate with central command for fast recovery in case of an emergency as well as ongoing tracking of people and assets.

"We have benefited from using Globalstar's technology as we improve safety and communication for our field staff. The Globalstar devices and service have been particularly important in areas and in terrain where traditional communications can be fraught with risk, and can't be relied upon," said Javier de la Cal from the Spanish Ministry of Defence. "With the addition of the GSP-1700 handsets, we believe our troops will be equipped with the best satellite communications products available to support them in the field."

"Traditional communications rely on line-of-sight from one base station to the next, but those base stations can be at risk in a crisis or war situation. Instead, satellite communications provide increased reliability levels," said Gavan Murphy, Director of Marketing, Globalstar EMEA.

Globalstar's SPOT solution is fully integrated with the Spanish Ministry of Defence's Command and Control system. SPOT devices from Globalstar allow users to send custom messages to central control, confirming that they are OK, speedily and accurately communicating their GPS location and providing emergency assistance when required. SPOT, which has facilitated more than 3,000 rescues worldwide, has a single SOS button to press in an emergency.

Globalstar Europe Satellite Services' infosite may be accessed at ***http://www.globalstar.com/***

The Spanish MoD infosite is located at ***http://www.defensa.gob.es/***

DISPATCHES

HARRIS' RIFLEMAN TEAM IS ON TARGET WITH FALCON III RADIOS FOR DOD

Harris Corporation has provided a U.S. Department of Defense customer with the first production units of its Falcon III® RF-330E-TR wideband team radio, the only independently developed and fully compliant solution for the U.S. Department of Defense Rifleman Radio program.

Designed with the dismounted warfighter in mind, the RF-330E-TR is smaller and lighter than existing wideband handheld radios yet provides superior battery life and transmission range. The radio quickly connects warfighters operating on the tactical edge into the tactical network for enhanced command and control and situational awareness.

The RF-330E-TR offers a built-in display with an intuitive visual interface which simplifies radio configuration and programming, validates network availability, and monitors radio status.

The radio has been certified by the National Security Agency for Type-1 information security, the Joint Interoperability Test Command for interoperability and the Joint Tactical Radio System Test and Evaluation Laboratory for Software Communications Architecture compliance.

"The Department of Defense has committed to full and open competition in the Handheld, Manpack and Small Form Factor (HMS) Radio programs," said George Helm, president, Department of Defense business, Harris RF Communications. "Our initial shipments of the RF-330E-TR reflect our confidence and readiness for this competition. We look forward to the opportunity to deliver this enhanced capability to the U.S. warfighter."

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 JTRS requirements, as well as network-centric operations worldwide.

Harris RF Communications also supplies assured communications® systems and equipment for public safety, utility and transportation markets—with products ranging from the most advanced IP voice and data networks to portable and mobile single and multiband radios.

Download the radio's data sheet here:
http://rf.harris.com/media/rf-330e-tr001_tcm26-22862.pdf#search=%22Falcon%20III%C2%AE%20RF-330E-TR%22

NSR PUBLISHES AN IN-DEPTH LOOK AT SATELLITE OPERATOR FINANCIALS

NSR's Satellite Operator Financial Analysis (SOFA), 4th Edition, finds that operational efficiency is more important than ever for satellite operators, with many taking a multi-pronged approach to increasing productivity—this trend is not limited to acquisitions, but also extends to HTS payloads being launched.

"We are seeing a fundamental transformation within the satellite telecommunications industry. Economies of scale the likes of which we have never seen, powered by not only M&A but also HTS payloads delivering previously unimagined throughput, will have an immense impact upon the financial dynamics of the industry moving forward," said Blaine Curcio, Senior Analyst and report author. "The impetus is now on the Big Four to capitalize on their increased efficiencies—and on the regional players to further diversify their value propositions—without this combination, we will see a divergence between the haves and have-nots of the sector, and long-term, extensive consolidation."

An example of this phenomenon of huge potential for HTS payloads would be Avanti Communications, which is covered extensively in the report. Avanti currently has a fleet of three satellites plus one on order, and the company has publicly stated these satellites are capable of generating revenues of up to $700M—this would make them the 5th largest operator in the world by revenue, despite having only three dedicated satellites and ARTEMIS, an ESA-purposed satellite. Big revenues? Yes. Big fleet? Absolutely not.

Beyond this phenomenon, 2013 was an inflection point in terms of satellite operators. In recent years, NSR's past SOFA analyses noted regional players seeing faster growth rates than the Big Four. 2013 changed that in a big way, with Eutelsat's acquisition of Satmex leading the way for the Big Four to seeing nearly 5 percent revenue growth, compared to nearly 4 percent revenue decline for "everyone else". The fastest growth was again seen by the top regional operators, with companies such as Arabsat, APT Satellite, and Avanti setting the pace.However, unlike 2012, two of the Big Four saw nearly 10 percent growth rates, with SES and Eutelsat benefiting from currency fluctuations and Eutelsat's acquisition of Satmex, and as such seeing their collective revenues increase by nearly $400M in 2013.

For more information, please visit
http://www.nsr.com/research-reports/satellite-communications/satellite-operator-financial-analysis-4th-edition/

SOUTH DAKOTA GUARDSMEN SUPPORT U.S., SOUTH KOREA IN LATEST MILITARY EXERCISE

The South Dakota Army National Guard's 115th Brigade Signal Company recently conducted their annual training in support of U.S. and South Korea military forces during the annual Ulchi Freedom Guardian exercise.

Approximately 30,000 U.S. troops and 50,000 South Korean troops took part in this year's computer-simulation exercise that enhances the combat readiness of the Republic of Korea and U.S. supporting forces through combined and joint training.

Thirty-nine Soldiers from the 115th based in Brookings, South Dakota, joined service members from all branches of the South Korean and U.S. military for the computerized command-and-control exercise designed to enhance readiness, protect the region and maintain stability on the Korean peninsula. The focus of the exercise is on strategic, operational and tactical aspects of general military operations in the Korean Theater of Operations should defense of the peninsula become necessary. The exercise provided the South Dakota Guardsmen with the opportunity to work with the U.S. Army's 1st Signal Brigade, who enables joint and combined command, control, communications, computers and information management throughout United States Forces Korea and other areas of operation.

Story by Sgt. 1st Class Theanne Tangen,
South Dakota National Guard Public Affairs
129th Mobile Public Affairs Detachment

DISPATCHES

USAF—EYES IN THE SKY PROVIDE GLOBAL WEATHER DATA TO HELP WEATHER THE STORM

In the absolute silence of space, a special group of satellites circles our planet in a fast, low earth orbit, their cameras and sensors point toward Earth as they record endless data and images of storm systems and weather patterns moving across the globe below.

Capt. Melissa Bierma stands next to an engineering model of a GOES sounder satellite component at the National Oceanic and Atmospheric Administration's satellite operations facility in Suitland, Maryland. The GOES sounder is a radiometer designed to provide data that allows meteorologists to deduce atmospheric temperature and moisture profiles. Bierma is satellite operator and executive officer with Detachment 1, 50th Space Operations Group. The geographically separated unit manages the Defense Meteorological Satellite Program—the only weather satellite system in the DoD—in cooperation with NOAA.

U.S. Air Force photo/Senior Airman Alexander W. Riedel

Back on the ground, hidden in a D.C. suburb, Maj. Jonathan Whitaker squints against the sun and points to Marine One, the U.S. president's dedicated helicopter, as it arches its way across the horizon of the nation's capital.

Whitaker is commander of Detachment 1, 50th Operations Group, which belongs to the 50th Space Wing, Schriever Air Force Base, Colorado. However, the geographically separated unit places its guidon flag hundreds of miles east, in Suitland, Maryland.

With a small contingent of four Air Force officers, the detachment is responsible for seven satellites that comprise the Defense Meteorological Satellite Program, or DMSP. The team coordinates with the space experts of the National Oceanic and Atmospheric Administration, contractor corporations and military organizations to maintain the command, control, and health of Defense Department weather assets.

"We're sort of a way point for the pilots as they travel through the area," Whitaker explained, standing in the shadow of a large antenna dish atop NOAA's Satellite Operations Center.

Little may the helicopter pilots know, they not only rely on NOAA's array as a minor urban visual aid. Its antennae are always pointed toward the sky in anticipation of a satellite flyover—which allows the operators inside the building to send and receive thousands of lines of vital international weather data -- the very same data that pilots around the world use to make flight predictions.

The DMSP network is the DOD's only weather satellite constellation and has provided military and civilian agencies with global meteorological and environmental data for more than five decades.

While users vary from the National Weather Service to the National Hurricane Center, its primary customers are the Air Force Weather Agency and the Navy's Fleet Numerical Meteorology and Oceanography Center. They take data from DMSP and NOAA's other satellites and combine it to create various mission-specific weather forecasts.

"Weather is the only variable in war that cannot be controlled by any party engaged in a conflict," said Capt. Tyson Johnson, the detachment's ground systems flight commander. "The data we're able to provide out of this facility, is the gold standard for both civilian and military weather prediction and gives commanders an edge in battle."

As a former enlisted explosive ordnance disposal technician, Johnson has experienced the impact weather has on missions, something that now allows the officer to be operations-focused and driven with the warfighter in mind.

"I had a very hands-on, point-of-the spear mission," Johnson said. "Today, I take pride in providing timely, accurate weather data to my brothers and sisters who are still in harm's way. Our work allows mission planners to insert them into the best possible situations and predict environmental implications to help ensure success.

"Sand storms, for example, are a huge concern for rotary wing aircraft. To be able to predict the wind and how fast that sandstorm is moving, gives them the window to get off the ground and get where they need to go," Johnson continued. "When the chance for success hinges on close air support, we help get those jets and helicopters off the ground and in the fight safely; and when things go badly, medevac personnel can get in the air and arrive on scene in time to save lives."

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While the DMSP started as a classified program in the 1960s, to support the National Reconnaissance Office's top-secret CORONA satellite program, they weren't publicly acknowledged until 1973. Today, the program's products are no longer used for defense operations alone. From government agencies to commercial users, the data provided by NOAA and the Air Force affects everyday lives worldwide.

"The DMSP mission is the oldest continuously operational constellation in the DoD," Whitaker said. "While most Americans may never use or even see our data, they benefit from the efforts of Det. 1 and our interagency partner NOAA." In addition to being interagency, this weather mission is also total force. The 6th Space Operations Squadron, a Reserve unit under the only Air Force Reserve Space Wing, back at Schriever AFB, serves as backup to the Det. 1 team and can take the control of the constellation at the drop of a hat should the need arise.

Another unique aspect of this Air Force Space Command mission is the unit serves as a connector between two cabinet-level organizations—the Department of Commerce and the DoD—as an important traffic point on the data highway.

"Many agencies are interested in our data and we keep all those players in the loop and let them know what is happening," said Capt. Melissa K. Bierma, the assistant director of operations and executive officer. "We often translate information from one organization to the next."

Bierma arrived at the station four years ago and has seen the unit take on increasing responsibility at NOAA. She began her work with the engineers and has developed an expertise when it comes to sensors aboard the spacecraft.

"We have to ensure our data is of good quality, and it's being fed to the warfighter 24/7, 365," she said. "And if there is a problem with any of the systems that keep the satellite in orbit, we need to find out where the problem is. If one of the sensors goes out, there is a loss of data that could mean the warfighter doesn't get important data points."

The partnership between NOAA has provided the Air Force highly specialized NOAA engineers, operators and schedulers-- who are recognized among the most experienced group of its kind, Whitaker said. It makes the detachment the only unit within the 50th SW with an interagency mission.

"We work side-by-side with the Department of Commerce to control our satellites," Whitaker said. "The majority of the (civilian) DMSP team has greater than a decade of experience on the mission—and many are military veterans."

Under the dimmed lights of the operations floor, NOAA's satellite operators focus on seemingly endless lines of data displayed on stacked rows of computer screens. Every operator is responsible for a satellite and a desk cluster comprises a constellation. Each pass of a satellite opens a limited time window allowing communications to the satellite, requiring operators to be ready to pull and push data to their satellite quickly.

With their heads deep in the acquisitions and planning world, the Airmen maintain a strong operational focus. Any given day can include numerous meetings and conferences with contractor representatives and stakeholders to get clarification on the sensor status, software updates to the spacecraft or planning for an upcoming launch.

"We serve as diplomats and liaisons between some 17 different organizations," said Capt. Nathaniel Sharkey, the director of operations at Det. 1. "We're the glue that holds everything together but also the grease that allows all the gears to mesh well. The detachment makes sure everyone stays on target, mission focused and has the resources needed to get the job done."

The view on weather from space is essential and gives the ultimate overview. Knowing the condition and status of the satellites is critical to the sustainment of the fragile systems that offer such an essential tool to ground commanders and users worldwide.

"Space is the final frontier. It's the cutting edge and furthest boundary humans can reach out to and push through," Sharkey said. "It's about pushing the envelope. And we exceed and excel where humans have no business being. To me that is fascinating and incredible.

"I joined the military to help and protect people—to have an impact," Sharkey continued. "Our Air Force space missions do that. DMSP and weather prediction saves lives. What space operations provide is not just for the warfighter on the battlefield, we enhance life for everyone on the planet."

Recently, the DMSP team achieved an operational milestone when their oldest operational satellite, DMSP F-13, orbited the earth for the 100,000th time -- a rare feat, Whitaker said.

Despite its relative age, the defense weather mission is far from over as the need for on-demand, reliable weather forecasts is only increasing.

"We are engaged in the budgeting, planning and installation of key components to our aging ground system that will keep our constellation viable through the next decade and beyond," Whitaker added.

Recently, his team watched over the successful launch of their newest satellite, DMSP F-19, and is preparing to launch another, F-20, soon—so Air Force eyes in the sky can keep watch for years to come.

Story by Senior Airman Alexander W. Riedel
Air Force News Service

U.S. ARMY TRAINS NEW SIGNAL SYSTEMS SPECIALISTS

Soldiers of the 311th Expeditionary Sustainment Command, mostly signal support systems specialists, participated in Joint Capabilities Release classes at the West Los Angeles U.S. Army Reserve Center.

The Joint Capabilities Release system is the US Army's next generation of a friendly force tracking system currently fielding to Afghanistan.

The JCR system builds on the situational awareness tool Force XXI Battle Command Brigade and Below/ Blue Force Tracking, which is integrated on more than 120,000 platforms and fielded to every brigade combat team in the Army as a software upgrade.

Radames Montalvo, Engineering Solutions & Products Inc. instructor, said, "During the first Iraqi War we didn't lose one American Soldier due to enemy fire because of this type of communication system."

Signal support systems specialists are a military occupational specialty in the U.S. Army's Signal Corps that maintain selected electronic devices, including versions of the Blue Force Tracker and various automated systems.

Students had hands on training which included learning each part of the radio and the different configurations that allow the device to work efficiently. There were five JCR Training Matrix classes which taught more than twenty persons.

Training included KGV-72 Platform Encryption Device and Key Management Support Requirements that help the lines of communication. These courses focus on teaching the students the importance of communication.

Story by Capt. Fernando Ochoa,
311th Sustainment Command (Expeditionary)
U.S. Army Europe

DISPATCHES

USAF EMBEDS TACPS FOR CRUCIAL CLOSE-AIR SUPPORT

Embedded deep within an Army maneuver unit lies an Airman. Charged with orchestrating critical close-air support, oftentimes it's the effort of this combat maestro that means the difference between life and death on the battlefield—this individual is known as a tactical air control party, or TACP for short.

Tactical air control party specialists with the 169th Air Support Operations Squadron survey an enemy-controlled landing zone before calling in close-air support at Operation Northern Strike in Grayling Air Gunnery Range, Grayling, Mich., Aug. 14, 2014. Northern Strike was a 3-week-long exercise led by the National Guard that demonstrated the combined power of joint and multinational air and ground forces. TACPs with the Air National Guard's 169th ASOS from Peoria, Ill., and more than 5,000 other armed forces members from 12 states and two coalition nations participated in the combat training.

U.S. Air National Guard photo by Staff Sgt. Lealan Buehrer

However, the success of close-air support doesn't depend on these Airmen alone, but also the equipment and communication tools they use.

TACP-Modernization, an Air Force Life Cycle Management Center-owned program, is the driving force responsible for acquiring and equipping battlefield Airmen with such tools. This technology has the capability to interface with ground forces, CAS aircraft, UHF satellites, remotely piloted aircraft and command and control intelligence, surveillance and reconnaissance platforms.

To meet the needs of a modern day ground and cyber battlefield, the 46-member TACP-M team focuses on reducing reliance on voice transmission and replacing analog equipment with the latest data link and streaming video technology. They do this by addressing three main areas—mounted, dismounted equipment and communication software.

"Mounted mobile communication is a top requirements priority for us," said Rob Bubello, Battlespace Communications Branch chief and TACP-M program manager.

TACPs, who advise ground commanders on employing airpower and control aircraft to put bombs on target, use two different types of mounted equipment: fixed and mobile.

The mounted, fixed element integrates computer and communications equipment into re-locatable vehicle, rack or transit case-mounted systems for use in tactical operation centers and air support operation centers. This includes the Humvee-mounted ASOC Gateway, Gateway Lite, as well as Dismounted Communication Packages known as DCPs.

Today, TACP-M's sights are set on producing the next generation of on-the-move technology—Mobile Communication Systems or MCSs.

"The MCS offers a much more robust C2 capability since it provides four channels of voice or data as well as video streaming," said Maj. Jason Huff, MCS program manager. "In addition, the system is tailored to the vehicle and allows for more room within, which provides easy access to the equipment and more importantly, it offers easier egress access allowing members to exit the vehicle in an emergency."

The mounted, mobile element, which is similar to its fixed counterpart, integrates hardware into mobile tactical vehicles employed by the Army and provides on-the-move voice and data capabilities. To date, the program office has fielded 45 communication pallets, which are integrated onto Stryker vehicles that operate within the U.S.'s area of responsibility.

"Another large requirement for us includes DCPs," Bubello said. "It's essentially a docking kit, which allows you to combine your existing equipment."

DCPs, considered part of the mounted equipment component, are comprised of existing hardware such as computers, keypad displays, headsets and antennas. Those items are then coupled with equipment found in air support and tactical operation centers.

Since 2007, TACP-M has managed to acquire and equip 224 Humvees and 45 Strykers with TACP communication systems and plans on integrating 400 more systems into vehicles over the next five to 10 years. They have also fielded 17 operation center Gateways, four Gateway Lights and procured 144 DCPs to date.

Essentially, all these components help modernize digital voice and data communications, allowing for

machine-to-machine interface and ultimately reducing what is commonly known to warfighters as "the kill chain."

However, it isn't solely mounted equipment that TACPs use in the field; therefore, the program team also focuses on acquiring state-of-the-art dismounted technology as well.

For example, multiband man-pack radios began fielding in late 2010, followed by small wearable computers in 2011. Within the same year, pocket laser range finders, handheld laser markers and mini thermal monoculars also entered field testing. Later in 2013, equipment such as full motion video receivers and TOC light/heavy computers found their way onto the battlefield.

Master Sgt. Jeff Kennedy, a battlefield Airman who's currently assigned to the Hanscom AFB, Massachusetts, program office, is one of approximately 2,000 TACPs in the Air Force; he and others like him know all too well the importance of having the latest technology.

"It is crucial to have the most up-to-date tools," said Kennedy, looking back on a recent tour in Afghanistan. "Being able to quickly and efficiently communicate out there is a life or death situation."

According to the TACP, it's not only the efficiency of the equipment that has an impact, but also the size and weight. "We have a saying ... things should be smaller, lighter, faster," Kennedy said. "Ounces equal pounds, pounds equal pain. It's something the program team takes into consideration when procuring new equipment."

With this in mind, TACP-M moves toward acquiring more efficient pieces of dismounted equipment. For instance, the team recently introduced 202 additional Soldier ISR Receivers, or SIRs, that will help bring full motion video capability to dismounted TACPs such as Kennedy. In addition, small wearable computers are being replaced by TACP computer kits, which are comprised of an integrated computer, vest and cable systems.

Tatical Air Control Party specialists provide over-watch of friendly forces in an undisclosed location using a PSN-13 global positioning system and an AN/PRC-117F multiband manpack radio. TACPs use a variety of equipment to call in close-air support for ground forces. The TACP-Modernization program office at Hanscom AFB, Massachusetts, is charged with equipping TACP Airmen with the necessary communication tools.

Photo is courtesy of the U.S.A.F.

"We're building cheaper, more specialized kits," Bubello said. "In this case, a larger, ruggedized, tactical body-worn computer system with simpler message-focused software is the direction we're headed. It will ultimately provide the operator the means to accomplish their task at a much faster and efficient pace."

The final piece of the puzzle, and the team's third area of focus, is close-air support system software, commonly referred to as CASS.

The purpose of CASS is simple—to develop and sustain a common software application, one that establishes a baseline across all TACP systems. "What's the point of having high-tech gear if we have outdated software?" Kennedy said.

The Air Force currently uses CASS version 1.4.4, but Rockwell Collins, acting on a recently awarded contract, will produce version 1.4.5 by October. It was a selection that led to a 60 percent savings for the service from the previous contract.

With CASS playing a substantial role in TACP-Modernization, the Air Force is optimistic that the new version will be fielded in fiscal year 2015.

What's to be expected? A software version that improves TACP mission effectiveness via Human Machine Interface, data that can be exchanged between dissimilar air and ground platforms and a dismounted simplified interface environment for battlefield Airmen. The 1.4.5 version will also focus on software applications for the dismounted operator as well as a more complex scale software capability found in air operation centers.

For those who doubt Airmen are on the ground and in the fight, they're not privy to the crucial role TACPs play or of the diligent people behind the scenes ensuring the warfighter goes into battle properly equipped. Through the use of CASS, mounted and dismounted equipment, TACP-M ties it all together by balancing the Air Force's present day needs with tomorrow's modernization.

Story by Justin Oakes
66th Air Base Group Public Affairs

DISPATCHES

PUSH IS ON FOR US GOVERNMENT USE OF COMMERCIAL SATELLITES TO GATHER WEATHER DATA

An Oklahoma Congressman is urging the U.S. government to outsource the collection of certain weather data to commercial satellite operators, the same model currently used by the Department of Defense (DoD) for global satellite communications.

In a recent speech given to the Washington Space Business Roundtable (WBSR), Rep. Jim Bridenstine (R-OK) said using commercial data would improve weather forecasting and make the network of weather satellites more resilient.

"We need to move from the government owning and operating huge satellites to a day when the government can purchase data from private satellite operators," Bridenstine told industry representatives at the WSBR luncheon. "The historic government monopoly of weather satellites, and associated data, is now at the point of creating unnecessary costs, delays and risks that could dramatically degrade U.S. weather forecasting."

Bridenstine's speech centered around the National Oceanic and Atmospheric Administration (NOAA) and his desire to see NOAA's use of commercial weather data to mitigate risk of pending weather data gaps.

NOAA's weather satellites are aging and one of their critical polar operational environmental satellites (POES) is nearing the end of its lifespan.

The agency hopes to address this challenge by launching new, next generation spacecraft. However, this project, known as the Joint Polar Satellite System 1 (JPSS 1), has fallen behind schedule.

According to a 2013 report from the Government Accountability Office (GAO), this could result in the U.S. having insufficient polar satellite data to accurately predict severe weather events. This data gap could range from 17 to 53 months, according to the report.

Representative Jim Bridenstine (R-OK)

Bridenstine has introduced a bill, the Weather Forecasting Improvement Act of 2014, which takes several steps to mitigate this near-term data gap.

The Bill, passed by the House and awaiting action in the Senate, calls on NOAA to explore purchasing commercial data and to incorporate such purchases into the standard operating procedures of the agency.

The bill also requires NOAA to make funds available for non-federal weather researchers through competitive grants, contracts and cooperative agreements.

"Going forward, NOAA should adopt Department of Defense principles that include the disaggregation of space for the purpose of resiliency," Bridenstine said. "That's the model that NOAA should adopt. It's the same model that we've seen be successful in the Department of Defense as it relates to imagery and communications."

We welcome Congressman Bridenstine's willingness to embrace innovative new approaches to challenges in space. Whether in weather services, remote sensing, space situational awareness, and especially satellite communications, commercial capabilities offer a tremendous value as well as resilience, information assurance, and capability.

In the current budgetary climate, government and industry must work collaboratively to find new approaches that can efficiently maintain and upgrade U.S. space architectures.

Regarding weather, the GAO report put both parties on notice regarding the coming data gap. Similar short-falls can be made to other mission areas as well. Representative Bridenstine is right: let's further our cooperation now in the best interests of the public.

Source: Intelsat General Corporation Blog
Story by Myland Pride
Director, Legislative and Government Affairs
Intelsat General Corporation infosite::
http://intelsatgeneral.com/

Mr. Pride joined Intelsat General Corporation as Director, Legislative and Government Affairs in January 2014. He represents Intelsat General's interests with key government officials, associations and industry groups in the advocacy and promotion of innovative and strategic uses for commercial satellite communications.

Prior to joining Intelsat General, Mr. Pride served in the U.S. Air Force for 24 years, retiring as a Colonel. A career nuclear weapons and space officer, he had numerous command and senior staff assignments at Air Force Space Command, the Air Staff, the Joint Staff and the National Reconnaissance Office.

DISPATCHES

USCG'S ARCTIC SHIELD EXERCISE TESTS MUOS CAPABILITIES

From studying the effects of solar activity to improve radio transmissions to enhancing the capabilities of Automated Identification Systems, the importance of having a reliable communications infrastructure in the Arctic has not been lost on researchers traveling aboard the Coast Guard Cutter Healy as part of Arctic Shield 2014.

The Mobile User Objective System (MUOS) is the U.S. Navy's next generation narrowband military satellite communications system that will replace the legacy Ultra High Frequency Follow-On (UHF-FO) communications system before that system reaches its end of service life. Engineers from Lockheed Martin Space Systems, the creators of MUOS, were aboard the Healy to test the system's capabilities in the Arctic for the Department of Defense.

"A single MUOS satellite will provide four times the capacity of the entire legacy UFO constellation of eight satellites," said Dr. Amy Sun, narrowband advanced program lead for Lockheed Martin traveling aboard the Healy. "The MUOS constellation is designed to provide smartphone-like communications to mobile forces at rates 10 times faster than the legacy system."

MUOS delivers secure voice and data transmissions to mobile users using an advanced waveform similar to commercial cellphone technology.

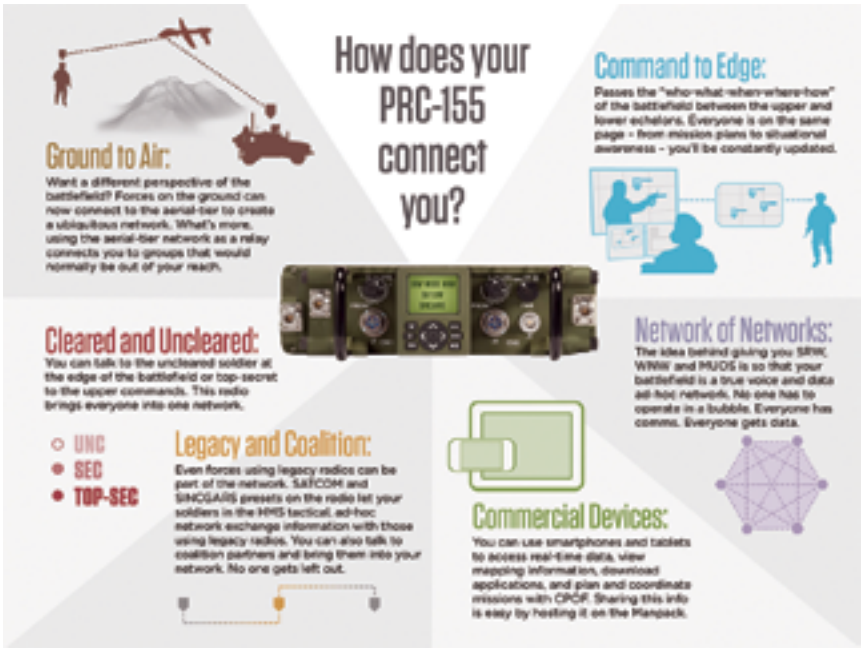
The MUOS waveform leverages the widely used commercial Wideband Code Division Multiple Access cellphone technology and allows different radios to communicate with the greater MUOS system as well as other network users. Unlike the UFO satellite constellation, the MUOS system allows routing to and from any radio terminal in the system regardless of which satellites are in view.

"This means users could traverse the globe using one radio, without needing to switch out because of different coverage areas," Sun explained.

The additional coverage provided by MUOS comes at a time when a need for dependable Arctic communications is growing. If successful, the system could provide the Coast Guard and its partners with one more valuable tool for providing safety and security to those under their watch.

Story by Petty Officer 1st Class Shawn Eggert, U.S. Coast Guard District 17

USAF ENLISTS GENERAL DYNAMICS... MUOS DEMONSTRATION SUCCESSFUL



General Dynamics C4 Systems supported a successful Mobile User Objective System (MUOS) satellite communications (SATCOM) demonstration connecting a U.S. Air Force C-17 mobility aircraft, flying over the Pacific Ocean, with a simulated airlift operations center at Scott Air Force Base, Illinois.

Using MUOS-equipped AN/PRC-155 radios located in the aircraft and on the ground, Air Force observers at Scott Air Force Base were able to talk with the airborne C-17 aircrew, exchange data and monitor the flight status of the aircraft using the MUOS satellite communications system.

"The Air Force reached out to General Dynamics asking us to demonstrate how the PRC-155 Manpack radio and the MUOS SATCOM system would work in an airborne C-17," said Chris Marzilli, president of General Dynamics C4 Systems. "The Air Force observers experienced the cellphone-like voice clarity during conversations with the flight crew and realized the powerful new voice and data capability this communications combination represents."

Over the course of the four-day demonstration, the MUOS-Manpack PRC-155 two-channel radios aboard the aircraft consistently sent and received secure voice and data communications, including in-flight position and location information, from the aircraft to the operations center at Scott Air Force Base.

The MUOS Manpack PRC-155 radio also used a loosely coupled airborne networking suite to route flight-path changes from the command center directly to the pilot and aircrew, displaying the information on portable cockpit mission displays.

Data from the aircraft's flight computers traveled securely from the PRC-155 radio, over the MUOS satellite and down to the PRC-155 radio in the operations center allowing Air Force personnel to watch the aircraft's flight on their mission tracking/status workstation displays.

In addition to the Air Force demonstration, the PRC-155 MUOS-Manpack radio is the first to deliver secure voice and data connectivity using the MUOS system in Polar Regions, from the ground and aboard aircraft in flight. The PRC-155 two-channel Manpack radio was developed by General Dynamics.

The MUOS satellite communications system offers smartphone-quality voice communications and more than 10-times the data capacity of the legacy UHF satellite communications system that is more than 20-years old.

To connect to the MUOS satellite system, radios, such as the PRC-155, must have the MUOS communications waveform that is based on commercial cellular networks technologies.

As part of the Handheld, Manpack and Small Form Fit (HMS) family, the PRC-155 Manpack is the only radio available to the U.S. Army today that connects the new Mobile User Objective Satellite (MUOS) network, while also bridging lower tactical tier networks to the "big Army" network that reaches back anywhere in the world.

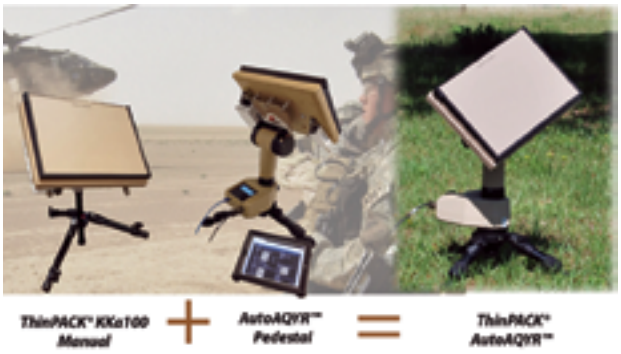
General Dynamics C4 Systems is a business unit of General Dynamics.

For more information about General Dynamics, visit
http://www.generaldynamics.com

For more information about the General Dynamics family of tactical radios visit
http://thesoldiersnetwork.com/

DISPATCHES

THINKOM + AQYR'S NEW MICROVSAT



ThinKom Solutions, Inc. has partnered with AQYR, a wholly owned subsidiary of Windmill International, Inc., to support the joint development of a turnkey micro-VSAT terminal.

This terminal will be the satellite industry's smallest, lightest, and most rapidly deployable and packable auto-acquisition terminal on the market, covering Ka-band military and commercial frequencies.

Combining the best practices of ThinKom and AQYR now brings to the market the smallest and lightest form factor for a Ka auto-acquisition terminal, also increasing spectral efficiency while still meeting the power spectral density requirements (such as FCC 25.222, 25.138, 25.209, MIL-STD-164B, ITU KA1, etc.) without spreading or the need for a waiver for use over existing and new high-throughput commercial or government satellites.

ThinKom Solutions, Inc. products enable near-term worldwide availability of affordable high data rate connectivity for the consumer, enterprise and public sector organizations including military, intelligence, civilian and public safety communities and are deployed in land, air and sea applications.

AQYR and its parent company, Windmill International, Inc., offer program management, engineering, training, technology and software development for innovative, tactical systems.

The ThinKom Solutions infosite may be accessed at ***http://thinkom.net/***

The AQYR infosite may be reached at ***http://aqyrtech.com/***

DISPATCHES

UK SPACE AGENCY SOARS IN THE AIR + AT THE BANK

"The UK space sector makes an impressive contribution to the UK economy and has consistently done so over the last decade, virtually doubling in size in financial terms since 2006."

The UK Space Agency has published its biennial study into the progress of the UK space sector. *The Size and Health of the UK Space Industry* report reveals that the sector continues to soar and is currently worth £11.3 billion to the UK economy, growing at more than 7 percent per year, employing over 34,000 people and supporting a further 65,000 jobs in other sectors.

Speaking at the Royal Aeronautical Society Strategic Choices for Space-President's Conference 2014, Minister for Universities, Science and Cities Greg Clark announced the publication of the report and said,

Greg Clark, Universities and Science Minister. Photograph: Sarah Lee for the Guardian

"The UK space sector makes an impressive contribution to the UK economy and has consistently done so over the last decade, virtually doubling in size in financial terms since 2006. These figures show that the UK is well placed to meet our ambitious target of 10 percent of the global space market by 2030. Co-operation between the public and private sector is the foundation for this continued success."

The Size and Health of the UK Space Industry allows the UK Space Agency to track the progress of the sector and serves as a metric against its ambitions and the targets set in the Space Innovation and Growth Strategy. The latest figures reflect well on the past two years of strategic investment by government in key technological innovations.

Through strategic investment, improved policy and stronger international collaboration in areas with the potential for further growth and high economic return,

The UK Space Agency is working to build a supportive environment for the commercial space sector and enabling the UK to fully exploit a growing market for space data and technologies.

The report is available from the UK Space Agency infosite:
https://www.gov.uk/government/publications/uk-space-industry-size-and-health-report-2014

VIASAT MAKES WAVES...

During development of its recently announced next generation terminals, ViaSat demonstrated 1Mbps throughput over the LightSquared SkyTerra-1 satellite to a small terminal less than 8-by-5-by-2-inches, in fixed configurations and mobile applications at speeds up to 65mph.

Improved performance over L-band broadens the scope of applications that Mobile Satellite Services (MSS) can serve. With faster downloads, enhanced broadcast and multicast services, and greater responsiveness, ViaSat L-band Managed Service provides a better overall user experience with more timely information, while maintaining a low cost of ownership. ViaSat achieved the 1Mbps data rate by efficiently balancing power and bandwidth over the LightSquared satellite.

"Receiving 1Mbps with a mobile terminal, this small terminal pushes the boundaries of performance per cubic inch and creates an opportunity to address unserved and underserved mobile market segments," said Phil Berry, VP MSS at ViaSat.

The ViaSat L-band Managed Service operates over the highest performance L-band satellites and is enabled by ViaSat technologies that provide high-availability, greater data security, and faster response for MSS. This flexible, open service enables an array of applications that serve the communication needs of consumer, enterprise, and government segments.

Learn more at ***http://www.viasat.com***

DISA SECURING THE JOINT INFORMATION ENVIRONMENT WITH JRSS

The Defense Information Systems Agency (DISA) and its Army and Air Force mission partners have initialized the first Joint Regional Security Stacks (JRSS) at Joint Base San Antonio (JBSA) to provide a consolidated, collaborative, and secure Joint Information Environment (JIE) across the Department of Defense.

"This is a significant network security infrastructure upgrade and milestone for JIE," said David Stickley, Vice Director, PEO-Mission Assurance. "It allows DISA, Army, and Air Force to monitor compliance and apply consistent security policy to information traveling over DoD networks."

The Joint Regional Security Stacks include failover, diversity and elimination of critical failure points as a means to assure timely delivery of critical information to warfighters around the globe. The use of Multi-Protocol Label Switching (MPLS) switches inside security stacks provides a virtual traffic management system that moves data faster, improves command and control, and prioritizes and streamlines data flow, significantly reducing the chances of data being stalled or lost due to high volume and congestion.

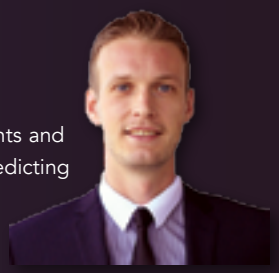
Joint Base San Antonio is the first of 25 DoD NIPRnet data sites to host the suite of equipment, which performs firewall functions, intrusion detection and prevention, enterprise management, virtual routing and forwarding (VRF), and provides a host of network security capabilities. Additionally, 25 SIPRnet Data sites will be implemented into the same locations over the next year.

Installation is complete at ten JRSS sites within the continental United States (CONUS), with the 11th taking place in first the quarter of Fiscal Year 2015, at Joint Base Lewis-McChord, Washington. Their final implementation will be a phased approach over the next fiscal year. Overseas, JRSS installation in Europe is complete, with three more sites planned for completion in the third quarter FY15 for Southwest Asia.

While the current implementation of JRSS is a joint effort with Air Force and Army, DISA is coordinating with the remaining military services and other DoD components to identify opportunities and resources for continuous implementation and deployment of JRSS to enable the top down security and visibility foundational to JIE.

EUROCONSULT ANALYSIS: FUTURE MILSATCOM REQUIREMENTS AND THE DIFFICULTY OF PLANNING FOR THE UNPREDICTABLE

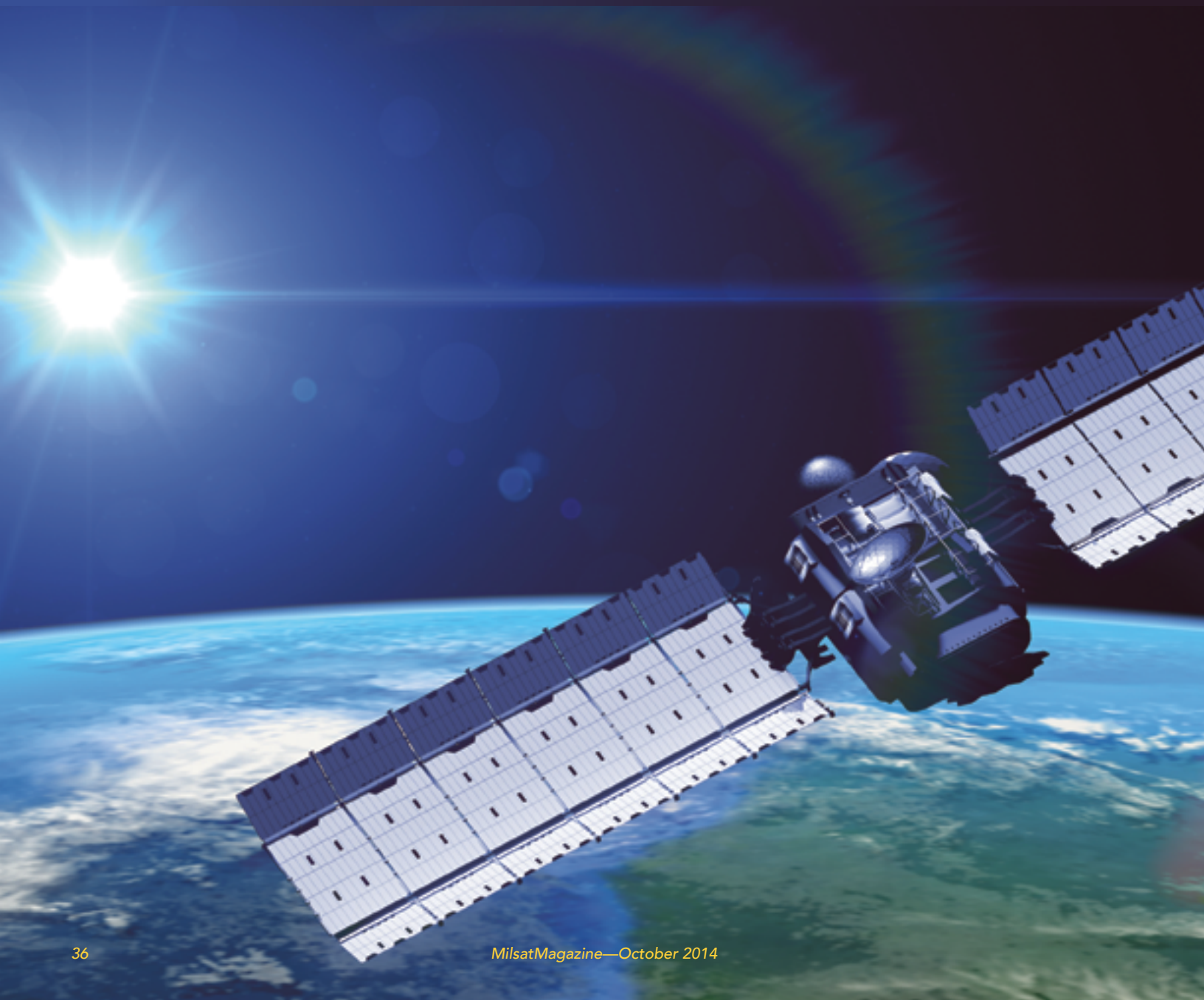
By Brent Prokosh, Consultant, Euroconsultt



Recent developments in Iraq, Syria and Ukraine have, once again, demonstrated the fragility of peace in certain regions of the world, as well as the startling speed at which conflict situations can arise, forcing international and regional military powers alike to react.

While some military planners and government officials warned of possible chaos caused by the U.S. troop withdrawal from Iraq in during the 2011 to 2012 timeframe, few would have surmised that the U.S. would again be leading a new military conflict in the country little more than two years later.

This again shows the difficulty that governments and military agencies around the world face in predicting their future requirements, notably regarding satellite communications infrastructure, which has become a pivotal component of modern warfare.



The military market was relatively peripheral to the commercial satellite communications market until 2001 when the start of the war in Afghanistan followed by Iraq promptly led to an unprecedented amount of commercial leases. Capacity needs greatly surpassed available supply on legacy proprietary military satellite systems.

Currently, more than 60 percent of the satellite capacity used by the U.S. Department of Defense (DoD) is provided by leading commercial operators, the vast majority (+/- 80 percent) of which is in Ku-band.

Commercial operators have been negatively impacted by troop withdrawals from Iraq and Afghanistan in recent years and have been clamoring for more transparency from the DoD regarding its future requirements. While the DoD has made clear that its future operations would again entail a significant volume of commercial leases, the fact remains that such demand is largely unpredictable and most of its procurements are driven by annual funding cycles which remain difficult to reconcile with the commercial operators' need for future visibility.

Despite the fact that the military requirements are extremely event-driven and that conflicts are unpredictable by nature, there are still a number of key structural trends within the MILSATCOM landscape that may help when trying to estimate the prospects for future demand.

Network Centric Warfare (NCW)

While information superiority has always been a crucial factor in successful military conflict outcomes, the doctrine of network-centric warfare is more engrained in today's military strategies than ever before. These elements require the rapid collection, analysis and dissemination of battlefield data via communications that have been pushed down to lower echelons of military hierarchies/units—whether on land, on sea or in the air.

Sustained Budget Pressure On Governments

Recent trends in MILSATCOM must be viewed through the lens of the intense budgetary pressure that now faces most of the world's developed economies (and leading military nations), from the U.S. to Europe to Japan, all occurring in recent years.

The economic crisis and the current burden of public debt have led to strong government emphasis on the reduction of public spending. These reductions in expenditures for defense and military purposes have certainly had an impact on a nation's willingness to support costly military operations.

Although satellite communications are a relatively small piece of defense budgets, and cuts are expected to be less than in other operational areas given SATCOM's strategic importance, the impact of the budget reductions will continue to be felt across the board. At a minimum, expenses for SATCOM will fall under greater scrutiny with regard to necessity, terms and prices of commercial capacity leases.

Requirements related to sovereignty, security, survivability and performance have driven some defense agencies, most notably the U.S. DoD, to invest in large-scale, next generation, proprietary satellite communications systems such as WGS, MUOS and AEHF. However, given the acute budgetary pressures faced by the majority of developed economies and leading military nations, a shadow of uncertainty has been cast over the future of these large programs of record and their successors, particularly given their high price and propensity for cost overruns and delays.

While highly capable, this type of proprietary satellite, particularly on the scale of current programs, will struggle to find new long-term funding in coming years, as just one AEHF satellite costs well over $1 billion to manufacture and upwards of $500 million to launch.

Better Collaboration

As a response, nations seeking to improve/expand their MILSATCOM capabilities have increasingly engaged in various forms of partnerships to help mitigate high up-front investment requirements and risk of cost overruns and delays associated with proprietary satellite systems.

For example, Japan, Brazil, the UAE, Qatar, and Israel have all partnered with local industry and/or satellite operators to secure long-term satellite capacity leases for military needs without assuming ownership of the satellites or their entire development costs.

Partnerships among allies have also been employed to help defray the costs of proprietary MILSATCOM systems, with the U.S. receiving investment from Australia and Canada to continue funding the WGS program and Italy and France jointly investing in their Athena-Fidus system.

Increased Need For ISR Capabilities

While these types of partnerships have a limiting factor on the amount of commercial capacity leased on the market, UAVs and manned ISR missions have also been strong drivers of commercial capacity usage.

UAVs are believed to account for nearly 20 percent of commercial capacity currently used by the U.S. military, driven by the fact that UAV missions were five times higher during the first three years of the Obama administration alone than in the eight prior years of the Bush administration. Furthermore, U.S. UAVs are in the midst of expanding their operations in North and West Africa, in addition to their ongoing missions in Iraq, Syria, Yemen, Pakistan and Somalia.

Along with continued growth in UAV inventories and sustained deployments, the key driver in their future satellite usage is expected to be more bandwidth-intensive payloads, primarily for wide-area surveillance and full motion video (FMV).

Due in part to the complexity of equipment, the DoD has struggled to connect its UAVs to its own high-capacity WGS satellites and the issue remains largely unresolved, with previous implementation timelines of 2015 having recently been revised to no earlier than 2019.

Reliance on commercial satellites is expected to continue over the long term, particularly as UAVs appear to be the preferred method of U.S. counter-terrorist and counter-insurgency operations, given their lower financial, political and human costs as compared with large-scale, conventional expeditionary troop deployments.

Capacity Demand Growing

Whether we look at the more than 10,000 military vessels that are currently in service, the thousands of soldiers deployed in the field, military base camps, or central military intelligence offices themselves, there is a clear trend that the required data rates and capabilities per unit are increasing significantly alongside a growing information flow and a range of new applications used by military forces.

Military ships use VSAT now to connect to cloud applications, stream real-time high definition (HD) images and video, provide welfare connectivity to troops on board, all combining to require several Mbps per ship today as compared to the single 2.4kbps voice connection that was all that was available just a few years ago. The same is true for deployed soldiers who increasingly rely on sophisticated tactical communication means and real-time information streaming to and from the combat theatre, including images, video, databases, and so on.

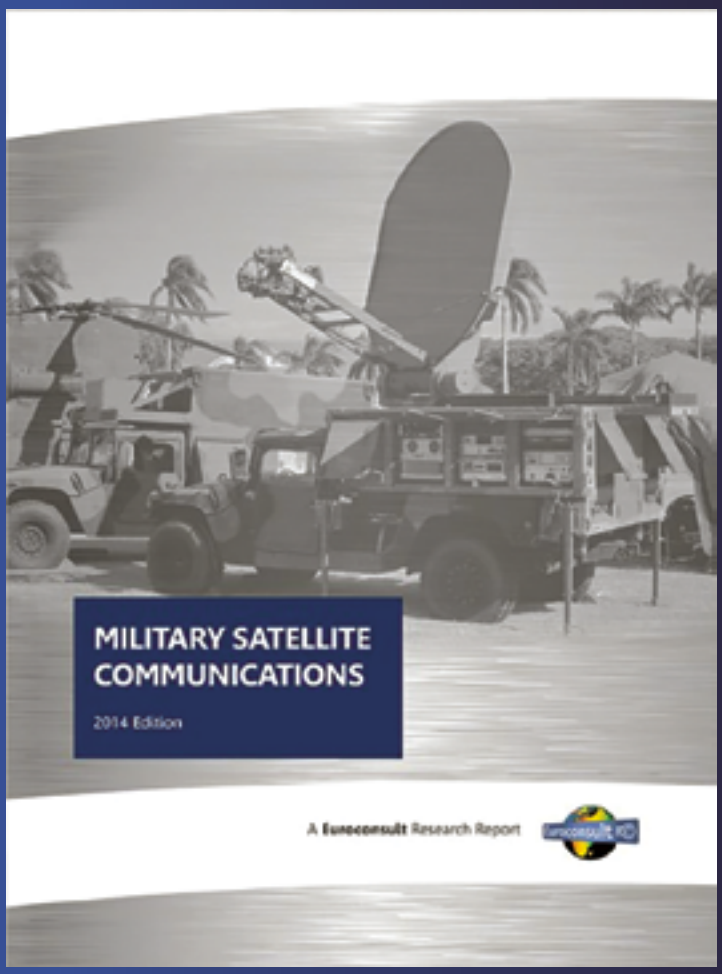
Satellite Technology Advances

High-throughput satellites (HTS) and advances in related technologies may also support commercial SATCOM usage by defense agencies, as several HTS operators will be bringing significant amounts of less costly capacity to market—well beyond that of current military systems—in the near-term. This volume of HTS capacity is complemented by flexibility in terms of both coverage and power, specifically designed to accommodate the uncertainties of future military demand. For example, O3b, Inmarsat, Newsat, Avanti and Yahsat have all incorporated steerable beams in their HTS system design and have targeted the defense sector as a major market.

Beyond advances on the satellites themselves, continuous progress has also been seen on the ground segment with ever smaller, more versatile and increasingly mobile SATCOM user terminals that enable high data-rates and a growing range in in-theater applications. Notably in Ka-band, all major terminal manufacturers are currently spending significant amounts on R&D, which should drive the usability of SATCOM systems in the future.

While these trends will undoubtedly shape the demand profile for MILSATCOM, predicting the location and magnitude of future conflicts remains a monumental task. Taking into account the nature of this market, Euroconsult has spent an enormous amount of time and effort to assess the MILSATCOM market and developed a tool that allows users to simulate an infinite number of bottom-up conflict scenarios and the related satellite requirements based on different scales of conflicts in terms of the number of deployed troops, SATCOM terminals, ships and satellite connected UAVs.

As a sample scenario, assuming that a sizeable medium-term conflict with a two to three year duration starts in 2017 involving heavy use of UAVs and some deployment of ground troops by a global military alliance, demand for SATCOM capacity in such a scenario could see a spike to more than 16 to 18Gbps by 2018-19—that's around two to three times the requirements that are assumed to be required for a minimum requirement peacetime scenario.



While military planners and commercial satellite operators alike would prefer a stable and predictable outlook in order to plan budgets and close business cases, the reality is that there is no magic formula for determining the exact future requirements for MILSATCOM or the optimal mix of proprietary and commercial capacity. However, having an idea of the possible future requirements under a number of "what-if" scenarios that take into account all known variables is an essential part of the planning and strategy definition cycle and a tool that may ensure to be prepared for the unpredictable in the foreseeable future.

The Euroconsult infosite is located at
http://www.euroconsult-ec.com

About the author
Brent Prokosh is a Consultant of Euroconsult's SATCOM practice who specializes in strategic planning, financial forecasting and market assessment; he is also a contributor to Euroconsult's "Military Satellite Communications" research report.

THE FORECAST TOOL

Given the event-driven nature of the MILSATCOM market and limited usefulness in projecting one possible future evolution, Euroconsult has developed a fully customizable forecast tool allowing the user to instantaneously measure possible demand requirement and impacts of any future conflict scenario over the next ten years, while taking into account all key trends, drivers and limitations of military satellite communications.

The tool allows you to create scenarios with multiple conflicts, variable conflict types, and different conflict years for all four segments, and simulates capacity (GHz) and throughput (Gbps) requirements by frequency band, military segment, and commercial vs. proprietary systems.

Additional details are available at
http://www.euroconsult-ec.com/shop/satellite-communications/49-military-satellite-communications.html

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NEW SATCOM DESIGN FEATURE SETS FOR NEXT-GENERATION PRODUCTS

By Karl Fuchs, Senior Contributor

When at tradeshows or other industry events, we are often asked, "What are you working on these days?" Of course, the question actually is, "What will the next generation of satellite router look like and what feature sets will it have?"

In the past, the answer could detail one or two remotes with fairly broad feature sets. Today, however, as satellite communications has entered new markets with diverse needs that span the spectrum from airborne to consumer, a broader portfolio of satellite routers is required.

One fairly ubiquitous requirement across all market segments of next-generation remotes is to reduce size, weight and power (SWaP). Nowhere is SWaP more important than the man-portable market. The importance of reducing the physical size of the terminal is self-explanatory, but the more important element is the need to reduce power draw.

From a systems perspective, the number of batteries required to accomplish a mission truly determines the soldier's load. Even in the fixed terminal market, size and weight are important. New developments are under way to integrate the digital side of a satellite router directly with a block upconverter (BUC) through an I and Q interface. These remote routers can be mounted to the antenna and run by power over Ethernet. This configuration greatly simplifies the RF chain and eliminates the need for inter facility link (IFL) cable runs and electrical power on the roof.

The new High Throughput Satellite (HTS) architecture with the promise of global coverage is driving the demand for mission flexibility. End-users need to be able to use government satellite assets when necessary and appropriate, and yet have the flexibility to leverage commercial HTS when needed.

In addition to HTS, the DoD uses a number of waveforms in various programs. True interoperability would mean standardizing on a single platform, adopting an industry standard waveform or leveraging a software-defined radio (SDR). Of course, each approach has pluses and minuses.

Standardizing on a single, potentially proprietary platform often provides the best technical solution but leaves the end-user vulnerable to all the inherent risks of a single vendor solution. The adoption of a standardized waveform can be effective and allows for vendor interoperability in the case of simple topologies such as single channel per carrier (SCPC). However, such falls far short when more spectrally efficient, and therefore more complex, topologies,

such as time division multiple access (TDMA), are employed. In TDMA systems, waveform interoperability is not the limiting factor. It is simple enough to describe both an outbound and inbound carrier in which multiple vendors' equipment could lock and pass data. The efficiency of a TDMA system is derived from the system being able to take advantage of the statistical nature of bursty IP data and integrate a network-wide remote burst plan.

These TDMA time plans are tightly coupled to a system's quality of service (QoS) and de-queuing mechanisms. The ability to deliver an over-subscribed and therefore spectrally efficient network—which provides tight traffic characteristics such as jitter to allow for real-time, voice and video data—cannot simply be defined in a waveform document.

The real efficiencies of TDMA systems lie in the intellectual property of the individual suppliers. The software-defined radio (SDR) option can be a compelling one. The promise of an SDR is that no matter the mission requirements—*e.g.*, SCPC, TDMA, supervisory control and data acquisition (SCADA) and so on—the software image on a single device is displayed to meet the need.

The complexity of the design of an SDR comes in when we try to push the limits of a hardware design. The conventional wisdom is that it is hard enough to make complex software work on purpose-designed hardware, let alone support a wide range of software. The other perhaps more intractable problem is that of intellectual property rights. Given there are a number of proprietary satellite solutions deployed in the DoD, vendors may not be open to allowing their waveforms instantiated on a competitor's SDR.

Applications in the DoD and commercial markets have designers of next-generation remotes building in separate processors. These processors can be PC104 form factor or the like and provide a wide range of possibilities.

For example, a processor could run routing code to off load layer 3 processing requirements. Other applications include providing a moving map with effective isotropically radiated power (EIRP) contour overlays for airborne situational awareness.

Looking at more distant horizons, much attention is being paid to non-geosynchronous satellite constellations.

Recent announcements by Google and others have satellite terminal vendors grappling to understand the true impact of these Low Earth Orbiting (LEO) satellites and their inherent power and bandwidth advantages. Clearly, these developments could open satellite to new markets, but the question then becomes, "*How far can satellite go in a market dominated by terrestrial wireless*?"

It's too early to see how the LEO market plays out. However, if the LEO market proves to be valuable for satellite, vendors will be designing product with SWaP in mind. Additionally, a broader portfolio of next generation satellite routers will be available to support the breadth of new SATCOM developments.

About the author

Karl Fuchs is vice president of technology for iDirect Government Technologies (iGT). He joined iGT in 2004 as the director of sales engineering, just as the satellite-based IP communications company was expanding its very small aperture satellite (VSAT) market presence into the federal government and international Internet Protocol (IP) networking world. He now works as the vice president of technology. With more than 20 years of experience in technology and the federal government, Fuchs leads iGT's team of federal systems engineers and serves as chief architect for new product integration.

Prior to joining iGT, Fuchs was director of systems engineering at Nortel Networks, where he oversaw the Verizon account team of systems engineers, leading the design of IP, frame relay, asynchronous transfer mode (ATM) and dense wavelength division multiplexing (DWDM) networks. Before joining Nortel, he designed IP and ATM networks for Sprint and the federal government. Fuchs holds a Bachelor of Science degree in electrical engineering from George Mason University, Fairfax, Virginia, and an MBA from Averett University, Danville, Virginia.

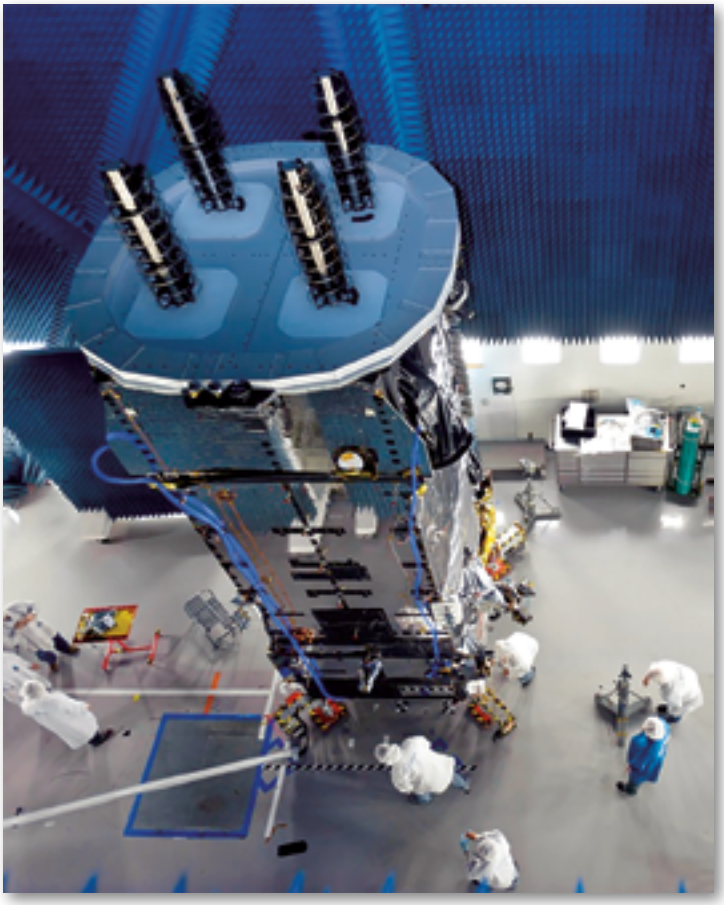
THE HPA CORNER: HOSTED PAYLOADS, READY AND ABLE

By Diana Ball, Senior Manager, Communications, Boeing Network & Space Systems

The recent award of the Hosted Payload Solutions (HoPS) indefinite-delivery-indefinite-quantity contract sends a strong signal to industry that the United States Air Force is not only interested in exploring the use of commercially hosted payloads for government applications, but has backed it by allocating nearly $500M to provide a faster path to fulfill the U.S. Government's need.

While this is a major move forward, hosted payloads are not a new concept. In fact, as this table shows, many of the Hosted Payload Alliance member companies have been developing hosted payloads since the late 1970s.

More than two dozen hosted payloads have entered service over the last 35 years, serving customers ranging from the Coast Guard to the Japanese Government to most branches of the U.S. military, and many others.



The IS-22 satellite during the build process. Photo is courtesy of Boeing.

At Boeing, the expertise in payload design, coupled with market experience in the commercial and government sectors, has created several opportunities to develop solutions to meet the demand for MILSATCOM.

These solutions have proven to be highly economical as well as expedient. A recent example is the UHF hosted payload on Intelsat's IS-22 satellite. The payload, purchased by the Australian Defence Force, was placed into service just 31 months after the satellite contract was awarded to Boeing. This is a marked improvement over dedicated government satellites that can require as many as 10 years to be specified, funded, competed for, awarded, and finally—delivered.

More notably, the Australian Defence Force confirmed that it saved $150 million by purchasing a payload hosted on a commercial satellite versus buying and operating a dedicated satellite.

The technology is ready. The need is obvious, as well, when one considers that demand continues to rise. Latest estimates report that the U.S. Government's demand for military satellite bandwidth is expected to rise 74 percent over the next decade. This will be an increase from the current level of 24 gigabits per second to more than 41 gigabits per second, according to a Northern Sky Research study published in 2013*.

This column's question for HPA members is...

What are the remaining barriers preventing the government's adoption of hosted payloads and what can industry do to address these issues?

"The issue continues to be the integration of hosted payloads into system architectures. Industry must constantly remind U.S.

Artistic rendition of the IS-22 satellite on orbit. Image courtesy of Intelsat.

*Government customers of the benefits of hosted payloads and press for their inclusion early in the analysis of alternatives and architecture development processes. This allows for early and full integration of the hosted payload data into relative ground infrastructure and other needed linkages. This early planning is a small price to pay to take advantage of the cost savings, resilience, enhanced access to space and other benefits hosted payloads provide."—**Myland E. Pride**, Director, Legislative and Government Affairs,* **Intelsat General Corporation**

*"While national policy encourages and enables the use of hosting, challenges still remain: government architectures for space capabilities do not yet include hosted payloads and concerns continue to be expressed about the priority commercial hosts will give to USG payload needs. Industry can help by developing approaches for government payloads which are hosted on commercial spacecraft to be readily integrated into existing government space systems—especially the associated communications and processing infrastructures on the ground. We can also help by inviting the government to "sit in" on some decisions about current satellites with hosted payloads aboard them; we can give them the opportunity to see how two or three partners balance their interests and concerns to arrive at a decision each partner agrees with."—**Ed Spitler**, President,*
Airbus DS Government SATCOM

*"The value of hosted payloads to both operators/owners and hosted payload sponsors has been proven with programs such as GPS WAAS and CHIRP. The challenge now is to make these deals more routine through innovative and integrated business, technical and operational solutions. For governments, both US and foreign, to take advantage of hosting, they must have payloads ready to integrate on the timelines of the host spacecraft and flexible contracting to act when flight opportunities occur. As a leading provider of government payloads and solutions, as well as commercial satellites, Lockheed Martin believes there are many untapped opportunities for commercial operators and government sponsors to enhance their business case and better satisfy mission needs through hosted payloads. Integration of the business, technical and operational solution will be a key enabler."—**Mike Hamel**, Vice President and General Manager,* **Lockheed Martin Commercial Space**

*"The desire to reduce schedule and cost and the enabling technology is available today, but the U.S. Government is struggling to execute its current portfolio of programs of record. These programs, especially on the terminal end, are continuing to exceed cost and schedule estimates and any available funds to pursue new ideas are used to fund these shortfalls. If funds can be specifically budgeted to pursue augmentation of existing capabilities or development of new capabilities, innovative approaches can be demonstrated. New concepts often are not accepted until they are proven. One approach where industry may help is to make capital investments whereby the U.S. Government does not have to pay upfront but rather procures a service for a capability once it is on-orbit. Demand signals like letters of interest and/or commitment from the U.S. Government will go a long way in facilitating these efforts."—**Rich Pang**, Senior Director of Hosted Payloads,* **SES Government Solutions**

**Source: "The Military's Second Chance for a Bandwidth Fix," Apr. 19 2013, Defense News*

About the Hosted Payload Alliance

Established in 2011, The Hosted Payload Alliance (HPA) is a satellite industry alliance whose purpose is to increase awareness of the benefits of hosted government payloads on commercial satellites. The HPA seeks to bring together government and industry in an open dialogue to identify and promote the benefits of hosted payloads.

The HPA:

- *Serves as a bridge between government and private industry to foster open communication between potential users and providers of hosted payload capabilities*
- *Builds awareness of the benefits to be realized from hosted payloads on commercial satellites*
- *Provides a forum for discussions, ranging from policy to specific missions, related to acquisition and operation of hosted payloads*
- *Acts as a source of subject-matter expertise to educate stakeholders in industry and government.*

For additional details, please visit
http://www.hostedpayloadalliance.org/

MISSION-CRITICAL COMMUNICATIONS DEMAND SATELLITE CONNECTIVITY

By Ali Zarkesh, Product Development Director, Vislink

The face of modern surveillance has changed dramatically in recent years. Today's defence officials expect a constant stream of information live from the scene as it unfolds, and they rely on a combination of video, audio, and data to provide the necessary input for making critical decisions.

Traditionally, this has required a sizable and often expensive investment in military grade hardware. However, given the personnel and budget restraints currently faced by governments all around the world, investing in bespoke equipment is no longer always possible. These groups are turning to commercial off the shelf (COTS) equipment out of necessity—and contrary to popular belief, this move is no longer a compromise on product performance.

Effective communication between disparate teams has always been the most powerful tool in any military's arsenal. It's also critical when it comes to surveillance, as operational success largely depends on the quick and reliable transfer of information.

Now, thanks to the latest developments in satellite technology, there is no longer a need to rely on expensive and bespoke equipment. The same results can be achieved with hardware that, although initially intended for the broadcast market, is capable of meeting the expectations of defence officials in terms of speed, reliability and security.

Rugged, portable and boasting high data throughputs, modern satellite data terminals are a cost effective alternative for military personnel looking to handle HD video, voice and data simultaneously, and can provide a much more effective communications network than traditional radio or cellular.

That's not to say there isn't room for cellular technology. After all, Mobile Network Operators (MNOs) have invested heavily in their 4G LTE networks to improve bandwidth and coverage,. With 5G on the horizon, it's no surprise they are looking to cash in on their investment by offering premium network services tailored specifically to the defence sector. However, 4G LTE was never intended for mission-critical communications where there is absolutely no margin for error.

Surveillance personnel have come to expect a reliable line of communication with HQ at all times, which cellular cannot provide. These networks are prone to being overloaded in a crisis, resulting in a delay in transmission.

Given the nationwide coverage offered by cellular networks, they are well suited for initial surveillance and data gathering purposes. However, during heavy usage they are subject to high latency, delay and glitches, which can ultimately result in a failed operation. This is a risk military personnel cannot afford to take—satellite communications offers a much safer alternative.

Combine the advent of Unmanned Aerial Vehicles with the need for reliable backhaul services on land, sea and air, and it's no surprise there has been such a large surge in the use of non-traditional satellite communications equipment. As this technology advances, providing greater throughput rates and higher quality video, so does the amount of created data. The availability of fast, portable and robust SATCOMs equipment has always been of paramount importance. As satellite bandwidth is also a prized commodity, it's vital for that same equipment to compress the data feed as far as possible.

Fortunately, new modems included in satellite hardware are capable of achieving significant data rates and high efficiency gains. Paired with portable equipment housing, such as Vislink's MSAT range, which weighs only 12.5Kgs and is designed for one-man operation, COTS equipment can provide military personnel with all the benefits of a fully integrated satellite terminal yet on a much smaller scale, suitable for use in any environment.

This represents a marked change in how satellite technology is viewed by the defence sector. Historically, it has been seen as an expensive and complicated communications network. Due to steadily increasing capacity, reduced costs, modular functionality and higher data transfer rates, satellite communications can now exceed even the most stringent requirements, all delivered through a more robust network than 4G LTE. As a result, SATCOMs now play more important roles than ever before in keeping disparate teams of military personnel connected at all times.

As military budgets continue to be squeezed, all the while governments continue to expect high returns for their restricted investments, the global reliance on COTS equipment for mission-critical communications is set to grow exponentially. Not only suitable for surveillance operations, this technology also has applications for domestic training, data distribution and backhaul purposes.

No matter what the requirement, satellite technology has the ability to deliver video, voice and data from a variety of deployed assets to enable swift, accurate and intelligent decision-making.

For further information regarding Vislink, please visit their infosite at ***http://www.vislink.com/***

Vislink transportable, parabolic antenna.

About the author

Ali Zarkesh is the Director of Product Development at Vislink.

THE CRITICAL COMMS CHALLENGES OF THE MULTI-NATIONAL COUNTER-PIRACY COALITION: A KVH CASE IN POINT

Resolving global threats such as piracy and terrorism requires nations to work together to advance a coordinated strategy. These multinational operations present a unique set of challenges particularly in communication and coordination.

A common view of shared information is essential for maritime domain awareness and paramount to mission success. The havoc caused by modern-day piracy continues to inflict a very high cost on the global economy. According to a recent World Bank* study, hijackings in the High Risk Area (HRA) of the Indian Ocean and the Arabian Sea have dropped significantly since reaching a peak in 2010. However piracy is still expected to cost the global economy an estimated $18 billion annually. The increased costs can be traced to a number of reasons including:

- ***Changes in trading routes increasing transit times***
- ***Longer routes causing fuel bills to rise***
- ***Higher insurance premiums***
- ***Increased number of armed security guard onboard***

$1.65 billion	Estimated cost of security equipment & guards
$1.53 billion	Extra fuel costs associated with increased speeds
$1.09 billion	Incremental cost of military vessel deployments
$209.5 million	Cost of re-routing vessels around HRA
$82.7 million	Cost per piracy incident (up 189% from 2011)

Table 1. The cost of piracy to the commercial shipping industry.

World Bank Report—"Pirates of Somalia: Ending the Threat, Rebuilding a Nation**", and **Oceans Beyond Piracy**, a project of One Earth Future Foundation*

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Effective and efficient communication is critical to the success of the multinational naval coalition counter-piracy task force. Task force members must be able to share information, despite differences in their data network specifications.

Reports by the World Bank and the Oceans Beyond Piracy project agree that one of the most effect means of reducing piracy has been the increased and continuing mobilization of international naval forces and tighter security adopted by the shipping industry. The "big three" of naval counter-piracy operations include EUNAFOR's Operation Atalanta, NATO's Operation Ocean Shield, and the Combined Task Force 151 (CMF-151). CMF-151 is a multi-naval task force established in 2009 to conduct operations under a mission-based mandate of the Combined Military Forces (CMF). The task force's goal is geared toward deterrence, disruption, and suppression of piracy off the coast of Somalia and in the Gulf of Aden.

A key to the success of the naval coalition efforts is the ability for all members of the multinational task force to communicate effectively and efficiently despite differences in data network specifications. To achieve the level of communication and cooperation necessary for the CMF to execute effective strategies against piracy, terrorism, and other criminal activities, coalition forces required a common satellite communications system that could deliver high-performance at low cost, handle heavy data flow, and was easy to deploy on multiple vessels. The CMF found a solution that meets all of these requirements in the mini-VSAT Broadband^{SM} global satellite service network from KVH Industries, Inc.

KVH today offers a series of onboard terminals for the mini-VSAT Broadband service, from the compact TracPhone V3-IP with a 37cm antenna, to the TracPhone V7-IP with a 60cm antenna, up to the global dual-mode C/Ku-band TracPhone V11-IP with a 1m antenna.

The preferred system for the CMF was the enterprise class TracPhone V7 (the predecessor to the TracPhone V7-IP) with a 60cm antenna. All TracPhone V/V-IP series terminals are one antenna, total end-to-end solutions, featuring integrated, below decks equipment and the antenna is pre-configured for the global mini-VSAT Broadband service, built on the foundation of ViaSat's ArcLight® spread spectrum technology.

Effective Communications for Effective Operations

The CMF consists of several Combined Task Forces (CTFs), including:

- ***CTF-150—focused on maritime security and counter-terrorism including the illegal transport of weapons, personnel and income-generating narcotics***
- ***CTF-151—dedicated to counter-piracy operations in the Somali Basin, the Gulf of Aden, and the Indian Ocean***
- ***CTF-152—in charge of Arabian Gulf security and cooperation***

The CMF is also tasked with guarding vital Iraqi oil and gas platforms, with the assistance of U.S. Coast Guard Port Security Units (USCG PSUs).

When assuming command of the CMF and its task forces, Navy commanders discovered that some coalition partners were deploying vessels into the region that did not have adequate datacom messaging capabilities, leaving them unable to communicate with other task force vessels. CMT operations require the use of the Combined Enterprise Regional Information Exchange System (CENTRIXS), which is often encrypted and enables ship-to-ship operational dialogue between vessels of other nations in text and web-based formats.

Coalition operations, such as the successful boarding and seizure operation that freed the M/V Magellan Star from pirates, rely on clear and non-ambiguous communication.

CENTRIXS, which consumes a high volume of data, is vital to the success of the operations. As the task forces operate in a widely dispersed fashion, line-of-sight communications do not meet daily needs. Additionally, when multiple nations speak English with varying dialects, ensuring that all parties have the same level of understanding can be difficult. CENTRIXS enables the secure use of such widely used tools as chat/instant messaging and email, as it is easier to reach understanding with written communications.

Battling the High Cost of Multinational SATCOM

Initially, CMF provided various coalition vessels a provider's L-band systems, which were desirable based on their small antennas, straightforward configuration, and coverage throughout the operational region. Unfortunately, the steep cost of data transmissions as well as high latency, combined with the high data volume required by CENTRIXS, resulted in prohibitively high SATCOM costs.

Furthermore, the forces in the operations are constantly changing. Various countries assign vessels, aircraft and personnel to the task force operations. Therefore, the Navy felt there was a need to offer SATCOM systems that were simple to install and operate, as well as being able to deliver global coverage with reliable high-performance at a lower cost.

KVH Industries' TracPhone V7 with the mini-VSAT Broadband network presented the solution to these multiple challenges of performance, affordability, and ease of installation and operation.

The TracPhone V7 SATCOM system is installed on multiple USCG PSUs that are deployed in the Arabian Gulf to assist with guarding high-value O&G platforms.

Rigorous USCG Testing

Coalition forces drew on the extensive testing, evaluations, and operational experience of the U.S. Coast Guard in selecting the TracPhone V7 and mini-VSAT Broadband solution.

The Coast Guard was faced with meeting the challenge of many new applications that required or would be enhanced by broadband connectivity, as well as the need to provide Internet and voice calling capabilities for their crew members while offshore. With that in mind, the USCG began testing KVH's integrated SATCOM system shortly after the service was launched in September of 2007.

The flexibility and power of the TracPhone V7 and mini-VSAT Broadband service are clearly demonstrated by the system's ability to meet the USCG's rapidly expanding requirements driven by new biometric technology used in immigration and law enforcement activities, missions that sent USCG vessels to the Persian Gulf in support of the U.S. war on terrorism and anti-piracy efforts and natural disasters that required the USCG to support humanitarian efforts.

In addition, the 24/7 nature of USCG operations and the extreme sea and weather conditions in which these relatively small vessels operate demanded the durability and reliability of the TracPhone V7 and mini-VSAT Broadband service.

The USCG began deploying KVH's TracPhone V7 systems on their 225-foot Seagoing Buoy Tenders and their 240-foot Seagoing Buoy Tender/Icebreakers to replace the previously-installed equipment, which was proving to be prohibitively expensive for the USCG's expanding broadband requirements. Their primary interest was providing broadband connections for non-classified operations and to improve crew morale.

During the Buoy Tender fleet rollout, the Coast Guard inquired about an urgent requirement to augment broadband communications aboard their 110-foot Island Class Patrol Boats stationed in the Persian Gulf. The previous provider was unable to support the concentration of users operating within such a limited geographic area, so the Coast Guard needed an alternative commercial satellite service to meet the communications needs of the Coast Guard vessels operating in the Middle East. KVH provided the TracPhone V7 units and helped the USCG to integrate the mini-VSAT Broadband network into its communications backbone.

Recognizing the significant benefits offered by the TracPhone V7 and the mini-VSAT Broadband service, the U.S. Coast Guard next looked to equip their High Tempo/High Maintenance (HTHM) 110-foot Island Class Patrol Boat fleet with mini-VSAT Broadband service. These vessels use new biometric instruments to positively identify every person the Coast Guard detains, requiring large amounts of data to be transmitted between the Patrol Boats and the central database in Virginia.

Using the previous service, this was an extremely time-consuming and expensive exercise, slowing vessel response times. The TracPhone V7 systems deployed on these vessels offered a dramatic improvement in performance, including tracking in rough seas and maintaining communications in rain and other adverse weather conditions.

In late 2010, the Coast Guard awarded KVH a $42 million contract to replace the satellite communications equipment on more than 200 vessels with the TracPhone V7 and mini-VSAT Broadband service.

Coalition Forces Choose mini-VSAT Broadband

Following assignments to the Combined Maritime Forces, the U.S. Navy purchased six TracPhone V7 units with mini-VSAT Broadband service based, in part, on the success of the USCG's mini-VSAT Broadband testing and deployment. The U.S. Navy also encourages allied forces working in the combined joint task force in the region to equip their vessels with the mini-VSAT Broadband service.

Today, TracPhone V7/V7-IP systems are installed on high-value oil and gas terminals in the Arabian Gulf, and on U.S. Navy and coalition vessels participating in the Combined Maritime Forces. The units are available to be deployed as needed in the Gulf of Aden, the Gulf of Oman, and the Arabian Gulf. These systems have already been successfully deployed on vessels of the navies of Thailand, Pakistan and Bahrain, among others.

Based upon their experiences with the coalition, the Republic of Korea Navy, which recently assumed command of CTF-151, purchased three of KVH's TracPhone V7 systems for installation on their vessels serving in the CMF task forces.

A NexGen Global SATCOM Solution

As discussed earlier, an effective SATCOM solution for CMF vessels needed to meet a range of critical needs:

- ***Coverage throughout the operating region***
- ***Sufficient bandwidth and capacity to support the broadband communications requirements for CMF vessels, crews, and operations***
- ***Easily deployable, low-cost hardware***
- ***Affordable airtime***

The end-to-end solution offered by KVH's TracPhone V7/V7-IP and mini-VSAT Broadband service meet each one of these needs.

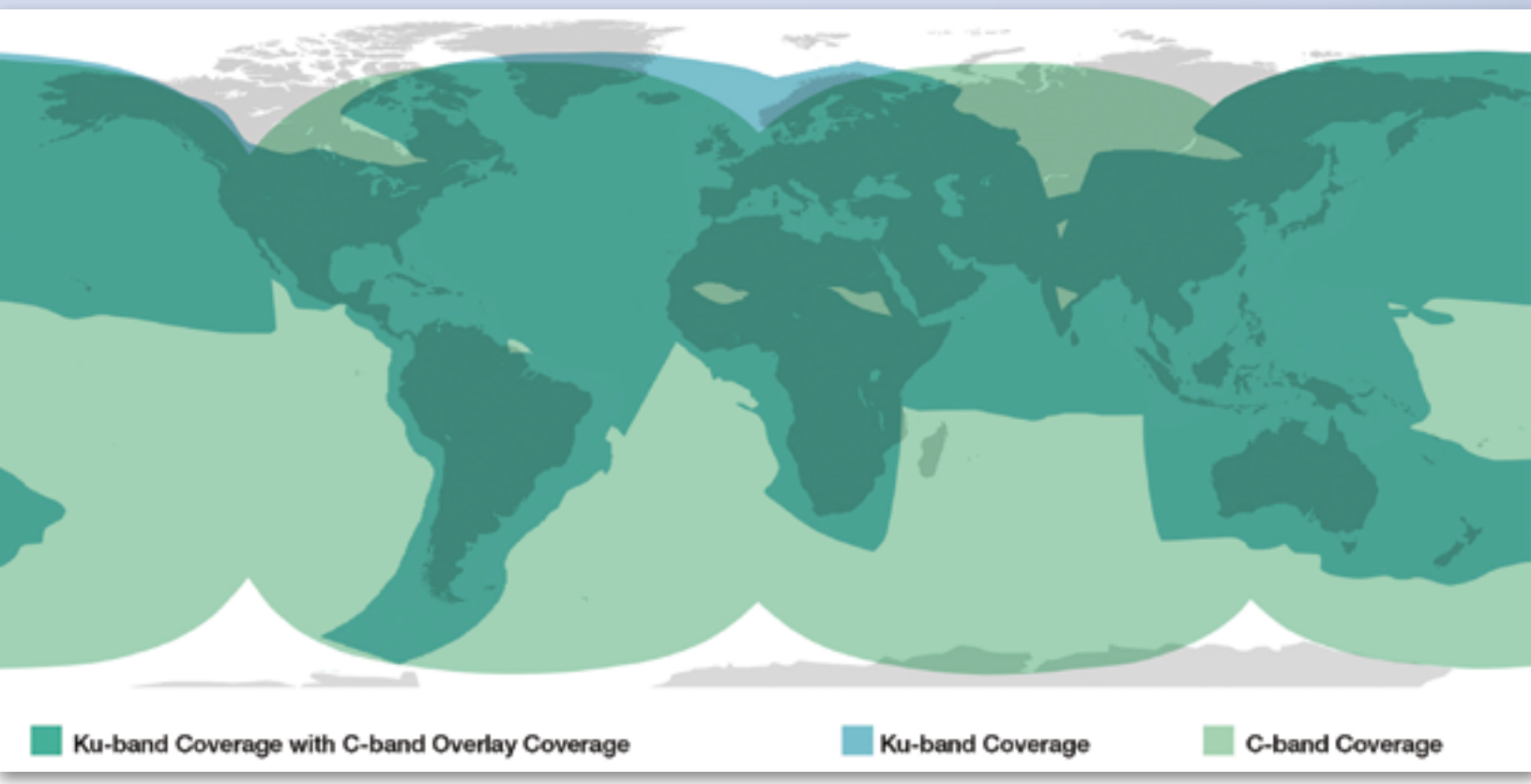
Regional and Global Coverage

Military forces using VSAT services travel all over the globe, switching from one regional network to another. The mini-VSAT Broadband service is a robust, high-capacity, global broadband network. Numerous Ku-band satellite transponders create seamless coverage throughout the northern hemisphere, and around all of the major continents in the southern hemisphere. In Q3 2012, three global C-band transponders were added to provide total coverage outside of the extreme polar regions.

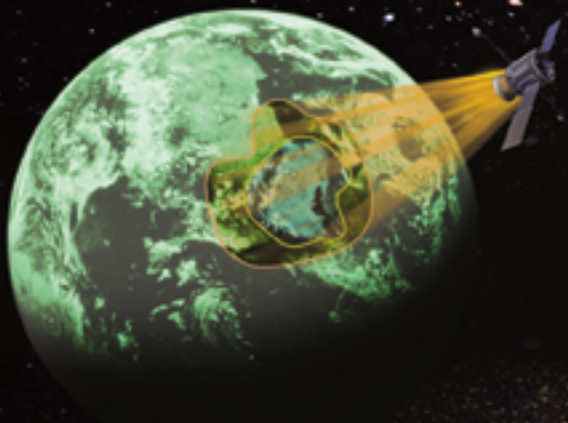
Bandwidth and Capacity

The mini-VSAT Broadband network is the first nexgen maritime SATCOM solution. The global spread spectrum satellite network, built with ViaSat's patented ArcLight technology, offers more affordable airtime, voice service and Internet access as fast as 1Mbps (ship to shore) and 2Mbps (shore to ship).

The mini-VSAT Broadband network is based on ViaSat's ArcLight Code Reuse Multiple Access (CRMA) spread spectrum technology. The ArcLight technology is more than twice as efficient as older second generation Time Division Multiple Access (TDMA) technology used by all other maritime VSAT systems.



The Global mini-VSAT Broadband Network



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MILITARY AND GOVERNMENT SPEAKERS

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PRE-CONFERENCE WORKSHOPS | 3RD NOVEMBER 2014

A 8.30-12.00 **Role of Satellite in Operational Situational Awareness - Latest Technological Trends**

Hosted by **Vladimir Stoiljkovic,** Business Development Manager, **Satellite Applications Catapult**

B 13.00-17.00 **Satellite Interference - Technology and Tools**

Hosted by **Martin Coleman,** Executive Director, **Satellite Interference Reduction Group**

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The CRMA spread spectrum signals can also be received by much smaller antennas while still ensuring high quality connections that withstand atmospheric interference, rain fade, and multipath errors.

In addition, mini-VSAT Broadband's transmission technology is highly efficient at managing network traffic and provides affordable, consistent data rates. This ensures that vessel commanders and crews get what they need with regard to service speeds, reliability, clear Voice over Internet Protocol (VoIP) phone connections, and performance.

Easily Deployable, Low-cost Hardware

The modern spread spectrum broadcast technology used by mini-VSAT Broadband permits the service to operate using smaller antennas such as the TracPhone V7/V7-IP antenna, which is 85 percent smaller by volume and 75 percent lighter than those employed in 1 meter VSAT equipment. By way of comparison, the TracPhone V7/V7-IP is only 24 inches (60cm) in diameter and weighs 60lbs (27kg) compared to the 40 inches (1m) or larger traditional VSAT antennas that weigh 250 to 400 lbs (115-180kg).

Affordable Airtime

KVH's TracPhone V7/V7-IP with mini-VSAT Broadband service offers a wide range of affordable, flexible airtime plans, including always-on, fixed-price monthly options and per-megabyte plans that allow TracPhone V7/V7-IP customers to save 85 percent or more per megabyte than existing maritime data services.

The Critical SATCOM Connection

Reliable, high-quality SATCOM is critical to successful multinational security operations, especially when coordinating multilateral military strategy. The effective deployment of coalition forces requires communications systems capable of supporting high-volume data use, such as Internet access and onboard video teleconferencing.

The KVH TracPhone V7-IP Maritime SATCOM System

KVH's mini-VSAT Broadband network and TracPhone V/V-IP series systems have proven themselves ideally suited for such operations thanks to compact antennas, affordable broadband service and global coverage. More than 4,000 TracPhone V/V-IP series systems have been shipped since the product's introduction, making the mini-VSAT Broadband network the fastest growing maritime VSAT solution.

Additional information is available at:
http://www.kvh.com/minivsat

Straight from Today's Headlines

*As reported by the **Taipei Times**, a Vietnam-flagged tanker was hijacked by gun-toting pirates who stole part of the vessel's cargo of oil before releasing the ship and its crew safely, a Vietnamese official has said.*

The MT Sunrise 689 went missing en route from Singapore to the Vietnamese port of Quang Tri, falling out of contact shortly after it left port a little more than a week ago.

"The Sunrise and its 18 crew members were released early this morning by pirates who took around a third of cargo on board," Vietnamese Maritime Department Director Nguyen Nhat said yesterday.

"Around a dozen pirates with guns jumped on the ship, took control and beat the crew," said Nhat, who had spoken to the ship's captain, Nguyen Quoc Thang, early yesterday after their release. "The pirates broke the communication system, robbed the oil and goods on board," he added.

Southeast Asia has seen a spate of daring hijackings this year, centred on the Strait of Malacca running between Malaysia, Indonesia and Singapore. The incidents have fanned fears that the region's busy shipping lanes—plagued by piracy for centuries—could once again become a problem area after an earlier surge in sea banditry was largely suppressed by regional navies.

The Sunrise, which belongs to a shipbuilding company in the northern Vietnam port of Hai Phong, was carrying more than 5,200 tons of oil and 18 crew, state media reported. "Two crew members were slightly injured," Nhat said, adding that the others were unhurt.

The ship is heading toward Vietnam's southern Phu Quoc Island. The International Maritime Bureau's Piracy Reporting Center in a statement confirmed that the "crew and vessel are safe and proceeding to a safe port in Vietnam."

Southeast Asian piracy attacks have crept back up, according to the International Maritime Bureau. The agency in June called on regional authorities to step up cooperation to prevent a re-emergence of the piracy scourge in the Malacca Strait and adjacent waters — the conduit for one-third of global trade flows.

SATCON Keynote

Lt. Gen. Tom Sheridan (U.S.A.F. – Ret.)
Vice President, National Security Space, Vencore, Inc.

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