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MilsatMagazine

U.S.A.F.'s GPS IIF-9 Rockets Into Orbit

The United Launch Alliance (ULA) Delta IV launches with the GPS IIF-9 satellite aboard. Photo is courtesy of ULA.

MilsatMagazine

April 2015

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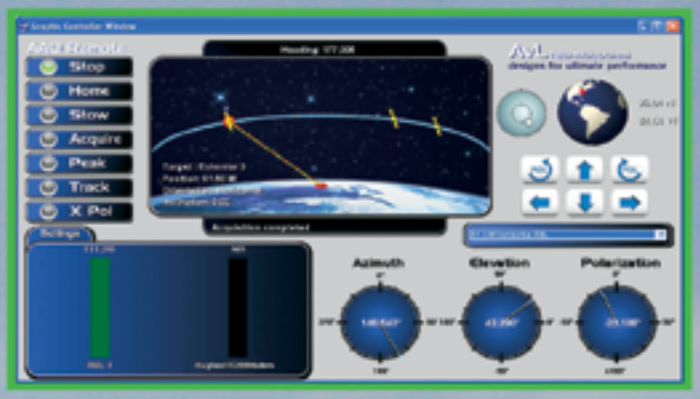

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DISPATCHES

SEQUESTRATION REMAINS A SERIOUS THREAT... + SPACE IS NO LONGER A SANCTUARY...

The space domain is no longer the relative sanctuary it once was and growing adversarial threats intend to deny the U.S. national security and economic benefits derived from space access, Defense Department officials told Congress on March 25th.

Testifying before the House Armed Services Committee's subcommittee on strategic forces during the fiscal year 2016 national security space hearing, Douglas L. Loverro, deputy assistant secretary of defense for space policy, and other DoD officials discussed the importance of the department's space program and budget concerns.

Increased Budget Addresses Threats

Deputy Assistant Secretary of Defense for Space Policy, Douglas L. Loverro.

"Those threats continue to mature and our adversaries are not sitting still—let me assure you—neither are we," Loverro said. "To address these threats, the department has increased its budget for space security by $5 billion. The substantial increase is intended to make certain that U.S. space forces are as dependable as the terrestrial forces which depend upon them."

Loverro said these investments, along with other changes, will make clear to all that attacks in space are not only strategically ill-advised, but militarily ineffective.

"Notwithstanding our increased focus on the national security dimensions of space," he said, "we remain absolutely committed to ensuring the peaceful use of space for all." Space "is a global good," Loverro said, "and has been a driver for economic growth, environmental monitoring, verification of treaties and an enabler for everyday citizens at home and abroad."

Space Reliance

According to Loverro, several of the department's initiatives are intended to extend its commitment to the peaceful use of space, deter conflict in space and enhance the economic benefit that derives from space.

"We no longer can view space as a sanctuary," he said. "Potential adversaries understand our reliance on space and want to take it away from us—we won't let them," Loverro said. "The U.S. leads the world in space on the commercial side, the civil side and the national security side. We will not cede that leadership."

Together, with allies and commercial partners, he said, the United States will continue to defend the rights of all nations to space access for peaceful purposes.

Loverro noted where that access is threatened or where others would seek to remove the national security or economic benefits derived from that access, DoD will defend its use just as the department would in any other domain.

Better Buying Power 3.0 Working

Dyke D. Weatherington, acting deputy assistant secretary of defense for space, strategic and intelligence systems, told Congress the department has been able to leverage Better Buying Power initiatives to generate significantly lower costs and real savings in its negotiations for several space systems production contracts.

Mr. Dyke Weatherington Director, Unmanned Warfare & Intelligence, Surveillance, and Reconnaissance (UW & ISR), Strategic and Tactical Systems in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics and the Office of the Assistant Secretary of Defense for Acquisition.

"We look forward to seeing how these latest iterations of Better Buying Power 3.0 will continue this trend and save the taxpayers real dollars," Weatherington said. "I'm also happy to report... that with a few exceptions, our defense and intelligence satellite constellations are currently in a relatively stable, healthy and well-populated situation to support both the nation and our warfighters," he said.

Many of these constellations will be entering a window of recapitalization in the coming years, he added. "How we approach these recaps will be a primary concern of the department," Weatherington said, "and will hinge on many ongoing analyses and study efforts—chief among those being the secretary's strategic portfolio review, and several key analyses of alternative studies."

Sequestration Harms Plans, Programs

Weatherington told the congressional panel that the department's plans and programs will be "drastically and harmfully impacted" if sequestration takes effect again.

Would-be adversaries, he said, are developing formidable capabilities designed to deny U.S. intelligence professionals and uniformed warfighters the asymmetrical advantages derived from the nation's space capabilities. "It's my

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job to ensure the department acquisitions for new capabilities stay abreast for this rapidly evolving challenge," Weatherington said, "and that our warfighters have the capability they need, but not at a price that is untenable to Congress and the American people."

Budget Control Act Relief

Air Force Gen. John E. Hyten, commander of Air Force Space Command, said a return to sequestration-level funding, set to take effect October 1 unless Congress acts, would increase risk.

Gen. John E. Hyten, Commander, Air Force Space Command, Peterson Air Force Base, Colorado.

"Returning to funding levels as directed by the Budget Control Act of 2011," he said, "Air Force Space Command is going to have a difficult time meeting operational requirements." Hyten added, "Compromises will be made, risk would be increased in any scenario, but we know that we have to continue to provide the nation with necessary capabilities and not lose ground in the space arena."

Air Force Lt. Gen. John W. Raymond, commander of 14th Air Force, and the Joint Functional Component Command for Space, which conducts space operations for U.S. Strategic Command, noted a return to Budget Control Act caps would threaten the nation's assured access to critical space capabilities. "I am concerned that if we do not receive relief from the Budget Control Act, our ability to provide our nation assured access to these critical space capabilities will be at risk," Raymond said.

Lt. Gen. John W. "Jay" Raymond, Commander, 14th Air Force (Air Forces Strategic), Air Force Space Command; and Commander, Joint Functional Component Command for Space, U.S. Strategic Command, Vandenberg Air Force Base, California.

"We are absolutely committed to ensuring global access to space and peaceful operations in and through the space domain," he said. "Credible, reliable and assured space capabilities are vital to our nation's strategic deterrence."

Story by Army Sgt. 1st Class Tyrone Marshall Jr.
DoD News, Defense Media Activity

TWENTY-FIVE YEARS OF PROVEN FLIGHT SUCCESS FOR PEGASUS

Orbital ATK, Inc. has marked the 25th anniversary of the first flight of the company's Pegasus air-launched rocket.

The world's first all-new privately-developed space launch vehicle, Pegasus was developed in the late 1980's in a joint venture between Orbital Sciences Corporation and Hercules Aerospace Company, a predecessor to ATK Inc., and was first launched on April 5, 1990.

Since its maiden flight 25 years ago, Pegasus has conducted a total of 42 space launches, including 28 consecutive successful flights over the past 18 years since 1997. With some launches carrying multiple small satellites on a single rocket, these Pegasus flights placed over 80 satellites into orbit for scientific, commercial, defense and international customers. Recent missions carried out by the air-launched booster include the launch of NASA's NuSTAR astrophysics satellite in 2012 and IRIS heliophysics spacecraft in 2013. Pegasus is also scheduled to launch additional satellites into orbit in 2016 and 2017.

Pegasus technology and subsystems, including the vehicle's solid rocket motors, avionics and control systems, and composite structures, also have been used in more than 110 other Orbital ATK-built launch vehicles. These include the company's Orbital Boost Vehicle (OBV) missile defense interceptors, IRBM- and ICBM-class target vehicles, Minotaur and Taurus space launch vehicles, and Hyper-X hypersonic test boosters. Pegasus and its derivatives are compatible with air-launch deployment from three aircraft types (L-1011, B-52, C-17) and have been launched from eight ranges in the U.S. and overseas.

Following the rocket's first flight, the Pegasus development team received the National Medal of Technology from President George H. W. Bush and the Air and Space Museum Trophy from the Smithsonian Institution, among other honors and awards.

"Pegasus combined major technological advances in propulsion systems, composite structures, digital avionics and aerodynamic design with a new business model involving commercial development and operation of space launch vehicles," said Dr. Antonio Elias, Orbital ATK's Chief Technical Officer and Pegasus' inventor. "The spirit of innovation that Pegasus reflects is alive and well at Orbital ATK today, with several exciting new projects now underway."

DISPATCHES

DSP SATELLITE SUPPORT GARNERED BY NGC

Northrop Grumman Electronic Systems, Azusa, California, has been awarded a $9,634,400 cost-plus-fixed-fee and firm-fixed-price contract for Defense Support Program (DSP) satellite constellation sustainment.

Northrop Grumman will provide required DSP sensor support, anomaly resolution, mission threat analysis, infrastructure maintenance, and training. Work will be performed at Azusa, California, and is expected to be complete by October 1, 2015. This award is the result of a sole-source acquisition.

Fiscal 2015 operations and maintenance funds in the amount of $9,634,400 are being obligated at the time of award. The Space and Missile Systems Center, Remote Sensing Directorate, Los Angeles Air Force Base, California, is the contracting activity.

DATAPATH BRINGS WGS TERMINALS TO USAF

DataPath Inc. has been awarded a $6,791,930 firm-fixed-price contract by the U.S. Air Force.

DataPath will provide five Wideband Global Satellite (WGS) Satellite Communications (SATCOM) terminals with related equipment and training for the Danish Air Force and 29 WGS SATCOM terminals with related equipment and training for the Danish Army.

Work will be performed in Duluth, Georgia, and is expected to be complete by June 30, 2016. This contract is 100-percent foreign military sales.

This award is the result of a sole-source acquisition. Air Force Life Cycle Management Center, Hanscom Air Force Base, Massachusetts, is the contracting activity.

ORBITAL ATK'S MESH ANTENNAS UNFURLED

Two unfurlable mesh antenna reflectors developed by Harris Corporation have successfully deployed onboard the third Mobile User Objective System (MUOS) satellite built by Lockheed Martin.

This represents the fifth and sixth successful Harris reflector deployments in the planned five satellite MUOS system. The MUOS satellite constellation operates like a smart phone network in the sky, vastly improving current secure mobile satellite communications for warfighters on the move. Unlike previous systems, MUOS provides users and on-demand, beyond-line-of-sight capability to transmit and receive high-quality, prioritized voice and mission data, on a high-speed IP-based system. Once fully deployed, MUOS will be compatible with, and provide 16-times the capacity of the legacy UHF satellite system.

DISPATCHES

U.S.A.F.'S GPS IIF-9 MAKES A SUCCESSFUL MOVE TO ORBIT

The launch of the Boeing manufactured GPS IIF-9 satellite via a ULA Delta IV launch vehicle, Aerojet Rocketdyne + Orbital ATK engines. Photo is courtesy of United Launch Alliance.

A United Launch Alliance (ULA) Delta IV rocket successfully launched the ninth Global Positioning System (GPS) IIF satellite for the U.S. Air Force at 2:36 p.m. EDT on March 26, 2015, from Space Launch Complex-37, supported by the USAF's 45th Space Wing.

This is ULA's fourth launch in 2015 and the 95th successful launch since the company was formed in December 2006.

"Congratulations to the Air Force and all of our mission partners on today's successful launch of GPS IIF-9! The ULA team is privileged to work with this world-class U.S. government and contractor mission team, and we are proud to contribute to the GPS capabilities that were delivered to orbit today," said Jim Sponnick, ULA vice president, Atlas and Delta Programs. "This entire team is focused on 100 percent mission success, one launch at a time, and also providing on-time launches to meet our customer's mission needs."

This mission was launched aboard a Delta IV Medium-plus (4,2) configuration Evolved Expendable Launch Vehicle (EELV) using a single ULA common booster core powered by an Aerojet Rocketdyne RS-68 main engine, along with two Orbital ATK GEM-60 solid rocket motors.

Artistic rendition of the GPS IIF-9 satellite. Image courtesy of Boeing.

The upper stage was powered by an Aerojet Rocketdyne RL10B-2 engine with the satellite encapsulated in a four-meter-diameter composite payload fairing.

GPS IIF-9 is the ninth in a series of next generation GPS satellites and will join the GPS worldwide timing and navigation system using 24 satellites in six different planes, with a minimum of four satellites per plane positioned in orbit approximately 11,000 miles above the Earth's surface. The GPS IIF series provides improved accuracy and enhanced performance for GPS users.

ULA's next launch is the Atlas V AFSPC-5 mission for the United States Air Force, scheduled for May 6 from Space Launch Complex-41 from Cape Canaveral Air Force Station, Florida.

The EELV program was established by the United States Air Force to provide assured access to space for Department of Defense and other government payloads. The commercially developed EELV program supports the full range of government mission requirements, while delivering on schedule and providing significant cost savings over the heritage launch systems.

GPS satellites serve and protect our warfighters by providing navigational assistance for U.S. military operations on

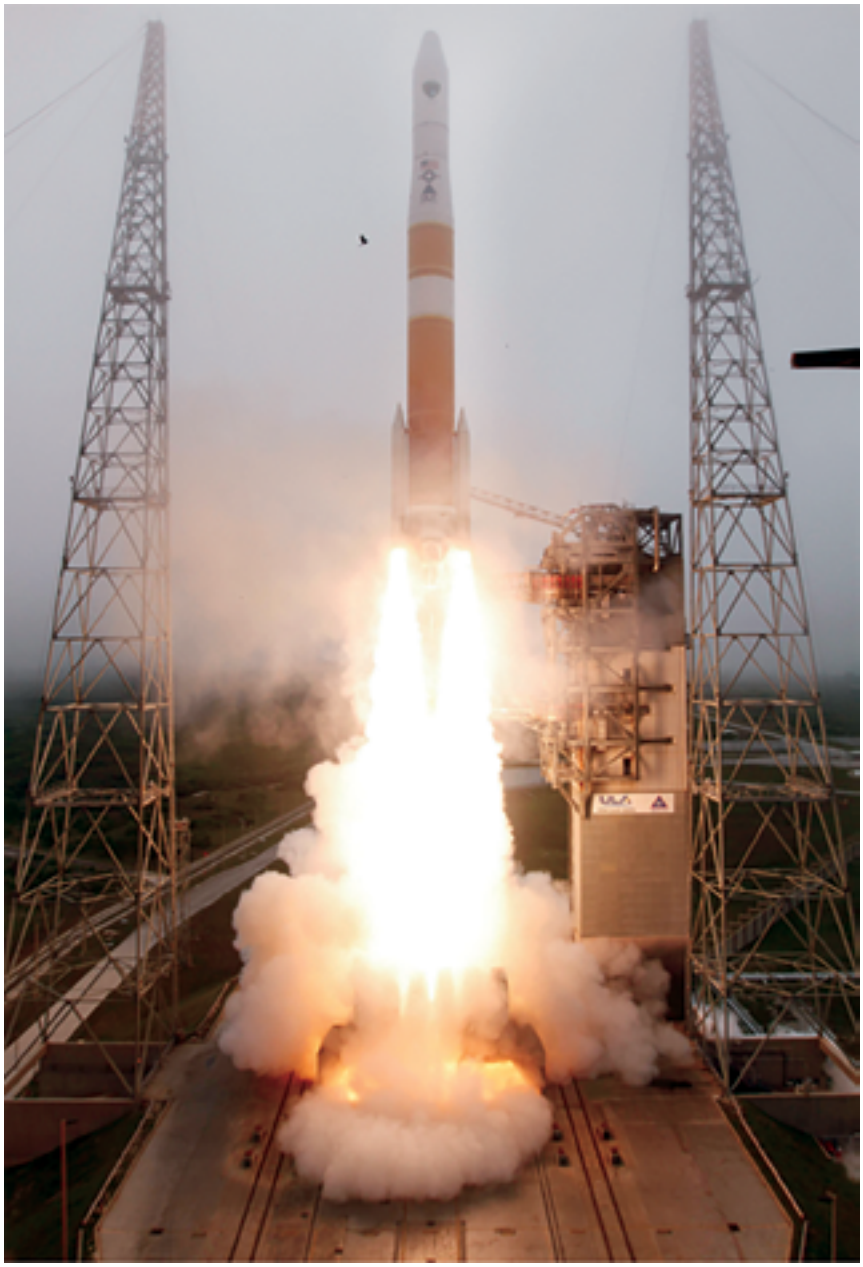
land, at sea, and in the air. Civilian users around the world also use and depend on GPS for highly accurate time, location, and velocity information.

The satellites continuously transmit digital radio signals pertaining to the exact time (using atomic clocks) and exact location of the satellites. The GPS IIF series have a design life of 12 years. With the proper equipment, users can receive these signals to calculate time, location, and velocity. The signals are so accurate that time can be measured to within a millionth of a second, velocity within a fraction of a mile per hour, and location to within feet. Receivers have been developed for use in aircraft, ships, land vehicles, and to hand carry.

As a result of increased civil and commercial use as well as experience in military operations, the USAF has added the following capabilities and technologies to the GPS IIF series to sustain the space and control segments while improving mission performance:

- ***Two times greater predicted signal accuracy than heritage satellites.***
- ***New L5 signals for more robust civil and commercial aviation.***
- ***An on-orbit, reprogrammable processor, receiving software uploads results in improved system operation.***
- ***Military signal "M-code" and variable power for better resistance to jamming hostile environments, meeting the needs of emerging doctrines of navigation warfare***

"I'm elated with today's successful launch. The GPS constellation remains healthy, strong and robust, and, in over 20 years since initial operational capability, GPS has never failed to deliver on its global positioning, navigation, and timing commitments," said Brig. Gen. William Cooley, director of Space and Missile Systems Center's Global Positioning Systems Directorate. "Each



new generation of GPS satellites provides enhanced capability over the prior generations, and has delivered reliable performance demonstrating our commitment that GPS remain the Gold Standard space-based positioning, navigation and timing service for the future," he said. "Thanks to the men and women of SMC, the 45th, 50th and 310th Space Wings, Boeing, United Launch Alliance, The Aerospace Corporation, GPS IIF and Delta IV launch teams, the GPS IIF program continues to meet GPS enterprise needs."

Air Force Space Command's Space and Missile Systems Center (SMC), 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 the Global Positioning System, military satellite communications, defense meteorological satellites, space launch and range systems, satellite control networks, space based infrared systems and space situational awareness capabilities.

Moog Inc. Space and Defense Group played a critical role in this successful launch. The ULA Delta IV rocket that carried GPS IIF-9 into space includes Moog hardware on the first and second stages.

On the first stage, Moog provides electrohydraulic (EH) actuators for the Orbital ATK solid rocket booster (SRB) GEM60 helium blow-down system. In addition, two pogo suppression valves, one on each core of the vehicle, function to suppress oscillations in the ducts carrying liquid oxygen to the rocket engines.

On the second stage, a Moog Electromechanical (EM) Thrust Vector Control (TVC) System plays a key role supporting attitude control after separation of the first stage.

Finally, Moog provided the Inlet Valves for the RL10 main upper stage engine and the Control Valves for the Roll Control Module (RCM) Thrusters.

The Boeing GPS IIF-9 satellite is equipped with Moog thruster valves, isolation valves and service valves that contribute to the satellite's Attitude Control System (ACS). High reliability of the ACS is crucial to ensure correct positioning of the spacecraft for optimal information transmittal to and from the Earth.

Additional information about Moog's Space Sector can be found at ***www.moog.com/markets/space/***.

Boeing reported the GPS IIF-9 confirmed its on-orbit health on March 30th. The satellite reached orbit approximately three hours, 20 minutes after its launch from Cape Canaveral AFS.

"Boeing, ULA and the Air Force successfully launched four GPS IIFs last year, the highest operations tempo in over 20 years, and today's mission marks the first of three launches planned in 2015," said Dan Hart, vice president, Boeing Government Space Systems. "As they enter service, the IIFs are advancing and modernizing the GPS constellation by

improving accuracy, signal strength and anti-jamming capability. We are also introducing the L-5 civilian 'safety-of-life' signal intended mainly for aviation and transportation."

The GPS IIF-9, designated as SVN-71, then underwent on-orbit testing and checkout, all normal procedures before beginning full operation.

Boeing has served as a prime contractor on GPS since the program's inception, contributing multiple generations of GPS satellites and accruing more than 525 years of on-orbit operation.

The successful rocket propelled launch of a satellite is the end result of numerous companies and experts contributing their skills and assets working to achieve one goal... launch the rocket and then the satellite(s). The launch of the U.S.A.F.'s GPSIIF-9 is such an example.

Orbital ATK, Inc. technologies also played a crucial role in the launch of, and the on-orbit operation of, this latest Boeing GPS IIF satellite launch.

Orbital ATK's contributions to the Delta IV and GPS IIF include cutting-edge technologies from across the company. In addition to the state-of-the art solar arrays and other critical components on the GPS IIF satellite, contributions include the two Graphite Epoxy Motors-60 (GEM-60), large composite structures and the main engine nozzle.

"Orbital ATK's contributions to the Delta IV GPS IIF-9 mission are prime examples of the affordable, innovative and reliable products we offer," said Ron Grabe, President of Orbital ATK's Flight Systems Group. "These products are crucial to our nation and millions of GPS users around the world."

ULA's Delta family of launch vehicles has been lifting high-priority government and commercial payloads to orbit for more than 50 years. This launch marks the 371st Delta

rocket since 1960 and the 29th Delta IV since 2002. It also marks the 69th GPS satellite launch and the 55th to use a Delta rocket.

The Delta IV medium-plus rocket flew in a configuration featuring two Orbital ATK commercial GEM-60 solid rocket motors produced in Magna, Utah. These motors boast a flawless record and are the 43rd and 44th GEM-60s to fly. Their 90 seconds of flight time and 560,000 pounds of thrust boosted the 371st Delta vehicle into the sky.

The nozzle for the launch vehicle's RS-68 engine was designed and manufactured at Orbital ATK's facility in Promontory, Utah. The nozzle design includes an Orbital ATK-developed thermal protection material that is capable of shielding the nozzle from the extreme heat of launch when external temperatures can exceed 4,000 degrees Fahrenheit.

The Delta IV composite structures manufactured by Orbital ATK provide higher performance with lower weight and included:

- ***The GEM cases, manufactured using advanced wet winding techniques at Orbital ATK's Clearfield, Utah facility.***
- ***The fairing, payload attach fitting and diaphragm, interstage, centerbody and thermal shield, all produced using advanced hand layup, machining and inspection techniques at Orbital ATK's Iuka, Mississippi facility.***

For the GPS IIF-9 satellite, Orbital ATK provided a host of products and services:

- ***Orbital ATK's Goleta, California, facility designed and manufactured the satellite solar arrays and a deployment boom. Orbital ATK has achieved 100 percent on orbit success on all solar arrays and deployable systems delivered and launched to date.***
- ***Orbital ATK's San Diego, California, facility manufactured the composite solar array substrates.***
- ***Orbital ATK's Commerce, California, facility had responsibility for the ullage tank assembly, including the blankets, heaters, thermistors and pressurant lines. This tank is a spherical vessel constructed of titanium.***
- ***Orbital ATK's Beltsville, Maryland facility provided heat pipes for the GPS IIF equipment and radiator panels.***
- ***Orbital ATK's Rancho Bernardo, California facility performed final assembly and RF (Radio Frequency) testing of the antenna suite for GPS IIF between 2003 and 2010.***

ULA will deliver two more GPS IIF satellites into orbit this year, and then another in early 2016 to complete the IIF series. These satellites will be delivered into medium-Earth orbits and will circle the globe every 12 hours, providing critical Navstar positioning, velocity, and timing assets fully functional until the next-generation GPS Block IIIA comes online in 2016. In addition to their civilian usage, the Block IIF satellites boast enhanced accuracy, reprogrammable processors, interference-free signals for commercial aviation, search and rescue capability, and a new Military code that is better resistant to electronic jamming.

Orbital ATK: ***www.orbitalatk.com/***

Aerojet Rocketdyne, a GenCorp company, helped successfully propel another in the series of Global Positioning System (GPS) IIF military navigation satellites into orbit. Aerojet Rocketdyne propulsion included an RS-68 booster engine, RL10B-2 upper-stage engine, multiple attitude control thrusters and six helium pressurization tanks.

The GPS satellite includes a pair of Aerojet Rocketdyne propulsion systems provided by the Space Systems Business Unit in Redmond, Washington. These systems are used periodically to keep the satellites in their designated orbits and to eventually decommission them.

Steve Bouley, vice president of Space Launch Systems at Aerojet Rocketdyne, said, "Aerojet Rocketdyne propulsion systems have played a role in the launch of every GPS spacecraft placed into orbit since the inception of the program in the late 1970s."

During launch, the ULA Delta IV rocket rose from the pad, powered by an RS-68 engine that provided 758,000 lbs of vacuum thrust and 663,000 lbs of sea-level thrust. This flight represents the final flight of an RS-68 engine, with subsequent Delta IV rockets being powered by the upgraded RS-68A engine which includes 39,000 lbs of increased thrust and improved combustion efficiency. Since its first flight in November 2002, 42 RS-68 engines have successfully powered 28 Delta IV missions (including seven "Heavy" launches of three engines each) with 100 percent mission success.

Once in space, the ULA Delta IV Cryogenic Second Stage (DCSS), powered by a single RL10B-2 engine, ignited multiple times to place the payload into orbit, helped by the DCSS thrusters and other Aerojet Rocketdyne-provided hardware for both the booster and upper stage.

The RL10B-2 engine delivers 24,750 lbs of thrust to power the DCSS, using cryogenic liquid hydrogen and liquid oxygen propellants during its operation.

Aerojet Rocketdyne's RS068 engine.

ARDÉ, a subsidiary of Aerojet Rocketdyne based in New Jersey, provides the pressure vessels on the first and second stages of the launch vehicle.

Twelve Aerojet Rocketdyne monopropellant (hydrazine) thrusters in four modules on the Delta IV upper stage provided roll, pitch and yaw control as well as settling burns for the upper stage main engine.

Aeroject Rocketdyne's RL10B-2 engine.

The IIF satellites are designed to improve navigational accuracy for civil, commercial and defense applications worldwide.

They feature more capability and improved mission performance, including predicted signal accuracy that is two times greater than heritage satellites; a 12-year lifespan that provides longer service and reduced operating costs; and a military signal that has better resistance to jamming in hostile conflict areas.

Aerojet Rocketdyne in-space propulsion systems have provided 100 percent mission success on all GPS missions over their lifetime.

Aeroject Rocketdyne: ***www.rocket.com/***

DISPATCHES

IMAGESAT'S NEW MINI-TERMINAL DEPLOYS IN ONE HOUR FOR EO DATA RECEPTION

ImageSat International N.V. , the owner and operator of the EROS A and EROS B very high resolution imaging satellites, will reveal the 70 cm resolution EROS B satellite portable end-to-end ground Mini-Terminal (MiniTer) for real time ultra-fast downloading of data from Earth observation satellites at LAAD 2015.

The EROS B MiniTer solution allows direct downloads from the satellite to any location and combines a 1.5m or 2.4m X-band antenna system designed by ORBIT Communication Systems, with a processing unit developed by ImageSat.

Specially designed to meet the needs of EROS B customers, this compact, rugged, portable solution can be installed in any environment or weather condition, enabling rapid deployment for any Earth observation application.

The lightweight MiniTer receives X-band signals when the EROS-B satellite passes within a 2000-km radius footprint of the MiniTer's location.

Features include X-band signal demodulation, image reconstruction, image display during signal reception (quick look) and image archiving.

According to Mr. Rani Hellerman, Vice President for Business Development, "We will debut our portable ground system at LAAD 2015—the first of its kind in the world—allowing deployment in one hour. The system enables our customers to receive accurate, high quality data in real-time delivering images of large areas in the shortest possible time, from the battlefield or the location of an event.

Currently, starting the marketing of the system, we are very happy with the feedback we have received from potential customers, and expect the first orders to be placed in the near future."

ImageSat: ***www.imagesatintl.com***

DISPATCHES

MILITARY LEADERS REPORT CONCERNS ON LONG-TERM READINESS

The U.S. military is consuming readiness as fast as it can generate it, and this leaves America vulnerable, uniformed leaders have told the House Armed Services Readiness subcommittee.

Gen. Daniel B. Allyn, the Army vice chief of staff; Adm. Michelle J. Howard, the vice chief of naval operations; Marine Corps Gen. John M. Paxton Jr., the assistant commandant, and Gen. Larry O. Spencer, Air Force vice chief of staff, all told the subcommittee that even under the president's proposed fiscal year 2016 budget, readiness is at the ragged edge.

"We are not building surge capacity, we are not building a continuous response capability," Allyn said during his testimony. Troops will have the training, equipment and leadership needed to do their missions, but long-term readiness remains a problem, the leaders said. And, they added, if Congress allows the Budget Control Act of 2011 to stand, triggering sequestration October 1, even today's readiness would be endangered.

General Daniel B. Allyn, Vice Chief of Staff, U.S. Army.

Army Readiness 'Strained'

The Army is consuming readiness as rapidly as the service can generate it, Allyn said, which means "that our ability to respond to the unknown contingencies, to reinforce either the major fight, or the deterrence fight, is significantly strained."

Sequestration budget cuts would have real consequences, the general said, offering the prospect of responding to two contingency missions as an example. "It [would mean] we're late to the fight in one or both locations with sufficient capacity, Allyn said, "and we either fail in our mission or we increase the loss of life to those committed forward from the joint force, as well as innocent civilians that we are charged to protect in accordance with our national security interests."

Navy Readiness 'Still in Reset'

The Navy is still struggling to catch up to readiness challenges imposed when sequestration kicked in in fiscal year 2013, Howard told the committee.

Admiral Michelle J. Howard, Vice Chief of Staff, U.S. Navy.

"With this particular budget, we are still in reset, taking those ships through drydockings, through overhauls, all the way up through fiscal year '18 for our carrier strike groups," she said. "And then we don't reset and recover the maintenance on our amphibious ships until fiscal year '20."

Marine Corps Faces Degraded Readiness

Like the Army, the Marine Corps is facing readiness issues in meeting today's deployments, Paxton said.

"The challenge is that the next to deploy will be in a degraded state of readiness," he said. "Right now we have over 50 percent of our home station units in what we call degraded readiness, C3 or C4. They don't have their proper equipment, they don't have the right skilled leadership at the small-unit level, they don't have the right training opportunities."

General John M. Paxton, Jr., Assistant Commandant, U.S. Marine Corps.

Air Force Operations Tempo Hurts Proficiency

The Air Force is seeing huge readiness challenges, Spencer said.

General Larry O. Spencer, Vice Chief Of Staff, U.S. Air Force.

"We have the smallest and oldest Air Force in history, we need all of our airmen to be proficient in every aspect of their mission," he said. "Unfortunately, our high-operations tempo has caused our airmen to only be proficient in the jobs they do when they deploy. We simply do not have the time and resources to train airmen across the full spectrum of Air Force missions."

Story by Jim Garamone
DoD News, Defense Media Activity

HPA CORNER: COMMERCIALLY HOSTED PAYLOADS FOR THE GOVERNMENT'S CIVIL AGENCIES

By Nancy Nolting, Marketing Programs Manager, Intelsat General Corporation

The commercial satellite industry has long been a crucial enabler of civil government functions.

With new satellites and networks coming online every year, the industry is offering new and creative solutions to meet the evolving requirements of NASA and other civil government agencies.

From the WAAS payload for the FAA to the NOAA GEONETCast network, civil agencies have long used commercial systems to meet their satellite communications requirements.

As new weather payloads and tracking systems such as TDRS (Tracking and Data Relay Satellite—(*artistic rendition displayed here*) move ahead, the commercial satellite industry can provide optimal value through regularly-scheduled launches, efficient program timelines and competitive pricing.

This column's question for HPA Members is…

How can hosted payloads on commercial satellites benefit NASA/ NOAA and other civil agencies?

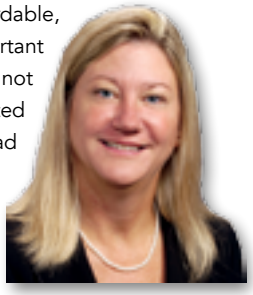
"NASA has definitely taken the lead on implementing the benefits of hosted payloads. NASA's TEMPO program, for measuring air quality over North America, was the first payload hosting study awarded under the U.S. Air Force HoPS IDIQ. This demonstrates how our government agencies are working together to reap the economic benefits of hosting government payloads on commercial spacecraft. NASA benefits from the persistent synoptic coverage available from GEO, the same as our commercial communications missions desire. NASA Goddard's Laser Communications Relay Demonstration (LCRD) is another great example of NASA making a commitment to, and gaining benefit from, the hosted payload approach.

"Hosting the LCRD payload on a GEO ComSat will get the payload into space faster and at a fraction of the cost of a dedicated mission. SSL sends more commercial satellites to GEO orbit each year than any other satellite manufacturer. By working with SSL to first develop the payload interfaces to the spacecraft, NASA has the benefit of then pairing LCRD with the best host mission with confidence in meeting the delivery date. This is a proven method to align the government payload development schedule with a commercial GEO satellites schedule.

"SSL is considering a variety of satellite operators when the timing is right to host LCRD on their GEO missions. We believe other US government agencies can build on the approach that NASA has taken."—***Al Tadros***, Vice President of DOD and Civil Business, **SSL**

"Hosting civil payloads on commercial satellites takes advantage of all the benefits of hosting to include lower cost; more opportunities for access to space; improved architecture resilience, and operational flexibility. But civil agencies partnering with commercial companies provides unique opportunities for joint ventures and technology exchange that can advance the satellite industry as a whole.

"While meeting civil requirements, these agencies can leverage taxpayer investments in technology to create commercial alternatives for future cost savings, improved capability and domestic job growth. This in turn would accelerate and diversify many civil space missions to include advancement of global health, environmental situational awareness, and space exploration."—***Andrew Handinger***, Associate Sales Engineer, **Intelsat General Corp**



"Commercial hosting of government payloads provides an affordable, rapid solution path for important missions that might not otherwise warrant a dedicated satellite. Hosted payload solutions can also readily leverage NOAA/NASA investments in enterprise ground architectures, facilitating low-cost addition of new missions within a scalable ground framework. Reducing the expense and time required increases the ability to rapidly deploy and leverage technology advancements and expanded data sets, contributing to improved weather-preparedness and environmental intelligence."—***Romy Olaisen***, Vice President, Global Weather Solutions Business Area, Government Communications Systems, **Harris Corporation**.

Hosted Payload Alliance: ***www.hostedpayloadalliance.org/***

*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 (**www.ww.hostedpayloadalliance.org/**):*

- *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.*

2016 WILL BE THE YEAR OF OUTSOURCED WGS OPERATIONS… AN INTELSAT GENERAL PERSPECTIVE

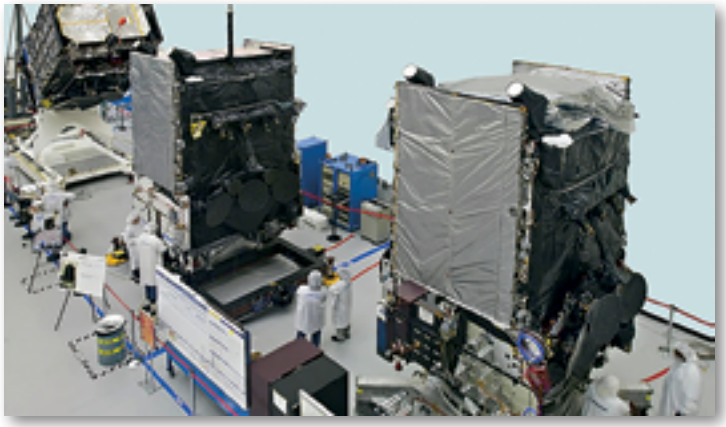
By Skot Butler, Vice President, Satellite Networks & Space Services, Intelsat General

The U.S. Air Force is targeting 2016 as the year to outsource the operation of its Wideband Global Satcom (WGS) constellation to commercial providers.

The Air Force has been developing a strategy for better managing its satellite operations for some time now. This satellite control network performs the telemetry, tracking and control (TT&C) for government satellites, so this is another element of the Air Force satellite control infrastructure under review. According to a WGS published in *Space News*, the Air Force found the results of these studies very compelling:

"We gained valuable information from the Commercial Provisioning study, which will be assimilated into our broader analysis on how to integrate operations across multiple satellite programs," Master Sgt. Kevin Williams, a spokesman for Air Force Space Command, told Intelsat General's SatCom Frontier in a March 5 email.

Recent comments from top officials are the strongest indication yet that the transfer of operations is moving quickly from review to actuality. General John Hyten, Commander of Air Force Space Command, has repeatedly made clear he wants Air Force operators to spend more time on battle management and other more difficult tasks and less time on routine, day-to-day satellite operations.



WGS-4 during the build process. Photo is courtesy of Boeing.

David Madden, executive director of the Air Force's Space and Missile Systems Center in Los Angeles, laid out an aggressive timetable for the transfer as quoted in the *Space News* article:

"I'm hoping 2016 is going to be the year we finally take the command and control for WGS and move it over to a commercial service," Madden said.

Madden continued by stating the program would be far more cost-effective to have commercial providers operate the satellites. By moving to commercialize the AFSCN mission, the Air Force will be able to maintain mission effectiveness, even in the face of potentially harmful sequestration cuts scheduled to take effect in 2016.

Intelsat General is gratified by the growing recognition that the commercial sector has the experience, knowledge and technical skills to operate and manage the Department of Defense's (DoD) constellation of wideband satellites.

Intelsat General and Intelsat currently support a global fleet of 75 spacecraft that represent the diverse technology of every major satellite manufacturer as well as a wide variety of customers requiring TT&C services.

The Air Force can be assured the company is well prepared to handle day-to-day operations for WGS, allowing Air Force personnel to pursue more specialized missions that commercial companies are not in a position to complete.

Intelsat General SatCom Frontier blog: ***www.intelsatgeneral.com/blog/***

Skot Butler is responsible for managing an integrated sales, marketing, and business development organization which serves all of Intelsat General's customers, including the U.S. Department of Defense, NATO, various civil agencies and commercial enterprises within the United States and Europe.

Mr. Butler brings to the position two decades of experience in the commercial satellite communications and telecom industries. He joined IGC in 2006 as Director of Hosted Payload Business Development and was most recently Director of Solutions Development. Preceding IGC, Mr. Butler held sales, business development and strategy roles at satellite services companies DRS, Spacelink, and Verestar.

Mr. Butler recently completed his MBA at the Smith School of Business, UMD-College Park. He stays active in the industry, serving as the President of the Mid-Atlantic Chapter of SSPI in 2012. He will also represent IGC on the Commercial Space Engagement Forum (CSEF), the Satellite Industry Association Comsatcom Operations Working Group and other assignments.

Editor's note: Our thanks to Intelsat General for affording us permission to republish this article from their blog, SatCom Frontier.

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KEY TOPICS TO BE DISCUSSED:

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- Technological advancement in SatCom capability
- Military SatCom requirements and capability
- US Pivot to Pacific and the consequences for MilSatCom
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THE EVOLUTION AND FUTURE OF FSS AND MSS MILSATCOM DATA SERVICES

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LOCAL EMERGENCY SERVICES NEEDS WILL LEAD TECHNOLOGICAL ADOPTION

By Tony Bardo, Senior Contributor + Assistant Vice President, Government Solutions, Hughes

Our nation's emergency services are lacking, when they should be leading in adopting technology innovation.

For example, 911 Public Service Answering Points (PSAPs) are still using circuit-switched legacy systems having none of the many benefits from today's common mobile connectivity features such as texting, video messaging or global positioning systems (GPS).

In recognition of this fact, the Federal Communications Commission (FCC) has launched its Next Generation 911 initiative to modernize emergency services capabilities. This initiative is set to offer significant benefits to the community as a whole, including persons with disabilities.

Among the most critical goals, but least discussed or implemented, is Continuity of Operations (COOP)—which means the ability for centers to keep operating, even when disasters strike and cause primary network outages.

As defined by the Bush Administration's National Security and Homeland Security Presidential Directive, 'Continuity of Operations, or COOP, means an effort within individual executive departments and agencies to ensure that Primary Mission-Essential Functions continue to be performed during a wide range of emergencies, including localized acts of nature, accidents, and technological or attack-related emergencies.' Although this definition applies to federal agencies, the underlying concept of mission assurance is especially important for PSAPs entrusted with providing timely emergency services to local citizens.

To meet this challenge calls for PSAPs to implement robust networks having the highest possible levels of reliability and availability in the face of a disaster. This means building redundant communication paths as backup to primary terrestrial networks, whether for carrying 911 emergency calls from mobile cellphones or from any number of fixed landline devices.

Robust networks are no less important for COOP in minor emergencies as they are in major disaster scenarios, such as Superstorm Sandy. As a case in point, networks became overloaded by consumer traffic from residents of Maryland, Virginia and Washington, DC during the earthquake of 2011, which left the Washington Monument covered in latticework and closed for repairs until early 2014.

The Washington Monument encased by scaffolding for earthquake damage repairs.

Even though the earthquake was relatively small and thankfully resulted in only minor injuries, worried residents were quick to pick up their phones to check on loved ones. As the FCC and terrestrial carriers have acknowledged, network congestion meant that many callers were unable to connect due to a major spike in caller volume. However, implementing fully redundant access networks is simply cost-prohibitive and infeasible; the focus should be on employing redundant backhaul networks to primary terrestrial infrastructure—and to do it cost-effectively.

Enter satellite backup. Only satellite offers a true alternate path to carry traffic when terrestrial outages may occur due to minor or major emergencies on the ground.

Rapid fault detection and automatic switching of traffic to satellite links from primary terrestrial facilities is routinely implemented by virtually all major enterprises, when every second of network downtime translates into lost revenue and profits.

The imperative for emergency services exceeds financial measures, as lives are at stake. The pairing of satellite broadband with terrestrial networks ensures communications are quickly restored in case of temporary loss and will operate with the highest possible availability designed within budget limits.

Satellite networks can also be quickly set up in disaster locations anywhere—whether urban, rural or remote areas—using vehicle-mounted terminals and flyaway kits which can function solely on portable power, and employing self-pointing antenna systems. FEMA has already explicitly encouraged non-federal government entities "to make use of emerging technologies."

Artistic rendition of the Hughes JUPITER satellite.

The FCC's directive was clear: Local PSAPs need to be proactive in implementing emerging technologies. Satellite solutions available today surely qualify, and deliver a desperately needed cost- to-value ratio for budget strained emergency response centers. They provide essential path diversity to aid PSAPs in achieving their goal of adopting important NG911 capabilities, ensuring the highest levels of network reliability and availability through path diversity when disaster strikes, no matter the cause or length.

Anthony "Tony" Bardo has more than 30 years' experience with strategic communication technologies that serve the complex needs of government. Since joining Hughes in January of 2006, Bardo has served as assistant vice president of Government Solutions, where he is focused on providing Hughes managed network broadband solutions and applications to Federal, State, and Local governments. Bardo also served as Chair of the Networks and Telecommunications Shared Interest Group (SIG) for the Industry Advisory Council, an advisory body to the American Council for Technology (ACT).

Prior to joining Hughes, Bardo was with Qwest Government Services for nearly five years where he was senior director of US Government Civilian Agencies sales and marketing, senior director of marketing, and senior director of business development. Prior to Qwest, Bardo spent 14 years with the government markets group at MCI where he held the position of executive director for civilian agencies. During his tenure, his teams managed programs for the Federal Aviation Administration's national air traffic control network, the Social Security Administration's toll-free network, the U.S. Postal Service Managed Service Network, and the U.S. General Services Administration's FTS2001.

Mr. Bardo is a 1974 graduate of Virginia Tech where he majored in economics with a minor in public communications.

REP. ROGERS ENDORSES LONGER LEASES FOR COMMERCIAL SATELLITE CAPACITY

By Intelsat General's SatCom Frontier Editors

With a vision to reduce costs and increase military use of commercial satellites, Rep. Michael Rogers (R-Alabama) wants long-term government leases of such satellites.

Representative Michael Rodgers, R-Alabama.

As chairman of the House Armed Services Committee's Strategic Forces subcommittee, Rogers is seeking to amend the current law to allow leases to go from the current one-year limit to as long as five-years.

A *Bloomberg Government* story gives details of Roger's plan that would also allow the government to achieve significant cost savings by renewing contracts every five years.

Rogers also pointed out that longer leases provide long-term revenue for commercial providers that allows for funding of key technology investments by giving the industrial base the increased predictability of consistent business.

Recently, Rogers also made the following statement after the House Budget Committee introduced the details of their proposal to balance the budget over the next 10 years while cutting $5.5 trillion in spending.

"While folks across East Alabama are tightening their belts to live within their means, the Federal government should be following suit, but not at the expense of our national security. Recent cuts to our military are devastating readiness and the ability to defend ourselves."

This is not the first time that Rogers has shared this message. In 2014, he authored a *Space News* op-ed discussing how the current commercial satellite services procurement model is "too expensive, lacks strategic foresight, puts our troops at risk, and disadvantages the U.S. industrial base."

In that article, he said the Department of Defense (DoD) predominantly leases these commercial satellite communications services through expensive one-year leases and "spot market" purchases. He also discussed the need to move away from the nation's reliability at the time on Chinese satellite systems.

"A smarter acquisition program for these services is not just good business sense, it's a critical imperative that will allow us to stretch scarce defense resources at a time when space is more important and more threatened by America's adversaries and competitors," the article quoted Rogers as saying.

Rogers has actually been a long-time advocate for supporting U.S. space efforts to enhance national security.

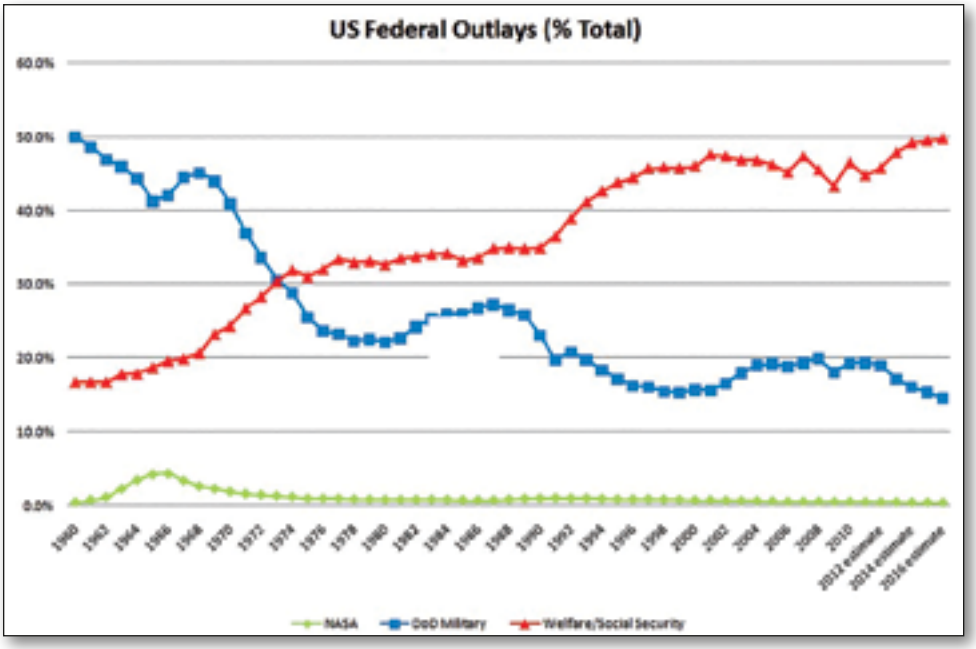
"Space is a critical element of our national security in both peace and wartime environments," Rogers said in a 2013 subcommittee hearing regarding the Defense Authorization Budget request for National Security Space Activities. "I am very concerned of the impact of sequestration on national security space programs."

The industry should be heartened to see that Rogers is continuing to push the need for the correct services that support the warfighter and advance the mission in a more cost-effective manner.

Clearly, more lawmakers need to follow his lead.

Intelsat General SatCom Frontier blog:
www.intelsatgeneral.com/blog/

Editor's note: Our thanks to Intelsat General for affording us permission to republish this article from their blog, SatCom Frontier.



This chart was drawn using data from the U.S. Office of Management and Budget and reveals the outlays or spending by NASA in green, by the U.S. Department of Defense on military programs in blue, and by the U.S. Department of Health and Human Services and the Social Security Administration on Medicare/Medicaid and Social Security in red. The chart plots the percentage of total U.S. Federal government outlays made in each of these three major areas for 1960 through 2016.

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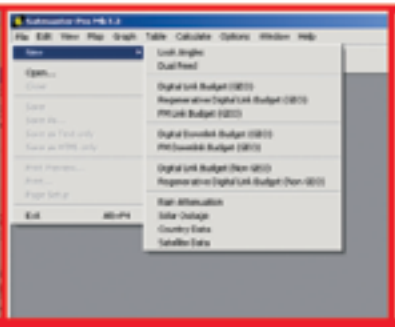

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SPACE & MISSILE SYSTEMS CENTER'S REMOTE SENSING SYSTEMS ACQUISITION SUCCESS

By U.S.A.F. Colonel Michael A. Guetlein, RS Director

The Remote Sensing Systems Directorate, at the U.S. Air Force Space and Missile Systems Center, is responsible for the acquisition activities for DoD's Space-Based Remote Sensing needs. These include the Space-Based Infrared System (SBIRS) missile-warning system, Defense Meteorological Satellite Program (DMSP) and the next generation missile-warning and weather systems.

We provide global, persistent, infrared surveillance and environmental monitoring capabilities to our warfighters and the Nation. This includes space- and ground- based capabilities providing accurate and timely missile-warning, missile-defense, technical-intelligence, battlespace awareness, and environmental monitoring support.

Artistic rendition of SBIRS, courtesy of U.S.A.F.

We are focused on meeting current warfighter needs along with planning for future capabilities to win tomorrow's fight using transformational acquisition initiatives such as: USAF's Bending the Cost Curve (BTCC) and DoD's Better Buying Power (BBP) initiatives. We have already been employing those initiatives across the Remote Sensing portfolio.

Defense Support Program (DSP) satellites successfully served the U.S. throughout the Cold War as the backbone of the ballistic missile early warning system. Those satellites laid the foundation for the SBIRS mission. The current SBIRS constellation of satellites and sensors, along with legacy DSP satellites, provide global 24/7 detection of missile launches. They also provide increasing value to intelligence assessments leading to real-time collection activities of emerging world events. Strategic missile-warning is critical to the Nation's survival as ballistic missiles pose a serious threat to the U.S., our deployed forces, allies and coalition partners.

Our space-based environmental sensors provide timely weather information to U.S. and allied forces. DMSP is the primary global provider of terrestrial and space weather information for the U.S. military with timely accurate and continuous information. DMSP satellites carry sensors vital to weather prediction and space weather forecasting. Their sensors provide visible, infrared, microwave and space weather data to enhance information available to the warfighter. The Air Force, in partnership with the National Oceanic and Atmospheric Administration (NOAA), works to continually improve the developing science of weather forecasting.

Accomplishments

The first two SBIRS Geosynchronous Earth Orbiting (GEO) satellites and first two Highly Elliptical Orbiting (HEO) sensors have launched and are certified for mission operations. In 2014, the system detected, tracked and released over 304 missile events utilizing the DSP and SBIRS satellites.

In 2013, operators at the 460th Space Wing in Denver, Colorado, detected, processed and released over 10,000 events of interest that could pose a threat around the world, which is a 400 percent increase over legacy systems. With the recent award of the contract for acquisition of the fifth and sixth GEO SBIRS satellites, the Air Force is poised to provide support through the next decade.

On the space environmental front, the Defense Meteorological Satellite Program (DMSP) has been the cornerstone providing 24/7 global weather coverage to the warfighter. In April of 2014, we launched the 19th DMSP satellite. The DMSP satellites are uniquely designed to meet the military's tough requirements for worldwide space and terrestrial weather information. Through these satellites, military weather forecasters can detect developing patterns of weather, track existing weather systems over remote areas, and alert the civil and military communities of anticipated hazards in space to satellites and qualified personnel.

Our Focus

We have just scratched the surface of what these new assets can do. We are making steady progress to deliver and operationally accept a consolidated ground system upgrade at Buckley AFB, Colorado in 2016 that will enable quicker event detection and the ability to detect dimmer and previously undetectable threats. Also, we are working with government mission partners and industry to maximize the dissemination and exploitation of all data in support of the missile-warning, missile-defense, technical intelligence, battlespace awareness, and environmental monitoring missions for participants in the Army, Navy, Air Force, U.S. Forestry Service, NASA, NOAA, USSTRATCOM, intelligence community and others. In addition, we are actively working on plans for the next-generation missile warning and follow-on weather systems.

DSP in space, image courtesy of U.S.A.F.

Artistic rendition of DMSP, image courtesy of U.S.A.F.

Affordable Mission Maneuvers

To meet DoD and Air Force goals of providing critical capability to warfighters with increased value, we've successfully employed BBP affordability and productivity initiatives on the SBIRS production contract and, most recently, with the SBIRS production contract award for the acquisition of the fifth and sixth GEO satellites. The BBP Initiative is a DoD effort to implement a series of best practices aimed to strengthen the Defense Department's buying power, improve industry productivity, and provide an affordable, value-added military capability to the Warfighter.

SBIRS successfully folded in program and contract oversight efficiency initiatives resulting in excellent cost/schedule performance over the past two years on the third and fourth GEO satellites and third and fourth HEO sensor production efforts. We delivered the third HEO sensor on-time, with the next two GEO satellites and the remaining fourth HEO sensor on track for delivery in 2015 and 2016. The BBP Initiative, "eliminate unproductive processes", was applied in the operational acceptance of the first two SBIRS satellites. Focused improvement of on-orbit testing and operational acceptance processes resulted in over 16 months of schedule savings on the second satellite. In addition to eliminating unproductive processes, focused "Should Cost" management resulted in the taxpayer rewarded with more than $1B in savings on the fifth and sixth satellites' SBIRS GEO production contract award. This was attained by using a fixed-price contract to leverage the stable design from the third and fourth satellites, and a number of efficiencies: eliminating unnecessary layers of program and contract oversight, restructuring the test program and streamlining the production schedules.

Future

The program continues to leverage these efforts for further improvement under the recently updated BBP initiatives. In addition, SBIRS was selected as a pathfinder program for the Air Force's BTCC initiative. The BTCC initiative is a broad initiative designed to build cost consciousness into our programs from the start, and to partner with industry early to ensure our systems remain affordable. These initiatives have challenged military acquisition programs to think and act in new and innovative ways. The Remote Sensing System Directorate is at the forefront of employing these transformative principles to enable the achievement of affordable current, and future space-based, remote sensing technologies such as the next-generation missile-warning system and follow-on weather system in a budget constrained environment.

Key areas of transformational focus include: 1) focusing government oversight on the highest risk areas and /or the greatest cost areas while simultaneously allowing industry the latitude to execute the rest of the program with limited oversight; 2) partnering with industry to drive down costs and by changing the program governance models to require less day-to-day oversight coupled with greater insight by utilizing the existing data systems and data products; 3) honing the cost estimation methodologies to account for the leaps in technology and manufacturing processes; 4) performing cost capability analysis/ trades on program requirements to assist in comprehending the cost sensitivity to relative performance. This process helps to understand where small adjustments in a requirement could significantly reduce the cost of our systems; 5) performing disciplined program evolution activities phased over time; and 6) strengthening our partnerships with industry to better understand the realm of the possibilities and deliver leading edge capabilities to the warfighter more rapidly and affordably.

While the program office is working closely with industry and the requirements community to deliver the next generation mission ground system in 2016, we're also addressing future ground improvements with a requirements/cost/return-on-investment focus in accordance with the BBP and BTCC principles. Data Exploitation and Space Modernization Initiative efforts are focused on affordability and incentivizing innovation. Examples include the SBIRS Automation Pathfinder, demonstrating the feasibility of building a low-cost ground system with a modest amount of automation to drive down future operational and maintenance costs. Also, the Pathfinder is proving there may be a way for the Department to take advantage of legacy sensors that may be robust enough for some residual operational value. Additional examples include; the pursuit of commercial services; commercial-class spacecraft; and commercial launch capabilities to significantly reduce the acquisition lifecycle and manpower needs while demonstrating on-orbit sensor technologies critical for future missile-warning and weather systems.

It doesn't stop with buying better future technology; we are also pursuing costs saving initiatives in the sustainment of the current and legacy programs such as the Defense Support Program. Specifically, DSP consolidation of industry support infrastructure has generated nearly $14M in realized savings with another $11M projected for FY15 and FY16. Efficiencies between ground and factory organizations as well as increased satellite automation are targeted areas for future savings opportunities. All these best practices are being employed while we are simultaneously planning for the next-generation of missile-warning and weather systems.

Over the last decade, America's near-peer competitors have made great strides in narrowing the gap of our military technological advantage. To keep this advantage, DoD must be able to innovate faster than our potential adversaries, all while adhering to current fiscal constraints. By merging the defense weather and missile-warning materiel development offices, and by incorporating innovative business practices into systems development, the Remote Sensing Systems Program Office is leading the charge to find new and affordable ways to maximize capabilities today while simultaneously preparing for tomorrow's fight.