



SPACE NEWS

INTERNATIONAL

October 10, 2005

VOLUME 16 ISSUE 40 \$4.95 (\$7.50 Non-U.S.)

PROFILE/22>

**DAVID
KIER**

VP, MANAGING DIRECTOR FOR PROTECTION,
LOCKHEED MARTIN



Defects Push Back Launch of Europe's ATV Until May 2007

PETER B. de SELDING, PARIS

Multiple defects in hardware and software have been found in Europe's unmanned space tug and will delay the launch of the 20,000-kilogram vehicle to the international space station by at least a year to May 2007, according to European government and industry officials.

European Space Agency (ESA) governments have been informed of the problems but for the moment will not need to pay the cost overruns associated with the delay of the Automated Transfer Vehicle (ATV).

Because of earlier difficulties with the program, ESA governments insisted on a firm, fixed-price contract for the ATV with prime contractor EADS Space

Transportation. It is that company, and its long list of component suppliers, that will bear the cost of the latest series of glitches.

"The customer and the contractor are very much in the same boat on this thing," said Alan Thirkettle, head of development for ESA's directorate of human spaceflight, microgravity and exploration.

EADS Space Transportation leads a team including Alcatel Alenia Space that is building the first ATV, called Jules Verne, under a contract that has been renegotiated on at least two occasions and was valued at about 975 million euros (\$1.17 billion) when signed in 2004. Before then, ATV work was performed under a cost-reimbursement scheme.

The same industrial team is building six more ATVs to service the international space station under a separate contract valued at 835 million euros.

The ATV often is referred to as the most complicated orbital machine ever attempted in Europe. The roller-coaster ride in production of the Jules Verne prototype would appear to confirm that characterization.

"We are building something with all the characteristics of a human spaceflight vehicle, plus all the technical requirements of a satellite, in a machine that has to find its own way to a given point in space," Thirkettle said Oct. 5 in an interview confirming the latest round of ATV problems.

EADS Space Transportation spokesman Rémi Roland did not respond to requests for comment on the ATV. Other industry officials said the ATV difficulties are due at least in part to repeated changes in customer specifications, whether ordered by ESA, or NASA as space station general manager, or the Russian space agency, Roskosmos, whose Zvezda space station module will be



The latest hardware and software problems with the Automated Transfer Vehicle cargo tug (above) surfaced during final launch preparations at ESA's Estec technology center in The Netherlands.

SEE ATV PAGE 4

INSIDE THIS ISSUE

CIVIL SPACE

Revised Plan Includes Most ISS Hardware

NASA expects to complete an international space station (ISS) that includes most but not all of the hardware being built by its international partners. *See story, page 4*

REMOTE SENSING

DigitalGlobe To Fly Two New Imaging Satellites

DigitalGlobe intends to finance the construction and launch of a second WorldView satellite exclusively through contracts with non-U.S. government customers. *See story, page 6*

SATELLITE COMMUNICATIONS

Controllers Stop Fuel Leak on JCSat-1b

Controllers stopped an on-orbit satellite thruster fuel leak that had threatened JSAT Corp. with a total and uninsured loss of the spacecraft. *See story, page 6*

Satellite Service Targets Nautical Market

SeaMobile Inc. plans to use satellite technology to provide telephone and Internet services to cruise ships, yachts, ferries and other offshore platforms. *See story, page 12*

Terminal Firm Sees Promise in BGAN Market

As Inmarsat prepares to launch its Broadband Global Area Network (BGAN), terminal maker Thrane & Thrane also has entered the terminal distribution market. *See story, page 20*

MILITARY SPACE

Senate Favors ABL in Defense Spending Bill

As the Pentagon considers dropping one of its two main boost-phase missile defense programs, the Senate adds funding to the Airborne Laser (ABL) program. *See story, page 11*

Shaking Things Up in Omaha

Marine Corps Gen. James E. Cartwright, head of U.S. Strategic Command, says the old ways of doing things are ill-suited to meeting today's threats. *See story, page 13*

INTEGRATED BATTLESPACE

NATO's Missile Defense Program Edges Ahead

After years of study and delay, the NATO alliance's layered theater missile defense program is finally, but slowly, moving ahead. *See story, page 16*

> FEATURES

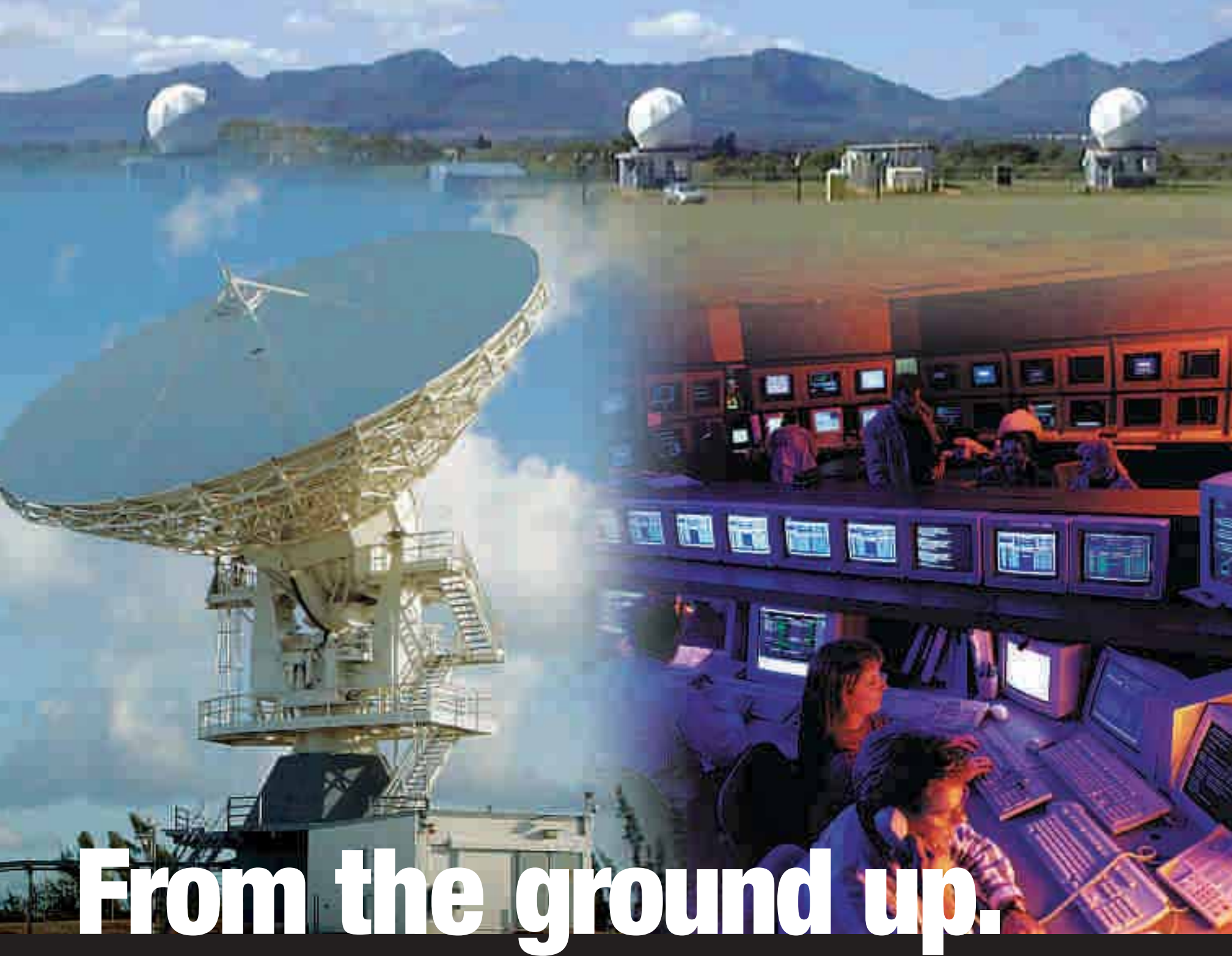
3 NEWS BRIEFS /
16 INTEGRATED BATTLESPACE /
21 ON THE MOVE

PERIODICALS-NEWSPAPER HANDLING

Pushing performance to the moon, mars and beyond.

WHATEVER THE MISSION, SWALES OFFERS UNPARALLELED CAPABILITIES TO ACHIEVE SUCCESS.

SWALES
AEROSPACE



From the ground up.

As part of our full-service space systems offering, we're providing government customers with turnkey solutions that include the development, deployment, and operation of ground systems for large satellite communication systems.

Leveraging the breadth of our satellite communications expertise, we're leading the design and implementation of the MUOS ground segment; providing network management, satellite and mission operations support for NASA's TDRSS and the Naval Satellite Operations Center (NAVSOC); and supporting Iridium® gateway operations and maintenance. We're also providing a wide range of antenna products for mobile SATCOM and fixed communication gateways, and customizing SATCOM services to meet our customers' unique communications challenges.

At General Dynamics C4 Systems, we're building space systems from the ground up.

Satellite Communications

GENERAL DYNAMICS
C4 Systems

www.gdc4s.com/space

October 10, 2005

NEWS BRIEFS

NASA Shifts R&D Funds to Crew Exploration Vehicle

Determined to shave at least two years off the development of the Crew Exploration Vehicle (CEV) and its launcher, NASA sent Congress a revised spending plan in late September that would permit an extra \$483 million to shift to Project Constellation in 2006. Project Constellation includes the hardware that NASA will need to fulfill its plan to return to the Moon by 2018.

Assuming lawmakers do not object, the latest change in NASA planning would give Project Constellation a budget of roughly \$1.9 billion as the agency prepares to give either Lockheed Martin or Northrop Grumman the prime contract to build the CEV.

U.S. President George W. Bush announced in January 2004 that NASA would build and launch by 2014 a CEV that would permit the United States to return humans to the Moon by 2020. In response, NASA developed a detailed plan, unveiled in September, that calls for conducting the first CEV flight in 2012 in preparation for returning to the Moon by 2018.

To help finance the accelerated CEV timetable, NASA is cutting back sharply on previously planned spending on exploration-oriented research and technology efforts. NASA is canceling 28 so-called human systems research and technology contracts for work in such areas as radiation shielding, long-duration close-loop life support systems and artificial gravity for \$243 million in savings next year. NASA also is discontinuing 80 exploration systems research and technology projects in fields such as nanomaterials and inflatable structures for another \$174 million in savings next year. Finally, NASA found \$66 million for Project Constellation next year by further reducing its spending on nuclear power and propulsion research.

Globalstar Inks Deals For Satellite Launches

Mobile satellite-telephone operator Globalstar LLC has signed a contract with the French-Russian Starsem company for the launch of four Globalstar satellites aboard Russia's Soyuz rocket in the first half of 2007. Globalstar also signed backup launch options with the German-Russian Eurockot venture for Rockot vehicles.

Financial terms were not disclosed. Soyuz launches generally are sold for \$40 million or less. Each Soyuz vehicle can carry four Globalstar satellites. Globalstar, headquartered in Milpitas, Calif., operates a constellation of satellites in low Earth orbit to provide global telephone and data services. Six Soyuz rockets were used in 1999 to launch a total of 24 Globalstar satellites from the Baikonur Cosmodrome in Kazakhstan.

Paris-based Starsem said its contract includes an option for a second launch.

Globalstar spokesman Dean Hirasawa said Oct. 6 that Globalstar has eight first-generation satellites already built and awaiting launch as needed. He said the Starsem contract is firm for four of these satellites, which are identical to the spacecraft already in orbit. He declined to say how many Globalstar satellites are currently operational in orbit.

Eurockot Launch Services GmbH of Bre-

men, Germany, signed a contract to launch up to eight Globalstar satellites, also in 2007. Hirasawa said the Eurockot deal is to protect Globalstar's launch schedule in the event Starsem cannot perform on the contracted date. Each Rockot vehicle can lift two Globalstar satellites at a time. The vehicle is launched from the Plesetsk Cosmodrome in northern Russia.

Starsem said it will place the Globalstar satellites in a 920-kilometer orbit. Globalstar spacecraft operate at an orbit of about 1,400 kilometers and would need to use their own power to climb into operational position. Eurockot said it would be launching its Globalstar payload into an orbit "near" the final 1,400-kilometer operating position.

Integral Systems Buys California Telemetry Firm

Satellite ground systems provider Integral Systems of Lanham, Md., announced it has purchased aircraft and missile telemetry product provider Lumistar LLC of Carlsbad, Calif.

Lumistar will operate as a wholly owned subsidiary of Integral, according to Integral's Oct. 6 press release. Financial terms of the deal were not disclosed.

Lumistar builds telemetry components and systems used in monitoring aircraft and missile flight tests. According to Integral's release, Lumistar will report to RT Logic, a Colorado Springs, Colo.-based subsidiary that specializes in satellite telemetry.

It's Official: NRO Revamps Boeing Satellite Contract

The U.S. National Reconnaissance Office (NRO) has formally restructured Boeing Co.'s contract to build the Future Imagery Architecture (FIA) spy satellites, according to Rick Oborn, a spokesman for the agency. Oborn declined to comment further on the program, which is classified.

The FIA program, which includes optical and radar imaging satellites, has run into significant cost and schedule problems. Lockheed Martin, which lost to Boeing in the competition to build the FIA satellites in 1999, is expected to get additional work as a result of the contract restructuring.

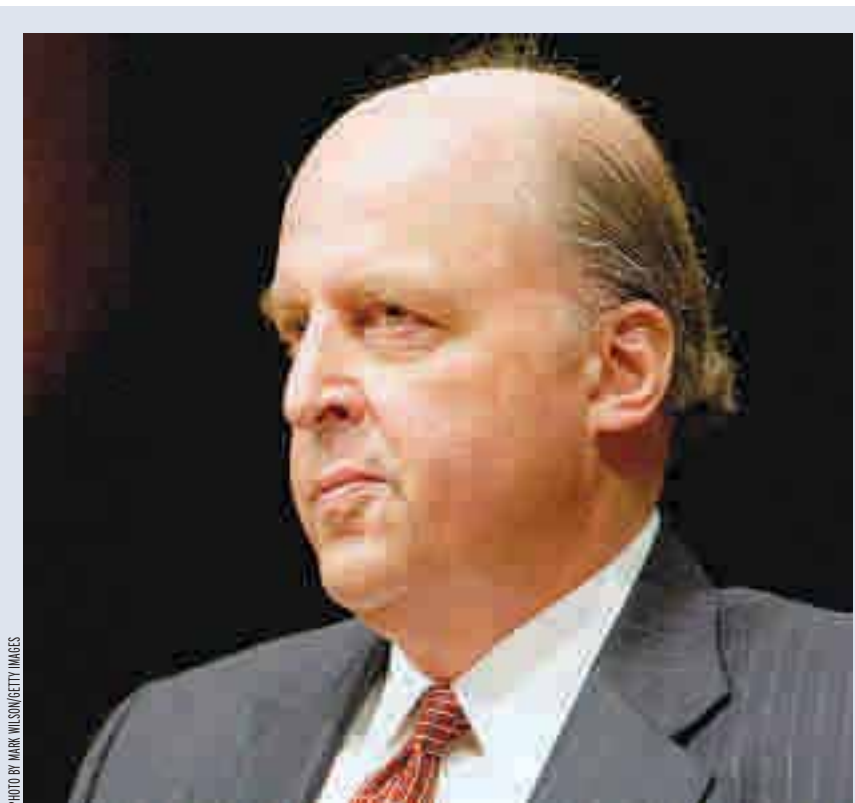
XM Radio Subscriber Gains Disappoint Some Analysts

XM Satellite Radio announced Oct. 3 that it had added more than 617,000 subscribers during the third quarter of 2005, though some analysts characterized the gains as less than expected.

The additions bring XM's total subscriber base to more than 5 million, according to the company's press release. More subscribers were added during the

Correction

The article, "Europe Readies Test of Laser Communication System," [Oct. 3, page 6A], gave an incorrect title for Berry Smutny, chief executive officer of Tesat-Spacecom GmbH & Co.



John Negroponte

Negroponte, Rumsfeld Order Rewrite of NRO Charter

U.S. Director of National Intelligence John Negroponte and Defense Secretary Donald Rumsfeld are completely rewriting the charter governing the National Reconnaissance Office (NRO) for the first time since the original document was penned in 1964.

In a related move, Negroponte and Rumsfeld named Don Kerr, the NRO director, to the new post of assistant to the secretary of the Air Force for intelligence space technology. An Oct. 3 memo from Rumsfeld says Kerr "will support the Secretary of the Air Force in carrying out his [Defense Department] executive agent for space duties. Dr. Kerr will also ensure

that [Defense Department] and NRO programs, activities and operations are properly aligned."

Kerr's new appointment is just one step in the effort to rebuild and realign the relationship between classified and unclassified space following the decision earlier this year to separate the NRO director's position from that of Air Force undersecretary.

"They want to go back to ground zero and see where we should go," Maj. Gen. James Armor, head of the National Security Space Office, said Oct. 5 at the Strategic Space conference in Omaha, Neb.

third quarter of 2005 than in the same period last year, when 415,000 new subscribers signed up.

Nonetheless, an analysis prepared by SG Cowen & Co. said XM's gain fell below expectations of 640,000 new subscribers.

SG Cowen's analysis said Washington-based XM likely reduced its marketing efforts during July and August because its retail market share was significantly higher than that of its rival, New York-based Sirius Satellite Radio. The analysts said subscriber numbers for XM should shoot up in the fourth quarter, when XM will push hard against Sirius' expected promotional

efforts related to shock jock Howard Stern's arrival to the airwaves in January.

Meanwhile, Sirius announced in an Oct. 4 press release it had added more than 359,000 new subscribers during the third quarter of 2005, up from 182,000 new subscribers during the same period last year. Sirius had more than 2.17 million subscribers as of Oct. 4.

The subscriber information comes in advance of both companies' third quarter financial reports, which have yet to be released.

SEE BRIEFS PAGE 8



This Week on Space.com

Mystery Monday - Unborn star revealed in stellar incubator.

Tech Wednesday - Inside Russia's Inflatable Re-entry and Descent Technology.

NightSky Friday - Partial lunar eclipse to tease the U.S. early on Monday morning, October 17.

SPACE NEWS

(ISSN 1046-6940)

Is published weekly, except for two weeks in August and two weeks in December, by Imaginova Corp., 6883 Commercial Dr., Springfield, Va. 22159-0500. USA. *Space News* is not a publication of NASA. **Annual subscription rates:** \$139 U.S. Domestic mail; \$159 Canada; \$199 International mail. Periodicals postage paid at Springfield, Va., and at other mailing offices. **Postmaster:** Send address change to *Space News*, 6883 Commercial Drive, Springfield, Va. 22159-0500. If change of address is due to official military orders, please forward in accordance with DMM 159.223. *Space News* is registered with the British Postal System and Canada Post International Publications Mail (Canada Distribution) Sales Agreement No. 546046. To order *Space News*, to change an address or for subscription information, call 1-800-368-5718 or write to Subscriber Service, *Space News*, 6883 Commercial Drive, Springfield, Va. 22159-0500. For change of address, attach address label from a recent issue. **Telephone numbers:** Editorial: 703-658-8400, fax 703-750-8913; Library: 703-750-8696; Circulation: 703-750-8754, fax 703-642-7352; Advertising: 703-642-7330, fax 703-642-7386. **Photocopy permission:** Contents of this publication are copyrighted by Imaginova Corp. The Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, Mass., 01923, has been granted a license to authorize the photocopying of any article herein. The fee is \$2 per copy per article, limited to 500 copies. Send payment directly to CCC specifying ISSN 1046-6940. For bulk reprint requests of more than 500, send to *Space News* Attn: Reprint Department.



Revised NASA Shuttle Plan Includes Most Station Hardware

BRIAN BERGER, WASHINGTON

NASA expects to fly 19 space shuttle missions between 2006 and the orbiter fleet's planned retirement in 2010, completing by then a six-person international space station that would include most but not all of the hardware being built by the U.S. space agency's international partners.

NASA's revised space station plan, the result of several months of internal study, is slated for public release later in October. A preview of the so-called Shuttle/Station Configuration Options Team (S/SCOT) study provided to *Space News* shows that NASA intends to launch Europe's Columbus laboratory module and the Japanese Experiment Module before retiring the shuttle. But NASA's revised space station plan would eliminate the Russian Solar Power Platform and the Centrifuge Accommodation Module that the Japan Aerospace Exploration Agency had agreed to build for NASA under a barter agreement. Both the Russian power platform and the centrifuge module are designed to launch aboard the space shuttle.

NASA spokeswoman Debra Rahn said Oct. 6 that NASA's international partners were briefed the previous week on the revised space station assembly plan. "We have initiated discussions with all the partners on the results of the Shuttle/Station Configuration Options Team study," Rahn said.

Bill Gerstenmaier, NASA associate administrator for space operations, held high-level consultations with senior officials of the space station partners in late September, Rahn said. Those telephone meetings are being followed by more formal bilateral



▲ NASA intends to launch Europe's Columbus laboratory module and the Japanese Experiment Module (above) before retiring the shuttle, but the agency's revised space station plan would eliminate the Russian Solar Power Platform and the Japanese Centrifuge Accommodation Module.

sessions between NASA Administrator Mike Griffin and his international counterparts, she said.

Rahn said Griffin held the first of those meetings with the head of the Russian Federal Space Agency, Anatoly Perminov, while the two were at the Baikonur Cosmodrome in Kazakhstan for the Oct. 1 launch of a Soyuz capsule carrying a new two-person crew and U.S. space tourist Greg Olson to the space station. She said Griffin informed Perminov that NASA will not be able to launch the Russian Solar Power Platform.

Keiji Tachikawa, president of the Japan Aerospace Exploration Agency, was in Washington the week of Oct. 3 where he attended at least two receptions held in his honor and met with

U.S. lawmakers. Rahn said Griffin did not meet with Tachikawa during his Washington visit because the two already have a formal meeting scheduled during the International Astronautical Congress in Fukuoka, Japan, the week of Oct. 17.

A formal Heads of Agency meeting involving Griffin and all of his space station counterparts is tentatively planned for December or January at a location still to be determined, Rahn said. The last such high-level space station meeting occurred in January in Montreal. At that meeting, NASA told the partners it planned to conduct 28 space shuttle flights by 2010, a manifest that included about 10 space station logistics and utilization flights but no mis-

sion to service the Hubble Space Telescope.

But not long after being sworn in as NASA administrator in April, Griffin began expressing doubts about the feasibility of the 28 flight manifest, even as he emphasized the agency's resolve to retire the shuttle fleet before the end of 2010.

Griffin testified before Congress this spring that he thought NASA could eliminate all or nearly all of the logistics and utilization flights in the manifest and concentrate instead on using the shuttle solely for assembly flights requiring the orbiter's payload bay.

According to the preview of the S/SCOT study results, NASA thinks it can accomplish 18 flights to the space station beginning with STS-121 — the second

so-called Return to Flight mission it now hopes to launch in May — plus one mission to service Hubble, for a total of 19 flights. One of the assumptions underlying the new station assembly plan is that the shuttle orbiter fleet will be retired before Oct. 1, 2010, the start of the U.S. federal government's new budget year.

Building the international space station is taking much longer than NASA and its partners ever expected. An assembly plan finalized in September 1997, one year before on-orbit construction actually began, envisioned completing the orbital outpost by late 2003.

The first piece of the space station, the Russian-built Zarya Control Module, was launched Nov. 20, 1998, aboard a Proton rocket. It was followed two weeks later by the U.S. Unity Node launched aboard NASA's Space Shuttle Discovery. Space station assembly then hit a 19-month hiatus while Russia struggled to finish the next major component, the Zvezda Service Module.

The space shuttle fleet made 13 flights to the space station before the Space Shuttle Columbia's fatal accident in February 2003. NASA has deployed no major hardware at the station since November 2002, when the Space Shuttle Endeavour delivered the outpost's first U.S.-built solar arrays. NASA does not expect to resume space station assembly flights before July 2006, the agency's current planning date for attempting its third post-Columbia flight. Although STS-121 is bound for the space station, the mission's primary purpose is to validate changes made after the Columbia accident, not deliver major hardware to the station.

Comments: bberger@space.com

ATV FROM PAGE 1

the docking point for the ATV.

But these industry officials also said the ATV contracting team has suffered from corporate reorganizations and personnel changes that have complicated an already-difficult engineering endeavor.

One European government official was highly critical of EADS Space Transportation for bungling the ATV project.

Thirkettle declined to be that harsh. "I am convinced that the prime contractor is now making a major effort," he said. "Up to several months ago they perhaps were trying to get to the end of the program before the loose ends were tied up. We weren't particularly impressed. They are now fully engaged. [ATV] is a major effort that neither they nor we can afford to see fail."

Thirkettle and industry officials said the Jules Verne ATV, originally scheduled for launch in 2004, was undergoing final preparation for a May 2006 flight at ESA's Estec technology center in Noordwijk, Netherlands, this summer when bad news struck from several angles.

At that time, the agency was coping with a revised set of flight-safety and oper-

ational demands ordered by NASA and Roskosmos. "They were fairly fundamental changes to our flight application software, which is 1.5 million lines of code," Thirkettle said. "But we had to bite the bullet and accept it."

While updating the software, ESA officials discovered that the ATV flight simu-

docked to the station for up to several months to be loaded with garbage before being undocked and sent on a course to re-enter and burn up in the Earth's atmosphere. Also among its many functions is to use its on-board engines to raise the station's orbit on regular occasions.

It is Europe's first rendezvous and

tude control system also were defective. No bigger than a cigarette and deeply buried in the completed ATV, all 48 of them had to be removed and replaced.

"The good news is that we found the actuator problem before it found us," Thirkettle said. "Every little engine on the ATV has these valves."

To top it off, the drive mechanisms on the Jules Verne ATV's solar arrays also were found to need replacing, Thirkettle said.

At that point, ESA officials were facing a six-month delay to the ATV's planned May 2006 launch. But keeping to that revised schedule would have meant ordering the contracting team and ESA's own ATV managers to work double shifts and weekends.

"We determined that this is not the best way to keep teams motivated, and we have set a schedule that includes sufficient margins and would permit us to launch around March 2007," Thirkettle said. "Given the fact that we also want to launch after a planned Soyuz [manned flight] to the station that spring, we are now targeting a May 2007 launch."

Comments: pdeselding@compuserve.com

"I am convinced that [EADS Space Transportation] is now making a major effort. Up to several months ago they perhaps were trying to get to the end of the program before the loose ends were tied up. We weren't particularly impressed."

Alan Thirkettle

lator — racks of electronics that simulate each phase of the ATV mission — was incapable of doing its job.

The ATV is designed to carry more than 9,000 kilograms of water, fuel and other supplies to the station following its launch atop an Ariane 5 rocket. It stays

docking vehicle, and is designed to approach the station, then back off in the event of difficulty and remain near the station until ordered to approach again.

At around the same time as the simulator defects were disclosed, ESA managers learned that activators in the ATV's atti-

geoint 2005 United States Geospatial Intelligence Foundation symposium

October 30 – November 2, 2005 • San Antonio, TX

Experience the Nation's Premier Geospatial Intelligence Event!



LEARN

Hear directly from government and industry leaders, including:

Lt. Gen. Keith Alexander, U.S. Army
Director, National Security Agency (invited)

Lt. Gen. William G. Boykin, U.S. Army,
Deputy Undersecretary of Defense for Intelligence (Intelligence and Warfighting Support (I))

Lt. Gen. James R. Clapper, Jr., U.S. Air Force (Ret.),
Director, National Geospatial-Intelligence Agency (NGA)

Col. Brian Cullis, U.S. Air Force, Executive Manager,
Defense Installation, Spatial Data Infrastructure,
Office of the Deputy Undersecretary of Defense for
Installations and Environment

Jamie S. Gorelick, Partner, Wilmer, Cutler, Pickering,
Hale and Dorr, LLP and former Commissioner, 9/11
Commission (invited)

Gen. Michael V. Hayden, U.S. Air Force,
Principal Deputy Director of National Intelligence

Maj. Gen. (P) John F. Kimmons, U.S. Army,
U.S. Army Deputy Chief of Staff, Intelligence (G2)

Amb. John D. Negroponte,
Director of National Intelligence (invited)

Hon. R. James Woolsey, Vice President, Booz
Allen Hamilton and Former Director of Central
Intelligence

NETWORK

Experience the sights, sounds, and tastes of Texas—while networking with your peers:

- La Villita Welcome Reception
- Allder Golf Classic at Canyon Springs Golf Club
- GEOcaching Scavenger Hunt
- GEOwalk Hospitality Night - a haunted evening on the world-famous San Antonio Riverwalk
- USGIF Hall of Fame Awards Banquet

DISCOVER

Meet with more than 100 exhibitors showcasing the latest Geospatial Intelligence technologies:

- Commercial Satellite Imaging
- Geographic Information Systems
- Global Positioning Hardware & Software
- Image Processing
- Location Based Services
- Mapping & Visualization Tools
- And Much More!

Produced by



Premier Media Sponsor

SPACE NEWS

SECURING FREEDOM
Defeating Threats

REGISTER AND GET COMPLETE DETAILS AT WWW.USGIF.ORG

Priority Code GS902A

Oct. 30 – Nov. 2, 2005 • Henry B. Gonzales Convention Center • San Antonio, Texas

DigitalGlobe Unveils Plan for Second WorldView Satellite

MISSY FREDERICK, WASHINGTON

DigitalGlobe intends to finance the construction and launch of a second next-generation imaging satellite exclusively through up-front contracts with non-U.S. government customers, according to a company spokesman.

Longmont, Colo.-based DigitalGlobe unveiled plans Oct. 4 to launch a satellite dubbed WorldView 2 in 2008 to go along with the previously announced WorldView 1, which is slated to launch in 2006. Both satellites will be capable of taking pictures sharp enough to distinguish objects as small as half a meter across, but WorldView 2 also will be able to collect highly detailed color imagery, the company said.

And whereas WorldView 1 is being financed largely by a \$500 million data contract with the U.S. National Geospatial-Intelligence Agency (NGA), WorldView 2 will be underwritten by commercial customers who want guaranteed access to high-resolution imagery, DigitalGlobe spokesman Chuck Herring said.

Building two satellites on nearly concurrent schedules is standard operating procedure among U.S. satellite imaging firms, giving them a readily available back up in case of a launch or on-orbit failure at far less cost than building a new satellite from scratch. The practice has paid off — all three U.S. providers of high-resolution satellite imagery lost their first spacecraft in launch failures.

Assuming the first spacecraft launches successfully, having the



▲ DigitalGlobe will launch the WorldView 2 satellite in 2008 to go with the previously announced WorldView 1, slated for a 2006 launch. The company's QuickBird satellite can collect both black-and-white and color images such as the high-resolution color image (above) of a nuclear facility in Yongbyon, North Korea.

spare gives companies the option of launching the second soon thereafter to provide greater imaging frequency of time-critical targets.

Nevertheless, DigitalGlobe had never publicly discussed plans to build and operate WorldView 2 until now. "We've always been internally planning that, though this is the first time we've announced we're working on a second satellite," Herring said.

The announcement does reveal one change in plans, Herring acknowledged. Previously Digital-

Globe planned to include a color, or multispectral, imaging capability on WorldView 1. But schedule considerations — the company is required under its NGA NextView contract to launch WorldView 1 before the end of 2006 — prompted the company to defer the multispectral capability to WorldView 2, he said.

David Burpee, a spokesman for the NGA, said WorldView 1 without the multispectral capability remains compliant with the terms of DigitalGlobe's NextView contract. He also said the NGA ex-

pects to take advantage of both WorldView 1 and WorldView 2.

DigitalGlobe currently operates the QuickBird satellite, which can collect black-and-white, or panchromatic, images with 0.61-meter resolution. The satellite, launched in October 2001, also collects color images with 2.5-meter resolution. It is expected to operate until 2009.

WorldView 2 will be capable of taking multispectral pictures at resolutions as sharp as 1.8 meters, DigitalGlobe said. In addition, the satellite will have eight multispectral bands for added information, whereas QuickBird has only four.

Herring said up-front purchase commitments for WorldView 2 data are being finalized with non-U.S. government organizations, but declined to provide details. He said DigitalGlobe will not need to approach the debt or equity markets to help finance the spacecraft.

Satellite remote sensing expert Edward Jurkevics of Chesapeake Analytics of Arlington, Va., said DigitalGlobe needs a second WorldView satellite to take full advantage of market opportunities outside of its NGA contract.

"One of the problems is that NGA's data purchasing will consume the vast majority of the capacity of this panchromatic sensor, not leaving much for DigitalGlobe to sell commercially," Jurkevics said.

But the NGA also intends to take advantage of WorldView 2, Burpee said. Black-and-white imagery is useful for surveillance and determining precise locations,

while color imagery is helpful for applications such as categorizing terrain and detecting camouflage, he said.

Color imagery is generally more appealing for all customers, according to Jurkevics. "One shouldn't underestimate that people like color imagery better than black and white," he said. "Whether you're a military analyst or someone looking at something on Google or Yahoo, people prefer color imagery."

Herring said WorldView 2's multispectral capabilities, including the added color bands, will increase its utility for applications across the board, including forestry and agriculture.

Herring would not comment on how time on each satellite will be divided between government and commercial customers. "Obviously we've been talking to all of our customers about both satellites and what their needs are," he said.

DigitalGlobe's announcement follows on the heels of news that its main competitor, Orbimage of Dulles, Va., will purchase the third industry player, Space Imaging of Thornton, Colo. Analysts have estimated that the deal will give Orbimage up to 60 percent of the market.

Orbimage spokeswoman Nancy Coleman declined to comment on DigitalGlobe's announcement.

WorldView 1 will be launched on a Boeing Delta 2 rocket, Herring said. The DigitalGlobe has yet to make launch arrangements for WorldView 2, he said.

Comments: mfredrick@space.com

Boeing Officials Say Fuel Leak Aboard JCSat-1b Satellite Has Been Fixed

PETER B. de SELDING, PARIS

Ground controllers have stopped a thruster fuel leak aboard an on-orbit Boeing 601-model satellite owned by JSat Corp. of Tokyo, fixing a problem that had threatened the Japanese firm with a total and uninsured loss on the spacecraft, according to Boeing officials.

The JCSat-1b communications satellite will be returned to service, Boeing said.

The thruster problem occurred in July and followed a similar, but short-lived, problem in January. Officials from JSat have been forced to move a spare satellite into position to pick up the traffic on the stricken satellite.

With its one in-orbit spare in use at the company's 150 degrees east longitude slot, JSat was under pressure to accelerate a planned satellite-replacement program and has ordered a JCSat-11 spacecraft from Lockheed Martin Commercial Space Systems. The contract, announced by Lockheed Martin Oct. 3, marks the third consecutive satellite that

Japan's biggest satellite operator has ordered from the Newtown, Pa.-based manufacturer.

Like the JCSat-9 and JCSat-10 satellites on order, the JCSat-11 will use Lockheed Martin's A2100 AX satellite frame. It is expected to be delivered in 2007 and will serve as an in-orbit backup for the JSat fleet.

In response to *Space News* questions, JSAT spokesman Hideyuki Torii said Oct. 5 that JCSat-9 will be launched within the next six months. JCSat-10 is expected to be launched before March 2006, with JCSat-11 following in 2007.

Torii said JSat had not yet completed its review of the status of JCSat-1b, whose in-orbit insurance coverage does not currently cover losses related to the thruster. It is common in the space insurance industry for underwriters to exclude certain components when signing up to cover satellite in-orbit policies, which are renewed every year.

Torii said the JCSat-R satellite, which has been moved into position to replace the defective JCSat-1b, is fully insured.

Marta E. Newhart, a spokeswoman for Boeing Satellite Systems International of El Segundo, Calif., said Oct. 6 that the JCSat-1b thruster leak is unique to this satellite and is not a serial defect that has affected other Boeing 601-model satellites.

"In July, JCSat-5 [the name of the satellite before it was renamed JCSat-1b in orbit] experienced an anomaly which caused the spacecraft's attitude to tilt, or create an off-pointing of the satellite's normal on-orbit angle," Newhart said in a written statement. "The anomaly was isolated to a leak in the thruster valve of the spacecraft propulsion system. This leak has been stopped and testing continues to be conducted. The anomaly has not occurred on other Boeing satellites and at this time we have no new information that would indicate this anomaly will impact other Boeing satellites."

JSat's nine-satellite in-orbit fleet includes six Boeing 601-model satellites. Four of them — JCSat-3, JCSat-R, JCSat-4a and JCSat-1b — were launched between

1995 and 1999. During this period, the Boeing 601 satellite was the world's best-selling model.

The 601 has since become a case study for serial defects in satellites. More than \$1 billion in insurance claims have been paid to cover in-orbit losses. Boeing became the owner of the 601 production line following its October 2000 purchase of the business from Hughes Electronics.

Torii declined to say whether JSat's purchase of a new satellite is directly related to the trouble on JCSat-1b. But the order will add to JSat's capital expenditures at a time when the company's financial performance is suffering. In its annual report to shareholders, JSat cited capital expenditures as one reason for the company's poor performance in 2004.

In addition to the two other Lockheed Martin satellites on order, JSat has agreed to pay almost all of the \$140 million capital expense of the Horizons-2 satellite that will be co-owned with PanAmSat Corp. of Wilton, Conn. It is a PanAmSat-registered orbital slot that will be used for

the Horizons-2 business. PanAmSat will reimburse JSat for its 50-percent share of the total investment in the Horizons-2 venture over several years.

For its 2004 financial year, which ended March 31, 2005, JSat reported sales of 42.88 billion yen (\$378 million), a 7.3-percent decline in yen terms over the previous year. Net profit, at 4.5 billion yen, was down 26 percent.

EBITDA, or earnings before interest, taxes, depreciation and amortization — a commonly used financial metric among satellite operators — was 56.8 percent of revenues, down from 61.6 percent in 2004.

In its annual report issued Aug. 22, JSat blamed "up-front expenditures aimed at future growth, and a harsh business environment, chiefly in the domestic communications sector" for its performance in 2004. "The business environment has become severe."

JSat said it expects revenue to decline again in 2005.

Comments: pdeselding@compuserve.com

Technologies. Ideas. Knowledge.

Experience all of this and more at the **2005 AGI Users' Conference**. For complete conference information and your electronic copy of the event guide, visit www.agiuc.com/spacenews.

REGISTER FOR THIS FREE EVENT & WIN!

As an added bonus, Space News readers who register for the free **2005 AGI Users' Conference** will be automatically entered into a drawing to win a 30mm brass refractor telescope from **Orian Telescopes & Binoculars**, a Space News sister company.

Secure your seat today and your eligibility to win at www.agiuc.com/spacenews.

www.agiuc.com
FREE EVENT
FREE CONFERENCE
CLASSIFIED PAY

agi 2005
USERS' CONFERENCE
OCTOBER 11-14 2005 • WASHINGTON, DC

Complete details inside!

STEP INTO THE SPOTLIGHT!
Explore New Technologies • Exchange Ideas • Expand Your Knowledge

www.agiuc.com

October 10, 2005

NEWS BRIEFS

BRIEFS FROM PAGE 3

Telesat Canada's Anik F1R Enters Commercial Service

Telesat Canada has begun commercial operations of its Anik F1R telecommunications satellite, which in addition to its 24 C- and 24 Ku-band transponders carries a two-transponder navigation payload to augment the performance of the U.S. GPS satellite navigation system, Ottawa-based Telesat announced Oct. 3.

Anik F1R, built by EADS Astrium of Europe, was launched Sept. 9 by an International Launch Services Proton-M rocket and is co-located with the Boeing-built Anik F1 satellite at 107.3 degrees west longitude. Anik F1, launched in 2000, is one of the six first-generation Boeing 702 satellites that have defective solar arrays. Anik F1R, which uses EADS Astrium's Eurostar 3000 frame, is the first non-U.S.-built satellite ever ordered by Telesat Canada. The company subsequently ordered the Anik F3 satellite from EADS Astrium, for delivery in 2006.

2nd ESA Deep Space Antenna Declared Ready for Operation

The European Space Agency (ESA) has opened the second of three planned ground stations as part of its deep space network to communicate with future science satellites.

The Cebreros, Spain, antenna was inaugurated Sept. 28 and will meet its contractual deadline to be operational in time to track ESA's Venus Express satellite, scheduled for launch Oct. 26 aboard a Russian Soyuz rocket operated from the Baikonur Cosmodrome in Kazakhstan.

The Cebreros station, featuring a 35-meter-diameter dish, was built for ESA by an industrial consortium led by SED Systems of Canada and including antenna manufacturer Vertex Antennentechnik of Germany under a February 2003 contract valued at 30 million euros (\$36 million).

The station initially will be able to transmit and receive signals in X-band, and includes a receive-only Ka-band system that will be augmented with a Ka-band transmission capability, according to ESA. The agency said future science missions will send back ever-increasing amounts of data from greater distances that will require the use of higher radio frequencies including Ka-band.

The Cebreros facility will be used with a similar antenna in New Norcia, Australia, to provide deep-space communications for ESA's Estrack network operated from the Esoc space operations center in Darmstadt, Germany. Plans call for adding a third facility either in North or South America later this decade to provide global deep-space tracking ability.

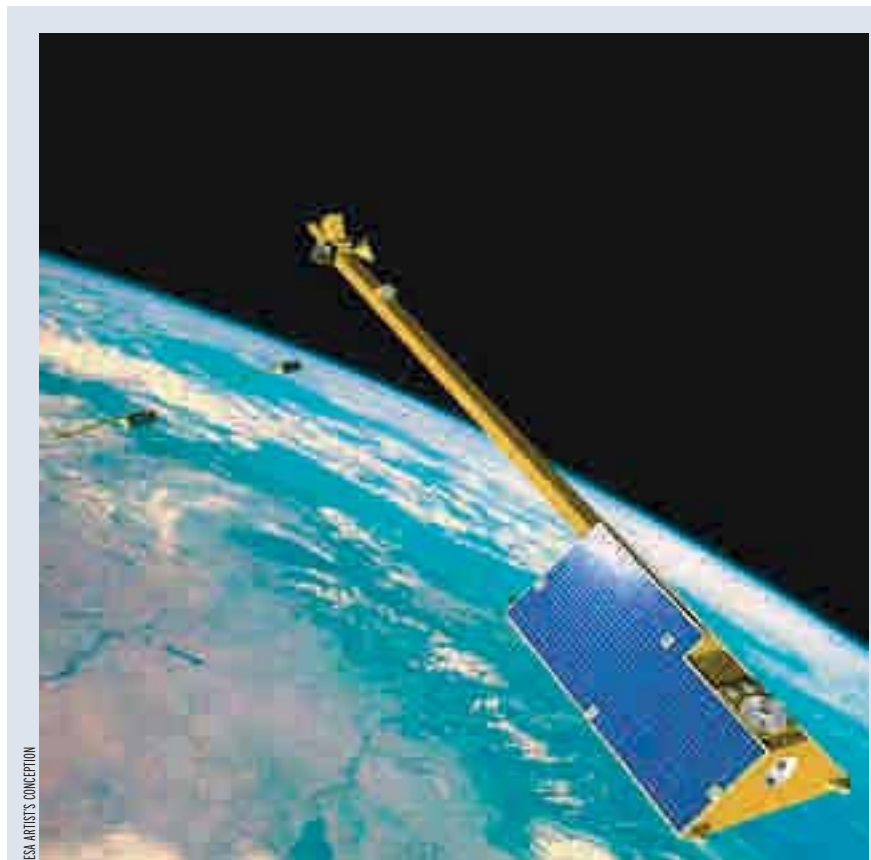
Regulatory Uncertainty Derailed Boeing-ISRO Deal

Boeing Co. and the Indian Space Research Organisation (ISRO) cited the uncertain pace of U.S. government approvals as the reason why Boeing shelved plans for a joint venture in satellite manufacturing.

"Over the past few years, Boeing had been exploring the viability of working with [ISRO] to jointly market satellites on a commercial basis by making use of each others' complementary capabilities," Boeing said in a prepared statement provided to Space News Sept. 26. "This requires U.S. government approvals, some of which have been granted. However, because the time frame for all necessary approvals was uncertain and because of other business factors, Boeing decided to place this activity on hold."

A senior ISRO official, who did not want to be named, said Boeing became frustrated with the "bureaucratic hassles" involved in obtaining U.S. approvals for a business venture with limited potential.

Chicago-based Boeing and ISRO were exploring the possibility of incorporating Boeing technology onto Indian-built platforms weighing roughly 2 metric tons. Most of today's communications satellites are in the 4- to 5-ton range, and



ESA ARTISTS CONCEPTION

Swarm satellites

France Agrees to Join ESA's Swarm Mission

The French space agency, CNES, has agreed to invest 9 million euros (\$10.8 million) to provide magnetometers for the European Space Agency's (ESA's) Swarm mission to study the Earth's magnetic field, CNES announced Oct. 6.

The three small, identical Swarm satellites are scheduled for launch in 2009 on a four-year mission as part of ESA's Earth Explorer program. Swarm is budgeted at 180 million euros, including the construction and launch of

the satellites, ground infrastructure and four years of operations. The mission will supplement data gathered by the Danish Orsted satellite in the late 1990s, and Germany's Champ spacecraft, launched in 2000.

The CNES-provided magnetometers will be manufactured by CEA/LETI — the French Atomic Energy Commission and the Information Technology and Electronics Laboratory.

the Boeing-ISRO joint venture would have competed in a market niche currently occupied by Orbital Sciences Corp.

The ISRO official said the scrapping of the venture indicates that Indo-U.S. cooperation in space, part of a wider diplomatic initiative aimed at expanding technical ties between the two countries, is not moving along as quickly as expected.

Officials with the U.S. State Department, which regulates U.S. trade in space

technology, did not respond to a request for comment.

Scientists Solve Mystery Behind Gamma Ray Bursts

NASA announced Oct. 5 that scientists have unlocked a mystery behind the split-second flashes of light known as gamma-ray bursts, which occur so quickly that studying them has been difficult until recently.

Scientists were able to observe two gamma-ray bursts May 9 and July 9 using ground-based telescopes and NASA spacecraft. Upon examining the data, scientists determined that the flashes — which are brighter than a billion suns — occur when there are violent collisions between a black hole and a neutron star or between two neutron stars.

Gamma-ray bursts were first detected in the 1960s and are the most powerful explosions known. The randomly occurring bursts are "notoriously difficult to study," Neil Gehrels, principal investigator for the Swift satellite at NASA's Goddard Space Flight Center, Greenbelt, Md., said in a prepared statement. "We now have the tools in place to study these events."

The Swift satellite detected the May 9 burst, and NASA's High-Energy Transient Explorer detected another July 9. The agency's Chandra X-ray Observatory and Hubble Space Telescope also were used in studying the afterglow of the July 9 burst.

ESA's Ulysses Spacecraft Celebrates 15 Years in Space

The Ulysses spacecraft marked its 15th year in space — it launched Oct. 6, 1990, aboard Space Shuttle Discovery — by continuing its four-dimensional survey of the Sun and enabling scientists to better understand the solar system environment, the European Space Agency (ESA) announced Oct. 6.

The European-built Ulysses, which is operated by both ESA and NASA, is in a polar orbit around the Sun, collecting data for scientists about solar wind, the Sun's poles and its magnetic field. The spacecraft has traveled nearly 7 billion kilometers to date as it makes six-year-long orbits around the Sun.

In February 2004, ESA's Science Programme Committee extended the Ulysses mission until March 2008. ESA said in a prepared statement the craft is "still going strong" after 15 years.



ESA ARTISTS CONCEPTION

Ulysses

October 10, 2005

Gravity Probe B Mission Ends Data Gathering Phase

NASA announced Oct. 3 that its Gravity Probe B satellite has completed collecting data that will be analyzed over the next year to try and validate Albert Einstein's general theory of relativity, which proposes matter causes space and time to curve.

Gravity Probe B — which was launched April 20, 2004 — successfully completed gathering scientific data after 17 months in orbit when the spacecraft's liquid helium supply, which is used as a system coolant, was depleted. This depletion had no adverse effects on the mission, said Steve Roy, a spokesman at NASA's Marshall Space Flight Center in Huntsville, Ala., which manages the Gravity Probe B program.

The spacecraft used four ultra-precise gyroscopes to measure two effects postulated in Einstein's relativity theory. The first phenomenon, known as the geodetic effect, says the Earth warps the local space-time in which it resides. The other, called frame-dragging, states that the Earth drags local space-time around as it rotates.

Nearly 50 weeks' worth of data has been downloaded from the spacecraft to computers at Stanford University's Mission Operations Center in California. Data analysis and validation is expected to take about one year.

Northrop Integrates Sensor For First SBIRS Satellite

Northrop Grumman has completed mechanical and electrical integration work on a payload for the first satellite in the United States' next-generation missile warning system, the Space Based Infrared System (SBIRS), the company announced Oct. 3.

The work was conducted at Northrop Grumman's space systems facility in Azusa, Calif., where 100,000 lines of flight-software code were integrated into the payload hardware. Once the integration work was complete, the payload was successfully powered on, initialized and calibrated to complete function tests that included command and telemetry, internal data bus messaging and downlink interfaces.

The infrared payload features both scanning and staring sensors. The scanning sensor continually observes large swaths of territory for ICBM launches, while the staring sensor detects low-signature, short-burn missiles.

Northrop Grumman will provide the

payload to Lockheed Martin Space Systems of Sunnyvale, Calif., which is developing the SBIRS system under contract from the U.S. Air Force Space and Missile Systems Center at Los Angeles Air Force Base.

NASA Extends Analex's Launch Support Contract

NASA's Kennedy Space Center in Florida has exercised an option to extend its Expendable Launch Vehicle Integrated Support (ELVIS) contract with Analex for three years, the Alexandria, Va.-based firm announced Sept. 29.

The \$65 million contract option started Oct. 1 and lasts through Sept. 30, 2008. During this time, Analex will continue to provide ground services and technical support in the areas of engineering, safety, payloads, launch operations and systems management.

DirecTV To Offer Customers 72 Channels of XM Radio

El Segundo, Calif.-based DirecTV Group has entered into an agreement with XM Satellite Radio of Washington to offer 72 channels of XM audio programming to its television customers starting Nov. 15. The arrangement will nearly double the number of audio channels available to DirecTV's 14.6 million customers.

XM announced Sept. 29 that the programming to be made available to DirecTV customers would include music channels, children's programming and sports talk radio.

NASA Site To Teach Kids About Flying Over Mars

A new interactive Web site launched Oct. 1 by NASA is intended to educate and excite elementary and middle school students about the agency's plans to explore Mars.

NASA announced Sept. 29 that the Web site, called Wings Over Mars, will feature background videos, animations and articles to inform students of the engineering challenges involved in developing an airborne Mars explorer. The site also will include a section for teachers on how to incorporate the information into their classroom curricula.

"The project exposes students to the benefits of planetary flight and engages them in the engineering challenges of planetary flight on Mars," Christina

O'Guinn of NASA said in a prepared statement. O'Guinn is a member of the education technology team at NASA's Ames Research Center in California, which developed the Web site. It can be viewed at <http://wingsovermars.arc.nasa.gov>.

The Web site will support NASA's future Quest Web, where students and NASA experts will work together online to explore the various problems associated with designing a Mars airplane.

Northrop Grumman Ships Reflector for I-4 Satellite

Northrop Grumman announced Sept. 29 it has completed an AstroMesh reflector for the third and final Inmarsat I-4 satellite, part of a series of spacecraft intended to provide mobile broadband communications services.

The reflector, which was shipped to prime contractor EADS Astrium of Toulouse, France, is part of the spacecraft's antenna system, increasing its sensitivity to allow the use of laptop-sized terminals in a coverage area.

The first I-4 satellite was deployed in March, with the second planned for launch later this year. Both of these satellites also are equipped with AstroMesh reflectors. The reflector on the first satellite was successfully tested on-orbit earlier this year, achieving the correct pointing accuracy and other technical requirements that eliminate interference.

Alcatel Wins Contract for Amos-3 Satellite Payload

Alcatel Alenia Space of Paris announced Sept. 29 it has won a contract from Israel Aircraft Industries (IAI) to supply the payload for Amos-3, a communications spacecraft IAI is building for Israeli operator Space Communication Ltd. (Spacecom).

The Amos-3 is slated to launch in late 2007 to replace the aging Amos-1 geostationary communications satellite, which launched in 1996. Amos-3 will expand Spacecom's range of Ku-band services and also offer Ka-band capacity for broadcasting and other services covering the Middle East, Africa, Europe and parts of the Americas.

Under the contract, Alcatel must deliver to IAI a communications payload with Ku- and Ka-band transponders by the beginning of 2007. The payload will be assembled at Alcatel Alenia Space's Toulouse, France, facility. No financial details about the contract were disclosed.

Astrotech To Support NASA Payload Processing

NASA's Kennedy Space Center in Florida has awarded a contract valued at up to \$4.9 million to Spacehab Inc. subsidiary Astrotech Space Operations to provide payload processing services for a number of scientific spacecraft scheduled to launch next year, Spacehab announced Sept. 29.

Astrotech will offer NASA the necessary services from its of Titusville, Fla., facility to process spaceflight hardware and will assist with other launch-related duties. The NASA spacecraft covered under the contract include the Stereo observatory, which is part of the Solar Terrestrial Probes program; the Dawn mission, a spacecraft that will study protoplanets in the asteroid belt between Mars and Jupiter; and the Themis spacecraft to study aurorae.

NASA Underwater Tests Delayed by Rita Effects

NASA has delayed an exercise to test extravehicular activities and new space medicine concepts in an underwater laboratory in the Florida Keys due to damage and delays caused by Hurricane Rita, the agency announced Oct. 3.

The NASA Extreme Environment Mission Operations exercise was slated to take place Oct. 3-21, but will be postponed until this coming spring. The Aquarius Underwater Laboratory, owned by the U.S. National Oceanic and Atmospheric Administration (NOAA) and operated by the University of North Carolina at Wilmington, suffered some external damage from Rita's undersea effects.

Rita also interrupted the training of the three astronauts and one doctor selected to participate in the exercise at NASA's Johnson Space Center in Houston when the facility closed as the hurricane approached.

The mission is a joint project involving NASA; NOAA; the Centre for Minimal Access Surgery at McMaster University in Hamilton, Ontario; the U.S. Army Telemedicine and Advanced Technology Research Center, Fort Detrick, Md.; the National Space Biomedical Research Institute, Houston; and the Canadian Space Agency.

Missile Defense Motor Completes Round of Tests

Lockheed Martin announced Sept. 28 that ATK Alliant Techsystems of Edina, Minn., has completed the first round of qualification tests on the Orbus 1A solid-rocket motor, which provides second- and third-stage propulsion for the U.S. Missile Defense Agency's Boost Vehicle-Plus.

Lockheed Martin Space Systems of Denver is the contractor for the Boost Vehicle-Plus, one of two rockets designed to loft kill vehicles as part of the U.S. territorial missile shield. Orbital Sciences Corp. of Dulles, Va., builds the primary booster rocket for the Ground Based Midcourse Defense System.

ATK conducted the rocket motor tests one week ahead of schedule at the company's Elkton, Md., facility, meeting all performance requirements. Lockheed Martin, headquartered in Bethesda, Md., manages the Boost Vehicle-Plus work at its facilities in Denver, Sunnyvale, Calif., and Courtland, Ala.

Cassini Flybys Reveal Details of Saturn Moons

NASA's Cassini spacecraft performed back-to-back flybys Sept. 24 and Sept. 26 of the Saturn moons Tethys and Hyperion, respectively, capturing images that reveal details of the moons' topographies, the space agency announced Sept. 30.

Cassini passed approximately 1,500 kilometers above the scarred surface of Tethys, taking images of the ancient moon's south pole — an icy land of steep cliffs and craters — that had not been seen by NASA's Voyager spacecraft.

These photographs included images of the giant rift Ithaca Chasma littered with im-

pacts, indicating the rift was created long ago.

Images taken during the spacecraft's flyby of the spongy-looking Hyperion moon show a surface dotted with craters that have been modified by an unknown process. False-color images taken at a distance of 500 kilometers reveal the surface might be composed of a variety of materials. Scientists are especially interested in the darker material that fills many of the craters on the moon. NASA hopes the new images will help determine if landslide activity has occurred there.



Saturn's Moon Hyperion

October 10, 2005

Purchase of Snecma Unit Positions Contraves for Galileo Work

PETER B. de SELDING, PARIS

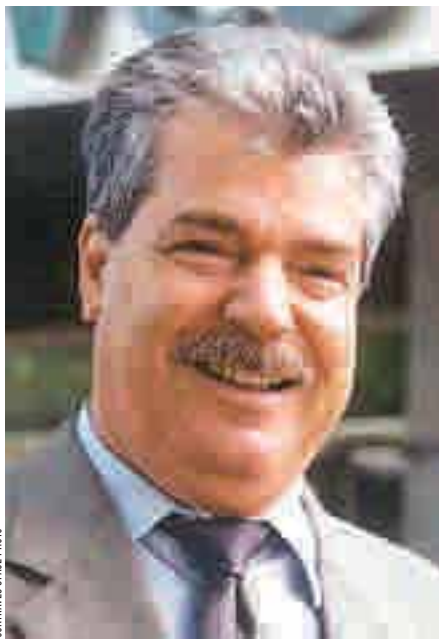
Contraves Space of Switzerland has purchased the solar-array drive production business of Snecma of Paris in a deal that moves Europe's space-component industry one step closer to a consolidation that industry officials see as inevitable.

In purchasing Snecma's facility for producing solar-array drive mechanisms, Zurich-based Contraves also is positioning itself to better compete for the biggest single satellite order expected in Europe in the next decade: the 30-satellite Galileo navigation constellation.

"Snecma would surely have been a strong competitor to us for the Galileo business," Contraves Space Chief Executive Umberto Somaini said. "But we will have others for this business, including perhaps Alcatel and Astrium."

Alcatel Alenia Space of France and Italy, and EADS Astrium are both satellite prime contractors with major equity-ownership stakes in the consortium expected to build Galileo. Both build solar-array drive mechanisms, although Snecma has been a regular supplier to Alcatel Alenia Space.

Better known for its rocket fairings — Contraves equips Europe's Ariane 5 and the U.S. Atlas 5 vehicles — Contraves Space has developed, with financing from the European Space Agency (ESA) and using



Umberto Somaini

its own funds, its own line of solar-array drive mechanisms tailored to the Galileo satellite design.

Contraves Space reported revenues of about 100 million Swiss francs (\$77 million) in 2004. Sales have fallen by about 15 percent over the past three years with the con-

traction of the worldwide commercial space industry and Europe's stagnant government space budgets. The company has reduced employment by about 10 percent, to 300 people.

"Our top line, like just about everybody else's in the space business, has suffered in the past three years," Somaini said. "Right now we think the market has somewhat improved and we can hold sales to where they are, and hold our employment to where it is. But it won't be until 2007, in our view, before the market turnaround is really felt."

Solar-array drive mechanisms steer a satellite's solar panels and transfer the electrical energy generated by them to the satellite's payload.

Snecma recently merged with electronics-manufacturer Sagem to create a company called Safran. Snecma's principal space-hardware business is Ariane rocket motors, but the company also makes satellite thrusters in addition to its solar-array drive business. With the sale to Contraves Space, Snecma's Villaroche operation in France will shut down and the affected employees will be transferred to positions elsewhere in Snecma.

Snecma spokesman Vincent Chappard declined to discuss the sale and whether it is part of a broader Snecma strategy to shed smaller operating units as it refocuses its business following the merger with Sagem.

Industry officials have speculated that Snecma also would unload its satellite-propulsion business.

Europe's space-component business is scattered throughout a dozen nations. This in part is because Europe's biggest space-hardware customer, ESA, is obliged by its member governments to distribute contracts to all nations participating in each program in close proportion to each nation's level of investment.

How to marry this requirement — called *juste retour* — with the need for economies of scale in component manufacturing is an ongoing dilemma for ESA managers.

Somaini said Snecma's Villaroche operation will close out work on existing contracts in the coming months. The Snecma solar-array drive production tools, equivalent to several truckloads of equipment including vacuum chambers and vibration-test hardware, would gradually be transferred to Contraves in Zurich.

The full transfer is expected to be completed by mid-2006. It remains unclear how many new jobs will be created at Contraves as a result; Somaini said perhaps 10 or 15. "It will be a significant enlargement of our existing solar-array drive facility," Somaini said.

Financial details of the sale were not disclosed for competitive reasons, he said.

Comments: pdeselding@compuserve.com

British Survey Reaffirms Government Space Policy

PETER B. de SELDING, PARIS

Britain's space industry has urged its government to hold firm to its policy of refusing to invest in launch vehicles or any programs involving astronauts, and wants the European Space Agency (ESA) to avoid missions with near-term commercial potential, according to a survey conducted for the British National Space Centre (BNSC).

Completed in mid-September, the survey will be used to help set British government space spending priorities in advance of a conference of ESA governments scheduled for December in Berlin. The conference is designed to fix ESA's agenda for the next three or four years.

The British government has taken only a minimal stake in the Ariane 5 and other European rocket programs. Astronaut-related programs including the international space station have gone without British participation.

According to the survey results, British companies see no reason for the policy to change except as part of international projects with broader appeal. "[M]anned space or launchers should only be supported as common endeavours with the U.S., Russia or other countries and not as a major element of Europe's space spending," according to a BNSC summary of the survey results.

As things stand now, launchers and astronaut-related missions together account for some 40 percent of ESA's budget, with no major changes planned in the next several years.

The British distance from Europe's launcher sector extends to the use of European-built rockets such as the Ariane 5. The government's position, as summarized in an introduction to the survey, is that no special preference should be granted European rockets. Instead, satellite owners should be free to seek the best value for money.

In recent years, ESA has expressed an interest in building satellites whose mission is somewhere between research and commercial applications, especially regarding Earth observation.

The British survey respondents said this should stop because it "distorts the commercial market." ESA's role should be to facilitate indus-

try-led solutions, the respondents said.

In what might be considered a contradiction to that point of view, the survey finds broad support for Europe's Galileo satellite navigation initiative, which includes some technology development but is mainly a commercial system designed to make a profit.

British government investment in Galileo, however, should be made only on the condition that the Galileo system operator is permitted to select hardware according to its value, not according to its political acceptability in Europe, the respondents said.

Alan Hicks, secretary general of the U.K. Industrial Space Committee, said British industry is united behind the idea that Galileo's operations should be conducted as a business, free to select suppliers from anywhere.

Galileo is just the latest example of the difference in philosophy between the French and British governments when it comes to space development programs, according to Stephane Janichewski, director of programs and strategy at the French space agency, CNES.

Speaking during a Sept. 21 space policy conference in Paris, Janichewski said France believes investing in a high-technology program like Galileo has a value in and of itself, in addition to the eventual downstream commercial revenues that should result. The British view, he said, hesitates to invest in the system until the revenue-generating potential is proved. Both positions are valid, Janichewski said.

The British space budget is about 195 million British pounds (\$347 million) per year, of which 60 percent goes to ESA and most of the rest is invested through Europe's meteorological satellite organization, Eumetsat of Darmstadt, Germany.

Britain invests little in maintaining its own national space program outside of ESA, and that lack of investment is cited in the survey as a liability for British companies as they seek commercial contracts against French, German and Italian competitors.

Demise of U.S. Navy Comsat Raises Gap Concerns

JEREMY SINGER, WASHINGTON

The Pentagon is reviewing options that include procuring an interim satellite and leasing more commercial services to deal with a potential gap in communications for troops on the move, according to military officials.

Concern about a gap in coverage between the U.S. Navy's current UHF Follow-On (UFO) satellites and the next-generation Mobile User Objective System (MUOS) arose in June after the UFO F3 satellite, launched in June 1994, ceased operating, the officials said. The MUOS program is several years behind its original schedule.

Before the loss of that satellite, the Pentagon estimated there was a better than 70-percent likelihood that eight UFO satellites would still be operating beyond March 2010, when the first MUOS satellite is expected to enter service, according to U.S. Navy Capt. David Porter, program manager for Navy communications satellites at the Space and Naval Warfare Systems Command in San Diego.

Pentagon officials become concerned about a gap when the probability that it will have the minimum number of satellites required for a given service drops below 70 percent. With the loss of UFO F3, the calculated probability of having eight satellites on orbit drops below 70 percent by February 2009, Porter said in an Oct. 6 written response to questions.

The UFO constellation currently has nine operational satellites. The Congressional Budget Office recently said three of those satellites could stop functioning by 2008.

The last of the UFO satellites, all built by Boeing Satellite Development Center of El Segundo, Calif., was launched in December 2003.

A gap between the UFO and MUOS systems could be averted if the remaining UFO satellites last longer than expected, Porter said. Nevertheless, the Pentagon is considering holding a competition for an interim satellite, he said. Another option is asking MUOS prime contractor Lockheed Martin Space Systems of Sunnyvale, Calif., to build a gap-filler spacecraft that includes a UFO payload, Porter said. Accelerating the first MUOS launch is not an option, he said.

Porter declined to discuss cost estimates for those options, citing competition sensitivity.

Leasing commercial satellite services or relying on unmanned aerial vehicles to augment the UFO constellation also are possibilities, Porter said.

Meanwhile, Pentagon officials also are concerned about a potential gap in the Global Broadcast Service, a system that transmits maps, imagery, news programs and other bandwidth-intensive information to commanders in the field, according to Pentagon sources. The UFO constellation includes three satellites with Global Broadcast Service payloads, the last of which was launched in 1998.

The next Global Broadcast Service payload was scheduled to reach orbit in 2004 aboard the first Wideband Gapfiller communications satellite, but technical difficulties have delayed that launch until mid-2007. The satellite is not expected to become operational until it completes a planned six-month on-orbit checkout period, the sources said.

Leasing commercial bandwidth likely is the only option available for plugging a gap in the Global Broadcast Service coverage, the sources said.

Comments: pdeselding@compuserve.com

October 10, 2005

Senate Hammers KEI in Defense Spending Bill

JEREMY SINGER, WASHINGTON

As the U.S. Defense Department marches toward a 2008 decision on whether to drop one of its two main boost-phase missile interceptor programs, the Senate has indicated its clear preference.

The Senate on Oct. 7 passed a 2006 defense spending bill that cuts funding for the Kinetic Energy Interceptor (KEI) and adds money to the Airborne Laser (ABL) program. The bill was drafted by the Senate Appropriations Committee, and some defense experts interpreted the panel's KEI recommendation as an effort to protect the Ground Based Midcourse Defense System — the U.S. territorial missile shield now being deployed — from a potential competitor.

The Senate bill cuts \$111 million from the Missile Defense Agency's \$218 million request for the high-speed KEI interceptor, which is being developed by an industry team led by Los Angeles-based Northrop Grumman Corp. Meanwhile, the Senate added \$10 million to the agency's \$465 million request for the ABL program, a modified 747 aircraft equipped with an anti-missile laser. Boeing Co. of Chicago is prime contractor on that effort.

In a report accompanying its proposed legislation, the Senate Appropriations Committee said the KEI program is consuming funds that could be better spent on systems that will offer protection in the near term, such as the Aegis sea-based missile defense system and the Ground Based Midcourse Defense System.

On ABL, the committee said it was "encouraged" by the "steady progress" on

the program over the past year and a half.

The House of Representatives fully funded both the ABL and KEI programs in its version of the 2006 Defense Appropriations Act, so the Senate's actions will be subject to negotiation when lawmakers from both chambers meet in conference in the coming weeks to hash out a final bill.

The report accompanying the House bill does not state a preference between ABL and KEI, but directs the secretary of defense to conduct a study with the Government Accountability Office that examines the military's ability to shoot down missiles launched from North Korea and the Middle East in their boost and ascent phases, and the cost of doing so.

The Missile Defense Agency plans to examine the results of KEI and ABL tests scheduled for 2008 before it makes its decision on whether to drop one of them. The ABL test involves shooting down a target missile, whereas the KEI demonstration entails a flight of the high-speed booster rocket but no intercept.

Officials from the Missile Defense Agency and Northrop Grumman have suggested the possibility of modifying the flight path of the KEI's test to one that mocks a higher-altitude, midcourse intercept. The Ground Based Midcourse Defense System is the primary midcourse interceptor in the agency's layered missile defense architecture.

The KEI's flexibility is both a blessing and a curse, said Loren Thompson, chief operating officer for the Lexington Institute, a think tank here. The KEI could back up or augment the Ground Based Mid-

course Defense System, he said. But that capability also makes KEI a potential competitor, and thus a political target, he said.

Thompson said the cut to KEI likely was motivated by a desire among key senators to protect the Ground Based Midcourse Defense System, whose interceptors are being deployed in Alaska and California. He noted that the chairman of the Senate Appropriations Committee, Republican Sen. Ted Stevens, hails from Alaska.

Courtney Boone, a spokeswoman for Stevens, rejected the notion that the senator would advocate a funding reduction on a Pentagon program out of parochial concerns. "Sen. Stevens does not make cuts to our nation's defense to benefit Alaska," she said.

Darryl Fraser, senior vice president of Northrop Grumman's Washington operations, declined to discuss the potential impact of the Senate's KEI reduction during an Oct. 6 briefing for reporters. However, he said Northrop Grumman views the KEI as a complement, rather than an alternative, to the Ground Based Midcourse Defense System.

Both the House and Senate bills also direct the Missile Defense Agency to provide more programmatic detail in its annual budget requests. The agency currently divides its request into 12 categories, rather than by specific program, which complicates Congress' oversight of the agency, according to the reports from both House and Senate appropriators.

The Senate appropriators said a more detailed accounting of spending plans will help prevent "large sums of money" from being realigned internally and spent on pro-

grams outside of their advertised purpose.

Victoria Samson, a research analyst at the Center for Defense Information, a think tank here, said asking the Missile Defense Agency for the type of information traditionally submitted in defense budget requests may be a concession to critics who have accused Congress of lax oversight of missile defense spending.

Other key recommendations of the Senate bill include:

- Adding \$75 million to the Pentagon's \$836 million request for the Aegis sea-based missile defense program, which is led by Lockheed Martin of Bethesda, Md. The additional money, which is not included in the House bill, would fund improvements and increased production of the Standard Missile-3 interceptor, the report said.

- Requiring the Missile Defense Agency to conduct a study of the threat posed to U.S. territory by missiles fired from offshore.

The House made a similar request, and its version of the bill contains \$20 million for that purpose. The Senate bill includes no additional funds for the study. The Senate also indicated that it still has questions about the threat: it asked for a report by the Defense Intelligence Agency on the threat's "validity."

- Transferring an experimental missile defense sensor platform from the Missile Defense Agency to the U.S. Army. The High Altitude Airship, under development by Lockheed Martin, is intended to linger over areas of interest for months at a time to watch for missile launches. The Senate report said the airship, which has fallen behind schedule, might better serve the Army as a communications and intelligence-gathering platform and that the Missile Defense Agency should focus on its immediate priority of fielding a national missile shield.

Federal Employees and Friends:

Show your support for space by making a pledge to the **National Space Society** in the **2006 Combined Federal Campaign!**

Your pledge will go to support key space education programs that promote student and citizen knowledge of space.

The society's CFC code number is **#2413.**

Thank you for your support.
Ad Astra!



National Space Society

1620 I St. NW Suite 615 Washington, DC 20006

To learn more, please visit: www.nss.org

October 10, 2005

New Satellite Service Targets Cruise Ship Passengers

Seattle-Based SeaMobile Inc. To Connect Passengers' Regular Cell Phones with U.S. Mainland

MISSY FREDERICK, WASHINGTON

A new company is banking on the desire of cruise ship passengers to stay connected by cell phone to drive the market for its latest venture.

SeaMobile Inc., a Seattle-based venture established in May, plans to use satellite technology to provide telephone and Internet services to cruise ships, yachts, ferries and other off-shore platforms.

The company is led by a diverse group of individuals: DirectTV founder William Marks Jr. serves as chief executive officer; his father William Marks Sr., former president of American Video Corp., is chairman; and Chief Technology Officer Jim Ellis is among various people coming from McCaw Cellular Services.

The company is funded by its founders, a team of private investors and a venture capital firm known as Ignition Partners of Bellevue, Wash.

"It was very apparent to me this was an exciting venture, a new way of thinking and an untapped marketplace," Ellis said. "An extension to the sea just seems like a natural extension; we affectionately call it the final frontier of wireless need and coverage."

The technology is an "agnostic" [Internet Protocol-based] system, which means it doesn't matter what type of phone a customer is using, Ellis said.

The platform on the ship, Ellis said, is very similar to a land-based wireless network, and relies on satellite connectivity.

"From a user's perspective, it's no different than if you took your phone from Washington, D.C., to Europe, it's just like roaming on another operator's network," Ellis said.

The technology uses a very small aperture terminal to bounce its signal to a satellite and back to a teleport. SeaMobile's technology interfaces with the satellite link already used by the cruise vessel, Ellis said.

SeaMobile's venture is unique, Ellis says, because the company controls coverage on the cruise itself; it can provide extra capacity if an event is being held in a particular area, or turn off coverage in another area if needed. SeaMobile also will be monitoring the performance of its network on a 24-hour basis.

The company announced Sept. 29 it signed a three-year contract with Saab Ericsson Space of Sweden, for which Ericsson will supply a wireless network, monitoring and roll-

out services.

Right now, SeaMobile is "actively pursuing cruise lines," Ellis said, though it has not signed any on for its service yet. The technology can be implemented once a deal is in place, and SeaMobile expects to have some signed within the calendar year, Ellis said.

Nancy Brumfield, the company's vice president of marketing, thinks the technology will appeal to cruise companies because a number of people choose not to go on cruises because of the lack of phone and Internet connectivity available.

Brumfield said the company also hopes to be the first to offer custom applications, such as e-mail and video, to its customers, though it will begin by offering voice and short messaging.

"Because the backbone of our technology is what's being used for land-based systems, we have the ability to do that," Brumfield said.

SeaMobile hopes its service will appeal to more than just cruise lines. The company is targeting oil and gas platforms, yachts, ferries and the container shipping business, the latter which Ellis says relies

on "antiquated technology" such as teletype for its communications needs. Cruise lines that run charter activities for businesses will be particular targets, Ellis said.

Though the market for SeaMobile's technology isn't crowded yet, there are competitors. Wireless Maritime Services, a joint venture between AT&T Wireless and Maritime Telecommunications Network (MTC) of Miramar, Fla., has arrangements with 40 cruise vessels, 12 of which already are equipped with wireless connectivity, according to MTC President David

Kagan. MTC combines wireless and satellite technology, but only Global System for Mobile phones can use the system.

MTC has relationships with Royal Caribbean, Celebrity and Norwegian cruise lines, among others, Kagan said.

"They have nowhere near the capabilities we have as far as understanding the business needs of the market, us being ex-cruise executives," Kagan said. "But we welcome them to the market and look forward to competing, and the better company will win out."

Comments: mfrederick@space.com

MONTHLY Launch Report

A GPS 2R-14 satellite was launched Sept. 26 by a Delta 2 rocket from Cape Canaveral Air Force Station, Fla. A Soyuz-FG rocket (right) launched a replacement crew and space tourist Greg Olsen to the international space station Oct. 1 from the Baikonur Cosmodrome in Kazakhstan.



SEPTEMBER Launches

Date	Launch site	Vehicle and provider	Payload and owner	Outcome or purpose
Sept. 2	Baikonur Cosmodrome, Kazakhstan	Soyuz, TsSKB-Progress	Cosmos-2415, Russian military	Launched satellite for Russian military.
Sept. 8	Baikonur Cosmodrome, Kazakhstan	Soyuz-FG, TsSKB-Progress	Progress-M cargo ship, Federal Space Agency	Launched resupply mission to international space station.
Sept. 9	Baikonur Cosmodrome, Kazakhstan	Proton-M, International Launch Services	Anik FIR, Telesat Canada	Launched telecommunications satellite.
Sept. 22	Vandenberg Air Force Base, Calif.	Minotaur, Orbital Sciences Corp.	STP-R1, U.S. Air Force Research Laboratory	Launched experimental satellite.
Sept. 26	Cape Canaveral Air Force Station, Fla.	Delta 2, Boeing	GPS 2R-14, U.S. Air Force	Launched GPS navigation satellite.

OCTOBER Launches

Date	Launch site	Vehicle and provider	Payload and owner	Outcome or purpose
Oct. 1	Baikonur Cosmodrome, Kazakhstan	Soyuz-FG, TsSKB-Progress	Soyuz-TMA, Federal Space Agency	Launched replacement crew to the international space station.
Oct. 8	Plesetsk Cosmodrome, Russia	Rokot, Eurockot Launch Services	CyroSat, ESA	To launch scientific research spacecraft.
Oct. 13	Jiuquan Satellite Launch Center, China	Long March 2F rocket, China Aerospace Corp.	Shenzhou 6, China	To launch China's second manned mission with two Taikonauts on a five-day mission.
Oct. 13	Guiana Space Center, Kourou, French Guiana	Ariane 5GS, Arianespace	Syracuse 3A, French military; Galaxy 15, PanAm-Sat	To launch military communications satellite and commercial TV broadcast spacecraft.
Oct. 19	Vandenberg Air Force Base, Calif.	Titan 4B, Lockheed Martin	NROL-16, National Reconnaissance Office	To launch classified payload.
Oct. 26	Baikonur Cosmodrome, Kazakhstan	Soyuz-FG, TsSKB-Progress	Venus Express, ESA	To launch Venus orbiter.
Oct. 26	Vandenberg Air Force Base, Calif.	Delta 2, Boeing	CloudSat, NASA and Calipso spacecraft, NASA and French space agency	To launch CloudSat to measure the vertical structure of clouds and Calipso to study the effects of clouds and aerosols on changes in the Earth's climate.
Oct. 27	Plesetsk Cosmodrome, Russia	Cosmos-3M, Production Association Polyot	Cluster of minisatellites, Research institutions in UK, China, Iran and Russia	To launch cluster of observation and research minisatellites.
Oct. 31	Kwajalein Atoll, Pacific Ocean	Falcon 1, Space Exploration Technologies Corp.	FalconSat-2, Defense Advanced Projects Research Agency (DARPA)	To launch a spacecraft to measure space plasma phenomena that affect GPS satellites.

COMPILED BY CORRESPONDENTS TARIQ MALIK AND SIMON SARADZHIAN

October 10, 2005

Ditching the Old and Shaking Things Up in Omaha

JEREMY SINGER, WASHINGTON

The commander of U.S. Strategic Command is determined to shake things up.

As the man in charge of the operational response to the most serious threats to U.S. national security, Marine Corps Gen. James E. Cartwright knows that the old ways of doing things are ill suited to meeting the asymmetric threats in an increasingly dangerous and complicated world.

His goal is to break down the traditional Napoleonic structure of the U.S. military where information and decision-making crawl up and down the chain of command. To accomplish that goal he is busy irritating and if necessary threatening those in his command to get them to break down long-standing barriers to improved performance and innovation.

Whether it is the organizational structure within his command, or the way that the military buys the space systems that have become critical to waging war today, Cartwright said during a Sept. 15 speech in Washington sponsored by Women in Aerospace that he is determined to find more effective and efficient ways of accomplishing Strategic Command's mission.

Cartwright says he began his campaign against the status quo at Strategic Command as soon as he arrived at its Omaha, Neb., headquarters in July 2004. The command, which had long been focused on the strategic deterrence mission, already had seen changes to its agenda that included folding in the mission of U.S. Space Command in 2002.

Pentagon officials were optimistic that adding the space mission to Strategic Command's portfolio would create operational synergy by placing responsibility of the offensive and defensive aspects of the nuclear mission within a single organization.

Cartwright, however, felt that more needed to be done. He asked three working groups — composed of officials from the military war colleges, retired officers and private industry — to find a better way of doing business.

"If you're not contributing, I don't want you as part of the organization. And if you're not contributing because you don't think the information will be perfect, I still don't need you. It's just not how we're going to do business."

Gen. James E. Cartwright

The most valuable input in the general's eyes came from industry. Cartwright has spoken in the past about the need for speed in military decision-making and operations, and compared it to animals in the wild that must continually move fast enough to avoid predators and find food themselves.

Cartwright chose to develop a new organizational structure for the command based on the business community's model of outsourcing and moving operations offshore. Implementing that model has not been easy, he said, because it requires

altering military organizations and cultures that have stood for decades.

The changes took operational responsibilities that had been handled at Strategic Command's headquarters and put them in the hands of service officials who already had acquisition authority and were not resident in Omaha.

"If you can push power closer to the source of where you make decisions, and produce products, you're going to have a better business model," Cartwright said. "You're going to make decisions faster, and the decisions you make have a better chance of being right."

However, this has made some military officials who jealously guard the power they wield "very, very uncomfortable," Cartwright said.

In at least one case, finding a taker for one new responsibility was not easy. Integrating missile defense activities was considered controversial and potentially expensive, said Cartwright.

In the end, Lt. Gen. Larry Dodgen, commander of the Army's Space and Missile Defense Command, stepped up and now leads the Joint Functional Component Command for Integrated Missile Defense.

"Dodgen has authority I don't have, and I can link him together with space and [intelligence resources] that he probably never had real access to," Cartwright said.

The new structure also includes a Joint Functional Component Command (JFCC) for Space and Global Strike; Intelligence, Surveillance and Reconnaissance; and Network Warfare, as well as a Center for Combating Weapons of Mass Destruction.

This structure may not only represent a new approach for Strategic Command, but changes for the units that deploy to battlefields around the world as well, Cartwright said.

"A good military commander wants his own intelligence — and we refuse to allow that to occur," Cartwright said. Instead, commanders must come to the new joint functional component commands for their needs in these areas, he said.

The biggest obstacles to making the

new structure work are cultural, not technical, in nature, Cartwright said. While considerable lip service has been paid to concepts like network-centric warfare and horizontal integration, people have been slow to put those concepts into practice, he said.

The General's Blog

Cartwright has implemented his own concept for better network-based collaboration at Strategic Command. Known as SKY Web, the network is intended to help bring together Strategic Command per-



Gen. James E. Cartwright

sonnel around the world to use their access to the Pentagon's Secure Internet Protocol Router Network to work together on addressing any number of issues.

Cartwright is the first to acknowledge that the concept was not universally loved at its inception. "It clearly was something you could rebel against and hate," he said. "And they did. They truly did."

Some of the personnel at Strategic Command, Cartwright said, have been skeptical that a nontraditional method could be used to exchange information and foster discussion on command issues that could in turn be used to take real actions. Some people do not feel comfortable using information that does not have the stamp of approval from a chain of general officers, and would prefer to wait for so-called "perfect" information, Cartwright said.

"So I had to get up and really irritate the crowd, and said 'tell me what [about] the current system is perfect?'" Cartwright said. "Where do I get perfect information? It doesn't exist."

Participating on the network is not optional. In fact, those who are shy about participating should look for work elsewhere, Cartwright said.

"If you're not contributing, I don't want you as part of the organization," he said. "And if you're not contributing because you don't think the information

will be perfect, I still don't need you. It's just not how we're going to do business."

The input must be genuine, Cartwright said. Logging in to give answers to simply tell the commander what he wants to hear is not appreciated, nor are the "tethered goats" — sergeants typing with a general looking over their shoulder and feeding them info to boost the appearance of participation within an organization, he said.

Subversive Electrons

One example that Cartwright cited as a good, productive use of the network took place earlier on the same day of his speech in Washington. Strategic Command personnel were dealing with a landing gear problem on the Predator unmanned aerial vehicle, and troops in the Middle East were able to exchange ideas with colleagues back in Omaha and elsewhere — "anywhere they were awake" — to resolve the issue, he said.

Ken Allard, a retired Army colonel and national security analyst for MSNBC, said in an interview that fostering discussion on problem solving through internal computer networks has become increasingly popular in industry in recent years. Encouraging input regardless of a person's relative spot on a corporate or mili-

SEE CARTWRIGHT PAGE 14

October 10, 2005

CARTWRIGHT FROM PAGE 13

tary totem pole is part of a growing trend towards the breakdown of traditional hierarchies — a breakdown that has been accelerated by the proliferation of technology, he said.

That such hierarchies lasted for more than 100 years is a testament to their value, “but they’re not going to last forever,” Allard said. “The fact that it’s happening at all says something about what the electron is doing to us — it is really subverting hierarchies around the world,” Allard said.

Space Acquisition

Meanwhile, Cartwright also has serious concerns about the Pentagon’s satellite development efforts, particularly the number of programs that are over budget and behind schedule.

“We’re so darn close to Chapter 11 [bankruptcy] in so many areas that it’s really uncomfortable for me as a commander,” he said.

While he believes that the Pentagon has “turned the corner” on its acquisition problems, Cartwright said the Defense Department still needs to find better business models for space acquisition, both for how it acquires systems, and the types of systems that it chooses to buy.

Intelligence missions, he said in an interview, demand that the Pentagon do more than just put

eyes on areas of interest. Instead those areas of interest need to be watched by multiple types of eyes, he said, because using a single type of sensor makes it too easy for an enemy to mask its actions.

The military has probably reached the point of diminishing returns with the accuracy of images from electro-optical sensors, and needs to push ahead with the development of new systems like the Space Radar constellation, Cartwright said.

The military hopes to begin launching the Space Radar satellites, which are intended to watch for moving targets on the ground regardless of time of day or weather conditions, in 2015, but the program is facing a significant reduction to its 2006 budget request of \$226 million on Capitol Hill.

The increased data about enemy positions provided by Space Radar could lead to significant reductions in the amount of munitions needed to destroy targets and also help reduce civilian casualties and collateral damage, Cartwright said. Requiring aircraft to carry fewer weapons per sortie — weighing perhaps 90 rather than 900 kilograms — can translate into fewer logistics demands as well, he said.

Space Radar also offers the possibility of faster response time to tactical needs by turning a flexible radar beam, rather than the entire spacecraft, to

look at different areas, Cartwright said.

However, the military will not be able to take full advantage of the data from those satellites unless it finds a new way of dealing with processing and distribution of the information once it reaches the ground, Cartwright said.

The solution will likely require heavy use of automation, as troops cannot afford to wait for data on moving targets to be analyzed, reviewed and approved by a long chain of officials, who also risk introducing errors into the data, he said.

The high projected cost of the Space Radar satellites will force the military to consider a variety of options for its overhead architecture — and not all of them will be satellites, Cartwright said.

The military must decide how big a satellite constellation is needed to keep tabs on the entire globe at all times, and how it can respond to times of peak need during a crisis with the launch of aerial reconnaissance assets or small spacecraft that can be launched on short notice, he said.

Promoting Competition

Cartwright also is hoping to find some innovative ideas for the development of new space systems from other parts of the government.

The desire for competition does not come from dissatisfaction with the Air Force Space Command, or a lack of trust that the Air Force has solved the problems that have plagued its management of new satellite programs, Cartwright said.

“My belief is that competition will drive the market,” Cartwright said. “If the only person that builds spacecraft for the government is Air Force Space Command, and I go to that warehouse for every product, there is



SPACE NEWS PHOTO BY NICK KOZAK

▲ Don Kerr (above), National Reconnaissance Office director, said he had worked with Gen. Cartwright and said he hoped to be the first avenue that Strategic Command would turn to for the development of new intelligence capabilities.

space concepts, he said.

“I would like to be able to give them business in a way that drives the competition and the organizations in a positive direction,” Cartwright said.

Asking the same satellite developers who designed a legacy system to develop a new generation often leads to incremental improvements, but asking other officials for a fresh take could yield something much different — and more capable, Cartwright said.

Cartwright said that his existing contacts in the intelligence community could help with the competition concept, but indicated that he would like to make it a formal part of acquisition procedures so that such

from the military.

One issue that would likely need to be worked out before implementing the concept of competition is how to pay for the satellites, according to one industry official. Agencies that traditionally build satellites primarily for the intelligence community may be reluctant to take on projects for the military unless funding came along with the requirements, the official said.

However, one intelligence community official already has expressed interest in helping to meet Strategic Command’s needs in this area.

NRO Director Don Kerr told reporters during a Sept. 1 briefing at the Pentagon that he had

“If the only person that builds spacecraft for the government is Air Force Space Command, and I go to that warehouse for every product, there is not a lot of competition. There are a lot of well-intending, energetic people, but there is not a lot of competition.”

Gen. James E. Cartwright

not a lot of competition. There are a lot of well-intending, energetic people, but there is not a lot of competition.”

Cartwright said that he would like to bring emerging user requirements to the Central Intelligence Agency, the National Reconnaissance Office (NRO) and Air Force Space Command, as well as other government and military laboratories, and ask for the best ideas that can be accomplished in the fastest and least expensive manner. Other entities that could play a role here include commercial firms that are developing innovative

work can continue well into the future.

One congressional aide cast doubt that having internal competition within the government for national security space systems would yield to new innovation for satellite designs, given that contractors who already compete amongst each other are the ones that ultimately build the hardware.

But another staffer disagreed, and said that contractors largely execute parameters given to them by the Pentagon, and that innovation on design and capabilities largely comes

worked with Cartwright during the general’s previous assignment as director of force structure, resources and assessment for the Joint Chiefs of Staff, and said that he hoped to be the first avenue that Strategic Command would turn to for the development of new intelligence capabilities. During that time, Kerr was the director of science and technology work at the Central Intelligence Agency.

“If we can do it, I want to make sure we’re good enough to merit that first call,” Kerr said.

Comments: jsinger@space.com

AIRCLAIMS SPACETRAK™ LAUNCH & SATELLITE DATABASE

ONLINE


COMING SOON!

- Multi-user access to the latest industry data
- Customised queries on reliability, histories & future launches
- Automatic update service
- Data export facility to Excel, Word & PowerPoint

For more information:

www.airclaimsportal.com

Tel: +44 (0) 20 8897 1066
space@airclaims.com

See SpaceTrak at
IAC 2005 Fukuoka, Japan
UK  Pavillion D5



AIRCLAIMS 

October 10, 2005

NEWS FROM STRATEGIC SPACE 2005

Fragile Industrial Base Seen as Long-Term Issue

COLIN CLARK OMAHA, Neb.

A “fragile industrial base” and a relatively small work force are among the long-term problems the space industry must address to fix the cost overruns and schedule delays that have afflicted a number of programs, a senior U.S. Air Force acquisition official said.

“This is a strategic issue for the nation: acquisition for strategic success,” Air Force Lt. Gen. Michael A. Hamel, Space and Missile Systems Center commander, said Oct. 6 at the Strategic Space 2005 conference here. The cost and schedule problems are “symptoms” of the erosion of systems engineering discipline and expertise over the last decade, he said. To assure that the long-term problems are fixed, the work force issue has to be addressed, he said.

Much attention is being focused on the problem, Hamel said, because of the U.S. military’s “growing use and dependence” on space systems and also because once those systems are in orbit, they perform extremely well and give U.S. forces a decisive advantage over any adversary.

Hamel cited success stories in U.S. space system reliability, longevity and performance, including GPS, the Defense Meteorological Support Program weather satellites, and the Delta 2 and Evolved Expendable Launch Vehicle rockets.

But Hamel made clear he knows fixing the acquisition problem is a must. He began his comments with a recent quote from Acting Air Force Secretary Pete Geren to illustrate just how serious the challenges are: “We are fighting three wars: terrorism, disaster relief and acquisition reform.”

Echoing Hamel, Richard W. McKinney, director of space acquisition in the office of the undersecretary of the Air Force, said, “we have the best systems in the world today in space. Having said that, we have some issues. Simply stated, we need to deliver on our promises ... It’s an effort that’s going to take the war fighters, the combat commanders, the industry and it’s going to take Congress. The government should not over-ask and industry should not over-promise.”

McKinney said the users of military satellite systems need to be involved in the acquisition process well before the Air Force issues requests for proposals to industry in order to minimize the number of changes that industry is asked to make once a program is under way — a problem known as requirements creep.

“We have proven processes, but we don’t always follow them,” McKinney said during an appearance with Hamel in a panel session dubbed “Acquisition for Strategic

Success.”

Several panelists said industry officials, Air Force acquisition personnel and the users of space systems need to work more closely together.

“Dialogue — a frank, open and trusting relationship — is what we’re after,” said Kenneth “Steve” Callicutt, director of capability and resource integration at U.S. Strategic Command. Strategic Command is responsible for broad oversight and long-term planning of space operations.

The government probably needs to have a greater presence in factories, Callicutt said. Also, contractors and the government should be prepared to grant each other complete access to their program databases, he said.

McKinney said the requirements process — amended three years ago — is actually working well, but added: “We need more flexibility.” To get there, the military has to be ready to listen to industry when it comes in with the argument that some requirements will just cost too much for the budget to bear.

“If you want less cost then you have to have less requirements,” he said.

McKinney agreed with Callicutt’s point about improved dialogue: “We need to have a lot more and have a feedback loop between the acquirers and the users.”

Callicutt added later in the discussion that many systems get used in ways that requirements and acquisition officials did not envision. More experimental prototyping might help reduce the gap between a system’s design and how it actually gets used, he said.

Air Force Brig. Gen. Larry James, director of signals intelligence systems in the acquisition and operations directorate of the National Reconnaissance Office, said the agency learns from soldiers, sailors and airmen every day and uses the information to improve and redesign its classified systems.

James also cited the importance of industry-wide specifications and standards, as well as the management of subcontractors.

“We need to invest a lot of energy into” subcontractor management, he said, because every time a subcontractor has a problem — large or small — it can ripple through a program, slowing work on other aspects of a system. That can mean schedule delays and cost increases.

James also said the space industry and military have to broaden their perspective beyond satellites. “We can’t just look at spacecraft,” he said, but also must consider ground systems, reconnaissance aircraft, and other sensors and networks with which the spacecraft may connect.

Comments: cclark@space.com

Sega Pushes Back-to-Basics Approach To Cure Military Space Acquisition Woes

LON RAINS, OMAHA, Neb.

Full integration of spacecraft into other operational military systems, fixing U.S. Air Force acquisition programs, and developing a better-trained military and civilian work force top the list of priorities for Ron Sega, the new undersecretary of the Air Force.

In a speech and in an interview here during the Strategic Space 2005 conference sponsored by *Space News* and the Space Foundation, Sega said it is “time to get back to basics.”

Like a number of speakers at the two-day conference, Sega noted in his Oct. 6 address that the U.S. military satellites already in orbit are highly successful and give American forces a dominant advantage. Many, he said, are performing much better than expected, and operating well past their design lives.

“Space is really, really important. It is absolutely indispensable in every aspect of how we plan and conduct military operations,” added Air Force Lt. Gen. Michael A. Hamel, commander, Space and Missile Systems, Air Force Space Command.

Fixing the problems with space programs now in development, Sega said, is essential for keeping the U.S. advantage in the future.

Sega said part of the reason for the cost overruns and delays plaguing major U.S. military space programs is that the Air Force and industry have lost a great deal of their systems engineering expertise over the last decade. Restoring that systems engineering capability would help the Air Force restore discipline into the acquisition process, he said.

In outlining the back-to-basics approach he intends to insist on for space acquisition, Sega emphasized: improving the Air Force’s cost estimates; making much greater use of proven hardware for operational systems; designing a program for testing at key phases of development and manufacturing; and increased government oversight of projects.

Sega said the Air Force must reduce the time it takes to get satellite programs from the drawing board to the launch pad. One of the ways to accomplish that, he said, will be getting Air Force acquisition people to take a hard look at the technical maturity of spacecraft components and sensors with an eye toward reducing risk.

Sega said that while he was not suggesting a risk-free approach, the Air Force needs to utilize designs that have a much higher level of technical maturity than many of today’s programs. New technology, he said, should first be developed in experimental programs, then tested on what he called developmental spacecraft and, once proven, incorporated into the designs of operational systems.

The state of space acquisition programs was one of the major topics addressed during the two-day conference.

Most if not all of the Air Force’s major established satellite development programs are significantly over budget and behind schedule. Newer projects, such as the Space Radar and Transformational Satellite (T-Sat) communications system, are being scrutinized by members of Congress who are leery of more big programs that could experience similar problems.

The Senate version of the 2006 Defense Appropriations Act recommends cutting \$250 million from the Air Force’s \$836 million request for the T-Sat program. The bill also proposes fencing off \$150 million of the money remaining for the possible acquisition of another Advanced Extremely High Frequency (EHF) satel-



Ron Sega

lite in case T-Sat encounters substantial development delays. The House of Representatives is recommending a \$400 million cut in the T-Sat program.

Report language accompanying the Senate bill directed the Air Force to come up with a plan within four months of the bill’s passage “to improve space acquisition and re-establish the proud legacy of successful satellite development.”

Richard W. McKinney, director of space acquisition in the office of the undersecretary of the Air Force, said Sega will spend a full day the week of Oct. 10 reviewing the status of “the full run” of military satellite telecommunications programs.

In an Oct. 6 interview, McKinney and Sega said that review is just the first of several in-depth reviews Sega is expected to make. “This will take months. It is very complicated,” McKinney said. “It won’t be the only review he does of it.”

The Senate also recommended cutting \$126 million from the Pentagon’s \$226 million request for the Space Radar program. The report accompanying the Senate bill noted that the current cost projections for the program are “very high and bring into question the program’s affordability.”

When asked if he was concerned that Congress will continue to be reluctant to fund Space Radar, Sega said the key will be the recommendations of the Quadrennial Defense Review currently under way.

An endorsement of the Space Radar’s capabilities in the review likely would heavily influence Congress’ view of the program, Sega said.

Sega also said he will be working with U.S. Strategic Command to get space communications and sensor platforms fully integrated with the land, sea, air and subsurface systems needed for modern military operations.

Comments: lrains@space.com

INTEGRATED BATTLESPACE

NATO's Missile Defense Program Makes Slow, Tentative Progress

BROOKS TIGNER, BRUSSELS

No other initiatives better exemplify the best and worst of NATO's defense aspirations than its missile defense objectives for protecting deployments abroad and for shielding the alliance's home territory against attack.

After years of study and delay, for example, the alliance's layered theater missile defense (TMD) program is finally moving ahead. Designed to make all national deployable theater missile systems compatible with the alliance's Air Command and Control System (ACCS) — now being modernized — the TMD program's management office will become operational in early 2006.

Soon afterward will be a call for tenders from industry to develop an integration test bed for the TMD system's low-altitude layer. NATO's own project, valued at \$700 million, is focused on the active-defense portion of TMD.

The catch, however, is that a functioning TMD depends on the precision detection and communication capabilities of ACCS. And that program's first modernization phase — known as Level of Operational Capability — is plagued with glitches.

The initial NATO contract, worth \$500 million, was signed in 1999 with Air Command Systems International, a French-registered company based near Paris and formed by two shareholders, the U.S. defense firm Raytheon and France's Thales.

"ACCS is the backbone for TMD, but it has a lot of problems to resolve," a NATO official said. "They've put all the new pieces together and it doesn't work."

ACCS is intended to combine and automate the planning, tasking and execution of all air operations at the tactical level to seamlessly manage all types of air operations over NATO's territory and beyond. It will do this by allowing national militaries to integrate their air traffic control, surveillance, air mission control, airspace management and force management functions with the ACCS.

Part of the problem with its update effort is that planners at the alliance's Supreme Headquarters Allied Powers Europe military command headquarters in Mons, Belgium, have piled operational demands onto the system. This has added complexity, delay and cost overruns to the project.

As a result, Level of Operational Capability is running 12 to 18 months behind its original target date for operational status in 2005-2006.

"At some point, you have to draw the line and say, 'That's it. No more requirements, gentlemen, if you want this project to reach completion.' I think the military guys have understood that now," the NATO official said.

Since the alliance is looking at about a 15-month delay in getting ACCS' first-phase modernization ready for testing, the TMD project will have to be paced accord-

ingly, NATO officials said.

Once the TMD program office opens its doors in The Hague early next year, with a staff of approximately 20, it will call for proposals by mid-2006 for the integration test bed.

Although the winning bidder will use the other program's delay to get the TMD integration test bed ready for trials with Level of Operational Capability toward early 2007, the delay in ACCS still has a knock-on effect on funding.

"We can't spend much money on TMD until [Level of Operational Capability's] functioning is stabilized," the NATO official said.

Missile Defense Debate

A similar coordination fissure runs through the alliance's interminable debate on missile defense and how to protect its home territory from an incoming attack.

NATO officials constantly refer to the threat of weapons of mass destruction and the proliferation of missile technology and know-how to volatile regions around the world — fears rendered only more acute in Europe by the terrorist attacks against Madrid in March 2004 and London in July.

And yet NATO's European allies remain deeply divided among themselves and against the United States in their assessment of the missile threats to Europe.

"It's not a technical issue: The technology is there and waiting to be used, as we've seen in the United States," another NATO source said. "It's political. Very political."

Indeed, to design a missile defense system means first agreeing on the threat and where it may originate. And that is something most European countries do not want to advertise for fear of provoking the threat.

"We have problems of instability facing us across the Mediterranean, all around Turkey's borders, in the Balkans and around the Black Sea and Caucasus regions — areas that will be right next door to the [European Union] when Romania and Bulgaria join the union [tentatively in 2007]," a European diplomat added. "What are we going to do? Point radars and missile heads in specific directions? What kind of impression would that give? It would be a return to a new cold war."

NATO officials admit the debate on missile defense is moving at a turtle's pace. Although a massive new 10,000-page study on the architecture, cost, performance criteria and military requirements of missile defense was completed July 12 by a consortium of companies led by San Diego-based Science Applications International Corporation, few in NATO expect it go anywhere fast.

"We'll give our opinion on it by the end of this year and then we'll pass it on" to the North Atlantic Council, NATO's highest political authority, a NATO defense planner said. "And then the politicians will start their debate — for a long time, I suspect."



Cobra Dane Radar

Cobra Dane Radar Tracks Air-Launched Target

The Pentagon used its Cobra Dane radar sensor to track a ballistic missile during testing Sept. 26, according to a U.S. Missile Defense Agency news release.

The Cobra Dane radar, which is located in Shemya, Alaska, is expected to play a key role in tracking ICBMs for

the Ground Based Midcourse Defense System.

During the test, the radar tracked a missile that was dropped by a U.S. Air Force C-17 cargo aircraft before igniting. Data from the radar was then fed into the missile defense fire control system.

General Says Army Forces Need Better Access to Intel

The U.S. Army needs to better connect its intelligence databases to ensure that deployed troops have access to information about the various threats on the battlefield, according to a senior service official.

In some cases in Iraq, a lack of access to certain databases has kept troops from reading information about enemy ambush points that lay directly in their routes, said Lt. Gen. John Kimmons, the Army's deputy chief of staff for intelligence.

Access to data about immediate threats to troops on the battlefield is "essential, not a luxury," Kimmons said during a panel discussion at the Association of the U.S. Army's 2005 Annual Meeting in Washington.

Meanwhile, Internet access has allowed Iraqi insurgents to rapidly ramp up the sophistication of their weaponry, Kimmons said. Online information enabled the insurgents to improve their bomb-making skills in a matter of weeks, whereas it took years for guerillas in places like Northern Ireland to make similar improvements, Kimmons said.

Northrop Grumman Tests New Global Hawk Sensor

Northrop Grumman Corp. of Los Angeles has completed testing of an upgraded imaging sensor suite for its Global Hawk unmanned aerial vehicle, clearing the way for the instrument's operational use.

"The installation of this new sensor package on Global Hawk is a significant milestone for the program," George Guerra, Northrop Grumman's Global Hawk pro-

gram manager, said in an Oct. 4 company news release. "The imagery provided by this sensor, even under the worst imaginable environmental conditions on the ground, will go a long way in meeting the needs of the warfighter."

The upgraded sensor was built for Northrop Grumman by Raytheon Space and Airborne Systems of El Segundo, Calif. Two Global Hawk aircraft outfitted with the new sensor package are expected to be deployed this fall, Northrop Grumman said in the news release.

The Global Hawk, which has seen extensive use in Iraq, is capable of providing surveillance from altitudes around 19,000 meters for more than 35 hours at a time.

Former SMC Director Kenneth Schultz Dies

Kenneth W. Schultz, a retired U.S. Air Force lieutenant general who headed the service's Space and Missile Systems Center (SMC) from 1972 to 1975, died Sept. 20.

Schultz, who was born in 1920, served in several space- and missile-related positions prior to taking the top spot at SMC. He was in charge of the Air Force's space development planning at the Pentagon from 1961 to 1964, and then became the service's assistant for manned spaceflight.

In July 1965, Schultz went to Norton Air Force Base in California, where he served as deputy for ballistic missile re-entry systems. In June 1967, he became deputy for the Minuteman missile program, where he helped develop the Minuteman 3, the country's first ICBM with multiple independently targetable re-entry vehicles.

WASHINGTON AeroSpace Briefing

SAVE \$200
1-YEAR SUBSCRIPTION
~~\$695~~ Now \$495
For a Limited Time

Be the first to know

Stay one step ahead with news and insight on the people and events in Aerospace that impact your business.



Twice a week expect an inside view on:

- **Decision Makers:** Who is making a difference. What makes them tick?
- **Legislation and Budgets:** What has the support of Congress? What does not?
- **Companies:** Which companies are on their way up? Which have challenges?
- **And much more.**

Many of your colleagues already rely on *Washington Aerospace Briefing*. So, don't miss out.

Act now and you will pay \$495, a **\$200 savings** off a 1-year subscription of 90 issues.

Go to www.WashingtonAeroSpaceBriefing.com/subscribe

SPACE NEWS
INTERNATIONAL



COMMENTARY

< EDITORIAL >

Inevitable Consolidation

Orbimage's planned acquisition of Space Imaging is a welcome and healthy development that will give the U.S. commercial satellite imaging industry its best chance of long-term success.

It has been clear for some time now that consolidation among the three U.S. operators of high-resolution imaging satellites was inevitable — the only question was which company would get swallowed up by a competitor. The answer came last September when Orbimage stunned Space Imaging to win the second and last NextView contract from the U.S. National Geospatial-Intelligence Agency.

With a third U.S. competitor out of the picture, Orbimage and fellow NextView contractor DigitalGlobe will be in a much better position to win enough international and private-sector business to go along with their steady government revenues to justify being labeled commercial. Orbimage will benefit from Space Imaging's work over the years building up an interna-

tional network of regional affiliates, and if Orbimage elects not to continue certain partnerships — as it has suggested — that could provide openings for DigitalGlobe to expand its international reach.

On the government side, things seem to be breaking the industry's way, although not necessarily for the best of reasons. Continuing delays to the Future Imagery Architecture spy satellite program could increase the Defense Department's reliance on commercial imaging satellites over the next several years. The fact that the National Reconnaissance Office recently canceled part of Boeing's contract to build the system suggests that talk in the past few years of a gap in U.S. imaging capability could be turning into reality.

Meanwhile, events like the war in Iraq and Hurricane Katrina have helped put — and keep — the industry on the map.

Orbimage and DigitalGlobe probably are not yet

where they want to be in terms of sales to customers other than the U.S. military and intelligence community. But Orbimage has said it will consider buying an upgraded version of Space Imaging's Ikonos satellite because of that design's appeal to certain international customers. If they follow through with such a purchase, that would be a very encouraging sign. DigitalGlobe's newly disclosed plan to deploy two next-generation satellites is another.

While DigitalGlobe and Orbimage have NextView contracts in hand, they still have to deliver. The spate of satellite and launch failures that just about killed the commercial remote-sensing industry in its cradle not so long ago stands out as a stark reminder that there are no guarantees in the space business.

But once Orbimage's acquisition of Space Imaging closes, the U.S. side of the industry will at least be sized properly for success. There will be nothing left to do at that point but execute.

Galileo Held Hostage

The ongoing impasse over funding for Europe's Galileo satellite navigation system is pushing the project's already-questionable economic viability onto ever shakier ground and likely will force a day of reckoning sooner rather than later.

Certain delegations to the European Space Agency (ESA), Germany in particular, are refusing to pony up their share of a 400 million-euro (\$481 million) cost overrun on the project without guarantees that key elements of the Galileo system, such as the satellite control center, will be located within their national borders. As a result, ESA cannot sign the 1.1 billion-euro contract with the Galileo Industries consortium to implement the In-Orbit Validation phase of the project.

The impasse, of course, is nothing new — it has been holding up the contract for the last 10 months. Since December, Galileo Industries has been operating under a 150 million-euro interim contract that was

supposed to expire in June but was extended twice, first through Sept. 30 and then through Oct. 31.

With Galileo Industries now warning that the money cannot be stretched further, some industry officials are urging ESA Director-General Jean-Jacques Dordain to buy more time by signing another interim contract.

To his credit, Mr. Dordain has refused, and on this he should not waver. ESA's members have had more than enough time to ponder the pros and cons of participating in the massive industrial and political undertaking that is Galileo. Those who committed to invest did so without guarantees as to their roles in the program, presumably on faith that Galileo as a service would prove an engine for economic growth and thus provide benefits to all.

The principal shareholders in Galileo, including the private-sector consortium to be selected this year to run the project, should be given the leeway to

choose a primary ground control center based on the merits of those applying for the job. The job should not be assigned based on a country's ability to hold the program hostage and thus drive up its cost.

Galileo's inauguration already has been delayed from 2008 to 2011, and will be pushed back further the longer the impasse remains unresolved. As a result, the system will become more expensive — Germany will be among the first to complain about the bill for the current delay — and even less likely to produce the financial returns upon which it was justified.

It is high time that Germany and any other holdouts step up and demonstrate that Galileo represents more to them than a place to plant the national flag. If they cannot, it is best that they acknowledge that now, and give the other European nations a chance to re-evaluate their participation based on a different set of assumptions.

LETTERS

Review Past Booster

In response to the commentary by Arnold D. Aldrich ["Space Shuttle Past and Future," Aug. 29, page 19], Mr. Aldrich is indeed correct that liquid fuel boosters have been investigated several times since the start of the shuttle program. I participated in the first such study by the (former) Rockwell International Corp. under contract to NASA's Marshall Space Flight Center.

The study, "Shuttle Growth Study," published in May 1977, evaluated several liquid booster concepts. The final selected booster was the LO2/LH2 version, which was sized for an orbiter carrying a fictitious 100-kilogram payload. The principal focus was on the booster, so we did not investigate the changes in the orbiter design that would have been necessary for that payload. However, we did study that, and more, in later in-house studies.

Today, I would recommend that booster coupled with the Rocketdyne RS-2100 engine that was defined for the (then) Rockwell X-33 vehicle. It was to be a greatly improved version of the highly successful space shuttle main engine and was to have incorporated some 20 years of applied advanced development into the current space shuttle main engine

Carl Ehrlich
Associate Fellow AIAA

SPACE SHOT

"We are still awaiting the mission to end world hunger. I think that comes later today."

U.S. Air Force Lt. Gen.
C. Robert Kehler

deputy commander,
U.S. Strategic Command

joking about the breadth of Strategic Command's missions, which include space and global strike; integrated missile defense; intelligence, surveillance and reconnaissance; network warfare; and most recently, combatting weapons of mass destruction. Kehler's comments came during his keynote speech at the Strategic Space 2005 conference in Omaha sponsored by *Space News* and the Space Foundation.

SPACE NEWS

Daniel A. Stone
President, Chief Executive Officer

William A. Klanke
Publisher,
Vice President, Trade Publishing —
Business Development
bklanke@space.com

Lon Rains
Editor,
Vice President, Trade Publishing —
Editorial
lrains@space.com

SPACE NEWS is a
registered trademark of



Deputy Editor:
Warren Ferster
wferster@space.com
Tel: 1 (703) 658-8418

Copy Chief:
Wendy Sandoz
wsandoz@space.com
Tel: 1 (703) 658-8419

Copy Editors:
Tom Wiseman
twiseman@space.com
Tel: 1 (703) 658-8414

Brad Amburn
bamburn@space.com
Tel: 1 (703) 658-8447

Paris Bureau Chief:
Peter B. de Selding
pdeselding@compuserve.com

WASHINGTON STAFF WRITERS:

Senior Staff Writer
Brian Berger
bberger@space.com
Tel: 1 (703) 658-8416

**Military Space,
Missile Defense**
Jeremy Singer
jsinger@space.com
Tel: 1 (703) 658-8423

Business
Missy Frederick
mfrederick@space.com
Tel: 1 (703) 658-8424

EDITORIAL OFFICES:

Washington
6883 Commercial Drive
Springfield, VA
22159-0500 U.S.A.
Tel: 1 (703) 658-8400
Fax: 1 (703) 750-8913

Paris
56 rue du Faubourg St. Antoine
75012 Paris, France
Tel: 33-1-53-33-09-08
Fax: 33-1-53-33-00-99
pdeselding@compuserve.com

Subscriber Services
Toll free: 1 (800) 368-5718
Tel: 1 (703) 750-7400
Fax: 1 (703) 658-8314

CORRESPONDENTS:

Florida
Ben Iannotta
25240 Margaret St.
Summerland Key, FL 33042
U.S.A.
Tel: 1 (305) 744-6481
Tel: 1 (305) 745-4088
biannotta@aol.com

India
K.S. Jayaraman
193 Samachar Apts.
Mayurvihar-1, Delhi-110091,
India
Tel: 91-11-271-1159
killugudi@hotmail.com

Israel
Barbara Opall-Rome
51A Ben Yehuda St.
Herzeliya 46403, Israel
Tel: 972-9-951-8258
Fax: 972-9-951-8257
opallrome@barak-online.net

Russia
Simon Saradzhyan
16 Vyborgskaya Ulitsa
Moscow, Russia, 125212
Tel.: 7-095-937-3399
Fax.: 7-095-937-3393
simons@imedia.ru

Japan
Paul Kallender-Umezue
150-0002 Shibuya Ku
Shibuya 1-20-17
Shibuya Mitake Hime 408 Japan
Tel.: (81) 3-3232-2430
pkk@tkb.att.ne.jp

October 10, 2005

A Tale of Two Missile Defense Systems

◀ VICTORIA SAMSON ▶

While much has been made of the U.S. fledgling missile defense system, it is often forgotten that another country already has deployed a layered national missile defense system. Israel's Arrow Weapon System has been fielded in two batteries and provides one tier of its hoped-for defense against tactical ballistic missiles (an older version of the Patriot missile defense system provides the second tier).

While the Arrow's effectiveness against missile threats is uncertain — it has never been tested against a Scud — its program designers had entirely different mindsets and objectives from their American counterparts that merit further examination.

The Arrow was co-developed with the United States, but responsibilities were cleanly and firmly split between the two countries. The United States was charged with developing the interceptor, the Arrow 2, and its launcher, while the Israelis designed the rest. They created the Green Pine Fire Control Radar, which was based on the technology they had at the time; the Citron Tree Fire Control Center, which they built in a man-in-the-loop precaution to prevent friendly fire; and the Hazel Nut Tree Launcher Center. Two batteries have been fielded thus far.

Compare this to the U.S. Ground-based Midcourse Missile Defense (GMD) system, which is designed to provide the

United States with a defense against ICBM attacks. Its configuration includes six ground-based interceptors that are still in the very early stages of development and have only begun their initial fielding; a sea-based, X-band radar program that is suffering developmental delays; the Space Tracking and Surveillance System for midcourse target tracking, which is not expected to have its test launch until 2007; and a command and control system that requires 20,000 miles

As of this writing, the United States has only engaged in ballistic missile defense during operations overseas, and there are serious doubts about any missile threat that the U.S. homeland might face.

of fiber optic cable and has yet to firmly establish a firing chain of command.

Granted, the U.S. homeland is a vastly larger area to defend, but what is striking when compared to the Israeli system is how many more gaps there are in the needed architecture for the U.S. system.

When the Israeli government first began considering the Arrow in 1987, it was a controversial topic, as the military fought it tooth and nail as being “un-

necessary and unaffordable,” according to Uzi Rubin, the Arrow's founder. In the next year, it was grudgingly allowed to begin development as an experiment; but it wasn't until the 1991 Gulf War when Iraq threatened the Israeli homeland with volleys of missiles that it spun up into a full-scale program.

While there have been a few naysayers about missile defense in the Pentagon who were concerned that the services would suffer from missile defense spend-

ing, it was decided that the Israeli Air Force would be in charge of the operational requirements documents, while the Israeli Missile Defense Organization (IMDO) would be responsible for the budget and the technology requirements documents.

There is no similar division of labor within the U.S. missile defense programs. To begin, operational requirements are no longer demanded of the various missile defense systems, as the Pentagon claims that they are too restrictive for their development. The U.S. Missile Defense Agency does release annual budget requests, but no official estimate of overall missile defense costs has been made public, nor are there any apparent technological milestones required for the system.

The way in which the Israelis took on their technical challenges is very different from how the United States has handled things. The Israelis used existing or low-risk technologies to develop their system, figuring that they could live with it being “good enough” (according to Rubin).

Simulation was used extensively at all levels. Likewise, all components of the system were integrated into the overall architecture from the very beginning. Perhaps most important were the flight tests. They were treated not as program

ing, overall the massive sum spent on the program across the board — an estimated \$92.5 billion since 1983 — has done much to quell a lot of the military's qualms about it. As of this writing, the United States has only engaged in ballistic missile defense during operations overseas, and there are serious doubts about any missile threat that the U.S. homeland might face.

In the process of designing the Ar-

SEE SAMSON PAGE 20

U.S. National Security Policy Toward Space: The Debate That Should End but Won't

◀ BAKER SPRING ▶

In the months before he became secretary of defense in 2001, Donald Rumsfeld headed a review commission that warned that the United States could suffer “a space Pearl Harbor.”

In fact, we're not only vulnerable to a surprise of Pearl Harbor proportions, there also is no question that if the U.S. suffered a successful military assault on its space-based assets that both the military and economic consequences would be severe.

The Bush administration has taken a number of steps to lessen the likelihood of such a catastrophe. It issued policy declarations in the 2001 Quadrennial Defense Review and the 2005 National Defense Strategy as well as military doctrinal guidelines issued by the Joint Staff in 2002 and the Air Force in 2004. All argue that the United States' ability to operate in space is essential to national security and that a variety of capabilities must be maintained to preserve access to space. This effort should culminate in the near

future with U.S. President George W. Bush issuing a new space policy directive that builds on one signed by President Clinton in 1996.

Given that the Bush directive probably will say much of what the Clinton directive did — that, regarding national security requirements, “the United States will develop, operate and maintain space control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries” — the Bush directive should end the debate.

But it won't. In fact, the debate has just begun, since arms-control groups have placed preventing the “weaponization of space” near the top of their agendas. Such groups have long supported a treaty proposed by China and Russia at the United Nations Conference on Disarmament to ban the deployment of weapons in space.

These groups launched their first legislative bid July 20 when Rep. Dennis Kucinich (D-Ohio), offered an amendment to the Foreign Affairs Authorization

Bill requiring President Bush to enter into negotiations on the kind of treaty proposed by the Chinese and Russians. Although the amendment was rejected, 302-124, its supporters have not retreated and, in fact, can be counted on to offer similar amendments in the future.

The anti-weaponization crowd puts forth a series of weak arguments. For instance, they:

- Assert that space is not now weaponized. When the most powerful weapon ever — the nuclear-armed intercontinental ballistic missile — travels through space for a majority of its flight time, one can't claim that space is not weaponized. The United States also deploys a wide variety of weapons systems components in space that detect military targets and direct munitions against those targets.

- Posit a false choice between a policy of space dominance or reassurance. These groups argue that the United States can either reassure other states regarding its policies toward space or pursue

space dominance. This ignores the obvious third option — reassurance through dominance, which is precisely the U.S. policy on the high seas.

- Mislabeled space as a sanctuary and inviolable. These groups seek to define space as some sort of sanctuary. In reality, space is a place, and our military must treat it as part of the geographic reality that all militaries have had to account for since the dawn of civilization.

- Charge the Bush administration with being an aggressor in space. Those seeking to “prohibit the weaponization of space” try to paint the United States as the initiator of a pending “arms race in space.” Actually, the Bush administration wants to dissuade other states from engaging in such a race by convincing them it is a race they cannot win.

- Simply assume that the United States will be capable of responding effectively to an attack on its space-based assets. These groups blithely assert that the United States will be able to re-

spond effectively to any attempted attack on its space-based assets regardless of their own relentless attempts to curtail the very programs that would allow the U.S. military to respond effectively. These include anti-satellite weapons, space-based missile defense interceptors and certain kinds of fighter spacecraft.

The weakness of the case of arms-control advocates does not clinch the debate over U.S. security policy in space. Opponents of the Bush administration's policy will fight and fight hard. Don't be surprised if sophistry or outright demagoguery enter the argument.

Those who seek to prevent the “space Pearl Harbor” the Rumsfeld Commission warned of in 2001 have the facts on their side. But they will have to marshal them effectively to prevail. The nation's security hangs in the balance.

Baker Spring is senior analyst at The Heritage Foundation (heritage.org), a Washington-based research institute. He specializes in missile defense and space weaponization issues.

Terminal Distributor Sees Promise in BGAN Market

MISSY FREDERICK, WASHINGTON

As Inmarsat prepares to launch its Broadband Global Area Network (BGAN) in 2006, its various equipment distributors are anticipating a change in the market for the ground equipment needed to use the new satellite-based mobile communications service.

While existing Inmarsat terminals mainly are being used by governments and large-scale companies such as high-profile news organizations, the faster, smaller and cheaper BGAN terminals may appeal to a broader customer base, industry members say.

Thrane & Thrane, an Inmarsat terminal manufacturer based in Copenhagen, Denmark, has been changing its business strategy to adapt to the new technology.

In 2004, Thrane & Thrane purchased its largest distributor, Land Sea Systems of Virginia Beach, Va., in an effort to become more of an end-to-end solutions provider. In other words, Thrane & Thrane will not just relinquish control of its terminals after sale—in some cases, it will distribute that terminal to its customer and provide technical assistance and supervision of its use.

George Spohn, the company's vice president for sales and marketing, has been approaching new customers in several new markets that he thinks will be attracted to the more advanced BGAN technology. Spohn said he expects BGAN to become much more widely accepted than



While existing Inmarsat terminals mainly are used by governments and large-scale companies, Thrane & Thrane, an Inmarsat terminal manufacturer based in Copenhagen, Denmark, hopes its faster, smaller and cheaper BGAN terminals (one shown above) will appeal to a wider commercial customer base.

existing equipment that is bought primarily by government customers, because it provides data more quickly for a significantly cheaper price than existing terminals.

Inmarsat will launch BGAN after its three new Inmarsat 4 satellites are operational. The first was launched in March. The

broadband service will use smaller ground terminals to distribute up to 492 kilobits of data per second; Inmarsat's traditional terminals are capable of speeds up to 144 kilobits per second.

Thrane & Thrane is banking on the increase in speed to help it make inroads into new markets, said Henrik Norrelykke, the

company's president. The faster speed and cheaper price are expected to draw an entirely new customer base, Spohn said. The new terminals are expected to range in cost from \$1,500 to \$3,500, less than half the cost of existing Inmarsat terminals.

"When you start looking at IP (Internet Protocol)-based satellite modems, all of a sudden you start looking at expanding beyond the traditional uses of Inmarsat, whether it be military, humanitarian or high-level media and television," said Spohn.

BGAN conceivably could be used by the insurance industry, construction industry, or particularly state and local governments, Spohn said. The telecommunications issues which plagued Louisiana and Mississippi during Hurricane Katrina should draw attention to the need for an IP-based communications system for first responders, Spohn said.

"The state and local government heretofore have not gotten much into the Inmarsat game, because equipment and air time are expensive," Spohn said. "But the big thing we're talking about with Sept. 11 and Katrina is interoperability, and putting everything on an IP-based responder. And now the price is becoming attractive to state and local governments."

Insurance providers doing assessments of Katrina-related damage could benefit from using the BGAN terminals in the field to communicate when inspectors are evaluating damage for claims, Spohn also proposed.

The company also has struck

up agreements with all the companies providing satellite air time, so that if a company purchases a BGAN terminal, it is not limited by what service provider it chooses, Spohn said. "None of the other manufacturers are doing this," Spohn said. "We're in the position of trying to provide end-to-end solutions."

It will take time to determine whether the potential clients will respond to the technology. Spohn said he has seen a "groundswell of interest" among the many communities the company is targeting, but that many do not know the technology is out there and could conceivably be affordable.

"Our job is really to be evangelists of the new technology," Spohn said. "It would be really easy just to go and sell the new stuff to all the people who buy the old stuff. But we need to get the word out that the BGAN terminals are really nothing more expensive than your standard laptop PC, and to use them is no more expensive than doing an international phone call."

In the meantime, the company has used other strategies besides reaching out to new customers to expand its business. Thrane & Thrane purchased Land Sea Systems last year, its largest distributor, and opened an office in Shanghai, China, in July. This gives it a more global distribution presence and an opportunity for further growth even when the Inmarsat market seemed more constrained, Norrelykke said.

"Financially, it has worked out very well," Norrelykke said, citing double-digit growth for business in North America.

During its first quarter of the fiscal year ending July 31, Thrane & Thrane overall showed a fall in revenue of 84 million Danish Krone (\$13.4 million) from the same quarter in 2004. The decline in revenue was attributed to losses in the maritime and land mobile markets, according to the company's financial report.

The company also has been growing physically, going from 17 to 27 employees stationed in Virginia Beach this year.

"We are quite unique; we're the only ones present in the U.S. where instead of pulling back on distribution, we've been investing in it," Norrelykke said.

The Shanghai office opened in July, and six sales representatives are stationed there right now, Norrelykke said. Its philosophy now is to work as a business with regional centers rather than operating as a manufacturer in Copenhagen with no further connection to its customers.

"You can't see the world from Copenhagen, even with really strong binoculars," joked Norrelykke.

SAMSON FROM PAGE 19

milestones but technical ones, with special efforts taken to depoliticize them (to the point where the attendance of VIPs was strongly discouraged).

Not to criticize Rubin, but just try to imagine an American program manager proclaiming in public that their efforts were merely adequate to the task.

Simulation has been used in the U.S. missile defense system, but there are some problems which only come out in flight tests: see the last two flight test failures of the GMD system where the interceptor never left the launch pad. It is hard to integrate the overall U.S. missile defense system when so many major components are missing. And the GMD flight tests have long been criticized for being scheduled to meet political considerations, not programmatic needs. The independent review team assembled by the Missile Defense Agency to examine its testing program disparaged the agency's tendency to rush through ground testing in an effort to meet a predetermined

flight test schedule.

Israel's missile defense team gave cost the same amount of importance that they gave schedule and performance. There weren't any fixed price contracts, but programs that ran over budget were stopped short and reorganized before any major harm was done. The IMDO directly contracted major subsystems. Compare this to the independent review team's worries that cost is being given up in order to meet schedule and/or performance requirements. And quality assurance, budgetary control and subcontractor responsibility are all elements that could stand improvement in the U.S. missile defense system.

Finally, the Israeli developers worked hard to give their program a lean appearance so that it wouldn't look like money was being wasted. Their media was given relatively open access to the program; and if access was denied, a reasonable explanation was given.

Supporters of the U.S. missile defense system have largely kept their promotion for the system to the so-called need for

it. Certainly missile defense, currently the single most expensive weapon system in this year's budget request, can hardly be called a lean program. And the U.S. media has been often stymied in information requests: most of the information regarding GMD's capabilities against countermeasures, one of the most potent arguments about its fallibility, has been classified.

The point of this analysis is not to say that the Israeli way of developing missile defense is perfect while the U.S. method is irrevocably flawed. Merely, it is to illustrate that there are other ways in which to develop a working missile defense system.

The United States, if it is indeed serious about getting a system operational that is more than what is optimistically called a "thin line defense," should examine its actions to date and decide if any are hindering the cause more than helping it.

Victoria Samson is a research analyst at the Washington-based Center for Defense Information.

October 10, 2005

ON THE MOVE

Northrop Grumman Corp., Redondo Beach, Calif., names four executives to new leadership positions in its Space Technology sector.

FREDERICK L. RICKER is named sector vice president and deputy for Programs; **DAVID L. RYAN** is named sector vice president and National Polar-orbiting Operational Environmental Satellite System (NPOESS) program director; **JAMES M. MYERS** is named sector vice president of Sensors and Payloads; and **STUART T. LINSKY** is promoted to vice president of Satellite Communications.



Ricker (above) assumes a new position with responsibility for the management, development, deployment and operation of space systems.

In his new position, Ryan is responsible for continuing the development of the NPOESS satellite system. He joined Northrop Grumman this year as vice president of Sensors and Payloads. He previously served as president of Boeing Satellite Systems International.



Myers (above) assumes Ryan's position as sector vice president for Payloads and Sensors. In this role, he is responsible for the development and implementation of sensor and payload strategy.

Linsky succeeds Myers as vice president of Satellite Communications. He is responsible for strategy development and new business capture.

Linsky previously led Space Technology's Transformational Communication Systems initiative.

Communications attorney **LINDA KINNEY** joins EchoStar Communications Corp., Englewood, Colo., as vice president of Law and Regulation.

Kinney joins EchoStar after spending the past 11 years at the Federal Communications Commission. Most recently, she served as deputy general counsel under Chairman **MICHAEL POWELL**, where she was responsible for the legal review of satellite, cable, broadcast, wireline and wireless matters.

The U.S. Army nominates three colonels for appointment to the rank of brigadier general.

COL. THOMAS M. COLE is currently serving as deputy program manager for Program Integration, Future Combat Systems Unit of Action in Warren, Mich.; **COL. MICHAEL T. FLYNN** is currently serving as director of intelligence, J-2, Joint Special Operations Command at Fort Bragg, N.C.; and **COL. JOHN E. SEWARD** is currently serving as commander, 94th Army Air and Missile Defense Command at Fort Shafter, Hawaii.

Retired U.S. Navy **CAPT. JOHN B. HERRINGTON** joins Rocketplane Limited Inc., Oklahoma City, as vice president and director of Flight Systems. He also will serve as chief test pilot for the XP Spaceplane.

Herrington, a former astronaut and Oklahoma native, is the first Native American to fly and walk in space and is an enrolled member of the Chickasaw Nation of Oklahoma.

He has logged 330 hours in space, including nearly 20 hours of extra-vehicular activity, since NASA selected him as an astronaut candidate in 1996.

THOMAS S. TYCZ joins the law firm of Goldberg, Godles, Wiener & Wright as senior policy advisor. Tycz recently retired from the Federal Communications Commission (FCC) as chief of the Satellite Division in the International Bureau. He had worked at the FCC for 30 years in various executive capacities.

Tycz is an expert on satellite communications regulation, international radio regulations, radio spectrum management and international relations and negotiations.

He has led or participated in many International Telecommunication Union conferences and meetings as a U.S. delegate, U.S. government spokesman or U.S. delegation vice chairman.

Comments: Tom Wiseman,
twiseman@space.com

SPACE NEWS

www.space.com

Fax: 01-703-750-8913

VICE PRESIDENT/PUBLISHER

William A. Klanke
01-703-750-8651

E-mail: bklanke@hq.space.com

REPRESENTATIVES

NORTH AMERICA

REGIONAL SALES DIRECTOR

David Bross

Phone: 01-703-642-7368

E-mail: dbross@space.com

REGIONAL SALES DIRECTOR

Candy Maness

Phone: 01-325-793-2626

Fax: 01-325-793-2767

E-mail: cmaness@space.com

RECRUITMENT & CLASSIFIED ADVERTISING

Juanita Clark

Phone: 01-703-658-8365

Fax: 01-703-750-7426

E-mail: jclark@atpco.com

OUTSIDE NORTH AMERICA

CHINA, GERMANY, INDONESIA, ISRAEL,

KOREA, MALAYSIA,

RUSSIA, TAIWAN, SINGAPORE

David Bross

6883 Commercial Dr.
Springfield, Va. 22159 USA

Phone: 01-703-642-7368

Fax: 01-703-750-7461

AUSTRIA, DENMARK, FINLAND, INDIA,

NETHERLANDS, BELGIUM,

LUXEMBURG, NORWAY,

SOUTH AFRICA, SWEDEN,

SWITZERLAND, UNITED KINGDOM

Sue Parker

Tony Kingham

Marketing Media

6 Rotherview

Church Lane,

Etchingham

E. Sussex TN19 7AS,
United Kingdom

Phone: +44 (0) 1580 819605

Fax: +44 (0) 1580 819607

E-mail:

tony.kingham@worldsecurity-
index.com

FRANCE, ITALY, SPAIN

Defense and Communication

Fabio Lancellotti

Emmanuel Archambeaud

Melanie Villard

48 Boulevard Jean-Jaures,

92110 Clichy, France

Phone: +(331) 47307180

Fax: +(331) 47300189

E-mail: earchambeaud@wanadoo.fr

JAPAN

Shinano International, Inc.

Akasaka Kyowa Building

1-6-14, Akasaka, Minato-ku

Tokyo, Japan

Phone: 81 03 (3584) 6420

Fax: 81 03 (3505) 5628

E-mail: scp@bunkoh.com

SUBSCRIBER SERVICE

Phone: Toll free in U.S.

1-800-368-5718

Outside North America

01-703-750-7400

Fax: 01-703-658-8314

E-mail: cust-svc@atpco.com

SEND ADVERTISING MATERIAL TO:

Mary Poston, Production Manager

Phone: 01-703-750-8991

Space News

6883 Commercial Drive

Springfield, Va. 22159 USA

advertising@atpco.com

On The Horizon

ADVERTISEMENTS

OCTOBER



October 17-20, 2005 Atlantic City Convention Center Atlantic City, New Jersey

MILCOM 2005, "Innovation... Fueling the Transformation" will be held October 17-20 in Atlantic City, NJ. The event is co-sponsored by AFCEA International and the IEEE Communications Society and the corporate host is SAIC. The technical sessions and exhibits will focus on information relevant to communication and information systems capabilities that address the 21st century challenges of National Defense and Homeland Security.

Panel Topics Include:

- Military Innovation
- C4ISR Network Solutions
- Innovation for Defense
- Challenges of JTRS Development
- Counter Terrorism and Homeland Security
- Countering IEDs
- Aviation Electronics and Survivability

For more information go to
<http://www.milcom.org>

Contact AFCEA:
Email plans@afcea.org
Phone (703) 631-6170 or (800) 336-4583
ext. 6170
Fax (703) 631-6405

NOVEMBER

November 7-9, 2005 Global MilSatCom 2005 Hotel Russel

London, United Kingdom
Global MilSatCom is the largest independent military satellite communications conference in Europe, bringing together a dynamic mix of over 200 military leaders and industry experts.

The conference will evaluate specific doctrines, identify new requirements, and present the latest developments from leading international case studies on procurement strategies and the operational deployment of specific programmes.

The conference provides an excellent opportunity to network, enhance your organisation's profile and keep up-to-date on the latest issues in the MilSatCom market.

For more information or to Register online visit: www.globalmilsatcom.com

Discounts available for serving military contact Teri Arri on tel: +44 (0) 20 7827 6162 or email: tarri@smi-online.co.uk

DECEMBER

December 1-2, 2005 California Space Conference - TRANSFORMING SPACE: Innovation, Infrastructure, and Intellectual Capital Los Angeles, California

The "Transforming Space" conference will provide business opportunities and networking among industry, government, and academia for a two-day conference that highlights the transformation of space in the civil, national security and commercial space sectors. Serving as Honorary Co-Chairs are Congressman Ken Calvert (R-CA.) and Congresswoman Jane Harman (D-CA.). Confirmed guest speakers include NASA Administrator Mike Griffin; U.S. Air Force Space Command Commander Gen. Lance Lord; and SMC Commander Lt. Gen. Mike Hamel. The conference concludes with the SpotBeam Awards Dinner. For more information and to register, go to www.californiaspaceauthority.org or phone 805-349-2633.

DECEMBER (CONT'D)

December 6 - 8, 2005 NASA - Risk Management Conference Orlando, Florida

NASA will conduct its premiere risk management training conference (<http://rnc.nasa.gov>) from December 6 through 8, 2005, in Orlando, Florida. For the past 5 years, this conference has provided an unprecedented opportunity for discussing risk management principles and advances in techniques for managing uncertainty and communicating risk on NASA programs and projects. The theme for this year's event is "Risk Management: Enabling the New Age of Exploration."

Past participants have included the NASA Administrator, Associate Administrators, astronauts, key management personnel responsible for major NASA programs and projects, project personnel responsible for day-to-day activities, industry, and the international space community. Complex challenges, risk balancing, and lessons learned in implementation of risk management are discussed, including tools to aid and improve the risk management process. This year's program will include approximately 40 speakers, 5 tutorials, 7 breakouts, an expert panel, and 7 demonstrations.

BOOKS

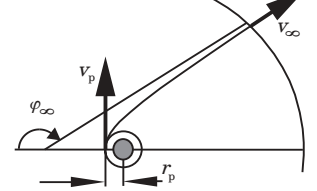
Astronautical Engineering

An Introduction to
the Technology of Spaceflight
by Hanfried Schlingloff

10 chapters, 505 pages, 280 illustrations,
738 equations and 67 examples

Keywords:

Space Environment, Rocket Propulsion,
Launch Services, Spacecraft Trajectories,
Orbit Optimization, Attitude Stabilization,
Launcher Dynamics, Planetary Missions,
Reentry Maneuvers.



www.astronautical-engineering.com

ADVERTISERS LIST

Advertiser	Page
WORLDWIDE DISTRIBUTION	
AGI	1, 5
www.agi.com	
ATK	24
www.atk.com	
Boeing	2A-3A
www.boeing.com	
General Dynamics	7A, 23
www.gdc4s.com/space	
Inmarsat	7
www.inmarsat.com/government	
Lockheed Martin	15
www.lockheedmartin.com	
NANO 2005	13
www.techbriefs.com/nano	
National Space Society	10
www.nss.com	
Northrop Grumman	2
www.northropgrumman.com	
Orbital Sciences	5A
www.orbital.com	
Swales Aerospace	14
www.swales.com	
WAB	11
www.washingtonaerospacebriefing.com	
Zaiss & Company	18
www.accessomaha.com	

Visit our advertisers today
at their online site listed above.

PROFILE **David Kier**

**Vice President and Managing Director for Protection
Lockheed Martin**

Keeping an Eye on Emerging Threats

In recent years public discussion in the United States about missile defense had been focused on protecting the homeland from ICBMs, and protecting troops on the battlefield from shorter-range missiles.

David Kier's focus is also on a new dimension that is getting a lot of attention these days: the threat posed by missiles launched from ships near U.S. shores.

Developing an integrated architecture of sensors and interceptors to stop short-range ballistic and cruise missiles could be worth \$10 billion to \$12 billion, and Lockheed Martin is in hot pursuit of that market, which will require a variety of systems the company already builds, Kier said. It also is an area that has drawn a lot of interest from companies in other countries who hope to partner with Lockheed Martin, he said.

Kier's responsibilities include overseas missile defense and homeland security issues that include defending U.S. satellite constellations. While satellite protection is a relatively small part of his portfolio, Kier hopes that it will grow as government officials come to better understand the critical nature of satellites and the threats that face them.

Kier is intimately familiar with the value of those satellites, having served as deputy director of the U.S. National Reconnaissance Office (NRO) prior to joining Lockheed Martin in October 2001. His space background also includes stints earlier in his career at NASA as a flight test engineer and high-speed vehicles program manager.

Kier talked about space and missile defense during a recent interview in Washington with *Space News* staff writer Jeremy Singer.



SPACE NEWS PHOTO BY RICK KOZAK

How much has Lockheed Martin invested in developing its concept for defending the United States against missiles launched from ships near its shores?

We put in about \$6.5 million, and are still spending. We did some analysis of potential damage and loss of life from this type of scenario, and the numbers are staggeringly large — so much so that I was able to go to the corporation and propose this activity, and they were concerned enough that they went ahead and funded it for me.

One of the key aspects of this challenge is persistent surveillance along the shores. You can't keep the aircraft of today up 24/7. We found that out after 9/11. It's too expensive and too hard on the airplanes, so a long-dwelling platform like the High Altitude Airship that Lockheed Martin is developing for the Missile Defense Agency, which is envisioned as hovering over areas of interest for months at a time, would be very helpful.

What has happened with the High Altitude Airship since the Pentagon stopped work on the program in March?

I went in and presented some options and our risk assessment to Air Force Lt. Gen. Henry "Trey" Obering, the director of the Missile Defense Agency, and he gave me two months to come back to him and define its military utility and provide a program plan and a cost assessment for the prototype and the operational system.

We did that; he liked what he heard, and he has decided to proceed with the program. One of the issues was the risk associated with the program. The best way for us to assuage the Pentagon's concern about that risk was to put up some of our own money against the problem. So the corporation is going to put up about \$43 million of the \$180 million it's going to take to do this.

I told Gen. Obering that I think the biggest risk is with the command and control, since it's a totally new type of unmanned aerial vehicle. I'm not worried about the fabric and the power. Those are amenable to technical solution and effort.

We need to do a better job in the simulation and preparation for the flight test. We can't afford to have this thing get loose and have to shoot it down over the

ocean. So that's why I'm working with the folks at Lockheed Martin's Skunk Works who know how to do this, and want to get them more involved with the execution of the program.

When might we see a demonstration of the High Altitude Airship?

They had wanted one in 2006 when we first signed the contract. However, the funding available couldn't meet the schedule, so now it looks like 2008, pending approval of the 2006 budget request. If the budget request is reduced, it could slip to 2009.

The Missile Defense Agency intends to terminate Lockheed Martin's booster vehicle work for the Ground Based Mid-course Defense interceptors and rely on the rockets built by Orbital Sciences. Given that the Pentagon feels it needs two sources of rockets for launching satellites, should it have a similar policy for missile defense interceptors?

They should carry an insurance policy as long as they can afford to, and our BV Plus booster is the insurance policy.

If they could carry it for another year or two, until the Orbital Sciences vehicle was fully vetted and had a satisfactory operational record, I would think they'd like to do that, but I gather that it's been budget pressure that forced them to make some hard choices, and this is one of them.

It's unfortunate, because sometimes you need insurance when some unforeseen things happen, and it's nice to have a backup readily available.

Given the trend at the Missile Defense Agency towards spiral development, would you be concerned that instead of a competition for a new booster, the agency decided to just incrementally improve Orbital's rocket?

That's certainly a viable design option for them, and a spiral approach is certainly something that they use, but spiral development could also be a benefit to the Terminal High Altitude Area Defense (THAAD) case. If they want to spiral THAAD up, that provides some interesting capabilities fairly quickly and cheaply.

You've seen how the NRO works from the inside. Was separating the position of undersecretary of the Air Force from director of the NRO a wise move on the part of the government?

Let me tell you what I told [former NRO Director and Air Force Undersecretary] Pete Teets when he first took that job, having seen it from both sides as a principle deputy assistant secretary of the Air Force and as deputy director of the NRO.

"Pete," I said, "it takes one of three things to do this job. Either you open your shirt and there is an 'S' on your chest for Superman, or you have divine connections, or you are a little bit touched," because I think it's more job than one person could do well.

The duties of NRO director, undersecretary of the Air Force and executive agent for space programs are each so demanding that they could be three separate jobs. Depending on what the Air Force secretary's preference is, the other undersecretary duties outside of space can be anything from very minimal to very large, and you just don't have enough hours in the day to do everything you would want to do, or perhaps should do. It's such a demanding job that I think splitting it is probably a prudent thing to do.

Any concern that it might be a step backward from the integration of black and white space that a lot of people thought worked out pretty well?

To a significant degree, yes it is. It's a step backwards — no matter how well any two people want to work together, it's not the same as one person having the job. So in that sense, it is a step backwards.

Will it fundamentally change the way things are done in the integration of black and white space? We'll have to wait and see. I don't know. A lot of it will depend on how well the integration of the director of national intelligence and the Pentagon's undersecretary of intelligence works. If that integration is good, then the integration of black and white space will be facilitated. If they don't get along well, it will inhibit the ability of those two to facilitate integration. The atmosphere will be more contentious, and that never bodes well for integration. That's just human nature.



REGISTER TODAY!



CONFERENCE AND SPOTBEAM AWARDS DINNER

Transforming Space: Innovation, Infrastructure and Intellectual Capital

DECEMBER 1-2, 2005
 Sheraton Gateway Hotel
 6101 W. Century Blvd., Los Angeles, CA

Space professionals from throughout the nation who are interested in California's space enterprise community will be attracted to the only state in the nation with end-to-end space capabilities. Conference attendees will learn of current business opportunities, discuss space policy and network with California space leaders from the civil, national security, and commercial space sectors.

PROGRAM PANELS AND SESSIONS

- **Space and Missile Systems Center: Transformation Epicenter**
- **Rapid Response: A Key Transformation Objective**
- **Luncheon Keynote – Transformation: The Entrepreneurial Perspective**
- **Innovative Space Technologies: Space Applications to Meet Government and Consumer Needs**
- **The Realities of Space Tourism**
- **Transformation: The NASA Perspective**
- **NASA Centers in California: Keys to Space Exploration**
- **Accessing Space: NASA and DoD Launch Transformations**
- **Luncheon Keynote – Transformation: The U.S. Air Force Space Command Perspective**
- **21st Century Education & Workforce: Science & Technology Challenges**
- **Transformation: National Space Infrastructure Assets**

Conference Sponsors



For sponsorship opportunities call Elizabeth Burkhead
 (805) 349-2633 • elizabeth.burkhead@californiaspaceauthority.org

Register Online Now!

<http://www.californiaspaceauthority.org/conference/>
 or call CSA at (805) 349-2633

Early Bird Discount Ends October 24
 Special Discount to CSA Members

Honorary Co-Chairs



Rep. Ken Calvert

Chairman
 Space & Aeronautics Subcommittee
 House Science Committee



Rep. Jane Harman

Ranking Minority Member
 House Permanent Select Committee
 on Intelligence

Confirmed Speakers



Dr. Michael Griffin

Administrator
 National Aeronautics and
 Space Administration (NASA)



General Lance Lord

Commander
 U.S. Air Force Space Command



Elon Musk

Chief Executive Officer
 Space Exploration
 Technologies Corporation



Lt. Gen. Michael Hamel

Commander
 Space and Missile Systems Center
 Air Force Space Command
 Los Angeles Air Force Base



Maj. Gen. Curtis Bedke*

Commander
 Air Force Flight Test Center
 Edwards Air Force Base



Col. Jack Weinstein

Commander
 30th Space Wing &
 Western Range
 Vandenberg Air Force Base



Scott Hubbard

Director
 NASA Ames Research Center



Kevin Petersen

Director
 NASA Dryden Flight
 Research Center



Dr. Charles Elachi

Director
 Jet Propulsion Laboratory



James Maser

President/General Manager
 SeaLaunch



Doug Young

Vice President
 Northrop Grumman



Brian Binnie

Astronaut
 Scaled Composites