

# PRIORITY BRIEFING

## GENERAL JAMES ARMOR (RET.)

MEMBER, BOARD OF DIRECTORS, INTEGRAL SYSTEMS, INC.

### *MilsatMagazine*

*General Armor, you've had quite a prestigious career in the Air Force. A little history is in order here... please talk to us about your last few assignments and when you retired from the service?*

### *General Armor*

I retired on January 1, 2008 after more than 34-years of service. In my last assignment, I served as the Director, National Security Space Office, supporting the Under Secretary of the Air Force, Washington, D.C. I coordinated all Defense Department and Intelligence Community space activities.



Previous to the Pentagon position, I was the Director, Signals Intelligence Systems Acquisition, and Operations, at the National Reconnaissance Office (NRO), Chantilly, Virginia. There, I worked with some truly amazing intelligence professionals at the NRO and the National Security Agency (NSA), in support of global military and intelligence operations, including those in Afghanistan and Iraq. Prior to my NRO service, I accomplished a short tour as Vice Commander of the Warner Robins Air Logistics Center at Robins Air Force Base (AFB) in Georgia, where I learned hands-on aircraft maintenance and logistics.

Probably the most exciting position I held was as Program Director of the Global Positioning System at the Space and Missile Systems Center, Los Angeles AFB, California. GPS is changing civilization and working with the military, civilian, scientific, industry, and international users was exhilarating. Earlier in my career, I also had the opportunity to train as a Shuttle payload specialist, although I didn't get to fly due to the Challenger disaster.

### *MilsatMagazine*

What have you done since you retired?

### *General Armor*

After re-introducing myself to my wife and family, I established an Aerospace consulting firm, The Armor Group, LLC. I've supported several large space firms with their project planning and contract activities. For example, I support Iridium Satellite on its current business expansion, as well as its future satellite constellation development. Their NEXT constellation has tre-

mendous global communication capability as well as providing some exciting, hosted payload opportunities.

I'm on the board of advisors for space activities at Johns Hopkins University Applied Physics Laboratory. I'm continuing to support some US Government activities as well. For instance, I'm a reader on the Space National Intelligence Estimate and I'm on the Senior Advisory Group to the Commander of the Space and Missile Systems Center at Los Angeles AFB. I also enjoy being active in professional and space associations, which support investment in space, such as space-based solar power. Space-based solar power was the last architectural study I conducted at the National Security Space Office (NSSO), the organization responsible for the design of military space architectures. I've also expressed the need for a new space industrial base policy with the US Chamber of Commerce, the Aerospace Industry Association (AIA), and others.

### *MilsatMagazine*

*You recently were invited to join the board of directors at Integral Systems, Inc. and how does your military background match up with their business focus?*

### *General Armor*

I believe I can add some perspective to Integral Systems (ISI) from the standpoint of an Air Force and NRO space system customer. Air Force Space Command is responsible for securing the space domain for all legal users and needs to get the absolute most for every tax dollar.

The same holds true for the NRO. For historical reasons, the Air Force and NRO have somewhat neglected the ground segment of space systems, mostly due to the nature of the spacecraft. These organizations are now realizing the biggest payoff is derived from managing the information "on the ground".

This is where ISI, as a corporation, has done a great job of providing commercial and government space operators cost effective, operational capability over the years. I hope to use my Air Force and NRO experience to help guide, lead, and support their continued growth into the government market.

The company has done a fantastic job of delivering the Command and Control System – Consolidated (CCS-C). The project is on time, on budget, and the operators are transforming their operations through CCS-C capability. I'm also energized

by their Rapid Attack Identification Detection and Reporting System (RAIDRS) efforts and looking forward to their GPS OCX solution in their role as part of the Northrop Grumman team. I think we're a good fit for one another.



### *MilsatMagazine*

*In addition to the normal board member duties, what role do you expect to bring into play for Integral's business?*

### *General Armor*

I plan to get involved with their strategic planning and help them lay out a five-year roadmap for getting more classified and open National Security business. They're doing some good IR&D Internal Research and Development.



ISI has developed great solutions to difficult problems. I have perspective on the Air Force and NRO corporate and acquisition processes, as well as an appreciation for government space ground system needs, which I intend to share. I believe I can provide feedback and direction on their IR&D efforts. In addition, I believe I can provide insight into more avenues of opportunity that could lead to further growth by informing our customers of the ISI's capabilities.

### *MilsatMagazine*

*Integral's CCS-C ground system program for Milsatcom has been quite successful. To what do you attribute this success?*

### *General Armor*

Great people, an open architecture based on ISI products, and a sound Air Force acquisition strategy.



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ISI is recognized for its ability to find a way to get the job done. Our technical experts are the best team in the space ground system business. They're dedicated, hard working, innovative, and solution-oriented and they take pride in delivering capability to our Air Force customers.

One of the outstanding attributes of the CCS-C architecture is the ability to upgrade or refresh the system without an impact on satellite operations. Once the system was rolled out to the operational community, there were many requests for addition-

al features and capabilities. ISI's relationship with our government's procurement agency and the developed creative atmosphere allows for available schedule and funding maximization. Change is a constant; our configuration allows for a seamless implementation of the Epoch product improvements.

## *MilsatMagazine*

*What are some of the benefits that the CCS-C system has brought to Air Force Operations?*

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## *General Armor*

One significant benefit of CCS-C has been in the area of automation. 3 SOPS (Standard Operating Procedure) has taken the lead in using the automated capabilities inherent within CCS-C. Staffing savings are now being realized. 3 SOPS has created and instituted automated satellite state-of-health supports along with other automated features. The WGS satellite is quite complex and we were able to automate the WGS command procedures. This resulted in much more efficient operations. The onus is on the system rather the operator, which is a consistent trend within the satellite industry.



## *MilsatMagazine*

*Integral has been promoting the idea of making the CCS-C system the standardized Satellite Operations Center (SOC) for AF satellites. What do you think of this plan?*

## *General Armor*

A common infrastructure would cost less, be easier to maintain and upgrade, and would simplify military operator training. CCS-C is an open architecture with flexibility and scalability to support all missions, plus it's proven and operationally tested. The system was built using ISI's EPOCH Integrated Product suite, which is operating with more than a hundred commercial satellites. The system architecture allows mission unique capabilities to be included through its API's, which allows for incremental upgrades without changes to the core operational software. By virtue of having a commercial, scalable approach able to operate any satellite, the Air Force has already acquired a standard satellite core system.



## *MilsatMagazine*

*Do you know what is Integral doing in the Space Situational Awareness area? How does their work in this area match up with the needs you saw as head of the NSSO?*

## *General Armor*

ISI is the prime contractor for the Rapid Attack and Identification Detection Reporting System (RAIDRS). ISI also provides commercial RF interference detection systems and a low cost geo-location capability for the commercial market. ISI demonstrated a space "neighborhood watch" capability for the government. Working with the commercial community, ISI was able to offer status information on commercial satellites for the government. The company has also come up with an innovative scheduling toolkit called MANTIS. MANTIS optimizes sensor tasking, significantly increasing the efficiency of the entire space surveillance network.

Recently, ISI also started work on the Executive Dashboard. This provides a "manager of managers" capability for SOCs to monitor and control multiple satellite buses and missions. Additionally, the Air Force customer can use the Executive Dashboard application in a Wing Integrated Operations Center. The capability gives quick insight into satellites, networks, and control centers and provides the Wing Operations Center with constant status on the systems—this increase Space Situational Awareness (SSA).

## *MilsatMagazine*

*General, what do you expect to see in regard of trends and developments in Command and Control systems in the future?*

## *General Armor*

Future budget constraints will drive government acquisitions to consolidate their space systems on common, COTS-based, Command and control systems save both development costs and long-term logistics and sustainment.

ISI expects the government to consolidate systems with proven performers in the satellite ground system industry, aptly demonstrated through the CCS-C program, civil programs, and ISI's proven performance as the most widely used command and control system in the commercial satellite industry. Couple the life cycle cost benefits with the lower development risk, along with the superior performance and capability of the ISI EPOCH IPS product baseline, and that's a winning solution.

## *MilsatMagazine*

*Are you involved in other projects, as well?*

## *General Armor*

Yes, and I'd like to mention one other activity simply to make a point. I'm on the board of directors of NAVSYS Corporation. This is a small business headed by Dr. Alison Brown. NAVSYS is working on some incredibly innovative R&D work with GPS. Among other things, NAVSYS built a server with augmented precision navigation data that the warfighters in Iraq and Afghanistan use directly. NAVSYS won the DoD SBIR Tibbets Award last year for this work.

I continue to be inspired by the creativity and energy of small businesses. Integral Systems management has recognized and taken advantage of this innovative power and has brought on RT Logic, Newpoint Technologies, SAT Corporation and other small businesses as part of their team. I believe US small technology businesses need far more policy and funding support from the U.S. Government. They are the foundation of the future of US leadership in space—commercial, civil, and national security.

## *MilsatMagazine*

*General, thank you for your time and your thoughts, as they are much appreciated.*

