Coupling Assured Space and Missile Defense

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Country X continues to slowly slip into chaos, and there are strong indications its military forces are posturing for war in response to its perceived escalating. Its economy has nearly come to a halt. Country X appears to have placed all of its military forces on heightened alert and have begun deploying mobile ballistic missile forces. What was once a functioning state is now on the brink of implosion and is increasingly a threat to regional and international security. In response, the U.S. has begun its own planning to address head-on this growing threat to our way of life.

Sound familiar? Most of you have read these fictional scripts detailing the buildup of tensions to set the stage and context for exercises and war games. Unfortunately, these scenarios are often not that far from real-world events.

The Department of Defense, under the guidance from National leadership, plans for these threats. For our part, the current integrated Ballistic Missile Defense System (BMDS) that includes radars, other sensors, shooters and the Ground-based Midcourse Defense (GMD) system, is a concrete example of a "family of systems" to combat threats such as those poised by Country X.

We routinely train and exercise against these fictitious scenarios by rogue or hostile states and/or actors. What we learn in training and exercises, however, is very real. We employ the concept of operations we plan to use. Our tactics, techniques and procedures are put into action and run through the ringer as if it were a real crisis or war. The real-world events help us as well. This past July, North Korea's launch of several missiles provided a test of the Ballistic Missile Defense System architecture.

North Korea didn't tell us what kind of missiles they were going to launch or their trajectories. As a precaution the president put the 100th Missile Defense Brigade (GMD) and its battalion, the 49th Missile Defense Battalion (GMD) in Alaska, on alert. The situation allowed the chain of command to exercise the operations plan, from the president through the Department of Defense and two combatant commanders (U.S. Strategic Command and U.S. Northern Command) to the brigade and battalion. In early September our defensive plan was again exercised during the successful integrated flight test of the ground-based interceptor conducted by the Missile Defense Agency.

These two events are detailed in an article in this issue from the perspective of 100th Missile Defense Brigade crew members who were involved in them.

In July while the 100th was on heightened alert status, its sister brigade, the 1st Space Brigade, was also standing ready. The 1st Space Battalion's Joint Tactical Ground Stations (JTAGS) were standing watch to provide missile warning. COL Timothy Coffin, commander, 1st Space Brigade, will discuss the JTAGS crews and their missions in an article also in this journal.

The 1st Space Brigade is an integral part of the Ballistic Missile Defense System. This summer, the brigade activated the FBX-T(Forward-based X-Band - Transportable) radar detachment and the Soldiers who operate the system. Those Soldiers now operate under the day-to-day control of the 94th Army Air Missile Defense Command in support of the Ballistic Missile Defense System mission. The Missile Defense Agency is projecting that several more FBX-Ts will come on-line over the coming decade. 1st Space Brigade will have an expanding role in activating these units.

This is definitely a growth industry. As other sensors become part of the Ballistic Missile Defense System architecture, the demand for information from sensors continues to grow. This has always been the case, but now warfighting commanders require the same information packaged in such a way to support timely situational awareness, missile warning and decision making. It is no longer good enough

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to report that a missile was launched from an approximate location and will impact in a general area. It is no longer sufficient to tell a commander that something "hot" occurred at a particular place and time. The commander, from the strategic level to the tactical level, and his forces need precise information to better support attack operations; timely, precise in-flight information to better focus active defense assets; and refined impact prediction to better focus active defense assets and direct passive defense efforts. To do this, all sensor data must be fused and correlated.

Ballistic Missile Defense System sensor robustness lies in the ability to receive, integrate and process data from multiple sensors. All supporting sensors must be able to provide reports on events, which create signatures across the entire energy spectrum, not just those detected by Space-based missile detection systems. The fused information must be received in a timely manner to give the various Ballistic Missile Defense System weapon systems time to react. This concept ensures that we avoid data, sensor and weapons stovepipes, and that the systems contribute to a common operational picture that supports the entire Ballistic Missile Defense System architecture. Those infrared sensors include but are not limited to: Space-based Infrared System; the Alternative InfraRed Satellite System; other air-based infrared sensors; as well as ground, air, sea and Space-based radars. This concept will provide a more robust capability to provide critical warning and battlespace awareness not only to theater commanders who rely on early missile warning, but also for our Nation's leadership who watch from a global perspective in defense of our Nation.

You should feel assured that the Nation's many defense industry companies and Department of Defense agencies, such as the Missile Defense Agency, are partnered with us to produce the best capabilities to defend our Nation and our allies. As an example, the Missile Defense Agency has done an exceptional job of leveraging and integrating the data from sensors (Cobra Dane, Upgraded Early Warning Radar, the Aegis SPY-1, etc), which were built for service missions and needs, into a common alerting system for the Ballistic Missile Defense System.

Even as the system matures and grows, it is dependent on electrons moving from sensor to sensor to ground stations or weapon systems, often through Space rather than through land lines of fiber. The Ballistic Missile Defense System is not the only system that relies on Space assets. Our Nation's military and those of our allies are becoming increasingly dependent on Space because of what those Space-based systems allow and enable forces to do. As stated in the 2006 Army Space Master Plan, "Space capabilities can significantly reduce the fog, friction and uncertainty of warfare when integrated with complementary airborne and terrestrial-based systems that promote understanding."

Commanders will use this information to enable them to direct military operations across the battlefield. As they depend on the Space-based capabilities to a greater degree, we will need to maintain access to them.

It is no wonder that maintaining access to Space systems is one of the primary goals espoused in the majority of articles and publications on Space. The United States national security is critically dependant upon Space capabilities, and this dependence will grow. Army doctrine in Field Manual 3-0 lists protection of Space assets as a component of force protection and that is echoed in the 2006 Army Space Master Plan.

Several initiatives are moving forward to assure the Army's access to Space-based systems and capabilities. The initiatives fall into two basic categories: they either provide Space and near-Space platforms or they protect the systems.

One initiative is the high altitude long endurance (HALE) program. The objective for HALE platforms — the HiSentinel, Lighter Than Air, Heavier Than Air, and Integrated Sensor Is the Structure (ISIS) — is to provide commanders with an operationally responsive system that they can tailor with a single or multi-mission payload, e.g., for intelligence, surveillance, missile defense cueing or communications. These four payloads could then be put in place where they are needed and left there for an extended amount of time. The HALE programs are all still in the test stages.

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lowering of the years required before one can track into FA40 (currently at the 7-year mark). As it is, there are members of Army Space Support Teams and Space Support Elements performing a vital Space mission, including lieutenants and NCOs, but since they are not FA40s, their expertise cannot so easily be kept within the Army Space community. Army Space cannot remain a small coterie of mostly field grade officers and meet the needs of its own service members. It must become its own branch, with fully developed career paths for both officers and enlisted. These proposals, taken together, represent a planned transition to just such a state.

As for Air Force Space Command, this plan would create an entirely new career path and a growing pool of Space officers with operational and even combat experience and first-hand knowledge of the warfighting employment of Space assets. It would help Space Command come into its own as an operations branch truly parallel to that of flying operations.

With increasing traffic between the Air Force and Army Space branches, there would arise a group of Space warriors whose experience would cut across the military Space world from acquisitions to support ops to combat employment, sharing a common body of knowledge, a common medium, a common language, a common commitment, a common doctrine and a common destiny. It would then be clear that a true Space force would already be a reality, if not yet organizationally recognized as such. The path of development outlined here represents not only the most responsive employment of military Space in service to the warfighter, but also the foundation for Space as a warfighting medium in itself.

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Operationally Responsive Space is another initiative. The term itself means different things to different people. To some, particularly Army leaders, it means a Space system or payload responsive to the theater commander that provides dynamic retasking and theater, en route and beyond-line-of-sight direct downlink. To others it means a small satellite that is reasonable in cost, quickly available (or already in storage), and supported with capabilities to launch it into Space upon request to support military operations. This latter definition is what the Department of Defense Executive Agent for Space refers to in its draft paper, "DoD Operationally Responsive Space Strategy," dated April 2006.

According to the draft, the "concept of ORS encompasses the ability not only to field capabilities expeditiously but also to react and escalate technically in response to changes in the security environment, potential threats or the needs of our nation and allies." The strategy focuses on small satellites that are designed for theater coverage with a modest payload, single tasking process and limited data processing. They may be designed to operate for one to two years or less.

The feasibility and capabilities of these small "sats" are being tested in a series of tactical satellite (TacSat) experiments (the current plan calls for six.) These experiments will investigate the capability to rapidly augment an existing constellation of Spacecraft, and/or to rapidly deploy Space assets with payloads tailored to specific Joint Task Force commanders' requirements and directly responsive to deployed tactical commanders. Technology advancements in small satellites, along with responsive launch, offer the potential of cost-effective, tactical Space systems. The Space and Missile Defense Battle Lab has developed a prototype tactical ground station called the Multi-User Ground Station for evaluating tactical tasking of the Spacecraft and receipt, and dissemination of tactical products from these small sats. It will be some time before the Department of Defense knows whether the small satellites and their related responsive lift are the mean by which commanders are provided assured Space.

The other issue of assured Space is how to protect what we currently have, i.e., how do we control Space, how do we prevent the adversary from blocking or interfering with the vital information flow that might keep the joint force commander from battlefield success? We achieve that through the joint functional concept of Joint Force Protection. The Army Space Master Plan describes that to effectively enable continuous operations supporting the joint commander's intent Army elements must "integrate Space situational awareness into a common operating picture; plan, coordinate, integrate and synchronize employment of joint Space control capabilities; exploit Space control capabilities in theater; and operate Space-based missile warning capabilities in theater."

By providing "Space capabilities to support continuous, global strategic and tactical warning as well as a multi-layered and integrated missile defense," the Secretary of Defense has met his responsibility as spelled out in the National Space Policy and has enabled both the 100th Missile Defense Brigade (GMD) and the 1st Space Brigade to effectively respond to the latest North Korean missile crisis. Although one may not see Space operations and missile defense as integrally related, they are. As Space professionals, we need to look for the larger picture and wider application of our Space expertise. As we pursue the initiatives I outlined in this article, we may find expanded applications and missions for the systems so that the entire Department of Defense is prepared to counter the threats that face us today and those we will face tomorrow.