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RECIPE FOR ACQUISITION

A Space Sentinel Feature Story

Recipe for Acquisition

On April 14, 2009, the Space Sentinel interviewed Dr. Paul Kaminski, the 1994-1997 Undersecretary of Defense for Acquisition and Technology, and Chair of the 2009 panel commissioned by DNI Dennis Blair to examine the future of the U.S. electro-optical (EO) overhead architecture.

By The NRO Office of Strategic Communications

Space Sentinel: Dr. Kaminski, earlier this year, Director of National Intelligence Dennis Blair asked you to lead an independent review of the EO Way Ahead. What were the results of your assessment?

Dr. Kaminski: Let me start with the foundation of the EO Way Ahead. Admiral Blair began with what he called the McConnell recommendation, which looked at two components — a high performance system, and a lower performing second tier system. He felt it was important to have an independent look at that recommendation and he appointed five of us to do that, with myself as the chair. The four other members were John Deutch, former DCI, Martin Faga, former NRO Director, Peter Marino who also chairs the NGA advisory board, and Tom Moorman whose experience includes both Space Command (commander) and NRO. We looked at a variety of architectures, across four tiers of systems and the McConnell recommendations in that framework. The first tier was the high performance systems; the second tier is the middle-class of government-acquired systems; the third tier, in which the government buys lower performance commercial imagery, and the fourth tier, which combines manned and unmanned reconnaissance systems

We addressed tier one first, because we felt that our assessment of the need for tier one strongly drove the overall recommendation. So we focused our attention on this fundamental issue of the need for high performance. We looked at the analysis done by NGA, we interviewed key intelligence users across the community, and each of us reached our own conclusion without attempting to

achieve consensus. But we reached a natural consensus because each of us concluded that the Nation needed the high-resolution performance provided by tier one. That was probably our most fundamental conclusion. Our second conclusion was what we need to shore up that option to explicitly address issues of risk and the need to provide a balanced national reconnaissance capability.

Space Sentinel: Please describe the methodology that the Kaminski Panel used to collect its data and evaluate alternatives.

Dr. Kaminski: Starting with high-resolution performance, we looked at several different constellations composed of various elements of tier one, to see how they would compare in collection of quality imagery. Next, we looked at constellation performance, not only image quality and quantity of collection, but the ability to collect an adequate sampling of points and areas; the timeliness of collection; and the frequency and time between accesses. Smaller aperture systems' performance fell off fast, and we were not able to get some of the high-resolution requirements that we needed. Other factors considered included survivability and robustness of the constellation, to include system failures, hostile threats to the spacecraft, flexibility of the constellation, the diversity of the communications path offered to return data, diversity of launch systems, and acquisition management. We also looked at program management, cost and schedule, developmental planning, flexibility in execution and meeting the schedule milestones, as well as sustainability of the industrial base, not only at the prime contractor levels, but also at key subcontractor levels and second and third-tier suppliers.

We also looked at the policy constraints we were operating under, such as the National Space Policy Directive 27 on commercial imagery and, finally, the issue the President raised about providing “entry ramps” for future capabilities in the constellation. Our recommendations provide entry ramps for additional payloads and important future capabilities.

Space Sentinel: In addition to the Kaminski Panel, the DNI also directed NGA, as the functional manager for National Geospatial-Intelligence, to study the EO Way Ahead. How were the results of the two assessments similar and different?

Dr. Kaminski: We used the NGA report as input, looking at the analysis they had done and the conclusions they had reached. We used it as a foundation; built on it using the results of our many user interviews and independent assessments, and looked for places where we thought work was incomplete.

Space Sentinel: On April 7, 2009, Secretary of Defense Robert Gates and DNI Blair approved an EO architecture combining high-resolution NRO and mid-resolution commercial systems. How is this architecture different from the one the Intelligence Community has been advocating for the past few years?

Dr. Kaminski: This architecture is similar; the difference is in the alternatives considered for the second tier. We discussed whether the system should be government-built or rely on a commercial imagery base with the expectation that it would eventually improve in capability. There were issues regarding our ability to enhance and improve capabilities over time.

Space Sentinel: What impact did the experience with the Future Imagery Architecture (FIA) program have on the Panel’s recommendation?

Dr. Kaminski: We carefully considered the FIA program, as it alluded that due to poor performance, our Nation lacked the ability to acquire high-performance space systems. Some people concluded that we should therefore constrain ourselves to acquire low-performance systems. We [the Kaminski panel] felt we should not try to tailor what we acquire to our ability to acquire it, but rather we should rebuild our acquisition system to acquire what the country needs.

I believe one of the root causes of FIA’s problems included our loss of development planning capability. An example of good development planning was the U.S. ICBM program in the 1970s and 1980s. When starting a new program, we would begin with competitive contract definition studies, supported by a systems engineering capability, and look at the key trade-offs in performance, schedule, and cost. Next, we identified the critical subsystem capabilities and allocated the requirements down to major systems and subsystems. We then initiated our development planning to develop and demonstrate critical systems. For ICBMs, these typically included the guidance system, critical propulsion components, and a re-entry vehicle. In a period of a couple of

years, we would have demonstration models of those systems with the ability to gather test data. Having that data and having a system engineering foundation in place, we would then conduct the final competition for full-scale development, and within three years of that award, a first launch. Today, people look at a five-year program and say that is incredible, because they are accustomed to acquisition programs that take 10 to 15 years.

I think three factors are critical: 1) systems engineering, 2) developmental planning, and 3) the development of people, both in government and in industry. A program manager gains experience by developing critical subsystems and understanding the trade-offs. That helps later in development of the full system. In FIA, that development planning approach was absent. We didn’t spend the upfront money to do a good job in systems engineering; neither did we build the engineering models for the critical subsystems or think ahead to how we were going to test those subsystems before dealing with the overall integration. Significant problems resulted in integration and in the testing to support that integration.

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Lessons learned for the next generation EO systems: do upfront systems engineering work; identify the critical subsystems and components down to the second and third-tier; and begin to analyze, build, and test some critical items early on. We need more attention given to alignment of authority, with accountability and responsibility. Today, most NRO program managers do not have the authority to make key program decisions in a timely fashion so they can continuously assess and manage risk. In FIA, we saw evidence of a four-month process to go up the chain-of-command and look at alternatives. This does not work.

Space Sentinel: In an American Forces Press Service article you remarked, “DoD must pay more attention to the quality, education, and continuous training of its acquisition workforce.” Do you believe, as it sounds like from your previous answer, that inexperienced acquisition professionals caused most of the past acquisition problems?

Dr. Kaminski: Let me first separate the issue of experience from competence and dedication. We have a significant number of highly competent and dedicated acquisition professionals in the NRO. I believe that lack of current and relevant domain experience in acquisition (both government and industry) has been a significant contributor to declining acquisition performance. But, there is a co-conspirator here: the lack of alignment of authority,

responsibility, and accountability. I do not believe all of our program managers have the flexibility needed to exercise decision authority in a timely manner. The acquisition workforce should be granted authority commensurate with their accountability and responsibility. We need to provide them room to make mistakes, but constrain the size and nature of the mistakes so they are not fatal, and allow them to learn from their mistakes to develop their capabilities and domain experience.

Space Sentinel: So, part of this comes from micromanaging to the point where you are afraid to do anything?

Dr. Kaminski: Absolutely. When I look at the models of the past, we had plenty of flexibility built into the NRO budgeting and acquisition system so the program manager had decision authority, rapid decision timelines, and the reserve funding needed to initiate alternatives when primary approaches were not progressing as expected. Today, the decision process is often four months or longer, and funding reserves are not adequate. Time in acquisition is important for several reasons. First, in a three-year project, expect that people will be in their job the entire three years and have to deliver something. If you are working on a 10-year effort that is handed off to a different program manager every two years, then accountability and responsibility get lost. Second, if a developmental program is 12 to 15 years, which is much of a person's career, they will not be able to leverage their current experience and apply it to the next program. So, you "lose the recipe" and confidence in being able to acquire space systems. Reducing the cycle time is critical.

Space Sentinel: In a March 3, 2009 statement before the Armed Services Committee, you cited a lack of stable program funding as a major contributor to acquisition problems. How does the proposed EO Way Ahead address funding challenges during this time of budget cutting?

Dr. Kaminski: Program and funding stability were key issues for us in reviewing how we execute the program. The program needs enough funding for front-end systems engineering and developmental planning, and for the flexibility to consider alternative paths. When I was serving as Undersecretary of Defense for Acquisition, we funded our programs to the amount recommended by our independent cost analysis group, but then held the program manager and contractor to their lower estimate as a target for the program, as an incentive. Because of problems that might develop, they might not achieve their estimate, but the difference between those two funding estimates would serve as a reserve for additional efforts as the program deemed necessary. The ability to have that reserve is very important. In the past, NRO was allowed that reserve, but we lost a great deal of flexibility. We need to regain some of that flexibility, and provide for both a financial reserve, along with a corresponding reserve for performance requirements. When we start a program, we never know as much about the program and

the trade-offs as we do six months to a year into the program. You need freedom to adjust the allocation of requirements and, in some cases, the freedom to adjust top-level requirements, as the program proceeds and the tradeoffs are better understood. The top-level requirements should be examined at a higher level, but the program manager should have the flexibility and financial freedom to look at requirements at the sub-system level and pursue alternative paths.

Space Sentinel: In that same March 3rd statement, you listed several obstacles to efficient acquisitions: lack of adequate systems engineering and planning; lack of alignment of responsibility, authority, and accountability of managers; lack of early attention to test and evaluation; and excessive time from program initiation to fielding. Why do they remain a problem for government acquisitions?

Dr. Kaminski: I think the fundamental problem is the very nature of large bureaucracies. There are many people influencing decisions and, sometimes, an invisible hand is blocking the decisionmaking process. When milestone decision authority is distributed, it is hard to hold the program manager accountable when someone else is constraining the program manager's ability to do his or her work. Pushing for alignment of authority, responsibility, and accountability is important. Time is the enemy; letting things drag out makes things worse. You have to push people to deliver on schedule and you do that by understanding what we are doing, and identifying the challenges and risks. We have to go back to the model of developmental planning, with good systems engineering, and the ability to learn from mistakes and make trade-offs.

Space Sentinel: Dr. Kaminski, thank you.

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