Initiative for A Renewed Transatlantic Partnership

July 2004

The report below has been endorsed by former U.S. Secretary of Defense Harold Brown and former NATO Secretary General Lord George Robertson, co-chairs of the CSIS Initiative for A Renewed Transatlantic Partnership. Written by Pierre A. Chao, Director of Defense Industrial Initiatives at CSIS, this report outlines ways in which the proposed NATO Alliance Ground Surveillance (AGS) program exemplifies Alliance cooperation on common goals, and identifies some of the fundamental problems that frustrate efforts to proceed on combined procurements.

NATO AGS—Finally Ready to Fly?

by Pierre A. Chao

Over a year after the fractious Iraqi War debates, steps are being taken to repair and reinvigorate the transatlantic relationship. One milestone has been the NATO Istanbul Summit on June 28-29, where the relevance and capabilities of the Alliance were reaffirmed. On the agenda, specifically, was the endorsement of a new collective investment by NATO to proceed with the next phase of the Alliance Ground Surveillance (AGS) Program. This will be the first major NATO procurement since the path breaking NATO AWACS program of the 1970s. In many ways AGS can become a centerpiece of the new NATO, a potent symbol of the transformation of its capabilities for the 21st century. Why is this program important and what lies ahead?

A Key Capability

AGS is a radar in the sky, mapping movements on the ground on a continuous basis and passing on those movements to battlefield commanders for intelligence and strike purposes. (For a more detailed description, see box on page 2.) AGS parallels the JSTARS program (Joint Surveillance Targeting and Acquisition Radar System) utilized by the United States during the 1990s. Operating from a safe distance behind the front lines, the AGS radars will look deep into hostile territory, identify movements and specific targets, and help coordinate counter-strikes on those targets. It is a centerpiece of the new information-intensive form of conflict pioneered by the United States during the past decade.

The AGS program will provide an important enhancement to Alliance military capabilities, particularly to the new NATO Response Force. Air ground surveillance technology has a vital role in almost every type of contingency NATO forces are likely to face as the Alliance embarks on its new vision for confronting global security threats, from high-intensity warfare to stability operations to counter-terrorism. Today, the limited number of air ground surveillance aircraft and unmanned vehicles owned by individual nations are in high demand, and constantly over-tasked (half of all the JSTARS available were deployed during the NATO operations in Kosovo, for example). The jointly owned NATO AGS is intended to provide the Alliance a reliably available pool of air ground surveillance assets. Moreover, the cooperatively designed AGS system serves to improve the interoperability between NATO forces at a time when NATO's increasing deployments and new mission of projecting stability beyond its borders constitute a real and pressing need.

Why It Matters

The AGS program is intriguing, therefore, because, in a microcosm, it embodies so many of the strategic and political issues facing the Alliance today. Will NATO transform its military capability for 21st century warfare? Is Europe willing to invest in enhancing military capabilities? And is the United States prepared to share technology with its allies? NATO AGS has the potential to be a win-win program. Progress on the program goes beyond just advancing a weapons system that provides NATO with real military capability; it can be one of the stepping stones to a new

NATO—an investment of political, financial and military capital in continued collective security.

Firstly, AGS will make a contribution to Alliance modernization because its technology is fundamentally transformational. It is a force-multiplying capability which leverages time sensitive information into better battlefield awareness, and a faster, more coordinated and more precise response. The revolutionary aspects of the technology were demonstrated by the United States during the Gulf War, the Kosovo operations, Afghanistan and the Iraq War. It is the type of capability that has been deemed necessary for the transformation of European and NATO militaries by every initiative of the last five years—the NATO Defense Capabilities Initiative in 1999, the EU European Capabilities Action Plan in 2001, and the NATO Prague Capabilities Commitment in 2002. NATO AGS fits ideally with the transformation vision for NATO articulated by General James Jones, Supreme Allied Commander Europe.

Secondly, AGS represents a new start for an alliance that needs closer military integration across the Atlantic and also between the European military establishments. The growing gap between the U.S. military and its European partners has been a central concern since the end of the Cold War. While Europe spends considerable resources on defense, much of that spending is unproductive because it is split among 26 countries, each of which maintains national overhead structures and establishments. Specialization of capability and consolidation of effort is the future for Europe and NATO if the goal is a set of useful capabilities. The jointly funded AGS will represent the investment of European capital necessary to live up to its capabilities commitments, provide a critical, NATO-owned, war fighting asset, and will pioneer the patterns of transatlantic cooperation that will be needed in the years ahead.

Thirdly, it has the potential to enhance technology sharing between allies. Traditionally, interoperability between NATO militaries has been achieved by building technological bridges between disparate, nationally developed weapon systems. But NATO AGS has at its heart a radar being designed cooperatively between the United States and Europe, and both partners are expected to contribute hitherto protected technologies—those developed for JSTARS in the U.S. and SOSTAR (Standoff Surveillance and Target Acquisition Radar) in Europe. Given that U.S. air ground surveillance technology is recognized as more advanced, progress on AGS would demonstrate that the United States is willing to share some of its technology to support the broader objectives of enhanced NATO interoperability and capabilities.

Fourthly, the program capitalizes on competition between transatlantic industrial teams. Rather than a battle between Fortress U.S. and Fortress Europe, the competing consortia have been multinational and transatlantic in nature. One team vying for the development and manufacturing of the overall AGS system is led by a U.S., French, German, Canadian, Italian, and Spanish group and has participants from 19 NATO nations. The other contender is led by a U.S., German, Italian, and British consortium and also has partners from most NATO nations. A consortium of companies from the U.S., France, Germany, Italy, the Netherlands, and Spain is designing the radar to be used in the system. The NATO AGS program demonstrates that defense industrial issues can be addressed in true partnership.

Air Ground Surveillance Technology

At the heart of air ground surveillance technology is a radar capable of producing photograph-like Synthetic Aperture Radar (SAR) images, as well as Ground Moving Target Indicator (GMTI) information. Both aspects of the system rely on a fundamental physical principle—the Doppler effect—by which radar echoes from a moving object return at a slightly different frequency. By observing changes (or lack thereof) in the frequency and or timing of reflected radar waves, the SAR mounted on an airplane in flight can use sophisticated software algorithms to produce high quality detailed images of the terrain below. Such a radar can also determine whether objects below are stationary, advancing or receding. Additionally, because the system relies on radar waves it can be used day or night, and during virtually all weather conditions.

At the practical level, air ground surveillance provides battlefield commanders reconnaissance and intelligence information in the form of SAR photographs covering a particular area, information about moving objects (direction, range, velocity), identification of objects (wheeled or tracked for example) and tracking of objects. The information generated is further leveraged by using it to cue other surveillance systems, like UAVs, to take closer looks, or by directing ground or air forces in for a strike.

Despite these compelling reasons for pursuing NATO AGS, the program's history so far also highlights the patience and perseverance needed when working in a multinational setting. It should be reinforced that NATO AGS has not yet reached the point where its future is assured and many difficult spots remain on the road ahead.

History of a Collaborative Program

NATO has been deliberating AGS for over a decade. [See page 5 for NATO AGS History.] The NATO Defense Planning Committee stated a need for this capability back in 1992, having seen the considerable benefit of JSTARS during the Gulf War in 1991. At the time, the AGS program was widely viewed as a way to extend the declining production program for the American JSTARS program. European partners resisted what was seen then as an American push to sell a pre-packaged deal, harkening to an earlier era when NATO bought the American-designed AWACS system for air surveillance and command and control. This ultimately led to the transatlantic industrial teaming in 2001 that sets AGS apart as an example of cooperation, but also contributed to the long process of building the consensus for a major new NATO investment between the allies.

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In April of this year, a key milestone was achieved when the NATO Conference of National Armaments Directors formally directed the AGS Steering Committee to proceed with the design and development phase for AGS. The National Armaments Directors also endorsed a recommendation to award a €350 million ($417 million in U.S. dollars) AGS system design and development contract to the Transatlantic Industrial Proposed Solution (TIPS) team after evaluating competitive proposals from two transatlantic manufacturing consortia—although it should be noted that this decision is currently being protested by the losing bidders. If the program were to proceed without a hitch, AGS will become fully operational in 2013.

To reach fruition, however, progress has to be made on the fundamental issues of requirements and technical solutions; funding of the development; and technology sharing. Furthermore, firm commitments for funding the production phase of the program are far from being in place.

Answering the Requirement—Manned or Unmanned?

On the requirements front, one of the fundamental questions yet to be fully resolved is the question of whether AGS will be a manned or an unmanned system. The decision by the National Armaments Directors to approve the development of a combined fleet of manned and unmanned aircraft papers over the fact that substantial differences remain on this key point.

Ironically, this debate parallels an early debate on the U.S. JSTARS. Back in 1984-85, the debate for JSTARS was whether to mount the radar on a large aircraft—a Boeing 707 like that used for AWACS—or a small long-endurance aircraft—the U-2 spyplane manufactured by Lockheed at its famous "Skunk Works." The U.S. Air Force strongly favored the large aircraft option so that operating stations could be located in the aircraft along with the radar. This matched the operational concept used for AWACS and they understood the management challenges of that approach. Civilians in the Office of the Secretary of Defense (and to a lesser extent the U.S. Army) preferred the U-2 option. This approach would put the radar and basic signal processing capability on the aircraft, but beam down to ground stations the data that would be analyzed by operators, who would in turn communicate breaking developments to combat commanders for follow up attack. Ultimately, the Boeing 707 approach was selected and JSTARS has been a huge success. The option of a radar on a smaller aircraft, like the U-2, was not pursued and the concept was never fully tested at the time.

Today the battle lines are drawn between manned and unmanned vehicles. One variant of AGS would mirror that of JSTARS, with operator stations on board the aircraft that would immediately evaluate breaking developments and communicate to ground commanders for subsequent action. The other variant would place the radar on a long-endurance unmanned aircraft, with the radar picture beamed down to ground stations for action.

There are considerable advantages for the manned aircraft option. The military and industry know how to make this kind of a system work. It parallels the operations used for NATO AWACS and JSTARS, and provides additional command and control capabilities to battlefield commanders. A larger radar can be placed on an aircraft. The integration problems are considerable, but can be defined within the physical limits of the airframe. And if an enemy force decides to engage the AGS aircraft, onboard pilots can take evasive measures on their own and more effectively for force protection purposes.

There are also considerable advantages to the unmanned aircraft option. Why build big aircraft to put people in the air, when all you need airborne is the radar? An unmanned aircraft can be much smaller, and therefore much less expensive. It also does not possess all the constraints that humans face, so it can remain on station much longer, therefore requiring fewer aircraft. Operator stations on the ground can be considerably less expensive to build, and therefore more can be purchased.

Both alternatives have advantages and disadvantages. And in this debate, NATO has been internally divided. It is reported that the United States favored the manned aircraft option, while some Europeans favored the unmanned option. The National Armaments Directors bridged over this divide by designing a program that has both. One can argue that this is the best of both worlds. It can also be argued that it represents as well the worst of both worlds. How much more will the AGS program cost by trying to satisfy both operational concepts rather than optimizing around one or the other? The question of how to meet the core requirement may yet resurface as a major question in the future of the program.

Funding Structure

How will NATO buy AGS? The model being used is the collective NATO investment made in the purchase of AWACS in the late 1970s. In that case, each participating country contributed in proportion to their relative economic strength. From the beginning, however, NATO AWACS did not have complete support. The United Kingdom, for example, never participated in the investment of NATO AWACS, arguing that it could rely on and contribute its Nimrod system to NATO in time of war.

It is also assumed that the long-term funding of AGS operations will parallel the system used to fund operations of NATO AWACS. Some 15 of the original 16 NATO countries participate in NATO AWACS operational funding— the United States, for example, contributes 42%, Germany nearly 31%, Canada 10% and the other nations the balance. Iceland, not having a military establishment of note, opted not to participate in AWACS operational funding. The United Kingdom, while opting not to invest in the NATO AWACS procurement, does contribute to its ongoing operations.

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How widely NATO will share the investment and operations burden of the system is now and will be a contentious issue. Although AGS was endorsed at the Istanbul Summit, at this stage there is still no formal agreement on funding even the first €350 million needed for the design and development phase. Similar to AWACS, the U.K. has already opted out and states it will contribute its ASTOR (Airborne Standoff Radar) aircraft to NATO when needed. For its part, the Pentagon currently has $30 million allocated for NATO AGS in its FY2005 defense budget. Negotiations on a memorandum of understanding (MOU) are not complete and are expected to wrap up by year's end. The funding negotiations are inextricably tied up with the question of technology sharing. Some European countries appear to be holding back funding until they see how forthcoming the United States is in releasing advanced radar technology, and the United States is holding back its decision on how to handle technology sharing until it sees serious European commitment to funding.

These discussions will not begin to address the serious commitments needed to enter production, requiring some €3.15 billion ($3.7 billion).

A Brief Chronology of the NATO AGS Program

1991 Gulf War (Operation Desert Storm)—even though the JSTARS program is still in advanced testing, two E-8A aircraft are deployed and used successfully to detect movement of Iraqi ground vehicles and Scud missiles. The benefit of an air ground surveillance system becomes clear to NATO military leaders.

1992 The NATO Defense Planning Committee issues a requirement for an alliance ground surveillance capability comparable to the JSTARS.

1995 The NATO Conference of National Armaments Directors (CNAD) endorses recommendation for a NATO-owned and operated core AGS capability, supplemented by interoperable national assets.

1997 The NATO CNAD reaffirms the decision to pursue a NATO-owned and operated AGS capability, but decides to drop a U.S. proposal for fast track acquisition of four JSTARS aircraft and instead initiate an intensive six-month search for fresh concepts and new acquisition options.

1998 The NATO CNAD endorses concept definition studies of the NATO Transatlantic Advanced Radar Program (NATAR) —comprising the United States plus Belgium, Canada, Denmark, Luxembourg and Norway—and the Standoff Surveillance Target Acquisition Radar (SOSTAR) by France, Germany, Italy, the Netherlands and Spain.

2000 The NATO CNAD authorizes two year competition between the NATAR and SOSTAR teams.

Northrop Grumman and Raytheon are awarded the Multi-Platform Radar Technology Insertion Program (MP-RTIP) contract by the Pentagon.

2001 Formal SOSTAR joint venture to develop a European radar—comprising EADS (France/Germany), Thales (France), Finmeccanica (Italy), Indra (Spain), Stork/Fokker (Netherlands)—is founded.

April 2002 The Transatlantic Industrial Proposed Solution (TIPS) consortium led by Northrop Grumman, EADS and Finmeccanica submits white paper to NATO on the platform solution to the AGS requirement.

November 2002 Thales joins TIPS consortium.

The National Armaments Directors of France, Germany, Italy, Netherlands, Spain and the U.S. sign a "Statement of Intent to Assess a Cooperative Radar Development" at the NATO Prague Summit, forming the Transatlantic Cooperative AGS Radar (TCAR) out of MP-RTIP/NATAR and SOSTAR.

February 2003 The Cooperative Transatlantic AGS System (CTAS) consortium led by Raytheon and Alenia Marconi Systems submits an unsolicited white paper/proposal to NATO on the platform solution to the AGS requirement.

May 2003 The NATO CNAD approves "limited competition" between TIPS and CTAS, together with a mixed fleet of manned and unmanned aircraft.

August 2003 TIPS and CTAS each awarded study contracts during €1.5 million /$1.7 million concept definition phase.

April 2004 The NATO CNAD endorses the TIPS concept and the development of TCAR. CTAS protests the decision.

Late 2004 *Award of €350 million/$417 million System Development and Demonstration contract planned*

2007 *Expected date for transition to Production phase, estimated €3.15 billion/$3.7 billion.*

2010 *Due date for initial operational capability of six aircraft.*

2013 *Full operational capability*

Technology Sharing

For years, NATO has worried over the widening gap in military technology between America and Europe. With the United States spending 5 to 6 times more on R&D every year than Europe combined, there is little wonder why this gap exists and has grown. The question is what to do about that yawning gap in the context of a joint NATO project?

Enter the debate over technology controls. Both the U.S. and Europe developed control procedures over military technology during the Cold War. It was a centerpiece of the West's strategy to keep advanced technology out of the hands of the Communist world. The Soviet Union has collapsed, but U.S. technology controls remain, stronger than ever. One of the most common complaints of allies is the difficulty in getting permission to incorporate American-developed technology into European-based development and production programs. While technology sharing could represent a major highlight of the AGS program, unfortunately, it has the potential to also be a major problem.

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The program has been structured as a cooperative transatlantic project since 1998. The competition for the platform has been between two international consortia—both involving industrial partners from 19 NATO nations. It has also been a feature of the program that regardless of who was selected to provide the overall system, the winning team would use the same cooperative designed radar supplied by a U.S., French, German and Italian consortium leveraging the U.S. MP-RTIP (Multi-Platform Radar Technology Insertion Program) and the European SOSTAR technology. The U.S. Government jealously guards advanced technology, and the JSTARS/MP-RTIP radar and signal processing algorithms are among the most sensitive technology. Whether the United States will permit its industry to introduce the JSTARS/MP-RTIP knowledge into AGS is an unresolved question.

The key technology release issues are currently under debate within the Department of Defense and within the Alliance. Support for AGS in part hinges on this key question. As noted, if European capitals conclude that America is withholding critical technology from AGS, it is widely anticipated that participation in AGS will drop off. In theory this question is to be settled over the next six months, but the matter is far from clear. Past experience in transatlantic cooperative programs indicates that without a clear understanding of the technology sharing issues from the outset, there may be considerable difficulties. This issue could remain a sticking point.

The Way Ahead

Direction by the National Armaments Directors to proceed with design and development, and support for the AGS program at the Istanbul summit mark an important moment for the Alliance and for the program itself. There are two basic paths that lie ahead. One path is for collective, allied procurement and operation of new capabilities. The other path is for national specialization of specific defense capabilities in Europe and the U.S. that are later combined to provide the Alliance, in its entirety, with integrated capabilities. Both paths are difficult journeys. AGS represents a critical opportunity for the Alliance to develop and deploy breakthrough capabilities on the battlefield, as well as unifying the vision of different countries into a collective whole. Success is not a given and will require hard compromises on the interlinked issues of funding and technology sharing. Europe must realize that, if it is not able to provide the long term funding for improving capabilities, it only provides ammunition to those in the U.S. who are leery about sharing technology. The U.S. needs to acknowledge that Europe will not commit funding unless it leads to the development of European capabilities and helps close the gap between the allies.

Overcoming the hurdles facing the program can complement the Alliance's efforts on its broader challenges. Progress on AGS will send a message that Europe is willing to invest in military assets for 21st century warfare. And if the U.S. were to share the necessary technology to make NATO AGS a success, it would show the cynics that it is possible to have a true transatlantic defense partnership. Ultimately, the NATO AGS program is about providing a much-needed military system to the war fighters. If an investment of time and capital in NATO AGS returns not only material benefits in terms of capabilities, but also enhances the Transatlantic Alliance more broadly, all the better.