Transforming Joint Air Power
The Journal of the JAPCC

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NATO's Air Power has been of utmost importance to the Alliance since its inception. Time and time again, NATO and the Alliance nations have turned to Air Power as their first, and in some cases only, military response option. Air Power, now coupled with Space Power, continues to demonstrate its unprecedented value. It provides the widest variety of response options against a range of threats, crises or disasters; to safeguard our populations and enable NATO operations.

Despite its unprecedented value, NATO nations have and continue to drastically reduce their Air Power capabilities. This trend began at the end of the Cold War and continues at an alarmingly increasing rate. The near-term cessation of Afghanistan operations, combined with the on-going financial crisis, makes it certain that Air & Space (A&S) Power capabilities will be under heavy scrutiny and most likely further reduced. Although everybody talks about money, this is not the key problem in NATO. European NATO members collectively spend about € 240 billion annually on defence, second in the world after the United States. The problem is that the money is spent wrongly. The sovereignty paradigm prevents the nations from really making steps forward in multinational cooperation. Smart Defence will never lead to effective solutions as long as this sovereignty issue is not solved. The key to success of Smart Defence is therefore Smart Politics. This can create the A&S Power (as well as Land and Naval) capabilities NATO needs to execute its mission.

I am delighted to introduce the 17th edition of the JAPCC Journal which contains two specific articles that expand on the Pooling and Sharing issues I raise above (page 54 and 74); I urge you to read them. But we start this edition with an interview with Major General Finn Kristian Hannestad, Chief of the Royal Norwegian Air Force (page 6); who says that Norway's unique situation allows it to continue investing in future technologies, such as the F-35A. Along the 'future Air Power' theme, Dr. Holger Mey (page 24) stresses the importance of Air Power in Afghanistan and how it will be even more important in the future. Dr. Dolf Bos (page 68) also elaborates on the importance of Air Power in future conflicts; specifically stating that fixed-wing combat aircraft should be the emphasis for NATO. I am especially grateful for their contributions in support of Air Power.

Air Commodore Paddy Teakle (page 58) offers a stimulating approach to economic austerity, laying out his concept of military momentum; arguing that velocity is as important as mass in the momentum equation. He ties this to Command and Control, which he says is the key to identifying and setting the velocity vector. Also, in this edition, we dedicate a special five-article section on Space; specifically showcasing the Schriever Wargame 2012 (SW 12) International (pages 33–53) with various first-hand accounts. Other articles cover topics from HIP, HIND and NH90 Helicopters to the Alliance Ground Surveillance programme, fighter training and a NATO Air Advisor capability. I would like to thank all the authors for their valuable contributions.

Finally, the JAPCC team greatly appreciates your feedback and thoughts. Please take five minutes to complete our short online survey at
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Thank you very much!

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Please e-mail submissions to: articles@japcc.de

We encourage comments on the articles in order to promote discussion concerning Air and Space Power.

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The Royal Norwegian Air Force

On the Doorstep to Something Great

An Interview with Major General Finn Kristian Hannestad, Chief of Staff, Royal Norwegian Air Force

Sir, on 15 June 2012 Norway placed an initial order for the F-35A Lightning II; thus commencing the largest procurement project in Norwegian history. What do you see as the biggest challenges in integrating the Joint Strike Fighter into the Royal Norwegian Air Force (RNoAF) and how do you plan to meet these challenges?

The RNoAF faces several challenges to integrate the F-35A Lightning II. First and foremost, the F-35 constitutes a greater capability compared to our F-16's, and as with any new capability comes a host of new support requirements. Though we are integrating the F-35 in the Air Force, the effect will be apparent in the entire Armed Forces of Norway. This will demand relatively large changes in everything from doctrine to Command and Control (C2). One of our conclusions so far in our analyses is the need to establish a new National Air Operations Centre with a more robust and comprehensive capability than today.

Furthermore, the sustainment cost is constantly rising as we field new systems into our Air Force; this is also true for the F-35. In order to generate sustainment flexibility, we have to restructure and centralise our bases, establish more effective maintenance and logistics solutions and in fact develop more effective force generation and training for our pilots. In the future we will have fewer bases, 30 % of our training will be conducted in very advanced simulators and we are already preparing to implement performance based logistics. We're confident we'll meet these challenges, as well as others, on our way to fielding the highly capable Joint Strike Fighter.

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In June 2012 the Norwegian Parliament approved a Defence White Paper that outlines the medium-term development of the Norwegian Armed Forces out to 2020, including a major restructure of the Norwegian Air Force. Besides cost savings, what do you think will be the most important benefits and improvements to come out of this?

Norway is in a unique situation compared to the rest of Europe; whilst other countries are cutting in their defence budgets, we find ourselves investing largely in advanced, modern, high technology equipment. As for the Air Force, we have replaced our old tactical transport aircraft with brand new C-130J Super Hercules, we are currently receiving our new NH90 helicopters, and we are upgrading our surface-based anti-aircraft system as well as our C2 system. Furthermore, our Sea King Search and Rescue (SAR) helicopters need to be replaced soon. The largest investment, though, and the crown jewel in our modernisation, is the procurement of our F-16 fighter successor: the F-35A Lightning II. Preparing to receive this state of the art weapon system is one of the main reasons why we have to transform and centralise the Air Force. By reducing the number of air bases, we will enable ourselves to better utilise our systems through lowered operating expenses; thus achieving more Air Power from our budgets. By restructuring our organisation and modernising, we aim to achieve an improved synergy, higher efficiency and strengthened operational capability. Our momentum in regard to synergy will emerge through our future battle station at Ørland Air Station; where the F-35 fighters will be collocated with our Ground Based Air Defence Systems, Force Protection ground forces and all the necessary support units. I see the transformation as an opportunity to put into effect a concentration of effort that will allow us to continue to deliver world class Air Power in the future.

The RNoAF contributed to and played an active role in Operation Unified Protector (OUP). What were the Norwegian Air Force's main challenges during OUP and the key Lessons Identified/Learned?

I would say one of the main challenges was the aspect of time. It took the operational units less than one week from understanding the situation to dropping

bombs in Africa, and those we deployed were not from a standing Norwegian Quick Response unit. With this as a starting point you can easily see that this was a challenging feat. A big part of the challenge was establishing sufficient communication with all the participating units, receiving adequate information about what we were doing and attaining and sharing a good understanding about the situation, from the political level all the way down to the weapon operator. It is easy to see that it was quite demanding to conduct the plan, deploy the units and start the operation on such a short notice.

The reason behind the success we had, and simultaneously characterising it as a 'Lesson Identified/Learned,' lays in our training, our modern equipment and weapons, and highly skilled, knowledgeable, and motivated Airmen, including both military and civilian members. If you view the operation from a leader's perspective, you can see that the leadership on every level had the wherewithal to release the full potential of the units. Personnel made important decisions and coordinated on a (very) small scale. This can be seen as an example of network-based operation in the cognitive domain.

After five years of service in Afghanistan, the Norwegian Helicopter Medevac unit was withdrawn in the autumn of 2012. What impact has the engagement in Afghanistan had on the Norwegian helicopter community and what are your key takeaways from that operation?

The operation in Afghanistan for the helicopter crews was very challenging, from the harsh operating environment and the demand placed on the personnel themselves. It was a new environment with heat, sand, and darkness. And most of all there was varying degrees of, at times, unknown threats. The predeployment training the helicopter units conducted in Norway in preparation for the Norwegian Aeromedical Detachment (NAD) assignment, together with the standard training program, have shown us the value of training under challenging conditions back home before deploying into an operation. Training and education of new pilots and crews is done partly under bad weather, winter operations, and complex scenarios. The crews who flew in Afghanistan benefited greatly from this training. The winter operations and landing in snow under night conditions was especially beneficial, since it was very comparable to the actual conditions they met in Afghanistan.

The Norwegian helicopter community is quite small compared to other countries. The personnel have contributed beyond what can be expected over time, and as the operation dragged out in time we had to bring in crews from other units, like rescue service units and staff officers, in parallel with the training of new personnel. The additional personnel from other units gave us the desired level of experience and fresh views on other systems, which contributed greatly to

the continued success of the NAD. As NAD is now discontinued the personnel have returned to their original units with new and valuable experiences they can develop further and apply in their own areas of work. The helicopter community and thus the entire Air Force is strengthened in terms of overall experience and capability.

All helicopters in the Norwegian Armed Forces, Coast Guard and the Department of Justice's Search and Rescue units, are operated by the Air Force. Could you please elaborate on the positive and negative aspects of this way of organising and operating national helicopter resources?

Given the relatively small number of military helicopter assets in Norway, the most cost-effective and safe way to organise them has proven to be in the Air Force. The RNoAF has provided an umbrella for common helicopter pilot production, flying regulations, and flight safety, since helicopters came into relevant military use in the early sixties. Initially the demands were served by small Bell utility helicopters, but over the years the need for more specialised capabilities has grown. Still, the overall concept of keeping Army support, SAR and maritime Coastguard helicopters under one hat, has not been seriously challenged. Overall, the flexibility of manning all helicopter types with well qualified and standardised crews has resulted in highly appreciated quality and safety records over the years. The helicopter community has also benefitted from a relatively large and cunning logistics organisation with a wide range of expertise. The only downside that may have been an issue is how much priority the RNoAF has been able to give to the helicopter branch for upgrades, etc., in competition with more 'sexy' Air Force assets like fighters and maritime patrol aircraft. However, budget mechanisms developed over the past decades, giving the 'customers' more leverage on priorities, have proved to counter most of this potential shortfall effect.

Do you think the Norwegian Air Force is on track to have the right equipment and capabilities to meet both the Norwegian national level of ambition and the level of ambition for contribution to NATO?

The Norwegian Air Force is now going through a demanding restructure, as previously mentioned. This includes a restructure of our bases, which will also affect many of our Airmen. But this will also mean a more efficient Air Force. We are on the doorstep to something great; where we are, and will continue to be, amongst the best air forces in the world. Our experience from recent international operations makes us even more prepared to deal with situations that may occur in Norway and in the rest of the world. We have shown time after time that we are world-class in all disciplines, whether with OUP, our NAD-contribution, the Gulf of Aden operations, and now with our Tactical Airlift Detachment (TAD) contribution. In the following years we will phase in both the new jet fighters and search and rescue helicopters, just to mention a few. This will make our men and women better prepared and capable to tackle the challenges we face in the future.

Sir, thank you for your time and your comments.

Major General Finn 'Finny' Kristian Hannestad

is the Norwegian Air Chief of Staff and joined the Air Force in 1982. He is a graduate of the Air Force Academy, Staff Course, Joint Staff Course and the US Air War College. As a fighter pilot he has logged approximately 2,000 hours and commanded at the Squadron (Ørland) and Group (Bodø) levels. During various staff positions he has collected vast experience in operational Air Force matters and International Military Policy related matters. He served as the Norwegian F-16 Detachment Commander operating out of Grazzanise, Italy during Operation Allied Force. In 2004 he became DCOS Ops at CC Air HQ in Ramstein, where he had a major role in commanding air operations during the 2006 NRF LIVEX Steadfast Jaguar. Prior to his current position he was the DCOS Ops at the NOR Joint Operational HQ.


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Shoulder to Shoulder

The Need to Cultivate an Air Advisor Capability within NATO

By Colonel Bernie 'Jeep' Willi, USA AF, JAPCC

"Our current operations have been a real-time, real-world driving force for improving our ability to work together – and, when necessary, to fight together. Not just among the twenty-eight Allies, but also with our partners around the world. Five in our Libya operation, seven in Kosovo, and twenty-two in Afghanistan. This is invaluable experience we cannot afford to lose."
NATO Secretary General, Anders Fogh Rasmussen[1]

The NATO Summit in Chicago held on 20 May 2012 stated in a Declaration that "NATO is ready to work towards establishing, at the request of the Government of the Islamic Republic of Afghanistan, a new post-2014 mission of a different nature in Afghanistan, to train, advise and assist the Afghan National Security Forces (ANSF), including the Afghan Special Operations Forces. This will not be a combat mission. We task the Council to begin immediately work on the military planning process for the post-ISAF mission."[2] The requirement to provide training, advice and assistance to potential partners is not unique to Afghanistan. It is one that is becoming more common as NATO extends its reach outside of Europe and North America. This requirement manifested itself in Iraq as the NATO Training Mission – Iraq (NTM-I) and in Afghanistan as the NATO Training Mission – Afghanistan (NTM-A). The ability to provide training, advice and assistance in the post conflict phase to bring vanquished nations back into the world community is an important capability. But it is also important for the mentoring and development of relations with non-NATO partner nations where common interests are shared with NATO, especially as NATO's role in the world evolves post Afghanistan. The importance of building these relationships now, for potential future NATO-led operations, is clearly highlighted in the above statement by Secretary General Rasmussen. NATO needs

to look at how it executed these previous air advisor missions and determine if there are better, more efficient ways it can support these missions in the future. This article looks at why these missions are important to NATO and provides possible options for NATO to support these missions in the future.

The Importance of Partnership Building to NATO

The notion of NATO embracing the concept of partnership building to support NATO-led operations is nothing new. Some claim the NATO declaration from the London Summit in 1990 as the first mention of the importance of partnership building to NATO. Even Article 2 of the Washington Treaty which conceived NATO in 1949 could be interpreted as a mandate to partnership building.[3] The legacy of T.E. Lawrence, the man known as Lawrence of Arabia who's regarded as a hero in British history, is evidence that engagement with partner nations has long been part of Western military philosophy. Even today, the notion of partnership building is seen as a keystone in NATO's political agenda; as it was often mentioned in comments made by key delegates during the recent NATO Summit in Chicago[4] and it is mentioned in the 2010 NATO Strategic Concept[5]. Why should NATO care about partnership building aside from the robust rhetoric it provides? If it is truly an important piece of NATO's future, what role can advisory missions, specifically air centric advisory missions play in partnership building?

The Role of Air Advisors

Partnership building specifically through use of air advisor teams can be a key tool in crisis management. This is because partnership building helps foster cultural understanding and provides a framework for assessment of future crises that may arise in these nations. Previous NATO air advisor teams that lived and worked with their partner nation hosts gained a greater level of understanding of domestic challenges that exist within that country. Also, NATO air advisor teams facilitate opportunities for dialogue and building trust and confidence between NATO and the partner nation. This dialogue and trust serves both the partner nation and NATO. For NATO, it improves the ability to initiate consultation with non-NATO entities during NATO led operations. This trust and dialogue serves partner nations because in times of crisis (such as in natural disasters or other humanitarian operations), NATO assets can quickly be brought in as they leverage the experience they gained through previous training operations in that country. Also, depending on the nature of the preparation provided by NATO trainers it gives partner nations additional response options. These response options may add legitimacy to governments struggling against an insurgency by providing capabilities the insurgents cannot match. These include improved use of Air Power to support disaster response operations, search and rescue capabilities, humanitarian operations and evacuation of non-combatants in areas where civilians are threatened. Finally, in nations where hostilities are occurring, partner nations can prevent fighting from escalating by using Air Power to rapidly move government forces where needed to contain insurgents.

USAF Model

Robust air capability is a hallmark of NATO operations. This robust air capability was useful in NATO operations in Kosovo and Libya. NATO air advisor teams can improve operational interoperability and help develop procedures for sponsoring potential operational partners. The utility of this capability was demonstrated by the work done by the US Air Force's (USAF) 6th Special Operations Squadron (6th SOS) prior to Operation UNIFIED PROTECTOR (OUP). The 6th SOS is a USAF combat aviation advisory unit whose mission is to assess, train, advise and assist foreign aviation forces in Air Power employment, sustainment and force integration. Squadron advisors help friendly and allied forces employ and sustain their own Air Power resources and, when necessary, integrate those resources into joint and combined (multinational) operations.[6] During 2009 and 2010, squadron detachments deployed to Afghanistan, Kyrgyzstan, Jordan, Qatar, United Arab Emirates, Korea, Thailand, Poland, Indonesia, Bangladesh, Mali, the Dominican Republic, Trinidad and Tobago, Guatemala and El Salvador.[7] It is not a stretch to imagine that these efforts were an important factor in enabling the integration and inter-

operation of Qatari and Emirati forces supporting OUP enforcing United Nations Security Council resolutions 1970 and 1973.

NATO air advisor training teams can provide an opportunity to engage across the globe with a variety of nations strategically important to NATO. Nations that may be reluctant to permit a NATO presence would be likely to consent to these less intimidating training teams. This is because these teams will focus on providing partner nations training on the non-lethal use of Air Power to support disaster response, search and rescue, humanitarian assistance, and non-combatant evacuation operations. Recent agreements NATO signed with Kuwait[8] and South Korea[9] and the level of interaction NATO has placed on working with Pacific nations in the future[10] is an indication of where NATO may potentially employ these teams. Finally, Partnership for Peace, Istanbul Cooperation Initiative, and Mediterranean Dialogue nations could also be potential locations where this air advisor training team capability could be of great use. If one considers the statement made by NATO Deputy Secretary General Alexander Vershbow at the 7th Annual Riga Conference regarding the importance of Asia to NATO's future[11], the utility and importance of this capability in permitting NATO to operate in areas where it previously had a limited presence becomes clearer.

A NATO Air Advisor Unit?

NATO's participation in air advisor operations has typically been accomplished by a variety of NATO nations and forces that have not been specifically trained for

the mission until just prior to deployment. Analysis suggests that a "specialised skill set and extensive experience working with foreign forces" is an important component in accomplishing this critical mission.[12] NATO may benefit by the establishment of an organisation that specifically supports these air centric advisory missions with the 6th SOS serving as a model. A principal mission objective for the 6th SOS is facilitating the availability, reliability, safety and interoperability of participating foreign aviation resources supporting joint and combined operations.[13] Mission execution is approached primarily through hands-on, adaptive training and advisory support geared to practical Air Power applications. Squadron training and advisory capabilities in the employment arena include Air Power applications, tactical employment and mission planning. Tactical flying activities include fixed and rotary-wing operations for combat search and rescue, close air support and airlift/aerial delivery (infiltration, exfiltration, resupply, and air drop). Assistance in the sustainment arena includes aviation maintenance, supply, munitions, ground safety, life support, personnel survival, air base defence, Command, Control and Communications (C3) and other sustainment functions supporting combat air operations.[14] Unlike the 6th SOS, this NATO Air Advisor Unit would have a large number of nations to draw from in order to tailor the capability to meet the specific

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requirement. If a nation is selected for engagement by NATO, the NATO Air Advisor unit could determine which NATO nation has the best capability to provide this training and would facilitate the preparation of an air training team. For example, if a Spanish speaking potential partner nation is selected that currently operates Mi-17s and C-130s, a determination could be made as to which NATO nation could best fulfil that unique requirement.

Due to the challenge of constraints on resources, especially in NATO countries, an alternate to a dedicated unit may include NATO units that have 'air advising' as a collateral mission. For example, an element of the Hungarian Mi-24/35 squadrons could be specifically trained as advisors or a C-235 squadron in Spain could have trained advisors embedded within the squadron. This could create a cadre of advisors across NATO that would not require additional resources or creation of new units. Another key piece in this concept would be having educated and trained staff officers/planners to develop the concepts and taskings for the mission set. This would drive air advisor requirements and thus facilitate a relevant and capable force structure.

Conclusion

In order to improve the effectiveness of these teams, this air advisory capability should be coordinated as part of a concerted effort by NATO with other diplomatic, economic and civil engagement efforts. These efforts would focus on promoting regional security and stability, finding mutually beneficial objectives and increasing mutual understanding. From a military perspective, air advisor efforts could be accomplished concurrently with land and maritime based advisor efforts to improve operational interoperability across the land, sea and air military components of a partner nation. Extensive study and analysis is still required to fully define the expected mission requirements, determine the existing capabilities within NATO to meet these requirements, identify the capability gaps and make recommendations to fill the needed capabilities. Finally, recommendations on how to organise, train and equip forces to provide this capability for future NATO led Air Advisor missions would need to be made in order to make this capability a reality. ●

1. NATO Secretary General, Anders Fogh Rasmussen at the Munich Security Conference, 4 Feb 2012.
2. Chicago Summit Declaration Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Chicago on 20 May 2012.
3. Article 2 of the Washington Treaty of 1949 states "The parties will contribute to the further development of peaceful and friendly international relations . . ."
4. Chicago Summit Declaration.
5. http://www.nato.int/lisbon2010/strategic-concept-2010-eng.pdf states, "The Alliance will engage actively with other international actors before, during and after crises to encourage collaborative analysis, planning and conduct of activities on the ground, in order to maximise coherence and effectiveness of the overall international effort."
6. 6TH SOS Military Factsheet, USAF, http://www2.hurlburt.af.mil/library/factsheets/factsheet.asp?id=3496
7. Ibid.
8. http://www.globalresearch.ca/kuwait-signs-security-agreement-with-nato/4138
9. http://www.rttnews.com/1969759/south-korea-signs-deal-to-become-nato-partner.aspx
10. http://www.nato.int/cps/en/natolive/topics_49188.htm
11. Speech by NATO Dep Sec Alexander Vershbow at the 7th Annual Riga Conference, 15 Sep 2012.
12. Another Way to Fight: Combat Aviation Advisory Operations, Norman J. Brozenick, Jr., Lt Col, USAF, June 2002.
13. 6TH SOS Military Factsheet.
14. Ibid.

Colonel Bernie 'Jeep' Willi

was a distinguished graduate of the USAF Academy in 1990 and an honor graduate of US Army Flight Training at Ft Rucker, AL in 1991. Col Willi holds a Master's Degree from Embry-Riddle Aeronautical University and is a graduate of the USAF Squadron Officer School, US Naval Weapons School, USAF Air Command and Staff College, and the USAF Air War College. He has held the position of Personnel Recovery Core Function Team Chief at HQ Air Combat Command, Langley AFB, VA, served as the Commander of the HH-60 Combined Test Force, Nellis AFB, NV and was the Deputy Group Commander of the 438 Air Expeditionary Advisory Group. Col Willi was an HH-60G/H, SH-60F and Mi-17 evaluator pilot and has flown combat missions in Operation Southern Watch and Operation Enduring Freedom. Col Willi is currently the Combat Air Branch Chief at the Joint Air Power Competence Centre in Kalkar, Germany.

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The sky is the limit at Sigonella Air Base, Italy for NATO AGS.

Alliance Ground Surveillance Programme

The Challenge of Training a Multinational Crew Force

By Lieutenant Colonel Scott Coon, USA AF, NATO AGS Implementation Office, SHAPE HQ

NATO's Alliance Ground Surveillance (AGS) programme was established following the initial Gulf War in the early 1990's. The Alliance was eager for a ground surveillance capability similar to that of the U.S. Air Force Joint Stars system. Through two plus decades, the AGS programme lingered in political turmoil as nations sought consensus on the procurement of a suitable system. After several considerations, the RQ-4B Global Hawk was chosen as the 'airframe of choice' to provide NATO with the long awaited capability. In May 2012, it became official, as the € 1.2 billion AGS procurement contract was signed at the NATO Summit in Chicago.

The AGS procurement contract accounts for the purchase of an 'AGS Core' system consisting of 5 RQ-4B Block 40 aircraft with the multi-platform radar technology insertion programme (MP-RTIP) sensor and the necessary ground control stations to control all 5 aircraft simultaneously. However, 'AGS Core' is a 'system of systems' and is comprised of much more than aircraft alone. The programme also includes a deployable exploitation capability including two Transportable General Ground Stations (TGGS) and six Mobile General Ground Stations (MGGS). These assets will be acquired to augment the exploitation capability that will reside at the Main Operating Base (MOB) at Sigonella AB, Italy.

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The MOB will be set up to host mission support, training, maintenance, and logistics functions. Additionally, all required AGS facilities at Sigonella will be owned and operated by NATO. All in all, Sigonella will host an AGS programme that can be described as a 'one stop shop' for NATO ISR … from training to exploitation and dissemination of data.

Now that the AGS programme is underway, there has been an accompanying shift in mind-set towards implementation. Many challenges lie ahead, including: long-term sustainment issues, infrastructure build-up at the MOB at Sigonella, and the approval of the AGS Peacetime Establishment (PE). However, there is no greater challenge for the Alliance than effectively training the multinational personnel that will comprise the NATO AGS Force (NAGSF). Training is closely aligned with PE development, and as such, staff officers must ask three questions: (1) How many personnel are required to field and operate the system across all career fields? (2) Will nations fill these required positions? and (3) Will the personnel that the nations send to AGS duty meet all prerequisites and be qualified for the positions they intend to fill? The AGS Implementation Office (AGSIO) at SHAPE is currently in the process of answering all three questions.

Personnel Required

Recent estimates say the AGS PE will not be approved until approximately February of 2014. However, extensive analysis and planning have occurred over the

past 18 months to assure required functions are accounted for. The AGSIO can answer questions such as: How many pilots, sensor operators, imagery analysts, or communications technicians, etc … will comprise the NAGSF? The AGS PE package contains 600 personnel from many required career fields. Figure 1 provides a functional depiction of expertise required. The initial process to obtain AGS PE approval has already begun. The package was submitted to NATO HQ in January 2013. AGSIO's desire is that it be formally approved by the end of calendar year 2013 in order to be able to fill PE billets by Summer 2014.

Filling the Required Positions

At this stage of the programme, NATO staff officers and analysts alike must assume that nations intend to fill the AGS PE positions once approved. The exact number of personnel that it takes to field and operate the system and the national intent to fill the required positions, are two separate arguments and it is important *not* to combine the two issues. AGS manning projections in 2008 contained 832 personnel.[1] These projections were subsequently reduced to 632 personnel in the May 2011 Capability Package submittal[2], and finally capped at 600 by the 'AGS Proposed Practical Funding Solution' document[3]. The latest reduction to 600 has come with an associated cost of critical ISR personnel in the MOB's Field ISR Squadron. The result will be the inability to maximise the use of equipment that has already been purchased in the procurement contract. The programme has been in constant 'drawdown' for years now – long before the Capability Package was approved and the procurement contract was signed. Therefore, if additional manpower reductions are allowed to occur, a significant curtailment in capability can be expected. In the coming months, personnel experts at SHAPE and NATO HQ will engage all 28 NATO nations in an effort to justify & gain support for the AGS PE package. The hope is that this 'engagement' will be successful and that it will occur in time to influence the AGS PE Package approval.

Personnel Qualifications

Once the AGS PE package is approved by the member nations, the AGSIO will still have to contend with the qualification levels of the NAGSF. In other words, will incoming personnel be qualified for the positions they occupy? Historically, this has been a problem for various organisations throughout the Alliance. If incoming personnel do not meet established prerequisites, the overall success of the AGS programme could be jeopardised. According to existing policy[4], NATO does not provide 'Basic Training', but depends on nations to accomplish it. However, the policy does allow for nations to ask NATO for this type of training if they cannot manage it on their own. Out of the 183 ISR personnel within the proposed AGS PE, 95 of them are Imagery Analysts (IA). The IAs represent the largest AGS career field and are least likely to arrive at Sigonella with sufficient basic skills to perform their duties. Therefore, the idea of creating an 'Imagery Analyst Basic Training Course' has been proposed to NATO's intelligence

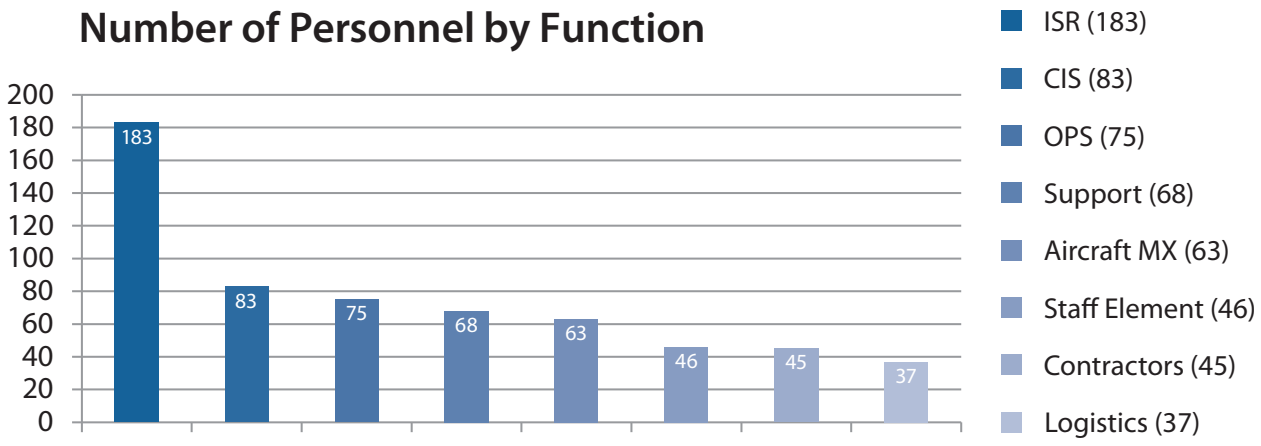

Figure 1: AGS Personnel by Functional Area.

community. The AGSIO is prepared to fund the courseware development for this proposed course. For all other AGS career fields, courseware will be further developed from the contractor provided materials that are included within the AGS procurement contract. Therefore, it has been determined that relatively low risk is associated with training pilots, sensor operators, surveillance operators, communications technicians, etc. IA courseware or training is not included in the AGS procurement contract, so a critical gap has been identified that must be filled.

Overall, the NAGSF will be divided into three main groups as they arrive at Sigonella: Test Team, Initial Cadre, and Pipeline Personnel (normal rotational tours of duty). The first two groups (Test Team and Initial Cadre) will be trained with materials and instructors that are included within the procurement contract. However, the Pipeline Personnel will be the first to be trained by the AGS Training Branch at Sigonella. Training Branch instructors will further develop courseware and materials provided through the procurement contract in order to train the multinational crew force across all required career fields at Sigonella.

Training is considered a critical area, and as such has been identified as a key work strand in ANNEX 1 of the 'Delivering the Alliance Ground Surveillance Capability-10 Point Paper'[5]. Additionally, an AGS Training Integrated Project Team has been established and is co-chaired by members of the AGSIO and NATO AGS Management Agency (NAGSMA). Their task is to articulate, coordinate, and staff the overarching training strategy for the AGS programme[6]. By sending personnel to Sigonella for an 'AGS tour of duty', nations can be sure their overall ISR expertise will grow over time. Nations with little or no real ISR capability can begin to grow their national expertise through personnel they send to the AGS programme. Rest assured, work has already started in this critical training area. The combat effectiveness of the AGS programme depends upon a successful outcome.

Summary

In summary, the NATO AGS procuring nations[7] have agreed to procure a 'NATO owned and operated', end-to-end ISR system that will be part of the overarching Joint Intelligence Surveillance and Reconnaissance (JISR) Initiative. This procurement comes with the understanding the operations and support (O&S) costs for the programme life cycle will be common funded, as described in the AGS practical funding solution document[8]. Funding aside, the success of the AGS programme boils down to its personnel, and the Alliance's ability to train them to proficiently perform their jobs.

1. SHJ3/AGSIO/08/02-203772, 'Options for Effective Employment of the NATO AGS Core', Para. 20, p. 5, Feb 2008.
2. Draft MC 0597, BI-SC Capability Package (CP) 0A0201 'Alliance Ground Surveillance (AGS)', Para. 12, p. 4, 26 May 2011.
3. PO(2012)0049, 'Annex 1, Alliance Ground Surveillance Proposed Practical Funding Solution', Para. 33, p. 1–6, 1 February 2012.
4. MC 0458/2 (Final), 'NATO Education, Training, Exercise and Evaluation (ETEE) Policy', Para. 22a and 22b, p. 6, 12 Oct 2009.
5. Annex 1, DI(AAC)(2012)0200, 'Delivering the Alliance Ground Surveillance Capability-10 Point Paper', Para. 6, p. 1–3, 27 September 2012.
6. NATO Alliance Ground Surveillance, 'Training Implementation, Planning and Sourcing Integrated Project Team' (TIPS IPT), Terms of Reference, 10 August 2011.
7. Bulgaria, Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Romania, Slovakia, Slovenia, United States.
8. PO(2012)0049, 'Annex 1, Alliance Ground Surveillance Proposed Practical Funding Solution', Para. 33, p. 1–6, 1 February 2012.

Lieutenant Colonel Scott Coon

is the Chief of the Operations Branch at the NATO AGS Implementation Office at SHAPE HQ, Belgium. He is a 1992 graduate of the U.S. Air Force Academy, holds two Masters Degrees, and is a Command Pilot with more than 3,200 flight hours. He is the former Commander of Detachment 4, 9th Operations Group, Sigonella AB, Italy, where he was responsible for the establishment of a U.S. Air Force High Altitude Remotely Piloted Aircraft (RPA) capability for Europe and Africa. Prior to that assignment, he was the Director of Operations at the U.S. Air Force Global Hawk 'Schoolhouse' at Beale AFB, CA. In addition to his flying duties, he completed an assignment at the Air Force Research Laboratory at Wright-Patterson AFB in Dayton, Ohio, where he was responsible for a technology portfolio aimed at enhancing RPA operations.


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The HIP is a simple, yet robust, inexpensive transport/assault helicopter, that has a clear potential to continue to fulfil its mission for years to come.

Hip Hip Hooray!

The Need to Modernise HIP and HIND Helicopters in NATO

By Lieutenant Colonel Jenő Szénási, HUN AF, JAPCC

"So the challenge is stark: if we can't spend more, we must do things differently, maximising the capability we can collectively squeeze out of the resources we have …"
Rt Hon Philip Hammond MP[1]

In the early 1990s, amid the general euphoria resulting from the fall of the Iron Curtain, many Central and Eastern European politicians (armed with the advice of their overly-optimistic military fortune-tellers) expected to wake up one beautiful and sunny morning to find that all their existing Soviet-made military inventories had miraculously been replaced with shiny new 'Western' equipment. The reality soon dawned upon those politicians and militaries that weapon systems with manuals written in the Cyrillic alphabet would prove difficult to integrate with NATO systems, let alone participate and interoperate in combat operations.

It also became clear that discarding all legacy capabilities without first establishing robust replacements could prove too risky a step for the tiny and not particularly rich countries of Central and Eastern Europe. In politics, as in aviation, a tight 180 degree turn without having sufficient speed can be dangerous.

Today, ten of the 28 NATO member states are former Warsaw Pact[2] members. The HIP[3] and/or HIND[4] helicopter fleets currently in service with these NATO


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nations are in different states of readiness. Some have undergone recent modernisation/upgrades whilst others are in a 'prolonged state of agony'. Given the current, and forecast, status of Central and Eastern European economies, it is unlikely that procurement of new military helicopters will be realised in the near future. This leaves three possible options.

1. After more than twenty years of prevarication, complete the modernisation of the HIP and HIND fleets bringing them to the standard required for national and Joint and Combined operations undertaken by NATO and/or the EU.
2. Continue operating these helicopter fleets for as long as possible in their current configuration and accept the operational limitations (i.e. limited national duties only).
3. Nations allow their fleets to wither and die and accept a capability shortfall, including the loss of years of experience and waste in human resources.

This paper will argue for the first option.

Old Philosophy – New Alliance

In August 2012, the Joint Air Power Competence Centre (JAPCC) published a study entitled 'Enhancing NATO's Operational Helicopter Capabilities'. The study concluded, among other observations, that "shortfalls in standardisation, operational capability and the required Education and Training (including training structures), are not fully appreciated by a significant number of NATO and EU member states."[5]

Whilst the statement above was not aimed exclusively at the former Warsaw Pact nations it is the case that many of these nations are currently struggling, unlike their Western colleagues, with the difficulties caused by the Soviet origin of their helicopters. The HIP, and more so the HIND, were originally designed to operate in a Cold War environment and in a certain method of employment – en-masse.

These 'flying tanks', armed with enormous fire power, were designed with robustness, simplicity, durability and a high degree of survivability in mind. 'Luxuries' such as ergonomics, high-tech avionics and fuel efficiency

were not considered of primary importance by their Soviet designers. However, since the end of the Cold War, NATO operations have become increasingly expeditionary, placing a greater reliance upon mobility rather than military mass. To remain capable of contributing to future NATO operations, and thus remain relevant, the HIPs and HINDS must maximise their strengths whilst addressing (or hiding) their weaknesses.

Modernisation Attempts

Since NATO's expansion eastward, criticism has been (rightfully) levelled against a number of these new member states as to the level of their contribution to operations. Amongst the numerous deficiencies, operational Rotary Wing capability has been identified as one enduring shortfall area.[6] Whilst there has been, and remains, broad agreement as to the requirement, there has been a distinct lack of action to address this shortfall.

Historical reasons for not deploying HIP and HIND helicopters in support of NATO operations include: (1) the lack of aircraft availability due to general obsolescence, (2) issues of interoperability due to the lack of modern equipment and (3) the lack of adequate defensive countermeasures. However, these problems were well known to those countries operating HIPs and HINDs long before joining NATO. Eight years prior to joining, politicians realised the need for a regional co-operation agreement and recognised areas of common interest regarding defence and security. As a result, the alliance of Visegrad countries (V4: Czech Republic, Hungary, Poland, and Slovakia) was formed in 1991.

In addition to their geographical proximity and similar histories, the V4 group forged a common, and friendly, attitude toward the West following a V4 shared negative experience with Soviet occupation. Their collective determination to expand the zone of security and prosperity provided cohesion amongst the group; the fact that they all used the same Soviet-era armament cemented this relationship.

The V4 group of nations initially expressed a clear willingness to participate in multi-national Crisis Response Operations, principally under the umbrella of NATO but also in support of the EU and UN. The HIPs and HINDs of all V4 countries were therefore planned to be modernised to the same (interoperable) standard.

"Is it wiser (during these tough economic times) to spend vast sums on next generation technology (which may or may not be required)? Or invest in upgrades to avionics, sensors, propulsion and weapons for existing platforms?"

Unfortunately, the modernisation of these helicopters, within the framework of the V4, proved unsuccessful due to a lack of political will and appropriate financing. Subsequently, the V4 countries acted unilaterally, launching their own modernisation projects.[7] As a consequence of this disunity, when the V4 nations joined NATO, the capabilities of their helicopters varied widely. Very few were fully upgraded and acceptable to Western standards.

HIP Helicopter Task Force (HTF)

In addition to the obvious requirement to modernise the platforms, the logistical challenge to deploy and support HIP helicopters, as part of a NATO-led operation, provided the next major obstacle for all HIP user nations within the Alliance.

As a result, the HIP HTF was launched in February 2009. The HTF, led by the Czech Republic, was tasked with developing a multi-national transport helicopter programme for NATO to assist those countries lacking the necessary national resources to deploy and sustain a transport helicopter operation. Assistance ranged from the provision of pre-deployment training, command and control capabilities and base support or financial aid, particularly for ISAF operations in Afghanistan.[8]

Multinational Helicopter Initiative (MHI)

In 2008, in order to increase the availability of Rotary Wing capability to support Crisis Response Operations, the United Kingdom and France launched the Multi-

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The HIND came of age during Soviet combat operations in Afghanistan.

national Helicopter Initiative (MHI). The MHI secured and managed the resources necessary for the modernisation of all helicopter fleets, not just HIP and HIND. Seventeen members of NATO and the EU have joined this initiative and, to date, contributed circa € 30 million. The MHI has been successful in upgrading a number of legacy platforms however, in the case of the HIP, this project can be considered only a partial success due to the Russian denial (or delayed authorisation) of licences to the company contracted to complete the work.

Why then should NATO member states continue to operate the HIPs and HINDs? And why continue with efforts to integrate these helicopters into the Alliance order of battle?

Why HIP?

The HIP's strengths are readily apparent: it is a simple, robust, relatively inexpensive multi-purpose platform which, once the logistics chain has been established, can be operated in almost all environments. The HIP is designed to operate safely in mountainous terrain, from austere landing zones or airstrips, and at extreme temperatures whilst carrying 4 tons of load or a fully armed infantry platoon.

Naturally the HIP has some weaknesses. Earlier variants were too simple. They were underpowered and equipped with outdated avionics, specifically lacking any NVG[9] capability. Furthermore the logistic footprint was too large and cumbersome. However, the majority of these problems were solved by later versions (e.g. Mi-17/171 and Mi-35). To date, in excess of 11,000 Mi-8/Mi-17 helicopters have been produced and are in service with some 80 countries.

Why HIND?

The HIND came of age in Afghanistan, and not in recent NATO-led operations. These highly capable helicopters were first modified as a direct result of their (unexpectedly painful) combat operations during the Soviet experience in Afghanistan from 1979–89.

From its inception in the late 1970s, the HIND represented a completely new breed of assault war machine. It combined an armoured gunship with (limited) troop transport and, notably, had no direct NATO counterpart. The United States had employed the UH-1 (Huey) helicopter to either ferry troops or as gunships, however they were not able to do both at the same time. Converting a UH-1 into a gunship meant trading in the entire passenger compartment

to accommodate extra fuel and ammunition; with that its troop transport capability simply disappeared. The Mi-24, designed to do both, was fully exploited by airborne units of the Soviet Army during the war in Afghanistan. It posed a deadly threat to enemy ground forces until the rebels acquired MANPADs[10] that were effective against the unprotected HINDs.

Today, the Afghan Air Force operates both the HIND and HIP helicopters with aircrew and maintenance personnel being mentored by the NATO Training Mission. This NATO training 'recipe' combines the experience accumulated through decades of flying and maintaining HIP and HIND helicopters by Central and Eastern European NATO members with the skills, knowledge of tactical procedures and training methodology of their Western NATO colleagues. Only time, following the eventual withdrawal of NATO forces from Afghanistan, will determine whether this training mission, and the Rotary Wing platforms, prove successful.

Back to the Future?

Currently, there is a debate surrounding future defence expenditure and procurement: Is it wiser (during these tough economic times) to spend vast sums on next generation technology (which may or may not be required)? Or invest in upgrades to avionics, sensors, propulsion and weapons for existing platforms? To reiterate the quote from Philip Hammond:

"… if we can't spend more, we must do things differently, maximising the capability we can collectively squeeze out of the resources we have …"

This article did not seek to 'advertise' the products of the Mil Helicopter plant. However, by familiarising readers with the historical aspects and recent updates to the HIP and HIND platforms, one can see there is a clear potential for these helicopters, despite their age, to continue to fulfil their mission for years to come. During the operations in Afghanistan a number of user nations[11] have proved that with modernisation, the HIP and HIND can carry on with their national service more effectively, and can be utilised as part of Joint and Combined operations undertaken by NATO and/or the EU.

The reality for both the politicians and the military is that, the introduction of Western-built medium/heavy, transport/attack helicopters into service with current HIP and HIND user nations is not an immediate and affordable option. However, by modernising and preserving these legacy platforms, NATO will retain this significant capability and perhaps more importantly, retain the corporate knowledge and expertise of the manpower resource. ●

1. Comments from the Right Honourable Philip Hammond Member of Parliament (MP), UK Secretary of State for Defence, at the Royal United Services Institute Air Power Conference on the Challenge of Partnership, 01 November 2012.
2. Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia.
3. HIP refers to all modifications of Mi-8, Mi-17, Mi-171 medium transport multirole helicopters.
4. HIND refers to all modifications of Mi-24, Mi-25, Mi-35 (export names) assault and attack helicopters.
5. Lt Col Wido Gerdsen, Enhancing NATO's Operational Helicopter Capabilities – The Need for International Standardisation. The Journal of the JAPCC, Edition 16, Autumn/Winter 2012 (discussing the JAPCC Helicopter Study of the same name). Available: www.japcc.de
6. The 2009 BI-SC Priority Shortfall Areas document defined 50 prioritized Tier-2 capability shortfall areas. Bi-SC (ACT and ACO) agreed that these are the priority shortfall areas for NATO and the military committee acknowledges this document.
7. Jaroslav NAĎ – István GYARMATI – Tomasz SZATKOWSKI – Libor FRANK: Trans-Atlantic Security, Policy Paper, Slovak Trans Atlantic Commission – Visegrad Security Cooperation, 2010.
8. www.nato.int/cps/en/natolive/news_58509.htm: Allies sign declaration of intent for HIP helicopter initiative.
9. Night Vision Goggles could only be used after the complete modification of the cockpit.
10. MANPADs: Man-portable air-defence systems.
11. A Czech helicopter detachment supported ISAF with 3 x Mi-171 (Task Force HIPO); a Polish detachment supported with 6 x Mi-17/5 x Mi-24 helicopters.

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is a distinguished graduate of the Hungarian Air Force Academy in 1987 and a graduate of the USAF Air Command and Staff College (Maxwell Air Force Base, Alabama) in 2004. Lt Col Szénási holds a Master's Degree from the Hungarian Defence University (Budapest) in Military Leadership. He is a Mil Mi-24 HIND pilot/instructor and has more than 28 years of experience in military helicopter matters. He served with the Multinational Forces and Observers in the Sinai, Egypt in 1997–1998, the OSCE Border Monitoring Mission to Georgia in 2001–2002, and with NATO Air Component Command in Izmir, Turkey from 2006–2010. He is currently a Subject Matter Expert of Manned Air & Attack Helicopters in the Combat Air Branch at the Joint Air Power Competence Centre in Kalkar, Germany.

Multi-mission fighters will remain at the centre of almost all missions.

The Future of Air Power

The Air-Ground Relationship in Asymmetrical Conflicts

By Dr. Holger H. Mey, Advanced Concepts, Cassidian

The role of Air Power is once again drawing fire. Referring to the Afghanistan employment, some critics, in particular those in Germany have argued that the role of Air Power has been rather limited. They point out, for instance, that for the price of one Eurofighter Typhoon it would have been possible to buy a large number of armoured fighting and transport vehicles. Those, they argue further, were badly needed – unlike the Eurofighter which was allegedly ineffective in such a conflict. More generally, critics argue that traditional 'classical' military power, including Air Power, is of little use for combating terrorists or in asymmetrical conflicts.

This article takes a different view, arguing that Air Power turned out to be extremely important in Afghanistan and that it will be even more important in the future. As the Libyan engagement has shown, Air Power can be a most appropriate and useful instrument in the context of so-called asymmetrical conflicts. If understood well and applied appropriately, Air Power will become an increasingly essential element of military operations; whether for own or collective defence, expeditionary operations, or global engagement. Air Power is an increasingly mobile, extremely flexible capability that can use many of the same assets to enable a broadening spectrum of operations.

The Evolving Air-Ground Partnership

Transformation has certainly characterised the air-ground partnership over the past decade – even though many strategists and analysts remain trapped in stove-piped understandings of ground and air forces. Because Afghanistan has involved widely dispersed forces, the use of Air Power to support such operations has been significant. Future Air Power will likely be even more important to distributed forces. The evolution of helicopter operations in Afghanistan, including the introduction of new systems such as the tilt rotor aircraft Osprey and the European attack helicopter Tiger, have also given ground forces significant new capabilities.

Improved situational awareness, provided by air-breathing and space-based 'Air Power' assets, has influenced, some would say revolutionised, ground operations in many ways. Whether organic ground forces' Unmanned Aerial Vehicles (UAVs), or larger UAVs operated by air forces or space-based Intelligence, Surveillance, and Reconnaissance (ISR) and communication systems, or manned air systems – the joint combination of airborne ISR coupled with airborne fire power has given ground forces a much broader range of options. Air assets have provided not only beyond line-of-sight ISR and communications capabilities, but also many options for fire support. In Afghanistan, NATO has flown 'overhead' air assets integrated into joint command and control that has provided ground elements with strike capabilities that can complement whatever organic firepower they have carried themselves.

The evolving Remotely Operated Video Enhanced Receiver (ROVER) system, which provides full-motion video from the aircraft directly to the ground forces as well as a common digital interface for target designation, has been one of the most significant innovations in the air-ground relationship. ROVER allows ground elements led by Forward Air Controllers (FACs) or, in U.S. terminology, Joint Terminal Attack Controllers (JTACs), to leverage various air-breathing assets.

An airdrop revolution has reshaped ground operations as well. Air forces can now deliver to the ground via precision drops the logistic support that an advancing or deploying ground element needs. Instead of carrying everything themselves, ground forces can benefit from a division of labour where precision airdrops and point-of-use delivery replace resupply by road. This is not an absolute because there will always be some sort of division of labour between air-delivered and organically-carried supplies, but airdrop is clearly redefining what ground forces can do.

Initial operations in Iraq highlighted how Air Power allows ground forces to operate with much greater speed, range and intensity of operations. The United States Marine Corps (USMC) operated its Marine Air-Ground Task Force (MAGTF) with its tankers landing to resupply ground vehicles allowing the ground element to have a much greater pace of attack.

In view of this on-going transformation of the air-ground relationship, it is clear that when some Army officers argue that expensive European Air Force programmes like the Eurofighter or the transport aircraft A400M consume the entire investment budget and leave nothing for the Army, then they do not present the full picture. These programmes exist mainly, although not exclusively, because they support and enable ground forces. They bring the troops from A to B and back and they keep the skies clear for the ground troops to operate safe from opponents' air attacks. In this sense, they are Army programmes; in any case, they are programmes for the joint forces.

Air Power in Asymmetrical Conflicts

All violent human conflicts have been, and will always be, in one way or another asymmetrical, i.e. the belligerents differ in many respects like size of the country and number of soldiers and apply different methods and tactics. Maximising one's own strength and exploiting the opponent's weakness is what it is all about. Successful strategy includes asymmetrical responses. 'Western'[1] reaction to terrorists flying civilian airliners into tall buildings, for instance, cannot be to fly civilian airliners into their buildings. Toppling the government hosting the terrorists, after unsuccessfully requesting to turn them in, is the more appropriate response. When tens of thousands of Albanian refugees descended on Italy, Italy did not respond with sending its own people as refugees to Albania, but with a Western European Union (WEU) intervention (Operation Alba) to stabilise a failing state. Understanding your opponent helps. Understanding your partners and allies isn't wrong either. Understanding oneself, including one's own weaknesses and strengths, is of utmost importance. Making the most of one's own asymmetrical advantage is even more important.

Many countries cannot easily come up with a skilled military; historically, many never have. When it comes to 'classic' warfighting, the so-called 'Western' states have usually enjoyed impressive superiority. For non-'Western' states challenging or even threatening 'Western' interests, the question arises, why challenge the 'West' by investing in mechanised divisions or fighter wings, i.e., into areas where the 'West', in many

if not most cases, enjoys clear-cut superiority. Why not invest into areas that look more promising in terms of a return of investment when it comes to competition with the 'West'? If it is not easy to come up with an impressive number of skilled heavy divisions and hi-tech fighter wings, why not recruit a number of micro-biologists and computer hackers? This looks even more attractive if one studies the vulnerabilities of 'Western'-oriented societies. 'Western'-oriented societies are concerned about their own casualties and their dependence on (highly vulnerable) critical infrastructure. Logically then, non-'Western' governments and non-state actors would see a bigger return on investment in weapons of mass destruction and cyber warriors (and if so, only in order to deter a 'Western' intervention). Would the NATO-states really have bombed a foreign capital in the Balkans for 78 days if President Slobodan Milosevic had nuclear weapons and long-range delivery vehicles?

Peer competitors, on the other hand, will most likely challenge 'Western' dominance in every category of influence. China, for instance, is not only investing huge sums in cyber warfare (and espionage) but also in aircraft carriers, 5th generation fighter planes, and ballistic missiles. It would be unrealistic to assume that these efforts are just the result of a simple 'me too' attitude rather than of a cold-blooded analysis of how to increase one's own room for manoeuvre and reduce the freedom to act of one's opponent or peer competitor.

This does not at all mean fighting wars all the time; what it does mean is that relative military power influences the calculus of all actors. After the Cold War, 'Western' nations were so happy that the clear and present danger, i.e., the threat posed by the Warsaw Pact, was over that they, at least some, failed to understand the continuous role of military power in international relations.

In sum, Air Power is important vis-à-vis peer competitors because 'Western' countries cannot allow themselves to be in an inferior position without risking the loss of all room for manoeuvre. Air Power is important in asymmetrical conflicts because it has a vital role to play in support of ground forces – one's own or those of the side that one wants to support (or help to prevent the other side from prevailing). Air Power is important in asymmetrical conflicts because it is the 'West' that needs to act asymmetrically to its own advantage, including the application of superior Air Power.

Conclusion

Clearly, thinking has shifted from seeing Air Power as the strategic 'hammer' to seeing Air Power as the enabler of multi-spectrum, multi-mission operations in the 21st century. Is the continuation of the counterinsurgency model with its assumption of air superiority 'for free' a realistic assumption for the decade ahead? Shouldn't we rather assume many other scenarios to plan for? The good thing about Air Power is that many of the same assets can do many different things. This makes Air Power a core and prudent investment that provides the flexibility necessary to meet evolving global demands and challenges.

In order to muster support for Air Power, one must not overstate the case for it at the expense of other services. At the end of the day, and in most scenarios, only ground forces will 'do the job'. This does not always have to include one's own ground forces since Air Power can support allied troops or insurgents who, for instance, would otherwise be slaughtered by regular forces of an oppressive regime. (Insurgents usually require some training to develop the skills with the equipment necessary to exploit favourable air situations.) What it does require is 'owning' the skies.

The much greater capabilities of individual platforms and of fleets operating with such platforms, enable ground and naval forces to operate with greater range and effectiveness. A new approach to power projection is possible, whereby NATO members can link their forces much more effectively, with enhanced lethality and range. Once again, this will require the political will necessary to overcome the compartmentalised, service-oriented thinking that stands in the way of fully exploiting new technologies for more effective joint operations.

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The trends are clear. Many nations will invest in aerospace industries and in research and development. If 'Western', especially European, countries want to maintain their competitive advantage, they need to continuously modernise their air assets, making the most of what technology can offer to modern, skilled militaries.

Air dominance will be the enabler of everything else, and investments to ensure such air dominance will be increasingly important. Without air dominance, one will not be able to have joint or coalition forces able to operate with freedom of action. Modern air transport platforms and concepts ensure that ground forces will be where they need to be, on time and over target and that they are supported logistically wherever they operate.

All ground forces will be supplied with superior situational awareness if the 'West' invests into the evolving air capabilities, which allows for full spectrum operations. Air support of ground forces will continue to evolve as modern weaponry, together with ISR and target acquisition, offers longer loiter time. Tanker planes that are able to fulfil more than just the air-refuelling mission are extremely useful in all scenarios. Multi-mission fighters, constantly upgraded and improved, will remain at the centre of almost all missions, including asymmetric conflicts. Air Power does indeed, have a great future! ●

1. The term 'West' or 'Western' refers to the cultural sphere of Europe including its former colonies and is being used with the understanding that this phrase cannot be defined easily or precisely – although most readers will fully understand what is being meant. Alternative terms, in the view of the author, have not been more convincing.

Professor Dr. phil. Holger H. Mey

began his professional career in 1986 as a Research Associate at the Stiftung Wissenschaft und Politik (Foundation for Science and Politics) then at Ebenhausen, Germany. From 1990 to 1992, he served as a Security Policy Analyst on the Policy Planning Staff of the German Minister of Defense. In 1992, he founded the Institute for Strategic Analyses (ISA) in Bonn and, serving as President & CEO, conducted over 30 studies for various Ministries and Government Agencies. From 1992 to 1994, already self-employed, he became the Security Policy Advisor to the Chairman of the Defense Committee in the German Parliament. In 2004, Dr. Mey joined EADS and became Head of Advanced Concepts, CASSIDIAN, Unterschleissheim near Munich, Germany. Over many years, he was a frequent TV and radio commentator, publisher and lecturer. Dr. Mey is a Honorary Professor at the University of Cologne, Germany.

© Italian Army Aviation

An Italian NH90 helicopter arrives in Afghanistan, marking its operational debut.

The Operational Debut of the NH90 Helicopter

Challenges and Lessons Learned

By Major Francesco Persichetti, ITA Army, JAPCC

Herat, Afghanistan, 20 August 2012, USAF Air Mobility Command C-17 Globemaster III, tail number 99211, delivers the first Italian NH90 helicopter and the crews of Task Unit Nemo. The arrival came with mixed feelings for the base's aviators. On one hand, there was pride in receiving the brand new helicopter and the joy of meeting friends just arrived from Italy with fresh copies of magazines, newspapers and tasty delicacies. On the other hand, the operational debut of the NH90, equipped with fly-by-wire flight controls, high-performance FADEC[1] engines, luxury glass cockpit, and state of the art avionics and communications, will spell the sad departure of the veteran UH1D; and no longer will the flapping of its blades echo along the Hari river valley. The UH1D (AB 205 MEP) was well equipped with modern electronic countermeasures, ballistic protection and armoured seats. But the extra weight of this equipment, combined with the extreme environmental conditions of Afghanistan, essentially killed its performance.

It is imperative to mention the tail number of the C-17, a significant one, which I don't believe was a coincidence. On the 26th of July 2011 Gen. Raymond Johns Jr., commander of Air Mobility Command, officially named C-17 tail number 99211 the 'Spirit of the Medal of Honor' stating that "the spirit of America's bravest will land with it, bringing hope, saving lives and preserving peace". I interpreted this as a sign of friendship by the U.S. Air Force towards their Italian Army Aviation colleagues and a blessing for the beginning of this adventure.

The operational debut of an aircraft is always exciting for airmen but not so interesting for Journals. Clearly governments don't procure new military helicopters to keep them parked in hangars, though the case of the NH90 is a special one. The project suffered many delays and several in military hierarchies were sceptical to see it landing at the end of August 2012 in Afghanistan. Often delays and problems are ascribed to incompetence or inefficiency, but for the NH90, they can be attributed to the extremely complex multinational nature of this enterprise.

A Bit of History

The NH90 project started in 1985, when five European nations (France, West Germany, Italy, the Netherlands, and the United Kingdom) gathered to draft the operational requirement of a NATO battlefield transport and anti-ship/anti-submarine helicopter for the 1990s. As NATO was still in the middle of the Cold War its requirements were based on the envisioned demands of that battlefield. In 1987 however, the UK left the endeavour, preferring instead to seek the cooperation of the American Sikorsky. This was due in large part to the fact that Westland Aircraft, the only remaining helicopter manufacturer in the UK, was suffering from a stringent financial crisis. This resulted in a big controversy in Margaret Thatcher's third government, known as the 'Westland Affair', which led to the resignation of Defence Secretary Michael Heseltine, sponsor of the European helicopter project. In the end, four main companies (Agusta, Eurocopter France, Eurocopter Deutschland and Fokker) continued to implement the ambitious programme, joining together to form the consortium NH-Industries (NHI).

Working 'multinational' is always difficult and has its unique challenges, which was no exception for the NH90. Changes to requirements, national political interests, unclear financial arrangements and various industrial pressures, resulted in numerous design modifications, cost overuns and lengthy project delays. The end result is that the NH90 is produced in two main versions: the TTH (Tactical Transport Helicopter) and the NFH (NATO Frigate Helicopter), is available in various configurations, has two different choices of engines[2], involves numerous national sub-contracters, and is built in 6 different locations[3]. Taking 20+ years to go from initial idea to an end product is simply not an acceptable or sustainable way of procuring essential operational capabilities today. Thus the lessons from the NH90 project must be taken into account in the future.

"The harsh local environment has proved to be extremely challenging for rotary wing aircraft. High altitudes, hot temperatures, dust and brown out landings demand trained crews and capable machines."

Conversely, working 'multinational' can be amenable and has its benefits. It gathers different experiences and know-how that often result in some excellent, yet unexpected, results. I believe this was the case with the NH90. Despite the delays and the complexity of the project, the NH90 is an innovative helicopter, following the proud tradition of great European aviation pioneers like the French Paul Cornu, who in 1907 succeeded to 'hop' with his prototype and the Dutch Albert Gillis von Baumhauer, who in 1927 patented the cyclic and collective.[4] The NH90 is a capable machine that has been ordered by 14 different nations[5]. In December 2003, the NH90 became the first medium-sized transport helicopter to fly with full fly-by-wire controls with no mechanical back-up.

Fit for the Mission

Operations in Afghanistan have taught political and military leaders that it is both ethical and cost effective to make all possible efforts to ensure the safety of their troops by providing them with the best possible equipment. They have seen how the helicopter can

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be a force multiplier, but they also know that no matter how many modern helicopters they provide for their troops, their troops will always want more due to the capabilities they bring. The harsh local environment has proved to be extremely challenging for rotary wing aircraft. High altitudes, hot temperatures, dust and brown out landings demand trained crews and capable machines. After the first month in operation, despite critics' concerns, the NH90 proved to be extremely reliable, performing beyond expectations.

The NH90 can perform in a broad spectrum of missions ranging from heli-transport, air assault, support to special operations, and medical evacuation. The digital maps generator together with the Mission Planning and Analysis System (MP&AS) shorten the in-theatre familiarisation phase for the crews, giving them more time to focus on the mission. The Helmet Mounted System Display (HMSD) 'Top Owl' projects symbology and is able to display augmented reality information, such as a terrain grid, directly onto the helmet visor. This technology, coupled with infrared or intensified images and the outstanding flight characteristics of the platform, permits safer landings in Degraded Visual Environments (DVE), while decreasing pilot workload. The helicopter is equipped with state of the art Electronic Warfare Systems, ballistic protection and armoured crew seats. 'Deterrence', more than just self-protection, is ensured by two M134 Dillon/OTO Melara six barrel, 7.62 mm machine guns equipped with IR laser Target Pointer Illuminator Aiming Lights on the side doors. And the Remotely Operated Video Enhanced Receiver (ROVER) 4 enables transmitting and receiving imagery.

The Operational Transition of the Italian NH90

The addition of the NH90 into the Italian Army inventory represents a true innovation in Army Aviation, as none of the existing aircraft incorporate fly-by-wire technology or the same maintenance philosophy. During the first years of service, all maintenance and logistic support was contracted to AgustaWestland

(the two companies merged in July 2000). This arrangement brought about a good efficiency rate but the pace of delivery of the new helicopter remained behind schedule. The challenge was to train a sufficient number of crews and military technicians to maintain the helicopter in operation. This was obtained through a very careful selection of the crews, balancing experience and skills with an open mindset for new technologies. Particular attention was dedicated to the planning of the training in order to make the most of every flight hour. No flight hour could be wasted. These goals were met and most of the pilots flying the NH90 in Afghanistan today are experienced, having accumulated more than 500 flight hours.

Duplicating flight conditions like those in Afghanistan has been a challenge; however the Italian aviators could count on the outstanding training opportunities and facilities offered by the Army Aviation Base in Viterbo. There, it is possible to perform all training with no particular restrictions on Night Vision Goggle (NVG) activities. A landing area to perform dust landings and a firing range suitable for the M134 door guns is also available, while mountain training up to 6,000 ft is possible in the surrounding areas. This superb training opportunity was experienced by many international crews during last year's exercise 'Italian Call'. Due to the extreme conditions in Afghanistan, the pre-deployment mountain training has been performed in the area surrounding Bolzano, offering higher and more challenging landing sites.

The responsibility for the second and third level maintenance has been given to the 2nd Army Aviation Support Regiment based in Bologna; who also deploy technicians for in-theatre maintenance. They will be able to perform all maintenance up to the 300-hour phase inspection in Herat. In order to provide a close link with the manufacturer and monitor the environmental impact, AgustaWestland deployed a liaison cell with the unit. A key player for speeding up the operational transition of the NH90 has been the Italian Army Aviation Test Centre that, in close coordination with industry and the Italian Air Force Test Centre, has dramatically contributed to design solutions for the integration of important mission equipment on the machine; such as machine gun pintles, resuscitation stretchers and ROVER 4. This Regiment, which is responsible for accepting new helicopters from the manufacturer, also handled the NH90 certification process for approval to be airlifted by USAF C-17s.

"Taking 20+ years to go from initial idea to an end product is simply not an acceptable or sustainable way of procuring essential operational capabilities today."

Impressions of the helicopter after 300 flight hours in theatre are positive; crews are particularly enthusiastic about the avionics, the HMSD, and the image offered by the Forward Looking Infrared (FLIR) sensor. Engines are performing beyond expectations even with outside temperatures in excess of 40°C. The helicopter is fast and smooth even in the harsh environment. Since its arrival, it has already relieved much of the workload of the CH-47.

Problems related to the operational transition and deployment of the NH90 have been solved in a reasonable amount of time due primarily to the following factors: (1) all competencies, including maintenance, logistics and facilities needed for the operational transition of the helicopter and the crews, operate under the command of the Chief of Army Aviation; (2) most of the facilities and infrastructure, with the exception of the 2nd Maintenance Regiment, are consolidated in Viterbo; and (3) AgustaWestland provided very close and cooperative support. Additionally, the hard work of everyone involved in the entire Italian NH90 endeavour has contributed to its overall success. Issues with pilot selection and training, for example, threatened to delay the NH90 operational debut. But extensive individual efforts helped contribute to solutions, ensuring the NH90 was succesfully integrated with new technologies and procedures, such as NVG operations.

Conclusions

The operational debut of a new aircraft is always a challenge, but in my opinion the debut of the NH90 faced extraordinary challenges. It has marked the

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The addition of the NH90 into the Italian Army inventory represents a true innovation in Army Aviation.

passage from the analog to the digital era for European rotary wings. The NH90 is the product of a venture among 'natural' competitors and the outcome of complex political negotiations. Furthermore, it demonstrates the level of commitment these nations have to the Alliance and their strategic will to maintain the highest competencies in the field of helicopters and defence technology. As a JAPCC member, even if I am a nostalgic UH1 pilot sure that the flapping of those beloved blades will never fade in my heart, I can't refrain from applauding the NH90 endeavour. Finally, as stated in our JAPCC study 'Enhancing NATO's Operational Helicopter Capabilities'[6], nations need to do more to share their operational experiences and lessons learned so we as a NATO helicopter community can learn and grow from each other. ●

1. Full Authority Digital Engine Control.
2. Rolls Royce-Turbomeca RTM 322 with a maximum power output of 2,270 shp and the GE/AVIO T700-T6E1, a slightly more powerful engine delivering 2,560 shp.
3. Australia (Brisbane), France (Marignane), Finland (Halli), Germany (Donauwörth), Italy (Venice Tessera) and Spain (Albacete).
4. Two other great European aviation pioneers include: the Italian Corradino d'Ascanio, the legendary inventor of the vespa scooter, whose 1930 prototype DA T3 with coaxial rotors broke several records for height and endurance (and could perhaps be the future for rotary wing); and the German Henry Focke who, in 1936, created the legendary Focke Wulf FW 61.
5. AUS, BEL, ESP, FIN, FRA, GER, GRC, ITA, NLD, NOR, NZL, OMN, PRT, SWE.
6. www.japcc.org (Under Publications/Reports).

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A JAPCC Introduction – Schriever Wargame 2012 International

A Small Step for Space Operations, But a Giant Leap for NATO

By Lieutenant Colonel Heiko Hermanns and Major Steffen Neumann, DEU AF, JAPCC

The JAPCC is pleased to introduce this special section of the Journal dedicated to covering Schriever Wargame 2012 (SW 12) International. The following four articles present viewpoints and lessons learned from several of the participating NATO organisations as well as an independent senior advisor. Although the articles are written from different perspectives, an attentive reader will find common observations and recommendations.

The purpose of this JAPCC introduction is to provide an overview, outline three of the key observations, and draw some conclusions.

Wargame Overview

The notional year is 2023. A coalition task force of nine NATO nations and Australia deployed to the Horn of Africa to battle a combination of terrorists, pirates and affiliated third parties. Opponent forces attempted to vertically flank the coalition by crippling space and cyberspace capabilities through various means including attacks on coalition territory. The coalition countered by sharing information across platforms, integrating into a joint force structure, and employing novel approaches to coordinate and defend enabling capabilities in space and cyberspace.

This was the basic scenario for the world's premier space and cyberspace wargame conducted by U.S. Air Force Space Command and hosted by the U.S. Air Force Warfare Center in 2012. SW 12 International offered NATO, for the first time, an unprecedented opportunity to explore combined space operations within a NATO construct.

"Here then is the conundrum: how do we educate, train and prepare personnel without a clear understanding of NATO's space related roles, responsibilities and authorities?"

The wargame included participants from six NATO organisations, nine U.S. entities, and worldwide commercial space industry. The game was conducted at the Joint Operational Level using notional headquarters guidance that provided sufficient latitude for game play. Commander Joint Force Command (JFC) intent was to integrate and synchronise terrestrial operations by employing space and cyber capabilities made available for the mission. To follow this intent, the task force was organised around a deployable JFC. The JFC Brunssum provided the core staff for the Headquarters (HQ), while the Supreme Headquarters Allied Powers Europe (SHAPE) provided manpower for the Comprehensive Crisis Management Centre.

One cannot overstate the importance and success of SW 12 International. The event was an eye-opener for high ranking military personnel in NATO and, unsurprisingly for space matter experts, highlighting NATO's increasing dependence on space capabilities.

The Absence of a NATO Space Policy

The first, and perhaps most striking observation, is the absence of guidance on space operations within NATO. This lack of information starts at the top of NATO and ripples down and out through the entire political and military structure. The articles provided by some key participants in this edition of the JAPCC Journal provide significant arguments as to why space guidance is essential for NATO's future capabilities and operations.

Unfortunately, nothing you will read in this edition is new! In 2008, the NATO Space Operational Assessment commented on the lack of policy and guidance in NATO. Again, in 2010 after urgent ISAF reports, NATO set up an ad-hoc space working group (an ACT led Space Integrated Project Team) which was initially tasked to develop a space policy for NATO. Due to political concerns with some nations the task stalled. SW 12 International highlighted, once again, the lack of space policy and guidance in NATO. Hopefully, the lessons identified in SW 12 International were important enough to put the topic of space firmly back on the Alliance's agenda at the highest level.

NATO is first and foremost a political organisation, but an organisation that has unique access to the collective defence resources of its 28 member states. This implies that, with consensus between its nations, the Alliance has to define boundaries, roles and responsibilities. In general, an overarching guideline must be a policy document, providing common vision, objectives and the basis for strategy and implementation. This basic NATO principle applies to the topic of space just as it does to any other agenda item (e.g. cyber defence, Intelligence Surveillance Reconnaissance (ISR), missile defence, etc.). Why should space be treated differently?

Although NATO benefits from national capabilities and commercial products when it comes to space support, it is not able to, and more importantly not willing to, execute any command and control over space assets. To cover its demands, NATO only synchronises and coordinates requests to the providers of assigned national space capabilities. The link between the sovereignty of national space assets and the Alliance's use of space capabilities poses a number of important questions: what, for instance, are the legal aspects resulting from dependencies between the NATO Charter and other supranational, international and national laws or regulations?[1]

A space policy would clarify such questions and provide guidance on how to treat space with the priority and respect it deserves in NATO's operations. The JAPCC believes in the requirement for a NATO Space Policy; it is a mandatory document and one that must be agreed upon and issued before the Alliance can

move essentially forward on this critical capability. The JAPCC has championed the idea of a NATO Space Policy, and has developed, based on existing NATO space efforts, a framework for such a NATO Space Policy document.[2]

The Lack of an Organisational Structure

The second observation is that there is no organisational structure within the Alliance to deal with space issues. Such issues include, but are not limited to: space expertise in personnel and common space Education & Training (E&T) programme. NATO's space dependency requires a robust organisational structure within the NATO Command Structure (NCS). Currently, space expertise within the NCS is limited and only available by happy coincidence.

SW 12 International provided an example of how space expertise could be incorporated into the strategic and operational levels in the NCS. The wargame revealed the current general space knowledge is not deep enough to support the Joint, Strategic and Operational planning processes nor the execution of operations at the Tactical level. As a first step, nations should increase their E&T efforts to provide a pool of personnel to support both National and Alliance operations. Once NATO implements an organisational structure to handle and support space operations, the Alliance must then provide appropriate E&T to maintain and improve space support to NATO operations. Regardless, NATO must increase the basic space related awareness for political and military leadership at all levels by utilising the E&T currently available.

Here then is the conundrum: how do we educate, train and prepare personnel without a clear understanding of NATO's space related roles, responsibilities and authorities? An organisational structure would set the parameters and define the education and training requirements. This change within the NCS demands meeting two preconditions which are not easy to achieve: consensus and money from the nations. A NATO Space Policy or guidance based on the consensus of all NATO nations would break this vicious circle and set the course for space operations.

The Lack of Space Related Procedures

The third observation is the lack of space related procedures at all levels of command. NATO's dependency on space, and the fact that it must coordinate with the national or commercial capability provider, requires intensive and timely planning and coordination. Currently, only rudimentary principles for space operations are provided in Allied Joint Publication 3.3. The execution of SW 12 International went a step further; providing an avenue for evaluating practical solutions for planning and coordination. This began with the development of a framework for the Operational Plan (OPLAN), and the Joint Prioritized Space Effects List (JPSEL). Furthermore, in addition to the boards detailed in the Bilateral Strategic Command (BiSC) Comprehensive Operational Planning Directive (COPD), a Joint Space Coordination Board (JSCB) was established. The formation of the JSCB, resulted in being the key element in the successful execution of the wargame.

"The JAPCC believes in the requirement for a NATO Space Policy; it is a mandatory document and one that must be agreed upon and issued before the Alliance can move essentially forward on this critical capability."

A major finding of SW 12 International is that until a policy and doctrine framework is in place, NATO command levels have to develop ideas, doctrines and procedures to implement the space support on their own. This risks diversification and lack of standardisation. In light of 'Smart Defence', this leads NATO down the wrong path.

Conclusion

Though significant work remains, there are positive signs. The findings from SW 12 International, coupled with the initiative of the Commander Air Command Ramstein, led the Alliance to formalise the NATO Space IPT into a BiSC Space Working Group (WG). The Terms of Reference (TORs) clearly task the BiSC Space WG to elaborate on operational concerns and E&T,

but falls short on space policy and organisational structure. Nevertheless, space capabilities are major enablers for key NATO capabilities such as cyber, Alliance Ground Surveillance and missile defence; defined in NATO's Strategic Concept decided at the Lisbon Summit and confirmed at the 2012 Chicago Summit. Consequently, space has to become a key capability of NATO as well.

During these times of austerity, and with the debates on-going over NATO's future tasks in the post ISAF era (beyond 2014), time should not be wasted in accelerating the development and implementation of a NATO Space Policy. With the task of the BiSC Space WG, the bottom up approach has already begun. However, the top down approach still lacks political guidance. Hence, work on a NATO Space Policy must start sooner rather than later; neither technology nor time will wait for NATO. There is no better time to address these issues than the present. We hope you enjoy the collection of Schriever viewpoint articles that follow. We are grateful for the authors' contributions and time and effort. ●

1. Further readings are available in SACTs report, 'Schriever Wargame 2012 International – HQ SACT Report', Supreme Allied Command Transformation, North Atlantic Treaty Organisation, Norfolk, Virginia, USA, July 2012.
2. The JAPCC, 'Filling the Vacuum – A Framework for a NATO Space Policy', Joint Air Power Competence Centre, Kalkar, Germany, June 2012, www.japcc.org

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entered the German Air Force in 1991 as a conscript. He began his officer career as a Tactical Control Officer in Ground Based Air Defence. He worked in the PATRIOT SAM Group 21 for eight years and became in this time deputy commander of two units and subsequently commander of the Ground Support Unit in 2003. After attending the German Military Staff College in 2003 he was posted to the German Office of Armed Forces, as a Junior Project Manager in the SASPF project to implement SAP software for the German Armed Forces. In 2008 he joined the NATO Joint Warfare Centre as Exercise Planning Officer and Officer of Primary Responsibility for NRF exercises on Joint Operational Level. He also participated in an array of exercises on Joint Operational Level as Subject Matter Expert for Theatre Ballistic Missile Defence. Currently he holds the position of Chief of Education, Training, Exercises and Education policy section at the Joint Air Power Competence Centre in Kalkar, Germany. Lieutenant Colonel Hermanns holds two Master Degrees in Management and Personnel Development.

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SHAPE View

Schriever Wargame 2012 International

By Lieutenant Colonel William 'Gator' Ator, USA AF
Chief, Ballistic Missile Defence Coordination Cell, SHAPE

Introduction

NATO's initial foray into the Schriever Wargame series was conducted in Schriever Wargame 2012 (SW 12) International at Nellis AFB, Nevada from 20–26 April 2012. The wargame scenario dealt with a notional NATO operation requiring space-based capabilities provided by NATO nations. SW 12 International included participants from nine NATO nations and Australia, teams from commands, organisations, and agencies across NATO, as well as commercial industry.

The Surpreme Headquarters Allied Powers Europe (SHAPE) team consisted of five members of the Allied Command Operations staff with expertise in operations, support, planning, and legal. Additionally, the SHAPE team was reinforced by the Deputy Director of the Joint Warfare Centre in Stavanger, Norway who played the role of Surpreme Allied Commander Europe (SACEUR).

Overall Objectives for SW 12 International

SW 12 International included five objectives that were formulated and agreed upon by the various players during the concept and planning phases of the wargame. They were:

1. Explore how to optimise space efforts from participating allies and AUS in support of a notional NATO expeditionary operation;
2. Identify ways to increase the resilience of space capabilities in a contested environment through expanded international and private-sector cooperation and coordination;
3. Determine operational challenges associated with defence of space capabilities employed in support of the operation;
4. Examine the operational integration of cyber into defence of the space domain;
5. Expand understanding of the operational benefits of broader international participation in combined space operations.

Overall, SW 12 International objectives were consistent with SHAPE requirements to embrace emerging concepts and doctrines at a time when the new Comprehensive Crisis Operations Management Centre (CCOMC) was weeks away from declaring Initial Operational Capability (IOC). However, there were two major shortfalls that impeded SHAPE's ability to operate and required significant planning and discussion prior to and during game execution. First and foremost, under the current and planned NATO Command Structure a Space Awareness Cell (SAC) located in the CCOMC does not exist. Second, NATO does not have an approved Space policy that provides specific

direction and guidance for NATO operations. Both critical shortfalls forced the SHAPE team to modify its battle rhythm throughout the wargame to work around the absence of validated processes or procedures to address these two unfamiliar domains of both cyber and space.

Lesson Identified #1

Observation: There is an absence of a NATO Space Policy and clear direction and guidance from NATO HQ. There have been multiple papers and discussions at all levels, political and military, of the NATO Command Structure on the subject of space operations.

"All levels of NATO need to get involved in space and cyber and develop a way to bring these two still unfamiliar areas into its command, planning, and education/training processes and procedures."

However, clear direction and guidance has yet to be developed. For example, a 2009 International Military Staff produced 'Food for Thought' paper poignantly stated, "As NATO has increased its emphasis on an expeditionary role, the reliance on space based capabilities has also increased. Despite this increasing reliance, NATO has not developed common concepts, policies, nor a doctrine to address the NATO use of Space Based Capabilities."[1]

Recommendation: Despite numerous discussions and documents on the subject of NATO's role in space, no direction or guidance has been given to push the development of this important and underdeveloped subject. NATO Headquarters needs to act sooner than later in regard to this key and integral aspect to military operations.

Lesson Identified #2

Observation: There are no existing organisations, agencies, or cells within the NATO Command Structure currently dedicated to space or cyber. A CCOMC Cyber Awareness Cell stood up in May 2012, however there are no plans to establish a SAC in the upcoming NATO Command Structure revision. Starting initially with the SAC inside SHAPE, other space coordination bodies were established to address the identified need as the game progressed. For example, the Space Coordination Working Group at JFC Brunssum and the Global Space Operations Council (GSOC) at USSTRATCOM but with only initial thoughts on *who* does exactly *what* and *where*.

Recommendation: There is an indisputable need for NATO to establish a space coordinating body since NATO predominantly relies on national space capabilities where nations withhold OPCON over their assets and only provide services. NATO Headquarters needs to direct the formation of overarching policy and guidance to allow work to begin on developing a NATO integrated space coordinating body. Initial steps have begun through the Allied Command Transformation (ACT) led Space Integrated Project Team (IPT) but this is only a start. A positive step in this direction is SACEUR's recent letter to Commander ACT to upgrade the Space IPT from its current ad hoc status to a formally recognised Bi-SC Working Group.

Using the newly developed NATO Ballistic Missile Defence architecture as a template, SHAPE developed a notional structure on how NATO could organise its command and control in combined space operations. This structure takes advantage and gains efficiencies by utilising existing command relationships and lines of communication. To that end it successively explores the possible roles and relationships of the SHAPE CCOMC SAC, JFC and Air Component RAMSTEIN.

Lesson Identified #3

Observation: The legal aspect and how NATO sets the boundaries for space and cyber operations is imperative. Furthermore, NATO requires doctrine on cyber and space targeting and Rules of Engagement (ROE). Even in a virtual world there will be a need to act along well identified and recognised military rules.

Recommendation: MC 362 is the overarching guidance that contains the standing list of North Atlantic Council (NAC) approved ROEs. Currently, there are only five ROEs that address cyber and zero that address

space. This too highlights the overwhelming need for NAC policy, direction and guidance to address this shortfall.

Lesson Identified #4

Observation: By and large, general knowledge and understanding of how we operate in the space and cyber environment is largely deficient and unknown to the majority of NATO personnel.

Recommendation: There currently exists small pockets of space and cyber subject matter experts at various levels in the NATO Command Structure but more in-depth training and education is certainly required. Outside of the one-week Space Operational Planners Course at the NATO School in Oberammergau no further focused space training and education for NATO exists. Furthermore, NATO needs to initiate and increase space and cyber planning into NATO Response Force exercises at the operational level.

Conclusions

Overall the wargame was extremely well organised and the interaction between the participants was good and constructive. As a result, the play of the wargame was beneficial to SHAPE and to NATO as a whole. NATO needs to continue the forward momentum and strike while the iron is still hot. All levels of NATO need to get involved in space and cyber and develop a way to bring these two still unfamiliar areas into its command, planning, and education/training processes and procedures.

Additionally, space brings another level of complexity into command and control. This is because many space assets that support military activities come from a variety of organisations. Some of these organisations are outside military channels or are considered national assets and are not readily available to a coalition or to NATO. These capabilities often have non-traditional chains of command and in some cases may be split between organisations due to shared interagency responsibilities. Coordination at the strategic level may be a requirement to fully access national space assets within a regional operation. SHAPE could designate a Space Coordinating Authority[2], what USSTRATCOM has called 'Global Space Operations Council', to facilitate unity of effort and deconfliction with member-nation space operations and military component space capabilities.

Lastly, coordination between the various organisations involved in the planning phase was excellent. There were a total of six planning conferences and a countless number of one-on-one discussions between various nations, commands, organisations, and agencies to fine tune the planning of this event to ensure a highly successful game execution. As the play and results of SW 12 International demonstrated, the bar has been placed very high and any future Schriever Wargame will require even more coordination, synchronisation and deconfliction between NATO bodies and wargame planners. ●

1. DIMS/8us-0213-2009, NATO Space Dimension (Food for Thought Paper), Enclosure 1 to, dated 5 October 2009.
2. See article by Major Phil Verroco, 'Making Ready: Practical Considerations for Space Coordinating Authority', The Journal of the JAPCC, Edition 16, Kalkar, Germany, Autumn/Winter 2012, www.japcc.org.

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currently serves as the Chief, Ballistic Missile Defence Coordination Cell at Supreme Headquarters Allied Powers Europe (SHAPE), Casteau, Belgium. In this capacity Lt Col Ator leads an international team of officers from six nations in the development of the newly declared NATO Missile Defence mission and responsible for Allied Command Operations strategic vision and SHAPE's operational plans. Furthermore, Lt Col Ator provides expertise regarding current and near term space operations and related joint command and control aspects. Lt Col Ator's background includes various assignments at the squadron, major command, Air Staff, and Joint NATO Staff levels with duties focused in Satellite Command and Control, Space Control, Intercontinental Ballistic Missile (ICBM) operations, and NATO Missile Defence.

ACT View

Schriever Wargame 2012 International

The following are condensed key take-aways from Allied Command Transformation (ACT), based on observations outlined in the full HQ Surpreme Allied Commander Transformation (SACT) Report[1]:

- 'Space Systems' include the satellites in space, but also the networks, nodes, data links, ground-based infrastructure, and the unique expertise of space-related personnel. Space protection and security encompass all these elements. Where space systems are concerned a Small Joint Operation (SJO) that is regionally focused can, with the right tactical event, have global impact.
- The wargame showed that NATO should develop appropriate doctrine to set requirements for coordination and cooperation mechanisms that set standards and guidelines for the conduct of Space Situational Awareness. At a minimum, NATO needs to elaborate how Commanders request the enabling assets and information derived from space.
- NATO should continue to explore the different organisational models developed in the context of the Schriever Wargame. Doing so will require an investment in time and effort to identify measures that can be used to overcome obstacles to dialogue, cooperation and information exchange.
- NATO should explore ways to educate political and military leadership at the Alliance level (top down) and train NATO space Subject Matter Experts (SMEs) in collaboration with the nations (bottom up). These NATO space SMEs should be capable of integrating available space and cyber capabilities and requirements into NATO's operational plans and be capable of working seamlessly with national SMEs.
- The scope of any combined space operation that NATO forces engage in will be driven by civil, military, and commercial players working together to protect the space commons for peaceful use.
- Preparations for SW 12 International demonstrated the need for clear political guidance on space. This includes how NATO will develop doctrine, capabilities, and partnerships that will enable the effective use of space during operations by NATO forces.
- SW 12 International reaffirmed that the land, air, maritime, cyber, and space domains cannot be viewed as separate and independent operating areas. Simultaneous incidents in the maritime, air, space, and cyber domains identified the complex interdependence of these domains. Allied missions and operations in the future will require that NATO adopts a comprehensive response to this complex issue. Moreover, this complexity will only increase over the coming decade which will require dedicated training, education, doctrine, and capabilities that are interoperable and connected. Doing so will ensure continued access to and use of these important domains.

1. http://www.act.nato.int/mainpages/schriever-wargame-2012-international

Disclaimer: *Opinions, conclusions and recommendations expressed or implied within are solely those of HQ SACT and do not necessarily represent the views of the North Atlantic Treaty Organization or the nations that participated in the event.*

JFC Brunssum View

Schriever Wargame 2012 International

"Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur."
Giulio Douhet

Introduction

NATO's involvement, spearheaded by Allied Command Transformation (ACT), included the participation of Joint Force Command (JFC) Brunssum which took centre-stage at the execution of Schriever Wargame 2012 (SW 12) International as it led a notional expeditionary operation in the year 2023. The role played by JFC Brunssum was directly in line with the current restructure of the NATO Command Structure (NCS), in which JFCs become deployable Headquarters (HQs) that will form the core staff of future NATO-led operations. Therefore, the intent, objectives, execution, findings and way-ahead presented in this paper come from the perspective of a deployed JFC HQ. The scenario itself was based on what a future NATO led operation may in fact look like in the near future, which made JFC Brunssum's participation that much more valuable.

Intent

The intent of JFC Brunssum to participate in SW 12 International was three-fold. First, lessons learned from the ISAF Joint Command (IJC) and Operation UNIFIED PROTECTOR space operations personnel indicated the importance that space operations play in deployed military operations. For example, some precision guided munitions benefit from Global Positioning System (GPS) planning prior to deliberate joint fires missions. In extreme cases, civilian casualties (CIVCAS) can be avoided through the integration of space operations (i.e. GPS) planning in conjunction with joint fires cells. Further, since JFCs would become deployable in the new NCS, having space expertise on-staff would facilitate such planning. Through coincidental space expertise and advocacy at JFC Brunssum, the new NCS now includes such a staff position in J3 J3S. Therefore, participation in SW 12 International by JFC Brunssum personnel afforded this HQ the opportunity to experiment with how space operations could be integrated.

Secondly, space and cyber are two relatively new domains of warfare that are often neglected in the planning, execution and assessment phases of military campaigns. The reasons for this vary by nation; and therefore it is understandable that the appreciation for space operations fluctuate in an international military structure that exists within HQs of NATO. Therefore, participation of JFC staff at SW 12 International provided an avenue for professional military education of mid-grade and senior officers from an operational JFC HQ. Participating staff members would gain a greater understanding of how space operations provide tactical, operational and strategic benefits to a military campaign.

Lastly, AJP 3.3(A) Chapter 6 provides guidance on Space Coordinating Authority (SCA) to Joint Force Commanders. It stipulates that, "… within a regional

operation, the Joint Force Commander can designate a SCA to facilitate unity of effort with member-nation space operations and military component space capabilities."[1] Further it defines SCA as, "… the single authority within a joint force to coordinate joint space operations and integrate space capabilities."[2] In conjunction with Headquarters Air Command Ramstein (HQ AC Ramstein) the concept of SCA within a NATO operation was explored in February of 2012. It was determined that further study would be necessary to explore the processes needed in order to facilitate the proper execution of SCA to utilise member-nation space assets within a NATO led operation. SW 12 International afforded this venue.

Objectives

Overall, the five agreed upon wargame objectives (see SHAPE article on page 37) were consistent with Deputy Chief of Staff, Operations (DCOS Ops) initial reasons for JFC Brunssum participation:

1. "… JFC Brunssum's initiative to explore the concept of NATO Space Coordinating Authority in support of its number one operation-ISAF."[3]
2. "… as our organisation transitions to a deployable HQ, consistent with lessons learned from ISAF, mechanisms and processes to exploit effects from space must be established."[4]

Execution

SW 12 International introduced a new concept for the JFC in the form of the Space Coordination Working Group (SCWG). This group synchronised and coordinated all space support with the campaign plan of the JFC Commander. The SCWG was led by the JFC J3 and was attended by space Subject Matter Experts (SMEs) from various organisations and nations. The outcome of the working group was a Joint Prioritised Space Effects List (JPSEL). This concept was effective and was coordinated with a Daily Assets Reconnaissance Board (DARB), which is an established working group in the JFC Battle Rhythm. The JPSEL would then be presented for endorsement by the Joint Coordination Board (JCB) for coordination with national space operations centres. If national providers were able to fulfil the requested space effect it would be included in the Joint Prioritised Space Effects Plan (JPSEP) for tasking. See Figure 1 on the following page for a graphical representation of the daily JFC Battle Rhythm at SW 12 International.

Findings and Observations

Eleven findings and observations were detailed in JFC Brunssum's SW 12 International After Action Report. These findings are noted below:

1. The JFC could benefit from numerous space providers; however the actual mechanisms by which coordination may occur are complex.
2. There is a lack of proper education, experience, expertise, and Standard Operating Procedures (SOPs) within the NCS.
3. The JFC only has coincidental space expertise, but now has one space SME in J3 J35 in the new NCS.
4. The SCWG is an effective model as a coordination body, which allows the JFC to benefit from internal and external space expertise.
5. NATO cannot task nationally owned space assets; it coordinates.
6. Space Situational Awareness (SSA) is important for the joint force. The JFC Commander should be aware of gaps in space support coverage that could have an impact on operations.
7. The SCWG does not replicate J2 (Intelligence) or J6 (Communications) functions and processes. In fact, the DARB compliments the SCWG and should include all service/national providers. The responsibilities between the DARB and the SCWG should be clearly articulated and delineated.
8. Nations need to develop mechanisms to provide space effects in support of a NATO operation, but the JFC should be prepared to receive and synchronise them.
9. The more nations can do to coordinate space effects outside the NATO structure, the less capacity NATO requires to efficiently utilise space assets.
10. Cyber is inextricably linked to the effects provided by space.
11. Integration of cyber warfare into the J3/joint fires seemed to provide the best possibility to leverage the capability at the operational level.

Further, the current JFC Brunssum space SME recently returned from IJC as the Chief of the space operations cell. The above findings from SW 12 International are consistent with various space operations issues in ISAF and IJC. This is particularly true with regards to tasking and/or coordinating space support from various nations. Currently, the U.S. provides the preponderance of space assets and support through the Combined Forces Air Component Commander and no official mechanism/procedures exist to coordinate space support from other NATO member-nations outside of the established U.S. space coordination construct.

Way Ahead

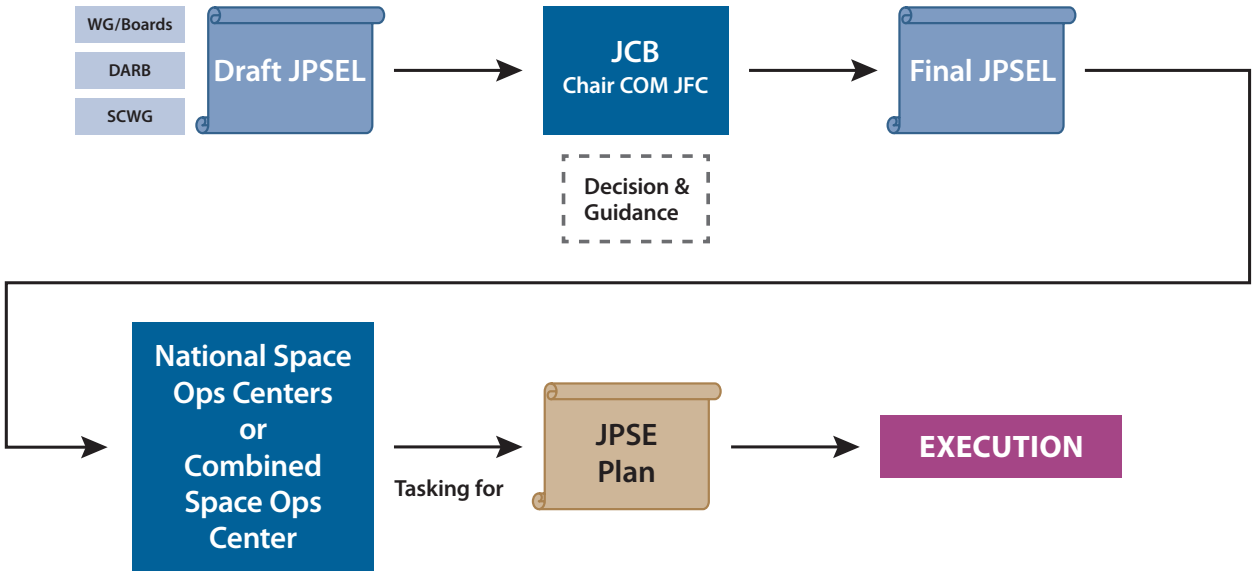
In light of these findings and observations, the following section will detail the planned way ahead at JFC Brunssum and its recommendations to SHAPE from an operational level HQ. First, JFC Brunssum will continue to spearhead its advocacy for space operations through a 'crawl, walk and run' approach.

Crawl – Professional Development/Awareness:

1. The basis will be laid through a professional development lecture to the entire HQ staff on space operations and the applicability of space coordination and effects to a deployable joint war fighting headquarters.
2. The initial lecture will be followed by regularly scheduled space operations updates at the commanders update briefings or similar venues.

Walk – Standard Operating Procedures/Exercises:

3. Further, local Standard Operating Instructions will be developed. In conjunction with JFC Naples a Standard Operating Procedure will be drafted and proposed for inclusion into both JFC's procedures. These initiatives will lead to an increased appreciation for the operational relevance of space within the HQ and standardise procedures to request, and synchronise space effects into the JFC Battle Rhythm.



DARB Daily Assets Reconnaissance Board
JCB Joint Coordination Board
JPSEL Joint Prioritised Space Effects List
JPSEP Joint Prioritised Space Effects Plan
SCWG Space Coordination Working Group

Figure 1: Daily JFC Battle Rhythm at SW 12 International.

4. The SCWG/JPSE concept will be examined via local instructions and internal exercises.
5. In order to validate the operational utility of the procedures, JFC Brunssum advocates the inclusion of space objectives into its next NATO Response Force (NRF) certification exercise STEADFAST JAZZ 2013. Initial informal collaboration efforts are underway with the Joint Warfare Centre (JWC) to study the feasibility of scripting and scenarios that would expose a training audience to a relevant minor space exercise event.

Run – Space Operations Part of Normal Battle Rhythm:

6. Once professional development is complete, standard operating procedures are built and validated and pending additional guidance from SHAPE – space operations will become part of the normal JFC Battle Rhythm during static and deployed operations.

Overall Recommendations

Additionally, JFC Brunssum has the following overall recommendations:

1. Though NATO does not currently possess a Space Policy, space operations are well defined within NATO doctrine. Additional guidance from SHAPE is necessary in order to properly integrate the space domain of warfare beyond the doctrinal level and into the operational level.
2. The common thread since March 2011 for space advocacy in NATO has been the *ad-hoc* NATO Space Integrated Project Team (IPT) (now the NATO Bi-SC Space WG)[5]. This article recommends, that in the absence of a space coordinating body within NATO, ACT and Allied Command Operations continue to support this body. JFC Brunssum intends to continue to support this WG through active quarterly participation by the JFC space SME or designated J3 representative.
3. Finally, as evident through various studies and on-going operations, space is relevant to the total NATO force[6]. As such SHAPE should support the inclusion of space objectives into its NRF certification exercises for both deployable HQs to ensure maximum readiness in all domains of warfare.

Conclusion

The participation of NATO and nine allied nations in SW 12 International is a significant step forward in the process of including the Space domain into NATO operations. The aforementioned lessons learned from SW 12 International, must not be lost and should now be put into actions. Recent NATO operations in Afghanistan and Libya have shown that the NATO Alliance should not remain stagnant and must adapt to what future deployed operations may entail. Within those future operations, two of the five domains of warfare (Air, Land, Sea, *Space and Cyber*) may be underrepresented within NATO in terms of education, experience, expertise and processes. Nonetheless, the impressive attendance of more than 300 participants at all levels of leadership, clearly demonstrates that NATO and many allied nations understand the potential force multiplier that space is for military operations. In the words of SACEUR: "… Space support to NATO operations is gaining momentum and we must continue to press forward in addressing this 21st century need." It is in that spirit that JFC Brunssum intends to continue to be at the forefront of advocating for the integration of space into NATO operations.[7]

1. Allied Joint Doctrine for Air and Space operations AJP 3.3(A), November 2009, 6-2.
2. Ibid., 6-2.
3. 'JFC-B Participation in the U.S. Schriever 2012 Wargame', JFC Brunssum's DCOS Ops to SHAPE DCOS OPI Letter, dated December 2011.
4. Ibid.
5. SACEUR Letter, 'ENDORSEMENT OF ALLIED COMMAND TRANSFORMATION'S (ACT) SPACE INTEGRATED PROJECT TEAM (IPT) AS A FORMAL ENTITY', 22 August 2012.
6. See JAPCC, 'NATO Space Operations Assessment', May 2008 for one such study, www.japcc.org.
7. SACEUR Letter, 'ENDORSEMENT OF ALLIED COMMAND TRANSFORMATION'S (ACT) SPACE INTEGRATED PROJECT TEAM (IPT) AS A FORMAL ENTITY', 22 August 2012.

JWC View[1]

Schriever Wargame 2012 International

By Lieutenant Colonel H. Todd Waller, USA AF, Space and Cyber SME, JWC

The Value and Challenge of Coalition Space Operations

Space is a remarkable, yet for all practical purposes invisible domain that enables many of the activities we experience in the modern world. Satellites operating in space facilitate worldwide communications, the transmission of all kinds of media, and personal and civil navigation systems. Space also provides many of the services critical to military operations. Command and control, accurate weather forecasts, detailed imagery of the battlefield, exact position data for the precise delivery of munitions, and warning that ballistic missiles might be coming your way are some of the space services that enable contemporary military operations. North Atlantic Treaty Organization (NATO) military operations are no exception in their usage and dependence on space, however, NATO uniquely enjoys access to the collective resources of its 28 member states. Taking advantage of the opportunity to enhance effectiveness and efficiency of NATO operations through a more robust exploitation of Alliance space capabilities makes excellent sense. It also has the attractiveness of thrift in a challenging economic environment that demands Smart Defence. But on the practical level, it is a complex and challenging endeavour the Alliance is not currently equipped to undertake. Schriever Wargame 2012 (SW 12) International was a watershed event that explored these challenges and complexities at operational and strategic levels. SW 12 International provided the Alliance with valuable insights into what steps must be considered for robust coalition space operations to become reality. And if they do become reality, the Joint Warfare Centre (JWC) will be poised to sharpen the NATO Response Force's (NRF) ability to plan and execute space effects through operational-level exercises.

SW 12 International in Context

SW 12 International is the culminating event of many months of work performed both by U.S. Air Force Space Command and numerous NATO entities. It is not an endpoint, but rather an illuminating opportunity to assess where NATO currently is and where it can go with regard to Alliance space operations. SW 12 International complements the on-going efforts of the NATO Space Integrated Project Team (IPT) to identify the path towards NATO space operations maturity:

Notional Vision for NATO Space Ops Maturity

Fully trained and equipped operational, strategic, and national elements able to exploit Alliance space capabilities to meet NATO operational requirements.

But this begs the question: what is NATO space operations maturity? I'd like to suggest space operations maturity exists when the Alliance's operational forces (typically composed as an NRF) can intelligently define and manage their space effects requirements and

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SW 12 International provided clarity on what kind of transformation is necessary to achieve the vision of NATO space operations maturity.

satisfy them in a timely fashion using, but not controlling, Alliance national space capabilities. But how do you get there? It is a significant challenge that requires strategic and operational transformation within NATO as well as diplomatic consideration of the expectations it will create for sovereignly controlled national space assets. It will most undoubtedly require new organisational structures, trained professionals, and new policy, procedures and agreements. SW 12 International did not surprise the NATO space community with this insight, but it did provide clarity on what kind of transformation is necessary to achieve the vision of NATO space operations maturity.

JWC Interest in SW 12 International

The JWC vision is to provide the highest quality training for NATO's operational and component level headquarters (HQ). Accordingly, the JWC leadership was especially interested in SW 12 International because of its operational-level focus and because it was consistent with the JWC initiative to make space a more relevant part of its STEADFAST series exercises. In fact, the former JWC Chief of Staff, Brigadier General Steven DePalmer, was so keenly interested in SW 12 International that he volunteered to play the role of Supreme Allied Commander Europe (SACEUR) during the wargame. The five JWC objectives for participation in SW 12 International were:

- Gain insights for operational-level space training to support STEADFAST exercises;
- Understand NATO's current aptitude for coalition space operations;
- Understand how future NATO operations might fully exploit Alliance space capabilities;
- Better understand NATO operational space requirements across the entire planning and execution spectrum;
- Become better equipped to support NATO's progress towards space operations maturity.

The JWC's most basic interest in SW 12 International was to observe space operations at an operational-level HQ for possible application to the JWC's STEADFAST exercises. More specifically, SW 12 International offered the JWC the opportunity to see how a NATO deployed Joint Force Command (JFC) would conduct

space operations now, and at some point in the foreseeable future. The JWC expected these observations to shape near, mid, and possibly long term expectations for the inclusion of space operations in NRF exercises. The JWC also hoped to develop a clearer understanding of the Alliance's strengths and weaknesses in managing coalition space operations. This would enhance the JWC's ability to contribute to NATO's continuing space operations maturity as an active member of the NATO Space IPT.

It is also important to note that while SW 12 International focused on the execution of Operation JOLLY ROGER, the JWC expected to gain insights useful for the entire operational planning and execution process. Training should equip the JFC to fully exploit Alliance space capabilities by considering the role of space operations during planning, deployment, execution, and redeployment phases of the operation. Training should also enable the JFC to answer questions during operation plan (OPLAN) development such as: how can Alliance space capabilities be used to create effects that help achieve the operation's military objectives, how can space effects be synergised with other effects to increase overall effectiveness and efficiency, and how can space effects contribute to crisis response during an operation. As well, the JWC expected SW 12 International to influence its thinking on how to introduce space operations to STEADFAST exercises across the entire spectrum of exercise activity: Phase 1 Academics, Phase 2 OPLAN development, and Phase 3 Execution.

JWC Observations from SW 12 International

1. Organisational prototypes were necessary to conduct coalition space operations.

Strategic and operational organisational prototypes were necessary to make SW 12 International work. Supreme HQ Allied Powers Europe (SHAPE) created the Space Awareness Cell (SAC), the JFC created the Space Coordination Working Group (SCWG), and national elements represented their own space resources to NATO. None of these entities exist today,

"National contributions of personnel and space capabilities … were the quintessential currency of the wargame …"

but they were essential to facilitate the wargame. They were created as prototypes to coordinate the identification of space requirements and the exploitation of allied space capabilities. They also were an excellent way to explore how NATO might organise itself to support space operations in the future. The SAC operated from within the Comprehensive Crisis Operations Management Cell (CCOMC). Its role was to provide space awareness to SACEUR, facilitate national space support to the JFC's operation, and communicate with NATO HQ and other strategic-level entities as required to support the operation. The SCWG, led by JFC J3, identified and prioritised JFC space requirements and synchronised their fulfilment using coalition space resources. The national elements used their national space capabilities to meet the JFC's space requirements.

2. Space experience within NATO is limited.

Space expertise within NATO is another limited resource. The absence of robust space expertise on the JFC battlestaff required technical assumptions to be made in order to maintain game play. As such, space effects during the wargame were treated with a certain amount of generality. During a real operation, technical limitations and operational constraints might create a more sophisticated problem set that would require a knowledgeable cadre of trained space professionals to solve. This kind of expertise would be essential to support both the planning and execution of an operation.

3. Denial of space capabilities was the focus.

Denial of space capabilities was the focus of the wargame. Since NATO was an extensive consumer of SATCOM, precision navigation and timing, imagery, weather and other satellite products for the conduct of this operation (as is true for all NATO operations in general), it was not difficult to impact the operation by denial of these services. Accordingly, JFC activity

was primarily driven by reactions to service interruptions. This is a reasonable first step on the path towards space operations maturity, but the ultimate goal should be to create and synchronise space effects with other operational effects in order to achieve military objectives. This process of space synchronisation must begin as part of OPLAN development.

"Supreme HQ Allied Powers Europe (SHAPE) created the Space Awareness Cell (SAC), the JFC created the Space Coordination Working Group (SCWG), and national elements represented their own space resources to NATO. None of these entities exist today, but they were essential to facilitate the wargame."

4. JFC execution of Space Coordinating Authority (SCA) was limited.

SCA, as currently defined by Allied Joint Publication 3.3 (A) Air and Space Operations, resided with the JFC during SW 12 International, but its execution was limited. The JFC exercised SCA by directly liaising with the nations to request space support for the operation in accordance with predefined agreements. If additional space support was required, SHAPE became the mediator between the JFC and the nations to get the support.

5. Space Situational Awareness (SSA) was complex.

SSA was provided by multiple nations. There was no central NATO body that synchronised the various sources of SSA into one common operating picture. This made getting all the facts to support decision making more complex.

6. Don't forget space planning requirements.

The emphasis of the wargame was execution, yet significant effort would be required in a real operation to reach the point of execution. Space effects requirements must be defined and prioritised within the context of the operation and agreements with the nations must be reached to satisfy those requirements. This effort would span operational-strategic-national lines of communication and should be considered for NATO's space transformation efforts.

7. National participation was quintessential.

The nations were the most valuable players of SW 12 International. National contributions of personnel and space capabilities (those identified in a notional 2023 space order of battle) were the quintessential currency of the wargame enabling meaningful interactions between all the major players. Broad Alliance participation in SW 12 International was a positive sign of NATO and Alliance-member interest in coalition space operations. The availability of national space resources to support Operation JOLLY ROGER was the key to SW 12 International success.

JWC Conclusions

1. SW 12 International and STEADFAST exercises are notably different.

SW 12 International provided exceptional insights for conducting space training at the operational level, however, the differences between SW 12 International as a wargame and STEADFAST as an exercise will limit the applicability. For example, an exercise is a full dress rehearsal of real forces, whereas a wargame is an exploration of concepts, processes and decision making. A wargame might allow assumptions to be made in places where an exercise demands details. SW 12 International allowed NATO players to create the elements they needed to make the game work. A STEADFAST exercise must replicate the real world to be of value to the participants.

2. STEADFAST inclusion of space training will be limited by NATO's space operations maturity.

In the absence of a NATO space cadre at the operational level, mechanisms to support the identification and prioritisation of operational space effects requirements, and a timely way to connect those requirements to Alliance space capabilities, the JWC's introduction of space to STEADFAST exercises will be limited.

3. National support is the key to NATO space transformation.

National participation in the wargame was the key to success and it will be the same for any real NATO space operation in the future. It doesn't matter how well the battlestaff can integrate space operations into the OPLAN if there are no Alliance space capabilities available to deliver the necessary space effects. In fact, an overly-ambitious introduction of space operations to STEADFAST exercises could frustrate the training audience and contribute to negative training if it doesn't match reality. That's why any serious NATO space transformation must be undergirded by concrete and tangible national support.

JWC Recommendations

Near-Term: The new Skolkan scenario, will provide significant opportunities to accommodate space-related injects due to the level of technology dependence in the Scandinavian-based Joint Operations Area. However, the absence of specific space-related Training Objectives will limit the level of space play. Space impacts could be introduced as a consequence to other injects.

Mid-Term: Advocate for space related Training Objectives in STEADFAST JAZZ 2013. Leverage key JFC Brunssum personnel participation in SW 12 International to obtain support for some level of space play in the exercise. Stand-alone space injects are possible, but given the JFC's limited space knowledge and capability, injects must focus on space denial.

Long-Term: If NATO elects to mature its organic space capabilities through the development of policy, training, organisation structures, and the necessary linkages to national space capabilities, then JWC will have a considerable opportunity to incorporate space into STEADFAST series exercises. This should be done with the ultimate goal of training the staff to synchronise space effects with other operational effects during planning and execution to achieve military objectives.

Final Thoughts

Overall, SW 12 International was an exceptionally useful activity and provided some excellent insights for how space might be played in a STEADFAST event. However, the effectiveness of the inclusion of space into STEADFAST exercises will be limited by the absence of space professionals on the JFC battlestaffs. The absence of institutionalised and effective processes that enable timely matching of operational requirements to Alliance space capabilities will also be a limiting factor. While the play of some space scenarios and injects at the present time could inform the broader training audience on the value of space to the operation (in terms of denying capabilities for which there is dependence) the ultimate goal of training the operational-level battlestaff to exploit space as a force multiplier to better NRF operations would be difficult to achieve. ●

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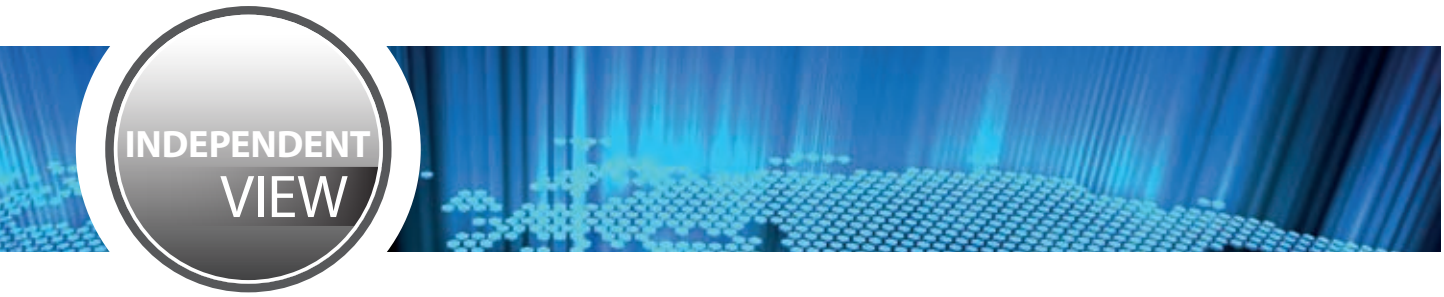

NATO and Combined Space Operations – A Senior Advisor View

Schriever Wargame 2012 International

By Marc J. Berkowitz, Vice President, Strategic Planning, Lockheed Martin Corporation

Introduction

The Schriever Wargame 2012 (SW 12) International, conducted at the Combined Air Operations Center at Nellis Air Force Base, Nevada, in May 2012, focused on space and cyber issues at the operational-level of conflict. It was the first in the U.S. Air Force Space Command-sponsored Schriever series with participants from nine NATO member nations – Canada, Denmark, France, Germany, Italy, Netherlands, Turkey, United Kingdom, and United States – as well as Australia. SW 12 International thus provided a unique environment to explore space and cyber security in the context of combined operations. This article discusses insights and observations drawn from the author's perspective as a senior advisor for the wargame.

Security Cooperation and Collective Defence

The Alliance between North America and Europe, based on shared values, interests, and objectives, is a cornerstone of international security. Strengthening transatlantic security partnerships and institutions is of enduring strategic significance to the United States. While NATO is still in the process of adapting to the new security challenges of the 21st century, it has come a long way since the end of the Cold War primarily because of the experience of conducting operations in the Balkans, Afghanistan, and Libya.

NATO now has a new strategic concept, has refined its structure and procedures for crisis management and military operations, and is addressing how to defend against such modern threats as ballistic missile and cyber-attack. SW 12 International indicated, however, that the Alliance has not yet come to grips with its reliance on space, what is at stake regarding threats to space assets, and the relationships among space, cyber, missile defence, and nuclear matters. NATO policy, doctrine, and planning have not kept up with the reality that, many allies conduct space activities, and that space assets enable on-going operations.

NATO depends upon secure lines of communications to transport people, goods, and services vital to their national security and economic prosperity. The importance of the transportation lines of communications across the land, sea, and air have long been recognised because of the need to ensure access to strategic materials, energy, and markets. The significance of the lines of communication across outer space and cyberspace for assured access to an unimpeded flow of information however, is less well appreciated.

Space systems are integral to the daily lives of people in North America, Europe, and around the world. They collect, generate, and relay information essential for commerce, trade, and security. Space assets are force multipliers that support the full spectrum of military operations. They operate concurrently in both the space and cyber domains and are critical to the strategic effectiveness of NATO forces.

With the advent of globalisation, interference with the space information lines of communication (emanating even from a geographically-localised conflict) can create strategic and operational effects with profound implications. Indeed, distant local space and cyber actions can be directly linked to homelands and global operations. NATO and its international partners thus can contribute to space security by fully appreciating the stakes involved in a contested space domain and cooperating to align their efforts in collective defence of their shared interests.

NATO will improve its ability to manage crises and deter aggression by formulating a unified approach that advances and protects its interests in space. The Alliance can strengthen stability by signalling its resolve and acting in concert to promote space sustainability and security. Establishing pre-planned arrangements for information sharing, interoperability, and leveraging the breadth of Allied capabilities will improve situational awareness as well as the robustness of NATO's space capabilities and thereby the resilience and mission effectiveness of its forces.

"The Alliance clearly would benefit from a coherent political-military perspective on the role of space activities in security cooperation and collective defence. In short, the time for a NATO space policy or comparable 'construct' is overdue."

The Alliance's extension of security cooperation and collective defence to space will complicate the risk calculus of any adversary contemplating inimical actions to interfere with NATO's ability to utilise space. It will help ensure member nations are not 'self-deterred' from authorising and participating in NATO operations. Moreover, it will help enable NATO to operate effectively even if an aggressor directly attacks satellites on-orbit, jams their up or down communications links, or launches cyber-attacks against their command and control.

A NATO Space 'Construct'

One of the major benefits of SW 12 International was to raise awareness among the participants about the strategic significance of the freedom of space. The ability to conduct operations in and through space without interference as well as the ability to operate though an adversary's attempts to actively contest use of the domain is essential to support NATO military operations. Yet it is apparent that NATO's familiarity with space security matters lags behind missile defence and cyber security, despite their operational interdependence with space activities.

Broader awareness is needed to leverage the opportunity provided by SW 12 International to increase knowledge about space within the Alliance. NATO must continue to build the expertise and capacity to conduct space operations. While the new strategic concept warns of technology developments that could impede the Alliance's use of space and the attendant implications for military planning and operations, NATO missed an opportunity to reframe its role in space security while crafting the new concept. Leadership and education evidently are required to prompt the Alliance to move beyond 20th century Cold War preconceptions about military space matters and recognise that proficiency in combined space operations is integral to NATO's ability to manage crises, deter aggression, or, if deterrence fails, prevail in conflict.

NATO's increasing reliance on space means that an attack on the space asset of any individual Ally will affect the security of the entire Alliance. NATO thus has a clear interest in taking steps to help maintain a safe, orderly, and secure space domain. A comprehensive, whole of nations approach that brings all Allies' diplomatic, information, military, and economic resources to bear is needed to advance and protect NATO's interests in space. Such an approach can help to shape

the space domain and contribute to dissuasion by promoting the responsible use of space and ensuring that the space capabilities of member nations can be employed to support combined operations.

"SW 12 International indicated … that the Alliance has not yet come to grips with its reliance on space … and the relationships among space, cyber, missile defence, and nuclear matters."

NATO's ability to efficiently and effectively utilise space, however, is currently impeded by the absence of an overarching framework to guide its provision and use of space capabilities. It lacks any vision, objectives, guidelines, and assignment of responsibilities for space. This is a substantial barrier to the establishment of organisational roles and functions, command arrangements, doctrine, concepts of operations, rules of engagement, education, and training for using space to support military operations. The Alliance clearly would benefit from a coherent political-military perspective on the role of space activities in security cooperation and collective defence. In short, the time for a NATO space policy or comparable 'construct' is overdue.

In fact, NATO is in a period of fiscal austerity necessitating a 'Smart Defence' approach that pools resources for collective defence. While space is an area within Alliance strategy where the United States has a comparative national advantage, other Allies have significant space capabilities that can contribute to collective defence. NATO should focus attention on determining how best to leverage available space resources to the Alliance's benefit. Defence space cooperation is not an end in itself. Rather, it must be understood as a means to the end of strengthening the political and security architecture the Allies rely upon to protect and advance their common objectives.

Combined Space Operations

NATO routinely conducts combined operations on land, at sea, and in the air. Mature doctrine, command and control arrangements, and tactics, techniques, and procedures exist so Allied forces can operate together in these terrestrial domains. NATO must extend this capacity to enable the planning and conduct of operations in space.

NATO can draw upon space assets provided by member nations, international consortia, and commercial enterprises. Many Allies now own and operate capabilities for launch, satellite command and control, space-based intelligence, surveillance, and reconnaissance, command, control, and communications, positioning, navigation, and timing, weather and environmental monitoring, and space situational awareness. The ability to orchestrate the provision and employment of space assets in support of military operations, however, will require NATO to integrate space into its planning and command structures. Space capabilities must be incorporated into NATO processes for requirements generation, force development, and command and control.

During SW 12 International, voluntary national contributions complemented the organic capabilities of the Supreme Headquarters Allied Powers Europe's Comprehensive Crisis Operations Management Center and Joint Force Command (JFC) Headquarters to synchronise and integrate terrestrial and space operations. Member nations did not delegate operational control of their space assets to the JFC. Rather, they identified capabilities made available to the JFC for planning. The JFC then established a mechanism to coordinate the employment of organic assets and external support to create the desired space effects.

SW 12 International thus highlighted the need for NATO to address space security matters and determine how to incorporate space into Alliance structures and procedures. A good place to start this is NATO's defence planning process. NATO needs to establish organisational roles and functions, command arrangements, doctrine, concepts of operations, rules of engagement, education, and training for the provision and use of space capabilities.

Combined space operations should be focused on planning, coordinating, de-conflicting, synchronising, and directing space-related effects in support of military operations. While the Alliance has established new

mechanisms for missile defence and cyber, it has not yet created any comparable mechanism for addressing space. The NATO command structure will require space expertise to plan and orchestrate space support to courses of action. Given the spatial and temporal demands of space operations, the Alliance must develop rules of engagement that enable effective operational execution, preserve the prerogative of individual member nations to act in accordance with their inherent right of self-defence, and avoid creating cumbersome, bureaucratic command arrangements and control processes.

"The wargame achieved the objectives … It highlighted the complexity and value of multi-national, all-domain, combined arms integration and synchronisation."

In particular, the Alliance's decision-making processes must be prepared to address the speed of operations in the space and cyber domains and the complexity of multi-national, all-domain, combined operations. Command and control arrangements must be adapted to operate at network speeds to enable NATO forces to seize and maintain the initiative. This will require an understanding within the Alliance about different national policies, red lines, and rules of engagement. NATO forces must be clear about strategic intentions, political-military objectives, and the desired end-state to execute effective lines of operations.

Conclusion

SW 12 International provided an excellent opportunity for the participating NATO member nations and Australia to explore space and cyber security issues in the context of combined operations. From the perspective of a U.S. participant and wargame advisor, SW 12 International was an unparalleled success. The wargame achieved the objectives for which it was designed. It highlighted the complexity and value of multi-national, all-domain, combined arms integration and synchronisation. Moreover, it underscored the enduring benefits of security cooperation and collective defence.

One of the most significant benefits of SW 12 International is the heightened awareness and additional knowledge gained by the individual participants about space and cyber security and the learning derived from their collaborative efforts. The ultimate value of SW 12 International, of course, will be whether that learning is applied; and acts as a catalyst for substantive actions that address the challenges and opportunities of space security cooperation and collective defence. Promulgating a NATO space construct will provide the framework and guidance for the provision and use of space capabilities. Adapting NATO's structures and processes to plan and conduct combined space operations will increase the Alliance's prestige, influence, and strength.

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Pooling and Sharing

How Are We Doing?

By Lieutenant Colonel Geert 'Flash' Ariëns, NLD AF, JAPCC

Since NATO Secretary General Anders Fogh Rasmussen's press conference on 7 February 2011, terms like 'smart defence' and 'pooling and sharing' are inextricably connected to the future of NATO, or so one might think. Many politicians and Chiefs of Defence concur that in this era of austerity, pooling and sharing of scarce and expensive defence assets is the only way that NATO can retain its capability to effectively guarantee the security on which we thrive.

Background

To get a clear view of what is meant by pooling and sharing some common definitions will be clarified. **Sharing:** One or more countries provide their partners with capability or equipment or undertake a task for another country. If this occurs on a permanent basis, the partners can reduce this capability – and save on costs. **Pooling:** Here too, national capabilities are provided to other countries. A special multinational structure is set up to pool these contributions

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and coordinate their deployment. Pooling can occur in the development, procurement or subsequent operation of shared equipment. This enables countries to either obtain a higher number of units or to co-acquire a capability that a state could not supply alone for cost reasons.

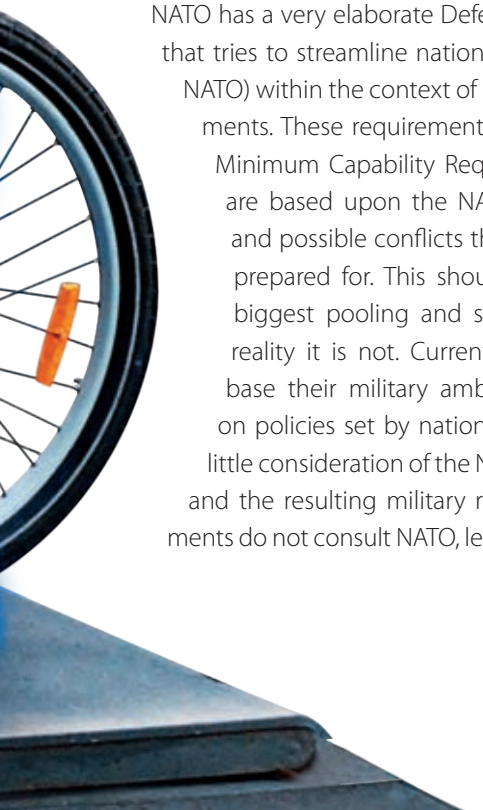
When looking for examples of the pooling and sharing concept in the air domain, the NATO Airborne Early Warning and Control Force Component at Geilenkirchen and the European Air Transport Command at Eindhoven jump to mind, closely followed by the Alliance Ground Surveillance (AGS) project and the European Participating Air Forces (EPAF) Expeditionary Air Wing (EAW). But have any new initiatives been raised as a result of Secretary General Rasmussen's directive? The lack of an organic NATO Intelligence Surveillance and Reconnaissance (ISR) capability and the inability to share some intelligence information between nations because of national releasability restrictions were some Lessons Identified (LI) as a result of Operation Unified Protector (OUP). Another LI was the lack of a well-trained Joint Force Air Component.[1] Although corrective measures are being developed for both lessons as we speak, the work to address these lessons surely cannot be the biggest NATO pooling and sharing accomplishment of these last years? In the next paragraphs some other NATO pooling and sharing efforts are reviewed.

NATO Defence Planning Process (NDPP)

NATO has a very elaborate Defence Planning Process that tries to streamline national assets (if offered to NATO) within the context of NATO military requirements. These requirements are set in the NATO Minimum Capability Requirements (MCR) and are based upon the NATO level of ambition and possible conflicts that NATO needs to be prepared for. This should be one of NATO's biggest pooling and sharing efforts, but in reality it is not. Currently, individual nations base their military ambitions and capacities on policies set by national governments, with little consideration of the NATO level of ambition and the resulting military requirements. Governments do not consult NATO, let alone request NATO's permission, when initiating and executing reductions on defence spending, nor is much consideration given to the possible consequences for NATO of these reductions and policy choices. Secretary General Rasmussen requests that NATO members consider pooled or shared acquisition of critical capabilities. In my opinion this means stop spending money on systems that NATO does not require and pool money to buy systems that NATO, specifically the European side of NATO, lacks, like Unmanned Aerial System (UAS), Electronic Warfare (EW) and cruise missiles. Nations should deliberate on which critical assets can be paired to help meet NATO capability requirements, while complying with national budget reductions in these times of austerity.

"… in this era of austerity, pooling and sharing of scarce and expensive defence assets is the only way that NATO can retain its capability to effectively guarantee the security on which we thrive."

Even if it would be possible for NATO to perfectly match up national bids with all demands that are set in the MCR, thus creating the optimum pool of assets required to fulfil NATO's level of ambition, there would still be a huge problem: once NATO decides to take on a mission, individual nations can still choose not to participate in that mission. This completely disconnects all NDPP efforts from the actual force generation for military actions. An example of this is the experience NATO had with the lack of non-US tanker aircraft during OUP. Although plenty of tankers should have been available according to the NDPP, OUP had to cope with a shortage of aerial refuelling capacity. For various political, financial, military, or other reasons, most nations did not offer their NDPP bid capacity in support of this conflict, even after intervention was collectively endorsed by the NATO Council. This brought about that the NATO Response Force (NRF) plan (another pooling and sharing effort) was rendered useless for the OUP mission. Instead, NATO had to form a coalition of 'just' the able and willing, of which several nations had caveats that further limited their contributions. This has not been different for previous NATO operations in the last decades. Based on this experience, it seems very likely that we will see the same



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"We need a new approach: what I call Smart Defence – how NATO can help nations to build greater security with fewer resources, but greater cooperation, coordination, coherence, and flexibility."
Secretary General Anders Fogh Rasmussen, press conference, 7 February 2011

thing happen in future conflicts. NATO needs to establish a firm link between NDPP-/NRF-planning and the actual force generation process to preclude shortage of assets and capabilities in future conflicts.

Quick Reaction Alert (QRA)

Another NATO pooling and sharing example is the QRA posture in Europe. Nations offer a number of air defence assets to NATO that in turn uses these assets to monitor the skies and react to certain calamities, mishaps or even threats.[2] The QRA assets are at the disposal of NATO's Combined Air Operations Centres (CAOC) and can be scrambled to intercept suspect or troubled aircraft with few limitations concerning national boundaries. This system had been employed successfully for years until the situation changed after 11 September 2001. The threat of hijacked aircraft (known as a renegade) forced most governments into demanding national jurisdiction over the actions taken against renegades in their own airspace. In all practicality, this means that NATO can only employ their assigned QRA assets until a renegade situation arises. From that moment on, most nations take back control over their fighters and do not allow any other NATO QRA assets to deal with that situation. Once a renegade crosses the border of another NATO nation, a QRA handover must be arranged between the involved nations. Because such a handover requires lots of additional coordination it increases the chances of mistakes or even drastic failure. Although the CAOCs and NATO QRA assets are fully capable and equipped to deal with renegade situations across national borders, individual governments demand national sovereignty in this specific situation. This drives QRA efficiency and effectiveness down with potentially disastrous effects. The worst case scenario would be a renegade situation arising over a country that cannot scramble its QRA due to bad weather. In this case terrorists cannot be stopped before they carry out their malicious plans, whilst capable NATO QRA assets of other nations are not allowed to intervene. Governments would not have to give up their national sovereignty and could still be part of the decision loop to resolve this unwanted situation. In order for this to occur, they must accept that the actual QRA mission can be performed by NATO assets of other nations, as for example is done at present when a military aircraft with malicious intent needs to be intercepted. As long as governments are unwilling to accept that their national sovereign interests are in the good and able hands of NATO, most pooling and sharing efforts will continue to fail or at least operate at suboptimal efficiency.

Weapon Stocks

Experience shows that the 2011 OUP weapon expenditure quickly depleted the war stocks of specific weapons of several (smaller) NATO nations.[3] Acquisition of new weapons, fuses and guidance kits takes years, not taking into account the lead time that most nations need to allocate money in their ever reducing defence budgets to even allow for new armament requirements. To counter the acute shortage nations tried to borrow specific weapons, guidance kits and fuses from other NATO members who did not participate in the air-to-ground missions. Even in the best of times this is a lengthy process that involves a lot of bureaucracy, as is shown by the transfer of weapons

from the Netherlands to Denmark during OUP: despite standing agreements on exchange of aircraft related parts that currently exist between the EPAF nations, it took weeks before final transfer permission was given. Strangely enough, the biggest issue that needed to be overcome was the fact that nations had problems with their weapons being dropped over Libya after they previously decided not to take part in kinetic warfare in Libya. These ethical issues are at least peculiar considering that some of these nations allowed their tanker aircraft to refuel NATO bombers, allowed their cargo planes to transport weapons to the end-users and permitted their personnel to take part in the targeting cycle as controllers in E-3A aircraft or as planners at the CAOC. Two disparities can be derived from analysis of this: first, NATO only recently started thinking about developing requirements for weapon stock quantities or capabilities, but there is no mature NDPP system to plan and track all NATO weapon stocks. This results in the inability of NATO to assess if weapon stocks are large enough to support its level of ambition. Second, although weapons that are used by nations share lots of commonalities and could easily be used by other NATO nations, a general agreement for shared use of weapons (and replenishment after use) does not exist. These shortfalls need to be fixed to overcome the weapon stock shortage that arose during OUP and that will continue to exist in years to come because of lengthy procurement processes and the belt-tightening that we are all going through. Any ethical issues that may exist between nations will have to be discussed and addressed before the next necessity to use one another's weapons arises, or NATO will find it more difficult to employ their forces effectively and efficiently.

Conclusion

So does all of this mean that pooling and sharing is a lost cause for NATO? The examples that were summed up do not impart a very promising view. On the other hand, most problems described in this article could be resolved without huge amounts of money, or could actually result in money saved. It would just take (political) commitment and effort to work through the solutions that are offered above: effort from NATO to change their plans and processes to become more agile; effort to convince politicians that national sovereignty is not in jeopardy, in contrast, sovereignty will be better served when nations endorse their international policy by power projection in cooperation with NATO nations. Also, effort from NATO members will be needed to convince them of the benefits of pooling and sharing assets that are already available. Nations need to assess multinational capability gaps, for example the lack of (European) ISR and EW assets, and fill those gaps by procurement and pooling in ways similar to the methods used to compose and operate the Heavy Airlift Wing in Pápa, Hungary. To make this happen, we not only have to encourage pooling and sharing, we have to find opportunities to actually use pooling and sharing in an effective and cost efficient way. Once opportunities are recognised we have to act to make pooling and sharing work; do it NOW! ●

1. These lessons identified are described in a point paper by HQ AC Ramstein, subject NATO Airpower Recommendations from OUP, dated 15 Feb 2012, ref 02151/CG/GXX/12.
2. The Netherlands' Regeling bijstand bestrijding luchtvaartterrorisme, 20 April 2005, nr. 5348913/505 describes how Dutch fighter aircraft are assigned to NATO and can be tasked for national duties in case of a renegade situation. Other NATO nations have similar regulations.
3. One instance is described in an article on http://www.nu.nl/onrust-midden-oosten/2541990/denen-bestoken-libie-met-nederlandse-bommen.html

Lieutenant Colonel Geert 'Flash' Ariëns

joined the Royal Netherlands Air Force (RNLAF) in 1984. After basic training, pilot training and an initial tour flying the NF-5 he started flying the F-16 in 1989. He is an F-16 weapons school graduate and instructor and flew the F-16 for over 20 years. He served in operational missions over Bosnia, Kosovo and Afghanistan. His last operational tour was in 2012, when he commanded the RNLAF F-16 detachment in Mazar-e-Sharif in support of ISAF. As Chief of Plans for the RNLAF Fighter Branch he gained in-depth knowledge about requirement procedures, National and NATO Defence Planning Processes and multinational collaboration. Lt Col Ariëns is currently employed as Subject Matter Expert in Manned Air at the Combat Air Branch of the JAPCC.

A Step in the Right Direction

The Concept of Military Momentum

By Air Commodore Paddy Teakle, GBR AF, Head Doctrine, Air and Space

Introduction

The global financial crisis and other complementary factors have forced western governments to examine defence expenditure and as a result many western forces face a quantifiable reduction in overall numbers of assets and personnel. On average, military expenditure amongst European nations has fallen almost 2 % annually during the past decade.[1] Smaller EU states have seen cuts of above 20 %; most middle-sized EU nations have implemented reductions of between 10 to 15 %; and larger EU countries like Germany and the United Kingdom have introduced cuts of about 8 %.[2] The implications for our armed forces are obvious and we must examine every aspect of our business to determine how best to organise, train and equip for an uncertain future. One approach is to consider more fully our thinking on military momentum rather than focusing solely on the concept of military mass.

Momentum, Velocity and Mass

Momentum can be defined as "the impetus gained by a moving object or the driving force gained by the development of a process"[3], alternatively, in the field of physics, momentum is defined as a "measure of movement equal to the product of the body's mass and velocity"[4]. Whilst the former definition is useful to express the capacity for progressive development, or

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the power to increase or develop at an ever growing pace, it is against the latter definition of momentum that this article will concentrate.

It is also important that we understand velocity and critical mass. Velocity is defined as "the speed of something in a given direction"[5]; the distinction between speed and velocity is crucial because speed alone is unlikely to compensate for a reduction in military mass. Critical mass is defined as "the minimum size or amount of resources required to start or maintain a venture"[6]. In military terms this means that there is an irreducible minimum force level (critical mass) below which no increase in military velocity can compensate. This critical mass includes not only the fighting element but also supporting elements particularly in the areas of sustainment and training.

Whilst it might be tempting for budgeters to seize on the concept of military momentum as a justification for force cuts they should do so cautiously because of the highly dynamic nature of military velocity. The ability to generate velocity is determined by many variables and these may conspire to create a situation where it is impossible to generate sufficient velocity for a given mass and we may be unable to match or out-strip the military momentum of an opponent. But military velocity can compensate for some reduction in military mass and this article examines how we, as militaries and airpower practitioners in particular, can generate velocity to deliver the same or greater momentum at a time when our military mass is reducing.

Speed, along with reach and height, is one of the abiding strengths and core characteristics of airpower. Speed allows the rapid projection of military power and permits missions to be completed quickly, generating tempo and offering the potential to exploit time, the fourth dimension.[7] Thus, any employment of airpower inherently comes with one element of the velocity equation satisfied. However, speed applied in the wrong direction or for its own sake will not deliver the velocity or momentum we need. Therefore, if we are to generate military velocity and momentum we must apply airpower's inherent speed in a set direction, in other words, we must establish Air Command and Control (C2) structures, mechanisms and processes which ensure that the direction set is the direction travelled.

Tempo

Before we consider C2 we need to explore our understanding of tempo. Tempo is defined as "the pace of an activity or process"[8] it follows, therefore, that if we can dictate tempo then we can control the momentum of a given mass. In military terms we should view tempo as the ability to operate at the speed of the problem; thus it is dependent upon the complexity of the problem set. The UK's Future Character of Conflict pamphlet describes the future battlespace as congested, cluttered, contested, connected and constrained.[9] This description may not be universally accepted but two accepted abiding characteristics are uncertainty and chaos. Therefore, the degree to which we can operate at the speed of the problem and consequently control campaign tempo is predicated on our level of understanding at any given moment. Understanding is derived from information and context. At the outset of a campaign a commander's understanding is unlikely to be sufficient to fully control tempo and a degree of operational and tactical patience will be required. As new information and context becomes available, understanding grows and commanders will be better placed to control tempo to their advantage.

Situational Awareness vs. Situational Understanding

We need, therefore, to shift from a position of situational awareness (knowing *that* something is happening) to one of situational understanding (knowing *why* something is happening).

Air and Space-derived Intelligence, Surveillance and Reconnaissance can contribute towards such understanding but the all-important human and social context is difficult to map from this vantage point. Consequently, the transition from awareness to understanding demands multi-source information fusion. Moreover, understanding cannot be derived through

a saturation of collect sensors and we must invest equally in our ability to direct, analyse, process and disseminate data. We need networked architectures which place the right information at the right place at the right time. The rewards will be high as better understanding facilitates improved decision-making – the key facet of command.

Command and Control

Military command is the art of decision-making and the direction of assigned forces to accomplish given missions. Recently, command and control have become conflated; indeed some commentators speak of C2 as if it were a single function. It is not. Command and control are two separate but inter-linked activities and to better frame our thinking we should view command as art and control as science. The key to effective command is an unambiguous understanding of superior commander's intent; this sets the velocity vector against which speed and mass are applied to create military momentum. Commanders must determine both the mass and velocity required to achieve their objectives and then apply their control mechanisms to deliver them. Thus our headquarters structures, mechanisms and processes must be designed to maximise military momentum; overly bureaucratic or unwieldy headquarters create an inertia which runs counter to this.

Responsive and effective air command headquarters must be capable of synchronising and integrating their activities and effects with the other domains to generate momentum through tempo rather than mass. Air C2 is already one of the most integrated, adaptable, flexible and high-tempo military processes, yet for many it remains a mystery. More worryingly we have, over time, allowed the control function (science) to dominate the command function (art) and have introduced complexity where simplicity is needed. We must reverse this trend else we risk eroding the agility we need to best deliver military momentum.

Air commanders must be at ease with the demands of information-dominated warfare and full-spectrum targeting. Furthermore, they must embrace the shift from control-based methods to a greater emphasis on command. They must use technology to their advantage and not become slaves to it; the technology itself is not important; the information it delivers is.

Traditionally, air command has used a model of centralised control, decentralised execution. Improved access to information and shared understanding, offers a more flexible approach. Centralised control will still be required to allocate and apportion scarce air resources, but directed – rather than decentralised – execution will become the norm. Commanders must be able to centralise or decentralise execution authority according to the prevailing circumstances. The guiding principle is that execution authority should be directed to the point of best understanding.

A greater degree of decentralised execution will be possible when all coalition participants are adequately trained, comfortable with mission command, and technically able to access the command network. This enables the delegation of certain command responsibilities (e.g. air-weapons release authority), enables tactical self-synchronisation and generates increased tempo through significantly reduced decision cycles. Crucially, as decentralised

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Travis Air Force Base Airmen in California conduct a mass launch of 12 mobility aircraft, practicing the combat capability of safely and swiftly launching a large number of aircraft in a matter of minutes.

control allows air commanders to concentrate on command rather than being distracted by the need to control, it remains the ideal.

However, the future air command environment will enable a greater degree of centralised execution. This may become the norm if there is better situational understanding in the air headquarters than in the cockpit or at the console. It may also be appropriate for certain high-risk missions or where the inclusion of less capable coalition partners makes it unwise to decentralise execution authority.

Having established his C2 structures, mechanisms and processes a commander will use Mission Command to generate and control tempo. Shared understanding, the assignment of a mission and the articulation of direction to subordinates sets the velocity vector against which the unit's speed and mass can be applied. Thus the momentum sought and required by the commander is achieved. Mission Command is underpinned by trust, which must first be earned and then sustained; combined and joint education, training and dialogue are the key building blocks. And here we can help. As airmen we use a language with which we are comfortable but which others find confusing, therefore, we have a duty to explain ourselves better, for instance, an Air Ops Directive is nothing more than a Fragmentary Order (FRAGO), and an Air Tasking Order is but a set of mission type orders. If others understand us and we them, trust and respect will invariably follow.

"… we need, therefore, to shift from a position of situational awareness (knowing that something is happening) to one of situational understanding (knowing why something is happening)."

Speed, Mobility and Positioning

Having set the velocity vector through commander's intent we need to look more closely at speed. Speed is about movement and the ease with which something can be moved is determined by its mobility. Mobility is one of the fundamental considerations of any strategist and the mobility of a unit is a deciding factor in its efficiency. Equality in mass can be mitigated by reducing an opponent's mobility (fixing) such that he is unable to concentrate his force quickly enough for the defence of the objective. Positioning can also be a deciding factor and artful positioning of an attack can force an opponent to defend in more than one place. This will expose positional weaknesses and an attacker who has forced the defender to consolidate his defence in one area should rapidly exploit the vulnerability of others through mobility. This is the essence of the manoeuvrist approach and plays to airpower's core strengths. The application of a manoeuvrist approach to air operations allows airpower to achieve a position of decisive advantage by rapidly bringing a concentration of force to bear anywhere in the battlespace. Although these operations can be conducted in isolation, airpower is most effective when fully integrated and synchronised with land, maritime, space and cyber activity. With careful joint and integrated planning the speed and precision of air systems can be linked to surface manoeuvre, indirect fires and disruption activities to increase available combat power.

"… we must establish Air Command and Control (C2) structures, mechanisms and processes which ensure that the direction set is the direction travelled."

Conclusion

This article has attempted to shift our thinking from the concept of military mass towards that of military momentum. Mass will always be important, especially as it forms one element of the momentum equation, but we should now view military velocity as an equally important factor. We must identify and set the velocity vector against which military speed is applied and the key to that lies in the art of Command supported by the science of Control. We must appreciate the linkages between mobility and speed – the more mobile and easy it is to move something the quicker it can be applied to the problem. We need to raise our sights from situational awareness to situational understanding or from knowing that something is happening to knowing why something is happening. A focus on C4ISTAR will help but we must look across the spectrum and avoid a myopic focus on collect. Finally we must integrate all five domains[10] to generate optimum momentum. This can only be achieved if every element of the military machine trusts and understands the others and the key to that particular puzzle lies in education and training. ●

1. World Politics Review: Global Insights: Righting Trans-Atlantic Defense Spending in 2012; Weitz; Jan 2012.
2. Brookings: Trends within the EU; Molling; July 2012.
3. Concise Oxford English Dictionary Eleventh Edition (2004).
4. Ibid.
5. Ibid.
6. Ibid.
7. British Air and Space Power Doctrine – AP3000 Fourth Edition (2009).
8. Concise Oxford English Dictionary Eleventh Edition (2004).
9. The Future Character of Conflict, UK MOD, 2010.
10. Air, land, maritime, space and cyber.

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The lessons learned from air-to-air combat losses over North Vietnam continue to impact advanced training today.

Is Red Air Meeting Your Needs?

Options for Enhancing Tactical Leadership Programme

By Lieutenant Colonel Brian Morrison, USA AF, HQ Air Force Space Command

What Red Can Do For You

On 10 May 1972, United States Air Force (USAF) Major Bob Lodge was piloting an F-4D on a mission over North Vietnam when his flight was engaged head-on by four MiG-21s. In a matter of minutes, three MiGs had been shot down and Major Lodge was manoeuvring to down the fourth when he was gunned by a MiG-19 using the jungle canopy beneath as camouflage. Lodge's Weapon Systems Officer, Captain Roger Locher, ejected and was rescued twenty-three days later. Lodge did not eject and was killed.[1] Marshall Michel, in 'Clashes: Air Combat over North Vietnam 1965–1972', writes that enemy pilots used 'Kuban tactics' to achieve the kill on Major Lodge's F-4.[2] Events like this served as the catalyst for such seismic occurrences as the stand-up of the Aggressors and the creation of Red Flag. Both of these entities are staples of operations at the USAF Warfare Center at Nellis Air Force Base, Nevada. The mission of the Warfare Center is three-fold: Tactics Development, Operational Testing and Advanced Training. This article focuses on the Advanced Training aspect, comparing it with the training conducted in the Flying Course of the NATO Tactical Leadership Programme (TLP)[3] with specific emphasis on the opposition force (OPFOR). (For the purpose of this article, I use OPFOR and Red Air interchangeably). I will attempt to shed light and pose questions in the following areas: attributes of Red Air in the context of the USAF Aggressors, what it means for Red to totally commit to the betterment of Blue and finally, offer recommendations for TLP planners to consider with the ultimate goal of maximising the effectiveness of its Red Air. I begin by defining this concept known as Red Air which is most easily accomplished by discussing the Aggressors.

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Advanced training like that at Red Flag or the TLP Flying Course is made possible by Red Air. Here, a flight of Aggressor F-16's fly during Red Flag.

'Red Air' and the Aggressors

The main point of this section is that the Aggressors are Red Air but that not all Red Air are Aggressors. First and foremost, Aggressors are standing squadrons. The men and women assigned to these squadrons commit to a cultural mindset right down to the type of pilot and Air Battle Manager insignia worn on their uniforms. The Aggressors are centred by the mantra of 'know, teach and replicate' the threat. An organic intelligence squadron is the foundation of the Aggressors. This squadron makes it possible for the flying Aggressor units to know the threat; which is even more important today as the threat is more varied and uncertain than in the past. This organisation works hand-in-hand with Aggressor pilots and controllers, ensuring they are employing the present-day 'Kuban tactics'. The pilots and controllers, once they are well-versed in the threat, certify on an adversary weapon system and initiate threat instruction. The certification process is rigorous and culminates in briefing your topic to an audience of fellow Aggressors, Weapons School instructors and Warfare Center senior leaders. Finally, the time invested to 'know' and 'teach' the threat culminates in being able to 'replicate' the threat in a Red Flag exercise or an Aggressor Roadshow.[4] A Roadshow is when Aggressors travel to Tyndall Air Force Base, for example, to train F-22 pilots on the threat via the aforementioned certification briefings and replicate the threat via flying operations.

In contrast to the Aggressors, Red Air, in my opinion, does not commit fully to the 'know, teach and replicate' philosophy. They do replicate the threat but do not engage in the certification and classroom instruction process. Another major difference between the Aggressors and a unit flying as Red Air is the Aggressors focus solely on making Blue better whereas Red Air may adopt a 'win at all cost' mentality which may do more harm than good to Blue. Two last comments on the Aggressors and Red Air in general are that: (1) in the debrief they must be completely forthcoming with the tactics they employed and (2) that flying dissimilar aircraft is key, especially at the merge.

While dissimilar aircraft is a key element, the effectiveness of Red Air is reduced when it is flown by pilots who normally fly in a Blue role. In other words, Red Air is at its most effective when flown by pilots who do not fly any other mission set (e.g. air-to-ground). TLP, unlike Red Flag, does not have standing Aggressor squadrons to meet its Red Air requirements. TLP instructors must ask themselves, "Are we taking the necessary steps to ensure negative learning does not occur?" Another question to ask in regard to training objectives is, "What Electronic Attack (EA) methods are we employing against Blue?" This is where the intelligence piece is so critical. If Red Air is not replicating the adversary as accurately as possible, then chances increase that Blue will experience negative learning. In addition to robust EA, Blue pilots should

be tracked by ground-based air defence systems during every range vulnerability time, commonly referred to as a 'vul' time. One final question for TLP planners is, "Are the surface-to-air missile (SAM) and anti-aircraft artillery (AAA) systems we are using representative of the threat NATO forces will see?" Essentially, advanced training like that in Red Flag or the TLP Flying Course is made possible by Red Air. However, I think Red Air is a spectrum with the Aggressors on one end, and four Eurofighters taking off from Coningsby or Morón as the OPFOR in a '4v4' mission on the other end. With that description of Red Air in mind, I will now devote some time to how Red Air should function within the confines of training.

The Mindset of 'Red Air' Pilots and Controllers

Red Air requires sacrifice from its pilots and controllers. The job of Red Air is not to win at all cost, but to make Blue better. This was not always the case however. A selfish attitude plagued the Aggressors in the 1980s. Former Commander of the Adversary Tactics Group, Colonel Dan Tippett (2010–2012), recalled stories of debriefings becoming very contentious. Instead of aiding Blue learning, these debriefings became an obstacle to learning. On multiple occasions, Colonel Tippett directed his squadron commanders to be completely forthcoming with the tactics used by Aggressor pilots, controllers and SAM operators. Also, he directed his squadron commanders to answer every question from Blue in a complete and forthright manner. In other words, Aggressors will not reply to a Blue question with, "I cannot tell you how we did that because it will compromise our methods". Additionally, this selfless attitude requires strict adherence to the scenario. The scenario for that day's 'vul' for example could dictate that Red Air restrict the use of their on-board radar or use a much less capable air-to-air missile variant. This often results in a skilled Aggressor pilot being 'shot down' by a less experienced Blue aviator. Red Air must have the discipline to realise that its purpose is to assist Blue in meeting their training objectives. This brings me to my final topic, recommendations for TLP planner consideration.

Can 'Red Air' Be Better?

Readers should interpret these recommendations as open-ended questions or points to consider. They are ordered based on perceived attainability. The first

recommendation is that Red Air is consistent (i.e. operate one type of aircraft) throughout the entire Flying Course. To the maximum extent possible, all aircraft flying Red Air should be dissimilar to any Blue aircraft. In addition, TLP should identify unit(s) providing Red Air well in advance so pilots and controllers can integrate with their intelligence counterparts and TLP cadre to more accurately 'become' the adversary.

"Red Air requires sacrifice from its pilots and controllers. The job of Red Air is not to win at all cost, but to make Blue better."

The second recommendation is that a squadron is detailed to fly as Red Air for a set amount of time (e.g. one year). This recommendation would obviously require a significant commitment. However, the training benefits to Blue aircrew attending TLP would likely exceed what is currently received. TLP member nations could contribute funding for operations and maintenance and pilot-intelligence crosstalks as the aircrew adopt the 'know, teach and replicate' philosophy. Finally, the most difficult recommendation, yet largest step in the 'threat-representative' direction, is the stand-up of a full Aggressor squadron. Building and sustaining such a squadron would entail considerable effort and commitment from the TLP member nations, including personnel, equipment and funding. (A detailed breakdown of the funding and personnel required is beyond the scope of this article.) This organisation would require its own organic intelligence apparatus, a critical foundation for which without, there is no 'know, teach and replicate' philosophy.

Conclusion and Way Ahead

There are varying levels of advanced training but the higher the quality of OPFOR, the better the Blue end-product. While dedicated Red Air is better than the day-to-day 'Blue versus Blue' training that fighter pilots get at home station, it is easy for the training not to be representative of any potential threat. As discussed, there are actions that will increase the effectiveness of

A standing Aggressor squadron could greatly increase the effectiveness of the TLP product.

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Red Air. First and foremost is to identify OPFOR units as early as possible. Second is to ensure they are operating equipment that Blue can expect to face in combat. And finally, get the pilots linked to the intelligence apparatus to make them as 'threat-representative' as possible. Taking it one step further, the effectiveness of Red Air could be increased if a squadron is identified to fly as the OPFOR for an entire year's worth of TLP classes. This detail could rotate among TLP nations. Finally, the ultimate solution is a standing Aggressor squadron. An organisation whose sole purpose is to provide the most 'threat-representative' adversary to Blue TLP students could greatly increase the effectiveness of the TLP product. Also, like the Nellis Aggressors, when the schedule allows it, this squadron could travel to bases throughout Europe. It would bring its high-quality product to Blue squadrons who can only expose a small percentage of its pilots to the TLP Flying Course or do not have the opportunity to attend Red Flag or similar training except once every several years.

Final Considerations

This article has touched on many topics and it has focused on the air domain. Modern warfare also includes the cyberspace and space domains. If we are conducting advanced training without contesting these domains, then we are certainly venturing into the dreaded 'negative learning' arena. Is it wise to assume there will be no cyberspace challenges in generating the Air Tasking Order? Finally, what about the integration of the OPFOR in these three domains? Blue forces stress integrated warfighting; shouldn't

Major Bob Lodge and Captain Roger Locher preflight their F-4 Phantom.

Red do the same? Considering these questions alone, one must admit this article has just scratched the surface on future discussions.

To bring it full circle, training of this nature is the legacy of the death of Major Lodge. I do not know if he would have become 'General Bob Lodge, USAF Retired', had he been able to mission plan or react differently due to having been exposed to 'Kuban tactics' at a Red Flag or at the Weapons School. However, I do think he would have shot-down that fourth Fishbed and relived the engagement that evening at the Club. ●

1. Peck Jr, Gaillard R. America's Secret MiG Squadron. Oxford: Osprey Publishing, 2012.
2. Michel III, Marshall L. Clashes: Air Combat over North Vietnam 1965–1972. Newport: Naval Institute Press, 2007.
3. The Tactical Leadership Programme (TLP) is an organisation formed in 1978 under a Memorandum of Understanding between 10 NATO nations with an aim to develop tactics, techniques and procedures to enhance multi-national air operations. TLP is not part of the NATO structure, but linked to NATO via a Letter of Agreement with NATO HQ AC Ramstein. While it is acknowledged that Red Flag and TLP are clearly not the same and have major differences, it is useful to compare some aspects of advanced training operations between the two.
4. Admittedly, there are limitations to accurate threat-replication when using F-15s and F-16s, the aircraft the USAF Aggressors fly, if you assume these are not the aircraft types Red Flag participants or TLP nations will face in future aerial combat.

Lieutenant Colonel Brian Morrison

was commissioned through the US Air Force Academy as an ICBM Launch Officer in 1994. Following Space-related assignments at Air University in Alabama, Cape Canaveral in Florida and Langley Air Force Base in Virginia, he was assigned to a Space Detachment at the Air Force Warfare Center at Nellis Air Force Base in Nevada. He was part of a team that was charged to further inculcate Warfare Center processes into applicable Space missions. In his final year at Nellis, he served as the Deputy Commander of the Adversary Tactics Group, commonly known as the 'Aggressors'. He is currently the Deputy Chief of the Cyber Defense Branch at HQ Air Force Space Command.

Back to the Future!

Future Air Power Ambition in an Austere Economic Climate[1]

By Dr. Dolf H.W. Bos, M.Sc., Netherlands Organisation for Applied Scientific Research (TNO)

Introduction

Current discussions on the future political-military ambition in an austere financial climate and the consequences for the future organisation of the armed forces, show a disturbing tendency to consider the current ISAF mission in Afghanistan as an example of the sort of conflict that is representative of future operations. As a consequence, the mission types that are primarily executed in Afghanistan are heavily considered for future fleet requirements. This is illustrated by the frequency with which the need is stressed for unmanned aircraft and dedicated Close Air Support (CAS) platforms. This article argues that counterinsurgency (COIN) operations such as ISAF should not be the focus for the future, especially in times of financial austerity, since they constitute an increased military ambition instead of a reduced one.

This article subsequently argues that COIN operations do not allow for employing the fixed-wing multi-role combat aircraft in its most efficient role (Interdiction), but instead force this weapon into an inefficient and reactive role, CAS, leaving the initiative to the opponent.

The author finally presents the following theses:

1. The extent, to which the Interdiction role can be carried out by combat aircraft in a certain conflict, is a litmus test for the effectiveness – and therefore the desirability – of armed intervention in that conflict.
2. As a consequence, NATO countries should not focus on COIN operations, but instead on operations in which combat aircraft can be employed in the most efficient way. This also calls for an efficient integrated air-land doctrine along the lines of Interdiction.
3. This requires multi-role combat aircraft capable of penetrating deep into enemy territory, carrying heavy payloads right into the heart of an Integrated Air Defence System (IADS).

COIN and the Conflict in Afghanistan

Operations such as those currently going on in Afghanistan (sometimes euphemistically called Peace Enforcing, but actually constituting COIN) are presented by some politicians as a reduction of the military ambition, clearing the way to economise on the capabilities that enable the armed forces to operate on the high end of the spectrum of conflict intensity.

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Actually, COIN operations have the lowest probability of success (as a consequence of the far-reaching interference with the political affairs of another country) and have a tendency to drag on, resulting in high attrition and high risk of 'mission creep'. This results in commitments lasting decades while imposing huge burdens on the armed forces (both in personnel and materiel) as well as on the treasury. Therefore a shift towards COIN operations constitutes an increase in ambition, not a decrease.

The fact is often ignored that the ISAF mission resulted and profited from the end state of Operation ENDURING FREEDOM (OEF), that is: the Taliban expelled from power and separated from their heavy weapons, including their Air Power. OEF was almost entirely conducted from the air, with the assistance of only a very limited ground presence. Within several weeks of execution, this operation drove the Taliban out of Mazar-i-Sharif and largely out of Afghanistan. Contrary to general belief, this operation did not concentrate on CAS, but primarily on (Battlefield) Air Interdiction. Based on the OEF experience, the United States was able to successfully implement a very effective application of Interdiction, in combination with ground forces, during the invasion of Iraq.

The causes for the eventual return of the Taliban are beyond the scope of this article. Of importance is the fact that Afghanistan is currently the scene of an insurgency against the rule of President Karzai and that NATO accordingly is involved in a COIN campaign. What is currently going on in Afghanistan is the execution of a policing mission, in classical colonial style, by means of patrols sent out from fortified positions in the interior. In fact, NATO voluntarily locks itself up in pockets surrounded by hostiles, as was the case in Bosnia. This greatly increases the dependency of both ground forces and local civilians (who also often find themselves in isolated pockets) on supply routes through unsecure territory as well as on Air Transport (and as a consequence, on the condition of a low surface-to-air threat environment).

This offers an interesting view. Acknowledging the massive dependency on supply and Air Transport in COIN operations implies acknowledging logistics as a strategic centre of gravity, and therefore highlighting it as a target for the opponent. In a nutshell, this is the situation in Afghanistan, and is the case for COIN operations in general. In such conflicts, the opponent may count on a considerable amount of support (possibly enforced) from the local population. Furthermore, the insurgents generally have time on their side ('protracted war'). Their logistic footprint is therefore small. This renders the opponent virtually immune to Interdiction, but instead renders Western troops especially vulnerable to Interdiction-like campaigns. Indeed the Taliban have focused on the disruption of NATO supply, as witnessed by their direct attacks on truck parks, fuel transports as well as road interdiction using Improvised Explosive Devices (IEDs).

"Future air operations will take place within, at least, a partially functional IADS."

There is an inherent lack of depth in NATO's concept of operations. As a result, it is virtually impossible for friendly ground forces that are under attack to buy time by employing defensive retreat tactics. The result is an extreme dependency on CAS. This leaves the initiative with the opponent and employs the air arm in a very inefficient reactive way (from an Air Power perspective; under the given circumstances fixed and rotary wing do of course provide very effective protection to ground forces). This causes a very advanced weapon system, costing several tens of millions of Euros, to be employed against individual warriors. Some people find cause in this to argue for less sophisticated and cheaper Light Attack/Armed Reconnaissance (LA/AR) aircraft. This argument is flawed however, since their lack of speed and reach requires such aircraft to operate from forward bases, making them and their logistics extremely vulnerable (not to mention the fact that they are single-role and therefore constitute an additional, complementary capability to multi-role aircraft). There is no need for cheaper airplanes; this kind of operation should be avoided altogether.

Since attention is almost exclusively focused on the conflict in Afghanistan, the fully incorrect conclusion is drawn that CAS is the mission of the future. This ignores the fact that kinetic missions are not the most

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Interdiction has to take place at all depths, requiring not only coordination but cooperation with ground troops.

effective contribution of Air Power to COIN operations (Air Transport is) and that CAS is not the most efficient contribution of Air Power to ground operations (Interdiction is). Concentrating on COIN operations and thereby on CAS is therefore detrimental to the optimal employment of combat aircraft and hence to the superiority over, and the effect on, the opponent. This results in drawn out conflicts.

Air Power is truly a three-dimensional weapon. By concentrating on CAS the employment of Air Power is forced from a three-dimensional to a two-dimensional way of operation, i.e. limited to the width of the Forward Edge of the Battle Area (FEBA) instead of over the entire width and depth of the theatre. The fact that Air Power is above all an area weapon is being undermined by concentrating on concepts that are optimised for operations close to the frontline, such as LA/AR aircraft.

Future Conflicts and Concept of Operations

The most effective kinetic mission type, Interdiction, hardly yields any effect in COIN operations, whereas on the other hand friendly forces become very vulnerable to Interdiction-like attacks by the opponent. Therefore, the measure in which Interdiction is effective, should serve as a litmus test for the desirability to intervene militarily in a particular conflict. Indeed, (fixed-wing) Air Power is the weapon that provides a decisive superiority, and if it cannot be employed in its most efficient way, then the risk of a prolonged and costly conflict is extremely high. If political decision makers choose to ignore this, it is up to the military leadership to make it clear that the conflict cannot be resolved militarily.

COIN operations fail this litmus test. If CAS is the only kinetic mission that qualifies, then it is highly questionable whether the objectives are attainable using Air Power (and, consequently, whether they are attainable at all). This leads to the conclusion that NATO countries should not purchase aircraft that are purely intended for a two-dimensional concept of operations (based on CAS), but instead opt for weapon systems that are capable of operating in depth.

Prosperous and relatively important economic powers such as Western European countries should focus on serious threats to international law, freedom of navigation and international stability. The endeavour should be to terminate any conflict as quickly as possible on favourable terms, in order to minimise as much as

Isolated ground forces in Afghanistan depend on Air Transport to deliver critical supplies via precision airdrop.

possible any material damage and human suffering on both sides of the conflict (which can linger for multiple generations). This is the opposite of the Maoist doctrine of 'protracted war' that is often employed by insurgents. Countries where technological development and the know-how economy are high on political agendas should focus on technologically advanced combat aircraft capable of achieving sustainable, disproportional superiority over future opponents. As a bonus, such aircraft have superior CAS capabilities as well.

Air Power must be able to operate in depth. The importance of an Air Force that can operate freely – or at least relatively unchallenged – deep over enemy territory cannot be overestimated. NATO has found itself for years in the luxury position that this was the case, with Afghanistan as the pinnacle. But imagine what the situation would look like for our ground troops if our Air Forces would not be able to operate freely, or even worse, where the opponent's Air Force is able to operate against our ground forces. Every year, the area of the world shrinks in which our current fourth generation and unmanned aircraft can operate without the risk of substantial losses. Future air operations will take place within, at least, a partially functional IADS. The days in which SAM sites could be eliminated within a couple of days by means of a concentrated Suppression/Destruction of Enemy Air Defences (SEAD/DEAD) campaign are over. So-called 'first entry' threat conditions will be present throughout the conflict. This requires manned multi-role combat aircraft with very good payload-range performance, combined with a high degree of self-protection, capable not only of surviving, but of operating under threat. Current unmanned systems are virtually unable to operate under threat; and won't be able to until highly survivable high-end systems become available; in which case one might ask why the human pilot was removed in the first place.

Despite this argument for a focus on Interdiction, historical results vary. Interdiction is traditionally a complicated mission. Best results are obtained during non-static situations, meaning a moving front, or at least pressure on the opponent. This requires support by the land component.

Integration with Ground Operations: Ground Assisted Air Interdiction

Interdiction has to take place at all depths, requiring not only coordination but cooperation with ground troops. It is worthwhile to dwell a little on the concepts

that the U.S. employed during Operation IRAQI FREEDOM (OIF) because they combined and optimised the objectives of both ground and air operations. They provided ground forces with the air support they desired in a way that brought along a decisively effective way of employing Air Power. European armed forces would do well to study these American concepts thoroughly and strive for an integrated air-land concept of operations.

The Americans use concepts like Ground Assisted Air Interdiction (GAAI) or Corps Shaping, in which the opponent is pressured by means of fire or manoeuvre and left with the choice to either disperse (and render himself vulnerable to ground attack), or concentrate (and render himself vulnerable to attack from the air). The importance of pressure by means of ground operations as one of the key contributors to success for Interdiction was already evident during the Second World War and the Korean War, where the success of the Interdiction campaign was strongly reduced when the front was static. Even in a defensive posture, ground operations may channelise an enemy attack and thereby force him to concentrate, followed by annihilation from the air in dedicated kill boxes. Such concepts are not only applicable to large manoeuvre-units, but to small units as well.

This kind of concept provides both effective and efficient indirect support of ground operations, but is not CAS. It requires close cooperation between land and air, in which Air Power is applied behind the front line and frequently from considerable altitude. Ground forces will not be able to see those aircraft, but they will notice their effects.

Conclusion

The weapon system that enables NATO to create the largest difference is the fixed-wing combat aircraft. Decision makers should avoid becoming involved in conflicts in which Air Power cannot be employed optimally. The focus should therefore not be on COIN operations but on operations in which combat aircraft can be employed in the most efficient way, which is Interdiction. At the same time, this calls for an efficient integrated air-land doctrine.

The objective, however, should not be a two-dimensional, reactive and inefficient air-land cooperation based on CAS, but instead on a three-dimensional, proactive and efficient air-land cooperation based on Interdiction. The future capability requirement is therefore not for CAS-specialised aircraft, but instead for multi-role aircraft capable of operating in depth with an extensive payload, under adverse weather and in the heart of the enemy IADS. This way, in the future, NATO will be capable of contributing in a credible and effective way to the promotion, sustainment and enforcement of international law & order, peace and stability.

1. This article is a condensed version of the original white paper. Limited space precludes a full description and analysis of the issues raised; however the full version including footnotes, historic examples and references is available online at www.japcc.org under the Publications tab.

Dr. Dolf H.W. Bos

holds a Master's degree in aeronautical engineering from Delft University of Technology and a Ph.D. on multidisciplinary design optimisation of supersonic aircraft from the same University. In 1997 he joined the National Aerospace Laboratory (NLR), focusing on exercise support (e.g. Red Flag 2000) and specialising in threat analyses of Soviet combat aircraft and radar-guided SAM systems. In 1999 he was involved in threat analyses of the Serbian IADS and the analysis of all Royal Netherlands Air Force (RNLAF) air-to-ground sorties during Operation ALLIED FORCE. He has attended the NATO Targeting & Weaponeering Course and the Advanced Air Power Course of the Netherlands Defense Academy. Since 2001 he has worked for the Netherlands Organisation for Applied Scientific Research (TNO) and is currently lead analyst of the RNLAF F-35 Operations Analysis Team, contributing to future concepts of operation. This article conveys his personal views.

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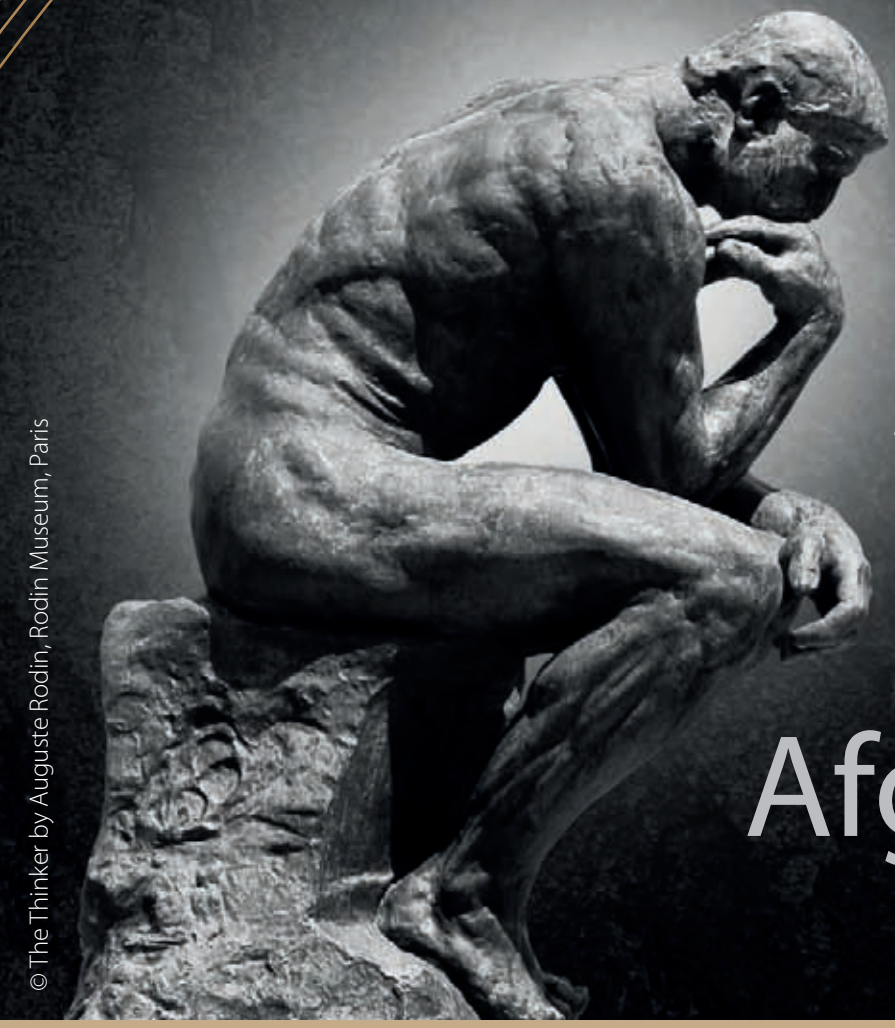

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The European Union's Pooling and Sharing

Political Rhetoric or Military Reality?

By Wing Commander R A C Wells, GBR AF, JAPCC

"In May 2011, the Council of the European Union reiterated the need to turn the financial crisis and its impact on national defence budgets into an opportunity for greater co-operation in the area of capability development. The Council called for a structured and long-term approach to pooling and sharing, based on a high level of ambition, in a wide array of capability areas, and leading to concrete results. The Council encouraged Member States to apply pooling and sharing on a systematic and sustainable basis, promoting multinational co-operation, including on a regional basis, as a key to preserving and developing military capabilities in Europe for sustaining and enhancing the Common Security and Defence Policy (CSDP)."
Council conclusions on pooling and sharing of military capabilities. Foreign Affairs Council meeting 23 May 2011.

Defence is facing its greatest challenge since 1991 with the former Yugoslavia, Iraq, Afghanistan and Libya merely aftershocks following the end of the Cold War. Terrorism had assumed the role of the 'enemy' however the principal enemy of Defence is the general apathy of western electorates, which is reflected in the political landscape. In these economically-straightened times, Defence has to compete with other government departments in the allocation of ever-scarce resources with the realisation that national security has slipped down the priority list in governmental spending. The talk is now of economic and resource security rather than the physical security of territory and people, the non-kinetic fight in cyberspace rather than the cold steel of the bayonet.

Evidence is presented by the percentage of Gross Domestic Product currently being spent by NATO and EU countries. EU nations spend less than 2% of their collective GDP, with the United Kingdom and France accounting for 40% of this collective expenditure. The clear message, from the United States to NATO[1], is that European nations must contribute more to European Security as the US shifts its military stance toward Asia Pacific. Nor can Europe blame the current global economic and financial crisis, it is a smoke screen. Europe is relatively rich, in terms of global wealth and when compared to other markets, and whilst Defence expenditure is indeed falling in the West, it is increasing across the Pacific region.

So how can European militaries contribute more capability with less resource? The suggested answer is to increase collective, collaborative efforts under the banner of Pooling and Sharing. However, is this initiative the latest in political buzzwords or will it actually deliver increased levels of co-operation and interoperability, through shared procurement, whilst realising huge cost savings to the taxpayer?

In theory this initiative sounds rather attractive. However, life is never quite that simple when you introduce politics into the equation. What is fundamental to Pooling and Sharing is political will or, more accurately, collective political will under a Common Security and Defence Policy; neither consensus nor compromise on the lowest common denominator but a complete surrender of (military) sovereignty. Furthermore, the military capability must be co-ordinated with foreign policy, industrial output and procurement strategy.

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The United Kingdom didn't commit fully to the pooling and sharing of NATO AWACs. The Canadians, after 25 years in the NATO Airborne Early Warning and Control Force, have also called time on the project and will withdraw on national economic grounds.

One area both NATO and the EU agree upon, with the potential to be exploited under Pooling and Sharing, is the collective European contribution to Air-to-Air Refuelling (AAR) capability. Indeed the two bodies agreed that the European Defence Agency (EDA) would take the lead in this field but the real argument (not even behind closed doors) is that Europe, according to the US, is not pulling its weight. There are however signs that Europe is making progress (at least on paper). There is certainly a political impulse[2] and, with aging fleets, a significant number of European nations are looking to re-capitalise their strategic AAR tankers over the forthcoming decade.

Take for example the United Kingdom and their (Airbus A330) Voyager; a new more capable fleet of 14 tankers replacing 29 aging VC10s and Tristars. I do not intend to dwell on the argument that a tanker cannot be in two places at once however with reduced numbers then flexibility must surely be compromised, and further compromised by the dual tanker-transport role. The aircraft were procured under a Private Finance Initiative delivered through a civilian company and leased to the RAF. Of the 14 aircraft, 9 are 'guaranteed' to the UK military with the remaining 5 used for surge operations but, when not required, are available to the open market. Surely this excess capacity presents a golden opportunity for Pooling and Sharing with other militaries? Sadly not. The Voyager was procured along national lines and as such only has a Probe and Drogue AAR capability. The majority of potential user nations equipped with probe receivers already have their own organic tankers and the remaining NATO nations (generally the F-16 community) have Boom receptacles. If only someone within the UK MoD had had the foresight to purchase Voyager with a Boom in addition to Probe and Drogue! (I believe this concept is known as Interoperability). This one example sadly reflects a broader malaise in the UK's Strategic Defence and Security thinking; no Maritime Patrol capability, no Maritime Strike capability and indecision over the future JSF variant or the size of aircraft carrier to launch it from. Or is it more accurate to suggest that the decision not to fit a Boom to the Voyager was taken for

national economic reasons rather than for the wider military benefit? More cynical is the potential commercial opportunities for an Airbus without a fitted Boom!

France is looking to recapitalise its aging KC-135 fleet and has chosen to procure, not lease, the Airbus A330. So, in accordance with the principles of Pooling and Sharing, the French should (in theory) hand over OPCON of these assets to the European Air Transport Command (EATC). Well no. The French AAR tankers are likely to be committed in support of their nuclear deterrence force, a national task. As such the French insisted upon any 'pooling' being located on French soil, a proposal which received a rather cool reception from other EU nations. Italy has recently purchased Boeing 767 tankers but only 4 in total, in addition to their KC-130J platforms. Pragmatists will point to at least one aircraft in the hangar being serviced, one in the circuit for pilots' playtime, leaving 2 for tasking and not that much to be pooled or shared.

In the absence of a 'larger' European nation taking the lead in the Pooling and Sharing of AAR, the European Defence Agency is acting as the facilitator to a number of initiatives aimed at addressing short-term capability gaps, improving existing capabilities and informing longer-term requirements. This project is undoubtedly welcome, and required, however the challenge for the EDA and participating nations and organisations is to translate pragmatic military thinking into the political and industrial language required to realise the requirement. Without sounding like a clarion call for a Federal European superstate, what is required is closer political and economic integration from which closer military intent would surely flow. However, even with this utopian dream, the concrete result of the pooling and sharing of European AAR capabilities adds up to fewer than 100 strategic tankers by the year 2020, enough to conduct a single, optimistically two, Air-Heavy Small Joint Operation (on the scale of the Libyan operation).

Euro-federalists often point to the example of the United States of America. Following the Revolutionary War with Great Britain, many of the newly united states found themselves in debt. Alexander Hamilton, the first US Secretary of the Treasury, proposed these debts be assumed by the Federal Government. Even with fiscal unity, within a hundred years the US entered into a civil war but emerged stronger as a 20th Century Superpower. Europe could pool its debt (what is the European Central Bank for?) and emerge stronger as a federal entity. However, given the lack of economic decisiveness amongst EU member states (20-plus summits in the past two years and counting) and the ineffective European External Action Service[3], then one does not hold out much hope of a credible European war-fighting capability. Europe remains divided along social, political, geographical, cultural, religious and ideological lines and, more pertinent, divided along military lines. (Western) European society has not been physically threatened since 1989 and as such lacks the stomach for a kinetic fight. Without this threat Europe has become lazy, largely obese, and with differing opinions on expeditionary ventures outside of its own geography. Experiences from Afghanistan and Iraq adversely affected European participation in air operations over Libya; the complete inaction in Syria exposes the military's subservience to political complacency and paralysis.

The Pooling and Sharing of military forces is of course not new and this latest initiative may appear to be little more than a political initiative at a time of economic austerity. Indeed co-operative efforts within Europe have occurred in the past. In a previous edition of this Journal[4] the Commander of the European Air Transport Command (EATC) cited his command as a successful example for Pooling and Sharing with "the fact that, for the first time ever, 4 nations (Germany, France, Belgium and the Netherlands) accepted the partial relinquishment of their sovereignty to enable the efficient and effective execution of OPCON over assigned AT and AAR refuelling assets already being used for routine, peacetime missions". However, the EATC remains constrained: the partial relinquishment of sovereignty, the existence of black rooms for national-only tasking, national caveats and red cards, the assigned AT and AAR assets, not all assets, for routine,

peacetime missions. Whilst the EATC did contribute to the overall NATO effort in Libya, minimal German participation exposed the current limitation of the EATC. The EATC does contribute to inter-theatre airlift into Afghanistan but not to intra-theatre airlift. Surely the ultimate test for the EATC is to contribute to war-fighting operations? Until such time the EATC is essentially a successful example of limited (à la carte) Pooling and Sharing. It is a step in the right direction but must not fall into the trap of being 'operationally' capable but, when the balloon goes up, is never deployed (the NATO Response Force[5] (NRF) for example).

And if yet more evidence is required; if the EATC is such a good idea why has it taken in excess of a decade[6] to reach this stage? Why have only 4 of the original 7 nations moved the project forward? Why only 5 nations in total from 21 EU and 28 NATO nations?

Lazy comparisons are inevitably made with the Strategic Airlift Capability/Heavy Airlift Wing (SAC/HAW) at Papa, Hungary, which is seen as yet another successful example of Pooling and Sharing. However, with just three C17 aircraft (heavily subsidised by the United States without whom the concept would not have been realised) being operated by a consortium of 12 nations principally in support of Iraq and Afghanistan, I think we should reserve judgement on the success of the HAW once combat operations in Afghanistan cease in 2014 and following a period of operational inactivity.

One significant obstacle to overcome is the institutional bureaucracy of the military. Before criticising the political and economic domains, Defence must fundamentally change extant military structures and practices, many of which are remnants of the Cold War, rather than tinkering and constantly changing the existing models. A pan-European Defence Review is now required to address/reform Europe's militaries, and to include a quantifiable minimum military mass to fulfil Europe's level of ambition (including its contribution to NATO). Without the resources of the United States, Europe is stumbling towards (if it hasn't already passed) its critical mass and no matter how large a velocity vector Air Cdre Teakle (see page 58) applies to this mass I doubt we will see much in the way of European military momentum.

But one should be careful about what one asks for. The goal of military Pooling and Sharing, to make the collective sum greater than its constituent European parts, may lead to the exact opposite and increase tensions within Europe. Just look at European Monetary Policy.

Ultimately, Defence may have to accept that Pooling and Sharing (or Smart Defence) is unachievable and can never achieve the same standards set by national capabilities. The real challenge is to reduce the delta between national and multinational capabilities and this requires the co-ordination of not just militaries but politicians, industrialists and economists. ●

1. Robert Gates, in his last policy speech as US Defense Secretary, addressing the transatlantic security relationship at the Security and Defense Agenda forum, 10 June 2011.
2. Chicago Summit Declaration issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Chicago 20 May 2012; European Union's Defence Ministers' political declaration regarding Air-to-Air Refuelling capabilities 22 March 2012.
3. 08 Dec 11, the foreign ministers of 12 EU member states outlined a number of aspects which seem to hamper the functioning of the EEAS.
4. EATC Commander interview, JAPCC Journal Ed. 16.
5. Since IOC in 2004 the NRF has only been deployed twice; in the aftermath of Hurricane Katrina (New Orleans) and in the aftermath of the Pakistan earthquake in 2005.
6. Analysis of the 'Elaboration of the (EU's 1999 Helsinki) Headline Goal' and the EUMS Helsinki Headline Catalogue reinforced the consensus that Europe had capability shortfalls, including in strategic and tactical lift. The EU's Headline Goal 2010 approved by General Affairs and External Relations Council on 17 May 2004 and endorsed by the European Council of 17 and 18 June 2004 calling "specifically for Airlift the transformation of the European Airlift Coordination Cell (EACC) into the European Airlift Centre (EAC) by 2004 is welcomed, as is the intention on the part of some Member States who so wish to develop a European Airlift command fully efficient by 2010."

Wing Commander Richard Wells

is a C130 Navigator with 4,000 flying hours – mostly in the tactical role. He has completed operational tours in Sierra Leone, Afghanistan, Iraq and the Middle East as an aviator, air advisor and as the commander of an Expeditionary Air Wing. Wells currently works in the Combat Support branch at the Joint Air Power Competence Centre in Kalkar, Germany, and, in his dual roles as Chairman of the NATO AAR Panel and as Custodian of ATP-56 (AAR Procedures), his current project concerns improving NATO's AAR Interoperability.

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A JAPCC delegation, led by Brigadier General Alessio Cecchetti, JAPCC Assistant Director Capabilities, visited the ITAF HQ on 28 January 2013.

JAPCC Engagement Strategy

In line with its Improvement Campaign, the JAPCC established an enduring mechanism to communicate by direct engagement with NATO entities and Sponsoring Nations (SNs). This engagement mechanism involves briefings with JAPCC teams visiting all 17 SNs, NATO HQs and partner nations by the second quarter of 2013. By early 2013, the JAPCC had visited the Spanish, Romanian, Turkish, Royal Netherlands and Italian Air Forces. The engagement team also briefed JFC Brunssum, AC Ramstein and the Extended Air Defence Task Force (EADTF).

The purpose of these engagements are to: (1) understand the challenges NATO nations are facing in their Air & Space (A&S) Power improvement and transformation efforts, (2) understand how the JAPCC can contribute to overcoming those challenges, and (3) to demonstrate JAPCC's value in terms of efficient use of resources and products.

These engagements will be conducted in a continuous cycle of activity designed to both inform and extract. It will inform NATO entities and the SNs about the JAPCC, how it operates, what it has delivered in the past and what it can deliver in the future. It will extract challenges faced in the Joint and A&S domains with the intention of establishing how the JAPCC can bring to bear its resources to assist in delivering A&S Power solutions to those challenges. The Programme of Work (POW) will be adjusted to meet customer needs. Initial findings of the engagement strategy were very positive. Spain, Turkey, Romania, Italy and the Netherlands have all identified possible fields of cooperation. The JAPCC will continue to engage! ●


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Lieutenant General Joachim Wundrak, Executive Director JAPCC (left) and General Philip M. Breedlove, Director JAPCC (right), together with Colonel Dmitry Kostyunin, special guest speaker from the Russian Federation.

Joint Air and Space Power Conference 2012

In October 2012, the 8th Annual JAPCC Conference was held in Kleve, Germany under the theme: *'Warfare in the 21st Century – Decline or Rise of Air Power?'*. The goal of the conference was to address how Joint Air and Space Power can best contribute to modern challenges in a rapidly changing world; and therefore appealed not only to those who wear a military uniform but also to senior officials from various government, non-governmental and international organisations as well as industry and academia. The distinguished audience of 224 representatives, including 51 flag officers, from 24 nations, received six guest speeches starting with the keynote address by SACT, General Jean Paul Palomeros, and five more insightful presentations by: General (Ret) Vincenzo Camporini, Mr. Diego Ruiz Palmer, Air Commodore Paddy Teakle, and special guest speakers Brigadier General Pascal Roux from the EUMS and Colonel Dmitry Kostyunin from the Russian Federation. The rest of the conference centred around four stimulating panel discussions which included extensive audience participation. For a brief insight into the key message please go to the JAPCC website www.japcc.org.

In his closing remarks, Lieutenant General Joachim Wundrak, Executive Director JAPCC, summarised the initial findings as: (1) Air Power is and will remain relevant; (2) an easy solution to overcome the dilemma of budget restraints cannot be found; (3) strategic communication of Air Power is essential; and (4) research activities on future challenges, risks and opportunities that NATO will face after ISAF, require JAPCC's contribution as facilitator for Air and Space Power.

Against that background, conference moderator General (Ret) David Deptula, stated in his closing remarks, the conference displayed innovative thought from the perspective of the community of European Airmen, and our partners from our sister services, industry, and academia. And therefore, JAPCC is looking forward to a continued partnership among our community of nations as we seek better means to secure peace and stability in an ever-changing and complex security environment. The next Annual Conference is scheduled for 8 to 10 October 2013, under the theme: *'Air Power Post-Afghanistan'.* ●

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JAPCC and Multinational Experiment 7 (MNE 7)

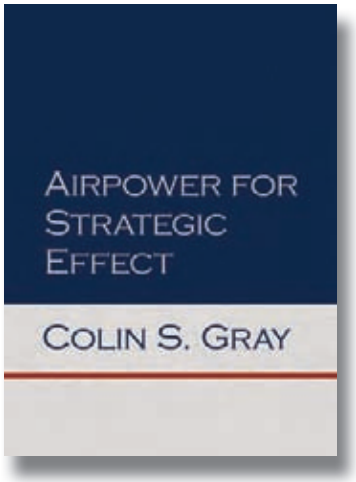
At the invitation of ACT, the JAPCC sent a delegation in October 2012, to Lucerne, Switzerland to participate as subject matter experts in the space Limited Objective Experiment (LOE) portion of the latest Multinational Experiment (MNE) series project, MNE 7. MNE 7 is a large, two year, multinational and interagency concept development and experimentation (CD&E) effort, completed in December 2012, to improve coalition capabilities to ensure access to, and freedom of action within, the Global Commons domains (Air, Maritime, Space and Cyberspace). The aim of the MNE 7 space LOE was to assess concepts developed to protect access to space by improving the collaborative ability to deter and prevent disruption or denial of space capabilities, as well as improving the resilience of space systems in the event that deterrence or defensive measures are ineffective.

The MNE 7 community has investigated the depth of the dependency of Western nations on space capabilities and has already highlighted the need for mitigation strategies to reduce the economic cost and hurdles that would be associated with the disruption or denial of access to space. During the LOE the group was confronted with various disruption and denial scenarios involving SATCOM, ISR and Space Situational Awareness. On the basis of pre-defined factors, and with the support of a Swiss Army decision making tool, the group was tasked to assess political acceptability of these scenarios. The results and findings of the experiment are being analysed and will be published by ACT in the final MNE 7 report in 2013. ●

Journal Survey

Your feedback is vitally important to ensure that the Journal continues to evolve to meet **your** requirements. Fill in the survey online at **https://www.surveymonkey.com/s/japcc**

‘Airpower for Strategic Effect’



By Colin S. Gray
Air University Press, USA, 2012
Reviewed by:
Maj Chad Taylor, USA AF, JAPCC

In ‘*Airpower for Strategic Effect*,’ Colin S. Gray takes a fresh look at Air Power theory. The book is neatly structured into three distinct parts: (1) an analysis of why Air Power theory requires better explanation and further development, (2) a brief history of Air Power strategies and how they were applied/misapplied in conflicts from the Great War to the present, and (3) concludes with the authors own theories on Air Power. Gray’s main argument for the need for a fresh look at Air Power theory is that previous Air Power theorists and advocates tended to overstate what Air Power can accomplish or ignore the context of the situation that Air Power strategy was called to address. He also, quite rightly, argues that Air Power strategy, no matter how correctly formed or skilfully executed, is doomed to ultimate failure if not linked to a successful grand strategy. Gray frames his theory of Air Power in 27 ‘Dicta’. These 27 statements on Air Power theory form a more complete and accurate summary of Air Power theory than the ‘10 propositions regarding airpower’ presented by Meilinger and the ‘10 attributes of airpower’ presented by Hallion. A notable strength of Gray’s theory of Air Power is that it carefully addresses what Air Power can’t do or can’t do well. Many attempts to use Air Power for strategic goals fail, not because Air Power is not a good tool or used unskilfully, but because Air Power was the wrong tool for the job. My largest critique of the book is that it over-focuses on the kinetic aspects of Air Power and gives little attention to other aspects of Air Power. ●

‘Air Commanders’

If you were asked what important or famous military captains come to mind at an instant, only very few of us will name an airman. This fact – deplorable or not – might have been part of John A. Olsen’s motivation to publish his book *‘Air Commanders’*, forming his third in a series dealing with Air Power.
This book provides a collection of 12 essays, each telling the story of one commander of the U.S. Air Force. As the editor says in his introduction: “air power’s effectiveness and efficiency are difficult to grasp”. I believe we all agree however, Air Power cannot be ignored due to this fact alone. By offering a thorough look into the life of this selected group of airmen, the reader has a chance of being captivated with the understanding of what contributed so massively to the shaping of air history since its birth, barely a hundred years ago.
I strongly recommend starting with chapter 9 ‘Charles A. Horner: Desert Storm Maestro’. The events from 1990 to 1991 and the role of General Horner in planning, preparing and executing the air campaign of Operations DESERT SHIELD and DESERT STORM provide a fascinating story about what happened and, more importantly, why. Regarding the individual, it demonstrates the progression “from combat pilot to combat leader”. It also reveals the impact of history on the men ‘writing new history’. Using the name Operation INSTANT THUNDER was no coincidence for airmen that had experienced ROLLING THUNDER in Vietnam. Olsen’s book invites the reader to enter the realm of Air Power. Captivation is guaranteed! ●

By John Andreas Olsen
Potomac Books,
Washington, D.C., 2012
Reviewed by:
Col Uwe Heilmann, DEU AF, JAPCC

THE VALUE OF UNITING AS A GLOBAL TEAM TO DELIVER NATO'S NEW JOINT ISR CAPABILITY.

NATO's new Alliance Ground Surveillance system brings together the best of European and American technologies to answer the pressing need for joint Intelligence, Surveillance and Reconnaissance. No matter the mission or where in the world our NATO forces are called, AGS will serve as an enabling capability to support a 21st Century Smart Defence. Northrop Grumman and all of its industrial partners are proud to be a part of this new era in cooperative international security.

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