



Transforming Joint Air Power
The Journal of the JAPCC



Delivering Security for the Future

EADS Military Aircraft is an international systems integrator and a total service provider working today for tomorrow's future.

We design, integrate and deliver manned and unmanned airborne systems which Air Forces require for combat, reconnaissance and training.

Dedicated to our customers' needs, we can provide complex aerostructures and also offer logistic support for high-performance fighters, transport and mission aircraft.



EADS

Military Aircraft, Communications

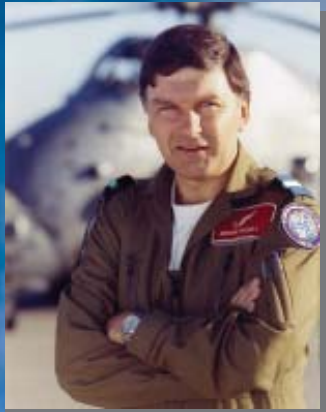
81663 Munich · Germany

Phone: +49 (0) 89. 6 07-2 57 11

Telefax: +49 (0) 89. 6 07-2 24 55



Editorial



Welcome to the first edition of the Journal of the JAPCC, the Joint Air Power Competence Centre's bi-annual publication. You will find a full explanation of the JAPCC's genesis and its aims and objectives later in the journal but, in essence, the Director's vision is to enable NATO's effective and efficient use of Joint Air and Space Power. It is our intention that the journal will become the JAPCC's public debating chamber for air power issues. We hope that through exposing a cross-section of ideas and opinions we will spark a debate that ultimately will help to shape the future of air power, to maintain and enhance its relevance, and to ensure that there is as much coherence as possible in air power issues from inception to employment.

In the first article, the Director of the JAPCC, General Foglesong, looks back at some of the lessons of the past and then looks forward to the evolution of air power in the future. In the second article, the Executive Director, Lieutenant General Schubert, examines NATO's Air Command and Control and gives his vision of Air C2 in the era of Network Enabled Capability. I am also delighted to be able to offer contributions from two European Air Chiefs. First, Lieutenant General Klaus-Peter Stieglitz reviews the on-going transformation of the Luftwaffe. In the second article, General Tricarico analyses the challenges facing the air community in the new world order and details how the Italian Air Force is evolving to meet these challenges.

In an article provided by the Southern Region, Combined Air Operations Centre 7 staff review the complex operation which provided air security to the Olympic Games in 2004. The last 2 articles are generated from within the JAPCC. In the first, Col (Dr) Osinga has written a thought-provoking article which assesses the future value of air power. I have also included a review of a proposal which the JAPCC inherited from the Reaction Forces Air Staff, namely the Deployable Airfield Activation Wing (DAAW) concept. This innovative paper seeks to formalise the advance support required to activate a deployed operating base in support of, for example, a NATO Reaction Force deployment. Although the conclusions are hardly a surprise, the idea of a standing force is new, but of course comes with a price tag. Finally, in the first of our regular "Out of the Box" section, Colonel Hans-Jürgen Wolf has a light-hearted look at the future.

I hope you enjoy this first issue. I hope, too, that you will feel inspired either to respond to the articles, or even to feel the need to write one! Our next edition will be published on 1 November as a precursor to our annual conference which will be held on 29/30 November in Kleve, Germany.

Martin Halsall

Air Commodore

**Transforming Joint Air Power:
The Journal of the JAPCC**



Director
Joint Air Power
Competence Centre
Gen Robert H. Foglesong

Executive Director
Joint Air Power
Competence Centre
Lt Gen Hans-Joachim Schubert

Editor
Air Cdre Martin W. Halsall

Editorial Board
Col Pete Tarter,
Lt Col Claudio Icardi,
Maj Panagiotis Akinosoglou,
Lt Col João Alves,
Capt Jürgen Eyermann,
MSgt Richard Bago

Associate Editor
Christiane Rodenbücher

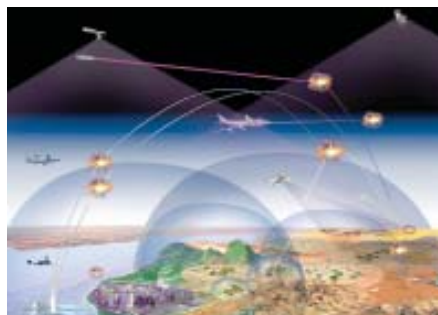
Production Manager
Maj Frank Weisskirchen

Graphics and Art Production
Simon Ingram and
SSgt Duane White

**Transformation &
Capabilities**



6 **Air and Space Power
Past, Present and Future**



10 **Transformation Challenges
for NATO's Air Command
and Control**



14 **Air Power in Turbulent Times:
A brief assessment of the
future value of air power**



18 **Deployable Airfield
Activation Wing**

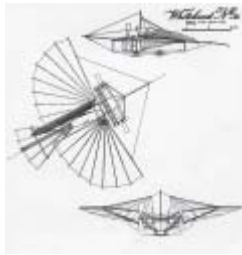
CONTENTS

View Points

- 22** Air Power and the New World Disorder



- 26** From step to jump to flight:
Transformation of the German Air Force



- 30** Air Guard Over The 2004 Olympic Games:
CAOC Larissa's Support to Greece
for the Athens Summer Olympics



Out of the Box

- 32** The Future of Air & Space Power:
Fact or Fiction?



Inside the JAPCC

- 34** Meet the Organisation
- 36** News

Regulars

- 38** Book Reviews
- 40** Bios
- 42** Afterburner

Cover page: SSgt Duane White, USAF
Content photos left page top to bottom
by USAF, EADS, USAF(2)
Content photos right page top to bottom
by UK Army, William J. O'Dwyer and
Flughistorische Forschungsgemeinschaft
Gustav Weißkopf, Antonios Tsagaratos, GAF

AIR AND SPACE POWER:




By General Robert H. "Doc" Foglesong

PAST,
PRESENT
AND

FUTURE



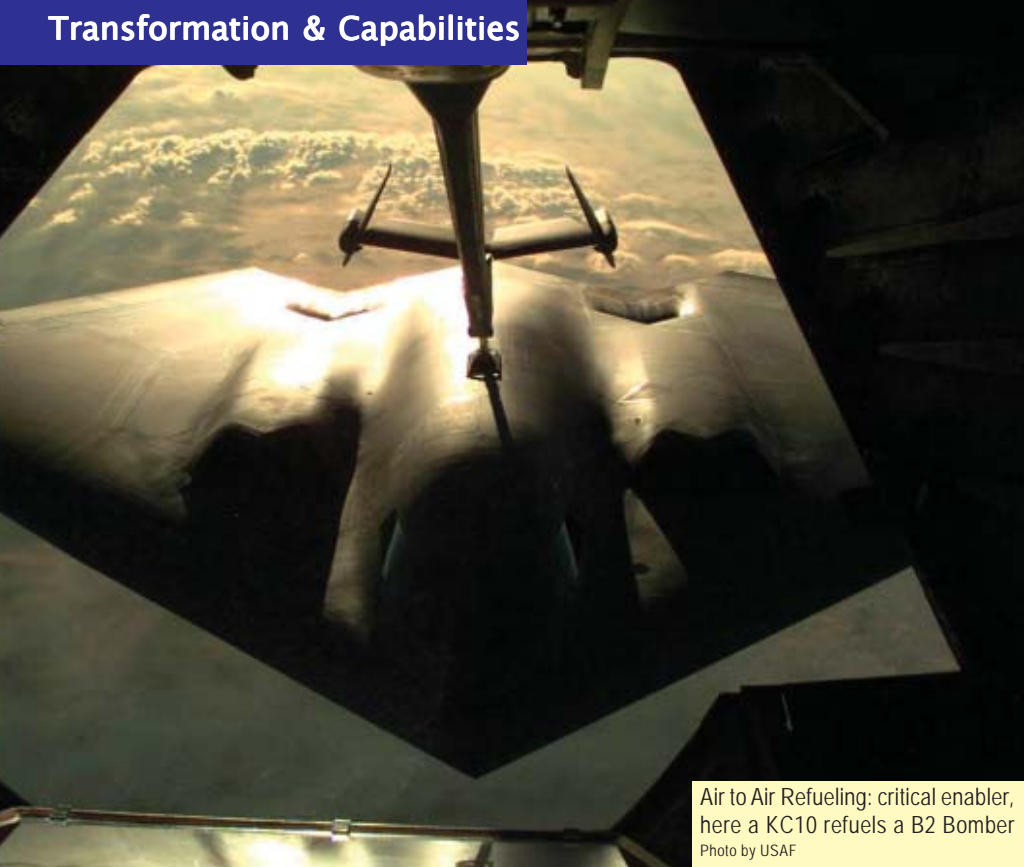


Air power has had a colorful but relatively short history. Starting in the late 18th century with the Montgolfier brothers' first lighter-than-air flight, man's journey to the skies has rapidly evolved. Through discovery, experimentation and determination, notable innovators such as Sir George Cayley, Hiram Maxim, Otto Lilienthal and the Wright brothers made the vision of heavier-than-air flight a reality... and it's taken off from there! Air power has evolved from primarily reconnaissance missions in WWI to the predominance of strategic bombing in WWII to birth and maturing of the air superiority fighter in Korea and Vietnam.

Air Power Success

In particular, the past fifteen years in the development of air and space power have been spectacular. Operation Desert Storm began the 1990s with a 38-day air campaign that so thoroughly shaped the battlefield that coalition land forces needed only 100 hours to claim victory - coalition air dominance was so intimidating that Iraqi MiGs were flying to Iran to escape destruction! The operation was a classic example of how mass and precision could combine to produce an overwhelming victory. Following this remarkable effort, air power continued to prove its usefulness as the 78-day air campaign in Kosovo completely shaped the minds of our enemies, forcing them to fold their tents without engaging in ground combat. This was another example of how mass and precision could be utilized to paralyze an adversary and drive them to the treaty table.

"The first lesson is being able to freely roam the sky".



Air to Air Refueling: critical enabler, here a KC10 refuels a B2 Bomber
Photo by USAF

At this point, I want to make it very clear that I am not implying that ground forces were not relevant in these conflicts, quite the contrary; the threat of invasion played a significant role in the eventual capitulation, and after their surrender our brothers and sisters in the Army occupied some tough territory with the thankless job of trying to sort out and maintain control of a long-standing feud. Yet on the heels of these two seemingly overwhelming air power successes, we were again reminded of our vulnerability when, despite having the most powerful air force in the world, we were unable to stop unarmed civilian aircraft from tearing huge holes in the physical and psychological fabric of America.

In the finest traditions of coalition fortitude, and with the help of our friends, we rebounded from the terrorist attacks with a vengeance by taking the fight to the enemy in Afghanistan; operating with impunity to create incredible opportunities for land forces to maneuver. However, Soldiers and Marines were not the only people on the ground; we had Airmen on horseback with laptops in the middle of the fight ensuring ordnance fell where it was needed, when it was needed. Once again air and space power was a great enabler, but in the end

you had to have boots in the cave to finish the job.

This operation continued a transition from the use of overwhelming mass to a more technology-enabled, precise engagement. Compared to 3000 sorties a day in Operation Desert Storm, Operation Enduring Freedom averaged only 200 sorties a day but achieved the same destructive results!

"We must move toward an expeditionary infrastructure and organization, or become obsolete".

The most recent demonstration of the importance of air and space power was Operation Iraqi Freedom, featuring a simultaneous application of air power with ground forces. Again the air power focus was predominately precision, where we found that visibility, as it had been previously defined, was not necessary - precision-guided munitions allowed us to put bombs on target even when we couldn't see the target. This development further enabled all-weather precision attacks and helped facilitate greater stand-off ranges, decreasing our vulnerability in high threat areas.

Despite resounding coalition successes, to retain our edge we must go back after each of these operations and identify key lessons that we have learned and relearned. The first lesson is being able to freely roam the skies--period.

It enables on-call delivery of kinetics from the air and freedom of maneuver on the ground. A word of caution here - we should never take that freedom to roam in the skies for granted. We will have enemies who will make it hard to achieve that latitude and will contest coalition air for that control of the air space above its battlefield. The second lesson that has become more evident with each operation is how fundamental space "utilities" are to our success.

An important caveat to that lesson, however, is that we can't take those "utilities" for granted - GPS can be jammed and our Intelligence, Surveillance and Reconnaissance (ISR) can be disrupted and deceived. A third recurring lesson is that reach is important - without both strategic lift and tankers you can't execute quickly.

In Desert Storm an armada of tankers formed an air bridge allowing air superiority fighters to be in place to defend Saudi Arabia five days after Iraq invaded Kuwait. Strategic lift additionally positioned more than 500,000 personnel and their accompanying equipment in theater to deliver the knockout blow in less than six months.

A fourth lesson is that really long reach with a kinetic conclusion can stop, shape, or surgically strike an adversary from around the globe. This lesson has been proven again and again, from B-52s flying seventeen hours one way to deliver their cruise missiles in the opening hours of Desert Storm, to B-2s flying from Missouri, refueling twice, striking 16 of 16 targets and returning to base during Allied Force.

Another age-old lesson that commanders have learned and relearned is that ISR, at all levels of war (strategic, operational, and tactical) is imperative - from intent to capabilities, to be successful, we must have insight into the

enemy's mind. A subset of this lesson is that fleeting and mobile targets require special attention and special handling - the sensor-to-shooter chain must take minutes, not hours, or valuable opportunities will be lost. Another hard-learned lesson is that sustaining the fight requires changing our investment strategy; we must move toward an expeditionary infrastructure and organization, or become obsolete. Finally, but most importantly, a leader must always remember people, people, people. If we don't recruit and retain outstanding people, not even the most advanced technology in the world will make a difference.

Key questions

Although all of these lessons will continue to apply tomorrow as they have in the past, the nature of the fight has a different balance and to ensure we stay relevant we must understand and exploit the changing environment. The key questions we must ask are "What do we want air and space power to do for us in the future?" and "How can we ensure it remains relevant?"

We can never fail to provide the capability to be victorious in the traditional mass-on-mass Desert Storm-type conflict. A fundamental tenet for this type of warfare is the freedom to roam the skies, thereby permitting ground forces the unhindered ability to maneuver and engage the enemy at will. We can also never forget that reach is imperative, both in lift and in kinetic strike, whether by air-breathing or space-based assets. Lastly, we must not neglect our ISR capabilities, and even though space carries the lion's share of the burden, we can't forget the contributions that our airborne platforms provide as they sweep up data. However, to remain relevant, we must push beyond what we've achieved in the past, and find ways to contribute to the new order of battle, such as finding three bad guys with C-4 in a hut, and addressing the issue in a timely manner. Control of air and space remains fundamental

- it allows us to maintain a persistent presence over the battlefield. We must then exploit that presence by finding new ways to look, listen, and rapidly describe detailed information from air and space so that our kinetic and non-kinetic capabilities can be swiftly focused on our adversaries.

Once we have the bad guys fixed and tracked we must then have a means of delivering lightning fast and pinpoint accurate global strike using smart weapons and smart platforms, with both manned and unmanned assets. To operate this state-of-the-art technology we must continue to train our personnel with the appropriate skills - but this is the easiest part because we have the best airmen in the business who, when given the opportunity, will excel.

We're the best at "snap vector, vertical scan, auto lock, uncage a missile, get a tone, pull the trigger" and it's almost that fast. We're also much better at massing forces to address the operational level of war, although there is still work to be done. Therefore, our challenge is not mass on mass, it's how we

invest and train for this new and disruptive, asymmetric war that can change our lives dramatically.

We must continue to seek out and adopt the doctrine, tactics, techniques and procedures that are appropriate for this new and evolving type of warfare. We already know who the mass-on-mass air warrior is, but who's the warrior in this new role for air and space forces?

The answer is still evolving, but we know we can't throw away our principles. We still need to operate in, and control, air and space. As Airmen we pride ourselves on our abilities to adapt to changing circumstances - we can't impede that culture, we must continue to shape and press the limits of technology.

Stay Connected

Finally, as we transform we must stay connected with our ground and sea forces, learning all we can from each other. Air power has gone through a tremendous evolution in the last century; to remain relevant we must continue to adapt and persevere.

"Finally, but most importantly, a leader must always remember people, people, people".



Crucial in every mission: the human factor
Photo by USAF

TRANSFORMATION CHALLENGES FOR NATO'S AIR COMMAND AND CONTROL

"The basic nature of war does not change; it remains extremely violent, dangerous and unpredictable. What does change, however, is the way we plan to conduct warfare." -- Air Chief Marshal Sir Richard Johns.

By Lieutenant General Hans-Joachim Schubert

NATO's Framework for Transformation

The "Strategic Vision: The Military Challenge" by the NATO's Strategic Commanders is the leading document outlining a long-term vision of the way in which we expect future Alliance operations to be conducted. Therefore, it will guide the transformation of forces, concepts and capabilities in the coming decades.

The relevance and effectiveness of the Alliance's Air C2 is inescapably linked to its ability to successfully plan and conduct operations in a complex, multi-dimensional future environment. Key characteristics of the future environment are, for example, the expansion of NATO's area of interest, the increasing sophistication of asymmetric warfare and new threats to the Alliance's nations by worldwide terrorist networks and their willingness to use any measure of force.

As a result, future Alliance operations will demand forces that are agile, joint and expeditionary in character and design, technologically superior and, most importantly, capable of operating in a networked environment.

The most important aspect and challenge of the transformation process is to develop future military forces that are capable of applying and utilizing an effects-based approach to operations. The pre-requisite for the successful accomplishment of Effects-Based Opera-

tions (EBO) is the achievement of three key transformational goals:

- decision superiority,
- coherent effects,
- joint deployment and sustainment.

Therefore, and concurrent with the ongoing transformation of force capabilities and structures, the Alliance needs to transform the associated C2 arrangements to ensure their future relevance and effectiveness. Consequently, NATO's Air C2 has to become an integral part of the overall transformation process.

Principles and Criteria for Transformation Of Air C2

It appears safe to assume that joint airpower will remain an essential, enabling element in NATO's future military strategies, concepts and operations. A new perspective to be taken into consideration is that military forces are very likely to engage in post-combat or post-conflict operations and activities, including stabilisation, reconstruction and reconciliation.

This will result in new demands on joint air power. In future joint campaigns, an initial phase of high-tech/high-intensity "traditional" or symmetrical combat air operations, might be followed quickly by a shift of operational and tactical priorities to new types of asymmetrical air operations. Examples include support of stabilisation land forces, civil-military organisations and

the population within a crisis or conflict area.

The resulting principles and criteria for the transformation of NATO's Air C2 arrangements, including the tactical CAOC level, can be summarized as follows:

A key enabler of the Air C2 transformation process will be the achievement of decision superiority through its supporting transformation objective areas of Information/Knowledge Superiority and NATO Network Enabled Capabilities (NNEC).

Air C2 needs to be enabled to participate in EBO, and to effectively apply joint air power in concert with other "coherent effects", both in symmetrical and asymmetrical types of air operations.

Air C2 has to be expeditionary, fully deployable, quickly adaptable to a changing mission spectrum and sustainable for extended periods of operations.

Where does NATO's Air C2 stand today?

In light of these principles and criteria for transformation, an examination of today's Air C2 arrangements leads to the following observations:

NATO's regional division of a static, multi-level Air C2 organisation is largely a legacy of the Cold War. Current Air C2 arrangements need to be

streamlined to exploit the advantages of the introduction of NNEC in the dynamic fields of decision superiority, information sharing, common situational awareness, collaborative planning and synchronisation of efforts and effects.

The near-term implementation of the Air Command and Control System (ACCS) technology will certainly be an important step towards establishing a solid foundation for NNEC. However, it is long overdue and the timely availability of future, modern Air C2 technology has to be facilitated by a faster, less bureaucratic and more resource-effective “spiral” development and implementation process.

On the conceptual and procedural side, the CAOC concepts of operations, and the associated Air C2 processes, require a thorough revision. The weakest link in today’s platform-centric operations is the lack of situational awareness of CAOC commanders and staff. This has a detrimental impact on their ability and flexibility to maintain the initiative and decision superiority during highly dynamic situations.

Obviously, that is one of the reasons why no plan is likely to survive the first contact with the enemy. Additionally, sequential planning processes and execution cycles make it difficult to sustain a dynamic, high operational tempo and to reach the necessary operational agility to cope with time-sensitive situations and effects. Finally, the overall concept and processes should be tailored to achieve a higher degree of modular “adaptability” of the Air C2 system, in response to an unexpected or changing mission spectrum.

The original purpose of a CAOC, amalgamating the entire spectrum of air responsibilities and functions in a single entity, has been somewhat diluted and reduced to today’s main peacetime function of air surveillance and air policing. As a result, the current CAOC organisation and personnel establishments are not sufficient in quality and quantity

to cover the full spectrum of air expertise required for today’s air campaigns and future Effects-based operations.

Designated Deployable CAOCs have not delivered their full capability to deploy. Presently, prolonged de-

“The relevance and effectiveness of the Alliance’s Air C2 is inescapably linked to its ability to successfully plan and conduct operations in a complex, multi-dimensional future environment”.

ployed operations would be difficult to sustain and the rotation of augmentation would suffer from a lack of trained air operations personnel.

Roadmap for Air C2 transformation

To ensure the relevance, utility and effectiveness of NATO’s future Air C2, the road map for Air C2 transformation must include and inter-connect the following key areas:

- timely introduction of NNEC;
- transformation of the Air C2 process and organisational structures;
- attainment of deployment and sustained operations capability.

The future, timely introduction of NNEC, including as a first step the implementation of ACCS, could follow an approach similar to the one chosen by the USAF in the context of its “CAOC X”. The aim of this approach is to streamline and accelerate the continuous, spiral development, experimentation, operational testing, accreditation and fielding of modern CAOC technology.

The key objective is to provide the commander in the field with superior technology, in minimum time and at reasonable costs. In this context, Air C2 could be seen and employed as a “weapon system”, comprising a “system of systems” and including sensors, networked CIS, effectors, C2 and the human interface. This approach offers also the option of prioritising and phasing the development and implementation of key components of the “weapon system” and, thus, bridging the current capability gap in a modular and cost-effective manner. In addition, the timely



Controlling tomorrow's reconnaissance tools: UAV control centre
Photos by EADS

and continuous introduction of state-of-the-art technology will create the required “reachback” capabilities and reduce the overall future resource requirements of a CAOC in the fields of manpower and infrastructure.

The evolving introduction of NNEC has to be accompanied by a correlated transformation of the Air C2 process. The future process has to allow for a higher operational tempo by optimizing the planning, tasking and engagement cycles. In addition, the process has to be tailored to the requirements of future EBO.

Adaptation of the future organisation

In this context, we have to ask ourselves if we are still applying the right terms and procedures. For example, is “joint targeting” and “battle damage assessment” still adequate alongside the objectives of achieving and assessing “joint and coherent effects”?

The next key area for transformation is the adaptation of the future Air C2 organisation. The future force structure, expanded mission spectrum, introduction of NNEC and the transformation of the Air C2 process will have organisational consequences for future Air C2 layout and structures.

In particular, the full and optimum exploitation of NNEC will require more flat, networked Air C2 structures. Furthermore, CAOCs will have to provide the full spectrum of air expertise due to the unpredictability of future campaigns and conflicts.

They must be prepared to plan and conduct conventional, symmetric and asymmetric air operations in support of stabilisation land forces and civil-military requirements during post-conflict phases. Finally, our efforts must aim to establish and ensure the full deployability of Air C2 in support of expeditionary, joint operations.

Besides the deployment challenges of getting our Air C2 systems to the field, we also need to implement common Air C2 education and training measures, with respect to deployed operations, for staffs and individuals.

This will not only ensure the preparedness and proficiency of our core personnel, but also allow a smooth rotation of trained augmentation personnel during prolonged campaigns and sustained operations - in particular, in a deployed setting.

Conclusions for the transformation of Air C2

In summary, the following conclusions should guide the transformation process of NATO's Air C2:

The relevance and utility of future Air C2 is inescapably linked to its ability to achieve the transformational goals and objectives in the fields

“A new perspective to be taken into consideration is that military forces are very likely to engage in post-combat or post-conflict operations and activities, including stabilisation, reconstruction and reconciliation”.

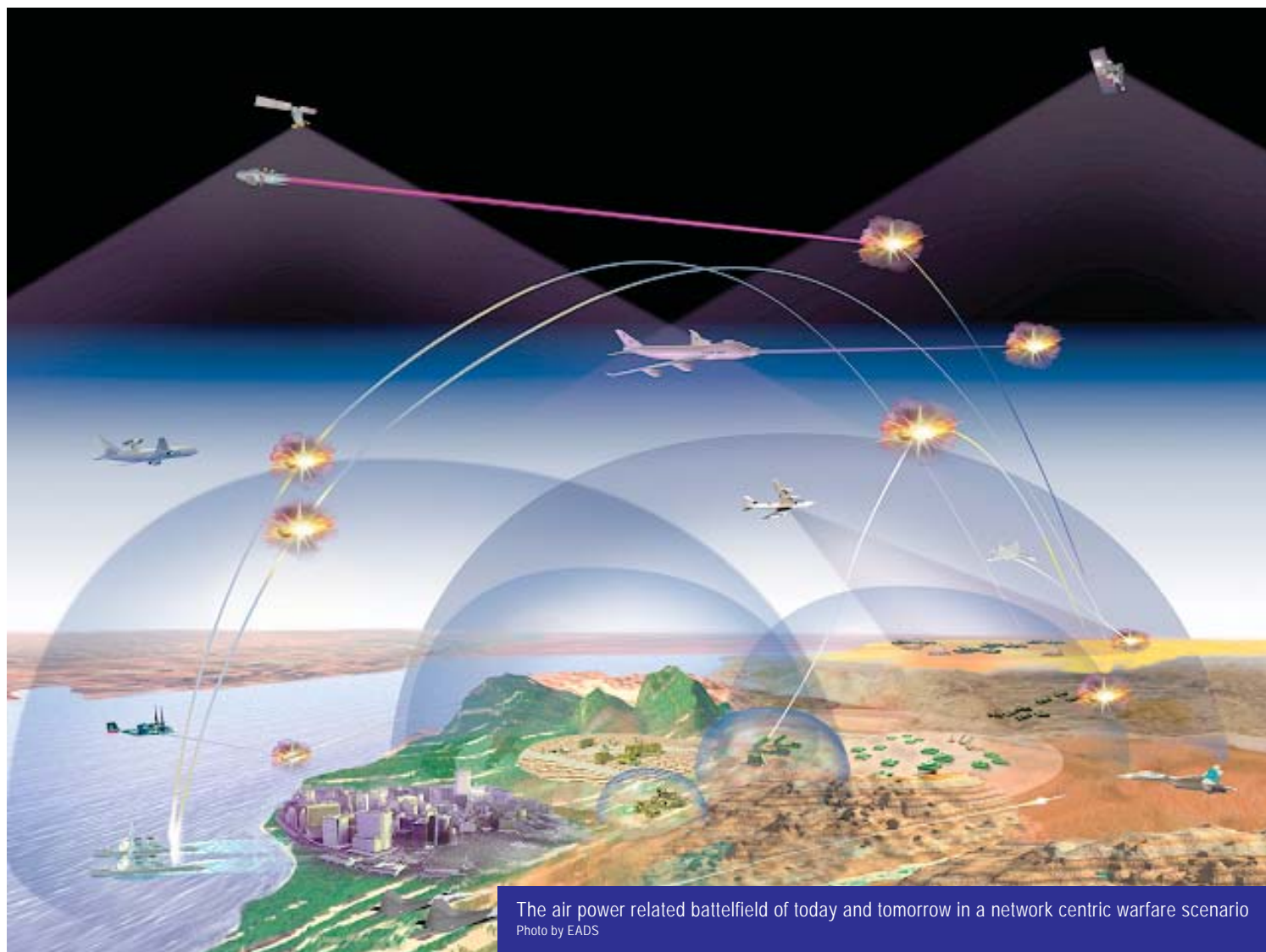


On patrol in Kabul: multinational cooperation for freedom and peace
Photo by IMZBW

of decision superiority, coherent effects and joint deployment and sustained operations.

The introduction of ACCS and future NNEC is a key enabler, but not the only important area for transformation. Our efforts also have to include the overarching human interface, as well as conceptual, procedural and organisational transformation goals and objectives.

We have to start the transformational process for Air C2 today. We cannot wait for the ACCS technology to be tested, validated and fully



implemented. If we do not change the development and implementation process for NNEC, we will continue to fall further behind the requirement of future Air C2. The next five years are crucial to get NATO's Air C2 arrangements and systems aligned with our most pressing challenges.

Finally, I hope this article will spark and stimulate a provocative, positive debate in the true spirit of the JAPCC's vision and mission. It is supposed to set the stage for a continuing discussion of this topic in future editions of the the Air Power Journal.

"Finally, we must establish and ensure the full deployability of Air C2 in support of expeditionary, joint operations".

I look forward to your comments and proposals on this very important issue of the future of NATO's Air C2.



AIR POWER IN *Turbulent Times*

By Colonel Dr. Frans Osinga

A short look at the recent past helps to distil what air power can bring to the table over the next five to ten years. Such an analysis suggests that there should be no question about the continued value of air power in the 21st Century. Western air power has undoubtedly contributed much to the successful conduct of military operations in the past 15 years.

The long air power decade

Indeed, it can be asserted that the current western way of war (and certainly the so called New American Way of War) revolves around the asymmetric edge provided by air power. As the Australian historian Alan Stephens noted: *"it is incontestable aerospace power that constitutes the developed world's greatest asymmetric advantage. It is incontestable aerospace power that has underwritten extraordinary military success in a series of campaigns fought against allegedly insuperable enemies in dramatically contrasting geographical settings from the Gulf to Bosnia, Kosovo, and Afghanistan, control of the air was the necessary precondition, decisive bombing was the sufficient war-winner"*.

Iraqi Freedom can now also be added to this list. Interestingly, these successes have been achieved against powerful conventional-arrayed armies (Iraq), in coercive types of operations (Milosevic's Serbia), and against a regime defended by guerrillas (the Taliban). Indeed, the 1990s and early years of this century may well be termed "the air power decade" in light of the significant development of air power.

Precision age warfare

Nothing marks the era of precision age warfare better than the televised images of Precision Guided Munitions (PGM) impacting the elevator shaft of the Iraqi Ministry of Defence during the opening nights of Desert Storm. The following years witnessed rapid advances in precision attack capabilities, leading to the ability to precisely strike a target from high altitude, outside the range of enemy Surface to Air Missile systems. It resulted in a quantum leap in sortie effectiveness, offering the ability to attack several targets per mission, instead of the Cold War-era method of dedicating several assets to attack a single target.

Averaging at least 70% of all ordnance dropped in the three most recent major air operations, the employment of PGMs has since become the norm, due in no small measure to political and societal pressures, in addition to military logic.

Sanctuary

Manned and unmanned surveillance systems, tied in a data network to command nodes and weapon platforms, dramatically improved situational awareness and shortened response times from 14 hours during Desert Storm to only several minutes during recent operations. Stealth, SEAD and EW platforms ensured rapid required levels of air superiority over large swathes of territory. Combined, these capabilities implied that the offensive gained the upper hand in air warfare.

For example, loss rates during Allied Force bottomed out at 0.18 per 1000 sorties, whereas during the Vietnam War the US lost 2 aircraft per 1000 sorties. If properly applied, air power can gain and exploit a sanctuary over enemy territory, increasing the effectiveness

of subsequent air operations such as information gathering, air transport, and offensive operations.

Campaign level impact

It also allowed for new ways to attack the entire enemy system. Instead of an incremental approach it became feasible to attack multiple enemy critical nodes simultaneously, even if it entailed attack of military and political command facilities in urban environments, as Allied Force and Iraqi Freedom proved.

Campaign level intensity thus rose dramatically (in principle), as well as operational tempo, while the risk to our own troops and of collateral damage could be brought down to historically low levels - a key factor for both military commanders and politicians, not least to maintain the continued legitimacy of the operation in a world where the ever present media can cause each local incident to have strategic and political consequences.

New air-ground calculus

As Enduring Freedom and Iraqi Freedom demonstrated, advances in aircraft, weapons and C4ISR technology also offered potent changes in air-ground co-operation. In both wars special forces combined with offensive aircraft to dominate large areas of operation, influencing enemy behaviour by their sheer presence, not least because of their proven ability to conduct precise time sensitive targeting against the enemy's leadership, mobile missile launchers and small infantry units. Speed of advance of ground units was enhanced by air power providing detailed information on the disposition of enemy forces.

Moreover, air power could severely hinder enemy movement and it could very effectively detect and destroy enemies well before contact with our own ground forces. In essence, air power proved it could provide fire power traditionally provided by artillery and armour. Subsequently, in the knowledge that

air power could detect and engage threats in a timely manner, ground commanders felt comfortable to leave their flanks and rear area relatively exposed. The value for, and role of air power in joint operations, has subsequently been steadily increasing.

High hopes

Ongoing technological developments, research and experiments suggest that these positive tenets will be enhanced in the future. For instance, developments concerning hypersonic flight, long range high speed PGM, unmanned combat and surveillance vehicles, stealth technology, sensor integration, small diameter

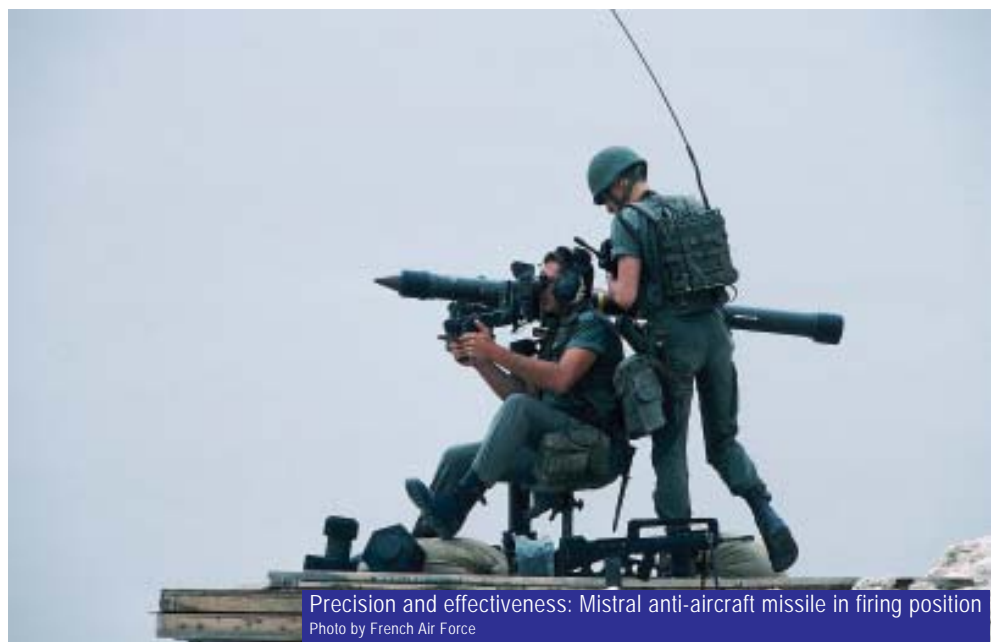
"The value for, and role of air power in joint operations, has subsequently been steadily increasing".

bombs, all in combination with advances in information technology, and embedded within a joint architecture, will ensure that air power continues to enlarge its reach, responsiveness, accuracy, lethality, speed and its leading edge. In the meantime, there will be a migration of missions - ISR in particular - from the atmosphere to space.

The contribution of air power

A summary of the key advantages of western air power to joint commanders is set out below:

1. air power can rapidly project power and presence, including people and modest amounts of equipment, in a short time over great distances,
2. air power offers credible military escalation potential and can, through presence or threat, create political leverage as part of a comprehensive strategy to dissuade or persuade,
3. air power can offer protection against air attacks,
4. air power can offer a sanctuary for observation over enemy territory - overwatch - thus expanding the situational awareness,
5. air power can deny the adversary a night sanctuary and, from stand-off ranges, can target an adversary's fixed assets with virtual impunity,
6. air power offers a time-sensitive-targeting capability,
7. air power can, through persistent air presence, increasingly help shape, disrupt and deny enemy movement,
8. air power can increasingly substitute for fire power delivered by artillery and armour;



Precision and effectiveness: Mistral anti-aircraft missile in firing position
Photo by French Air Force



*“...the discussion concerning
geostrategic limits is over”.*

Photo by NASA

9. air power can mitigate risks for ground troops and increase the operational tempo;

10. air power can simultaneously operate against tactical, operational and strategic targets across the entire battlespace.

No limits

The future value of these capabilities needs to be assessed in light of the rapidly changing political and military environment, especially the geostrategic expansion of NATO and the EU. Even a brief glance at NATO's current operations and the EU's Security Strategy will quickly get the point across that the discussion concerning geostrategic limits is over. We cannot rule out future air power employment in various guises in the Causasus, Central Asia, the Middle East, and even Africa, not only for humanitarian operations, but also for more robust operations against rogue states harbouring terrorists, weapons of mass destruction or conducting massacres and deportations. We should also not forget the continuing potential for Interstate Wars, which the author Micheal T. Klare

asserts might be down but far from out, not least because of slumbering territorial disputes, access to scarce energy and water resources, or because of economic interests. It is also obvious that any military posture relevant for future political security dynamics must have the ability to rapidly deploy to remote areas, putting a premium on the power projection capabilities inherent in air power, including the need for equipment to set up staging bases and the ability to ensure access. However, all this involves new challenges and not only because of the enormous distances involved.

This geostrategic expansion brings into view the occasional need to revert to the now unfashionable threat-based planning method. While current Western air power is certainly superior to any possible opponent “in the foreseeable future”, an alternative view is that no future is foreseeable - period - and that the chances are increasing that western air power will encounter latest generation Russian combat aircraft or “grey threats” (consider the proliferation of F-16s) and will face the latest generation of shoulder launched SAMs. Encounters with

double digit SAM systems with ranges of 300km, GPS jammers, novel combinations of radar, IR and EO sensor systems for air surveillance, High Power Microwave and Directed Energy Weapons, and even fixed laser systems, might all sound far fetched but such developments could entail the defence regaining the upperhand over the offence in air warfare, upsetting the favoured way of war of the west.

A sanctuary, but for how long?

All this has led some to comment that stealth technology will need to be substantially improved to ensure the continuing survivability of all surface, air-borne and space forces. To this should be added the threat of cruise missiles, simple and small (but armed) UAV's and mobile surface to surface missiles. All this suggests that air superiority cannot be taken for granted. Second, it is almost inevitable that air power will increasingly be employed in “zones of turmoil”, or areas infested with non-conventional conflicts. In fact, since 1945 only 12% of all conflicts can be classified as high intensity state-on-state warfare. As Air Chief

Marshal Burridge asserted, we may indeed be running out of rogue states and Iraqi Freedom may well be the last of its kind. An air power advantage does not pay equal dividends in each and every environment or type of conflict but is a function of several variables: the nature of the enemy, the type of war waged by the enemy, the combat environment, the constraints and the political objectives. In ambiguous situations, such as stability operations and counter - guerrilla actions in an urban environment-all under the watchful eye of the media and local population - air power's contribution to joint operations can become disintinctly more qualified.

Conflicts waged in time

As Hammes, and Grant Hammond before him pointed out, such conflicts are waged in time, and what we might call "soft power" - religion, ideas, ideology, ethnic loyalties, the perception of legitimacy - can matter more than military hardware. Indeed, whereas Western conventional armed forces in high intensity fast paced conventional combat operations can easily overwhelm an opponent, the seemingly ineffectiveness and vulnerability of those same units can prove a severe strategic liability in non-conventional operations. Worse, an air attack on guerrilla fighters in a dense urban setting can easily backfire due to the very real risk of massive civilian casualties. This option, and the value of decoys, human shields or captured UN monitors, has not been lost on the media savvy and strategically cunning "new warrior class" who are unshackled by rules of engagement or the law of armed conflict.

In addition, the relative lack of real tangible benefits of such attacks against an enemy, who is seemingly able to mobilise an abundance of people, who careless for life on earth than life after death, only erodes credibility, legitimacy and local support. Moreover, in such a contested environment, air base security and air superiority need to be reconsidered - as the frequent helicopter crashes over Iraq demonstrated.

To some extent, this is a reminder of the Vietnam War, when infiltrators destroyed 99 aircraft and damaged 1,170. Indeed, the term "air-denial" has already been coined to capture these features. Yet, recent counter-insurgency operations indicate air power can contribute substantially, even under these adverse environments, if it is well planned and orchestrated.

In this context, we should not discard the value of air transport (fixed wing and heliborne) for combat support operations, providing rapid response mobility to infantry units and for humanitarian operations. Second, as in conventional operations against small mobile units, we can witness the increasing value of surveillance capabilities, combined with responsive, persistent precision air attack. US air surveillance systems constantly monitored the town of Falluja, providing valuable real time intelligence, in preparation for the ground attack in Fall 2004. During combat operations fixed wing aircraft, Apache armed helicopters and surveillance systems mitigated the risks for ground forces.

Surveillance and precision

In particular, in such highly ambiguous non-linear operations, the ability to identify and track friendly troops, as well as detect and follow the movement of the opponent, to spot ambushes, snipers and truck mounted mortar launchers, or simply to look over the next wall in support of a patrol, is of paramount importance. The emphasis is obviously less on stealth, long range stand-off weaponry, transport, EW, or SEAD and more on surveillance and persistent Close Air Support with small precision weapons, networked through datalinks with ground units.


Air power has been central to victories in the past decade. Together with sea and space power, it commands the "commons". Its contribution to joint operations has consistently risen, be it against conventional armies, dictators or

bands of guerrilla fighters. (American) air power also shapes its own future in a way. The demonstrated capabilities can dissuade possible future military competitors from entering arms races with the West. Against traditional actors - states, rogue and otherwise - there will remain a need for the power projection capability, in both soft and hard form. Indeed, the past in this sense could be seen as a prologue to the future. Anti-access methods, grey threats and emerging weapon technologies will also need to be taken into account.

New operational environment

Moreover, the expanding geopolitical scope for Western militaries implies that access to air bases, long range air surveillance, air transport and air-to-air refuelling, all command increasing attention. Finally, the increasing likelihood that we will need to operate in non-conventional wars alerts us to the importance of transport, surveillance, and persistent and precise Close Air Support in urban and mountainous environments. But air power is proving it can play an important role here too, due to recent technological advances.

Indeed, there should be no question about the future value of air power, even in non-conventional conflicts. However, no doubt there will be such a debate, as witnessed right after the fall of the Iron Curtain, right after Desert Storm, and most recently right before Operation Enduring Freedom against the Taliban. So, despite an impressive track record, air power's value will constantly need to be proven in new operational environments. The NATO transformation czar, Admiral Cebrowski, now holds that 'we expect to justify systems based on their capabilities against irregular or catastrophic challenges - the degree of capability provided against traditional challenges will be the added benefit'. To remain relevant tomorrow the name of the game must therefore be to set about (im)proving air power's multi-environment value.



Improving NATO Deployability: The Deployable Airfield Activation Wing

By Lieutenant Colonel Ton Pelser,
Royal Netherlands Air Force

The recent NATO Force Generation (FG) experiences in Pristina and Kabul, in which NATO sought a lead nation to conduct the Airport of Debarkation (APOD) task, proved to be a very time-consuming process. The difficulties were such that NATO eventually abandoned this approach and resorted to producing manning and equipment tables, specifying in detail what resources were required to generate the required APOD force elements. It then asked the nations to provide them on a piecemeal basis.

Whilst this did eventually generate the resources required, it proved to be extremely time-consuming to achieve and also led to many operating problems on the ground – these included insufficient language

skills at working level, the unfamiliarity of personnel from some nations with the in-place equipment pro-

were all vital early lessons for NATO expeditionary operations.

“The DAAW concept is focused upon activating airfields and APODs for NRF operations, with the types and numbers of required DAAW capabilities being determined by the NRF mission and readiness states”.

vided by other nations, together with the very real difficulties of trying to run a coalition operation against a backdrop of a multitude of national support procedures. These

The ongoing transformation of NATO to become more available, deployable and expeditionary in character underlines the lessons-learned from recent operations and argues that NATO must change the way it does business. Simply put, the NATO Response Force cannot wait for a lengthy FG process before it gets the support enablers in place to get them into the Area of Operations. The NRF, with an extremely short Ready To Move (RTM) timescale for its lead elements, needs its key enablers to be at similar states of high readiness. This is particularly true for the APOD and airfield activation, who have the vital tasks of activat-



In close formation: C-17 Globemasters
Photo by USAF

APODs and Forward Operating Bases the NRF might require. Given that the DAAW has an enabling role to set up airfields for NRF operations, it follows that the DAAW should itself be on a higher readiness than the lead elements of the NRF and also that it should be available 24 hrs per day/7 days a week.

The concept also calls for all DAAW equipment to be air transportable, preferably in a C130. This is due to the highly responsive nature of the DAAW task and the likely delays (of up to a week) when generating a commercial airlift contract. At selected airfields, the DAAW's concept of operations sees it providing a reception capability, managing the arrival of the main NATO force elements and synchronizing the arrival of manpower and equipment to meet operational priorities. This includes setting up the infrastructure of the airbase to receive, process and dispatch both cargo aircraft and the lead elements of the Air Component, combat aircraft, personnel and equipment. Also, for the APOD task, the DAAW would provide the personnel and equipment necessary for the reception of personnel and cargo and the preparation for its onward movement to the staging areas.

An important point to stress is that the DAAW concept is based upon it providing an initial operating capability only – for a

period up to 60 days – by which time it is assumed that all the necessary follow-on support forces will be fully in place.

The DAAW Structure

The main drivers in determining what support is actually required at each airfield are likely to be:

- The facilities already available at the airfield and what additional support can be provided by the host nation
- The levels of threat in theatre
- The type and volume of aircraft that need to be handled each day

In terms of DAAW sizing, this would need to be decided following an assessment of the airfield. With the varied nature of current operations it will be up to the JFC to recommend to SACEUR the number and size of the DAAW modules needed to achieve the mission.

The figure overleaf sets out the full spectrum of capabilities that a DAAW could provide. Airspace management, air traffic control, fire/crash rescue, ground handling operations, security, life support and medical elements are all essential capabilities that would be vital to create the reception and operating capability of that airfield. In addition, appropriate force elements must be able to communicate verbally with each other, within the airfield and with aircraft, and also with the deployed HQ.

Force Protection is also another key capability and the DAAW concept provides for ground defence within the general area of the airfield, together with Explosive Ordnance Disposal (EOD), Short-Range Air Defence

ing reception facilities at airfields, many of which could be austere or bare, and also ensuring that sufficient infrastructure and support functions are in place to support early operations. The proposed NATO Deployable Airfield Activation Wing (DAAW) concept could be the answer to this.

The DAAW Concept of Operations

The DAAW concept is focused upon activating airfields and APODs for NRF operations, with the types and numbers of required DAAW capabilities being determined by the NRF mission and readiness states. A key driver here is the NATO planning assumption on the number of



Service needed: ISAF soldiers in Kabul
Photo by Sandra Elbern

(SHORAD) and Nuclear Biological Chemical (NBC). A range of logistic support capabilities are also offered, including aircraft handling, camp infrastructure, food and supply.

In total, a fully manned DAAW could consist of up to 1400 personnel, plus their accompanying equipment. However, a key point here is that the DAAW is seen as being modular in nature, with the size of each element being tailored to the specific mission.

Meeting NRF requirements

The varied nature of current operations will require the JFC to recommend to SACEUR the number and size of the DAAW modules required to achieve the mission. The high readiness requirements for the DAAW suggests that it should be at least a notional (preferably a permanent) standing force, made up from NATO-owned or nationally declared capability modules.

The DAAW concept sees the Wing as a strategic asset. As such, the DAAW proposal places the Wing under the full command of SACEUR. This would enable the DAAW to be quickly deployed to meet NRF readiness requirements and also allow SACEUR to redeploy DAAW modules when the NRF follow-on support

forces have arrived. In practice, the nominated JFC, through the theatre JFACC, will establish the OPLAN and this will determine DAAW commitments. In peacetime, the NATO Air Component Commanders (ACC) should be responsible for establishing, training and equipping the DAAW to meet NRF requirements. At the deployed location, the respective Airfield Commander should have control of DAAW activities.

If you would like to know more about this JAPCC product, please contact the JAPCC Journal Editor: japcc.journalads@online.de

During the activation stage of an operation, or at an APOD, it could be that the DAAW Commander is also the Airfield Commander, at least whilst the operational build-up is underway. However, the key point is that the principle of unity of command is maintained at the deployed base. The DAAW should also be in the Air Component Commanders' functional area to ensure that tasking and operational priorities are maintained.

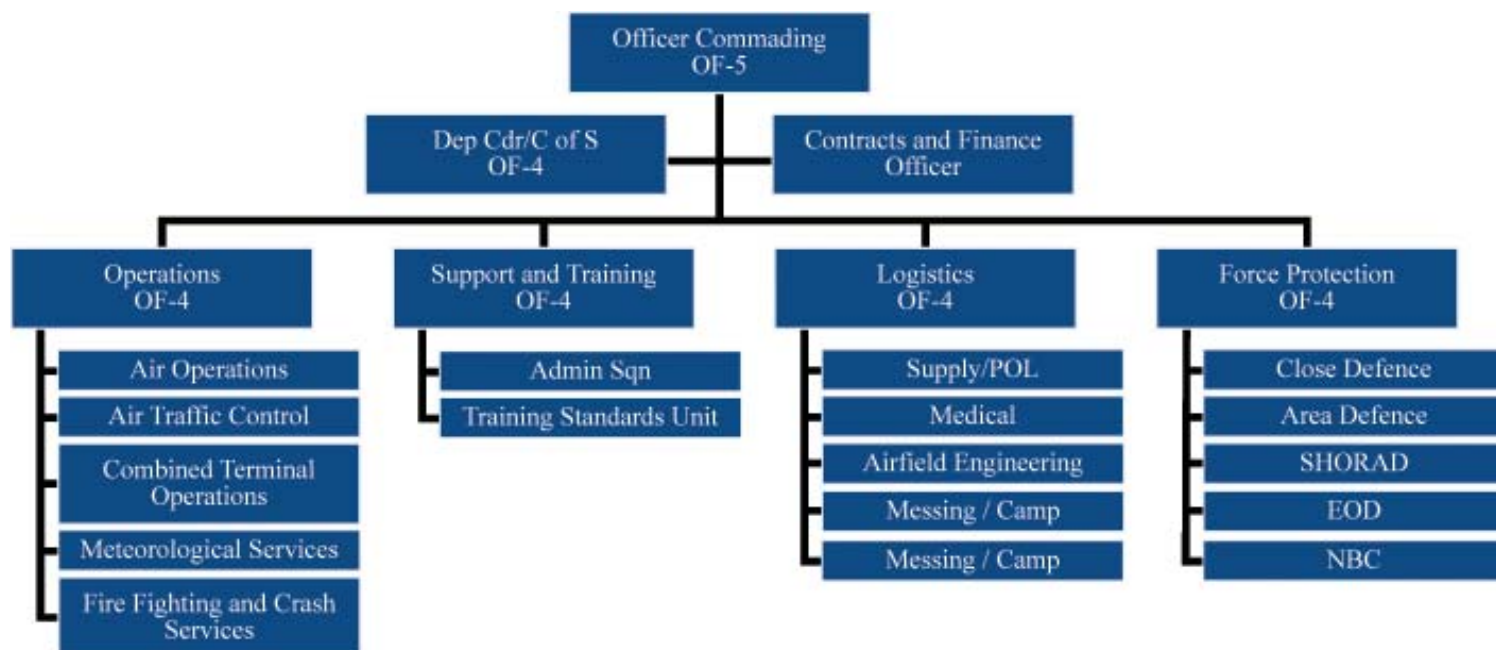
The JAPCC has now completed development of the DAAW concept and

the next step is to translate the DAAW from a concept into a NATO capability. As such, the JAPCC has formally submitted the DAAW as a NATO Force Proposal, for consideration in the next round of the Defence Requirements Review later this year. ACT is also considering trialling the DAAW concept in a series of forthcoming NATO exercises.

Key enabler for deployability

At present, not many NATO nations have the capability to activate bare airfields and those that do have limited resources which often sees scarce manpower and resources being activated time and again on national missions. Even if national resources could be made available for NATO tasks, recent experience suggests that the force generation process cannot deliver the capability to meet NRF readiness requirements.


Against this background, we believe the DAAW concept is a key enabler to make NATO more deployable and expeditionary in character, giving NATO its own multinational and equipped unit available 24/7 and with the capability to activate airbases in support of NRF operations for up to 60 days.



**THE RESULT OF ADDING BRAINS
TO BRUTE STRENGTH.**



With its instantly recognizable silhouette, the C-130J may look the same. But beneath its skin is a totally new, advanced, fully integrated digital weapons system. It starts with advanced avionics technology designed to increase safety and reduce crew workload. The new J has LCD instrument readouts for aircraft flight control, operating systems, and navigation. Night vision displays that let its crew fly in and out of areas of total darkness wherever and whenever the mission dictates. And, as the new standard in tactical air support, it goes higher, farther, and faster than the C-130 it is replacing. C-130J. Advanced. Proven. Ready.

LOCKHEED MARTIN 
We never forget who we're working for



Air power needs . . .

Air Power and the New World Disorder

By General Lieutenant Tricarico,
Chief of the Italian Air Force

Air power and its (more or less) controversial applications ...

... the history of air power has always been controversial. Its theoretical establishment has seen the prosecution of its advocates, such as Douhet and Mitchell, in Europe and in the United States. Its “romantic” World War I image and its astonishing, chilling exploits in the Spanish Civil War, captured by Picasso in his most famous picture, have accompanied its development together with furious disputes.

Its massive role in WWII has seen the bright and innovative “Blitzkrieg” approach, supporting the lightning speed advances of the Wehrmacht, together with the systematic devastation of the Allied area bombing campaign, climaxed with the atomic bomb. Air power’s nuclear deterrence was the backbone of the strategic confrontation in the Cold War, while its limited tactical role in the many regional conflicts of the era has raised many discussions, both in political terms and in respect to its effectiveness.

The Israeli Air Force, always decisive in Middle East conflicts, has written an interesting chapter about the strategic and tactical use of air power. Another relevant experience was the Falklands War, where greater effectiveness in the application of Argentinean air power could have meant a different

“Even though air power has always been considered a relevant element of military power, its actual importance and its cost-effectiveness ratio has regularly been questioned, particularly during budget debates between Services”.

outcome for the whole campaign. Even though air power has always been considered a relevant element of Military Power, its actual importance and its cost-effectiveness ratio has regularly been questioned, particularly during budget debates be-

tween Services. Nevertheless, at the end of the Cold War a new era seemed to open up for air power. The new geopolitical conditions, characterised by widespread instability and the frequent and unpredictable explosion of crisis, generate the need to intervene everywhere and at the lowest possible political cost. To the traditional characteristics of air power; great firepower and the capability to strike anywhere in a short time, a new revolutionary element is added: precision.

The convergence of the needs of the new scenarios, together with the technical and doctrinal evolution of air power allows it to play a primary or even an exclusive role in major campaigns. The first post-Cold War large conflict was won from the



Italy's new near real time eye in the sky: the Predator UAV
Photo by IAF

air through a two-month air campaign that destroyed the Iraqi military machine, closing with a few days of ground operations, which substantially involved the acceptance of the surrender of the defeated armies. Similarly, in the Balkan theatre, air power intervention forced the Serbs to the negotiating table, ending the bloody massacres of the Bosnian war.

High costs and the new strategic balance

The application with great precision of an ominous firepower, in any place and at any time, imposes huge military, political and economic costs to the adversary, taking the price of non-compliance to unacceptable levels, or alters the strategic balance on the ground through the destruction of military forces. In Kosovo, the air forces were the only ones to fight. Notwithstanding the scepticism surrounding the political opportunity and the military viability of a war based solely on the air component, allied bombing compelled Milosevic to surrender, solving the conflict, at least at the military level.

Meanwhile, another revolution grows at the conceptual and technological level. The exponential development of information technology in the military field produces systems for the acquisition, sharing and timely widespread usage of information by combat forces to achieve the best result.

The development of high technology airborne Command and Control and of distributed systems down to the single aircraft gives a further strategic capability, just as has happened with the rapidly growing availability of precision guided weapons. In Operation Desert Storm, only 10 % of air-to-ground munitions were guided, but they still accounted for 80 % of the damage; in the Kosovo campaign they composed about 35 %, while in the latest Iraq war about 70 % of expended ordnance was precision-guided. Following the 11th of September 2001, the new United States National Security Strategy answer to the attacks ex-

presses iron will to go ahead with multiple and preventive military operations to protect America's security. The new threat, its ambiguity, volatility, and uncertainty, demand a new military approach. Into action, comes the new US air power fundamental capability, together with the extant ones: precise firepower and the ubiquitous strike capability, information technology that adds the near real-time ability to put effects on targets, keeping inside the enemy decision loop and making him reactive at best, until his complete destruction. This is Network Centric Warfare, the war based upon a diffused net for collection of information and their intelligent redistribution to all nodes, so that strategic, operational and tactical decisions can be supported in the most timely and appropriate manner.

So, in the second Gulf War, an aggressive air campaign, almost simultaneous to the ground offensive, inflicted huge damage to the Iraqi forces through extensive use

"Acquisition and deployment of a Predator unit in the Iraqi theatre in a very short time span is another major step towards Network Enabled Capabilities".

of precision weapons and an extraordinary information integration capability. Air power application continued during the ground offensive with the full spectrum of air operations and led to the swift defeat of the Iraqi armies. Air power, even though used in a less massive and prevalent manner than in the previous conflicts, was fundamental to the outcome of the war.

Eventually a new and unexpected situation alters the success story: the post-war situations shows how even today a low-intensity conflict, a guerrilla-type situation can achieve huge military and political results with very limited resources, in comparative terms. It becomes evident that it is not possible to measure the extent of the successes assured by Air Power on previous occasions. What can be done to reduce the terrible costs of an Iraqi-type scenario? Can Air Power be decisive also in urban warfare? And how does the Italian Air Force relate to all this?

... *precision!*



The first obvious consideration is to proceed with the upgrade of operational concepts, weapon systems, tactics and training to counter this type of threat. This is the usual approach to asymmetric war and there is much that air power can do to better prepare itself. Considered only in technical terms and beyond any political judgment, a reference in that sense could be the Israeli Government's use of its air force, where a F-16 can hit the car of a terrorist leader in an urban street.

Unexpected and changing events in a dynamic situation

That implies the capability to identify the target, to follow its movements in real-time and to decide the engagement in a matter of seconds in a dynamic situation, subject to unexpected and changing events, with minimal collateral damage. Today, this example gives the nearest existing answer on what air power can do even though, beyond the conceptual analogy, a much deeper analysis is needed to see how much of this model is applicable to other scenarios.

"Traditional" air power can tear apart any identifiable opponent that cannot counter it with adequate air capabilities. History, and in particular recent history, declares it. There are no Divisions, however formidable, that can oppose a bombing campaign. There are no ships capable of defeating coordinated air attacks without air cover, and no missiles that can repel, alone, a large air operation. There are no surface forces,

however capable, that can win against an adequate air campaign by western standards. We can say that state-of-the-art air power dominates military conflicts, determining the outcome of surface operations, alone or integrated with the other components. That can be done, to pursue the political ends of the conflict, applying air power to the different elements of an enemy's national power, with diverse intensity and effects. The capability to impose unacceptable damage to the enemy with limited political, operational and logistical costs, makes air power the instrument of choice for many situations.

Nevertheless, the post-war events seem to show the limits of air power and we must strive to do more. The road has already been taken: the integration of all information sources, limited to the traditional ones, like Recce, Operational and Strategic Intelligence, etc. Air power must be able to interface in real-time with other sources from different fields: human intelligence, any relevant product of any na-

tional or allied agency and anything able to produce a desired effect on the enemy, including Information Operations. Then, we must pursue the capability to autonomously acquire critical information in a very short time, compressing into a few seconds the attack cycle, to engage in an extremely precise manner, being

"We need to invest where the asymmetry favours the enemy ..."

capable of measuring out lethality along a scale of results, dependent on whether you are targeting a single person or destroying an armoured division. Air power must be capable, in a future scenario similar to the Iraqi one, of using in truly integrated ways all kinds of sensors, from the fundamental strategic domain of space, to the sky and the surface, from the satellite to the "watching man" and to micro robots, in day and night, in all weather, capable to control a whole area or single persons, interfaced with the network centric world of information.

Additionally, it must be able to intervene with the mentioned gradualism, flexibility and effectiveness, using technologies that exist today only in concept and that can be validated in a very short time, to be able to adapt to and anticipate threats. All this in a seamless joint dimension, where sensors, network and effectors are completely integrated throughout the services, each of which brings to the accomplishment of the mission its best expertise and capability.

Last, but not least, the key resource to defeat the asymmetric threat is not more weaponry, people and bureaucracy. We need to invest where the asymmetry favours the enemy, targeting his creative capabilities and being able to fight with an even more aggressive creativeness, able to focus the huge resources available to the West in the right place, at the right time keeping them focused as long as necessary. This may be the perspective. Let's now see what the Italian Air Force is doing to move toward it.



Worldwide: many nations work together in out of area operations
Photo by USAF

The Aeronautica Militare is carrying forward several initiatives to confront the new scenarios. First and foremost, has been the drive to transition from the static Cold War posture to an expeditionary one, still fully underway. The Air Force has been and is involved in many out-of-area operations, and seeking to match the national, Alliance and EU expeditionary goals. An important enabling asset we are acquiring is a Special Forces unit with particular expertise in air operations, including Combat Controller functions. This asset, together with HUMINT, ground reconnaissance capabilities and the discovery and designation of hostile assets provides a crucial capability in the new scenarios.

The acquisition and deployment of a Predator unit in the Iraqi theatre in a very short time span is another major step towards Network Enabled Capabilities that are the technological frontier and true innovation for air power. These aircraft offer a very long loiter time, the ability to detect situations and targets of interest day or night real time with diverse sensors, such as electro-optical, infrared and, in the near future, synthetic aperture radar. This links very well to the project of pursuing a connectivity integral to the Air Force and to the joint and combined arena, through a system of digital interfaces for all data flow systems in use in the Air Force that are fundamental to any networked capability.

The Air Force concept, including correlation, data fusion and exploitation capabilities and renamed "Italian Common Ground Station", has been adopted as the backbone of the Defence C4-ISTAR architecture. A major step forward in the same direction is being considered through the acquisition of the AEW&C, with significant C4-ISTAR capabilities, in a short-medium term time horizon. This is part of the JAMES-C3 Staff Target (Joint Airborne Multi-Sensor Electronic Support and C3), including also SIGINT, ESM, Wide Area E/O and Radar Recce, C2 and communication relay. All are to be fulfilled through the most cost-effective solutions available. A new attention to space as an

enabling mean, through several cooperative initiatives, is complementary to the general effort toward the new required capabilities.

The acquisition of the new weapon systems is focused on precision ammunition: besides laser and infrared weapons, already in the AF inventory, we

"The new threat, its ambiguity, volatility, uncertainty, demand a new military approach".

are acquiring GPS and laser-GPS systems, and integrating the Storm Shadow on the Tornado, giving the Air Force a cruise missile with GPS, inertial and infrared guidance, very well proven in the recent Iraqi campaign. On the organizational level, the establishment and development of Air Force Operational Command (COFA) and of a deployable C2 capability focuses resources on the Command and Control of operations, while the SiCCAM, (Air Force Command and Control System) is being interfaced with the NATO ACCS (Air Command and Control System), to constitute one of the pillars of the Italian C4-ISTAR capability.

The job we face is to refine, develop and integrate these capabilities and the other necessary ones into one single big picture, aiming beyond costly aero-

nautical technology by depending on Air Force leadership, culture, procedures, organization and information technologies, often available at lower costs. This perspective, that extends also to the consideration of further ways to accomplish the mission, according to the Effect Based Operation concept, has an inherently integrated nature. It has to be deeply joint, fully interoperable with allied and coalition partners, and with effective interfaces with all national and international agencies relevant to the accomplishment of the mission.

But, more than anything else, we must keep aware that the new threat can be agile, creative, volatile and iron-willed. We do not know how, when and where it will strike. Additionally, making our minds, our procedures, and our huge organizations agile and connected, rather than slow, cumbersome and bureaucratic, is the priority. We need to be able to swiftly bring to bear the great strength we have all together on the right target at the right time, to ensure the security of our world.



Joint and combined: interoperability with allied and coalition partners
Photo by Sandra Elbern

From step to jump to flight:

By Lieutenant General Klaus-Peter Stieglitz
Chief of the German Air Force

Transformation of the Luftwaffe

Today, allied defence and security communities worldwide agree that there are common challenges and objectives – e.g. new forms of conflicts, new players, new tasks, augmented pace/speed of technological innovation etc. It is also widely acknowledged that certain necessary military conclusions can be derived:

- The need to modernise Warfare Concepts (organisation, armament and equipment),
- A new mind set: change for recruitment (adaptation of training and education),
- A responsible selection of military leaders (including war-fighting experience),
- A need for new forms of military exercises.

But the question is – are these really new conclusions? The answer is: “no”. In 1813, Carl von Clausewitz had already used these bullets in a letter honouring Scharnhorst’s achievements for the Reform of the Prussian Army after Scharnhorst’s death. In transferring Scharnhorst’s achievements to the 21st century, Germany is currently facing the following challenges relating to security policy and decision-making:

1. New forms of asymmetric threats, and the emergence of new players in the security arena, characterise some of the military and security challenges to which we must respond.
2. The constitutional mission of the Bundeswehr remains unchanged. However, homeland defence issues must be seen in a broader global dimension.
3. Fulfilling Germany’s international obligations resulting from the

membership of NATO, the EU and the United Nations in accordance with decisions by our parliament.

Based on this, the German Minister of Defence, Dr. Peter Struck, initially started the Transformation of the Bundeswehr with the publication of the Defence Policy Guidelines on May 21, 2003. On August 9th, 2004 he issued a

- missions network centric operations (German technical term: *Vernetzte Operationsführung*)
- multinationality.

A defined end-state and an end-date have been characteristics of the Bundeswehr reforms in the past.



Fokker DR-1 Photo by Neville Murphy

corresponding Concept of Bundeswehr. This document constitutes the basis for the adapted equipment and materiel planning of the Bundeswehr. It is a conceptual precondition for the future Bundeswehr-Plans from 2005 onwards. Derived from the Defence Policy Guidelines, the following three issues constitute the main guidelines for our Transformation process:

- concentration on most probable

The ongoing structural reforms initiated in 2000/2001 will almost be completed by 2006 and are to be finished without major changes. The structural measures related to the improvement of the Bundeswehr initiated in October 2003 have led – in the case of the Luftwaffe – to the ‘Luftwaffenstruktur 6’. Their implementation will start as soon as possible as an integral part of the transformation of the Bundeswehr.

The Transformation of the Bundeswehr capabilities will serve two major goals – first, to prepare the Bundeswehr for the most likely missions, and second to create the right conditions for a smooth process which will constantly adapt the Bundeswehr to new challenges and new capabilities.

According to the Concept of the Bundeswehr, the German understanding of Transformation is the shaping of a continuous, forward-looking process of adaptation aimed at improving our mission effectiveness. Transformation has security, social, technological, innovation and mental dimensions. As an open-end process, transformation needs to take into account the changes in the security environment and has to find answers to the new threats we are facing. Transformation will also enable the Bundeswehr to cope with the changes in the social and economical sector at an appropriate operational tempo.

Changing from traditional reform mechanisms to a transformational approach will help the Bundeswehr to take advantage of technological innovations. This is a prerequisite for enabling the Bundeswehr to conduct and to participate in Network Centric Operations. But transformation is not just driven by technological innovations such as hardware or routers – it requires the ability and readiness of all the Bundeswehr personnel to change the old-fashioned, well-established mindset and to be open for promising new ideas and concepts. In other words: transformation must take place in the hearts and minds of the people of the Bundeswehr. Additionally, Germany is determined to better understand the way our allies and partner nations transform their forces. The lessons learned derived from these observations will be taken into account to guarantee an interoperable and multinationally feasible approach to our Transformation.

The Bundeswehr will adjust its capability-profile. It will be streamlined into a joint expeditionary force, able to contribute to conflict prevention, crisis management and counter-terrorism, as well as major combat operations. Our future capability-



profile comprises of the following six interrelated categories:

- command and control,
- intelligence collection and reconnaissance,
- mobility,
- mission effectiveness,
- support and sustainability,
- survivability and protection.

We are going to implement forces at different levels of readiness and capabilities. They can be employed immediately and effectively in a joint and/or combined force within a networked environment. What does this specifically imply for the Luftwaffe? Existing capabilities in the Luftwaffe need to be, and will be, improved in their networking capabilities. This will increase the joint operational effectiveness of the Bundeswehr.

Additionally, we are fielding new systems within all capability categories. By doing this, we will add sensors, effectors and C2 elements to the network. From the very beginning, the Luftwaffe is determined to highlight the importance of Network Centric Operations (NCO) with regard to changes for Joint C2 structures and doctrine. The new Concept of Bundeswehr drives our transformational process and the current method of implementation via network centrality. The journey towards further jointness and multinationality has not

reached its destination yet. Transformation – as a permanent, rather than a singular process – will demand a constant preparedness to adapt to new concepts and doctrines. The Luftwaffe will remain the “Centre of Excellence” in terms of Air Power in the Bundeswehr. To enable this for the future, the Luftwaffe has taken appropriate re-organisational steps to strengthen Jointness and Air Power Competence. Applying NCO to the forces is one of the most challenging tasks for the future.

In order to stimulate joint thinking on NCO, the Luftwaffe has issued a first conceptual paper on NCO in December 2003. It was published in order to establish an overarching NCO mindset and to start the development process of necessary adaptations within the Luftwaffe. This has been done in close cooperation with partner nations. Regarding bilateral and multinational co-operative efforts, the Luftwaffe is proud to have our own personnel inside the US Office of Force Transformation Working Groups, supporting the development and evaluation of the NCO Architectural Framework. Additionally, the Bundeswehr and the Luftwaffe exchange information on NCO with NATO and other partners, such as Sweden.



Exercise COMMON ARRANGEMENT: rapid prototyping for the challenges of tomorrow Photo by IMZBw

Transformation in an international context

The Bundeswehr and Luftwaffe have established several key organisational elements to push transformation efforts, both nationally and internationally. On the national joint level, the coordination group “Transformation Bundeswehr” is setting the priorities at the Ministry of Defence level. This group is working closely together with the newly established “Centre for Transformation of the Bundeswehr”. For the Armed Forces, we will set up a Joint Command for our Expeditionary Elements. For the Luftwaffe, a National Joint Air Power Competence Centre will be established and the operational value of the Deployable ACC/AOC will be strengthened. On the international level, the NATO Response Force (NRF) will be the main driving factor for the transformational changes in a multinational environment.

For airmen and air power, the Luftwaffe sees a special role for NATO’s Joint Air Power Competence Centre (JAPCC) in Kalkar. From a strategic doctrinal perspective, the JAPCC in Kalkar will be the face and the voice of Joint Air Power within the transformation process of NATO. Supporting the Commander Allied Command Transformation, as well

as the SACEUR, the Luftwaffe – representing the German Armed Forces – is very proud to host the JAPCC. We are looking forward to establishing a close relationship with the JAPCC, especially with our national Joint Air Power Competence Centre.

Educational aspects to Network Centric Operations

The success of Transformation will depend heavily on the willingness of the people to follow the new concept and ideas of NCO. In this context, one of our main efforts is to provide quality training to personnel on all NCO matters. Besides the course “Network Centric Operations for flag officers and colonels”, the Luftwaffe is also establishing NCO as a relevant element in training for other officers, as well as for non-commissioned officers.

As highlighted above, the Luftwaffe has bilaterally linked up with the United States on NCO. Supported by the Office of Force Transformation, the Luftwaffe hosted the first “German Joint Network Centric Operations Short Course” for military instructors in September last year.

How to implement NCO in the Bundeswehr and the Luftwaffe?

Concept Development and Experimentation seems to be the most suitable method for the time being. The Luftwaffe supports the Multinational Interoperability Council Experiment Series (MNE) by providing necessary and qualified key personnel. Furthermore, the Luftwaffe was lead agent for the first German National NCO CD&E Project COMMON ARRANGEMENT 2004.

This CD&E Experiment took place in November 2004. It was set up to experiment in a simulated, live, and a mixed simulation-live-environment. The Bundeswehr jointly used assets and personnel from the Luftwaffe, the German Navy, the German Army and the German Joint Support Service for the experiment. In order to use rapid prototyping, the military services were directly supported by civilian and military personnel of the Italian Staff and the Armament Division as well as Defence Industry consultants. The main experimentation goals were as follows:

1. Use of a near real time multilink environment, including LINK 16, LINK 11, LINK 1, and ATDL (Army Tactical Data Link),
2. Use of a common joint web based info-space,
3. Gain experience to design and build a CROP (Common Relevant Operational Picture).

Therefore, a flat and mission tailored NCO-organisation was set up. The play was a NATO Response Force Scenario: “Joint Air Defence for a Seaport of Debarkation”. Networked C2 elements, sensors and effectors were technically linked into a joint web-based information space. To capture instant lessons learned and to monitor overall progress, a team of human factors and technical analysis experts was also deployed. Although the evaluation of findings is not complete, excellent evidence for the NCO-

hypothesis “Translating information advantages into warfighting advantages” has already been found. Additionally, the Luftwaffe is using “conventional” exercises like COOPERATIVE COPE THUNDER and BATTLE GRIFFIN to experiment with new technologies and concepts.

From step ... Networking is the future, but robust sub-systems of effectors, C2 elements and sensors are needed: “A tiger without teeth is still a tiger, but how long can a toothless tiger survive?” The Luftwaffe will support sharpening NATO’s air teeth at the JAPCC.

... to jump ...: Networking the Force needs common international industrial defence standards, everything

“...the Luftwaffe is establishing Network Centric Operations as a relevant element in training for officers as well as for non-commissioned officers”.


else leads into well known one way streets. Transforming to information age capabilities must focus on the human being in the network, that is the war-fighter. From this perspective, the Luftwaffe offers its knowledge on “Auftragstaktik” or Mission Command as a decisive soft-key enabler for NCO.

... to flight: Internationally, there are a lot of developments, sometimes divergent, sometimes convergent in the field of NCO, but there is no intellectual ownership: NCO as a concept is flexible enough to fulfil different needs. The Luftwaffe is prepared and willing to become an information age force amongst its allies and partners. The JAPCC is considered to be another valuable supporting asset to achieve these goals, thus strengthening integration within the alliance.

Jointness: a key element of Network Centric Operations

Photo by IMZBw





By Col John “JJ” Jackson, USAF
Lt Col Mark “Merlin” Carter, USAF
Maj Bob “Cheese” Stroebel, USAF

AIR GUARD OVER THE 2004 OLYMPIC GAMES

CAOC Larissa’s Support to Greece for the Athens Summer Olympics

In the early 800s B.C., King Iphitos of Elis, Greece introduced the idea of a truce between warring neighbors during the period of the Olympiad. This sacred truce was respected for many centuries and its spirit lives on in today’s Olympic Games. The warrior-king was again protecting the peace during the 2004 Athens Olympics. This time, he had new partners in the North Atlantic Treaty Organization and its multinational Combined Air Operations Center (CAOC) team in the heart of Thessaly.

Operation *IPHITOS* was the brilliant moniker given by the Hellenic Air Force to the national air defense plan for the 2004 Olympics. The corresponding international support was designated Operation *DISTINGUISHED GAMES 2004 (DG04)* and included defensive air, maritime, ground, and special operations components. This article highlights NATO’s air defense effort led through its CAOC command and control team in Larissa, Greece, as well as some of the

lesser-understood issues and challenges associated with this unique operation.

The smooth, nearly flawless execution phases of *DG04* were largely the result of excellent cooperation between the Hellenic AF, CC-AIR Izmir, and CAOC Larissa during the planning phases. The strong relationship between CAOC Larissa and its Hellenic counterparts, nurtured over four years of combined operations, greatly facilitated the process. The baseline was a very impressive air defense plan designed by the Hellenic AF that integrated the layered operations of fighter Combat Air Patrols (CAPs), helicopters, ground-based air defense (GBAD) units and even a blimp with high-tech sensors. From its brand-new, 11,000 square meter bunker, CAOC Larissa led a live combined exercise, a VTC/table-top “what if” seminar, and the tricky development of integrated national/NATO Air Tasking Orders (ATOs) and Airspace Control Orders (ACOs).

Much like matching the remaining pieces of a large jigsaw puzzle, the overarching challenge was to ensure that the NATO air defense CONOPS integrated perfectly with *IPHITOS*. Other unique challenges included the integration of emergency special ops support from beyond Greek borders and surveillance-only AWACS operations from multiple deployed locations. The United Kingdom and France added dedicated AWACS aircraft to those of Force Command, enabling 24/7 coverage when required.

The assets flew their 122 sorties and 908 hours from three countries - France, Greece, and Italy! Force Command’s deployed commander in Preveza, Greece did a masterful job orchestrating the on-station handoffs to minimize coverage gaps despite tenacious weather and the restriction of employing without the authorized use of air-to-air refueling.

A clear consensus had to be reached on some other unique assessments. For instance, as the first Summer Olympics host post-9/11, what was the threat to Greece? Given Greece's much publicized, record-setting investment in Olympic security, how strong a deterrent would it be? What would be the response of Greek nationals to NATO military operations over their country during this media-saturated event? There were no easy answers to these questions, although protecting against a rogue aircraft as a weapon threat became the air defense focus.

It was also a huge challenge, given that there were four other venues well outside Athens in Thessaloniki, Olympia, Volos, and the island of Crete. Deterrence was given a high-confidence vote and the NATO footprint created little visibility, so friction was minimized in the host nation. Since Greece had the preponderance of assets, the responsibility for Olympic security, and the sovereign right to defend itself, a worst-case air threat scenario would have been surprisingly easy to handle from a C² perspective, even if NATO would have had first contact.

In essence, the *DG04* plan directed continuation of routine NATO air policing and alert missions while adding AWACS to provide additional, gap-filling radar coverage for the Recognized Air Picture. This allowed the Hellenic AF to concentrate on securing the airspace over the five designated Restricted Operational Zones (ROZs). CAOC Larissa provided 24/7 C², extensive combined combat reporting, ATO/ACO production, and host support for on-site NATO AWACS and USAF special ops liaison officers. The center's customized battle rhythm was designed to adapt to those of the host nation, CC-AIR Izmir, Joint Forces Command (JFC), and the JFC's Forward Command Element (FCE) in Athens. The FCE's Air Cell, which included several CAOC Larissa liaison officers, was invaluable for on-site coordination with the Greek Ministry of Defense and literally every other agency contributing to

the greater air-land-sea defense effort. As with any operation, C² relationships are critical but often difficult to define and those in *DG04* were no exception. Overall, of course, the Hellenic AF was "supported" and NATO was "supporting." CC-AIR Izmir transferred tactical control of specified NATO assets to the Commander of CAOC Larissa for the operation.

Because of the close daily co-operation between the CAOC and the Hellenic AF, in particular the National AOC (NAOC), this transfer was seamless. At the same time, the JFC Naples FCE Commander, who was also the Land Component Commander, established his element in Athens where his integrated team could ensure continuous visibility along all command lines—lateral and horizontal, national and international. Thus, the triad of the NAOC, the CAOC, and the FCE in Athens worked together to monitor, police, and control both the wide-area airspace and the active ROZs throughout Greece for the duration of the Olympics and the

Paralympics—a period of about seven weeks.

Although there were no air threats to the 2004 Olympic games, there were some significant "firsts" achieved during *DG04*. This operation was the first non-Article 4 or 5 NATO assistance provided within the borders of a member nation. It was also the first NATO mission of its kind to combine air, maritime, CBRN response, anti-terrorism measures, and other assets under one NATO Commander. By any measure of merit, NATO's overall support to the Government of Greece was an unequivocal success. CAOC Larissa's 7-nation team from Greece, Turkey, Italy, Germany, Spain, Hungary and the United States is immensely proud to have been a part of this groundbreaking NATO endeavor and to have contributed to both the security and the success of the world's 2004 summer games.

"What would be the response of the Greek people to NATO military operations over their country during this media-saturated event?"



The backbone of operation IPHITOS: Hellenic Air Force's new F-16 Block 52+
Photos (2) by Antonios Tsagaratos

The Future of Air and Space Power:

When we talk about the future of Air and Space Power, we might be tempted to build our prognosis on the speed and quality of developments in the past as a reliable reference line. But this approach is in itself a fundamental misconception because too many interdependent variables have changed since then and will continue to change throughout the period of time until the targeted end-date of the prognosis. We all seem to accept that the difficulty of prognosis is directly linked to the question of how far ahead one intends to look, how complex the subject is and how well developed prognostic tools and methods are. We also know that the risk-threshold will be reduced if the time period grows and the complexity increases.

History and experience tell us, however, that without risk there will be no fun, but more importantly no progress. It takes a brave leader to apply this rule and never lose sight of far-reaching technological goals. Transformation describes nicely what it is all about. There must be a vision, an acceptance of inherent risks, a balanced approach somewhere between evolution and revolution, and a persisting instinct for what is achievable even if it takes a decade or longer. We must attempt to exploit all theoretical possibilities, including science fiction. Jules Verne and other proponents have shown to the world how successful that can be. We can learn quite a lot from science fiction authors, who think the unthinkable, although their intellectual foundation is based on fantasy rather than science or innovative knowledge. Let us try to follow that ex-

ample for a moment and imagine how future flight operations might look. We have entered the time when B-52s are still flying but the F-22s need to be replaced and the aircrews are demanding to get the latest, state-of-the-art technology:

- Seamless task-/mission-tailored situation awareness from leaving the squadron building to landing and back to squadron.
- Complete understanding of the Commander's Intent in the given situation.
- Seamless exchange of mission-relevant data as a Network Enabled Capability supported by a robust Air Command and Control System and a fully integrated and real-time Aerospace Ground Surveillance, Warning, Tracking and Targeting System, among others.
- Unmanned, fully protected ground transportation between the squadron building to the aircraft with the enroute provisions to maintain situation awareness and to update the mission profile.
- Vision-enhancing aircrew headgear in the shape and weight of regular scull caps.
- No anti-G garments because new aircraft provide a low-G cockpit environment.
- Fully automated pre-launch sequence in minimum time without any assistance.
- Fully automated mission profile with manual override at pilot's discretion.
- Multifunctional and secure information exchange capabilities, air to air and air to ground.
- Autonomous navigation system with zero errors.
- Choice between manned or unmanned wingmen.
- 360 degree launch-and-forget weapons with assured precision at any time and at maximum F-pole.
- Agility superiority across a large aerodynamic flight spectrum.
- Fail-safe and non-co-operative Identification Friend-Foe (IFF).
- Fail-safe and fully automated get-home-safe capability, including automatic full-stop landing with minimum ground roll.
- Unlimited free drinks if none of that worked.

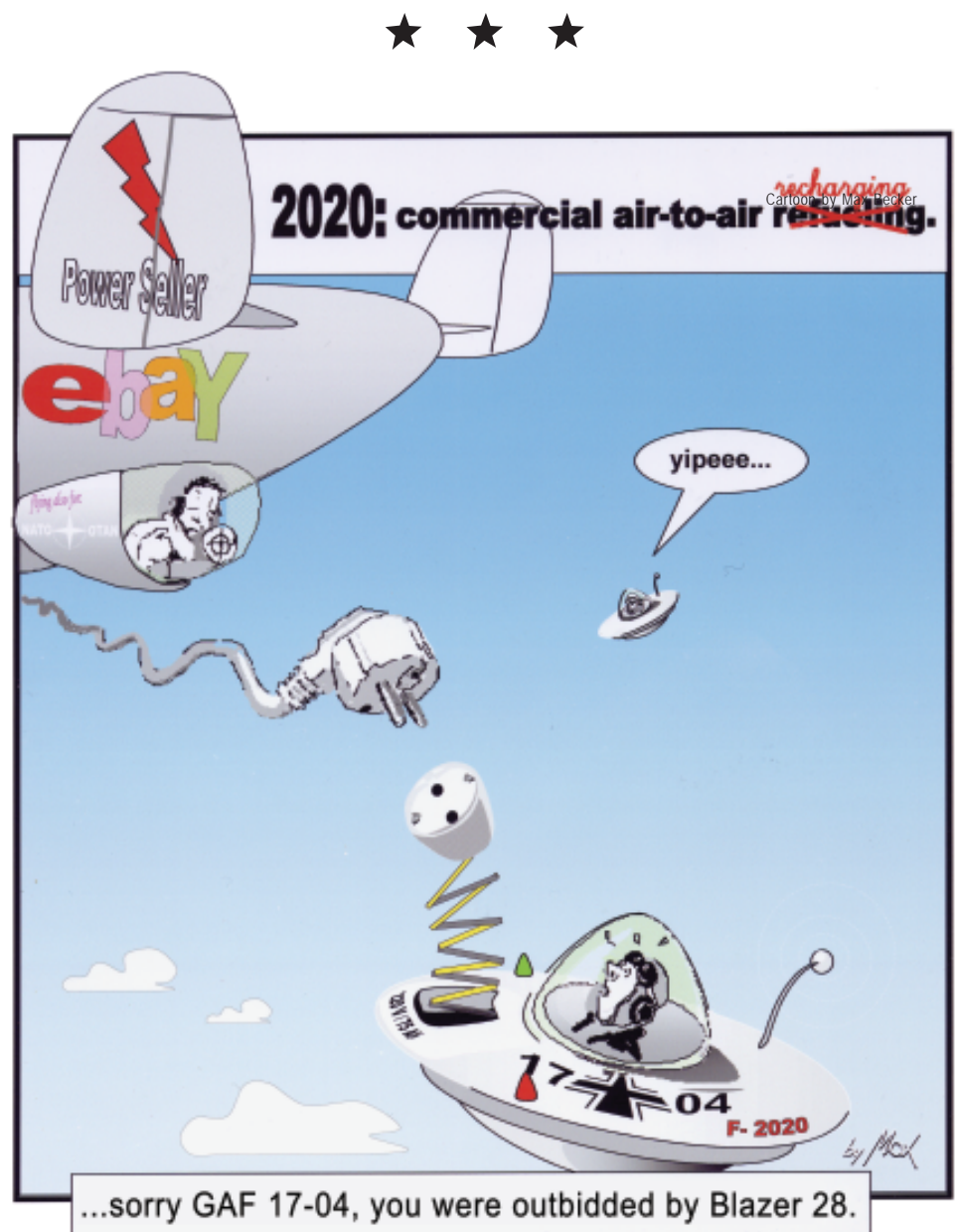
A comparable picture could be drawn for any other type of operation if your visionary abilities are as well developed as those of eccentric aircrews.

Fact or Fiction?

But visionary abilities are not enough. We need the tools and the methods to exploit and to push technology as far as we need to make things happen, which means fielding the systems. Fielding assumes availability and affordability, another very complex area with numerous potential show-stoppers, exceeding the scope of this very brief discussion, which intends to raise interest in Transformation and innovation of Air and Space Power.

And finally, we must learn to incorporate all customers, leaders, planners, developers, builders, testers, trainers, users, maintainers, supporters, and enablers in the multi-faceted and never-ending processes of Transformation, which means changing form, function or nature of things and processes.

The Joint Air Power Competence Centre (JAPCC) offers the unique capability to develop far-reaching conceptual visions for a broad variety of areas related to Air and Space Power, incorporating all interested and affected entities in the transformational efforts for NATO. The JAPCC is capable of delivering required output to specific customers and will, depending on the prioritisation of work, also be self-starting and proactive as a transformational THINK TANK.





By Colonel Dan Eagle,
USAF, JAPCC Director of Staff

Meet the Organisation



After more than one year of dedicated effort, the Joint Air Power Competence Centre stood up on January 1st of this year as a NATO Centre of Excellence on Air Power Issues, sponsored by the German Ministry of Defence. Based on the 16 Nation MOU, signed on 13 December 2004 at SACT Headquarters, Norfolk, VA, the new organisation's vision is to "enable NATO's effective and efficient use of Joint Air and Space Power".

It is located at the Von-Seydlitz-Kaserne, Kalkar, Germany and forms an MOU-based International Military Headquarters. Its staff, provided by the 16 Signatory Nations, is structurally designed as a matrix organisation with dedicated job descriptions and occupational backgrounds covering the majority of Combined and Joint Air Operations as laid down in AJP 3.3.. JAPCC is headed by General Robert H. "Doc" Foglesong (USA) as Director and supported by Lieutenant General H-J. Schubert (DEU) as Executive Director, Air Commodore M. Halsall (GBR) as Assistant Director for Transformation and Brigadier General E. Baldazzi (ITA) as Assistant Director Capabilities. Director of Staff is Colonel D. Eagle (USA). The mission of the JAPCC is to facilitate Joint Air Power transformation by providing strategic-level

support for:

- concept development and experimentation
- doctrine development
- standardisation and interoperability
- capabilities and defence planning
- education and training, exercise, evaluation assistance and lessons learned activities
- military cooperation with partners on transformational issues.

An Optimised Staff Structure

The JAPCC staff is optimised to focus on the transformation of air capabilities as assigned by Headquarters Supreme Allied Command Transformation (SACT) and agreed by the Sponsoring Nations. To carry out effectively his mission, the Director will ensure that close relationships are established and maintained with other SACT organisations, such as the Joint Warfare Centre and Joint Analysis and Lessons-Learned Centre, as well as other NATO Education Facilities, National/ Multinational Centres of Excellence and institutions devoted to the study and development of

Airpower. The staff is structurally organised as a Matrix organisation in order to execute its mission effectively. Below the Executive Director, the staff will be broadly divided into two Functional Divisions, each headed by one of the Assistant Directors.

The Transformation Division

maintains a close relationship with SACT and contains two branches each headed by an OF-5.

The Policy, Concepts and Coordination Branch

ensures that all Joint Air Power doctrine and concepts are coordinated within the staff and that all outputs are aligned with NATO visions.

The Future Capabilities Branch

has the lead in providing the required intelligence, information and knowledge-base for effective implementation of transformation activities. This branch also serves as the primary conduit for promotion of Air Power concepts throughout NATO.



Left to right: Brigadier General Baldazzi, Assistant Director Capabilities, Lieutenant General Schubert, Executive Director and Air Commodore Halsall, Assistant Director for Transformation Photos (3) by Sandra Elbern

The Capabilities Division

consists of subject matter experts forming a research centre and knowledge repository covering a broad expanse of Air Power tasks and competencies. It is composed of four functionally aligned branches each headed by an OF-5.

The Combat Air Branch

is supporting NATO forces' lethality and has staff dedicated to Suppression of Enemy Air Defence (SEAD) and Electronic Warfare (EW), Manned Air Attack, Unmanned Combat Aerial Vehicles (UCAVs), Precision Guided Munitions (PGMs), Ground Based Air Defence (GBAD), Theatre Missile Defence (TMD) and Maritime Air.

The Combat Support Branch

is dedicated to getting NATO air forces quickly and effectively to the fight, and helping to ensure our forces are supported throughout combat activities. It

contains Airlift, Air to Air Refuelling (AAR), Combat Search and Rescue (CSAR) and Special Operations Subject Matter Experts.

The Combat Service Support Branch

focuses on force sustainment for the duration of operations, with staff dedicated to Force Protection, Medical Support, Civil/Military Cooperation, and all aspects of logistics support.

The C4ISTAR Branch

is devoted to NATO Air Power attaining, maintaining and exploiting full spectrum dominance of the battle space, with staff devoted to AEW&C, Air to Ground Surveillance, Unmanned Aerial Vehicles (UAVs), Air C2 and Data Link, Space Systems and supporting Computer and Information Systems.

JAPCC Structure



NEWS

Joint Air Power Forum

On 30/31 March 2005, the JAPCC hosted the first Joint Air Power Forum in Kalkar/Germany, creating an opportunity for information to be exchanged, ideas aired, and relationships and contacts to be established. The main focus of this Joint Air Power Forum was on Command and Control issues of Joint Air Power operations, and on how to explore the most effective ways for the JAPCC, as the first accredited Joint Centre of Excellence, to promote Joint Air and Space Power across NATO. The Joint Air Power Forum was attended by a variety of expert proponents from various NATO and national Headquarters and organisations dealing with Joint Air Power issues, from the strategic to the tactical level. Combined and Joint Air and Space Power applications, in the context of the NATO Response Force, was high on the agenda and revealed specific areas where the JAPCC could support staffing of doctrinal and conceptual matters of operational and transformational interest. The JAPCC intends to host the next Joint Air Power Forum in Kalkar on the 28-29 September 2005.

NATO Air Forces Logistic Doctrine and Procedures

The JAPCC Combat Service Support Branch is leading on the rewrite of important NATO Air Forces Logistic Doctrine and Procedures. A key aspect in this work is ALP 4.3, where the logistic doctrine is being considerably revised to take account of the NATO Response Force concept, along with Allied Command Transformation new processes in support of NATO transformation. The aim is to put the document to the nations for comment by Summer 2005.



Photo by Sandra Elbern

A 10-YEAR Vision for enhancing NATO Air-to-Air Refuelling Interoperability

JAPCC/ Combat Support Branch is leading a JAPCC project, under the sponsorship of Allied Command Transformation, with the aim of developing and implementing a 10 Year Vision to enhance Alliance AAR interoperability through improved formal guidance, including updated and accurate documentation. The scope of the project includes development of a NATO AAR Doctrine, update of NATO AAR related publications, contributing to the development of AAR standardisation documents, development of a Tanker Planning Training Programme for NATO AAR Ops/Planning Officers, refinement of NATO's Defence AAR Planning and assessment of the Alliance's AAR interoperability and standardisation. The estimated completion date is in June 2007.

JAPCC Conference 2005

JAPCC will host its first Joint Air and Space Conference in November 2005, under the theme: "How Does NATO Joint Air and Space Power Remain Relevant?" The conference will provide a forum for the exchange of information and knowledge, promoting at the same time the co-operation and collaboration between academia, Defence industry and NATO, with specific focus on the JAPCC as the designated agent for transformation of Combined and Joint Air and Space Power in NATO.

Industrial relations policy

To achieve its Mission, it will be important for the JAPCC to develop strong links with both academia and the NATO Defence industries, not just to exchange ideas but also to work on air power topics of mutual interest. In order to take forward contacts with the Defence in-

dustries, the JAPCC Policy Concepts and Co-ordination branch is leading on the development of a policy document which will govern our communication and co-operation with industry.

NATO - Russian Federation Theatre Missile Defence Command Post Exercise

The JAPCC participated with an observer from Combat Air Branch in the NATO - Russian Federation Theatre Missile Defence (TMD) Command Post Exercise. The exercise took place from 14 to 23 March 2005 at De Peel Air Force Base, Netherlands. The objective of this Command Post Exercise was to validate an Experimental Concept of Operations as well as to practice procedures for TMD planning and coordination through the injection of several simulated scenarios. This exercise provided the basis for future interoperability enhancements and the development of procedures for joint NATO-Russian Federation operations in the area of TMD.

NATO Force Protection course

The JAPCC is currently in the process of finalising a NATO Force Protection course. Such a course is vital in the era of multinational expeditionary operations and the JAPCC have led on the development of the course objectives, including lesson plans and course schedules. The first course will be delivered at the NATO School in Oberammergau in May 2005.

Strategic Airlift Support to NATO Response Force deployments

The JAPCC/Combat Support Branch has finalised a study that aims to define an enabling concept to support the higher level "Operational concept for expeditionary operations". The study has analysed the NATO Response Force deployment requirements and the evolution of the Com-

bined Joint Statement of Requirement. It was then applied to two generic deployment situations, injecting these requirements into the Allied Deployment and Movement System (ADAMS) application. The results were then reviewed for the air transport assets and the times required. These outputs formed the basis for new proposals on strategic airlift.

NATO Air Operations Working Group

JAPCC/Policy Concepts & Coordination Branch Head has been accepted as the Chairman of NATO's Military Committee Air Standardisation Board (MCASB), Air Operations Working Group (AOWG). This forum is responsible for all Air Power doctrinal publications and definitions in NATO.

Civil Military Cooperation in joint deployed operations

JAPCC is currently in the process of developing new expertise in the area of civil military cooperation (CIMIC). The topic of CIMIC is now central to the effective execution of joint deployed operations and the JAPCC is becoming well placed to work with other NATO organisations, such as Allied Command

Transformation and CIMIC Group North, on the development of new CIMIC doctrine, policy and processes.

Participation in NATO exercise CLEAN HUNTER 05

JAPCC is supporting NATO Exercise CLEAN HUNTER 05, in order to monitor aspects of the deployment, operation and connectivity of the Deployed Combined Air Operations Centre. The aim is to propose recommendations to further enhance deployability, interoperability and effective NATO Air Command & Control at the operational and tactical levels.

JAPCC Air Power history & doctrine library

JAPCC has initiated the creation of a book library, collecting book titles from various sources, in order to establish a physical repository of air power related history and doctrine themes. In addition, considerable effort is being put into effective Intelligence and Information Knowledge Management, in order to develop an electronic library for all aspects of air power issues.



Photo by USAF

Book Review



Unmanned Airlift

by Lt.Col. Chad T. Manske USAF

Maxwell AFB, Alabama.: Air University Press, September 2004. Cadre Paper n.18
Pg. 106.

Available at www.aupress.maxwell.af.mil

This is a timely study that outlines an option to satisfy the Airlift Shortfall. Lt Col Manske reviews the operational requirements, some possible cost effective operational concepts and the current technologies that would support the project.

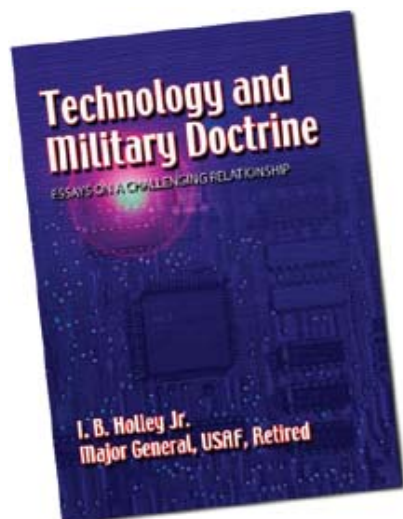
The study focuses on the USAF strategic airlift objective to move up to 68 million ton miles per day. He discusses the progress in UAV technologies and possible increase in UAV Research and Development expenditure. The author highlights how the technology is feasible to meet the requirements, although implementation could be jeopardised by budget constraints.

The work focuses on the USAF but a NATO perspective could certainly be suggested.

Is the Unmanned Transport concept a viable option to meet NATO's NRF mobility shortfalls? Perhaps this should be considered.

This short book outlining an unmanned airlift concept is not a panacea for all airlift problems, but, could foster discussion on how to overcome the critical NATO NRF airlift shortfall.

Reviewer: Claudio Icardi, Lt Col ITAF



Technology and Military Doctrine: Essays on a Challenging Relationship

by I. B. Holley, Jr., Major General, USAF, Retired. Air University Press, Maxwell Air Force Base, Alabama, USA, August 2004.

Air University Press, 131 West Schumacher Avenue, Maxwell AFB AL 36112-6615,
<http://aupress.maxwell.af.mil>

In *Technology and Military Doctrine*, Maj Gen Holley provides 11 essays written over his 30-year career that demonstrate the need to properly develop and present doctrine effectively and to understand and manage the link between changes in technology and doctrine. Each essay takes a different approach, achieving a complementary whole without redundancy. His core arguments are on continually improving doctrine through all periods, linking technological advances with doctrine to the betterment of both, and effectively providing doctrine to educate the military. For the NATO reader, he uses diverse examples to better show means of promoting doctrine and change. He analyses styles of presentation to improve comprehension and retention. There are myriad historical examples of the use and misuse of technology under existing and evolving doctrine. He provides ways to improve lessons learned beyond NATO practices. Many examples show how doctrine is not best developed by committee. Finally, he shows how the use of doctrine should be applied to non-traditional areas, which also applies to the Alliance.

Reviewer: Michael Welch, Lt Col USAF

CUTTING EDGE



NOTHING COMES CLOSE

www.eurofighter.com

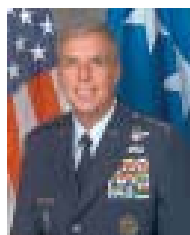


Typhoon is Europe's largest industrial programme with 638 aircraft under contract to five nations. Already in service with the Air Forces of Germany, Italy, Spain and the United Kingdom, Typhoon will be at the heart of both national and international security for the next four decades.

Typhoon is a new generation fighter aircraft featuring outstanding technologies and exceptional performance. Typhoon represents a commitment by Governments, Air Forces and Industry to build on technology and security for a safer future.

Typhoon

Bios



General Robert H. "Doc" Foglesong (USAF – BS, MS, PhD West Virginia University) holds a four-hatted position as Director JAPCC, Commander U.S. Air Forces in Europe,

NATO Air Commander Ramstein and Air Force Component Commander, U.S. European Command. He is a command pilot, having more than 4,000 flying hours in various types of aircraft primarily in fighter and training assignments. He has held command and staff positions at squadron, wing and major command level, and has been a commander five times. His staff tours includes duty as Assistant to the Chairman of the Joint Chiefs of Staff; Deputy Chief of Staff for Air and Space Operations at Headquarters U.S. Air Force; Vice Chief of Staff, Headquarters U.S. Air Force. General Foglesong has published several articles on scientific, leadership and military subjects and holds a honorary Doctorate in Strategic Intelligence from the Joint Military Intelligence College.



Lieutenant General Klaus-Peter Stieglitz (GAF) is the Chief of Staff German Air Force. He is a qualified pilot of F-104G and F-4F Phantom aircraft. He has served as commander at

squadron and wing level and as Branch Chief at German Air Staff and German MOD. He was the NATO E-3A (AWACS) Component Commander Geilenkirchen and the Deputy Commander at AIRNORTH, Ramstein. He is a graduate of General Staff Officer Training at Federal Armed Forces Command and General Staff College, Hamburg.



Lieutenant General Hans-Joachim Schubert (GAF) holds a triple-hatted position at Kalkar as Commander German Air Force Air Operations Command (GAFAOC), Commander CAOC 2

and Executive Director, JAPCC. He was trained in Ground Based Air Defence Systems and previously served at various national and NATO positions, being commander SAM HAWK Group 31; Branch Chief Ground Based Air Defence at German Air Force Command; Branch Chief Air Defence Operations, German MOD; Chief of Staff at German Air Force Command; Commander 2nd GE Air Division; deputy Commander, German Air Force Command. He attended the German General Staff Officers' Course and the Joint Warfare Course at the Armed Forces Command and Staff College as well as the Combined Force Air Component Commanders Course at Maxwell Air University.



Air Commodore Martin W. Halsall (RAF), is the Assistant Director Transformation of JAPCC. He is a fast jet navigator and has numerous flight hours in F4 Phantoms and Tornado

F3 aircraft. He previously served as Chief, Policy Branch, NATO HQ Allied Forces North Western Europe; Commander British Forces Italy (Air) and duty commander in the NATO CAOC at Vicenza.; Commander Western Sovereign Base Area and Station Commander RAF Akrotiri, Cyprus, being responsible for the preparation and operation of the Base for the 2nd Gulf War; Deputy Commander, NATO CAOC 3, Reitan, Norway. Air Commodore Halsall is a graduate of the Advanced Staff College in Toronto, Canada.



Lieutenant General Leonardo Tricarico (ITAF) is the Chief of Staff of the Italian Air Force. He is a qualified jet pilot, having more than 3000 flight hours in various combat aircraft types.

He has served in the Italian Air Force Headquarters as Chief of Office Intelligence Sector and Head General Affairs and Public Relations Division; Italian Air Force Academy as Commander; NATO 5th Allied Tactical Air Force, Vicenza as Operational Commander during the Balkan Conflict, serving at the same time as Italian Air Force Operational Commander and Deputy Chief of the multinational forces employed in the Balkans. He was also the Italian Prime Minister's Military Advisor and the Chief of the Political – Military Task Force.



Colonel Daniel R. Eagle (USAF) is the Director of Staff of the Joint Air Power Competence Centre. He is a command pilot, having more than 2,500 flight hours in various combat

and training aircraft. He previously served as Chief of international fighter programs at the Pentagon and as aide-de-camp to the US Air Force Vice Chief of Staff. He has also held the position of Air Attaché to the Russian Federation and Director of Staff at Component Command Air – Ramstein. Colonel Eagle attended the Japanese National Institute of Defence Studies in Tokyo, Japan.



Colonel Hans-Jürgen Wolf (GAF) is the Head of Future Capabilities Branch at JAPCC. He is a qualified F-104 Starfighter pilot and F-4 Phantom instructor pilot, having a total of 3,500 flying hours.

He served as commander at squadron and flying group level, and has held branch positions at GAF Commands and NATO HQs. He also had two assignments in the Balkans as Chief of Staff German Military Representative IFOR Zagreb and Sarajevo and Chief JVB and Protocol HQ SFOR, Sarajevo.



Colonel Frans Osinga, PhD, (RNLAf- PhD, University of Leiden) is the JAPCC's Liaison Officer in Headquarters Supreme Allied Command Transformation. He is a qualified jet pilot, serving

in various posts at NF-5 and F-16 squadrons. He has also served in the Air Power Studies Department of the Netherlands Defence College as a Director and seconded to the Clingendael Institute of International Relations as senior research fellow.

Colonel Osinga has received a doctorate degree from the University of Leiden, and has published and lectured on European defence policy, NATO's changing, asymmetric warfare, the Revolution in Military affairs, and coercive strategy.



Colonel John C. Jackson III (USAF – MBA Central Michigan University; MSS, Air War College) is the Deputy Director of Operations, Combined Air Operations Center Larissa,

Greece. He is a U.S. Air Force Academy graduate and has more than 3,000 in F-15A/B/C/D, T-37 and T-38 aircraft, as an instructor and command pilot. He has previously served as Chief, Air Superiority Assessment and Chief, Air and Missile Defense, CHECKMATE Division, Air and Space Operations in HQ USAF, Pentagon.



Lieutenant Colonel Ton Pelser (RNLAf) is a staff officer at Combat Service Support Branch at JAPCC. He is a Technical Officer (TO), previously serving in HQ RNLAf Material Command, Policy

branch for logistics; deputy Chief Logistics helicopter group Soesterberg AB; Section Chief logistics operations NL Tactical Air force; staff officer Reaction Force Air Staff mobility branch responsible for surface transport.



Lieutenant Colonel Mark E. Carter (USAF- MSc, Troy State University; MMOAS, Air Command and Staff College; MSS, Air War College) is the Deputy Director of Training and

Exercises/Mission Analysis (TEMA), Combined Air Operations Center Larissa, Greece. Lt Col Carter is a graduate of the Virginia Military Institute. His primary flying experience has been in the RC-135S/V/W as an Electronic Warfare Officer.



Major Robert O. Stroebe (USAF- MSc, North Carolina State University; MMOAS, Air Command and Staff College) is the Chief Air-to-Air Refueling Plans Officer, Combined Air Operations

Center Larissa, Greece. He graduated from the U.S. Air Force Academy. His primary flying experience has been in the KC-135 Stratotanker as an instructor and evaluator pilot.

Afterburner

The aim of the Afterburner section is to establish an original forum to encompass elite discussion concerning not only the articles in the *journal*, but also to expand upon subjects and visions concerning Air and Space Power inside NATO's Joint Air community. With this forum for debate, we desire to promote the professional discussion between those who want to reach higher levels of knowledge, and stimulate new concepts. It is incumbent upon the readers to provide input to this specialised debate section, please therefore send us your comments about our insights and our articles.

The *Journal* welcomes unsolicited manuscripts up to 1000 words in length.

Address them to:

The Editor, *The Journal of the JAPCC*, Joint Air Power Competence Centre, 140 Roemerstrasse, D-47546 Kalkar, Germany

or,

Email your manuscript as electronic file in either MS Word or WordPerfect to: japcc.journalads@online.de

Journal telephone: +49 (0) 2824 90 2225 fax: +49 (0) 2824 90 2274





Transforming Joint Air Power **The Journal of the JAPCC**

Subscription Request for The Journal of the JAPCC

Please send me _____ copies of the Journal of the JAPCC

Organisation or Company (Please type or print)

Attention Line (if applicable)

Street Address

City, State, Zip Code, Country

Daytime Telephone Number

Date

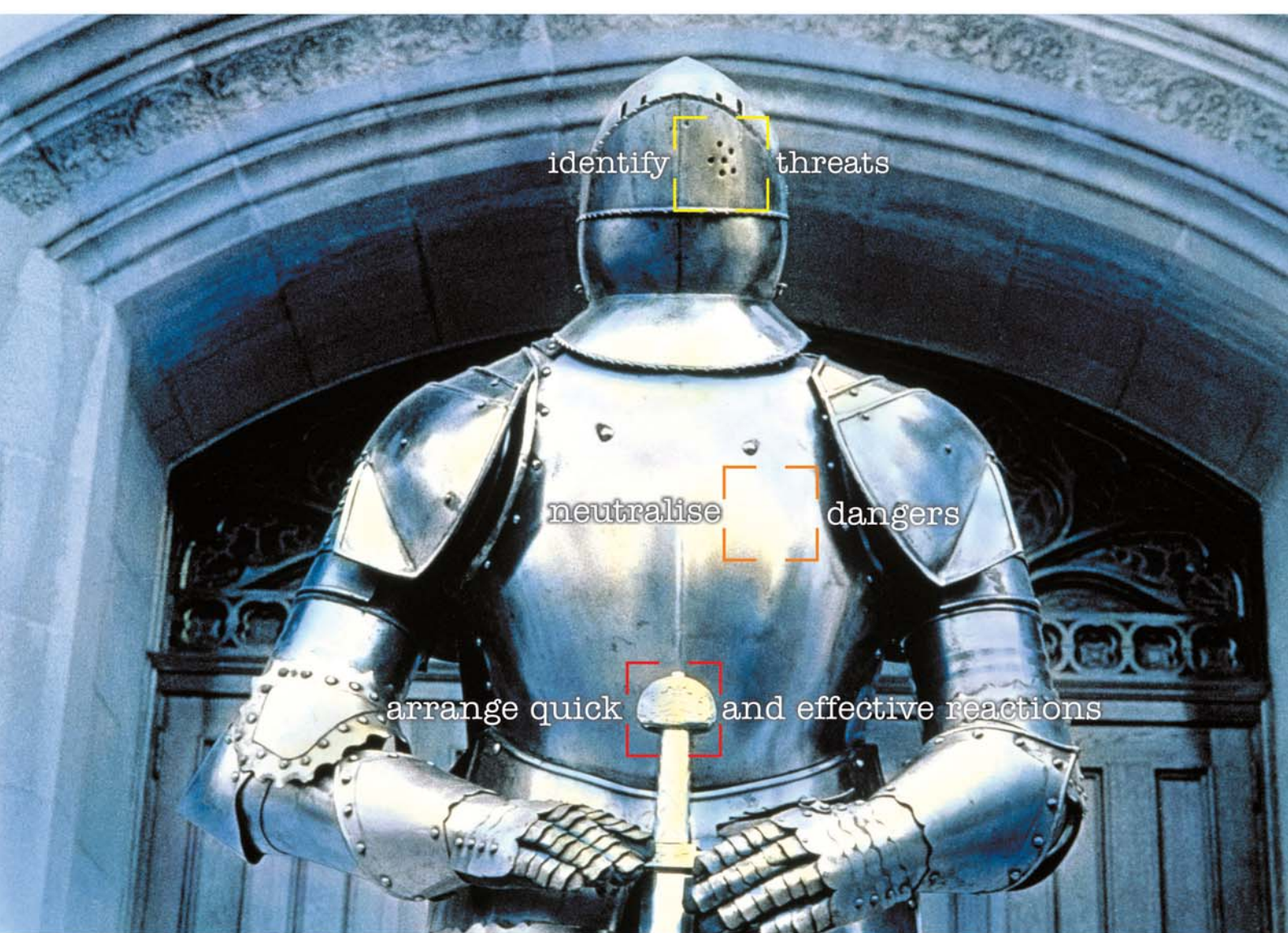
Signature

***If you want a free subscription to the
Journal of the JAPCC***

***. . . . then copy this page, fill out the information above
and FAX to:***

0049 2824 90 2274

or 02824 90 2274 within Germany



Concepts last, Technology evolves.

DATAMAT
Advanced Technological Solutions
for Defence

Mission Planning, Command and Control, Logistics and Training: for more than 30 years we have brought technological innovation to Defence, with Solutions based on a deep knowledge of operational scenarios and the capacity to improve, integrate and build on achieved results.

On the background of a deep transformation in the military world and with the most advanced technology, we realize the instruments required for activities that have always been fundamental in Defence.



www.datamat.it