

2016




annual REPORT

Joint Air Power Competence Centre

www.japcc.org



**Joint Air Power
Competence Centre**

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Release

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foreword

We are very pleased to present the Annual Report of the JAPCC for 2016. We must praise the quality and dedication of the personnel contributed by our Sponsoring Nations to the JAPCC team. The very high standard of work they delivered has allowed the JAPCC to influence the development and transformation of NATO Joint Air and Space Power through a wide range of activities.

Security threats, particularly those along NATO's southern and eastern borders, continued to generate a host of new challenges for NATO in 2016. These challenges keep many of us focused on near-term readiness and planning, so it is imperative to have an organization like the JAPCC shaping the transformation of Air and Space Power to meet the challenges anticipated farther in the future. At the same time, the JAPCC fills a second role as NATO's Air Warfare Centre, and makes substantial contributions to training and major exercises that ensure our near-term readiness. NATO Air and Space Power would not function as effectively and efficiently as it does, without the JAPCC. Put simply, the JAPCC is one of the Alliance's fundamental enablers.

We are also proud to welcome Denmark as a new Sponsoring Nation, and Greece as a returning Sponsoring Nation. Denmark's expertise in the area of Air Operations Planning was instrumental and will further strengthen our transformation efforts, while the addition of Electronic Warfare expertise from Greece will fill a key gap in the JAPCC's capability. The addition of Denmark and return of Greece to the JAPCC's Memorandum of Understanding demonstrates nations are increasingly recognizing the value the JAPCC brings to Alliance Air and Space Power capability.

The Nations continue to introduce new and highly sophisticated means, including manned and unmanned platforms. We have yet to recognize either the full potential of these systems or, understand in sufficient detail, the fundamental changes that their introduction will bring to our endeavours. These challenges should be viewed as the catalyst for Transformation, and if we fail to transform, we run the very real risk of failing to deliver when pressed by a current or future adversary. Air and Space Power is the Alliance's Asymmetric Advantage, and it must be maintained.

Whatever the advantages offered by individual new platforms, the true benefit will come from being able to create cohesive effects across the entire spectrum of Joint Operations. To do this, we have to employ the capabilities our nations provide in increasingly innovative ways, and we have to ensure NATO doctrine and training promote interoperability. These capabilities must be employed as one cohesive force, and not a collection of independent units that might be defeated in detail. In the future, we will likely face near-peer adversaries in materiel terms; however, we should always be in a superior position because we have striven to maintain our intellectual advantage. In this context, NATO Air Power cannot simply evolve, it must transform. Therefore, the JAPCC will continue to examine and question the delivery of all capabilities across NATO, in order to provide our senior leadership and key decision-makers with the intellectual edge. WHEN THE FIGHT COMES, WE WILL WIN AGAINST ANY OPPONENT, WHEREVER AND WHENEVER THEY APPEAR.

The JAPCC has been at the forefront of many significant issues facing NATO, helping the Alliance's military leaders establish and adapt policies and procedures to address challenges, such as the Project *'Alliance Airborne Anti-Submarine Warfare (ASW) – A Forecast for Maritime Air ASW in the Future Operational Environment'*. This work is proving to be foundational to both Allied Maritime Command and several NATO Nations' efforts to revitalize ASW and Maritime Patrol capabilities.

JAPCC's Programme of Work guides transformation that will allow the Alliance Air Power to master a changing Air and Space domain while remaining responsive to whatever the future may hold. Over the following pages, the 2016 JAPCC Annual Report will highlight the key developments, projects, and research shaping Joint Air and Space Power. We encourage each of you to review the contributions JAPCC is making to the Alliance, and to contact us with questions or requests for support at any time. Good Reading!



Tod D. Wolters
General, USA AF
Director, JAPCC

who we are

Established in 2005, the JAPCC was the first NATO-accredited Centre of Excellence (CoE). We provide subject matter expertise across a broad range of Joint Air & Space (A&S) Power topics including the development of Concepts and Doctrine, Capability Development, Education and Training, and Lessons Learned in accordance with NATO MC (M) 236.

The JAPCC seeks to maximize its contribution to the improvement and transformation of Joint A&S Power through a well-formulated engagement strategy. This strategy not only guides the Centre's approach to organizations within NATO and our Sponsoring Nations, but also enables outreach to other national organizations and academia, allowing the CoE to tap into a comprehensive and diverse pool of Joint A&S Power subject matter experts

Director's Vision

To be NATO's catalyst for the improvement and transformation of Joint A&S Power, delivering effective solutions through independent thought and analysis.



Director (USA AF)
General Tod D. Wolters

Mission

The JAPCC, as a team of multinational experts, is to provide key decision-makers effective solutions on A&S Power challenges, in order to safeguard NATO and the Nations' interests.

Leadership

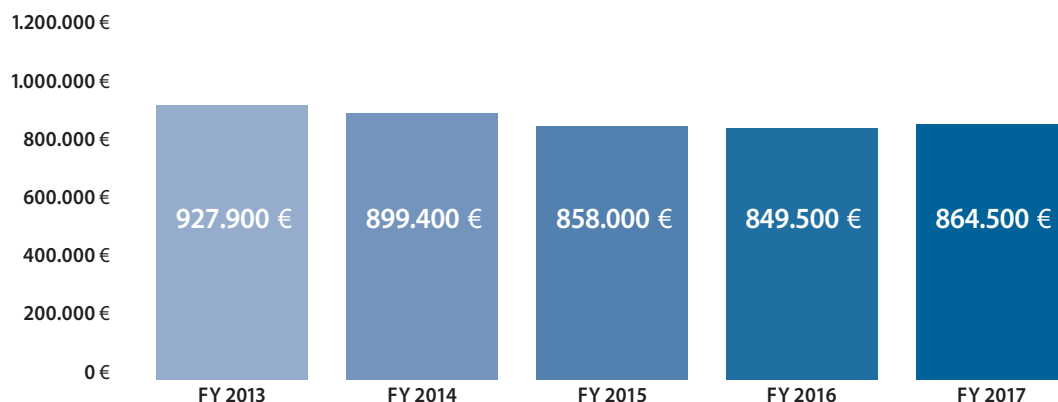
The JAPCC is headed by the Director, General Tod D. Wolters (USA AF), who has led the centre since August of 2016. General Wolters also serves as the Commander, Allied Air Command and the Commander, United States Air Forces in Europe and Air Forces in Africa (USAFE-AFAFRICA) at Ramstein Air Base. The JAPCC's Executive Director, Lieutenant General Joachim Wundrak (DEU AF), also serves as the German Air Operations Centre Commander and German Joint Force Air Component Commander.

On site, Air Commodore Madelein M.C. Spit (NLD AF) serves as the Assistant Director (AD), and together with the Chief of Staff, Colonel Brad Bredenkamp (USA AF), provides day-to-day leadership for the JAPCC team.

Colonel Norbert Geißendörfer (DEU AF) is Branch Head, Assessment, Coordination and Engagement (ACE); Branch



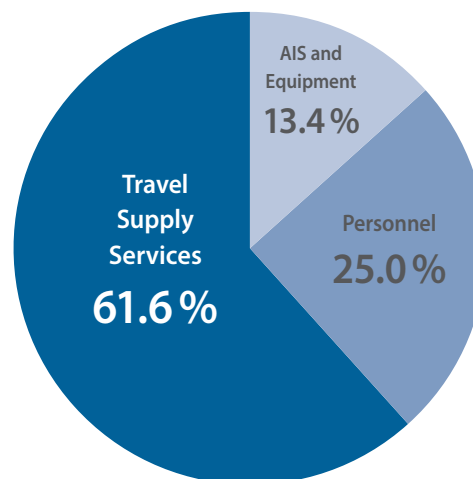
Executive Director (DEU AF)
Lieutenant General Joachim Wundrak



Head for Command, Control, Communications and Computers, Intelligence, Surveillance, Reconnaissance and Space (C4ISR+S), is Colonel Erik Abma (NDL AF); Branch Head, Combat Air (CA), is Colonel Joseph Speed (USA AF); and Branch Head, Air Operation Support (AOS), is Colonel Marco Galgani (ITA AF).

Personnel

The JAPCC has lost capability and capacity due to decreasing manpower over recent years. This trend continued in 2016, with JAPCC ending the year with 65 per cent of the posts bid and 61 per cent manned. As of 31 December, the JAPCC had only 29 of 58 Subject Matter Experts (SMEs) available (50%), with the following SME capability shortfalls (filled/positions available):



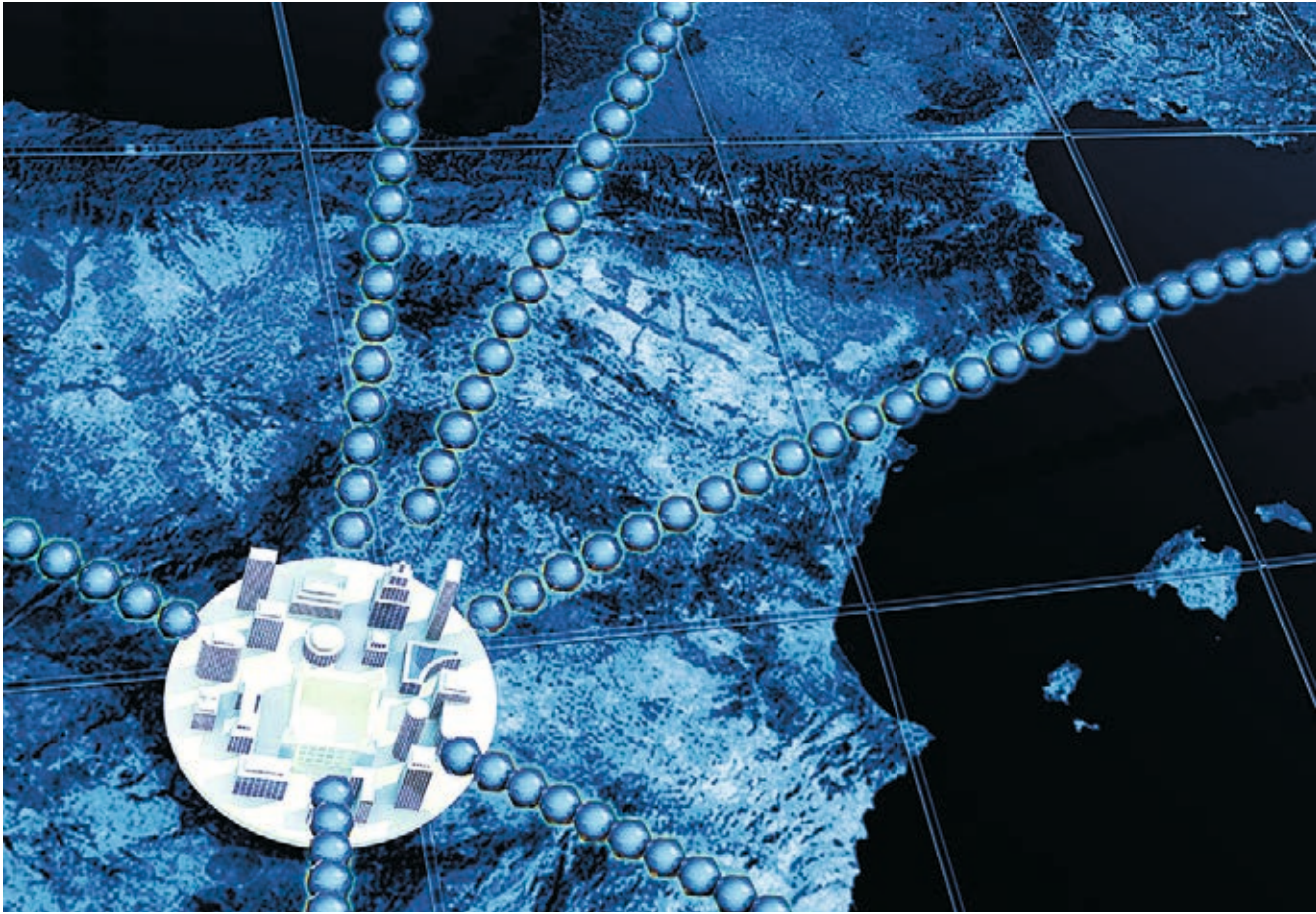
JAPCC Budget for FY 2016



Assistant Director (NLD AF)
Air Commodore Madelein M.C. Spit



Chief of Staff (USA AF)
Colonel Brad A. Bredenkamp



C4ISR+S

ISR (0/3), Air Battle Manager (1/3), Cyber (1/2),
Air Operations (2/3), Space (2/3)

AOS

AAR (0/2), Electronic Warfare (0/1), Logistics (1/2)

CA

EW (0/1), Manned Air (1/2), SOF (0/1),
UCAV/UAS/UAV (2/3), MPA (0/1), CAS (0/1), BMD (1/2)

ACE

E&T (3/4), Research, Analysis & Intel Support (1/2),
Plans, Concepts, Development & Vision (3/6),
PAO/Assistant Editor (0/2)

With the pending return of a subject matter expert from Greece in early 2017, and the expected arrival of replacements for three other gapped but bid positions, the JAPCC hopes to recover to 33 SMEs by mid-2017.

The JAPCC continues to actively mitigate these shortfalls through cross utilization, internal education and training as well as creative technological solutions. However, in order to better address the spectrum of air and space subject matter areas relevant to NATO, and to better support the Joint Warfare Centre and major NATO exercise programmes, JAPCC needs Sponsoring Nations to consider increasing their participation, and needs other NATO nations who may be benefitting from the Centre's work to consider joining.

Budgeting and Finance

Based on the JAPCC Medium Term Finance Plan and taking into account the actual number of assigned staff officers, the JAPCC Budget for 2016 remained just below 900,000 Euros. Our Senior Resource Committee (SRC) continues to provide full support to our budget on the basis of 'minimum military-requirements'. As described in the JAPCC Operational Memorandum of



Understanding, the sponsoring nations contribute to the budget according to the number of staff officers in their bid. The current corresponding annual cost per staff officer is approximately 14,630 Euros. For Fiscal Year 2016, the approved budget of 849,500 Euros was expended primarily on travel, supplies, and services, personnel-related expenditures and replacement of furniture, as well as hard- and software upgrades for automated information systems.

Stakeholders

Our primary customers are NATO Headquarters (Allied Command Operations, Allied Command Transformation, NATO Joint Commands and Air Command) and sponsoring nations. However, the JAPCC does accept Requests for Support (RfS) from other sources via our RfS form, which can be accessed through the JAPCC website. With numerous successful products and ever increasing connections with industry and academia,

the JAPCC continues to build upon its reputation as NATO's pre-eminent advocate for the development and enhancement of Joint Air and Space Power.

The JAPCC Provides Solutions to Address Air & Space Power Challenges

To fulfil our mission, the JAPCC conducts its own research and advocacy as well as responding to the needs of NATO and its member nations. Our Programme of Work (PoW) comprises Projects, Activities, and Tasks, which are dynamic in nature and are adjusted monthly based upon the acceptance of RfS. Independently, the JAPCC also hosts a number of major events, including an Annual Joint A&S Power Conference, the biannual meeting of the Air Operations Working Group (AOWG), the Maritime Air Coordination Conference (MACC), one session of the biannual meeting of Air-to-Air Refuelling WG, the JAPCC Steering Committee (SC) meeting and the Senior Resource Committee (SRC) meeting.

key developments

The JAPCC is vigorously active in areas in which it has Subject Matter Experts (SMEs) available to act. This section summarizes the efforts the organization has made this year in support of NATO's Joint Air and Space Power; however, due to space constraints, these are top-level summaries of activity. For more detail on any specific area, please visit our website or contact us directly.

Joint Air Power Development

The JAPCC's support to Joint Air Power development in 2016 includes the following:

Future Capabilities of Joint Air Power Study. Under tasking from the MC to provide military advice to the NAC regarding the future role of Joint Air Power, ACT built a team that included joint air power experts from across the Alliance. The JAPCC provided experts for the writing and review team, ensuring thoroughly considered, carefully constructed advice was prepared for the NAC. This advice was delivered to the MC in late 2015 and was provided and approved by the NAC in early 2016. This resulted in the tasking by the Defence Policy and Planning Committee to the Bi-SCs to develop the Joint Air Power Strategy.

Contribute Joint Air and Space expertise to Alliance decision-making processes through active leadership of, and participation in, NATO committees, Working Groups and fora.

Joint Air Power Strategy (JAPS). One of the recommendations in the Joint Air Power Capability study (JAPC), completed in early 2016, was to develop a NATO Joint Air Power Strategy. This resulted in a tasker to both strategic commands, with ACT directed to lead the effort but with specific mention in the NAC tasker for inclusion of the JAPCC contribution. The development of a strategy was split in two periods. In the first period (until November 2016), the Ends and Ways were described,

and a proposed definition of Joint Air Power was developed. In the second period (until end 2017), the Means of Joint Air Power will be defined and the two developed documents combined, resulting in NATO Joint Air Power Strategy. The Draft Strategy, was submitted to the NAC in November 2016. JAPCC provided key expertise and support with crafting of language throughout the three Joint Air Power Strategy workshops in 2016. This three workshop process will repeat in 2017 for final development of the strategy document, which will include a set of required capabilities that underpin the Strategy.

Alliance Maritime Air Anti-Submarine Warfare; a Forecast for Maritime Air in the Future Operational Environment. This study was completed in June 2016. Originally requested by MARCOM, it provides an assessment of the current and future state of airborne aspects of anti-submarine warfare. This study reviewed the history of NATO's Cold War ASW juxtaposed against today's political environment, and the current capabilities of the new NATO NCS, including national inventories of MPA and helicopters, to deal with a resumption of significant submarine activity. This study determined four critical findings (lack of MPA inventory, lack of sufficient ASW C2 structure, challenges with technical systems interoperability of ASW forces, shortfalls in doctrine and training) as well as 21 additional findings spread across the DOTMLPF-I spectrum.

To address shortfalls identified in the study, JAPCC continues to remain involved with the Maritime Multi-Mission Aircraft Replacement Team to offer expertise in this area. Furthermore, this study has been cited by Allied Maritime Command as being crucial to their efforts to advance ASW C2 within the Alliance to a more appropriate structure, as well as cited by numerous nations within internal national classified documents being used to generate resources to address capability shortfalls identified in the study.

Future Unmanned System Technologies – Legal and Ethical Implications of Increasing Automation. Published in December 2016, this study outlines the

potential legal and ethical implications of introducing highly automated, unmanned systems to the national inventories of NATO's members and partners. The level of automation built into such systems has reached a level of sophistication at which they are seemingly capable of performing many tasks 'autonomously', with no need for direct human supervision. Additionally, as there is not yet a definition of an autonomous weapon in NATO, it also proposes tiers of automation that may be used as a common baseline within NATO to define what autonomy actually is, where it begins, and how it delineates itself from automation.

Joint Air Power following the 2016 Warsaw Summit – Urgent Priorities.

At the 2016 Warsaw Summit, the Heads of State and Government (HOS/G) of NATO emphasized the need to address shortfalls in essential capabilities and competencies, whereas Joint Air Power is considered to be an essential part of the capabilities and competencies required for an effective implementation of NATO's Essential Core Tasks. Based on this important guidance and direction, in November 2016 the Executive Director of the JAPCC started a study as follow-up to the 2014 Future Vector Project: 'Joint Air Power following the 2016 Warsaw Summit – Urgent Priorities'. The study is being carried out by a small team of

external experts in the field of security, defence, and joint air power with sufficient experience, gravitas, and professional network to exert influence at the highest political and military strategic circles in NATO and its member states. The project is led by the Executive Director, the expert team by Lieutenant General RNLAf (ret.) Freek Meulman. The aim of the project is to provide a coherent set of urgent strategic priorities in the field of Joint Air Power capabilities and competencies linked to the Warsaw Strategic Focus Areas with the intention of:

- Strategically informing, in a timely manner, the discussion of needed capabilities and competencies as part of the NATO Joint Air Power Strategy currently being drafted under the leadership of Allied Command Transformation and to support the achievement of the goals of NATO Forces 2020, set in the 2012 Chicago Summit.
- Providing an input for the upcoming Intermediate NATO Summit in Brussels in 2017 (in line with the requirements and concerns of the HOS/G of NATO as expressed in the 2016 Warsaw Summit Communiqué). If the agenda of this meeting does not focus on major defence related deliverables then the aim is to provide timely input for the February 2018 Defence Ministerial meeting, where the Ministers are expected to agree on the finalized NATO Joint Air Power Strategy.



2016 JAPCC Conference, Essen, Germany.

NATO Concept Development and Experimentation (CD&E). JAPCC is engaged in the ongoing CD&E work and participated in the combined CD&E Working Group and the CD&E Conference in Sofia, 14–16 November 2016. The CD&E Workshop generated and evaluated transformational ideas and concepts through commitment and the pooling of ideas and resources to meet the prioritized shortfall areas that have been identified within the Alliance.

The CD&E Conference supports by exchanging information about ongoing CD&E work in the Alliance, developing products to the benefit of ongoing CD&E work within HQ SACT, and gains the awareness of CD&E methodologies and their practical application.

Baltic Air Force Protection Capability Development.

A further visit to the Baltic Region was conducted over the period 12–27 February 2016 and all three primary NATO airfields in the region were visited. The final project briefing was given at the NATO Air Force Protection (FP) Seminar held in Ramstein during April. Following this, in May, the project was briefly discussed at the NATO Force Protection Working Group (FPWG), and this event marked the handover of follow-up actions to the NATO Command Structure (NCS). The project has delivered individual FP analysis documents for each of the Baltic Air Bases, the Control and Reporting Centre (CRC) at Karmelava, Lithuania, and all of the Baltic Radar Sites. A Summary Document was produced for the Executive Director, which was subsequently passed to the Director. Whilst the classification of this work is such that outcomes cannot be discussed here in detail, it has now resulted in further, significant follow-up work for both AIRCOM and SHAPE as a result of the challenges identified within the JAPCC Project. It is likely the JAPCC will remain engaged with this follow-up work for some months to come. Further Requests for Support (RfS) can also be expected as a result of this project.

Air Warfare Communication in a Networked Environment. This project was approved in August 2015, and is currently in final drafting stages with an expected publication date of May 2017. The advent of technology that improves communication methods across the air domain offers an opportunity to explore adjusting the



level of Air Command and Control across NATO. Clusters of disparate platforms will be soon allocated and combined to function as specific force packages, organized by capability and hierarchy and ideally irrespective of service, country, or degree of human presence. Networked environments are both evolutionary and revolutionary. As advancing technology continues to increase both the speed and quantity of communication, humans and artificial intelligence will have to develop new 'social contracts' in order to comply with and execute the Commander's intent. This study reviews the evolution of C2 viewed through the lens of communication and subsequent cluster/platform behavioural changes, and applies that to future concepts of Air Power execution to shape movement toward generating improved shared situational awareness and tactical advantage, thereby enabling faster decision-making processes at the Air Component and Joint Force Command level.



NATO/EU Air Transport Training, Exercises and Interoperability. Published in December 2016 this project is a follow up to our 2011 study. First, it reports which of our solutions/initiatives from the 2011 study have been initiated or completed. Then, we re-examine the feasibility of the remaining dormant proposed solutions, identify any additional critical problems, and ultimately encourage NATO to adopt the best multinational initiatives to improve the standardization and interoperability of AT among NATO nations. This study primarily focused on training, exercises, and interoperability.

Command and Control of a Space Surveillance and Tracking Network. Based on a Request for Support from the Italian Air Force Staff, this project aims at analysing and defining the best solution for a C2 model for a multinational SST network. The project will also emphasize the advantages of an EU SST network for

the Alliance and promotes the importance of SSA and SST in support of NATO military operations. This project is expected to be completed by fall 2017.

Doctrine, Standards, and Procedures

Over the last year, the JAPCC led and participated in the following doctrine efforts:

NATO Force Protection Working Group. The JAPCC is the Chair of this Working Group's Doctrine, Organisation and Interoperability (DOI) Panel. At the first event, held in Brno, Czech Republic, and hosted by the CBRN COE, the JAPCC ran a workshop to revise the JAPCC-authored MC-0610, Military Committee Policy for FP. The purpose of this policy is to prevent the challenges that dogged NATO in Afghanistan during the ISAF era from recurring during any future operation. During the second meeting, hosted by the Portuguese Navy in

Lisbon, the JAPCC-chaired panel was run as a Writing Team that focused on incorporating the comments received during staffing into the FP Policy document that was developed at the previous meeting. As a result of this activity, a fully mature, up-to-date, and fit-for-purpose NATO FP Policy document will be submitted by Chief of Staff SHAPE to the Director International Military Staff in the first quarter of 2017. It is envisaged that the document will be presented to the full MC sometime within the first half of 2017. An MC-endorsed FP Policy represents the first step in a longer-term plan to develop a broader Policy for NAC approval. The work to firstly revise C-M(2002)50[1] and then merge it with FP Policy will be the next stage of this process. A DOI Panel/Writing Team Meeting to take this work forward is scheduled to take place at the JAPCC from 19–23 June 2017.

AJP 3.3 Allied Joint Doctrine for Air and Space Operations. The JAPCC has the custodianship of NATO's doctrine on joint air operations, AJP 3.3, Allied Joint Doctrine for Air and Space Operations. The custodian succeeded in drafting a new version of the AJP-3.3 and having it ratified and promulgated (old version was dated 5 November 2009). Simultaneously, the custodian prepared the Request for Feedback required for the next edition of AJP 3.3. A new Doctrine task is to be

expected early 2017, which marks the starting point for drafting a new edition (Edition C). A first draft of Edition C is foreseen by the end of 2017.

AJP 2.7, AIntP-14, and AIntP-16, in the field of Joint Intelligence Surveillance and Reconnaissance (JISR).

NATO assigned high priority to the AJP 2.7 as well as AIntP-14 standardization tasks, putting them on the fast track to achieve NATO JISR IOC in 2016. The JAPCC supported the development of the above-mentioned documents with active membership in the respective writing teams and delivered significant portions. AJP 2.7 was promulgated in February 2016, and AIntP-14 in October 2016. Starting in June 2016, the JAPCC began supporting the development of AIntP-16 on 'Intelligence Requirements Management & Collection Management (IRM&CM) Procedures', a new document needed to provide the link between Joint Intelligence (AJP 2.1) and JISR (AJP 2.7 and AIntP-14). The JAPCC complemented this activity by participating in the regular ACO IRM & CM Panels as well as the NATO Joint Intelligence Working Group (JINTWG).

AD 70-01 (Alert States and Alert Measures) rewrite.

Following the January 2015 terrorist attacks in Paris, the JAPCC received an Urgent Request for Support (URfS)



to review elements of the Allied Command Operations (ACO) Security Directive. The RfS was accepted and a JAPCC Project initiated. The JAPCC delivered its initial response on 2 May 2015. This was circulated for comment, and the findings of the work were briefed to a number of interested parties. Based on feedback received, the original document was subsequently updated, and as feedback included areas not previously addressed, an addendum to the original document was also produced. The final document plus addendum were delivered on 3 June 2015. These documents were hard-hitting and recommended some fairly fundamental changes both in approach to the subject and in content of the document. The JAPCC proposals have, for the most part, been accepted by the customer. As a direct consequence of this work and linked to the JAPCC's authorship of NATO FP Policy, the NATO Office of Security (NOS)¹, requested JAPCC assistance, through SHAPE, to assist in the revision of NATO Security Policy, specifically, C-M (2002)50, *Protection Measures for NATO Civil and Military Bodies, Deployed NATO Forces and Installations (Assets) Against Terrorist Threats*, dated 17 June 02. A meeting was held at SHAPE over the period 16–17 November 2016 to discuss a way forward with this work with agreement being reached that the JAPCC-based work on Alert Measures and

States would be published as a stand-alone update to Alert States at the earliest opportunity and that C-M (2002)50 would be updated and merged with FP Policy during the course of 2017.

ATP 3.3.4.1/3/4 Custodianship. The new editions of these studies were reviewed during the year. They are now under silence procedure awaiting promulgation by the NSO. As the JAPCC holds the NATO ATWG Chairmanship, it continues to manage the focus of the AT community. The JAPCC also continues to be a contact point for coordination between NATO and EU organizations involved with AT.

ATP 3.3.4.2. With the addition of a dedicated AAR SME in mid-2016, the JAPCC has remained active in the management of AAR Doctrine, Standards, and Procedures. In addition to continuing as the NATO AAR WG Chair, the JAPCC continued its management of the global AAR compatibility and clearance matrix and built upon its relationships with other key AAR stakeholders, producing, updating, and disseminating standardized AAR documents (6 STANAGs/4 NATO SRDs/1 SRD template/20 National SRDs). This year also saw the continued use of the Standardized Heavy Air Refuelling Course, a course created by JAPCC and AIRCOM



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personnel to train JFAC AAR planners and executioners, culminating in the graduation of the 63rd qualified individual. During the latter part of 2016, preparations continued for the 2-day JAPCC-led, Global Air-to-Air Refueling Strategy (GAS) Team-supported, EATC-sponsored AAR Clearance Request Process Training and Table Top Exercise to be held in January 2017. This TTX will focus on expanding the understanding of AAR Clearances and how they are obtained.

NATO Helicopter Underslung Load (USL) Certification.

Within the NATO Helicopter Inter-Service Work Group (HISWG), the Helicopter Underslung Load Equipment (HUSLE) panel acts as custodian of STANAG 2445, defining minimum criteria in the area of helicopter USL operations. To improve interoperability within helicopter USL operations, the HUSLE panel started a project to investigate the feasibility of forming a NATO accepted USL certification system. The JAPCC has supported the HUSLE panel by providing a white paper 'NATO Helicopter Underslung Load (USL) Certification'. The white paper provides guidance to the HISWG and HUSLE panel, and explores the requirements for establishing a NATO USL certification system. Furthermore, it provides recommendations for NATO and nations to improve helicopter underslung operations interoperability. In November 2016 the final draft of the white paper was forwarded to the HISWG and HUSLE panel for final review. Publication is anticipated in mid-2017.

ATP-49G Custodianship. In March 2016 the ATP-49G Edition 1 was promulgated. To prepare for future updates, some inputs and suggestions, concerning references to STANAGs in this Edition 1 were received. Due to personnel changes within the JAPCC, these suggestions were not presented for approval on the 43th HISWG held in September 2016. The ATP-49G custodianship will remain within the JAPCC. JAPCC will present at the 44th HISWG meeting in 2017.

Chemical, Biological, Radiological, Nuclear (CBRN) Defence. The JAPCC has been working since August 2016 on CBRN doctrinal documents as a contributor, attending different workshops, meetings, and panels and ensuring air equities are represented in this field. Starting from August 2016, one of the JAPCC sponsoring Nations decided to discontinue the provision of the

CBRN Subject Matter Expert, and that post is now unbid. A mutual cooperation agreement between JAPCC and the Joint CBRN Defence CoE has been established to ensure JAPCC's ability to continue the support on Air-related CBRN issues.

Due to the evolution of the CBRN threat, the review of doctrinal documents is an ongoing effort.

Education/Training and Exercises/Evaluation

During 2016, the JAPCC was active in the following ETEE areas:

Support to Major NATO Exercises. In June, JAPCC supported AIRCOM during its annual Exercise **Ramstein Ambition II**. JAPCC provided an OPFOR air team to Exercise Control (EXCON), which executed a highly dynamic air scenario for the training audience.

JAPCC was asked by the Joint Warfare Centre (JWC) to support both the development of the exercise scenario and the actual exercise execution for Exercise **Trident Juncture 16**. Starting with the development of the exercise scenario, the JAPCC was heavily involved and was successful in supporting JWC and the exercise with relevant Air & Space Power subject matter expertise. In October, a combined JAPCC team deployed to Stavanger, Norway, and to Naples, Italy, to support the execution phase of the exercise. JAPCC personnel were augmented by SMEs from CAOC Udem and 13 Squadron, RAF Waddington, all of whom deployed as members of the JAPCC team. The deployed JAPCC team, as part of the overall OPFOR concept, challenged the Training Audience with a host of modern warfare threats including Anti Access/Area Denial (A2AD).

Kalkar Sky III 2016 was a computer-assisted exercise at the Component Command level in preparation of NRF 2018, for which German Air Operations Command (ZLO) will act as Joint Force Air Component (JFAC) Headquarters. JAPCC supported the exercise by providing five SMEs who assessed the performance of the German National (NATO Force Structure) JFAC, leading to the declaration of Full Operational Capability.



JAPCC as the Department Head 'Space Support to Operations'.

Air Transport Exercises. The JAPCC participated in the development of the European Advanced Air Transport Training Course (EAATTC). JAPCC's active contribution to the Educational and Training Ad Hoc Working Group resulted in the creation of a new training course for instructor pilots who will teach during EAATTCs, designed to give them a higher level of standardization and expertise.

European Air Group (EAG) VOLCANEX/DOBEX 16.

This Force Protection event was run over the period 16–29 October 2016 at Lechfeld Airbase, Germany. The EAG bases its approach to the FP of deployed Air Assets on the JAPCC-authored AJP-3.3.6, *NATO FP Doctrine for Air Operations*. VOLCANEX is more routinely run as a FP Command and Control (FPC2), Command Post Exercise (CPX) but, this year's event saw a complete Deployed Operating Base Exercise (DOBEX) being run that included live exercise play with 600+ participants. Given the experience in commanding large multinational FP organizations that is resident in the JAPCC, the original task was to mentor the FP

Commander. However, upon arrival, the task was changed to a request to produce a FPC2 think-piece that could be used as a basis for the EAG to develop a standardized Air FPC2 construct for the future. The paper was developed over the course of the exercise, based on observations and discussion with participants and EAG personnel. The initial draft was provided to the EAG Staffs on 25 October 2016, and a more mature piece of work was subsequently delivered on 14 December 2016. Feedback on this document is expected in early 2017 and the EAG will host a meeting, with the JAPCC and the Nations, in order to determine a way ahead. It is likely that the Air FPC2 construct defined will be tested during VOLCANEX 17 to be held at RAF Honington in the United Kingdom over the period 7–20 May 2017. This activity demonstrates the relevance and impact of the JAPCC as it is directly shaping the way nations both think and operate.

Education and Training on Space Operations. On 24 May 2016, the Assistant Director signed the Appointment Letter that officially confirms the designation of

the JAPCC as the Department Head (DH) for 'Space Support to NATO Operations'. As the DH for Space, the JAPCC will coordinate findings and develop solutions for the E&T requirements identified by the Requirements Authority (SHAPE ACOS J3).

NATO School Oberammergau (NSO) Force Protection Course. The JAPCC is the Office with Principle Responsibility (OPR) for the NSO-run NATO Force Protection (FP) Course. Since taking responsibility for the course in 2009, the course has been re-written completely once and has undergone two substantial reviews/updates. The last review was conducted in preparation for the 2016 courses; a completely new syndicate work task was developed for use during the second course of 2016. The third course saw an increased number of Supporting Speakers attend to provide instruction. This enhanced both the quality and the Joint nature of the course. As previously reported, the course is one of the best received at the NATO School with a 85%+ satisfaction rating from students. The course remains relevant and up-to-date by offering insights into the FP challenges posed by the contemporary operating environment. The next iteration of the course runs in March 2017.

Pilot NATO Advanced Force Protection Course. This event took place at Joint Force Command Naples (JFCN) over the period 4–10 December 2016. Unfortunately, due to workload and competing priorities, the JAPCC was unable to attend. However, a number of lessons were provided for others to deliver and a substantial think piece was produced for discussion during the course. It is highly likely that the JAPCC will remain engaged with this work, which is likely to result in the development of a course that will be run annually at the NATO School, Oberammergau.

Force Protection Briefing to Luftwaffe Senior Officers. The JAPCC supports two events each year at the German Infantry Training Centre, Hammelburg. The first event held on 6 June 2016 was for Luftwaffe Senior Officers and introduces them, over the course of a week, to the concepts of protecting air assets in the complex air/ground environment. The JAPCC is recognized as the NATO lead for Air FP and as such, presented the keynote opening address. The briefing focussed on the challenges to be faced and NATO's approach to those challenges.

On 14 November 2016 the JAPCC delivered a briefing to newly appointed Objektschutzregiment Battalion Commanders and other officers filling executive positions within the Luftwaffe's FP structure. The JAPCC presented the keynote, opening address to set the context for the remainder of the course. The briefing focused on NATO's challenges in providing effective and resource-efficient FP for Air Assets operating in high, multi-dimensional threat environments, often in harsh/complex terrain, and sometimes at distance from the home base.

Cyber Support. The JAPCC continued its efforts to support both greater awareness of cyber considerations in operational planning and the practical exercising of NATO Command Structure staffs. Specific activities included scripting, Exercise Control and playing Cyber Blue and Opposing Forces (OPFOR) during the NATO Reaction Force Exercise Trident Juncture 16. JAPCC also supported the advancement of the Cyber Defence Action Plan (CDAP) via membership in the ACO-led Cyber Defence Working Group. Such participation and membership will continue in 2017.

Missile Defence

In preparation for the Air and Missile Defence Committee meeting, JAPCC is contributing to two 'Panel on Air and Missile Defence' (PAMD) drafting groups. Several documents were created during 2016 by the DGs:

- Vision for Integrated Air & Missile Defence (IAMD);
- Updating IAMD policy;
- Paper on IAMD issues within the NDPP;
- Observation Paper on the Alliance Future Surveillance and Control Capability (AFSC) from an Integrated Air and Missile; Defence (IAMD) Perspective.

Since mid-2015, JAPCC has been an active member of the multinational BMD campaign Nimble Titan and fills a position in the War Game Control Group. Furthermore, JAPCC provides the deputy in the Operational Control Group for Europe's biggest IAMD exercise, Joint Project Optic Windmill to be held in June 2017.

Space Support to NATO Operations

The JAPCC continued to champion the evolution of Space Power within NATO, in part through their participation in the Bi-Strategic Command Space Working Group (NBISCSWG), which reports directly to the NATO Military Committee (MC) and is working towards evolving Space support for alliance military operations. Since June 2016, the NBISCSWG has a new mandate, 'NATO's approach to space – follow on work'. The relevant action plan will be established at the beginning of 2017. In the frame of the new mandate, the JAPCC will in particular continue to foster the Awareness/Integration of Space into NATO exercise play and contribute to Space Education and Training through its new role as Department Head for Space support to operations.

Maritime Air

The JAPCC has provided SME support on Air and Space Power to the Multinational Aviation Training Centre (MATC) initiative to analyse further formulas for cooperation between the JAPCC and the supporting nations. In the past, JAPCC has had a low level of coordination with MATC, stemming from previous projects regarding standardization of aspects of helicopter employment. In 2016, MATC inquired about increasing the level of support into fighter training syllabi and potentially into standardization regarding the use of Maritime air. This potential cooperation would be focused on improved interoperability, standardization, and qualitatively improved air capabilities through scenario building and doctrinal and procedural assessment support and will potentially result in future cooperation between MATC nations (air and maritime-air forces).

Active Engagement

The JAPCC continues to actively engage with various air power stakeholders through working groups and other face-to-face meetings. These engagements included but were not limited to:

The JAPCC Annual Conference. On 4–6 October 2016, JAPCC's Annual Conference 2016 was hosted in Essen, Germany. It considered whether NATO's employment of air power over the past two decades in

operations, where environmental conditions have been neither contested nor congested, had resulted in a reduced level of preparedness – both doctrinally and in terms of training – for alliance air power to be utilized optimally in a degraded environment. This is a broad topic but does not appear to have received the attention it deserves. Recent operations in Iraq and Afghanistan have been conducted in environments where our adversaries lacked the technical sophistication to deny us complete air supremacy. Modern air power is a high tech business reliant upon unrestricted and assured access to the entire electromagnetic spectrum, space, and increasingly, cyberspace in order to achieve full effectiveness. Environmental degradations, be they imposed by an adversary or created by natural phenomena, can limit this access and have a massively debilitating effect on the ability to successfully employ air power across all its roles. In other words, the conference was seeking to consider whether this is an area in which NATO has potentially taken its eye off the ball. JAPCC's intention was to open a conversation among NATO's strategic joint air power leaders from all services, providing them with fresh ideas on actions required in this area.

Think Tank Forum (TTF). The third 'Joint Air and Space Power Think Tank Forum' was conducted in Madrid from 5–7 April 2016, graciously hosted by the Spanish Air Force. The objective of this forum was to share information regarding the POW, composition and responsibilities of Think Tanks, Air Warfare Centres, Air Force HQs, and Military Academies of JAPCC's Sponsoring Nations. Participants discussed how to better support NATO/AIRCOM in fostering multinational cooperation and preventing duplication of effort. The Forum was most beneficial in identifying vectors for mutual cooperation and outlining ways for more efficient coordination of the various institutions' projects.

Air and Space Power Network (ASPN). The Air and Space Power Network Meeting was hosted by the JAPCC from 8–9 November 2016 with participants from AIRCOM, the NATO HQ (Director Armament and Aerospace Capabilities), the European Defence Agency (EDA), the European Air Group (EAG), the European Air Transport Command (EATC), the Competence Centre for Surface-Based Air and Missile Defence (CC SBAMD)



Maritime Air Coordination Conference, 2016.

and the NATO Support & Procurement Agency (NSPA). The forum helps to develop better synergies within the Air & Space Power community. Issues included creating mutual awareness regarding focus areas, informing about current programmes of work and ongoing projects, as well as establishing objectives for follow-on collaboration.

NATO's Long-Term Military Transformation (LTMT).

The NATO Long-Term Military Transformation (LTMT) programme addresses the full range of security challenges, applies a unifying vision, and advances a conceptual framework for forces and capabilities required to succeed in future operations. To support this programme, JAPCC took part in both the Strategic Foresight Analysis (SFA) as well as the Framework for Future Alliance Operations (FFAO) Workshops.

The combined SFA/FFAO workshops were conducted in Luzern (March 2016) and Bydgoszcz (September 2016). The SFA products are linked to NATO Defence Planning Process (NDPP) through informing NDDP Step 1 – Establish Political Guidance. The SFA also serves as the foundation for the FFAO, which feeds the

NDPP in both Step 1 and Step 2 – Determine Requirements. The specific SFA workshop results will be captured in the SFA 2017 Report.

Develop Relationship with EPRC (European Personnel Recovery Centre). Collaboration by JAPCC with the new JPR entity EPRC is been established. JAPCC provides expertise to collaborate for the future development of JPR inside and outside NATO. For this purpose JAPCC is positively engaged with EPRC in building and updating the APROC (Air Centric Personnel Recovery Operatives Course) edit by EPRC. At the same time JAPCC is the liaison entity between ACT and EPRC on JPR.

COE Programme of Work (POW) Workshop. The primary purpose of this two-part workshop is to funnel NATO's inputs to the 2017 COE PoW. As a result, JAPCC received 28 official RfS to support NATO HQ and its subordinate commands. In accordance with NATO-wide RfS for POW-2017, JAPCC will engage in the requested activities, projects, and working groups on the subjects of NATO exercises, the Urbanization Concept, Lessons Learned, remotely piloted aircraft

systems, Space, NATO Defence Planning Process (NDPP), Strategic Foresight Analysis (SFA), Framework for Future Alliance Operations (FFAO), and Logistics and Maritime Air Coordination.

NATO Air Force Protection Seminar. The JAPCC attended the NATO Air Command (AIRCOM) FP Seminar over the period 17–21 April 2016. The JAPCC's primary presentation focused on its work in support of the Baltic Region. The outcome of this presentation was the endorsement of the JAPCC's work and agreement that AIRCOM would now 'adopt' this project and, in conjunction with SHAPE, work to resolve the challenges identified within the report. In addition, discussions on policy, doctrine, training and the requirement to establish an Air Minimum Military Requirement (MMR) for FP, were all supported during the course of the seminar.

Maritime Air Coordination Conference (MACC). The Bi-SC MACC 2016 was co-chaired by Commander Maritime Air NATO (Rear Admiral (LH) Ernst, DEU N) and JAPCC Assistant Director (Air Commodore Spit, RNL AF) and hosted at JAPCC 10–12 May 2016. The theme of this year's conference was 'The Maritime Air Network and Maritime Air Support to Anti-Submarine Warfare'. During her introductory speech, Air Commodore Spit emphasized how Maritime-Air Coordination is integrated into many JAPCC research projects and studies. She also highlighted the willingness of the JAPCC to assist in the continuing effort to improve coordination between the two domains, emphasizing the role and capability that this Centre of Excellence can add to this task. Finally, Air Commodore Spit thanked Admiral Ernst for his vision and leadership as he transitioned out of his post as Commander, Maritime Air NATO. The JAPCC then provided the results of a yearlong study into Maritime Air Anti-Submarine Warfare, which has been lauded at MARCOM and NATO HQ and is being leveraged by both NATO organizations and NATO Nations to address many of the current shortfalls identified in the study.

Aircraft Cross-Servicing (ACS). JAPCC is supporting AIRCOM by providing guidance and recommendations on the most effective and efficient way to rebuild the ACS capability in the area of processes, organizational

structure, and documentation, and assess potential additional ACS capability options for future employment to enhance this operational capability.

JAPCC Custodianships and Involvement in NATO Activities and Working Groups

JAPCC personnel fill chairmen, co-chairman, and panel positions on numerous NATO steering bodies as well as providing custodianship to a number of NATO Doctrine documents, as highlighted below.

Chairmanship

- NATO Air Force Armaments Group (NAFAG);
- Vice Chairman – ACG-2 (Effective Engagement);
- Air Operations Working Group (AOWG);
- Maritime Air Coordination Conference (MACC Co-Chair);
- NATO Air-to-Air Refuelling Working Group (AAR WG);
- NATO Air Transport Working Group (ATWG);
- Doctrine, Organisation, and Interoperability (DOI) Panel, NATO Force Protection WG;
- Aerial Refuelling Systems Advisory Group (ARSAG) Interoperability Working Group No. 5.

Exercise/Campaign

- Nimble Titan 16/18, Wargame Control Group;
- Exercise Director Joint Project OPTIC WINDMILL (JPOW);
- Deputy Chair Operational Control Group JPOW;
- Constructive OPTIC WINDMILL 16 (COW);

Panel Member/Working Group

- Allied Future Surveillance & Control Project Group (AFSC PG);
- JPR Forum;
- Air & Missile Defence Committee (AMDC);
- Ballistic Missile Defence Operational User Group;
- Force Protection (FP) Task Force;
- ARSAG Participation to Develop UAS AAR Procedures;
- Helicopter Inter Service Working Group (HISWG);
- European Personnel Recovery Centre (EPRC) calendar;
- Joint Capability Group Unmanned Aircraft Systems (JCGUAS);
- Joint Capability Group Ground Based Air Defence (JCGGBAD);

- Maritime Operations (MAROPS) Working Group;
- Global Helicopter Operations from Ships other Than Aircraft Carriers (HOSTAC) WG;
- Multinational Through-deck and Aircraft Carrier Crossdeck Operations (MTACCOPS) Working Group;
- ACG 2 – Effective Engagement;
- Amphibious Operations Working Group;
- NATO Urbanization Working Group;
- NATO Search and Rescue (SAR) Panel;
- Next Generation Rotorcraft Capability Team of Experts;
- NATO Single European Sky ATM (Air Traffic Management) Research (SESAR) Integrated Project Team;
- NLD BMD Policy Group;
- NLD Knowledge Network on BMD;
- Panel on Air & Missile Defence (PAMD);
- Under Water Warfare Coordination Group (UWWCG) Maritime Multi-Mission Aircraft (M3A) Replacement Team Panel Member;
- ACO IRM&CM Panel;
- Joint Intelligence Working Group.

NATO Policy/Doctrine/TTP Support

- AJP-3.3 Custodian;
- AJP-3.14 Allied Joint Doctrine for FP Custodian;
- AJP-3.3.3 Air-Maritime Coordination (Part of AMCWG);
- ALP-4.3 Air Forces Logistic Doctrine and Procedures (contribution);
- ATP-3.3.3.1 Maritime Air Coordination Procedures;
- AIntP-16 IRM&CM Procedures;
- ATP-3.3.4 (VOL II) Custodian;
- ATP 3.3.4.1 Custodian;
- ATP-3.3.4.2 (ATP-56) Custodian;
- ATP-3.3.4.3 Custodian;
- ATP 3.3.4.4 Custodian;
- ATP-3.3.6 Custodian;
- ATP-49G Custodian;
- MC-0610, FP Policy for NATO-Led Operations Custodian;
- AD 80-25 ACO Force Protection Directive Custodian;
- MPP-02 Vol. II.

Participation in the Air Defence Committee and Subordinate Bodies. The JAPCC remains an active participant in the Air and Missile Defence Committee and the PAMD and its subordinate Drafting Groups. Through continuous participation in these various bodies, the JAPCC supports the development of Integrated Air and Missile Defence policy.

Support to Norway. As a result of the visit to Oerland Air Base in late 2015, the JAPCC was invited to return to over the period 1–5 February 2016. This visit had two separate focus areas. Firstly, to present an overview of the Baltic Air Force Protection Capability Development Project and second, to run an in-depth FP Analysis Workshop designed to assist the base in revising its Security (Sy) and FP plans, prior to the deployment of F-35 in 2017. Feedback was extremely positive and a further RfS was received asking for a follow-up visit, to review the work produced. However, as concurrent activity to supporting VOLCANEX 17, the JAPCC worked in the margins of the exercise with the FP Chief from Oerland Air Force Base, to review its revised plans produced to date. Concurrent activity during VOLCANEX provided an opportunity to continue to provide support to a JAPCC Sponsoring Nation (SN) and demonstrated the JAPCC's flexibility, commitment to support its SNs, and relevance. This work in support of Norway is linked to both the introduction of Fifth Generation platforms into service and current Alliance activity in support of the Member States in the Baltic Region.

SHAPE Request for Support. The JAPCC FP & DAT SME has long championed the alignment of the Allied Command Operations (ACO) Force Protection Working Group (FPWG) with the Military Committee Joint Standardisation Board (MCJSB) and has produced a number of papers and supporting briefings on the subject dating back to 2009. The principle purpose of the alignment is to bring visibility of NATO Joint FP challenges to Brussels. SHAPE has accepted the need, and the NATO Office of Standardisation (NOS)/MCJSB has agreed to the alignment. SHAPE requested the support of JAPCC at NATO Headquarters, Brussels, on 12 September 2016 at a meeting with NOS to discuss the mechanisms for alignment given the JAPCC's experience and history with regard to this subject. The meeting delivered extremely positive results with agreement reached that alignment with the MCJSB will be an interim measure but, in the medium- to long-term, the FPWG should attempt to morph into an entity, possibly a committee, in its own right. This said, current FPWG work on Policy should now already be presented directly to the Military Committee (MC). It was agreed that the first meeting of the FPWG in its new format will take place at NATO HQ in October 2017.

This is a major success for the JAPCC in advocating for the development of FP capability within NATO and whilst representing only an interim step, it is the culmination of eight years of work.

The Hague University of Applied Sciences Security and Safety Professionals Seminar. This event took place in Utrecht over the period 3–4 May 2016. Professionals from the military, industry, and academia came together to share experiences and exchange best practices. The JAPCC presented on NATO Air's approach to FP. The presentation attracted substantial positive feedback, and a number of participants have engaged subsequent to the seminar to learn more about NATO and national militaries' approaches to Sy and FP in complex, high-threat environments. The JAPCC has also been asked to contribute to the development of course syllabi for the university and is mentoring students in the development of their degree theses.

The Hague University of Applied Sciences – Counter Terrorism Brief. This event took place on 1 December 2016 and consisted of four, 1-hour presentations with subsequent discussion. This activity is conducted as the JAPCC contribution to the university sponsored, Safety and Security Professionals Network. The network connects the JAPCC to academia and industry and provides a forum for discussion and the exchange of ideas. The JAPCC contribution is to support the university in the development of its syllabus and provide students with an insight into current military Force Protection and Defence Against Terrorism challenges. This activity demonstrates the JAPCC's reach beyond the military.

United Kingdom Air Command Engagement. The UK FP Force was represented at the AIRCOM FP Seminar held at Ramstein in April 2016. At this event, the JAPCC briefed the outcomes and recommendations from the 'Baltic Air Force Protection Capability Development Project'. The UK Contingent was extremely interested in this work from both an Air Plans (A5) and Air Operations (A3) FP perspective. This resulted in the JAPCC briefing and discussing its project work twice at UK Air Command during this reporting period. The UK is engaged with the Baltics as part of the 'Trans-Atlantic Capability Enhancement and Training (TACET) Initiative'

and was eager to use the JAPCC's work as a basis for its support to the Baltic States. The JAPCC work will likely reduce significantly the UK's need for reconnaissance and/or fact-finding visits, before the actual work of capability enhancement and training begins. This is one of the first of what would appear to be many potential positive outcomes of this recently completed, high-value project.

Allied Rapid Reaction Corps (ARRC) Force Protection Seminar. The ARRC is keen to develop its understanding of NATO's current approach to FP. As a result, the JAPCC was asked to support this event over the period 31 August–2 September 2016 with a briefing on the challenges in the Baltic region. This briefing proved an eye-opener for many as it highlighted the myriad challenges that will likely emerge, as the concept of enhanced Forward Presence (eFP) is developed, with the ARRC as a key player.

Deputy Commander Operations Visit. The Royal Air Force Deputy Commander (Operations) (DCOM Ops) visited the Combined Air Operations Centre (CAOC), Uedem on 30 November 2016. The JAPCC was provided with an opportunity to brief the DCOM and this resulted in an extremely successful discussion and exchange of ideas. As a result, work is ongoing within the JAPCC to develop an enhanced Mission Brief that better demonstrates the relevance of the organization by highlighting the value that the JAPCC brings to both NATO Air and the Nations. The revised Mission Brief will also be used as the central tool in a reinvigorated JAPCC Engagement Plan for 2017.

NATO Counter-Improvised Explosive Device (C-IED) Briefing Day. This annual event was held at NATO Headquarters, Brussels on 13 December 2016. Whilst the JAPCC has no current C-IED projects, it maintains a watching brief in C-IED arena to ensure that the air aspects of this subject are adequately represented. The JAPCC had no speaking role at this event, but it was interesting to note that a number of concepts either proposed or championed by the JAPCC in the past were discussed by other parties.

1. Note that both the NATO Office of Security and the NATO Office of Standardisation use the abbreviation 'NOS'.

2017 outlook

2017 Focus Areas

Introduction. JAPCC constantly reviews and transforms its Focus Areas, PoW and organizational structure to ensure that it can continue to address current and future challenges and to provide key decision-makers effective solutions on Air and Space Power challenges, in order to safeguard NATO and the Nations interests. The 2017 JAPCC Focus Areas were approved by the Steering Committee at their annual meeting in June 2016. In the broadest sense, the JAPCC could address any topic or capability within the realm of Air and Space Power, but closely following current developments throughout the world and within NATO, there are several topics requiring more prominent attention than

others. At the Warsaw Summit in July 2016, Alliance leaders committed to continuing to deliver on key capabilities, including Ballistic Missile Defence, Joint Intelligence Surveillance and Reconnaissance, and Alliance Ground Surveillance. They also recognized cyber(space) as a new operational domain, in addition to land, air and sea, to enable better protection of NATO's networks, missions and operations. These subjects, amongst others, provide the focus for the JAPCC's programme of work for the year to come.

Air and Space Power Force Evolution. It has been argued the European members of NATO must be ready, as a minimum, to autonomously face a Crisis Management Operation at the level of a Small Joint



SC Meeting 2016.

Operation – Air Heavy. Without a full spectrum of Air and Space Power capabilities and competencies to cope with such a contingency, there is an increased likelihood NATO may not be capable of adequately dealing with emerging security challenges at the periphery of NATO's geographical Area of Operational Responsibility.

Space. NATO's operations and missions are heavily dependent on data and services from space assets, including the areas of communications, surveillance and reconnaissance, global positioning and navigation, timing, meteorology, friendly force tracking, and early warning.

In 2017 JAPCC will continue to work to mitigate NATO's space dependencies within the construct of the BiSCSWG (NATO Bi-Strategic Command Space Working Group). Additionally, in accordance with the new mandate for the BiSCSWG, JAPCC will contribute to developing a framework for NATO's Policy on Space in the field of Space support to NATO operations.

In the focus area of 'Education and Training', JAPCC – as the Department Head for Space – will prepare and conduct the Annual Discipline Conference (ADC) for further improvement of NATO E&T in the 'Space Support to Operations' discipline, coordinating, if needed, the creation of new courses for specific training audiences. In addition, JAPCC's Space SMEs – in close cooperation with other Space experts from NCS – will support the 'TRIDENT JAVELIN 17' exercise, with the objective of integrating space capabilities as a transformational activity in a major NATO Exercise, and of assessing and refining concepts, C2, mechanism and relationships for space support to operations.

Finally, in late 2017, the JAPCC will publish the study 'Command and Control of a Space Surveillance and Tracking Network', an analysis of a C2 model to task a multinational network of SST sensors in order to populate a database of spatial debris and man-made objects.

Promote and showcase the effectiveness and relevance of Joint Air and Space Power as the critical elements in Air, Land and Maritime operations.

Training and Exercises. JAPCC will continue to provide substantial support to NATO exercises in 2017. Events to be supported will be Ramstein Ambition 17 at AIRCOM and Trident Javelin 17 at the Joint Warfare Centre (JWC) in Stavanger. JAPCC also provides continued support to the JWC in developing and updating exercise scenarios to include the latest developments in joint (and aerial) warfare.

NATO Command Structure (Deployable Air) Command & Control. NATO is implementing a fully interoperable Air Command and Control System (ACCS), which will provide for the first time a fully integrated set of tools to support the conduct of all air operations in real-time operations. ACCS also has the option to perform planning and tasking for air operations (e.g. OPTASK LINK, ACO etc.) which is referred as the non-real time environment. ACCS will make available the capability to plan, direct, task, coordinate, supervise, assess, and report on the operation of all allocated air assets in peace, crisis, and conflict.

Additionally, NATO is faced with a shortfall in Air Command & Control manning, primarily due to over-reduction of personnel at AIRCOM and the fact that the augmentation system for Joint Force Air Components is not institutionalized. This is exacerbated by the fact that some air forces seem reluctant to maintain or expand their knowledge of Air C2 processes and, as a result, the overall knowledge of these processes within NATO is bleeding away, sometimes at an alarming rate. JAPCC also suffers from a shortfall in manning with only one Air C2 position filled. However, the importance of Air Command & Control requires that JAPCC remains actively involved in most of these topics to the extent that limited manning allows.



Post Warsaw Summit Meeting 2016.

Joint ISR. NATO needs a JISR capability that will provide for the coordinated collection, processing, dissemination and sharing within NATO of ISR material gathered by the NATO Alliance Ground Surveillance (AGS) system, the NATO Airborne Early Warning and Control Force (NAEW&C Force) and nationally supplied ISR assets. As NATO pursues a replacement for the current NAEW&C capability, it must consider how the implementation of this replacement will be coordinated and synchronized with NATO AGS and national ISR systems. JAPCC is a member of the Alliance Future Surveillance Project Group (AFSPG) which is responsible for the development of the AWACS replacement capability, however JAPCC has not been represented in any recent JISR specific working groups or committees due to the long standing vacancy of the ISR positions in the C4ISR & Space branch.

Missile Defence. At the 2014 NATO summit in Wales, it was decided to regularly review the implementation of NATO BMD capability. In April 2016, Initial Operational Capability of NATO BMD was validated and IOC was

declared during the 2016 Warsaw Summit. There is one extra step on the road to FOC for NATO BMD called Enhanced Operational Capability, which is to be declared by the end of 2018. JAPCC is and will remain involved in various Missile Defence panels, meetings and working groups.

Cyber. Air Components rely increasingly on electronic communications for Command & Control which makes the Air Domain vulnerable to Cyberattack. Air forces are concerned about developing Cyber Resilience as a whole and developing countermeasures. Main efforts include supporting the Cyber Defence Action Plan and raising Cyber awareness among both operational personnel and senior leadership/decision-makers.

Furthermore, during the 2016 NATO Summit in Warsaw, it was declared Cyber is to be considered a Domain similar to the traditional Air, Land, and Maritime Components. Consequently, NATO forces must incorporate Cyber (defence only at this time) into all phases of operations. JAPCC SMEs are actively



US Marine Corps F-35B.

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involved in strengthening NATO's Cyber defence posture by contributing expertise to policy development/review, to working groups, and through exercise support. The key is raising our collective understanding of both the implications and requirements of Cyber, particularly as it pertains to the application and defence of Air Power.

Logistics. NATO is required to be able to carry out a range of smaller but demanding operations, and the Alliance must retain the capability to conduct large-scale high-intensity operations including in support of collective defence. To undertake these missions, the Alliance must be able to launch and sustain these missions. Since only a few Allies can independently deploy and sustain their forces, it is important NATO and the Allies continue to pursue Collective Logistics in order to provide NATO commanders the greatest flexibility on current and future NATO operations. Therefore logistics work in NATO will be pursued along four main lines of effort: more capable and interoperable joint logistics capabilities at the required readiness; optimize

Command and Control (C2) of logistics support; improve deployability of NATO forces; enhance sustainability of NATO forces. JAPCC is engaged in these topics and will continue to be so.

Precision-Guided Munitions. NATO is continuously seeking to share the burden of providing expensive defence equipment more equally across the Alliance. A new multinational project was launched during the 2014 Wales summit to develop innovative ways of increasing the availability of munitions to the Alliance. With Denmark in the lead, the project will focus on multinational approaches toward air-to-ground Precision-Guided Munitions (PGMs) and will establish a framework for strengthening international cooperation within the munitions sector. JAPCC will engage with relevant partners in order to provide Subject Matter Expertise. In 2016, the JAPCC assumed the role of Vice Chairman of the ACG-2 (Air Capabilities Group focused on Armaments), which will devote much of its effort in the upcoming years toward addressing this Priority Shortfall Area.

Partner with relevant NATO entities and nations to promote and synchronize output and products.

Force Protection. The delivery of Air Force Protection (FP) demands an understanding of the airbase, and surrounding ground and airspace. This operational setting routinely comprises a significant number of high-value assets operating in three dimensions; a vast Electromagnetic (EM) signature; a diverse population (both military and civilian); and large quantities of volatile and fragile materiel, all within a confined space. Within this context, FP activities must be coordinated with air operators, enablers, co-located units, and adjacent ground-holding units; any of which may be coalition partners. Conceptually, this battlespace may be described as the Complex Air Ground Environment (CAGE)¹. Within the Force Protection (FP) Focus Area, the JAPCC intent moving forward, is to continue to develop Alliance Air FP capability across all Lines of Development whenever and wherever possible in order to ensure that Alliance Air FP capability remains fit-for-purpose within the so-called CAGE.

Air Special Operations Forces. The Air Development Program (ADP) serves as the leader for NATO SOF Air/Aviation by determining and improving quantitative and qualitative aspects of SOF Air/Aviation across the network of NATO Special Forces Headquarters (NSHQ) nations and partners. ADP seeks to deliver high quality support to nations by providing policy, doctrine, training, education, assessments, and evaluation. JAPCC has been engaged with the ADP since its foundation and is actively involved with all the future development in support of AIR SOF. Collaboration within ADP and JAPCC was established in order to support and develop the annual Air SOF Conference held mid-September at NSHQ.



JAPCC Joint Air and Space Power Conference, Essen Convention Centre, Germany, 10–12 October 2017

The Annual Conference is one of the most important events on the JAPCC's annual calendar, as it brings together senior NATO and national military and political leaders with members of academia and industry in a forum for open discussion of issues of strategic interest to the Alliance and partners. The topic of the 2017 Joint Air and Space Power Conference is 'Deterrence', and will examine the current threat environment as well as the role and capabilities of NATO Air and Space power in deterring current and potential adversaries.

Conclusion

Thank you for taking the time to read the JAPCC Annual Report for 2016. We hope you have found this report informative, and that it has given you a greater understanding of and appreciation for the value and relevance of the JAPCC to the Alliance. For more information on the JAPCC, please contact us via email at contact@japcc.org or visit our website at www.japcc.org.

1. AP3002, Air and Space Warfare, Third Edition.

Joint Air & Space Power Conference

20
17

Congress Centre Essen-West, Germany



The Role of Joint Air Power in NATO Deterrence

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