

NATO STANDARD

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ALLIED JOINT DOCTRINE FOR AIR AND SPACE OPERATIONS

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April 2016**



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED JOINT PUBLICATION

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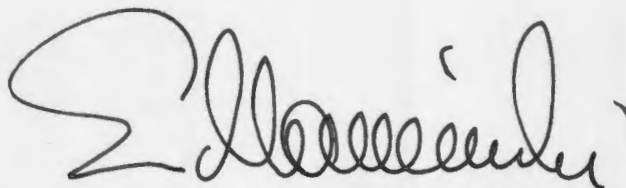
NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

8 April 2016

1. The enclosed Allied Joint Publication AJP-3.3, Edition B, Version 1, ALLIED JOINT DOCTRINE FOR AIR AND SPACE OPERATIONS, which has been approved by the nations in the Military Committee Joint Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 3700.
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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
DEU	<p>DEU ratifies STANAG 3700 understanding that Para 1.7 (STRATCOM considerations), sub-para 2, line 1-4 deals with the implications of incidental civilian casualties or damage to civilian objects.</p> <p>Matrix available at NSO.</p>
FRA	<p>France stresses that the use of the term “air” is not the same as “air component”, but covers all the components, each one of them conducting either component or joint operations in the third dimension.</p> <p>Chapter 2:</p> <p>2.1.2: France will make the following clarification at the end of the paragraph: “COM JFAC is responsible for planning and coordinating joint air operations, for integrating Land and Maritime contribution to joint air operations within the Joint air plan, and to accomplish operational missions assigned by SACEUR or the COM JTF.”</p> <p>2.5.8: France does not include AOAD SAMOCs as “JFAC air C2 elements”.</p> <p>2.5.9: France does not systematically include TACPs as “JFAC air C2 elements”.</p> <p>France will not implement paragraph 2.2.2.1.k.</p> <p>Chapter 3:</p> <p>The organization chosen by France and its composition are the subject of a national publication that complements this AJP, in particular:</p> <ul style="list-style-type: none"> - Regarding the organization of the French JFAC HQ: <ul style="list-style-type: none"> o Within the French “JFAC HQ SD”, the AOPG is not a permanent element of the “SD” and the GAT is part of the SD. o Within the French “JFAC HQ CPD”, the GAT is not part of the CPD in the French JFAC structure. The JFAC HQ does not include any NOC. o Within the French “JFAC HQ COD”, the EWCC, the AARC and FP are not dedicated cells, and coordination is through the CPD and

	<p>COD elements. There is no ATCC in the COD, and the RAMCC belongs to the CPD.</p> <p>3.3.2.e: France stresses that in accordance with AJP 3.3.5 Edition B, the JACC is a joint structure that includes elements from all components in support of the ACA. Therefore, the JACC will be colocated with the “JFAC C2 team” only when the responsibility of the ACA will be entrusted to the COM JFAC.</p> <p>France will not implement paragraph 3.3.2.f.</p> <p>Lastly, as part of her contribution to the special forces - a joint functional component - France reserves the right to use, in conjunction with this organization, air elements within C2 structures as defined in the 2015 “NATO Special Air Warfare Manual”, by applying the principles of air operations of special operations forces.</p> <p>These national specificities result from the French will to promote effective Air Land integration (ALI), which is defined in France as all the processes that are implemented at the tactical level as well as in planning and in conduct to combine air forces activities with those of land forces (conventional forces and special forces) in order to optimize joint manoeuvre.</p> <p>JFAC HQ SD : JFAC HQ Strategic Division AOPG: Air Operational Planning Group GAT : Guidance, Apportionment and Targeting branch JFAC HQ CPD : JFAC HQ Combat Plans Division NOC : Nuclear Operations cell JFAC HQ COD: JFAC HQ Combat Operations Division EWCC, AARC : EW Coordination Cell, AAR Coordination Cell FP : force Protection ATCC: Air Transport Coordination Cell RAMCC:Regional Air Movement Coordination Cell.</p>
GBR	<p>The development of the publication has been driven to ensure coherence with HQ AIRCOM's extant AIR C2 CONOPs. Therefore the resulting '80% solution' does not fully reflect current Air Power thinking, or the conduct of broader Coalition Air operations; moreover, a number of new terms have been introduced that are not approved within AAP-6 and have been adopted without the appropriate Military Committee</p>

	<p>Terminology Conference procedures being followed. Therefore GBR remains keen to see an immediate review instigated once AJP-3.3(B) is formally Promulgated.</p>
<p>USA</p>	<p>The US ratifies AJP-3.3 with the following reservations:</p> <p>(1) The US has reservations with numerous terms (definitions and acronyms) throughout the AJP that do not conform to the guidance found in C-M (2007) 0023. In particular, the terms “joint force air command” and “commander joint force air command” reflected in the AJP are inconsistent with approved Allied joint doctrine. Continued use of these terms introduces confusion with other components and with USA terminology during US led operations. This reservation will be withdrawn once approved terms are used throughout the AJP; or once revised terms are formally agreed by NATO and reflected in the NTMS.</p> <p>(2) (Ref para 1.6.2) The US does not agree with the statement; “conformity of any action within any ROE profile in force does not guarantee its lawfulness”. This statement does not comport with USA policy and doctrine, which states that all ROE must comply with the law of war. The US will remove this reservation once the text is revised to better harmonize with US law and joint doctrine.</p> <p>(3) (Ref para 1.6.2) The USA disagrees with the statement that “accountability for such violation” should be part of a commander’s assessment of whether actions are in accordance with international law. Accountability is inherent in command and the law, and subject to proper investigation. The US will remove this reservation once the text is revised to better harmonize with US law and joint doctrine.</p> <p>(4) (Ref para 5.1.3) The USA does not agree with the following statement, “multiple space activities are not fully legally apprehended, yet” which is vague and unclear. If it means space activities are outside the boundaries of existing law, the USA disagrees. If it means the current body of law does not address all space activities, then the para should be reworded for clarity. The US will remove this reservation once the paragraph is revised and the language clarified.</p> <p>(5) Figure 5.1: “NATO SATCOM command and control relationships” is not consistent with approved NATO higher level doctrine. NATO does not command “payload control”. The US will remove this reservation when the figure is corrected to properly harmonize with AJP-01 description of command authorities.</p>

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CHAPTER 1 FUNDAMENTALS OF JOINT AIR POWER

1.1. INTRODUCTION

1. Given the complexity of the modern world, NATO seeks to achieve its objectives via a comprehensive approach¹ that requires effective coordination and cooperation among national governmental departments and agencies, non-governmental organizations (NGOs), international organizations (IOs) and the private sector. Within this context, the early integration of the military instrument into a collective strategy encompassing all of the instruments of power² is a fundamental principle upon which the Alliance conducts operations. However, the successful execution of military operations requires a clearly articulated strategy linked to strategic objectives; this is especially important when operations are to be conducted by allied or coalition forces.

2. NATO's capstone publication for allied joint doctrine states that NATO forces must expect to perform a wide range of potentially simultaneous activities across a spectrum of conflict, from combat action to humanitarian aid, within short timeframes. This spectrum of conflict is the backdrop against which all joint air and space operations are conducted, the principal discriminators being the level of violence and complexity of actors engaged in the conflict. Air and space operations can contribute to all three NATO military missions, which are: article 5 collective defence, non-article 5 crisis response operations (NA5CRO), and consultation and cooperation. Moreover, the unique attributes of air and space power offer politicians and commanders the means to create a wide range of effects including contributing to engagement, deterrence and coercion activity at the tactical, operational and strategic levels; often within time-scales that other elements of the military instrument cannot match.

3. Recent Alliance operations have shown that air and space power is most effective when integrated with other levers of power rather than used in isolation. Consequently, joint planning is the process by which the Commander Joint Task Force (COM JTF) and his/her staff should seek to match strategy-to-task and means-to-ends; underpinned by robust doctrine that addresses how best to use air and space power. However, the comprehensive approach dictates a more nuanced methodology when planning and conducting joint air and space operations; with greater emphasis placed upon achieving desired outcomes and mitigating undesired ones. At the operational level, this approach involves the selective combination of actions, coordinated with the activities of other organizations, to create lethal

¹ Comprehensive Approach: Method applying holistic thinking incorporating all aspects, factors and parameters deemed to matter for a specific and well-defined situation where the aim is to move from an initial position to an aspired end state.

² 'Instruments of power' are the national or organisational means to enforce will or exert influence on others; one framework for this is diplomacy, information, military and economic elements (DIME).

and non-lethal effects in order to achieve operational objectives, in support of the strategic objectives and the desired end state.

4. Technology was and continues to be a decisive pillar regarding the Alliance's ambition to exploit air and space power. In this context, space capabilities became a primary enabler to air power over the last decades. Those capabilities are integrated into modern aircraft, weapon systems, as well as the conduct of command and control (C2); and/or they resort to the former, respectively. In any case, space capabilities permit the Alliance to enhance effectiveness of their military operations. But there is also a drawback: The integration of space capabilities into modern warfare creates critical dependencies towards space. Consequently, it is essential for the Alliance to understand the uniqueness and complexity of space operations. This forms the key prerequisite to turn space capabilities into an effective support for NATO Operations³.

1.2. THE AIR ENVIRONMENT

1. Whilst the Alliance can use a variety of military and non-military tools to change the behaviour of decision-makers, states and non-state organisations, the particular attributes of air power offer specific, flexible and responsive ways to create and exert influence; ranging from direct physical attacks to more nuanced, psychological effects. The ability of air power to create influence leads to a definition of air power as:

'The ability to use air capabilities to influence the behaviour of actors and the course of events.'

2. The air environment is unique. Air surrounds the globe and overlays the land and sea. Consequently, air power is inherently joint, as air power has decisive impact when orchestrated along with land, maritime, space and cyberspace power.⁴ Air power is also pervasive, as aircraft are rarely physically constrained by national boundaries or terrain, so can potentially obtain access to any point on Earth. The distinctiveness of the environment means that air power has very different attributes to maritime power and land power. Consequently properly executed joint operations, where air, land, sea, space and cyber capabilities are used to complement one another's strengths and weaknesses, can be particularly effective.

³ Chapter 5 addresses doctrine for planning and execution of space support to NATO operations. The remainder of this chapter and chapters 2 through 4 focus on doctrine for planning and execution of air operations.

⁴ Also known as environmental seams.

1.2.1. Core air power attributes

1. Air power offers the advantage of finding, fixing and engaging adversary surface forces across the full depth of the battlespace, without many of the physical, spatial, and environmental limitations imposed on surface forces. However, the synergy of Alliance air forces' capabilities and surface forces, operating as an integrated joint force, can often be overwhelming in cases where a single component cannot be decisive by itself.

2. Air power exploits the nature of the third dimension. Aircraft are generally faster than surface vehicles and can often route directly to a target or destination, while by definition, elevation is inherent to air operations. These factors result in the three core air power attributes: speed, reach and height. An additional beneficial characteristic of air power due to the above attributes is the required support footprint. Depending on mission, expected duration, and asset(s) employed the footprint is often minimal when compared to other military power projection options.

- a. Speed. The speed of aircraft allows military power to be projected rapidly and responsively and to complete missions quickly. This creates tempo and the potential to exploit time.
- b. Reach. About 70% of the Earth's surface is water, but all of it is covered by air. This provides aircraft with unrivalled reach, normally unimpeded by terrain, and opens up all of an adversary's resources to attack or influence, however distant or isolated their location.
- c. Height. The advantage of height is an enduring military reality. Air power offers an unparalleled vantage point; facilitating observation and thereby enabling operations within the land and maritime domains.

1.2.2. Additional attributes

The speed, reach and height of air power enable and enhance air power's additional attributes of ubiquity, agility and concentration. In combination, these provide air power's characteristic flexibility as the most responsive and easily scaled tool of national force.

- a. Ubiquity. Air power's reach, combined with the growing persistence available through air-to-air refuelling and high endurance unmanned aircraft systems (UAS), creates the sense of being everywhere all the time. This enables the Alliance to use air power to pose or counter threats simultaneously, and across a far wider area than surface capabilities. Unlike land forces, air power is not fixed at specific locations and its light footprint makes it easier to commit in politically ambiguous circumstances.

- b. **Agility.** Air power's agility stems from its responsiveness, enhanced by the capabilities of genuinely multi-role platforms. Agility means the Alliance can quickly switch the point of application within and between operational theatres, sometimes during the same mission, and create tactical to strategic effects in a variety of air power operational roles. Agility also means the JTF can easily scale the scope of operations up or down in response to a change in political guidance or political strategic objectives, from air-policing at one end of the spectrum to full-scale warfighting at the other.
- c. **Concentration.** Air power's speed and reach enable the JTF to concentrate air assets in time and space to deliver military force when and where it is required. Precision technology means that significant air power effects can be created without the need for large numbers of aircraft; imposing psychological shock that may be crucial to military success.

1.2.3. The limitations of air power

Air power has limitations as well as strengths. However, these are relative, not absolute, and must be understood in context. The most significant are impermanence, limited payload, and vulnerability.

- a. **Impermanence.** Although high endurance UAS and air-to-air refuelling have increased individual air assets' persistence; aircraft still require ground servicing and rearming. However, air power's reach and responsiveness can be exploited to hold adversaries at risk without necessarily maintaining a constant presence in the air. If a continuous presence is required, multiple assets can be employed serially to satisfy commanders' objectives.
- b. **Limited Payload.** Aircraft design places a practical limit upon the payload that can be carried. However, miniaturization and precision technology are enabling greater impact with fewer and smaller weapons whilst the use of air transport aircraft trades-off weight of payload against advantages in speed and reach.
- c. **Vulnerability.** The nature of the air environment creates specific vulnerabilities, including: the relative fragility of air vehicles; the effects of weather on air operations; and the requirement for basing.
 - (1) **Fragility.** Air platforms are comparatively lightly armoured which limits the extent to which it is sensible to expose them to hostile fire. Whilst tactics, techniques and procedures (TTPs), low observable technology and platform protection can be used to mitigate the operating risk, air planners must be cognisant of the capabilities (and limitations) of the platforms assigned to a campaign or operation.

- (2) Weather. Poor weather can hamper air operations and commanders require accurate, timely and relevant environmental information in order to maximise the effectiveness of air systems and missions⁵. However, technological developments have enabled Alliance air power to operate by day and night in adverse conditions; providing a potential operational and tactical advantage that can be exploited against less capable adversaries.
- (3) Basing. Like other forms of military power, most air capabilities depend on regional bases for support. Consequently, diplomacy and upstream engagement may be a key enabler for air operations in order to secure the necessary access, basing and over-flight permissions. Deployed land-based air operations also bring a specialist force protection requirement that member nations need to consider when assigning air assets to an operation or campaign.

1.3. PRINCIPLES OF JOINT AIR OPERATIONS

1. In order to accomplish the assigned mission, the COM JTF develops a concept of operations (CONOPS), provides commander's intent for the assigned mission and then organizes assigned forces based on the CONOPS. The CONOPS will be further developed to an OPLAN. The Supreme Allied Commander, Europe (SACEUR) will designate a commander joint force air component (COM JFAC) to exploit the capabilities of joint air operations.
2. From the outset of operations, air forces can pursue strategic, operational or tactical objectives, in any combination, or all three simultaneously. It is therefore essential that a degree of unity of effort is taken to allow air assets to be concentrated at the critical time and place to achieve results, maximizing joint synergy. To achieve the necessary strength of unity of air effort, the following key principles apply:
 - a. Unity of command. Unity of the air effort is best achieved when assets are commanded from the highest practical command level where the relative priority for air assets can be best established and assessed in consideration of conflicting demand. As outlined above, the delivery of Alliance air power will in most operational circumstances be vested in a COM JFAC.

⁵ Meteorological and oceanographic (METOC) support assists operations by the provision of information on the state and operational impacts of the air, sea, land and space environments that may enhance or impede the effectiveness of air operations. It gathers, analyses and provides meteorological data for mission planning and execution and is a key element of information superiority.

- b. Centralized control. Centralized control places the responsibility and authority for planning, directing and coordinating air capabilities with a single commander and his staff. It maximizes operational effectiveness and avoids duplication of effort by allowing commanders to prioritize, synchronize, integrate and deconflict the actions of assigned, attached and supporting capabilities in time, space and purpose to achieve assigned objectives as rapidly and as effectively as possible.
- c. Decentralized execution. Decentralized execution is the delegation of execution authority to responsible and capable subordinate commanders to make on-scene decisions that exploit opportunities in complex, rapidly changing or fluid situations. It provides for maximum responsiveness to cope with the uncertainty, disorder and fluidity of operations and makes it possible to generate the tempo of operations⁶.
- d. Strategy-to-Task. In order to optimize finite resources the objective of every air task must be linked by the operational level to the aim of the overall strategy. The strategy must also be linked through the operational level to what is actually realistic. Of prime importance is for the operational level commander to understand clearly how his/her activities mesh with the other strategic-level lines of operation. Selection and maintenance of the aim is therefore critical to the generation of a coherent air plan.
- e. Selection and Maintenance of the objective. Selection and maintenance of the objective by the commander is essential as every military operation must have a single, attainable and clearly defined objective that remains the focus of the operation. The COM JFAC selects his/her objective during the Joint Air Estimate process, which considers all of the relevant factors and identifies possible courses of action (COA) consistent with the COM JTF's objectives as outlined within the OPLAN. The output is the joint operations plan (JOP) which must clearly articulate the COM JFAC's objectives for air operations from which tactical decisive conditions and COAs can be deduced⁷.

⁶ Technological advances in data exploitation and communications have provided the commander with the capability to exercise centralised execution under certain operational circumstances. Whilst such an approach may be warranted during a small-scale mission involving high-value targets/objectives, adoption of a centralised execution methodology should not be the norm for Alliance air operations as no single person can achieve and maintain the level of situational awareness that is required in a dynamic combat environment spanning a theatre of operations.

⁷ Any tendency towards 'reverse planning', starting with available resources and capabilities to formulate a range of possible actions must be resisted as it invariably fails to link tactical activity to operational level objectives.

- f. Legitimacy. Legitimacy encompasses the legal, moral, political, diplomatic and ethical considerations that justify air operations. Perceptions of legitimacy are unlikely to be shared universally or unequivocally and may be heavily shaped by influences such as the media. Once established, the legitimacy of an operation must be protected; air power has the capability to adversely influence perceived legitimacy, particularly in irregular warfare where the perceived disparity in technology and risk to participants may lead to perceptions being developed that can be difficult to challenge. Consequently, air operations must be conducted within the relevant rules of law and with the full involvement of legal advisors (LEGAD) within the planning and execution cycles. Specific legal considerations for the conduct of air operations are detailed at chapter 1.6.

1.4. FORCES AVAILABLE FOR JOINT OPERATIONS

1. Air operations are not solely executed with air component forces. Maritime and land forces assigned and/or attached to operations are likely to include air capabilities and assets that individual component commanders (CC) may make available for joint air operations in consultation with the COM JTF. Such air assets are tasked directly according to the COM JTF's air apportionment decision and only the COM JTF has the authority to reassign, redirect, or reallocate a component's air capabilities. Should a component not have the organic air capabilities to support their assigned mission, the COM JFAC may task available joint air assets based on the COM JTF's air apportionment decision.
2. Joint air operations do not include air capabilities and assets organic to a component and used by that component solely in pursuit of its own operations to accomplish its assigned mission. Notwithstanding, these organic assets should appear on the air tasking order (ATO) to enable coordination and minimize the risk of fratricide; however, their appearance on the ATO neither implies any command or tasking authority over them, nor does it restrict CCs' flexibility to respond to changing battlespace dynamics. All users of the airspace within the operational area must adhere to the guidance provided by the airspace control plan (ACP), the airspace control order (ACO), the air defence plan (ADP) and the special instructions (SPINS) to assure integration and minimize the risk of fratricide.
3. The COM JTF integrates the actions of assigned, attached and supporting forces within the joint operations area (JOA); however, in order to maximize operational effectiveness and avoid duplication of effort, the COM JFAC synchronizes and integrates the actions of assigned, attached and supporting air capabilities and assets in time, space and purpose. The COM JFAC exploits the characteristics of all air assets made available for tasking to achieve assigned objectives as rapidly and as effectively as possible.
4. While missions vary widely across the range of military operations, the framework and process for command and control (C2) of joint air operations should remain consistent.

However, control of joint air operations is often complicated with the possible use of airspace by civilian aircraft, national and international agencies, governmental and non-governmental organizations, allied and coalition forces, and other participating entities. Consequently, airspace control is essential to accomplishing the COM JTF's objectives across the range of military operations. Through a mix of procedural and positive control⁸, it allows all users access to airspace whilst preventing operational conflicts and flight safety issues.

1.5. CORE AIR POWER ROLES AND TYPES OF AIR OPERATIONS

The delivery of air power can be defined in terms of roles, missions and sorties. This chapter introduces four broad, fundamental and enduring operational roles of air power that are used to achieve strategic, operational and tactical level objectives: counter-air, attack, air mobility, and contribution to intelligence, surveillance, and reconnaissance. These roles are not unique to the air component, and other components do perform them or similar activities to varying degrees.

This chapter concludes addressing "support to joint personnel recovery" operations.

1.5.1. Counter-air

1. Control of the air helps shape the operational area wherein friendly operations can proceed at the optimum place and time without prohibitive air interference, while providing force protection. Gaining control of the air is not an end in itself, but is only useful if it is then exploited as a means to a greater end. Once sufficient control of the air has been achieved, air power provides the possibilities to project military power where and when needed; however, control of the air is not a permanent state and has to be constantly fought for if it is to be assured. There are two levels of control of the air: air superiority⁹ and air supremacy.¹⁰

2. The required degree of control of the air is achieved through counter-air operations. This is to allow all friendly forces greater freedom of action, while minimizing their vulnerability to detection and attack. Counter-air operations also include all actions, taken by any component, to gain and maintain control of the air using a variety of integrated weapon systems and sensors to counter threats that include manned or unmanned aircraft (UA), ballistic missiles and air, land or sea launched cruise missiles, both before and after launch. Counter-air operations may be offensive or defensive in nature; the balance between

⁸ Achieved through a multi-agency approach the construct for which will be bespoke to the operation being undertaken and the joint operations area (JOA). However, air traffic control (ATC) in the JOA will be a key requirement to guide, control and support civil and military air traffic within the framework of the ACO.

⁹ That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force.

¹⁰ That degree of air superiority wherein the opposing air force is incapable of effective interference.

which will be dependent upon the nature and stage of a campaign, the depth, density and capabilities of an adversary's integrated air defence system (IADS) as well as their offensive air and missile capabilities.

3. Offensive counter-air. Offensive counter-air (OCA) consists of offensive operations to destroy, disrupt or degrade adversary air and missile capabilities. Ideally, most OCA operations will prevent the launch of aircraft and missiles by destroying them and their supporting infrastructure and systems on the surface, or failing that, as close to their source as possible. Such operations may be pre-planned or immediate, and are conducted across adversary territory at the initiative of friendly forces. Pre-planned operations rely on continuous and accurate intelligence for targets expected at particular locations and times, while immediate operations are conducted against unexpected mobile and time-sensitive targets where minutes often define the timeline when these targets are vulnerable to attack. OCA includes surface attack operations, air-to-air missions and suppression of enemy air defences.

4. Defensive counter-air. Defensive counter-air (DCA) operations protect friendly forces and vital interests from adversary air and missile attacks; as such it is synonymous with air defence (AD). DCA consists of all active and passive air defence operations to detect, identify, intercept, and destroy or negate adversary air and missile forces attempting to attack or penetrate friendly battlespace, or to nullify or reduce the effectiveness of such attacks should they escape destruction. As Missile Defence (MD) is part of AD, the air and missile defence commander¹¹ is responsible for the integration of all AD efforts regardless of system ownership. AD can be active or passive.

- a. Active air defence. Active measures taken against attacking adversary forces to destroy or nullify any form of air or missile threat or to reduce the effectiveness of any such attack. It is achieved through integrated detection, identification, assessment, interception and engagement and usually characterized by layered defence-in-depth allowing multiple engagement opportunities, utilizing airborne air defence and surface based air defence assets, including those dedicated to missile defence.
- b. Passive air defence. Passive measures taken for the physical defence and protection of personnel, essential installations and equipment in order to minimize the effectiveness of air and/or missile attack. Elements of passive air defence include early warning; camouflage, concealment, and deception; hardening; dispersion; reconstitution, and low observable or stealth technologies. Passive air defence measures do not involve the employment of lethal weapons, but do improve survivability. These passive air defence

¹¹ Responsibility usually vested in the COM JFAC (or a senior member of his staff).

measures for survivability of the joint force are part of the overall force protection doctrine.

1.5.2. Attack

1. Attack lies at the heart of air power's capacity to create influence by changing behaviours or the course of events. Air attack is coercive in the broadest sense of the term as it creates tactical, operational and strategic effects through the threat, and use, of force. The Alliance uses air-attack capabilities to target adversaries through strategic attack, counter-surface force operations and information activities.

2. Strategic attack. A strategic attack is a JTF-directed offensive action against a target, whether military, political, economic, or other, that is specifically selected to achieve military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict or continue an action and as such, could be part of a campaign, major operation, or conducted independently as directed by the Alliance. Additionally, these attacks may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition. Suitable targets may include but are not limited to adversary centres of gravity (COG). A key advantage of air power, over many other military forces, is the ability to strike directly at the heart of the adversary, disrupting critical leadership functions, war-sustaining resources and strategy, while avoiding the need to sequentially fight through layers of surface forces to get there. Expected effects, not the specific weapon systems, delivery platform or the type of target attacked, define strategic attack.

3. Counter-surface force operations. Counter-surface force operations comprise counter-land and counter-maritime operations and are conducted to: defeat an adversaries' fielded forces; destroy their supporting infrastructure; or generate psychological effects to shatter their cohesion or will to fight.

a. Air power contribution to counter-land operations (APCLO). How counter-land operations are conducted is dependent on overall joint campaign strategy and the specific circumstances of the conflict; such factors include adversary disposition, phase of the operation, whether ground combat is also occurring, the degree of control of the air and the need to support, or be supported by, surface forces. Operations generally fall under two mission types: air interdiction (AI) and close air support (CAS).

(1) Air interdiction. AI is air operations conducted to divert, disrupt, delay, degrade or destroy an adversary's military potential before it can be brought to bear effectively and at such distance that detailed integration of each air mission with the fire and manoeuvre of friendly forces is normally not required. The flexibility of AI allows it to be conducted in support of surface operations or as main effort against the adversary surface force without the presence of any friendly ground forces (or with

discrete ground force elements providing target cueing); thus, it may offer the potential to reduce the requirement for ground combat.

- (2) Close Air Support. Air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces for fratricide avoidance and targeting guidance performed by a certified and qualified Forward Air Controller (FAC). CAS provides ground or amphibious forces with firepower in offensive and defensive operations, by day and night, to destroy, suppress, neutralize, disrupt, fix or delay adversary forces in close proximity to friendly ground forces. The firepower and mobility of aircraft can make an immediate and direct contribution to the surface battle, especially against targets that are either inaccessible or invulnerable to available surface weapons effects. The variety of targets likely to be encountered makes it important to be able to employ a variety of weapons and delivery systems, thus reliable and interoperable communications with the supported force are essential features in the CAS environment.
- b. Air power contribution to counter-maritime operations (APCMO). Air attack missions flown in support of maritime operations extend the application of air power into the high seas or the littoral and its adjacent waters. Attack missions are typically flown in support of friendly naval forces as part of air-maritime coordination operations; however, they may also be conducted independently or when no friendly forces are in the area. Such operations usually contribute to two specific maritime warfare areas:
- (1) Antisurface warfare. Antisurface warfare operations are conducted to destroy or neutralize adversary naval surface forces. The area of attack and other factors that influence tactics, weapons mix and support requirements should be clearly identified and primary targets should be specified especially when surface combatants are escorting amphibious craft and supply ships.
 - (2) Antisubmarine warfare. Antisubmarine warfare operations are conducted with the intention of denying the adversary the effective use of submarines. Antisubmarine includes searching, locating, classifying and attacking submarines as well as their support assets.
4. Air-delivered Information Activities. Such activities primarily focus on non-lethal effects to influence an adversary's will, understanding and subsequent behaviour.

Information Operations staff¹² coordinates the different and sometimes competing activities to support the commander's overarching campaign objectives. Beyond the broad Air Power attributes of presence, posture and profile, Air-delivered Information Activities commonly precede/lead or support the following objectives:

- a. Changing, influencing, or reinforcing perceptions and attitudes of adversaries.
- b. Preserving and protecting Alliance freedom of manoeuvre in the information environment.
- c. Countering command functions and capabilities by affecting the data and information that support adversaries.

1.5.3. Air mobility

1. Air mobility enables the deployment, sustainment and recovery of military and civilian personnel and material by air; it is critical to the success of joint operations. The speed and responsiveness of air mobility provides political flexibility, thereby offering options to create immediate strategic influence. At the operational level air mobility operations fall into two fundamental categories: air transport (AT) (sometimes referred to as airlift) and air-to-air refuelling (AAR).

2. Air transport. AT allows a JTF to move and sustain forces anywhere in the world and across the entire range of operations. It provides rapid and flexible mobility options to military, national and international government agencies to quickly respond to various crisis situations worldwide. Payloads are delivered via two methods: airland or airdrop.

- a. Air land delivery occurs when an aircraft lands and unloads its payload. Air land delivery, as opposed to airdrop, is the preferred method when conditions permit. In a safe area it minimizes the risk of injury to personnel and damage to equipment, eliminates payload dispersal and offers an increased availability of resources. This delivery method can be conducted at a variety of landing destinations from well-established airbases to unimproved landing zones. Extended air land operations require secure, suitable, and conveniently located airfields with appropriate air transport support assets to facilitate offload.
- b. Airdrop is the delivery of personnel and/or materiel from an aircraft in flight to a drop zone. This method is used when landing is not possible, either because a lack of appropriate terrain or because of the tactical situation.

¹² Usually located within the JFC HQ in order to facilitate involvement in the joint targeting process.

Airdrop allows commanders to project and sustain combat power where ground transportation network may not be available or when time is critical.

3. Air Transport operations are typically classified as inter- or intra-theatre:
 - a. Inter-theatre AT provides the air bridge that links theatres to home bases and/or other theatres. Given the ranges usually involved, inter-theatre AT is normally comprised of heavy, strategic AT or larger civilian aircraft, but may be augmented by tactical-range AT if/when required.
 - b. Intra-theatre AT provides air movement within a specific theatre or JOA and is normally fulfilled by tactical AT capable of operation under a wide range of tactical conditions, including small, austere field operations. Intra-theatre fixed and rotary wing air assets provide time-sensitive AT to a commander, and enable the conduct of air manoeuvre operations; the air delivery of combat power to seize ground or installations via air assault, airdrop or air-land.

4. There are five types of AT missions:
 - a. Routine AT. Routine AT operates either on a regular schedule or an ad hoc basis for routine military requirements other than operations.
 - b. Air Logistic Support. Air logistic support missions are planned in direct or continuous support of an operation and respond to the requirements of tactical-level commanders. Notwithstanding, the requirements to deploy, sustain, and redeploy forces may also necessitate air logistic support operations to be planned and conducted at the operational level. These operations may be inter-theatre or intra-theatre.
 - c. Airborne operations. Airborne operations provide air-delivered combat power to seize ground or installations through the airdrop or air land delivery of forces directly into an objective area. The effects of airborne operations may be strategic, operational or tactical within the joint campaign plan.
 - d. Aeromedical evacuation (AE). AE is the movement of patients under medical supervision to and between medical treatment facilities (MTFs) by air transportation. The reduced forward medical footprint of contemporary operations has made rapid and responsive AE operations more critical than in the past.
 - e. Support to other missions. These missions include those tasks conducted by AT assets that are not included in the other AT categories. For example, AT used in a special air operation role provides commanders with the capability

to reach specific objectives that may not be achievable through more conventional AT practices and may require dedicated, specially-equipped aircraft and/or, specially-trained crews, and may use nonstandard procedures.

5. Air-to-Air Refuelling. AAR is an air support operation consisting of the in-flight transfer of fuel between tanker and suitable receiver aircraft. AAR is an essential capability that increases the range, endurance, payload and flexibility of all capable receiver aircraft, and is especially important when forward basing is limited or unavailable. The high demand placed on AAR assets makes proper employment critical.

- a. AAR enhances the ability of air power to achieve surprise by allowing indirect approaches and multiple axes of attack to seek out targets the adversary least expects to be attacked. AAR also maximizes the use of each combat/combat support asset launched by increasing flight time or on-station time.
- b. Increasing an aircraft's flight time will make additional aircraft available for reassigning towards other objectives, thus achieving economy of force. Additional fuel provides attack aircraft the ability to fight longer and out-last the adversary by extending range and endurance, and thus putting adversary aircraft at a distinct disadvantage.
- c. Fewer intermediate fuel stops have to be made during initial deployment, redeployment or overhaul flights, therefore ferrying can be done in a more efficient and expeditious way.

6. Types of AAR operations.

- a. Air bridge support. AAR makes accelerated air bridge operations possible since enroute refuelling stops are reduced or eliminated. It reduces the number of aircraft on the ground at forward staging bases, minimises potential enroute maintenance delays, and enables expeditionary air transport assets to maximise their payloads.
- b. Aircraft deployment support. AAR assets extend the range of deploying combat and combat support aircraft, often allowing them to fly with few or no stops enroute to an area of operation (AOO). Normally, this operation is associated with the movement of fighter aircraft between theatres. Deployments of heavy aircraft (bombers, airlifters) normally use an air bridge operation to support the deployment.
- c. Alert tanker. Some operational contingencies require the use of an alert tanker. Scenarios include a quick reaction alert (QRA) launch, missed refuelling,

adverse weather, battle damage, excessive time engaged with adversary aircraft or targets, or emergency carrier operations. Alert status can be held either on the ground or in the air.

- d. Global strike support. AAR assets are employed to give strike platforms the capability to reach any target globally without relying on intermediate basing locations, thereby enabling them to rapidly strike targets in distant locations and recover to safe areas.
- e. Reliability tankers. Ground spares might not be able to reach an area in a timely manner should tasked tankers not be able to provide adequate offload or receivers miss scheduled refuelling. Reliability tankers operate in a given area with no scheduled receivers and act as flying spares.
- f. Special operations support. AAR enables special operations forces (SOF) to increase their operating capabilities.
- g. Theatre Support. During a combat operation, the role of theatre AAR is to support air assets executing the air plan.

1.5.4. Contribution to Joint Intelligence, Surveillance and Reconnaissance

1. Joint intelligence, surveillance and reconnaissance (JISR) is an integrated intelligence and operations set of capabilities, which synchronizes and integrates the planning and operations of all collection capabilities with processing, exploitation, and dissemination of the resulting information in direct support of planning, preparation, and execution of operations. Air and space based ISR-assets can be used strategically to build an early understanding of potential crisis points and enhance the quality of political and high-level military decision-making. At the operational and tactical level it allows observation of an adversary's actions and dispositions thereby enabling commanders to identify dependencies, vulnerabilities and strengths. JISR is a multidisciplinary approach comprised of four distinctive elements:

- a. Joint. Describes the activities, operations and organisations in which elements of at least two services participate.
- b. Intelligence. Intelligence in a broader context describes the product resulting from the directed collection and processing of information regarding the environment and the capabilities and intentions of actors, in order to identify threats and offer opportunities for exploitation by decision-makers. The term is also applied to the activity which results in the product and to the organizations engaged in such activity. Good intelligence provides accurate, relevant, timely and predictive analysis to support operations in the creation of a commander's desired effects and is essential to inform the force

protection process. Intelligence organizations integrate technical and quantitative assessments with analytical judgments based on detailed knowledge of the way hostile or potentially hostile forces or elements are thinking and operate. Intelligence in the context of JISR encompasses the results from the different intelligence collection disciplines (ACINT, HUMINT, IMINT, MASINT, OSINT, SIGINT).

- c. Surveillance. Surveillance is the systematic observation of Space, aerospace, surface or subsurface areas, places, persons or objects, by visual, aural, electronic, photographic or other means. It is not oriented to a specific target, but designed to provide warning of opponents' initiatives and threats and to detect changes in opponents' activities (indications and warning). Airborne and space-based surveillance assets exploit elevation to detect opponents' initiatives at long range.
- d. Reconnaissance. Reconnaissance is a mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an adversary or potential adversary, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. Reconnaissance generally has a time constraint associated with tasking or the endurance of assets involved. Intelligence critical to the prosecution of current operations is derived from reconnaissance operations and should be evaluated and transmitted in near real time to those elements needing that information.

2. Successful contribution to JISR should help to reduce uncertainties in the decision-making process and improve the ability to gain and maintain information superiority, which in turn increases flexibility, enhances effectiveness, increases responsiveness and aids in force protection. JISR Products must be responsive to the needs of the commander and staffs, with the commander's critical information requirements (CCIR) serving as the "steering wheel" for JISR operations.

3. Integrating intelligence, operations, and planning functions is essential to maximize the efficiency and effectiveness of the employment of JISR capabilities. JISR operates in accordance with six key principles that are appropriate at all levels across the full range of NATO operations to ensure effectiveness: centrally coordinated, responsive, shared, sustainable, reliable and accurate.

1.5.5. Support to joint personnel recovery

Joint personnel recovery (JPR) encompasses all military, diplomatic and civil efforts to effect the recovery and reintegration of military or civilian personnel who are separated from their unit or organization in a situation that may require them to survive, evade, resist exploitation, or escape while awaiting recovery. JPR missions range from recovering a survivor by a

single unit penetrating hostile territory without any support to a JPR task force where the operations may involve a variety of forces including C2, CAS, SEAD, Intelligence, AEW, MEDEVAC and SOF (to name just a few). JPR operations are normally conducted in five distinct tasks: report, locate, support, recover, and reintegrate.

1.6. LEGAL CONSIDERATIONS FOR CONDUCTING AIR OPERATIONS

Commanders at all levels must plan and execute their missions effectively albeit within the constraints of international and individual national laws.¹³ Ensuring air operations maintain legitimacy must be a key consideration for the COM JFAC and his/her staff; facilitated by LEGAD support whose primary role is to ensure air operations are conducted in a legal manner and in particular in conformity with the law of armed conflict (LOAC) and the relevant rules of engagement (ROE) if applicable, and otherwise with the other relevant areas of international and national law.

1.6.1. Law of armed conflict

LOAC is a part of international law governing the relations between states. It regulates the rights and duties of the belligerents in time of armed conflict. Its main purpose is to protect combatants and non-combatants from unnecessary suffering; to safeguard the fundamental human rights of civilians and persons who fall into the hands of an armed belligerent; and to facilitate the restoration of peace.

1.6.2. Rules of engagement

1. Military actions are controlled by ROE which are authorized by the North Atlantic Council (NAC) for NATO/NATO-led operations on approval of the OPLAN. ROE define the degree and manner in which force may be applied and are designed to ensure that such application of force is carefully controlled. Should commanders at any level require a change to the extant ROE in order to carry out their assigned task they may request a change, with justification, through their command chain.¹⁴ Conformity of any action within any ROE profile in force does not guarantee its lawfulness, and it remains the commander's responsibility to use only that force which is in accordance with the principles of LOAC, in particular:

- a. necessity and proportionality;
- b. humanity;
- c. distinction;

¹³ Noting that Multinational forces deployed to a friendly nation are subject to the law of that particular country, unless otherwise specified in a memorandum of understanding (MOU) or Status of Forces Agreement (SOFA).

¹⁴ Responsibility for authorising changes to ROE profiles rests with the NAC.

d. accountability.

2. ROE should be timely, appropriate, current, responsive to change and not too specific or restrictive. It is also essential that adjacent or mutually supporting formations and forces particularly understand each other's ROE, as it cannot be assumed that each will react in the identical fashion to a given situation. This in turn can contribute to confusion, misperceptions and even fratricide. ROE never limit the right of self-defence, but provide political, legal and policy direction for the conduct of NATO operations. Even if no rule from a particular series is included, the relevant principles of law apply.

1.7. STRATCOM CONSIDERATIONS FOR CONDUCTING AIR OPERATIONS

1. Strategic Communications (StratCom) should be placed at the heart of mission planning, decision making and execution to ensure all operational activity (including messaging, military engagement, and kinetic and non-kinetic activities) is coherent with Alliance objectives, thus ensuring NATO's actions match its stated intent/words. Commanders and their staffs need to be fully aware of how military activities, especially those involving the use of force, may communicate strategically and influence perceptions of a wide variety of audiences. In the design of operations, commanders and their staffs need to consider various ways to create the desired effects, including both lethal and non-lethal measures (such as the use of PA, PSYOPS, Info Ops) as appropriate, to ensure those measures selected support the overall strategic intent.

2. For airpower this is particularly important. Where airpower presents NATO with a military advantage, adversaries will attempt to undermine this advantage by characterizing the use of airpower as indiscriminate and creating disinformation, particularly in the case of incidental casualties or damage to civilian objects. This may undermine Alliance unity and resolve as it targets the public opinion of its nations. In order to protect Alliance cohesion and preserve a commander's freedom of action, it is crucial that the Alliance's StratCom objectives are considered and are understood both across the staff and at all levels within the chain of command. In doing so, a commander will be able to maximize the communicative effect of their plans and activities while preparing for and minimizing the utility of an adversary's information campaign.

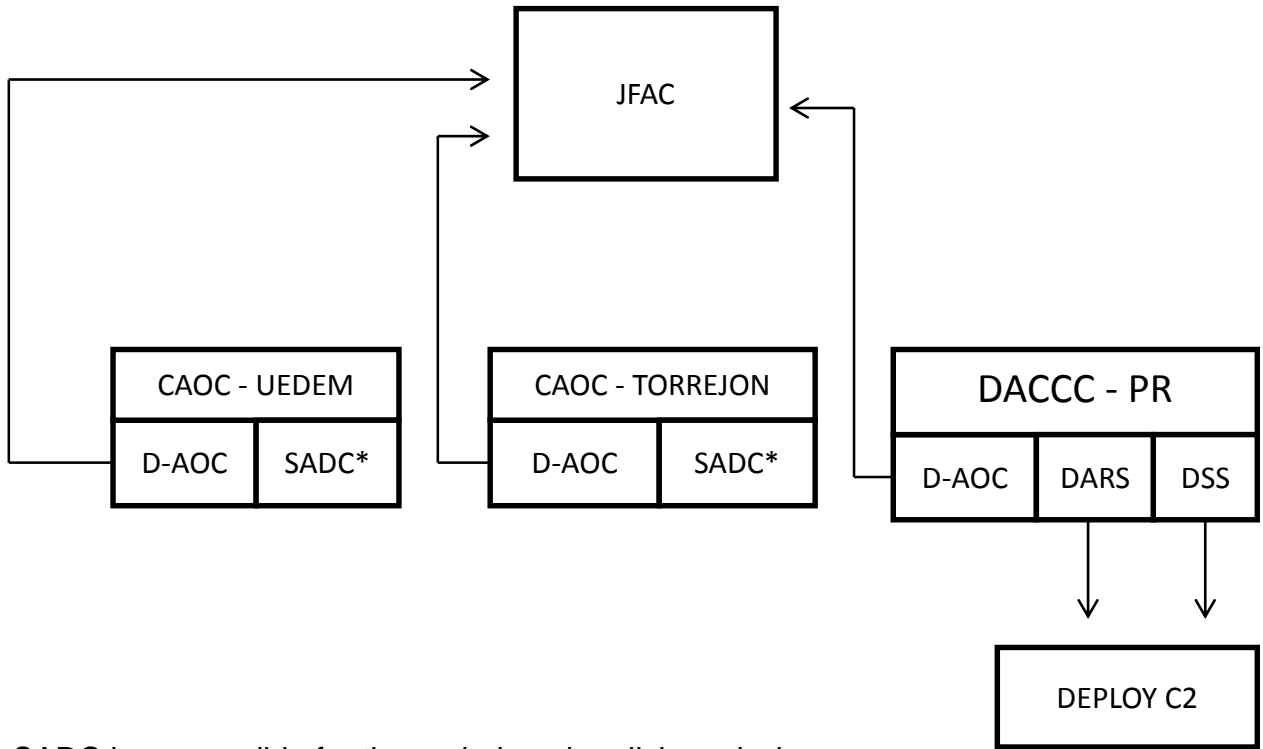
CHAPTER 2 COMMAND AND CONTROL OF JOINT AIR OPERATIONS**2.1. INTRODUCTION**

1. The Commander Allied Air Command (COM AIRCOM) is responsible to SACEUR for exercising Air C2 for the enduring peacetime tasks NATO AP and ballistic missile defence (BMD) as part of NATO integrated air and missile defence (NIAMD). During crisis and conflict, and within a designated JOA, SACEUR will appoint a COM JFAC who will conduct Air C2 for a specific operation.

2. During crisis response operations (CRO) the appointed COM JFAC exercises operational control (OPCON) on assigned air assets and capabilities through the JFAC. The COM JFAC serves as the principal air advisor to the COM JTF. Based on COM JTF direction and guidance (D&G), COM JFAC is responsible for making recommendations on the employment of assigned forces to include the apportionment of air assets. COM JFAC is responsible for planning and coordinating air operations, for integrating Land and Maritime air operations within the Joint air plan, and to accomplish operational missions assigned by SACEUR or the COM JTF.

3. If COM JFAC is appointed from within AIRCOM, he will exercise his responsibilities from a static headquarter (HQ) at Ramstein. Other locations could be used if COM JFAC is appointed from another entity. COM JTF should ensure that the necessary communication links to the JFAC are established.

4. The NATO Command Structure (NCS), established 1 January 2013, has allocated COM AIRCOM two combined air operations centres (CAOCs) and a deployable air command and control centre (DACCC) equipped with a unified Air Command and Control System. The CAOCs are composed of two entities, the static air defence cell (SADC) being responsible for AP and the deployable air operations centre (D-AOC) which, during crisis will form parts of the JFAC structure. The CAOC/DACCC is responsible to supplement JFAC with its D-AOC and can provide the operational flexibility to deploy its deployable air control centre/recognized air picture production centre/sensor fusion posts (DARS) to where it is needed. The CAOCs are located in Uedem (Germany) and Torrejon (Spain); the DACCC is in Poggio Renatico, (Italy). Additionally, in support of any NA5CRO, the JFAC may be provided by nations.



* SADC is responsible for the enduring air policing mission.

FIGURE 2.1: Allied Command Operations Air Command Structure

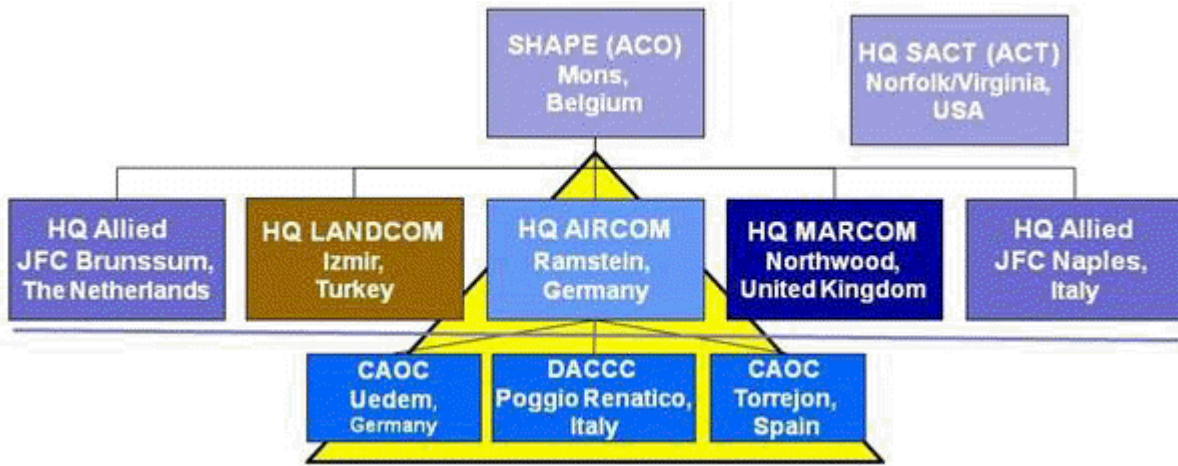


FIGURE 2.2: NATO Command Structure

5. Air command and control systems will enable NATO to seamlessly manage all types of air operations over their territory, and beyond, integrating air traffic control (ATC), surveillance, air mission control, airspace management and force management functions. In addition, a number of deployable control and reporting centres (CRC) with integrated deployable sensors will be activated with the air command and control systems (ACCS) implementation. NCS holds one standing deployable and scalable CRC (the DARS), and the NATO Force Structure (NFS) holds the possibility for other nations to contribute with deployable CRCs. ACCS will be fielded at the planning and tasking level in the CAOC during AP missions and the JFAC during crisis, and at execution level in the ARS/DARS.

2.2. COM JOINT FORCE AIR COMPONENT (COM JFAC)

The COM JFAC is the CC with the preponderance of air assets and the capability to plan, task and control joint air operations. COM JFAC plans, integrates, allocates, controls and tasks joint air operations based on the COM JTF's guidance and objectives, in accordance with the air apportionment decision and the authority, command relationships and responsibilities laid down by the JTF.

2.2.1. Authority and command relationships

The COM JFAC is given the authority to accomplish missions and tasks assigned by SACEUR and/or COM JTF. The COM JFAC typically exercises operational control over assigned assets and tactical control over other air capabilities and forces made available for tasking. In NA5CRO transfer of authority (TOA) assets will often be accompanied with a team/person representing the nation of the TOA assets. The appointed representative will be identified as the 'Red Card Holder' and holds the authority to veto on given missions/tasks according to national directives. JFAC should prepare to accommodate the influx of national representatives in the JFAC structure, ensure ready access to appropriate working bodies like the joint targeting working group (JTWG), and have procedures ready that will outline the relationship. The COM JTF may also establish supporting and supported relationships between the JFAC and other components to facilitate operations. The JFAC conducts joint air operations in accordance with the COM JTF intent and concept of the operation. The JFAC will be formed in order to perform air C2 of Alliance air operations. Operational C2 relationships will vary depending upon the size, complexity, and location of the mission. These relationships are established in the air OPLAN which is specific to the mission. COM JFAC conducts the air plan through a periodic air operations directive (AOD), then through the ATO.

2.2.2. COM JFAC responsibilities

1. The responsibilities of the COM JFAC are assigned by the COM JTF and include, but are not limited to, planning, integrating and monitoring joint air operations, and the allocation and tasking of joint air operations forces based on the COM JTF's CONOPS and air apportionment decision. Specific responsibilities include:

- a. Developing an air operations plan and air operations directive to best support the COM JTF's objectives in concert with other components.
- b. Recommending apportionment of the joint air effort to the COM JTF, after consulting with other CCs, by priority that should be devoted to the various air operations for a given period of time.
- c. Allocating and tasking of air capabilities or forces made available based on the COM JTF's air apportionment.
- d. Providing oversight and guidance during execution of joint air operations to include making timely adjustments to tasking of available joint air capabilities or forces. Coordinating with the COM JTF's and affected CCs, as appropriate, when the situation requires changes to planned joint air operations.
- e. Integrating joint air operations with operations of other CCs and forces assigned to or supporting the COM JTF's.
- f. Evaluating the results of joint air operations and forwarding assessments to the JTF to support the overall assessment effort.
- g. Providing and receiving appropriate liaison personnel required including national representatives.
- h. Performing the duties of the joint force Airspace Control Authority (ACA), unless a separate ACA is designated.
- i. Performing the duties of the Air and Missile Defence Commander (AMDC), unless a separate AMDC is designated.
- j. Functioning as a supported/supporting commander as designated by the COM JTF.
- k. Assuming the role of coordinating commander in case of nuclear operations. COM JFAC coordinates all operational level requirements for successful mission execution as directed by SACEUR.

2. JFAC products¹⁵. The products of the JFAC include, but are not limited to, planning and tasking products, airspace control, and Special Instructions. These are produced on a periodical (daily, weekly, monthly, as appropriate) basis. Specific products include:
- a. Air CONOPS and supplements. The air CONOPS and its supplements is a clear and concise statement of the line of action chosen by a commander in order to accomplish his mission.
 - b. Air OPLAN and supplements. The air OPLAN and its supplements is a plan for a single or series of connected operations to be carried out simultaneously or in succession. It is usually based upon stated assumptions and has the form of a directive employed by higher authority to permit subordinate commanders to prepare supporting plans and orders.
 - c. Air operations directive (AOD). In order to best employ the available capabilities, COM JFAC translates higher-level guidance, such as that provided in the joint coordination order (JCO), into tactical level air instructions through the AOD, which provides direction and guidance to the planning and execution branches of the JFAC, and forms the basis for the ATO. It outlines the COM JFAC's guidance for the execution of the air plan such as priorities, objectives, allocation of forces and airspace recognised air picture (RAP) production areas, and air defence areas (ADAs) on a non-permanent basis.
 - d. ACP/ACO. The JFAC will establish airspace control (ASC) procedures during crisis and conflict within the assigned area. ASC is used for deconfliction, identification and to minimize fratricide and provide AD forces with the appropriate means to maximize the effectiveness of military operations by promoting the ability of air, land and maritime forces to operate in an efficient, integrated and flexible manner with minimum mutual interference and without undue restraint and risk to friendly forces and neutral aircraft. Therefore, a procedural system of airspace control is also necessary. This system is based on a number of airspace control means (ACM) designated and activated by an ACO. The ACO is compiled and promulgated by the joint airspace coordination centre (JACC).

¹⁵ Formatted in accordance with NATO Message Text Formatting System (ADatP-3) and published for the use in the NATO Message Catalogue (AAP-11); where applicable.

- e. ATO. The ATO contains detailed tasking for all pre-planned air missions scheduled to operate within the JOA during a specific timeframe. It contains information both on missions flown under tactical command/tactical control of the JFAC as well as other missions within the JFC's assigned area. It also contains the SPINS.
- f. SPINS. SPINS are intended to provide information, and direction and guidance that apply to a longer period than just the intended ATO period or to more than one part of the ATO. SPINS should not contain already established procedures.
- g. Coverage mission order (CMO). The CMO tasks SBAD units to defend a defined area or asset.
- h. Operational tasking data link (OPTASK LINK). The OPTASK LINK specifies the operational management details for tactical data links of all (link-fitted) players in the operational area.
- i. Assessment report (ASSESSREP). The daily ASSESSREP is COM JFAC's assessment of the progress of the air effort and the problems encountered in his area.
- j. Situation and status reports. These reports inform the JFAC of the status of the Communication and Information Systems.
- k. Recognized Air Picture. The JFAC will direct the production and dissemination of the RAP.
- l. Battle Damage Assessment. The JFAC contributes to the battle damage assessment process by means of written and verbal reports, and available sensor information.
- m. Situation report (SITREP). A report giving the situation in the area of a reporting unit or formation.

2.3. LIAISON REQUIREMENTS

Effective liaison between forces is essential for coordinated operations and is a key factor in the success of joint operations. Liaison elements serve as their parent commanders' representative on matters of capabilities and limitations. Components have ready access to the JFAC, the JFAC's staff and the other components through their liaison officers (LOs).

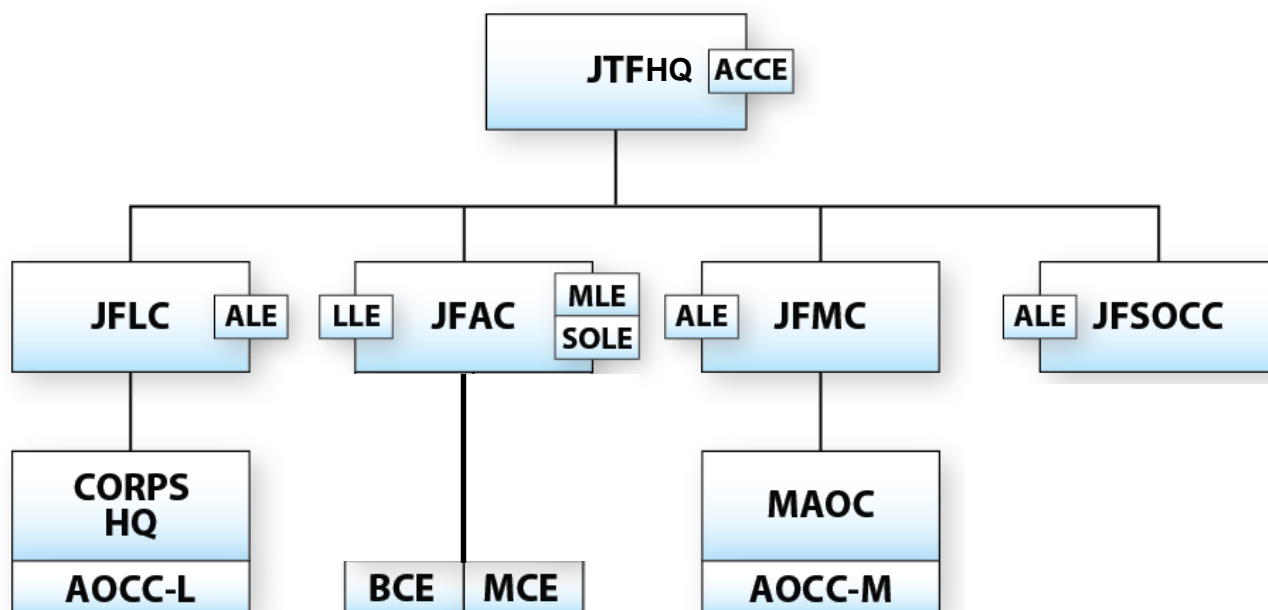


Figure 2.3 - Liaison with component and subordinate

2.3.1. JFAC Liaison with the JFC HQ

1. The air operational liaison reconnaissance team (AOLRT). The AOLRT is the AIRCOM's tool for initiating a mission in an expeditionary setting. The AOLRT is a group of very high readiness personnel drawn from the AIRCOM. Their main emphasis is to deploy from notification and liaise with the JTF and its Operational Liaison and Reconnaissance Team and to feed information back to the JFAC to support the planning process.

2. Air command coordination element (ACCE). During preparation for operations and throughout execution and redeployment, significant coordination and deconfliction between the JTF and JFAC will be required. JFAC requires representation in various joint boards and working groups that take part in the COM JTF decision-making process. This coordination and liaison will be conducted by the ACCE. The COM JFAC's on-site personal representative to the Joint Force Commander is the Director ACCE. The ACCE staff, activated for an operation, works to facilitate interaction and communication between the JFAC and the JTF. In addition, it works to integrate NATO air and Space operations within the overall joint campaign plan. The ACCE staff can be tailored for the operation and can range in size and scope from a few individual LOs to the JTF staff to a forward deployed element of the JFAC itself. The director ACCE is issued a "Letter of Authority" signed by COM JFAC to establish his authority to speak for the JFAC.

2.3.2. Liaison with CC

A component liaison element serves as the conduit for coordination between its capability component commander and the supported/supporting component commander. The liaison element is responsible to represent its component commander's perspective and ensure understanding of relevant considerations for the employment and integration of air power within joint operational planning and execution. The liaison element should possess the authority to represent its commander regarding time-sensitive and critical issues, and must be equipped and authorized to communicate directly with its commander. A component liaison element must be familiar with the details of all component air, surface and subsurface missions. It should possess the expertise and/or ability to plan and effect tasking of component capabilities.

2.3.3. Liaison with subordinate commands

1. The air liaison element (ALE) is an air entity staff under the command of COM JFAC located within either the joint force land component (JFLC) or the joint force maritime component (JFMC). The ALE provides the means for effective component-to-component liaison and is the primary conduit for information flow between the component commands. The ALE assists in planning air component supporting and supported requirements and is normally organized with expertise in plans, operations, intelligence, airspace management and air transport. Its interface includes exchanging current intelligence and operational data, support requirements, coordinating the integration of JFAC requirements for ACMs, joint fire support coordination measures (JFSCMs) and CAS. Although the air component LOs integrate with their hosting CCs' battle staffs, they remain under functional command and control of the JFAC.

2. The Maritime liaison element (MLE) staff serves as both the COM JFMC's primary representative to the JFAC and the maritime counterpart of the JFAC battle staff. The overall role of the MLE is to integrate the maritime plan with that of the JFAC, thereby ensuring an effective and efficient joint execution of the JFC's campaign plan. If required, LOs may be detached from various naval subordinated commanders to support the MLE staff. The Maritime co-ordination element (MCE) forms an integral part of the JFAC and serves as an agent between JFAC and the MLE to ensure effective operational co-operation.

3. The Land liaison element (LLE) staff is functionally subordinate to the JFLC and acts as his representative within the JFAC. If required, LOs may be detached from various land sub-commanders to support the LLE staff. The Battlefield co-ordination element (BCE) forms an integral part of the JFAC and serves as an agent between JFAC and the LLE to ensure effective operational co-operation.

2.3.4. Special operations liaison element

The Commander Special Operations Forces provides a special operations liaison element (SOLE) to the JFAC or appropriate air C2 facility. The SOLE coordinates, integrates, deconflicts and synchronizes special operations force air, surface and sub-surface operations with conventional air operations. The SOLE integrates throughout the JFAC's, or appropriate air C2, staff cells and functional areas. The SOLE performs its activities by providing a special operations force presence in the JFAC or appropriate C2 air, which is aware of the activities of special operations units in the battle space. This will provide visibility of special operations force operations in the ATO and ACO, in accordance with OPSEC requirements. Special operations must be closely coordinated with joint air operations planning and execution to prevent fratricide, and ensure achievement of mission objectives.

2.3.5. Other liaisons

Intergovernmental organizations, other government agencies and Non-governmental Organizations conduct activities near or in areas of military operations, and LOs from these organizations to the COM JFAC may be appropriate. To the maximum extent possible, commanders should assure that these organizations' efforts and the military efforts are integrated, complementary, or not in conflict; and establish coordination and mutual support mechanisms as needed to eliminate or mitigate conflict and support Alliance or coalition goals in the region. Multinational partners, particularly in operations being conducted in conjunction with or in close proximity to those of allied or non-aligned nations, may provide LOs that work with the COM JFAC to ease coordination between forces and with governmental agencies. They work with the COM JFAC to coordinate the activities of their sending organizations.

2.3.6. Air operations coordination centre (Land/Maritime)

The air operations coordination centre (AOCC) Land/Maritime provides an air entity, functionally subordinate to the JFAC, collocated with and an integral part of an army corps or maritime task force. The AOCC provides air expertise and integrates the liaison and coordination functions relating to air operations, including, but not limited to APCLO/APCMO, coordination of air defence assets such as mobile integrated air defence units, army organic air defence, coordinated air/space procedures, and airspace control. The AOCC will also provide a connection for the ALE team to the JFAC. For exercises/operations, the AOCC (with augmentation as required) will provide execution-level coordination of air operations in support of the appropriate CC as an extension of a designated JFAC for the exercise/operation.

2.4. AIRSPACE CONTROL AND AIR AND MISSILE DEFENCE

1. The goal of airspace control is to increase combat effectiveness by promoting the safe, efficient and flexible use of airspace. It helps reduce fratricide by facilitating the safe passage of friendly and neutral aircraft, and the engagement of adversary aircraft and missile threats in airspace that may be used by all components, civilian or neutral air traffic. Developing and executing fully integrated joint air operations, ACA and air and missile defence commander responsibilities are normally assigned to the JFAC because of the close relationship between these functions and the need to simplify the coordination required. If conditions do not permit this then the COM JTF may also designate a separate ACA or air and missile defence commander, in which case close coordination between these commanders becomes essential.
2. Air defence operations must be integrated with other tactical air operations within the operational area through the ADP. Weapons control procedures and ACMs for all air defence weapon systems and forces must be established. These procedures must facilitate defensive air operations while minimizing the risk of fratricide.
3. All air missions are subject to airspace control¹⁶ and have to adhere to the respective ACO, which provides direction to deconflict, coordinate, and integrate the use of airspace within the operational area. Methods to accomplish this deconfliction, coordination, and integration range from positive control of all air assets in airspace control area to procedural control of all such assets, with any effective combination of positive and procedural control between the two extremes. It is up to the ACA, through the ACP, to decide the appropriate method based on the COM JTF operations plan.
4. Depending on the mission, the degree of control of air assets may need to be rigorous and the ROE may be more restrictive. This is especially true in a non-warfighting environment that can transition quickly to combat and back again, and often has constraints and restraints on the forces, weapons, tactics, techniques and procedures employed. Consequently, all air missions, including both fixed, rotary-wing aircraft, and UA (if their operating altitude conflicts with other air operations) of all components should appear on the appropriate ATO and/or flight plan and all aircraft must adhere to common procedures. This type of rigorous control is necessary because the mix of friendly, adversary and neutral aircraft and mission constraints require the COM JTF to strictly control flights in the JOA. No matter what methods are chosen, they need to be continually evaluated for effectiveness and efficiency as the environment and mission change.

¹⁶ Details for joint airspace control are in Allied Joint Publication (AJP)-3.3.5 *Doctrine for Joint Airspace Control*.

2.4.2. The joint force airspace control authority

The ACA is the commander designated to assume overall responsibility for the operation of the airspace control system in a designated airspace control area. He establishes and coordinates an airspace control system that responds to the needs of the COM JTF, provides for integration into the airspace control system of the host nation, and coordinates and deconflicts user requirements. In consultation with appropriate components and civilian authorities, he develops the ACP, taking into consideration any coordination required and organized around maritime and land units. He is then responsible for directing the execution of the ACP through the implementation of ACMs and the development and promulgation of the daily ACO and any special instructions through the JACC. All components are required to comply with the ACP. In NATO operations, COM JFAC will normally be designated as the JTF ACA.

2.4.3. The joint force air and missile defence commander

The joint force air and missile defence commander is the commander with overall responsibility for air and missile defence; normally, the CC with the preponderance of air and missile defence capability and the command, control and communications capability to plan and execute integrated air and missile defence operations. He integrates and coordinates the air and missile defence assets of each force component into a coherent joint ADP. This includes establishing weapons control procedures and measures for all DCA weapon systems and forces, coordination with regional/host nation air and missile defence systems and the exchange of information necessary to support civil defence activities. Additionally, he is responsible for the production of the RAP within the COM JTF JOA, as assigned. He applies the principles of air defence to counter hostile air activity, including theatre ballistic missile defence¹⁷ (TBMD), and promulgates and employs common procedures for air defence battle management and the reduction of mutual interference, taking into account any air defence required and organized around maritime and land units.

2.5. JFAC AIR COMMAND AND CONTROL ELEMENTS

Air operations are controlled through an overarching air C2 and communications and information systems (CIS) structure centred in the JFAC. It includes the structures, personnel, procedures and equipment necessary to plan, direct and control air operations, and to coordinate air operations with other components.

¹⁷ Theatre Ballistic Missile Defence is the protection of deployed forces and high value assets/areas within a theatre from attacks by ballistic missiles and cruise missile.

2.5.1. ARS/DARS

The ARS/DARS is a ground-based integrated C2 element. It may be fixed or deployable, static or mobile and can be provided by an alliance, coalition, as a combined element, or by a single nation. One or more radars are connected to the ARS/DARS, one of which may be collocated. Subordinate to the JFAC, and horizontally integrated with tactical C2 and intelligence, surveillance and reconnaissance elements, attack and support aircraft, ARS/DARS is responsible for the decentralized execution of air defence and airspace control as well as supporting offensive air operations in a geographic sector assigned by the JFAC. In times of crisis or conflict, ARS/DARS manages all defensive air, offensive air and airspace management activities within its assigned operational area through surveillance, identification, weapons control, positive and procedural airspace control, and link management. Moreover, it contributes to the RAP. In compliance with JFAC directives, further control, surveillance and/or management may be delegated to subordinate radar units, airborne early warning (AEW)/airborne warning and control system (AWACS) or flight procedural agencies (such as air operations Control Centres) where, for example, they may have interoperable and better radio and/or radar coverage. The ARS consists of a number of tactical control organizations collocated into a single entity; that may be static or deployable (DARS). ARS are established for the production of the RAP; control of assigned weapon systems; preparation and execution of tasked missions; provision of guidance and control to air defence weapon systems; implementing the ordered readiness posture; reacting to execution orders; and reporting mission results to the JFAC. Components of the ARS are:

- a. **Air Control Centres.** Air control centres are the real-time battle management components that perform air mission control for manned and unmanned aircraft and surface-based air defence (SBAD) weapons within a designated geographical area. They can be delegated single, multiple or all of the tactical battle management functions by the JFAC for mission execution. This could include SBAD weapons preparation and SBAD weapon employment control. They may also provide limited ATC services, coordinate the minute-to-minute air battle with maritime forces afloat and army ground-air operations, and can also provide tactical, navigational and emergency assistance to aircraft.
- b. **Recognized Air Picture Production Centres.** Recognized Air Picture Production Centres (RPCs) produce a RAP, disseminate a joint environment picture (composite of sea, land and air surveillance picture), and manage their subordinate surveillance assets within an assigned area. An area air picture is established by correlating local air pictures from subordinate sensor fusion posts (SFPs) with tracks and surveillance data received from external sources. Maritime surface and sub-surface, land surface and air tracks are received via automatic data links from maritime and land forces, allied ground surveillance assets and airborne early warning aircraft. Additionally, the RPC manages allocated surveillance assets in accordance with the orders and

priorities received from the JFAC and in response to requests from RAP users for additional or improved RAP data.

- c. **Sensor Fusion Posts.** The SFP develops a local air picture through the fusion of data from active and passive sensors. They also report on the status and performance of subordinate sensors, controls sensor detection and respond to anti-radiation missile threats and electronic countermeasures activity. Additionally, they manage and distribute all data coming from ATC radars to the RPC.

2.5.2. Ballistic Missile Defence Operations Centre

The Ballistic Missile Defence Operations Centre (BMDOC) performs the management and control of the NATO BMD force. As BMD is related to NATO Europe's territorial defence, the BMDOC forms part of AIRCOM. Any missile defence operation under the responsibility of the joint force air and missile defence commander should be planned and executed in close coordination with BMDOC AIRCOM.

2.5.3. AEW/AWACS

AEW aircraft are flexible and capable integrated air surveillance, control and air battle management platforms that can provide a real-time, accurate and reliable all altitude and all weather battlespace picture air activity beyond the coverage of ground-based radars. On board controllers provide an offensive, defensive control and air battle management capability.

2.5.4. Air-ground surveillance

Air-ground surveillance systems, such as the Alliance ground surveillance Joint Surveillance and Target Attack Radar System (JSTARS) and airborne stand-off radar (ASTOR), are integrated land/air theatre/JOA wide battle management and/or C2 aircraft that build ground situational awareness through surveillance to support attack operations and/or targeting. They allow for rapid updates on adversary force disposition, identify opportunities for rapid interdiction and retargeting of surface forces and a limited battle management function. On-board battle managers (where carried) provide direction based on wide area surveillance ground moving target indicator and synthetic aperture radar information that detects and locates stationary ground targets and tracks moving ground targets and rotating antennas. This data is used to build a common tactical picture to provide the COM JTF and his CCs with situation development, targeting, attack planning and limited post attack assessment information. Data is transmitted to airborne and ground elements of the Air Command and Control Systems capable of receiving appropriate data link messages.

2.5.5. Signals intelligence

Signals intelligence (SIGINT) is a category of intelligence comprising, either individually or collectively, all Communications intelligence (COMINT), Electronic intelligence (ELINT) and Foreign instrumentation signals intelligence (FISINT), however transmitted. Airborne SIGINT capabilities allow real (or near real) time assessment of hostile air or surface based electronic emitters and the correlation of location, type and mode of emitted signal with the radar tracking information from AEW, AWACS and air-ground surveillance type aircraft.

2.5.6. Wing operations centre

Wing operations centre (WOC) performs continuous coordination between the wing and the JFAC (also the AOCC, if tasking authority is delegated) or between the wing and the squadrons. Feasibility of tasking will be verified throughout the mission preparation process. The tasking will be adjusted for additional mission relevant information and within the wing's capabilities and capacities in coordination with the tasking authority. Mission launch schedules are generated and missions are assigned to individual squadrons or to individual aircraft. The WOC monitors and ensures mission result reporting and provides continuous near real-time status information to the JFAC and associated ARS.

2.5.7. Squadron operations centre

The squadron operations centre (SQOC) performs continuous coordination with the WOC for final mission preparation. The SQOC is responsible for the preparation of assigned missions, their timely execution, and the reporting of mission results through the WOC to the ARS and JFAC.

2.5.8. Surface-to-air missile operations centre

The surface-to-air missile operations centre (SAMOC) performs management and control of SBAD weapons systems and provides continuous near real-time SBAD status information to the air control centre, the JFAC, and the AOCC (when providing support to ground forces). A SAMOC is normally deployable, but may be implemented at static installations.

2.5.9. Tactical air control parties

Tactical air control parties (TACP) are subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft. They are staffed with Air Liaison Officers (ALO) and/or FAC/JTAC to conduct liaison and control functions.

CHAPTER 3 JOINT FORCES AIR COMPONENT HEADQUARTERS ORGANIZATION

3.1. INTRODUCTION

1. The size of JFAC and the internal manning will vary according to the type and scope of the mission. The internal structure will remain composed of 5 divisions: strategy division (SD), combat plans division (CPD), combat operations division (COD), intelligence, surveillance and reconnaissance division (ISRD), and combat support division (CSD).
2. The NATO JFAC will be generated from the core JFAC within AIRCOM utilizing its organic C2 structure and supplemented by AIRCOM staff, one or more D-AOCs, and if necessary, augmented by any national air C2 organization.
3. There are national variations to the JFAC planning responsibilities, which see more of the planning effort devolved to a JFAC.

3.2. THE COM JFAC BATTLE STAFF

1. The JFAC staff will also include appropriate component representation and subject matter experts who provide the knowledge and experience required to effectively employ any capabilities or forces made available to the JFAC for tasking. To be most effective, the JFAC should integrate appropriate component representation throughout his staff, rather than just limiting them to a liaison position. Ideally, JFAC staff billets requiring specific expertise or individuals will have been identified, staffed accordingly, trained, and employed during peacetime exercises to ensure their preparedness for operations.
2. The nucleus of the JFAC staff should be trained in joint air operations and be representative of the joint force. Staff augmentation with the manning identified above ensures joint representation throughout the JFAC battle staff. The JFAC, in coordination with other CCs, will determine specific manning requirements based on the size and scope of the operation, assigned forces, and personnel availability.
3. The command group. The JFAC command group should be able to plan and execute air operations or battles and engagements within a campaign, as required; provide the focus of all air and space related functional tasks regarding when assigned to JFAC by SACEUR for this purpose; and to plan and execute, or provide support for, additional missions and tasks as assigned by COM JTF. The members of the JFAC command group are:
 - a. COM JFAC.
 - b. DEPUTY COM JFAC.

- c. JFAC Director.
- d. Director of Staff.
- e. Public Affairs Officer.
- f. Political adviser.
- g. Legal adviser.
- h. StratCom adviser.

3.3. JFAC LEAD DIVISIONS

1. **Strategy Division** should be able to support the achievement of air operational objectives, both of a kinetic and non-kinetic nature, and desired end state by developing, refining, disseminating, and assessing the COM JFAC air and Space strategy (which is presented in a comprehensive air OPLAN), act as the COM JFAC's focal point for air related plans development during either deliberate planning or crisis action planning, initiate the air tasking cycle via guidance in the AOD. The AOD can be issued -as needed- based on mission requirements, and operate at the operational-level, and assess the effectiveness and efficiency of air, Space, and influence operations. SD represents the JFAC core, long-range operational planning and assessment capability.

- a. **Air operations directive team.** The air operations directive team, based on the COM JTF's JCO, creates the air plan and translate this into the AOD in support of a joint prioritised target list (JPTL) and a joint prioritized defended asset list (JPDAL).
- b. **Air operations planning group (AOPG).** The role of the AOPG is to develop, review, update and coordinate Air Plans required to successfully conduct any given operation. The AOPG also provides a flexible and tailored staff for speedy analysis and staffing of any task related to crisis planning. Rapid recall and assembly procedures, as well as a streamlined planning process, will be the key to success in providing timely and appropriate output. Besides operational planning, the AOPG is also responsible for the coordination, synchronization, and integration of all other activities related to the development of JFAC plans, policy and orders as directed by the COM JFAC.
- c. **Operations assessment section.** This section evaluates results against objectives, advising on any changes to current objectives and estimates likely achievement timescales. This enables the air strategy assessment and report to be reproduced as well as supporting the air strategy section.

2. **Combat plans division.** CPD should be able to apply operational art to develop detailed execution plans for Air and Space operations, develop execution plans based on the COM JTF objectives and apportionment that apply specific air and space capabilities and assets to accomplish the COM JFAC's mission in fulfilment of the COM JTF operational objectives, and publish and disseminate the ATO, ACO, fragmentary orders (FRAGOs), SPINS, ROE and other planning/tasking documents as required. The Division is the focal point for force management (FM), command and control resource management (C2RM), Airspace Management (ASM) and ATC at the operational level. In case of nuclear operations, dual capable aircraft will be tasked directly by SACEUR. The CPD nuclear operations cell (NOC) will synchronize nuclear operations with conventional air operations as well as support to SACEUR's strike task. CPD is normally task-organized into functionally oriented core teams: the guidance, apportionment and targeting branch (GAT), the master air operations plan team (MAOP), the ATO production team and the C2 planning team.

- a. **Guidance, apportionment and targeting branch.** GAT is a branch within CPD whose mission is to ensure the linkage between the AOD, COM JFAC's vision and its practical application through the use of COM JFAC's assets to achieve desired kinetic and non-kinetic effects. In accordance with the JFAC's prioritized tasks (derived from strategy), GAT develops the JFAC planning guidance, air component target nomination list and air apportionment recommendation (JFAC guidance letter). If the COM JTF delegates joint targeting coordination authority to the COM JFAC, the JFAC will form a joint targeting working group (JTWG)/joint targeting coordination board (JTCB). GAT will serve as the core of the JTWG and receive all target nominations as well as prioritize them into the draft JPTL. All targets are reviewed for compliance with the law of armed conflict and rules of engagement before being included on the JPTL.
- b. **Master air operations plan team.** The primary objective of the MAOP team is to support the JFAC and its subordinate units with a high quality ATO product with corresponding daily SPINS based upon a tactically sound and robust MAOP in order to achieve the desired effects during an operation. The secondary objective is to keep the JFAC leadership informed about the air planning process through the air operation meeting and to get their final approval of the ATO product at the ATO release briefing.
- c. **The ATO production team** is directly responsible for the technical production and distribution of the ATO, SPINS and ACO (when delegated), and facilitates the timely production and dissemination of these products by the most expeditious means available.
- d. **Command and control planning team.** The C2 planning team develops the detailed C2 execution plans and the data link architecture for the JFAC. Major elements include airspace management, theatre air and missile defence planning, link interface planning and C2 architecture support planning. Some

of the C2 documents produced are the ADP, baseline SPINS and tactical data link coordination messages.

- e. **The joint airspace coordination centre (JACC)**, normally an integral body of the C2 team, develops the ACP; manages and publishes the ACO, receives, coordinates and approves/denies requests for ACMs; coordinates/deconflicts request for the activation of ACMs extending into adjacent joint operations areas; establishing liaison with CCs, appropriate NATO, national and international organizations; and ensuring the timely and adequate distribution of the ACO.
- f. NOC coordinates on behalf of COM JFAC all nuclear operations and the required support. The NOC is responsible for any de-confliction of nuclear and non-nuclear forces. The NOC liaises with GAT and MAOP as well as COD during ATO execution.

3. **Combat operations division.** The COD is responsible for monitoring and execution of the current ATO. In doing so, the COD should be able to maintain situational awareness of the battle space and constant contact with subordinate elements and assets, as well as other assets available for tasking, respond to battlefield dynamics by command and control of air and missile defence operations, and by modifying the published ATO through adding, deleting, retargeting, or changing a sortie's mission ("re-rolling"), exercise tactical control (TACON) over the JOA assets allocated by JFAC during the execution of the ATO, coordinate Air Support with appropriate component command HQs operating in the JOA, or beyond the JOA as directed, and assess the results of air operations and submits reports and recommendations to the COM JFAC.

- a. **Current operations cell.** The current operations cell is split into an offensive and defensive section responsible for managing all aspects of on-going air operations. It synthesizes the recognized air picture, various reports, and direct dialogue with JFAC and forward air element to maintain overall situational awareness. The current operations cell also coordinates changes to the AOD and priority target lists and coordinates with ISRD to execute all mobile, time-sensitive and conventional counter force targeting.
- b. **Surface-based air defence/theatre missile defence coordination cell.** The SBAD/TMD coordination cell monitors, assesses and advises on SBAD and TMD operations and plans.
- c. **Electronic warfare coordination cell (EWCC).** The air electronic warfare coordination cell is responsible for the planning and coordination of all air electronic warfare and related activities in liaison with the joint and CC electronic warfare coordination cell.

- d. **Air-to-air refuelling cell (AARC).** The AARC is responsible for coordinating air-to-air refuelling planning for all CCs and establishing appropriate airspace. As nations continue to field fewer more capable tanker transport (TT) aircraft, consideration should be given to combining the AARC and the airlift coordination centre (ALCC) or building coordination elements between the two cells to more efficiently use assets that are capable of being employed simultaneously (in a significant way) in both AT and AAR roles.
 - e. **Joint personnel recovery cell.** The joint personnel and recovery cell assists in planning, risk assessment and guidance to establish the combined joint rescue coordination centre embedded in the JFAC.
 - f. **Force protection coordination cell.** The force protection coordination cell advises COM JFAC on appropriate force protection measures considering threat, mission criticality and risk-taking philosophy, and coordinates chemical, biological, radiological and nuclear warning and reporting. The cell maintains close liaison with the force protection staff at JTF HQ, other CC and subordinate HQs.
 - g. **Airspace surveillance and control system cell.** The airspace surveillance and control system cell monitors, assesses and advises on integrated air defence operations and data links.
 - h. **Meteorological (METOC) support.** Weather information is an integral part of planning air operations. Designated METOC support is provided by METOC specialists that may reside in the A2 Ops Intel Section or the A3 Ops Support Section. They provide tailored forecast products to air operations, including severe weather warnings, general and aviation forecasts, airfield conditions, specific target forecasts and CBRN predictions. Specific METOC data may also be inputted into NATO planning and C2 systems. (ref AWP-2A, AJP3.11)
 - i. **Air transport coordination centre (ATCC).** The ATCC plans, coordinates, executes and controls air transport operations within the JOA. It works in concert with the JFAC director to ensure effectiveness in the air assessment, planning, and execution process. ATCC tasks and responsibilities normally include tasking and scheduling air transport operations within the JOA based on the JTF approved priorities for validated air transport requirements, allocating slot times for arrival/departure of transport aircraft at airfields in the JOA in response to requests from nations or the appropriate commander, integrating air transport activity with other operations, for example humanitarian and disaster relief operation flights, and publishing the air transportation schedule as a portion of the ATO.
4. **Intelligence, surveillance and reconnaissance division.** The ISRD needs to be able to provide the COM JFAC, JFAC and subordinate units with predictive and actionable

intelligence, Counter Intelligence and Security Information, ISR operations and targeting in a manner that drives the air tasking cycle. The ISRD also needs to provide a common threat and targeting picture in order to inform the planning and execution of theatre-wide air operations, provide the means by which the effects of the operations are measured, conduct planning, monitor execution of airborne ISR operations, lead collection management efforts, dynamically adjust ISR plans as required and direct the JFAC's distributed and reach-back ISR processes, conduct dynamic ISR operations in close coordination with MAOP, which provides the context for understanding the adversary's intentions and supports the application of predictive battlespace awareness (PBA). PBA is a multidimensional understanding of the battle space in time, space, and effect, regardless of the adversary, location, weather, or time of day, to assist PBA through contributing: initial preparation of the operational environment, target development, ISR strategy and planning, ISR employment, and assessment, and provide current battle damage assessment (BDA).

5. **Combat Support Division.** CSD is responsible to the JFAC for providing direct support in various functional areas to the JFAC and subordinate units; produce, coordinate, and execute sub-area plans to sustain the program; and facilitate the attainment of JFAC objectives through interfaces with other JFAC divisions. CSD could be structured into five functional sub-areas: Personnel, Communications, Logistics, Finance, and Support Group. CSD personnel are responsible for producing JFAC CRO manning lists in accordance with the authorized crisis establishment (CE), filling all authorized posts with qualified manpower, and developing a rotation plan when required. Logistics responsibilities include coordinating the logistics effort to enable and sustain the air plan by identifying logistics requirements, constraints, and limitations impacting the production of the air operations plan. Communications efforts include ensuring the planning of reliable, robust, and sufficient theatre air C2 and CIS for the required mission. The support group is responsible for planning and coordinating real-life support for JFAC operations.

3.4. JFAC TRANSITION

3.4.1. Planned Transition

The JFAC should develop a plan for the transition of JFAC duties to another component or location. Planned JFAC transitions are possible as a function of build up or scale down of joint operations. During transition of JFAC responsibilities, the component passing responsibilities should continue monitoring joint air planning, tasking and control circuits, and remain ready to reassume JFAC responsibilities until the gaining HQ or component has achieved full operational capability.

3.4.2. Unpredicted transition

As a possible result of battle damage or major C2 equipment failure, a smooth transition is unlikely. Therefore, the COM JTF should pre-designate alternates (both inter and intra-component) and establish pre-planned responses and options to the temporary or

permanent loss of primary JFAC capability. Frequent backup and exchange of databases is essential to facilitate a rapid resumption of operations should an unplanned transition occur.

3.4.3. Transition events

The following events may cause the JFAC responsibilities to shift:

- a. Coordination requirements related to the planning and execution of the air tasking order exceeds the component capability.
- b. Build-up or relocation of forces shifts preponderance of the air capabilities/forces and the ability to effectively plan, task and control joint air operations to another CC and the COM JTF decides that the other component is in a better position (location, C2 capability or other considerations) to accomplish the JFAC responsibilities.
- c. Command, control, communications, computers and intelligence capability becomes unresponsive or unreliable.

3.4.4. Transition considerations

Considerations to aid in JFAC transition planning and decisions include:

- a. Continuous, uninterrupted and unambiguous direction and guidance for joint air operations.
- b. Appropriate communications system support capabilities to ensure that the shift of COM JFAC duties is as transparent to the components as possible.
- c. The provision of specific procedures for coordinating and executing planned and unplanned shifts of COM JFAC in the air operations plan.
- d. The availability of adequate communications, connectivity, manning, intelligence support and C2 capability in relieving component prior to assuming COM JFAC responsibilities.
- e. Management of the current AOD, ACO, force disposition, adversary situation and order of battle.
- f. The COM JTF objectives to conduct supporting joint air operations.
- g. Established timely, reliable and secure communications links with all appropriate coordination cells to facilitate continuous and dynamic exchange of information.

- h. Complete familiarity with the air and missile defence plan and airspace control plan.
- i. Complete and keep current databases to expedite the transition.

CHAPTER 4	PLANNING FOR JOINT AIR OPERATIONS
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4.1. INTRODUCTION

1. The NATO operations planning process¹⁸ consists of a six phases planning process:
 - a. Phase 1 – Indications and warning (I&W) of a potential or actual crisis.
 - b. Phase 2 – Assessment of the developing, or reassessment of an ongoing crisis situation and of its potential or actual implications for Alliance security.
 - c. Phase 3 – Development of recommended response options to support NAC decision-making throughout the cycle of a crisis.
 - d. Phase 4 – Strategic Plan Development.
 - e. Phase 5 – Execution of NAC decisions and directives.
 - f. Phase 6 – Transition and termination of NATO’s crisis management role.

2. The NATO operational-level planning process (OLPP)¹⁹ consists of the necessary steps to support a JFC and his staff to develop the OPLAN. These OLPP steps are:
 - a. Step 1 - Initiation of the OLPP.
 - b. Step 2 - Problem and Mission Analysis.
 - c. Step 3 - Course of action (COA) development.
 - d. Step 4 - COA analysis.
 - e. Step 5 - COA validation and comparison.
 - f. Step 6 - Commander’s COA decision.

¹⁸ For further information on the NATO operations planning process, refer to Comprehensive Operational Planning Directive/Functional Planning Guides.

¹⁹ For further information on the NATO operational-level planning process, refer to Allied Joint Doctrine for Operational-Level Planning, AJP-5.

- g. Step 7 - Operational-level concept of operations (CONOPS) and plan development.
- h. Step 8 - Campaign assessment and plan review/revision.

4.2. COM JFAC PLANNING RESPONSIBILITIES

1. COM JFAC employs an AOPG following NATO's operations planning process to derive a supporting air OPLAN. NATO uses operational estimates as a part of the mission analysis process which outlines operational results to be achieved and to identify critical operational requirements, limitations on freedom of action and inherent risks. It is driven by the strategic assessments, direction and guidance, and further influenced by operational estimates, the comprehensive preparation of the operational environment, as well as advice from subordinate commands and cooperating organizations.

2. The operational estimate is a military problem solving process which is applied to structured problems in uncertain and dynamic environments against shifting, competing or ill-defined goals, often in high stake, time-pressured situations. It combines objective, rational analysis with the power of intuition (a combination of experience and intelligence) and its output is a decision about a course of action. Guided and energised by the Commander, the Operational Estimate is a mechanism designed to draw together a vast amount of information necessary for the thorough analysis of a set of circumstances, in order to allow the development of feasible courses of action and the subsequent translation of a selected option into a winning plan.

3. When the COM JTF approves the COM JFAC's COA(s) it becomes the concept of joint air operations - expressing what, where and how joint air operations will affect the adversary or current situation - articulated as the air plan. The COM JFAC's daily guidance ensures that these operations effectively support the joint force objectives while retaining enough flexibility to adjust to the dynamics of military operations.

4. The COM JFAC's role is to provide focus, guidance, direction and purpose to the staff to generate the effects associated with the commander's intent; however, his degree of direct involvement will depend on the time available, preferences, and the experience and accessibility of the staff. During planning he will use the entire staff to explore the full range of probable and likely adversary and friendly COAs, and to analyse and compare friendly air capabilities with the adversary threat. He ensures that planning is conducted in a collaborative manner with other components by making maximum use of appropriately empowered LOs to support integration of operations across the joint force.

5. Planning is a continuous process that only ends when the mission is accomplished and the forces are redeployed, or when the national command authorities terminate the mission and direct the redeployment of forces. Staff assigned to develop the plan should include representation from all components providing air capabilities or forces to enable coordination and greater understanding of all component capabilities or forces. Adversaries will always attempt to frustrate a plan and the JFAC must expect changes and be ready to make them in a time-constrained environment.

4.3. CAMPAIGN SYNCHRONIZATION DURING OPERATIONS

The joint coordination process synchronises the campaign efforts of a joint force. The primary objective of joint coordination is to provide the most efficient use of joint force assets and to capitalize on their synergistic effect. The COM JTF will establish, or may delegate a subordinate commander to establish a joint coordination board²⁰ organization within his staff to accomplish campaign synchronization and joint coordination. The joint coordination board and its subordinate working groups, the JTWG, the Information Activities Working Group, the daily asset reconnaissance board (DARB), the joint defended asset working group (JDAWG), Time-Sensitive Target (TST)²¹ cell, current operations or the combined joint operations centre and the joint operations planning group must all contribute with specific inputs to, and shoulder specific responsibilities for, the campaign synchronization process. Effective communications and liaison are vital to its success.

4.3.1. The Joint Coordination Board

The joint coordination board seeks to accomplish campaign synchronization and joint coordination (approximately 3-10 days hence), including joint targeting guidance, balancing competing component requirements with the COM JTF's direction and guidance. The joint coordination board should have a macro-level view of the JOA and balance competing component requirements with the COM JTF's direction and guidance for the next 3-10 day period. It issues a JCO as required on behalf of the COM JTF.

4.3.2. The Joint coordination order

1. The JCO provides, in one document, the overall operational focus of the campaign showing the total interaction of all forces and capabilities, lethal and non-lethal, that the COM JTF has available to complete his mission. The JCO states the COM JTF's intent, the point of main effort, provides amplifying guidance and coordinating instructions. It includes

²⁰ Known as a Joint Targeting Coordination Board (JTCB) in some nations.

²¹ The abbreviation TST is referenced in the Allied Command Operation Manual 80-70 but neither in AAP 6 nor in AAP 15.

annexes for the JPTL, TST, Info Ops guidance matrix and any SPINS on restricted targets, joint fires and Info Ops.

2. Based on the JCO, CCs develop their own objectives and tasks including requests and/or recommendations to the COM JFAC (unless he is the supported commander) on the proposed allotment and apportionment of air assets, prior to their submission to the COM JTFs joint coordination board for review and concurrence. The joint coordination board will resolve any case of conflicting component objectives.

4.4. AIR BATTLE RHYTHM AND AIR TASKING CYCLE

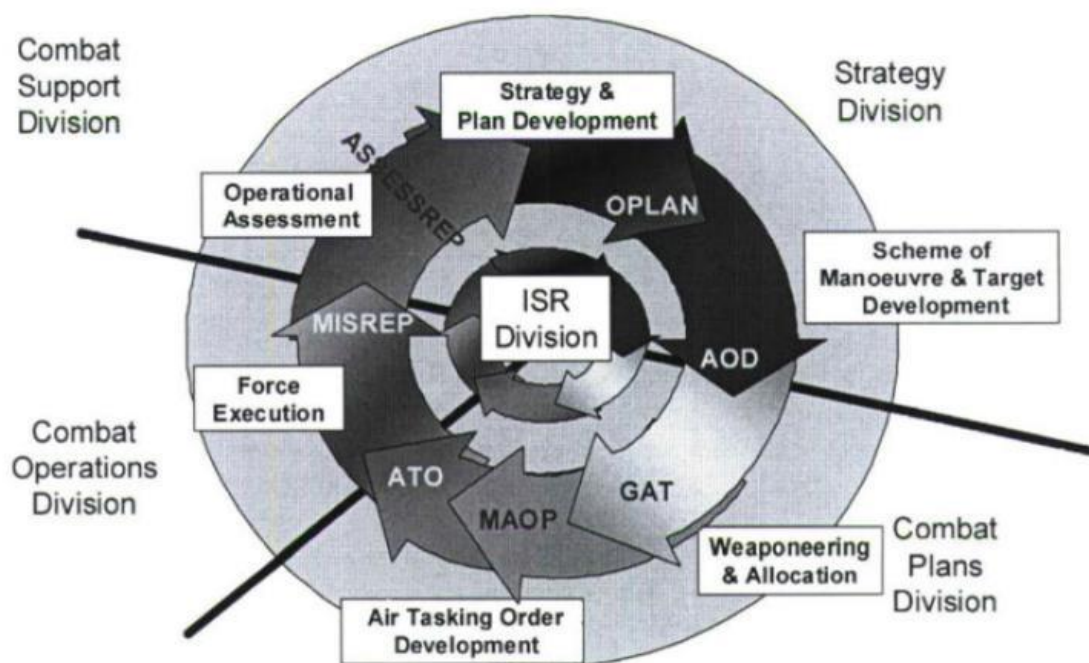


Figure 4.1: The air tasking cycle

4.4.1. Air Tasking Cycle.

1. The COM JFAC employs a joint air tasking cycle to provide for the efficient and effective employment of the joint air capabilities or forces made available. The cycle provides a repetitive process for the planning, coordination, allocation and tasking of joint air missions/sorties within the guidance of the COM JTF. The cycle must be flexible and accommodates changing tactical situations, COM JTF guidance as well as requests for support from other CCs. The joint air tasking cycle is an analytical, systematic approach that focuses targeting efforts on supporting operational requirements. Much of the day-to-day joint air tasking cycle is conducted through an interrelated series of information exchanges and active involvement in plan development, target development and air execution (through designated component LOs and/or messages), which provide a means of requesting and scheduling joint air missions. A timely ATO is critical - other joint force components conduct their planning and operations based on a prompt, executable ATO and are dependent on its information.

2. The joint air tasking cycle begins with the COM JTF's objectives, guidance during COM JTF and component coordination, and culminates with operational assessment of previous actions. The ATO articulates the tasking for joint air operation for a specific time period. Detailed planning begins at a predetermined and repetitive schedule as depicted in the OPLAN. The detailed planning should be finished so well in advance of the execution period that it will enable the integration of all component requirements. The net result of this planning effort is that there could be a number of ATOs in various stages of progress at any time. It is important that COM JFAC decides on an ATO cycle that is tailored to the specific tactical situation. JFAC staff will analyse all relevant factors, i.e. rapidly changing ground situation, amount of coordination partners, JTF battle rhythm, etc. and present COM JFAC with a recommended ATO cycle. The ATO cycle should be flexible enough to allow change in pace during different phases in the operation. Different timelines for the ATO cycles may be considered.

3. The ATO cycle starts with COM JTF guidance and ends after the assessment period. Long-range combat air assets launching from outside the JOA, may be airborne before ATO publication/execution. These assets require the most current (draft) ATO information and updates as required. Inter-theatre air transport, combat, aerial support and UAS missions may not necessarily operate within an established ATO cycle and are subject to foreign nation diplomatic clearance procedures. Careful consideration must be given to how these and intra-theatre air mobility and combat missions are integrated into the ATO.

4. The cycle matches specific targets with the capabilities or forces made available to the JFAC for the given ATO. Other component air missions that appear on the ATO may not be under the control of the COM JFAC, but their presence on the ATO provides visibility to assist overall coordination and deconfliction. The ATO phases are interrelated to the targeting cycle. The approach is the same, a systematic process that matches available capabilities or forces with targets to achieve operational objectives. Unlike the targeting cycle, the air tasking cycle is time dependent. The air tasking cycle is built around finite time

periods that are required to plan, prepare for and conduct air operations. The number of ATO development phases may vary based on theatre and contingency requirements. Prior to the COM JTF and CC's meeting, the COM JFAC meets with liaison elements and the JFAC staff to develop recommendations on air planning and air apportionment for future operations. (The use of the term 'meeting' is notional; other methods of information exchange could also be used.) The air tasking cycle usually consists of the following phases.

4.4.2. Phase 1 – Strategy & Plan Development (COM JTF/component coordination)

The COM JTF consults often with CCs to assess the result of the warfighting effort and to discuss the strategic direction and future OPLAN. The JCO provides the COM JTF's intent and guidance. The COM JFAC through consultation and the JCO strikes a balance between long-range planning and intimate involvement with day-to-day ATO production or execution. The end product is the AOD, which provides the guidance for ATO production.

4.4.3. Phase 2 – Scheme of Manoeuvre & Target development

This is the point where the efforts of the targeting process relate target development to tasking and are processed with the assistance of the liaison elements, through a GAT²² team (within CPD). The GAT team services the prioritized target list.

4.4.4. Phase 3 – Weaponneering and air allocation

1. **Weaponneering.** During the capabilities analysis and allocation phase, targeting personnel quantify the expected results of lethal and non-lethal weapons or systems employment against prioritized targets to create desired effects. The JPTL provides the basis for weaponneering assessment activities. All approved targets are weaponneered to include, target identification and description, target attack objectives, probability of destruction and collateral damage concerns, which desired mean point of impact should be used to achieve the desired effect and recommendations for weapons systems, munitions and fusing. GAT provides MAOP those JPTL/PTL targets that best meet the objectives of the COM JTF/COM JFAC. The MAOP team allocates air power by melding available capabilities with the GAT recommendations. The resulting MAOP is the plan of employment that forms the foundation of the ATO. The MAOP is normally a graphic depiction of capability required for a given period and is a key element of the concept of joint air operations. The development of the MAOP includes the review of COM JTF and COM JFAC direction and guidance; component air plans and their support requests; updates to target requests; availability of capabilities or forces; target selection from the JPTL; and aircraft allocation. Components may submit critical changes to target requests and asset availability during this final phase of ATO development.

²² See Chapter 4.5. for GAT responsibilities.

2. **Air allocation.** Following the COM JTF air apportionment decision, the COM JFAC translates that decision into total number of sorties by aircraft type available for each objective/task. On the basis of the COM JTF's air apportionment decision, internal requirements and air support request messages (AIRSUPREQ)²³, each air capable component prepares an allocation request message for transmission to the JFAC prior to initiating the MAOP process. Allocation request messages report excess sorties not required by the air capable component and available for tasking by the COM JFAC and requests for air support.

4.4.5. Phase 4 - Air tasking order development

COM JTF and COM JFAC guidance, including the AOD, target worksheets, the MAOP and component requirements are used to finalize the ATO/SPINS/ACO. Airspace control and air defence instructions must be provided in sufficient detail to allow components to plan and execute all missions listed in the ATO. These directions must enable combat operations without undue restrictions, balancing combat effectiveness with the safe, orderly and expeditious use of airspace. Instructions must provide for quick coordination of task assignment or reassignment and must direct aircraft identification and engagement procedures with ROE that are appropriate to the nature of the threat. These instructions should also consider the volume of friendly air traffic, friendly air defence requirements, IFF technology, weather, and adversary capabilities. Instructions are contained in SPINS and also in the ACO, and are updated as frequently as required. The ATO, ACO and SPINS provide operational and tactical direction at appropriate levels of detail. The level of detail should be very explicit when forces operate from different bases and multi-component and/or composite missions are tasked. By contrast, less detail is required when missions are tasked to a single component or base.

4.4.6. Phase 5 – Force execution

The COM JFAC directs the execution of air capabilities or forces made available for joint air operations. Inherent in that is the authority to redirect joint air assets dependent on any national caveats. The COM JFAC will coordinate with affected CCs and possible affected nations upon redirection of joint sorties previously allocated for support of component operations. Manned and unmanned aircraft or other capabilities or forces not apportioned for joint air operations, but included in the ATO for coordination purposes (e.g., other component air missions), will be redirected only with the approval of the respective CC:

- a. The JFAC must be responsive to required changes, i.e. battlefield dynamics during the execution of the ATO. In-flight reports, the discovery of dynamic

²³ Formatted in accordance with NATO Message Text Formatting System (ADatP-3) and published for the use in the NATO Message Catalogue (AAP-11).

targets and initial BDA, may cause a redirecting of joint air capabilities or forces before launch or a redirection once airborne.

- b. During execution, the JFAC is the central agency for revising the tasking of joint air capabilities or forces. It is also charged with coordinating and deconflicting those changes with the appropriate control agencies, components or nation.
- c. During execution, the JFAC is responsible for re-tasking joint air operations assets to respond to moving targets or changing priorities. Ground or airborne C2 platform mission commanders may be delegated the authority from the COM JFAC (under the same conditions outlined above) to redirect sorties/missions made available to higher priority targets as necessary. It is essential, however, that the JFAC be notified of all redirected missions.

4.4.7. Phase 6 – Operational assessment

1. Operational assessment is performed at all levels of the joint force. The COM JTF should establish a dynamic system to support combat assessment to ensure that all components are making contributions to the overall joint force activity. Normally, the COM JTF HQ joint operations staff (J3) is responsible for coordinating combat assessment, assisted by the joint intelligences staff (J2). Combat assessment evaluates the effectiveness of combat operations in achieving command objectives. Effective operation planning and execution require a continuing evaluation of the impact of joint force combat operations within each of the components and on the overall operation or campaign. The COM JFAC continuously plans for and evaluates the results of joint air operations and provides assessments to the COM JTF for consolidation into the overall evaluation of the current campaign.

2. Within the joint force, combat assessment is conducted at the tactical level and at the operational level. Tactical level combat assessment includes gathering information re battle damage in order to permit rapid future mission decision-making and plans including the development of target re-attack recommendations. However, the overall assessment process for joint air operations continues over several days or weeks to evaluate the effectiveness of weapons and tactical engagements as additional information and analysis become available from sources within and outside the operational area. At the operational level, combat assessment is concerned with planning for, and gathering information on, the broader results achieved by air operations. In order for the combat assessment process to be effective, logical links must be established early in the planning sequence. Planners must identify air objectives and tasks, along with relevant success indicators and measures of effectiveness, collection management and Intelligence, Surveillance and Reconnaissance (ISR) participation in the planning process.

3. In general, the combat assessment process at the tactical level provides one of the major sources of information for performing it at the operational level and all operators

should be vigilant in providing as much relevant information as possible in the mission report (MISREP)²⁴ and other reports. Those inputs along with a wide assortment of other information aid in the development of the air component's operational level combat assessment. The COM JFAC's operational level combat assessment should be forwarded to the COM JTF as one of the components' inputs to the COM JTF's determination of overall campaign success. The operational level combat assessment can also serve as the basis for important recommendations that can affect the COM JTF's air apportionment decision and the COM JFAC's allocation of air resources.

4. Although combat assessment appears to mark the end of the air tasking cycle, it is an ongoing activity that provides important inputs to decision-making and supporting processes throughout that cycle.

4.5. GUIDANCE, APPORTIONMENT AND TARGETING

Target lists. Following SACEUR's strategic planning directive, the COM JTF will normally task a JTWG to produce a joint target list (JTL) derived from the campaign targets database that has been initially derived from the integrated database. The JTL has to be reviewed against SACEUR/NAC targeting guidance and national limitations and caveats. All further joint targeting activities are based upon the JTL, which is updated, as new information becomes available. Subordinate commanders will keep the JTL under constant review, and forward their own nominations and/or restrictions of targets to the COM JTF staff through the JTWG via the target nomination process/lists (TNLs) and proposal of restricted targets list. Integration of proposed TNLs and restricted targets lists with the JTL results in the production of the JPTL. The JTL/JPTL and all target folders will be maintained in a collaborative environment and updated by inputs from the JTWG, the COM JTF's BDA cell and any other authorized source with relevant data that requires inclusion. Types of target lists are described in AJP 3.9.

4.5.1. Joint target working group/Joint targeting coordination board

1. The COM JTF may establish and task an organization to accomplish targeting oversight functions or may delegate the responsibility to a subordinate commander. Typically, the COM JTF will create a JTWG/JTCB comprised of representatives from the joint force HQ and all components of the joint force and national liaison representatives. If the COM JTF so designates, the JTWG would be an integrating centre providing a macro-level targeting review mechanism. This should be a joint activity comprised of representatives from the JFHQ and all components of the joint force, and, if required their subordinate units.

²⁴ Formatted in accordance with NATO Message Text Formatting System (ADatP-3) and published for the use in APP-11/ST7149 NATO Standard Message Text Catalogue.

2. The COM JTF defines the role of the JTWG/JTCB. Typically, the JTWG/JTCB would review target information, develop targeting guidance, priorities, and may prepare and refine JTLs for recommendation to the COM JTF. During operations, the JTWG/JTCB should also maintain a complete list of restricted targets and areas where SOF are operating to avoid endangering current or future operations. The JTWG/JTCB is the primary agency for the synchronization and management of the joint targeting efforts. As such they will prepare target lists for joint coordination board review and if necessary the COM JTF's approval, maintain the targeting database and coordinate the production of target materials.

4.5.2. The air apportionment recommendation

Air apportionment allows the COM JTF to ensure the priority of the joint air effort is consistent with campaign or operation phases and objectives. Given the many functions that the joint air effort can perform, its operational area-wide application, and its ability to rapidly shift from one function to another, COM JTFs pay particular attention to apportionment. After consulting with other CCs, the COM JFAC submits air apportionment recommendation for approval by the COM JTF and as guidance for upcoming targeting cycles. The methodology the COM JFAC uses to make the recommendation may include priority or percentage of effort against assigned mission-type orders and/or categories significant for the campaign.

4.5.3. Targeting

Targets fall into two general classes: deliberate and dynamic²⁵:

- a. Deliberate. Deliberate targets are those known to exist in an operational area with actions scheduled. Examples range from targets on JTLs in the applicable campaign plan, to targets detected in sufficient time that can be listed in the ATO, mission-type orders, or fire support plans. Deliberate targets have 2 subcategories: scheduled or on-call.
- b. Dynamic. Dynamic targets are those that have been identified too late, or not selected for action in time to be included in the normal targeting cycle, and therefore have not been scheduled. Dynamic targets have 2 sub-classifications: anticipated and unanticipated.

4.5.4. Draft JPTL construction

The draft JPTL is formed from a prioritized listing of targets based on COM JTF and component target priorities. Members consider the estimated available air forces/capabilities

²⁵ A specific type of target is a TST, which is detailed in Chapter 4.8...

and their ability to affect the targets on the list. The draft JPTL should reflect which targets would most likely be attacked (barring technical problems with aircraft, weather, retasking for higher priority targets, or other operational circumstances) with the projected apportionment of air assets assigned or made available to the COM JFAC. The priorities are important since low priority targets may not be tasked in that day's targeting cycle. Component LOs should be ready to justify and/or prioritize target nominations among all the priorities of the joint operation. The COM JFAC may also recommend to the COM JTF that other component assets be used against targets on the draft JPTL; however, only the COM JTF can approve this use of other components assets/forces.

4.6. COM JFAC TARGETING RESPONSIBILITIES

The COM JFAC has the following targeting responsibilities to the COM JTF and subordinate formations/units:

- a. COM JFAC. The development of a target list and priorities for achieving the COM JFAC's objectives; the provision of representatives to the COM JTF's joint coordination board; support to the JTWG; the provision of BDA information to the JTWG's target support cell and combat assessment information to the COM JTF's combat assessment section for fusion with other information sources; and for targeting, weaponeering, and allocation of organic assets for assigned JPTL targets.
- b. Formations/Units. Ensuring that all targets passed to formations/units for prosecution complies with the law of armed conflict and ROEs. However, this does not relieve lower echelon commanders and operators from using sound judgment to ensure continued compliance with the law of armed conflict and ROE.

4.7. SBAD AND TBMD PLANNING

1. The SBAD missile defence (MD) team contributes in very close coordination with all AD capable entities (i.e. maritime and land forces) to the planning of the air operation by developing the ADP. This plan will support the COM JTF's overall campaign plan and is meant to coordinate the joint AD efforts and to efficiently employ the scarce AD capable assets. This applies especially to the planning of TBMD, as TBMD capable assets are very limited and successful adversary attacks with ballistic missiles could have great political and psychological impact²⁶.

2. The SBAD and TBMD mission is planned and executed through the Joint Prioritized Defended Assets List. At the beginning of the process, NAC will provide D&G on High Value

²⁶ TBMD is the protection of deployed forces and high value assets/areas within a theatre from attacks by ballistic missiles.

Asset (HVA) based on host Nation(s) at Risk and political considerations through a critical assets (Political CAL) list. Then based on the CVRT (Criticality, Vulnerability, Recuperability and Threat) process each CCs will elaborate their prioritized critical assets list. Whilst an iterative process, the JDAWG is responsible, on behalf of the COM JTF to finalize the proposed joint prioritized critical assets. The JDAWG will reduce duplicates and where possible merge assets which are in close proximity into one single asset. The outcome will be one single list of non-military high value and military assets providing the priority order for AD, the recommended Joint Prioritized Critical Assets List (JPCAL).

3. This JPCAL list, together with an Initial Air and Missile Defence Design, will be presented at the JCB to the COM JFC. Once approved by COM JFC, the list will be sent through SACEUR, the MC and to the NAC for final approval. Once approved by the NAC, the list becomes the Joint Prioritized Defended Assets List (JPDAL), which is sent back to the COM JFC and onward to the JDAWG, which, in turn, sends it to the AMDC AMD Planners to develop the Joint Air Defence Plan for the Operation. It will be published as an Annex to the Joint Coordination Order (JCO). Due to the required operational adaptability of any CRO, this JPCAL/JPDAL process should stay a dynamic process.

4. For BMD planning, nations and CCs provide their prioritized critical assets and areas list (PCAAL) to SHAPE, which, under political guidance, merges these assets into a joint prioritised critical assets and areas List (JPCAAL). Based on available BMD assets, the JPCAAL is translated by AIRCOM into an initial defence design with a joint prioritised defended assets and areas list (JPDAAL). The JPDAAL needs to be approved by the North Atlantic Council. After approval, the defence design is transmitted to BMD units.

4.8. TST

1. TSTs are those targets requiring immediate response because they pose (or will soon pose) a danger to friendly forces, or are highly lucrative, fleeting targets of opportunity the engagement of which is of a high enough priority to warrant immediate action in order to support campaign objectives. A large proportion of TSTs involve cross-boundary issues and multi-component or joint force assets to find, fix, track, target, engage and assess the achieved results.

2. TSTs will normally be prosecuted by the component that has responsibility for operations within the AOO using organic/direct support assets. However, if unable to prosecute a TST the component may request support from another component. Via the collaborative network, the COM JTF TST cell and other component TST cells have the visibility of the processing of the TST. Any TST cell may offer other solutions/assets via the collaborative network, and coordinate with the COM JTF TST cell.

3. The COM JTF may designate a lead component as the TST lead, where it has the best information or situational awareness to prosecute TSTs. Where this is the case the COM JTF will normally embed his deployable TST cell within the lead component's current operations section.

4.9. CIS AND ISR CONSIDERATIONS

1. **Communications systems.** The COM JFAC is responsible for identifying all validated joint air- and space communications links requirements that support the COM JTF's mission and allow accomplishment of the COM JTF directives. The ability to exchange information via reliable secure communications with the COM JTF, joint force staff and CCs is key to the successful integration of the joint air- and space effort. Planning must address the following areas:

- a. Promulgation of data exchange requirements as early as possible to ensure that each component can meet interoperable interface requirements, and effort be made to confirm data information exchange connectivity requirements during planning.
- b. Planning for all information exchange requirements and procedures must consider all elements of Info Ops.
- c. The best mix of computer-aided systems must be available for data transmission. The COM JFAC and LOs depend on secure, reliable, beyond line-of-sight, communications and data exchange equipment in order to respond to requirements.

2. **ISR.** The COM JTF battle staff develops an overall collection strategy and posture for the execution of the ISR mission. The J2 reviews, validates and prioritizes all outstanding intelligence requirements for the COM JTF:

- a. The COM JFAC is responsible for planning, coordinating, allocating and tasking assigned airborne ISR assets to accomplish and fulfil COM JTF tasks and requirements. The JFAC will request ISR support from the COM JTF or another component if assigned assets cannot fulfil specific airborne ISR requirements. It is therefore imperative that the COM JFAC remains aware of all available surveillance and reconnaissance capabilities that can be integrated into joint air operations.
- b. The ISR personnel is usually part of the JFAC where the complexity of integrating airborne ISR normally determines whether a specialty team, cell or division within the JFAC handles the function. The JFAC's ISR collection managers and operations planners will work with the COM JTF battle staff and other components to effectively coordinate ISR objectives. The ISR collection elements will manage and satisfy the JFAC's information requirements.
- c. The JFAC provides integrated air- and spaceborne ISR for the COM JTF. The JFAC provides the joint force integrated information from the available air- and spaceborne ISR support.

4.10. UAS PLANNING CONSIDERATIONS

1. UAS bring capabilities such as persistence, flexibility, high level of automation, and efficiency to the JTF. Doctrinally, UAS can be treated similarly to manned systems in the application of established air and space principles. However, there are some unique issues for commanders and planners to consider when employing these systems.

2. Allocation and tasking. The JFC process for determining what UAS to allocate from other components to the COM JFAC is no different than for the manned aircraft allocation decision process. However, larger theatre-capable UAS often have longer endurance than comparable manned systems, which may further allow transferring control of the aircraft and/or payloads to multiple users during a single mission.

3. UAS communication links are generally more critical than for manned systems, as the UAS typically rely on a nearly continuous stream of communications for both flight and payload control. Communications availability, frequency deconfliction, and security, especially bandwidth protection, are important considerations. Some UAS have a beyond line of sight (BLOS) control capability and may conduct remote-split operations, which add flexibility but can present unique basing and C2 challenges.

4. Mission Planning. UAS must be included in the development of the ACO, ATO, and SPINS, and must follow all approved planning, guidance, and procedures. Typically, it is not necessary to include Class I UAS (see Figure 2) on the ATO unless their planned operating altitude conflicts with other airborne operations. Class II and III UAS should be included on the ATO for deconfliction. Inclusion of UAS in the ATO does not imply any change in command relationships or tasking authority. Compliance with the ACO is critical as UAS cannot “see and avoid” like manned aircraft, and generally lack identification, friend-or-foe (IFF) capability. Adversaries are also developing and acquiring UAS, so it is imperative C2 nodes are able to differentiate between friendly and adversary UAS and cruise missiles. Finally, managing a UA during an emergency may present different challenges than for manned platforms. Detailed contingency planning for all emergencies, including lost (or manipulated) link, loss of (or manipulated) positioning data, and procedures for safe recovery of the UA are required due to their dependence on information and control data links.

UAS CLASSIFICATION						
Class	Category	Normal Employment	Normal Operating Altitude	Normal Mission Radius	Primary Supported Commander	Example Platform
Class III (> 600 kg)	Strike/Combat *	Strategic/National	Up to 65,000 ft	Unlimited (BLOS)	Theatre	Reaper
	HALE	Strategic/National	Up to 65,000 ft	Unlimited (BLOS)	Theatre	Global Hawk
	MALE	Operational/Theatre	Up to 45,000 ft MSL	Unlimited (BLOS)	JTF	Heron
Class II (150 kg - 600 kg)	Tactical	Tactical Formation	Up to 18,000 ft AGL	200 km (LOS)	Brigade	Hermes 450
Class I (< 150 kg)	Small (>15 kg)	Tactical Unit	Up to 5,000 ft AGL	50 km (LOS)	Battalion, Regiment	Scan Eagle
	Mini (<15 kg)	Tactical Sub -unit (manual or hand launch)	Up to 3,000 ft AGL	Up to 25 km (LOS)	Company, Platoon, Squad	Skylark
	Micro ** (<66 J)	Tactical Sub -unit (manual or hand launch)	Up to 200 ft AGL	Up to 5 km (LOS)	Platoon, Squad	Black Widow

* Note: in the event the UAS is armed, the operator should comply with the applicable joint mission qualifications in AP-3.3.7 (STANAG 4670) and the system will need to comply with applicable airworthiness standards, regulations, policy, and legal considerations.

** Note: UAS that have a maximum energy state less than 66 Joules are not likely to cause significant damage to life or property, and do not need to be classified or regulated for airworthiness, training, etc. purposes unless they have the ability to handle hazardous payloads (explosive, toxins, chemical/biological agents, etc.).

Figure 4.2: NATO Unmanned aerial systems classification

ANNEX 4A SAMPLE GENERIC AIR PLAN
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COM JFAC OPLAN TO XXXX

REFERENCES

1. SITUATION.

- a. Background.
- b. Planning limitations.
- c. Given assumptions.

2. MISSION.

- a. ACC mission.
- b. ACC objectives
- c. COM JFAC mission statement

3. EXECUTION.

- a. COM JFAC intent.
- b. Task organisation.
- c. COM JFAC evaluation.
- d. Concept of operations.
- e. Coordinating instructions.

4. SERVICE SUPPORT

- a. Logistics.
- b. Movement.
- c. Medical support.
- d. Engineering support.
- e. Host-nation support.

5. COMMAND AND SIGNAL

- a. Command and Control.

6. ANNEXES

Annex A	Concept of operations
Annex B	Task organization and command relationships
Annex C	Forces, missions/tasks
Annex D	Intelligence
Annex E	Rules of engagement
Annex F	Maritime operations
Annex G	Land operations

Annex H	Air operations
Annex J	Force protection
Annex Q	Communications and information systems
Annex R	Logistics
Annex S	Movements
Annex T	Environmental support
Annex U	Operations in a CBRN weapons environment
Annex V	Joint personnel recovery
Annex AA	Legal
Annex DD	Space operations
Annex EE	Military engineering
Annex II	Joint fires
Annex KK	Operational analytical support
Annex QQ	Medical
Annex ZZ	Distribution

ANNEX 4B SAMPLE GENERIC AIR OPERATIONS DIRECTIVE
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AIR OPERATIONS DIRECTIVE (AOD) XXX

REFERENCES

1. SITUATION.

- a. Situation Update
- b. Adversary Forces
 - (1) Assessment of the adversary Most Likely COA
 - (2) Assessment of the adversary Most Dangerous COA
 - (a) Strengths
 - (b) Weaknesses
- c. COM JTF guidance
 - (1) Military End-state
 - (2) COM JTF Mission Statement
 - (3) COM JTF Intent
 - (4) COM JTF CONOPS

<i>Pri</i>	<i>Objective</i>	<i>Weight of Effort</i>

- (5) COM JTF Amplifying Guidance
- d. Friendly Forces
 - (1) Joint Force Land Component (JFLC)
 - (a) Forces
 - (b) CONOPS
 - (2) Joint Force Maritime Component (JFMC)
 - (a) Forces
 - (b) CONOPS
 - (3) SOCC (Notional)
 - (a) Forces
 - (b) CONOPS

2. COM JFAC MISSION.

- a. Given ACC Mission
- b. COM JFAC Mission Statement

3. EXECUTION - JOINT AIR OPERATION

- a. COM JFAC Intent
- b. COM JFAC CONOPS
 - (1) Scheme of Manoeuvre
 - (a) Phase X
 - (b) Phase XX
- c. COM JFAC Objectives
- d. COM JFAC Apportionment

d.

Resources allocation

Day	D+0	D+1	D+2	D+3	D+4	D+5
DCA	40 %	40 %	40 %	35 %	35 %	35 %
OCA	25 %	25 %	25 %	20 %	20 %	20 %
APCLO	25 %	25 %	25 %	35 %	35 %	35 %
SEAD	10 %	10 %	10 %	10 %	10 %	10 %

e.

- e. COM JFAC Planning Guidance
 - (1) General Guidance
 - (2) Attack Guidance and Risk Considerations
 - (3) Air Defence Planning Guidance
 - (4) Electronic Warfare Planning Guidance
 - (5) Airspace Planning Guidance
 - (6) Processing, Exploitation and Dissemination Guidance

Pri	Priority Objectives	Theatre ISR Weight of Effort				
		IMINT	GMTI	FMV	SIGINT	HUMINT
1	Personnel Recovery	High	Low	High	High	Med
2	Time Sensitive Targeting	High	High	High	High	Med
3	Troops in Contact/ I & W/ Imminent Threat	High	Med	High	High	Low

- (7) TST Planning Guidance
- (8) Dynamic Targeting Planning Guidance
- (9) Air Mobility Planning Guidance
- (10) ISR Planning Guidance
- (11) RECCE Planning Guidance
- f. COM JFAC ATO Planning Guidance
 - (1) Offensive Counter Air (OCA)
 - (2) Defensive Counter Air (DCA)
 - (3) APCLO

- (4) APCMO
- (5) EW/SEAD
- (6) Air Transport
- (7) Air-to-Air Refuelling
- (8) SBAD/TBM
- (9) Joint Personnel Recovery
- (10) Air C2
- (11) ISR
- (12) RECCE

4. LOGISTICS

- a. Sustainment Assumptions
 - (1) Combat Service Support/Logistics (JFAC CSS/A4)
 - (2) The Multinational Logistics Centre (MNLCC)

5. CO-ORDINATING INSTRUCTIONS

- a. Command and Control
- b. Targeting
- c. Joint Prioritised Defended Asset List (JPDAL)
- d. Daily Asset Reconnaissance Board (DARB)
- e. Convoy Security
- f. Additional Co-ordinating Instructions

6. ANNEXES

- A. Air Component Bed-down (See ICC Database)
- B. JFAC Objectives and Tasks
- C. Prioritized Target List (See ICC Database)
- D. Prioritized Defended Assets List (JPDAL)
- E. ISR Collection Requirements
- F. COM NIMFOR's CCIRs
- G. COM JFAC CCIR's
- H. COMNIMFOR TST MATRIX (See ICC Database)
- I. Target Engagement Authority for Dynamic Targeting (See ICC Database)
- J. Attack Guidance and Risk Considerations

CHAPTER 5 SPACE SUPPORT TO NATO OPERATIONS

5.1. INTRODUCTION

5.1.1. Overview

1. Space support to operations includes all activities that provide capabilities through space in order to support NATO operations. Space is congested, contested and competitive. Freedom to act in the space domain and employ space capabilities is crucial to the outcome of conflicts. The use of space capabilities by the military has expanded significantly since the first military satellites were placed on orbit. Continuous improvements in space technology have led to the development of advanced systems whose capabilities should be fully understood by commanders and their staffs; such systems have proven to be a potent force multiplier when integrated into joint operations. To ensure effective integration, all personnel engaged in the planning, conduct, and supervision of joint operations must have a common and clear understanding of how space capabilities (military, civil, commercial, national and multinational) contribute to joint operations, and how military space operations can be integrated in military operations to achieve alliance security objectives. They should also be aware that adversaries will increasingly seek to exploit their own access to space products with military utility; many of these can easily be purchased from commercial sources. Options available to prevent an adversary access to space capabilities include diplomatic, legal, economic and military measures.

2. In NATO, space capabilities that can contribute to mission planning and execution at all levels of warfare come from government, military, civilian and commercial providers. Currently, NATO does not own any on orbit spacecraft, but does own and operate a number of terrestrial elements (e.g. SATCOM anchor stations and terminals). While military units in theatre may have organic assets which will make unique contributions to joint operations, a significant portion of space support will be made available from outside the operational area.

3. Thus, the appropriate level of preparation must be in place prior to operation execution in order to ensure that NATO has the mechanisms in place to receive space support. The required preparation spans all DOTMLPFI²⁷ areas, across all levels of command. It serves to identify NATO's space dependencies and vulnerabilities, addresses how NATO can mitigate a threat/effect to its operations, and provides input to NATO defence planning and NATO Space Education & Training. Furthermore it defines the space-related peacetime missions, tasks, roles and authorities within NATO. A set of standing

²⁷ Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, Interoperability

arrangements, contracts and MoUs with NATO member nations and other provider establishes the foundation for space support to NATO. This establishes the baseline for NATO crisis response planning.

5.1.2. Fundamentals

1. For the purposes of this document, the description of a space system is simplified to three segments.²⁸

- a. Space segment comprising of the active spacecraft on orbit,
- b. Ground/user segment as the satellite and payload control elements and the user devices,
- c. Link segment with all up, down, and cross links connecting the ground and space segments.

2. Space capabilities provide data in the form of products and services. These include, but are not limited to: global, strategic and intra-theatre satellite communications (SATCOM); positioning, navigation, and timing (PNT) services, terrestrial and space environmental monitoring, to include space situational awareness (SSA), Geological Meteorological Oceanographic (GeoMetoc); intelligence, surveillance, and reconnaissance (ISR); NATO Shared Early Warning; and transponder tracking such as Friendly Force Tracking, maritime tracking, etc.

3. Space products are the result of processed and analysed data, mostly based on the exploitation of space based sensors. Satellite imagery is an example of a space product.

4. Space services are mostly represented by a continuous stream of data, provided directly from space to an end user terminal. Satellite communications and PNT are examples of space services.

²⁸ Technical definitions from an engineering or operations perspective are far more complex and detailed. In a wider context, space systems can be expanded to include the following: ground stations; launch facilities; satellite production, checkout, and storage facilities; communications links; user terminals; and Spacecraft (both manned and unmanned).

5.1.3. Space-specific characteristics, limitations, threats and vulnerabilities

1. **Space-based sensors** provide long-term, wide or narrow area surveillance, at a range of resolutions and spectra. Although the upper limit of national airspace is not clearly defined, it is commonly understood that movements of space objects do not interfere with national sovereignty. This gives space based capabilities an advantage over assets in other domains, which cannot be employed without crossing borders. Depending on their orbit, they may suffer gaps in surveillance periods and it can be difficult (or expensive) to move them to a new orbit. By their nature, satellite revisit times are predictable; therefore, a threat aware adversary could adjust its activity to avoid reconnaissance.

2. **Dual Use.** Military, civil and commercial sectors are increasingly dependent on space capabilities. Commanders should be aware that some space based capabilities supporting NATO operations may be under military, governmental, and even commercial governance or control. Therefore, these relationships often complicate planning and utilization of space products and/or services.

3. **Vulnerability.** Space capabilities are vulnerable to both man-made threats and natural influences. Adversaries may seek to exploit this dependence on space capabilities. Therefore, attacks on space systems become increasingly likely. Commanders must anticipate adversary or third party attempts to interfere with, disrupt or deny friendly force access to space capabilities. In addition to protecting their own national assets, alliance members must also consider how to deny the use or exploitation of these space assets by adversaries. Current satellite links are susceptible to interference, jamming, spoofing etc. and need to be protected. Ground facilities generally are subject to attack. Knowledge of an adversary's counter space capabilities – possibly including direct ascent or high energy weapons – will allow a joint commander and space planner to develop appropriate responses. Additionally, Space weather may affect the operation of space vehicles and their sensors/operations systems, as well as communication and positioning systems. An awareness of a space weather event's scale and timing is necessary to enhance the probability of utilizing mitigation measures to enable successful operations.

4. **Operational Lifespan.** A satellite's operational life is based on several factors which include spacecraft design features and the space environment. On orbit maintenance of satellites is not yet available; upgrades and modifications are therefore limited to software patches or utilizing on board back-up components. Additionally, the amount of fuel carried on board limits the number of possible orbital manoeuvres.

5. **Predictability.** A stable satellite's motion and orbital location is predictable. This predictability allows for both warning of satellite over-flight and maintaining situational awareness by tracking the location of objects in space.

6. **Availability.** Due to the global reach of satellites, they are usually considered strategic assets and serve multiple objectives and commanders at the same time. While

providing specific space support to NATO operations, nations will still retain command and control over their strategic assets. Therefore, national prioritization schemas will dictate how fulfilling NATO space requirements are fulfilled. Competition for bandwidth, tasking priorities and similar constraints, combined with satellite physical access to specific locations, impact the availability of space support. Users may be pre-empted based on competing priorities. Ultimately, a commander may not receive the desired support.

7. **Legal considerations.** Employing space capabilities brings up complex legal considerations involving international law, especially LOAC, and relevant codes of conduct. Considerations of proportionality, necessity, discrimination etc. apply equally to the space domain as to operations elsewhere. Existing international law in the domain of space may require specific case by case interpretation, since multiple space activities are not fully legally apprehended, yet.

5.2. SPACE SUPPORT TO NATO OPERATIONS

5.2.1. Overview

1. The following description explains the full concept of joint military space operations in order to provide general awareness. It delineates NATO's roles and responsibilities and limitations with regard to nations and third party contributions. NATO has requirements and/or functions in the Space Situational Awareness, Space Force Enhancement and Space Control mission areas.

2. While NATO neither owns nor directly operates any spacecraft, NATO's combined command and force structure depends on space-based capabilities across the spectrum of operations. Space situational awareness enables the efficient use and protection of those space-based systems.

3. NATO has OPCOM over its organic SATCOM capabilities and units (terrestrial SATCOM anchor stations, transportable satellite ground terminals and equipment.) The C2 for SATCOM is managed by NATO Communication and Information Agency (NCIA) and operated by NATO CIS Group (NCISG).



Figure 5.1: NATO SATCOM command and control relationships

4. Nations, military, civilian and commercial entities provide space support to NATO. Formal agreements should regulate NATO's degree of access, service level and coordination mechanisms.

5. Nations sharing space services and products, or otherwise contributing space support to NATO operations, should consider providing planning information and designating a point of contact for coordination purposes.

5.2.2. Space Operational Mission Areas Applicable to Supporting NATO

1. Space mission areas describe the capabilities space brings to the fight. They serve to delineate the different capabilities and functions of these areas, allowing for allocation of responsibility in manageable sub-divisions. Space Mission areas may also provide a useful framework for education and training purposes. Those are:

- a. Space Situational Awareness
- b. Space Force Enhancement
- c. Space Control

2. **Space Situational Awareness (SSA)** is the requisite current and predictive knowledge of the Space environment and the operational environment and their effect on NATO operations. It is fundamental to conducting Space operations. This includes knowledge about space systems capabilities, operational readiness, limitations, as well as environmental conditions, events, threats and activities (both current and planned) in, from, toward or through Space. As a consequence of NATO's space dependency and the

widespread use of space based products and services, NATO needs SSA products and services as a complement of space support to NATO operations in order to support all levels of planning, decision making and operation execution across the full spectrum of NATO operations in all domains. SSA products and services provided to NATO are based on surveillance, tracking and identification of space objects and monitoring of environmental conditions in space. SSA also incorporates the use of intelligence sources to provide insight into adversary use of space capabilities and their threats to own space capabilities while in turn contributing to the commander's ability to understand adversary intent. SSA is a prerequisite for the Space control mission and should therefore be planned for as a complementary requirement to other space support requirements.

3. **Space Force Enhancement** comprises the exploitation of space based products and services that contribute to maximizing the effectiveness of military operations in all domains. It is a key enabler for NATO operations. There are 5 force enhancement functions:

- a. **Intelligence, Surveillance and Reconnaissance (ISR).** Monitoring areas of interest from space helps provide information on adversary location, disposition and intent; aids in tracking, targeting, and engaging the adversary; and provides a means to assess these actions through tactical battle the production, exploitation, dissemination (PED) of space based ISR products will most likely not allow near real-time space support to current operations. Space-based sensors may support: the cueing of ISR systems operating in the JOA, damage assessment, and operational combat assessment. It also provides situational awareness, warning of attack, and feedback.
- b. **Shared Early Warning (SEW).** Dedicated national space systems provide timely warning and characterization of ballistic missile events to include launch, mid-course tracking, terminal phase re-entry, and nuclear detonations to support threat/non-threat discrimination and follow-on decision making.
- c. **Terrestrial and Space Environmental Monitoring.** Space systems provide data on meteorological, oceanographic and space environmental factors that might affect military operations in all domains. Additionally, environmental monitoring provides specific data for forecasts, alerts, and warnings on possible impacts on space systems, space operations and space based products and services. Environmental monitoring capabilities provide joint force planners with current, multi-spectral information on sub-surface, surface, and air conditions (e.g., traffic capability, beach conditions, vegetation, and land use). Knowledge of these factors allows forces to avoid adverse environmental conditions while taking advantage of other conditions to enhance operations.

- d. **Satellite Communications (SATCOM).** SATCOM provides NATO commanders with the ability to establish or augment telecommunications in remote regions that may lack suitable terrestrial infrastructure. The broad range of SATCOM capabilities allows the commander to shape the JOA. SATCOM uses include instant global connection to NATO communication infrastructure and to the nations, transmission of critical intelligence, the ability to tie sensors to shooters, and establish survivable communications in austere locations with limited or no infrastructure. The term SATCOM includes governmental, military, civil and commercial SATCOM systems and applications.
- e. **Position, Navigation and Timing (PNT).** PNT information is vital to military operations and a key enabler for a host of mission types, Command, Control, Information and weapon systems and platforms. The provision of accurate location and time of reference is a prerequisite for synchronized, precise, network enabled operations in all domains.

4. **Space control mission area.** Space Control aims to attain and maintain a desired degree of freedom of action to the Space domain. This includes defensive and offensive measures taken in all operational domains to ensure unimpeded access to space capabilities while negating adversaries the ability to do the same within the framework of international law and treaties. Space control operations require SSA in order to provide an understanding of global space operations and are supplemented by C2, ISR, and environmental information. Space control operations have an offensive and a defensive component:

- a. **Offensive Space Control (OSC).** OSC operations deny, degrade, disrupt, destroy or deceive an adversary's space capability or the space support provided by a third-party to the adversary at a time and place of own choosing through attacks on the segments, nodes and links of involved Space systems. OSC operations may be reversible or non-reversible and can be conducted in all domains. These operations range from kinetic attack on space system ground segments to electronic attack against satellite uplink or downlink frequencies. Space control operations can result in an immediate advantage in space capabilities and control of the space medium.
- b. **Defensive Space Control (DSC).** DSC operations aim to protect and preserve friendly space capabilities, withstand or suppress enemy attack, and restore/recover from it. DSC operations include passive and active measures and should be precautionary and proactive in order to prevent the adversary from disrupting NATO operations in all domains.

5.3. SPACE SUPPORT COORDINATION (SpSC)

5.3.1. Overview

1. Commanders at every level have responsibility to guide, manage, synchronize and direct activity in support of achieving military objectives across the full spectrum of warfighting functions in regard to all domains of conflict, to include the use of space-based capabilities. The space support coordination function describes the responsibilities and tasks for selected staff personnel who will serve as the commander's primary advisors for space support to operations. The space coordination function will have responsibility for planning the integration of space force enhancement tools and capabilities; the integration and coordination of space control and space situational awareness activities; and provides space analysis expertise and space related products to the staff and subordinate elements. The space support coordination function will not compete or interfere with well-established space related functions within the organization such as SATCOM apportionment, ISR collection planning, etc. It can add a space domain perspective to the existing functional area planning.

2. **Strategic Level SpSC.** The strategic SpSC function is focused on setting the conditions within NATO for space support operations. A strategic level space support coordination function is responsible to provide recommendations for space-based support alignment of forces and augmentation and interfaces required to support the full spectrum of NATO operations. This function has the responsibility to establish a process to request and deliver space-based capabilities and services that reside with each individual contributing NATO nations and to establish the formal agreements to ensure that access. Strategic level SpSC provides oversight guidance and coordination to support education, training, and overall preparedness of subordinate organizations to perform the expected space related function, roles, and responsibilities. In time of operational contingency, the space coordination function engages within the NATO process to identify forces and capabilities that will be provided by each supporting NATO nation in order to encourage the inclusion of required space-based capabilities and service and to clearly understand any ensuing gaps in those requirements subsequent to the contribution from the nation.

3. **Operational Level SpSC.** Operational level SpSC should focus on space support to actual operations, taking advantage of the established processes, formal relationships, agreements, and the available space-related capabilities, products and services within a likely dynamic and complex operating environment. This staff function should maintain close awareness and tracking of related space systems, capabilities, and operational dependencies and provide timely recommendations to courses of action, targeting and other space support options across the staff and subordinate units. The operation level SpSC function will collect, understand and process requests for space support through the NATO established mechanisms. Additionally, it will support the identification and recommendation for prioritization of delivery of space related products and services.

5.3.2. SpSC Considerations

1. **Preparation.** Space systems provide unique capabilities that are generally available prior to crisis arising, oftentimes without the requirement for (pre)deployment into theatre. Information from Space systems is essential for the effective pre-deployment of NATO forces, early phase campaign planning and, for operations in remote areas, may be the sole source of up-to-date geo data prior to entry into theatre. Commanders should be aware that access to space capabilities is a key enabler, in some campaigns even a precondition for success and must therefore be deliberately planned for and protected.
2. **Establishing Coordination Relationships.** Because many systems are closely held national assets or have complex relationships with non-governmental organisations, preparatory planning and agreements should be in place prior to operations in order to ensure greater availability to support NATO. This process should be made as transparent as possible to the supported commander, preferably by close coordination with existing/established staff functions in order to integrate, coordinate and synchronise space capabilities in the framework of operations. Detailed coordination should provide clarity of the relationships to NATO strategic and operational commands and clearly define the process for requesting and disseminating the products and/or services.
3. **Space Dependency and Operational Risk.** The special characteristics of space and the difficulty in gaining access to it present unique planning and operational considerations that affect friendly, adversary and neutral space users alike. The planner supporting SpSC must understand individual system strengths, weaknesses and limitations when considering the usage of space capabilities or products and must have a firm knowledge of the threats to the use of those systems by an adversary as well as understanding what steps can be taken to prevent or limit an adversary's access to space products. This understanding of dependencies and vulnerabilities enables the assessment of the operational risk to and potential mitigation measures for the joint force if space capabilities are degraded or lost.
4. **Access and Coverage.** The absence of geographical boundaries and terrestrial obstructions in space gives military forces global access; Space is the ultimate high ground. A single satellite in a low-Earth polar orbit will overfly any location on the Earth's surface within a given time. However, basic orbital mechanics limit the time most satellites can provide service over a particular geographic area. Except for geosynchronous orbits, the amount of time that a terrestrial user will be within a satellite's direct field of view will vary from seconds to hours depending on the satellite orbit type and the field of view of the satellite sensor/antenna. With a sufficient number of satellites in a properly configured constellation, it is possible to maintain continuous coverage and have permanent access to any or all points on the surface of the Earth. Global access is one of the key advantages

that space capabilities offer. Some space systems serve multiple commanders and/or users around the world simultaneously (e.g., early warning satellites, PNT).

5. **Persistence.** Orbital mechanics dictate the movement of satellites and thus provides some advantages and disadvantages that must be considered. The movement of on-orbit space assets is unaffected by terrain, physical obstacles nor significantly impeded by the low-level atmosphere. This allows these assets to remain on orbit for extended periods of time (generally measured in months or years). It should be noted, however, that except for certain geosynchronous satellites, orbital mechanics prevent satellites from providing continuous support to a given terrestrial area of interest. Because orbits are easily determined, short dwell times and intermittent coverage by a given satellite may provide an adversary significant windows of opportunity for unobserved activity. One must also understand that there are significant planning factors associated to the manoeuvre of satellites, most of which are at national discretion.

5.3.3. SpSC During Operational Planning

1. The NATO Crisis Response Planning system²⁹ covers the planning process and methodology on all levels of command. Space aspects have to be considered at all planning stages. Space is part of the strategic and operational assessment of the situation and informs the comprehensive preparation of the operational environment³⁰. NATO's potential strategic advantage is largely related to space dependencies, vulnerabilities and capabilities; those must be identified and considered to inform the choice of military response options³¹. The employment of space capabilities in theatre has to be considered during centre of gravity analysis and CoA development (including desired and non-desired Space effects) across all planning phases.

2. Identifying space support requirements and potential non-space-dependent alternatives is part of strategic and operational CONOPS development. This may result in space support requests (similar to an RFI process) to NATO member nations/capability providers and complements the CJSOR process, as well as the generation of a space specific annex (DD) to plans.³²

3. The strategic OPLAN development includes the force generation phase, where space support requirements will be presented to NATO member nations. Nations should

²⁹ as defined in MC 133 and the Comprehensive Operations Planning Directive (COPD v2.0) and supporting Functional Area Planning Guides (FPGs) and SOPs

³⁰ OPP Phase 1 and 2: Initial Situational Awareness, SACEURs Strategic Assessment, CPOE

³¹ OPP Phase 3: Draft MROs, operational advice

³² OPP Phase 4: CONOPS with supporting concepts and annexes, CJSOR

provide planning information on services, products, access procedures and points of contact for strategic and operational level planning and execution of the operation. Strategic and operational OPLAN development translates space aspects of the mission into ANNEX DD, detailing the planned employment of space support within the operation, respective roles and liaison authorities. This establishes the baseline for the execution phase.

4. The planner supporting the SpSC function on the strategic and operational level staffs, may provide significant input to the operational planning process. However, as space-based products and services are already planned for and utilized by functional areas (CIS, INTEL, GEOMETOC) in traditional staff positions (e.g. SATCOM by J6 or Satellite Imagery by J2), a clear delineation of the space planners supporting and contributing role towards those functional areas has to be established by harmonized Functional area planning guides, SOPs and TTPs to ensure deconfliction and unity of effort.

5. Combined Force Packaging (CFP) are commonly envisaged as the mechanism most likely to result in an effective capability. CFPs already include space capabilities, but this is more or less transparent to the rest of the package and is often the result of engineering level integration instead of deliberate strategic or operational planning. This is an opportunity for planners supporting the SpSC function to help tailor the force package.

6. Tailoring space support to a mission and a theatre requires a shared and active coordination between the user and providers. Space support to NATO operations should be integrated and considered within the existing NATO planning framework. The key is to bridge between the COPD and the applicable mission area.

5.3.4. SpSC During Operational Execution

1. During the execution phase of a NATO operation, there will be a need for managing, coordinating and adjusting space support. The space coordination function at each level provides feedback on operational execution and helps identify any emerging space support requirements which can be fulfilled using formal arrangements and the OPLAN ANNEX DD. This process supports the battle staff across all functional areas by marrying available Space capabilities to support dynamic operational requirements. This may result in updating space related documents (OPLAN ANNEX DD, FRAGOs, TTPs, and SOPs) as required.

2. Commanders at every level, with the support of a SpSC function, should develop and maintain a prioritized list of space requirements based on operational objectives and activities. Execution responsibilities include:

- a. Coordinating, integrating and synchronising space capabilities for the command within its operational environment, including ensuring optimum interoperability of space capabilities with Allied/coalition forces.

- b. Planning space support operations, including requesting any emerging space support requirements.
- c. Maintaining SSA, to include space weather and the operational impacts.
- d. Maintaining appropriate command or coordination relationships.
- e. Provision of space expertise across the staff processes and functions. For example, integrating into the target nomination process.

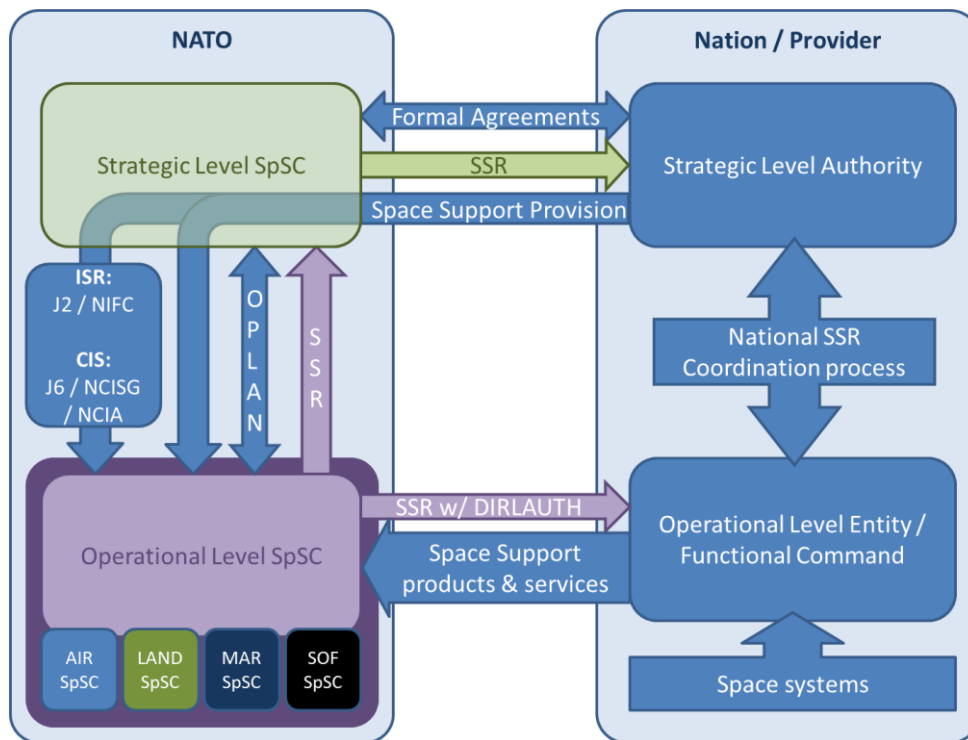


Figure 5.2: Planning and Execution of Space Support Coordination

ANNEX 5A OPLAN ANNEX DD SPACE SUPPORT TO OPERATIONS
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COM JFAC OPLAN TO XXXX

1. Situation. For political and strategic environment, see OPLAN main body.
 - a. Space environment:
 - (1) Enemy. (As needed, examples follow)
 - a. Satellite communications
 - b. Position, navigation and timing (PNT) and velocity
 - c. Space-based ISR
 - d. Space Control (Jammers, spoofers, lasers, anti-satellite weapons, etc.)
 - e. SSA
 - f. Counter Space
 - g. Commercial, Third party support and Dual use
 - h. Observed tactics and operational use
 - (2) Friendly. (As needed, examples follow)
 - a. Space Support Teams
 - b. Shared early warning (SEW)
 - c. Environmental support
 - d. Position, navigation and timing (PNT), and velocity
 - e. Satellite Communications (Realize there is another Annex for communication)
 - f. ISR (Realize there is another Annex for intelligence)
 - g. Space control
 - h. SSA
 - i. Critical space dependencies across allied force structure
 - j. Additional available space products and services
 - (3) Neutral actors and factors affecting Space support. (As needed, examples follow)
 - a. The Space environment including the factor of orbital debris
 - b. Various relevant non-aligned nations and commercial actors' orbital capabilities (Example: On-orbit resupply and management satellites)
 - c. Terrestrial development of relevant technologies of non-aligned nations (Example: Direct ascent anti-satellite missiles)
2. Mission. The overall mission of the commander as stated in the base plan.
3. Operations design (Space): How the commander will use Space products.
 - a. Commander's Intent (Specific to Space).
 - b. Main effort. (Overall effort to achieve mission in order to allow for prioritization).
 - c. Operational objectives (specific to Space). For example:

- (1) Forces have adequate awareness of the Space environment to mitigate forecast outages or degradations.
 - (2) Forces have full utility of Space-based position, navigation and timing services.
 - (3) The adversary is not capable of hindering friendly operations via Space-control operations.
4. Execution. An overall description of how the JFC becomes aware of available Space support to the operation, collect and prioritize the needs for Space support, and communicates requirements to NATO and the Nations. For example, you could define the requirement to review the commander's priorities and weights of efforts within a given timeframe, collect Space inputs from the staff and components and generate a table identifying prioritized Space products, the potential provider(s), and the desired effects.
 5. Service support: See OPLAN main body.
 6. Command and signal. Describe how the various relevant agencies will communicate internally and externally.
 - a. Space authority function
 - i. Strategic SSC
 - ii. operational SSC
 - b. Space Support providers

LEXICON

Part 1: Acronyms and abbreviations

The Lexicon contains abbreviations relevant to AJP-3.3(B) and is not meant to be exhaustive. The definitive and more comprehensive list of abbreviations is in AAP-15.

Abbreviation Acronym	or	Meaning
AAR		air-to-air refuelling
AARC		air-to-air refuelling cell
ACA		airspace control authority
ACCE		air command coordination element
ACCS		Air Command and Control system
ACM		airspace control means
ACO		airspace control order
ACP		airspace control plan
AD		air defence
ADA		air defence areas
ADP		air defence plan
AE		aeromedical evacuation
AEW		airborne early warning
AI		air interdiction
AIRCOM		Allied Air Command
AIRSUPREQ		air support request message
AJP		Allied joint publication
ALCC		airlift coordination centre
ALE		air liaison element
ALO		air liaison officer
AMDC		air missile defence commander
AOCC		air operations coordination centre
AOD		air operations directive
AOLRT		air operational liaison reconnaissance team
AOO		area of operations
AOPG		air operations planning group
AP		air policing
APCLO		air power contribution to counter-land operations
APCMO		air power contribution to counter-maritime operations
ARS		air control centre/recognized air picture production centre/sensor fusion posts
ASC		airspace control
ASM		airspace management
ASSESSREP		assessment report
ASTOR		airborne stand-off radar
AT		air transport

ATC		air traffic control
ATCC		air transport coordination centre
ATO		air tasking order
AWACS		airborne warning and control system
BCE		battlefield co-ordination element
BDA		battle damage assessment
BLOS		beyond line of sight
BMD		ballistic missile defence
BMDOC		ballistic missile defence operations centre
C2		command and control
C2RM		command and control resource management
CAL		critical asset list
CAOC		combined air operations centre
CAS		close air support
CBRN		chemical, biological, radiological and nuclear
CC		component commander
CE		crisis establishment
CIS		communication and information systems
CMO		coverage mission order
COA		course of action
COD		combat operations division
COG		centre of gravity
COM		commander
COM AIRCOM		Commander Allied Air Command
CONOPS		concept of operations
CPD		combat plans division
CRO		crises response operation
CSD		combat support division
D&G		direction and guidance
DACCC		Deployable Air Command and Control Centre
D-AOC		deployable air operations centre
DARB		daily asset reconnaissance board
DARS		deployable air control centre/recognized air picture production centre/sensor fusion posts
DCA		defensive counter-air
DIME		diplomacy, information, military and economic
DSS		deployable sensor sections
FAC		forward air controller
FM		force management
FRAGO		fragmentary order
GAT		guidance, apportionment and targeting
HQ		headquarter
I&W		indications & warning
IADS		integrated air defence system
IFF		identification, friend-or-foe
Info Ops		information operations
ISR		intelligence, surveillance and reconnaissance
ISRD		intelligence, surveillance and reconnaissance division
JACC		joint airspace coordination centre

JCO		joint coordination order
JDAWG		joint defended asset working group
JFAC		joint force air component
JFC		joint force commander
JFLC		joint force land component
JFMC		joint force maritime component
JFSCM		joint fire support coordination measure
JOA		joint operations area
JOP		joint operations plan
JPCAAL		joint prioritized critical asset and area list
JPCAL		joint prioritized critical assets list
JPDAAL		joint prioritized defended asset and area list
JPDAL		joint prioritized defended asset list
JPTL		joint prioritized target list
JSTARS		joint surveillance and target attack radar system
JTAC		joint terminal attack controller
JTF		joint task force
JTL		joint target list
JTWG		joint targeting working group
LEGAD		legal advisors
LLE		land liaison element
LO		liaison officer
LOAC		law of armed conflict
LOS		line of sight
MAOP		master air operations plan
MCE		maritime co-ordination element
METOC		meteorological and oceanographic
MISREP		mission report
MLE		maritime liaison element
MOU		memorandum of understanding
MTF		medical treatment facility
NA5CRO		non-article 5 crisis response operation
NAC		North Atlantic Council
NATO		North Atlantic Treaty Organization
NGO		non-governmental organization
NIAMD		NATO integrated air and missile defence
NSO		NATO Standardization Office
OCA		offensive counter air
OPLAN		operation plan
OSC		Offensive Space Control
PBA		predictive battlespace awareness
PCAAL		prioritized critical asset and area list
PSYOPS		psychological operations
QRA		quick reaction alert
RAP		recognised air picture
ROE		rules of engagement
RPC		recognized air picture production centre
SACEUR		Supreme Allied Commander Europe
SADC		static air defence cell

SAMOC		surface-to-air missile operations centre
SATCOM		satellite communications
SBAD		surface-based air defence
SD		strategy division
SEAD		suppression of enemy air defence
SEW		shared early warning
SFP		sensor fusion post
SIGINT		signal intelligence
SITREP		situational report
SOCC		Special operations component command
SOF		special operations forces
SOFA		status of forces agreement
SOLE		special operations liaison element
SPINS		special instructions
SQOC		squadron operations centre
SSA		space situational awareness
STRATCOM		Strategic communications
TACON		tactical control
TACP		tactical air control parties
TBMD		theatre ballistic missile defence
TOA		transfer of authority
TT		tanker transport
TTP		tactics, techniques and procedures
UA		unmanned aircraft
UAS		unmanned aircraft systems
WOC		wing operations centre

Part 2: Terms and Definitions

The Lexicon contains definitions relevant to AJP-3.3(B) and is not meant to be exhaustive. The definitive and more comprehensive list of definitions is in AAP-06.

air power

The ability to use air capabilities to influence the behaviour of actors and the course of events.³³

air superiority

That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force.

air supremacy

That degree of air superiority wherein the opposing air force is incapable of effective interference.

area of operations

An area defined by the joint force commander within a joint operations area for the conduct of specific military activities.

army organic air defence

Air defence units that are organic of land units.

ballistic missile defence

Defence of NATO European territory against ballistic missiles

battle damage assessment

The assessment of effects resulting from the application of military action, either lethal or non-lethal, against a military objective.

battlespace

The environment, factors and conditions that must be understood to apply combat power, protect a force or complete a mission successfully. Note: It includes the land, maritime, air and space environments; the enemy and friendly forces present therein; facilities; terrestrial and space weather; health hazards; terrain; the electromagnetic spectrum; and the information environment in the joint operations area and other areas of interest.

campaign

A set of military operations planned and conducted to achieve a strategic objective within a given time and geographical area, which normally involve maritime, land and air forces.

centre of gravity

Characteristics, capabilities, or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength, or will to fight.

combined

Multinational.

communication and information systems

Collective term for communication systems and information systems.

³³ This term is currently not approved in AAP 6/NTMS and requires a proposal to MCTC.

component command

1. In the NATO military command structure, a third-level command organization with specific air, maritime or land capabilities that is responsible for operational planning and conduct of subordinate operations as directed by the NATO commander.

2. A functional component command or service component command responsible for the planning and conduct of a maritime, land, air, special or other operation as part of a joint force.

component commander

1. A single-service or functional component commander at the third level of the NATO military command structure.

2. A designated commander responsible for the planning and conduct of a maritime, land, air, special or other operation as part of a joint force.

concept of operations

A clear and concise statement of the line of action chosen by a commander in order to accomplish his given mission.

control

The authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, that encompasses the responsibility for implementing orders or directives.

course of action

In the estimate process, an option that will accomplish or contribute to the accomplishment of a mission or task,

and from which a detailed plan is developed.

doctrine

Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application.

end state

The political and/or military situation to be attained at the end of an operation, which indicates that the objective has been achieved.

force protection

All measures and means to minimize the vulnerability of personnel, facilities, equipment and operations to any threat and in all situations, to preserve freedom of action and the operational effectiveness of the force.

host nation

A nation which, by agreement: a. receives forces and materiel of NATO or other nations operating on/from or transiting through its territory; b. allows materiel and/or NATO organizations to be located on its territory; and/or c. provides support for these purposes.

information operations

A staff function to analyse, plan, assess and integrate information activities to create desired effects on the will, understanding and capability of adversaries, potential adversaries and North Atlantic Council approved audiences in support of Alliance mission objectives. (This is a new term; the definition will be processed for NATO Agreed status)

intelligence

The product resulting from the directed collection and processing of information regarding the environment and the capabilities and intentions of actors, in order to identify threats and offer opportunities for exploitation by decision-makers.

joint

Adjective used to describe activities, operations, organizations in which elements of at least 2 services participate.

joint fires

Fires applied during the employment of forces from two or more components in coordinated action toward a common objective.

joint force commander

A general term applied to a commander authorized to exercise command authority or operational control over a joint force.

Not NATO Agreed

joint operations area

A temporary area defined by the Supreme Allied Commander Europe, in which a designated joint commander plans and executes a specific mission at the operational level of war. A joint operations area and its defining parameters, such as time, scope of the mission and geographical area, are contingency - or mission-specific and are normally associated with combined joint task force operations.

mission

1. A clear, concise statement of the task of the command and its purpose.
2. One or more aircraft ordered to accomplish one particular task.

multinational

Adjective used to describe activities, operations and organizations, in which elements of more than one nation participate.

operation

A sequence of coordinated actions with a defined purpose. Notes: 1. NATO operations are military. 2. NATO operations contribute to a wider approach including non-military actions.

operation plan

A plan for a single or series of connected operations to be carried out simultaneously or in succession. It is usually based upon stated assumptions and is the form of directive employed by higher authority to permit subordinate commanders to prepare supporting plans and orders. The designation 'plan' is usually used instead of 'order' in preparing for operations well in advance. An operation plan may be put into effect at a prescribed time, or on signal, and then becomes the operation order.

operational command

The authority granted to a commander to assign missions or tasks to subordinate commanders, to deploy units, to reassign forces, and to retain or delegate operational and/or tactical control as the commander deems necessary. Note it does not include responsibility for administration.

operational control

The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned, and

to retain or assign tactical control of those units. It does not include authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative or logistic control.

rules of engagement

Directives issued by competent military authority which specify the circumstances and limitations under which forces will initiate and/or continue combat engagement with other forces encountered.

supported commander

A commander having primary responsibility for all aspects of a task assigned by a higher NATO military authority and who receives forces or other support from one or more supporting commanders.

supporting commander

A commander who provides a supported commander with forces or other support and/or who develops a supporting plan.

Surface Based Air Defence

Air Defence units that are organic of JFAC.

tactical command

The authority delegated to a commander to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority.

tactical control

The detailed and, usually, local direction and control of movements or manoeuvres necessary to accomplish missions or tasks assigned.

targeting

The process of selecting and prioritizing targets and matching the appropriate response to them, taking account of operational requirements and capabilities.

theatre ballistic missile defence

Protection of deployed forces and assets from ballistic missile attacks.

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