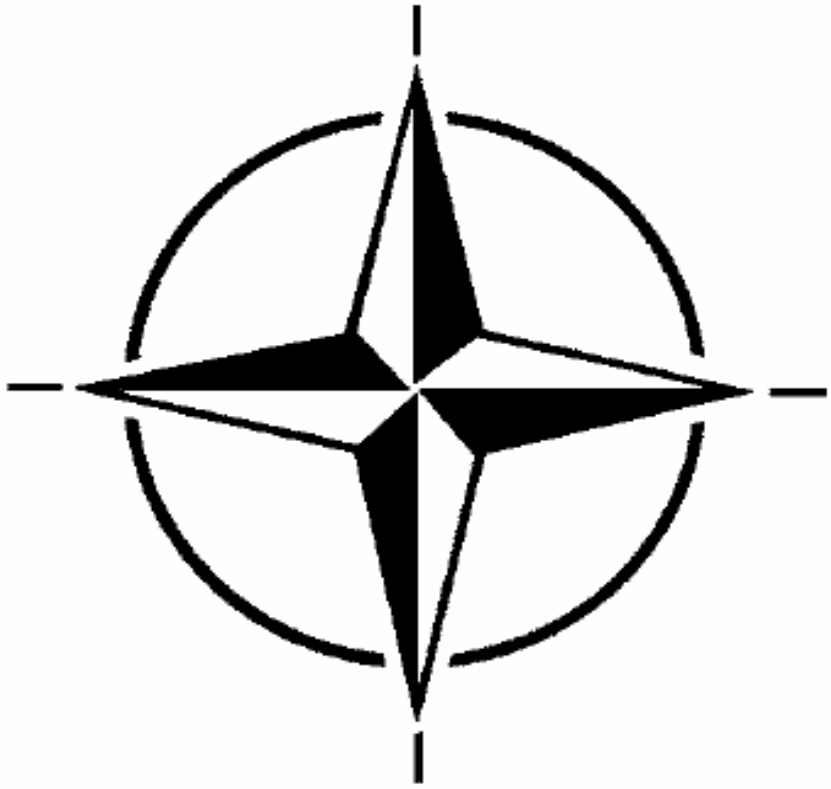

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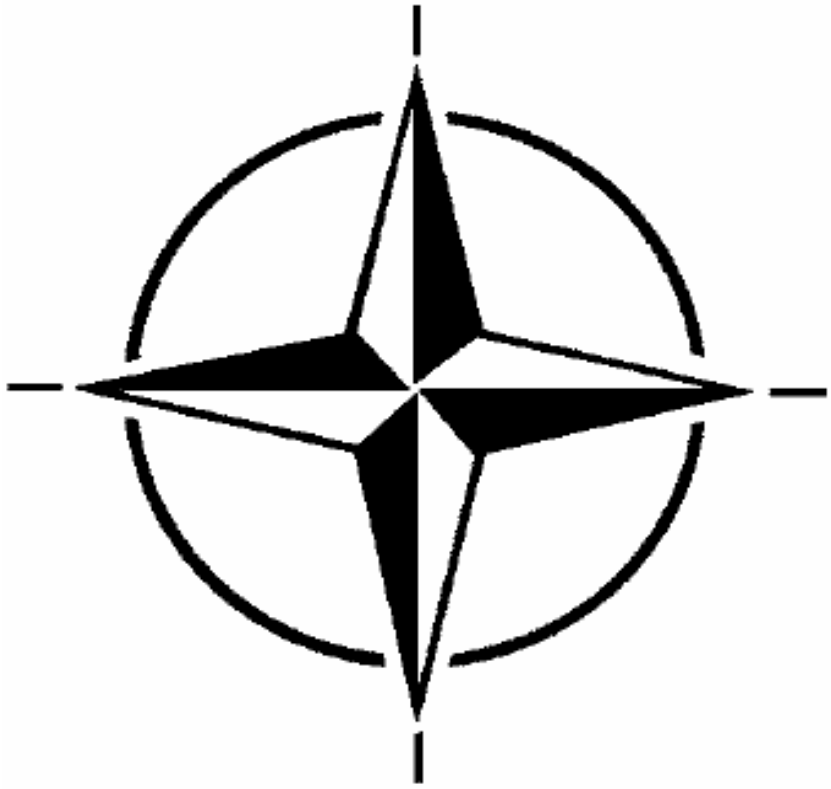

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ALLIED JOINT DOCTRINE FOR
COUNTER – AIR

JULY 2010

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NORTH ATLANTIC TREATY ORGANIZATION

NATO STANDARDIZATION AGENCY (NSA)

NATO LETTER OF PROMULGATION

9 July 2010

1. AJP-3.3.1(B) – ALLIED JOINT DOCTRINE FOR COUNTER - AIR is a NATO UNCLASSIFIED publication. The agreement of nations to use this publication is recorded in STANAG 3880.

2. AJP-3.3.1(B) is effective on a date to be promulgated by the NSA. When made effective it shall supersede AJP-3.3.1(A) which shall be destroyed in accordance with the local procedures for the destruction of documents.

Cihangir AKSIT, TUR Civ
Director, NATO Standardization Agency

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RECORD OF CHANGES

Identification of Change, Reg No. (if any), and Date	Date Entered	NATO Effective Date	By Whom Entered (Signature; Rank, Grade or Rate; Name of Command)

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATIONS BY NATIONS
2	USA
3	USA
4	ITA
5	BGR, ITA, USA
6	USA

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RECORD OF SPECIFIC RESERVATIONS

NATION	SPECIFIC RESERVATIONS
BGR	The Bulgarian Land Forces do not implement the requirements in Chapter 5, 0520, c, (2)
ITA	a. Paragraphs 0414 and 0415 - These paragraphs are not in compliance with the MC485 "NATO Suppression of Enemy Air Defences (SEAD) Policy", MC 64/10, ATP 44C and AIRNORTH MANUAL 80-6. In the AJP-3.3.1(B) it is written that the SEAD operations can be achieved through "destructive and disruptive means", while it is completely omitted the function "detection" which, as reported in the MC 485, is a primary task. Furthermore none of the above mentioned publications include "self defence" as a stand alone SEAD mission. Self Defence is to be deemed as an essential requirement for alI air assets operating in a hostile environrnent. b. Paragraph 0520 (a2) - The Fire Control Orders (FCO) listed in this paragraph differ from those ones listed in the SUPPLAN 45600 D "DECISIVE GUARDIAN" IADS-I (26 august 2009). In particular the order "cease fire" has been omitted whilst the order "cover" is not included as an FCO according to the IADS-I.
USA	a. The United States does not accept the construct for “counter-air” as defined in paragraph 0201 and in the lexicon and terms section of AJP-3.3.1(B) Ratification Draft One (RD1). Specifically, AJP-3.3.1 (B) RD1 states that the role of counter-air is to “attain and maintain a desired degree of control of the air” rather than to “attain and maintain a desired degree of air superiority” as it is currently defined in Allied Administrative Publication (AAP)-6. This modified definition of counter-air represents a significant departure from the approved definition found in AJP-3.3.1(A), but was apparently made without proper coordination and comment. Furthermore, AJP-3.3.1(B) RD1 now establishes “control of the air” as a framework that includes “favourable air situation, air superiority and air supremacy,” whereas AJP-3.3.1(A) uses the widely-accepted terms “air superiority and air supremacy.” Rationale. United States joint doctrine does not accept the idea that counter-air is intended to achieve “a degree of control of the air” as a framework, but rather it is intended to achieve “a degree of air superiority” as determined by the joint force commander (JFC). The application of this definition of air superiority allows the JFC to determine the “given time and place” for achieving air superiority, i.e., both temporally and spatially. Because the accepted counter-air definition does not include “control of the air,” that term is only used as a matter of context in AJP-3.3.1(A), i.e., “The degrees of control of the air are: air superiority and air supremacy,” and not an end in itself. However, with “control of the air” now a precept in the definition of

	counter-air in AJP-3.3.1(B) RD1, it establishes a new framework as follows: "There are three degrees of control of the air: (1) A Favourable Air Situation is one in which the extent of air effort applied by enemy air forces is insufficient to prejudice success of friendly sea, land or air operations. (2) Air Superiority is defined as 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. (3) Air Supremacy is defined as that degree of air superiority wherein the opposing air forces are incapable of effective interference." Background. The framework described above and the term "favourable air situation" were first introduced in the 2001 timeframe in the initial study drafts of AJP 3.3, Allied Joint Doctrine for Air and Space Operations, the "parent" doctrinal publication for AJP-3.3.1, which resulted in critical comments from US. This same framework was also rejected in Study Drafts 1-3 for AJP-3.3.1(A), and was finally removed from Study Draft 4 and the current version of AJP-3.3.1(A), which was ratified in April 2006. Unfortunately, the framework in question and the term "favourable air situation" somehow made its way into the current AJP-3.3 (Change 1), dated May 2002. It should be noted, though, that the current (Ratification Draft 3) for the next version of AJP-3.3(A) does not include "favourable air situation." b. The US does not subscribe to the omission of essential information in paragraph 0302 regarding an Air Component Commander (ACC) executing joint operational area (JOA)-wide missions and the requirement to coordinate with appropriate commanders of designated areas of operation (AOO) within the JOA. Rationale. Essential aspects of the synchronization activities regarding the surface component commander was left out. This clarifies who is responsible for those key activities. The commander designated for an AOO is responsible to synchronize maneuver, fires and interdiction (to include counter-air) and determine the priority, timing and effects of all operations within their AOO. Therefore, an ACC executing JOA-wide missions must coordinate with the commander of an AOO for any such missions within the AOO. c. The US does not subscribe to the misuse of objective area of operations in paragraph 0514a(2).

	Rationale. By definition a combat air patrol (CAP) mission is given an objective area not a forward area of operations. d. The US does not subscribe to the misuse of effects language in paragraph 0602. Rationale. Effects are created or generated to support achievement of objectives. Effects are not capabilities or packaged items to be delivered. They are the result of the employment of a capability. Language must be consistent with higher level Allied Joint Publications. e. The United States does not recognize the terms and definitions included in the text and glossary as being NATO agreed upon that are: (1) Defined in AAP-6 and not quoted verbatim: air component commander, favorable air situation, target development, theater missile and threat radar. (2) Terms used in the text, but misquoted from AAP-6: airspace control, counter-air operations and NATO assigned forces.

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CHAPTER 1

INTRODUCTION

0101. Origin. Allied Joint Publication (AJP-3.3.1), Counter - Air (CA) Operations, is based on the general doctrine and fundamental considerations contained in AJP-3.3, Joint Air and Space Operations Doctrine.

0102. Aim. The aim of this publication is to provide a reference document covering operational and tactical doctrine for CA operations. This publication will:

a. Provide guidance for North Atlantic Treaty Organization (NATO) and national commanders and staffs in order to promote the effective employment of allied forces in CA operations.

b. Lead to a better understanding of CA operations within all national armed services and allied forces.

c. Focus attention on all aspects of CA operations and thus lead to the identification of unsatisfactory areas and the further development of doctrine and procedures.

0103. Scope

a. This publication considers the contribution to the CA operations of all elements of a force whether they are in the air, in space, on land, or at sea.

b. This publication considers the full spectrum of CA operations, both defensive and offensive, including the suppression of enemy air defences, to counter both air and missile threats throughout the range of military operations.

c. In order to allow the widest possible circulation, this publication does not contain classified information.

0104. Terms, Definitions and Abbreviations. See the Lexicon.

0105. Application. The employment of allied resources and of associated measures involved in CA operations should be based on the principles contained in this document.

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CHAPTER 2

CONCEPT

0201. General. The purpose of counter-air operations is to achieve a desired, or necessary level of control of the air, through the destruction, degradation or disruption of enemy aircraft and missiles, in order to allow all friendly forces greater freedom of action, whilst minimizing their vulnerability to detection and attack. Counter-air operations are those integrated operations by all components to counter hostile and missile threats in order to attain and maintain a desired degree of control of the air. Control of the air is achieved through the use of a variety of integrated weapon systems and sensors to counter threats that include manned or unmanned aircraft, ballistic missiles, and air, land or sea launched cruise missiles, both before and after launch. There are three degrees of control of the air:

- A Favourable Air Situation is one in which the extent of air effort applied by enemy air forces is insufficient to prejudice success of friendly sea, land or air operations.

- Air Superiority is defined as 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 is defined as that degree of air superiority wherein the opposing air forces are incapable of effective interference.

It should be understood that neither air superiority nor air supremacy implies that losses will not be inflicted by an enemy. It is the level of interference in relation to achieving the objective caused by the enemy's air operations that is the focus.

a. **Offensive Counter - Air**. Offensive Counter - Air (OCA) consists of offensive operations to destroy, disrupt or degrade enemy air and missile threats. Ideally, most OCA operations will prevent the launch of aircraft and missiles by destroying them and their supporting systems on the ground, or failing that, as close to their source as possible. Such operations may be pre-planned or immediate, and are conducted across enemy territory at the initiative of friendly forces. Preplanned ops rely on continuous and accurate intelligence for targets expected at particular locations and times, while immediate ops 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 Defenses (SEAD).

b. **Defensive Counter - Air**. Defensive Counter - Air (DCA) operations protect friendly forces and vital interests from enemy air and missile attacks; as such it is synonymous with Air Defense (AD). DCA consists of all active and passive air defense (AD)

operations to detect, identify, intercept, and destroy or negate enemy 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. The Air Defense Commander (ADC) is responsible for the integration of all AD efforts, regardless of system ownership.

(1) **Active AD**. Active AD involves any direct defensive action taken to destroy, nullify or reduce the effectiveness of enemy air and missile attack against friendly forces and critical elements. It is achieved through integrated detection, identification, assessment, interception and engagement and usually characterized by layered defense- in –depth allowing multiple engagement opportunities, utilizing reactive air-to-air fighters, Surface-to-Air Missiles (SAMs) and other assets in the air or on the ground.

(2) **Passive AD**. Passive AD includes all other measures taken to minimize the effectiveness of hostile air and missile attacks, through individual and collective protection of friendly forces and critical assets. Elements of passive AD include early warning; camouflage, concealment, and deception; hardening; dispersion; reconstitution, and low observable or stealth technologies. Passive AD measures do not involve the employment of lethal weapons, but do improve survivability. These passive AD measures for survivability of the joint force are part of the overall Force Protection (FP) doctrine.

0202. Aim of Counter - Air Operations. The aim of CA operations is to shape the joint battlespace, to provide freedom of manoeuvre and action for friendly forces while ensuring that friendly Centers of Gravity, key assets and military forces are safe from attack. CA operations are coordinated and executed by all components, using a variety of integrated weapons systems and sensors to counter threats, both before and after launch. They are conducted over enemy and friendly territory exploiting the full benefit of both the offensive and defensive. They are both proactive and reactive. They range from seeking out and destroying the enemy's capabilities prior to their employment, to taking reactive measures to minimize their effectiveness during employment. Control of the air creates the conditions for the success of most operations. The degree of control required may well vary over time and geography and depends on the overall situation as well as the Joint Force Commander's (JFC) concept of operations. Consequently, surplus air power, when available, will be assigned to other lines of operation within the joint campaign. There may be occasions when the required degree of control of the air cannot be guaranteed throughout the Joint Operations Area (JOA) or for the duration of the joint campaign. Under these circumstances, the JFACC in consultation with the JFC will conduct a risk assessment before deciding an appropriate course of action.

0203. Relationship between Offensive and Defensive Counter - Air Operations. In order to achieve control of the air for the allied force, the OCA and DCA efforts must be integrated and synchronized. Air operations are referred to as "offensive" when they are conducted to seek out and engage an adversary at a time and place of friendly force choosing, or "defensive" when

they are reactive to adversary initiatives. Because OCA and DCA operations may require the same resources and may be conducted simultaneously in the same airspace, they cannot be considered in isolation from each other.

0204. Relationship of Counter - Air Operations with other Component Operations. The air and missile threat posed to friendly forces and operations is not bound by geography and is subject to the adversary's capabilities, priorities and objectives. CA operations may therefore impact either the land or maritime operations, and frequently cross the boundaries between them. Land, maritime, air, and special operations forces (SOFs) may all have a part in CA operations. The degree of mutual support required for CA operations will depend on variables such as the degree of adversary threat, the degree of control of the air required, friendly objectives, and the disposition of allied forces.

0205. Interoperability. Operational effectiveness is enhanced by the ability of systems, units and forces to provide services for, and to accept services from, other systems, units and forces. Such interoperability includes the provision of cross servicing facilities and of compatible doctrines, procedures, command and control (C2) systems, communications, information exchange formats, combat identification systems, and navigational aids. Interoperability enhances flexibility of response to changing requirements and may permit concentration of effort to succeed in CA operations. This is especially true when the proliferation of advanced adversary weapons and systems has reduced the time to react.

0206. Co-ordination of Effort. Integration of effort and unity of action that results from the efficient blending of individual AD systems and the coordination between units tasked with CA, as well as other friendly forces involves the assessment of capabilities of friendly resources and adversary vulnerabilities. This results in the effective application of resources (aircraft, weapons, control and support facilities, etc.) achieve the JFC's desired objectives.

0207. Intelligence, Surveillance and Reconnaissance (ISR). Effective CA operations require timely collection, processing, analysis, production, and dissemination of reliable and accurate intelligence. Near-real-time and real-time information from air-, surface-, and space-based sensors is used to provide warning, situational awareness (SA), targeting, and combat assessment. ISR information is also needed to identify and either attack or exploit emerging targets which pose a substantial threat to friendly operations. Timely target detection and geo-location, target development, weapon selection, mission planning, and combat assessments depend on integrated collection and analysis. Proper intelligence preparation of the battlespace (IPB) is a crucial step in conducting CA operations. Without an accurate, well-defined adversary air order of battle (AOB), friendly forces will operate under increased risk. Other component intelligence resources provide valuable information concerning any air operations within their area of operations (AOO). In addition to developing the AOB, IPB can enable a predictive analysis to help determine likely adversary actions or reactions, thus optimizing ISR effectiveness and combat air patrols.

0208. Readiness. The option of surprise often rests initially with a potential aggressor. Accordingly,

allied CA resources should be held at appropriate readiness states to ensure that response time to indications of an initial attack is commensurate with the warning that may be expected.

0209. Survivability. The survivability of CA assets is a vital factor in the conduct of the allied operation and will be enhanced by a combination of active operations and passive measures.

0210. Sustained Operations. The possibility of a prolonged conflict requires that allied CA resources are prepared to operate for extended periods, and economy of effort should therefore be sought at all times. However, the effects of CA operations are cumulative in nature and should be planned to allow the concentration of force when necessary to support allied objectives.

0211. All -Weather Day/Night Operations. Allied CA forces should be capable of continuous operation by day and night under all environmental, weather and light conditions.

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CHAPTER 3

COMMAND AND CONTROL

0301. General. The growing capabilities of air and missile threats (speed, range, mobility, accuracy, stealth, reduced radar cross section, lethality) require joint/allied forces to be more responsive, flexible, and integrated in order to effectively counter them. The manner in which JFCs organize their forces directly affects the responsiveness and versatility of joint force operations. The first principle in joint force organization is to accomplish the mission based on the JFC's vision and concept of operations, which must be in accordance with overarching political objectives, efforts and the desired end state. CA operations are part of the air component commander's (ACC's) air operation plan as an integral part of the JFC's campaign plan. Unity of effort, centralized planning and decentralized execution are key considerations. Unity of effort is necessary for effectiveness and efficiency. Centralized planning is essential for controlling and coordinating the efforts of all available forces, especially high demand, low density assets. Decentralized execution is essential to generate the tempo of operations required and to cope with the uncertainty, disorder, and fluidity of combat. The ability to task forces is situational dependent and normally tailored by the JFC to enable effective spans of control, responsiveness, tactical flexibility, and protection.

0302. Command Relationships. With the wide range of operational requirements to be covered with minimal assets, the execution of NATO military operations will often be guided by supported/supporting relationships when one organization should aid, protect, complement or sustain another force. This key relationship provides the establishing authority with an effective means of weighting the phases and sub phases of NATO operations with a subordinate commander typically receiving support from, and providing support to, other commanders. The supported commander has the primary responsibility for execution of the military tasks assigned by the JFC. The JFC will designate a component commander, normally the ACC to integrate the capabilities and C2 of allied air assets. The JFC also designates a component commander, normally the ACC, to be the supported commander for CA operations. As such, the designated CC plans, organizes, and executes CA operations JOA-wide. In accordance with JFC guidance and priorities, the designate CC has the authority to determine the priority, timing, and effects of CA operations throughout the JOA.

0303. Joint Force Commander. The JFC exercises the degree of command and control over assigned or attached forces as delegated to ensure unity of effort in all air operations including countering air and missile threats. The JFC provides authoritative direction to subordinate commanders on objectives, priorities, missions, and apportionment of joint capabilities and forces. Primary responsibilities of the JFC as they apply to CA include the following:

a. Develop and maintain a system to unify the employment of subordinate forces in carrying out assigned CA missions.

b. Develop and produce joint operation plans for joint CA and airspace control (ASC) or delegate authority to subordinate commanders.

c. Establish appropriate command relationships for the component commanders.

d. Define and assign operational areas.

e. Establish targeting priorities and issue targeting decisions as approved by appropriate higher authority.

f. Assign tasks, functions, and responsibilities to, and direct coordination among, the subordinate commands to ensure unity of effort in accomplishing joint CA missions.

g. After approval by the appropriate higher authority establish, coordinate, and disseminate rules of engagement (ROE) to all subordinate commanders.

0304. Air Component Commander. Normally, the ACC is the component commander having the preponderance of air assets and the capability to plan, task, and control allied air operations. The need for an ACC is based on the JFC's overall mission, concept of operations, missions and tasks assigned to subordinate commanders, forces available, duration and nature of allied air operations desired, and the degree of unity of C2 of allied air operations required. The functions and responsibilities of the ACC, air defence commander (ADC) and airspace control authority (ACA) must be integrated to ensure that OCA and DCA operations and ASC are synchronized. The responsibilities of the ACC, ADC and ACA are interrelated and are normally assigned to one individual, but they may be assigned to two or more individuals when the situation dictates. Based on the situation, if the JFC decides not to assign the ACC, ADC or ACA as one individual, then close coordination among all three positions is essential. The JFC assigns the ACC's authority and responsibilities. These normally include, but are not limited to, allied CA planning, coordinating, allocating and tasking based on the JFC's concept of operations and apportionment decision. Other responsibilities of the ACC relating to allied CA operations include the following:

a. Develop the allied CA plan by coordinating and integrating it with operations of other components.

b. Make an air apportionment recommendation to the JFC, after consulting with other component commanders.

c. Provide centralized planning for allied CA capabilities and forces made available by the JFC.

d. Provide information operations (Info Ops) strategies to neutralize adversary air and missile threats while preserving friendly offensive and defensive capability.

e. Perform the duties of the ADC when directed by the JFC.

f. Perform the duties of the ACA when directed by the JFC.

g. Conduct Air targeting when directed by the JFC.

h. Conduct “Combat Assessment”.

0305. Air Defense Commander. The JFC normally designates an ADC with the authority to plan, coordinate, and integrate overall joint force DCA operations. Normally, the ADC is the component commander with the preponderance of AD capability and the command, control, communications and intelligence capability to plan, coordinate, and execute integrated AD operations. Primary responsibilities of the ADC include the following:

a. Develop, integrate, and distribute a JFC-approved joint air defence plan (ADP).

b. Develop and execute, in coordination with the joint force staff, a detailed plan to disseminate timely air and missile warning and cueing information to components, forces, allies, coalition partners, and civil authorities, as appropriate.

c. Implement approved identification and ROE. Propose additional ROE to counter changes to the air and missile threat.

d. Ensure timely and accurate track reporting among participating units to provide a consistent common operational picture.

e. Establish sectors or regions, as appropriate, to enhance decentralized execution of DCA operations.

0306. Airspace Control. ASC is a vital factor in CA operations and must include all necessary airspace control means (ACM) to exercise effective control of friendly airspace and airspace users. Standardized airspace control procedures and close co-ordination between component commanders and appropriate national authorities reduce confusion and contribute to the overall effectiveness of the CA mission. Coordination with AD systems is essential. The establishment of identification and weapon engagement zones and the direction of non-combat air traffic will be arranged so as to permit maximum use of DCA resources while offering the least inhibition to OCA and other operations.

0307. Airspace Control Authority. The ACA has overall responsibility for establishing and operating the ASC system. The ACA also develops policies and procedures for ASC that are incorporated into an airspace control plan (ACP). A key responsibility of the ACA is to provide the flexibility needed within the ASC system to meet contingency situations that necessitate rapid employment of forces. The ACA coordinates through the ACP the use of airspace, including integration with the host nation and deconfliction of user requirements. The ACA must be able to rapidly implement airspace control means (ACM) in the dynamic CA environment to enhance freedom of action of components while preventing fratricide. The ACP is co-ordinated with the ADP. The ACP is implemented through the airspace control order (ACO). All forces affecting allied air operations are subject to the ACO.

0308. Command and Control System. A C2 system is required to direct all efforts toward the overall objective. To interconnect the various decision and execution levels, an efficient, secure and survivable C2 system is an essential prerequisite. For air operations, an Air Operations Center (AOC) normally functions as the ACC's principal operations centre that translates the Air Operations Directive into an air tasking order (ATO). The AOC disseminates and executes the ATO and monitors the resulting mission flow. The AOC links with all air C2 assets including theatre sensors, intelligence sources, and airborne C2 assets. Co-ordination and liaison with other component commands are provided by integrated land and maritime liaison elements to the AOC and through the air operations co-ordination centre (AOCC (M) or (L)) collocated with the respective Maritime/Army Corps headquarters (HQ).

0309. Rules of Engagement. NATO led forces generally operate under an established set of ROE. The JFC must establish and implement the ROE approved by higher authority. These ROE should be modified to meet the threat. The JFC will consider such factors as the mission, threat, political constraints, presence of non-combatants, and the possible effect of collateral damage when recommending modifications to ROE. Common ROE and standardized criteria used to determine activities of a hostile nature, are defined for peacetime application, times of tension, and crisis operations. Such ROE will include consideration of circumstances in which specific weapon systems (such as beyond visual range) may be employed. ROE and precautionary measures must be coordinated with all commanders to preclude anomalies and confusion in interpretation.

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CHAPTER 4

OFFENSIVE COUNTER - AIR OPERATIONS

0401. Objectives. The objective of CA operations is to gain and maintain the desired degree of control of the air. The purpose is to create a condition that gives friendly forces a freedom of action throughout the area of conflict, while denying the adversary the same freedom. There could be times when resources from all components are not adequate to ensure the required degree of control of the air. Decisions will be based, therefore, on an assessment of the desired degree of control needed to support allied objectives. Control of the air enhances an allied force's freedom of movement and creates a favourable environment for all operations. This enables friendly use of otherwise contested airspace, enhances freedom of action, and reduces the adversary's air and missile threat to friendly forces. OCA comprises operations conducted within enemy battlespace, at the initiative of friendly forces. They are aimed at destroying, disrupting, or degrading enemy aircraft, missiles, launch platforms and the associated supporting structures and systems as close to their source as possible. Control of the air is achieved through both offensive and defensive CA operations from all components.

0402. The Relationship of OCA to the Allied Operation. Operations are enhanced by at least a favourable air situation which is why attaining the desired degree of control of the air is normally one of the highest priorities of the JFC. There may be instances when the adversary does not have sufficient offensive air capability to affect the success of friendly land, maritime, air and special operations. If there is any possibility of adversary's offensive air and tactical missiles being employed, possible CA action must be considered carefully in operational planning. OCA must be directed at critical points of the adversary's air and missile warfare potential and targets, times of attack, and offensive force levels must be selected to optimize allied capabilities. Thus, OCA will contribute considerably in the effective employment of friendly air resources.

0403. Offensive Counter - Air Resources. The effectiveness of OCA operations depends on the availability and the capabilities of systems. The choice of a particular system may depend on target characteristics, threats, environmental conditions, fratricide and collateral damage concerns and available intelligence. Resources include, but are not limited to the following:

a. Aircraft. Includes fixed and rotary wing systems.

b. Suppression of Enemy Air Defences (SEAD) Aircraft. Specially equipped aircraft with aircrews trained for tasks dealing with the suppression and destruction of enemy ground-based, radar-directed, air defences including associated C2 resources. See paragraph 0414 for more detail.

c. Attack Helicopter (AH). The ACC will normally task AH made available by the JFC as a manoeuvre unit with mission type orders, when employing them to support OCA attack operations.

d. Unmanned Aerial Vehicle (UAV). When configured as a sensor platform, UAVs gather information to support OCA operations. Additional roles include combat, deception, electronic warfare (EW) and fire support.

e. Missiles. Includes surface-to-surface, air-to-surface, air-to-air, as well as air, land, and sea launched cruise missiles. Cruise missiles may be employed against CA targets. Factors such as damage per vehicle, vehicle cost, adversary AD capabilities, the importance of the target and its relative vulnerability to other forms of attack must be weighed against the benefits of using this weapon.

f. Special Operations Forces. Includes direct action and/or support functions. SOF can conduct direct action (i.e. attack or provide terminal guidance for precision weapons) and special reconnaissance (i.e. collect intelligence or locate and attack targets of opportunity) against both fixed and mobile ground targets, maritime targets, and aircraft/missiles prior to take off/launch.

g. Surface Fire Support. Should OCA targets be suitable for land forces, the land component commander and maritime component commander may support the ACC in OCA. This assistance can include the use of artillery, attack helicopter, air assault/helicopter borne infantry attacks, or maritime fires. Surface-to-surface guided missiles and long range unguided rockets may be used in OCA. Naval surface fire support includes naval gunfire, missile and EW systems that can be employed against suitable OCA targets.

h. Command, Control, Communication, Computers and Intelligence Systems. Includes early warning and surveillance systems, satellites, radars, identification systems, communication systems, and surface, air, and space-based sensors.

i. Information Operations Applications. Includes malicious codes, EW or electromagnetic pulse (EMP) generators.

0404. Associated Resources

a. The Air Surveillance and Control System (ASACS). In general, the Surveillance and Control System (ASACS) supports defensive and offensive missions as tasked by the designated CC (normally the ACC). Control facilities, using their radar and communication resources, give tactical assistance and control to aircraft tasked for AD and aircraft engaged in OCA. The support and the subsequent tasking of ASACS will be defined in the air operations directive and ATO.

b. Tactical Air Control Systems at Sea. Ships equipped for tactical air control should coordinate their activities closely with a shore tactical air control system when necessary. Ships should also coordinate with airborne C2.

c. Jammers. Certain units are equipped with various electronic equipment that supports OCA. Jamming platforms may be surface-based or airborne. If airborne, they may be suited for stand-off or close-in jamming. Surface-based assets can either be requested through joint procedures, or arranged at higher command levels. Aircraft self-protection devices such as electronic countermeasure (ECM) pods, internal ECM equipment, infrared (IR) flares and chaff dispensers are also included under this heading.

d. Intelligence. OCA depends on intelligence to provide threat warning and also to provide a means of target development. Such intelligence is mainly generated within the national structures and distributed at appropriate staff and HQ levels. Of particular importance to OCA is the ability to intercept and identify adversary electronic emissions and immediately pass derived location or threat warning to control agencies or aircrews involved in operations. Furthermore, the ability to carry out combat assessment of OCA operations will be a decisive factor in target development.

e. Space. Navigation systems, satellites and other technological devices may contribute to OCA, both in the planning and execution phases (e.g. satellite photography evaluated for weather data leading to a go/cancel decision). Space operations can enhance CA operations in a variety of ways. Navigation and timing systems providing information on precision, velocity, and time enhances accuracy for defining air corridors, precision navigation, air refuelling tracks, and target location. Communication systems ensure timing and assured voice and data transfer during combat operations. ISR assets help inform on and shape the battlespace, and provide accurate target identification. Space assets provide battle damage assessment to help determine if subsequent CA operations are needed and where. Space capabilities provide detailed layout of airfields and runways as well as locate ballistic missile systems for targeting. Warning systems can detect, find, identify, fix, track, and target ballistic missile launch. Weather systems provide timely and accurate information to aviators, air planners and targeteers/weaponeers for the conduct of CA operations.

0405. Planning. General aspects governing the planning of OCA, especially political and military considerations and restrictions, are contained in AJP-3.3. Three aspects of the planning process of importance to OCA are setting the objectives, determining the targets against which OCA is to be mounted, and unity of effort. Planning and tasking may occur at a high level of command, but personnel at all levels should fully understand not only the purpose of their specific air task, but also the commander's intent, objective and concept of operations. Thus, part of the planning process for all levels to execute operations is to understand how the specific mission and tasks to be achieved relate to other activities.

0406. Offensive Counter- Air Tasks. Tasked units should be given as much latitude as possible in the

detailed planning and tactical execution of tasks. The following are OCA missions:

a. Attack Operations. Attack operations are intended to inflict damage on or destroy soft and hardened land targets, underground targets, and selected maritime units that contribute to the adversary's air and missile capabilities. A wide choice of munitions and air and surface platforms are available for this purpose and most combat aircraft have some capability in this role.

b. Fighter Sweep. The fighter sweep is an offensive mission by fighter aircraft to seek out and destroy adversary aircraft or targets of opportunity in an allotted AOO (AAP-6). Traditionally, this mission has been directed against adversary aircraft in the air either in a designated area or along a route in support of other air missions (e.g. a composite air operation). Fighter sweep missions include attacks against adversary high value airborne assets (HVAA), e.g. airborne early warning (AEW) or air-to-air refuelling (AAR) aircraft, etc. In Non-Article 5 Crisis Response Operations fighter aircraft may be tasked to police established no-fly areas.

c. Escort. Escort is an OCA mission, whereby aircraft are assigned to protect other aircraft during a mission. When friendly aircraft enroute to an objective area may be subject to adversary air attack, air-to-air fighter escort aircraft may accompany the force, flying either directly with the force/package (close escort) or at a standoff position (detached escort).

d. Suppression of Enemy Air Defences. SEAD is that activity which neutralizes, temporarily degrades or destroys adversary air defences by destructive and/or disruptive means. SEAD tasks are mounted to protect friendly aircraft from the threat posed by adversary ground-based air defence (GBAD) systems. These systems may be part of an elaborate and well-integrated AD system designed to deny friendly forces freedom of action. The types and degree of adversary air defences will influence the complexity and magnitude of effort necessary to eliminate the threat. These tasks may often have to be accomplished by specialized aircraft and aircrew and may include both lethal or non-lethal defence suppression operations. If SEAD targets are within range of other weapons (e.g. artillery) they should be targeted and attacked, if suitable.

0407. Targeting. Targeting is the process of selecting targets and matching the appropriate response to them taking account of operational requirements, capabilities and desired effects.

0408. Information Operations. Information is essential in combat operations. The allied force is most effective when they exploit the information continuum. In current and future conflicts and operations, the allied force must ensure they understand the battlespace. Knowledge of the battlespace is the result of converting ISR and the C2 systems that distribute ISR data into meaningful intelligence information which is usable by the operational commander. Knowledge of the battlespace involves everything from target recognition to knowledge of an opponent’s operational scheme and the networks and systems relied on to pursue it. Together

sensors, processors, and transmission media work to provide target selection for combat operations. Information operations (Info Ops) comprise actions taken to gain, exploit, defend, or attack information and information systems. Info Ops assists OCA to achieve desired objectives by affecting the adversary's perception of the battlespace. Here attack forces are appropriately paired with targets to achieve mass. After the strike, combat assessment is used to determine the results of the application of force and assess whether future strikes are needed. Information technology provides the basis for continually improving precision strike, communications, intelligence gathering and dissemination, and sensor data processing. Other examples of Info Ops are any actions disrupting vital information transmissions that degrade the adversary's capability to recognize the situation until it is too late to take appropriate action. Info Ops can be applied to many OCA targets. Targets such as C2 systems, theatre missiles and support infrastructure, and airfields/operating bases can be affected by Info Ops applications, including malicious codes, EW, or electromagnetic pulse generators. Some of these IO applications afford access to a target that may be inaccessible by other means. The joint force must limit its own potential vulnerabilities and exploit those of the adversary.

0409. Potential Offensive Counter - Air Targets

a. Weapon Systems and Combat Facilities

(1) Aircraft. This category includes adversary fixed wing aircraft, helicopters, and UAVs. All these vehicles represent a threat to friendly forces. Aircraft on the ground might be lucrative targets if left unprotected due to movement and should be attacked. Destruction of adversary aerial vehicles automatically reduces his capability to bring airpower to bear, particularly in the short term. However, as in all attrition exchanges, care must be taken not to become involved in a series of unfavourable exchanges. Priorities will depend on the battle situation, and engagement priorities will generally follow the degree of threat presented.

(2) Airfields, Operating Bases, infrastructure and Aircraft Carriers. Adversary airfields, operating bases, infrastructure or aircraft carriers vary in vulnerability. Passive defence measures should be expected and may complicate the targeting process. Adversary airfields are invariably in the rear area, situated behind layered defences and generally well defended. Due to hardening and other such measures on airfields, the runways and support facilities may be more vulnerable than the aircraft themselves, even to specialized weapons. Destruction of command, control, and communications facilities, aircrew and key personnel workspace, hangars, maintenance facilities, petroleum, oils and lubricants (POL) and other storage areas will affect the adversary's ability to generate aircraft sorties. Runway or taxiway closures may prevent use of the airfield for an extended period. This may depend on subsequent strikes and the adversary's repair capability.

(3) Tactical Ballistic and Cruise Missile as well as Combat Drone Launching

Systems, Sites and Platforms. OCA operations are most effective when conducted against theatre missiles before launch. The pre-emptive destruction of missiles, launch facilities, storage facilities and other support infrastructure greatly limits subsequent theatre missile strikes.

(4) Known GBAD sites or AD capable maritime platforms should be eliminated or suppressed, if they affect other operations. It may be necessary to target all known sites in a given area in order to clear corridors of approach for aircraft involved in other air operations. Destruction of individual active sites may create gaps in the adversary's defensive shield, which could, in turn, allow relatively safe penetration possibilities for allied air forces. The creation of such gaps could force the adversary to rely on other defensive measures thereby diluting his overall AD capability and reducing his flexibility. The destruction of active GBAD system sites and maritime platforms may bring temporary relief in parts of an AOO, but long term effects cannot be expected except as a result of cumulative attrition. The target sites must be analyzed to ensure the attack is directed against the critical component of the GBAD system.

(5) Electronic warfare Systems. This category includes adversary systems capable of performing ECM that may be airborne or surface-based. Such systems are generally difficult to detect, but once detected and located are usually vulnerable and worthwhile targets.

b. Command, Control Facilities and Installations

(1) Command, control systems. While adversary C2 facilities may be hardened, certain portions of them are vulnerable, not only to direct attack, but to the more subtle forms of EW. In today's combat environment, an adversary that closely controls his forces is heavily dependent upon communications and other electronic means or upon rigid procedures in order to exercise that control. Denial of either the command function or the means of communication to exercise control can greatly hamper operations. Repeated attacks leading to the elimination of the means of command and control of forces can cause disintegration of adversary efforts. However, the redundancy afforded by a combination of multiple, hardened and mobile systems in large numbers creates difficulties in locating key facilities. Attacks against known facilities may have an immediate local beneficial effect upon an air battle occurring within the span of control of those facilities particularly if sufficient backup sites are not available. These attacks may also have a long-term cumulative effect as sites and maritime platforms are destroyed.

(2) Air surveillance and control system (ASACS). The ASACS includes linked ground-controlled intercept (GCI) and early warning radars and other sensors together with control and communications amid other supporting facilities.

These targets are important to the adversary's situational awareness and his ability to control his forces effectively. Although land-based radars may be movable, the time required to redeploy them is lengthy compared with that of the systems they control. Destruction of such sites in a confined geographic area could, therefore, substantially reduce the adversary's capability to detect, react and bring forces to bear against allied airpower elements and operations. While these target sites can be hardened, certain components must be in the open during operation. These targets should therefore be allocated a high priority in OCA operations. Some of these considerations also apply to maritime platforms.

0410. Control and Coordination. OCA will often be performed beyond range of friendly ground-based control systems. Nevertheless, such systems should contribute to the maximum extent possible to the effective conduct of the mission by providing information and advice during those portions of the operation within their range. This will contribute to the functions of ASC and AD. AEW and airborne control systems may, within the limits of technical equipment, be able to replace or complement ground systems and extend control into adversary territory. When OCA missions are conducted short of the Fire Support Coordination Line, they require close coordination between affected component commanders and must be under positive control or procedural clearance.

0411. Communications. When operating over adversary territory, forces committed to OCA may expect a degraded communications environment. Allied commanders are encouraged to develop standard tactics, techniques and procedures to minimize the requirements for communications without compromising mission effectiveness. This may be negated to a degree by the use of secure, ECM resistant communications and tactical data links. Development and use of standard tactics, techniques and procedures can further reduce the attempts at interference by hostile forces.

0412. Suppression of Enemy Air Defences Objectives. SEAD operations attack the adversary's AD posture to create favourable conditions for friendly operations to achieve their objectives with a reduced risk of attrition.

0413. Suppression of Enemy Air Defences Planning

a. As in the case with fighter sweep/escort missions, SEAD will not normally be pursued in isolation but as an enhancing activity to other operations. SEAD therefore has to be an integral part in the planning of other operations exposed to adversary ADs.

b. General guidance for SEAD planning is provided by the JFC. Component commanders will take this guidance into account when developing their own plans and operations orders.

c. Detailed SEAD planning will take place at that command level where the assets to conduct SEAD are available. Where Joint SEAD is accomplished, close coordination

between the respective commanders is necessary. SEAD operation planners have to take into account all friendly emitters (refer to the Joint Restricted Frequency List (JRFL)) to avoid limitations for and interference with those assets.

d. There are three primary objectives for SEAD planning as follows: 1. an accurate continual assessment of the enemy's air defences and their ability to influence the outcome of overall air operations; 2. to decide the scope, magnitude and duration of SEAD operations necessary to reduce the enemy's air defence capabilities to acceptable risk levels; and 3.to determine what SEAD assets, their capabilities and potential competing requirements are both available and required to achieve the End State of the SEAD mission/campaign.

e. Effective SEAD requires unity of effort to achieve a combined arms effect. The JFC uses all assets to protect friendly forces and exploit threat weaknesses. SEAD is most effective when the JFC integrates the combat power of all elements of the joint force.

0414. Suppression of Enemy Air Defences Resources. Each component has its own unique capabilities to suppress adversary AD systems. Historically, the component directly affected by the threat has assumed the immediate responsibility for suppressing enemy ADs. However, the distinct capabilities provided by each component, the diverse combinations these capabilities offer, and the aggregate of total SEAD capabilities allow allied forces to choose the best means and ways to conduct particular SEAD operations from the array of available options. Some of these options include aircraft with anti-radiation missiles (ARMs) and other air-to-surface munitions, EW, AH, direct or indirect fires (including mortars, artillery, missiles, drones or maritime fires), and direct action by SOF. SEAD operations can be accomplished through destructive and disruptive means.

a. Destructive Means. Destructive means seek the destruction of the target system or operating personnel. The effects are cumulative and increase aircraft survivability, but destructive means may place large demands on the available combat capabilities/forces. Examples of destructive SEAD capabilities are Anti-radiation missiles (ARMs), Directed Energy (DE) and other munitions, e.g. bombs, air and surface-to-surface missiles, drones and artillery.

b. Disruptive Means. Disruptive means temporarily deny, degrade, deceive, delay, or neutralize adversary AD systems to increase aircraft survivability. Disruptive means may be either active or passive. Active means include ARM, DE, electromagnetic jamming and electromagnetic deception expendables (chaff, flares, and decoys), tactics such as deception, avoidance, or evasive flight profiles. Passive means include emission control, camouflage, IR shielding, warning receivers, and material design features.

0415. Execution. SEAD operations can fall into three categories: JOA AD system suppression, localized suppression, and opportune suppression. JOA AD system suppression creates increasingly favourable conditions for allied operations by disabling adversary AD systems (or major capabilities of those systems). Localized suppression operations normally have specified time and space limitations because they support specific operations or missions. Opportune suppression includes self-defence and offensive attacks against adversary AD targets of opportunity. SEAD objectives are specified by the JFC, who will consider the unique capabilities of each component to contribute to CA operations.

a. JOA Air Defence System Suppression. JOA AD system suppression efforts should target high payoff AD assets that will result in the greatest degradation of the adversary's total system. These targets include adversary ground radars and associated C4 for early warning, GCI, critical communications nodes, and long-range GBAD systems. The objectives of JOA AD system suppression will depend upon the type of air operations (interdiction, CA, maritime, and other types) planned to support the JFC campaign plan. The immediate objective of JOA AD system suppression operations is to permit effective allied air operations by protecting allied airborne systems, disrupting the cohesion of adversary ADs, and establishing flexibility for allied operations. Because the results of JOA AD system suppression can have a significant impact on allied operations, they may have a higher priority for air capabilities/forces than localized SEAD objectives. However, planners must consider the impact on the manoeuvre force if strikes requiring localized SEAD are cancelled.

b. Localized Suppression. Localized suppression operations are normally confined to geographical areas associated with specified ground targets or friendly transit routes. These operations may occur throughout the JOA for all components and have time and space limitations because they protect specific operations or missions. Based on the JFC guidance, the land and maritime components' fire support elements and fire support coordination centres will determine the suppression systems available to conduct localized suppression. Examples of these capabilities/forces include field artillery, mortars, maritime surface fire, attack helicopters, EW, and surface-to-surface missiles. Component liaison elements located with the ACC assist localized suppression operations by providing the means to request surface fire support. The component commanders continually update lists of potential SEAD targets in their areas of interest. Tactical air control parties (TACPs), air and maritime gunfire liaison companies, and fire support agencies identify potential local SEAD targets and request SEAD fire support. A preplanned request for SEAD should also identify known or suspected adversary AD locations enroute to and from and around the target area. The request for air support contains the type of suppression desired by the requesting component.

c. Immediate Missions. Threat assessment and suppression requirements must be made quickly when processing a request for air support. Any friendly forces on the air request net able to meet suppression requirements may enter the air request net by contacting the TACPs or air and maritime gunfire liaison company to respond to the specific SEAD request. If a surface force cannot support the SEAD requirement, the component passes the request through the component senior air control agency to the ACC for immediate SEAD support consideration. Execution timing is based on the requested time on target and is relayed from the component to the suppressing unit. If a unit cannot fulfil a prearranged localized suppression commitment, it must relay this information immediately to the component through the appropriate command element. A requesting echelon or component must first consider what organic SEAD systems are available. When the requirements exceed the capability or availability of its systems, the requesting component passes the requirements through its respective chain of command to the ACC for resolution.

d. Opportune Suppression. Many AD threats are not identified in enough time for planned suppression. Opportune suppression is usually unplanned and includes aircrew self-defence and attack against targets of opportunity. The JFC or higher authority will ensure ROE for opportune suppression (SEAD ROE) are part of the established ROE.

(1) Aircrew Self-defence. Unless otherwise dictated by the law of armed conflict, restrictions ordinarily should be imposed only for the safety of friendly forces.

(2) Targets of Opportunity. SEAD targets of opportunity are those adversary AD systems detected by surface or airborne sensors or observers within range of available weapons and not yet targeted. Many SEAD efforts by surface forces may be against targets of opportunity. Surface and air weapon systems may suppress AD targets of opportunity whenever capabilities, mission priorities, and ROE permit. Such suppression operations should be coordinated through the AOC and/or fire support coordination centres unless autonomous action is specifically permitted by ROE or other appropriate command. The purpose of SEAD ROE is to enhance effective suppression of adversary ADs while minimizing risks to friendly forces.

(3) Targets Acquired by Observers or Controllers. Many combat elements may often be in good position to acquire SEAD targets of opportunity. Observers, spotters, controllers, and liaison officers from the components have the authority to request suppression for SEAD targets of opportunity. Such personnel include forward air controllers (FAC), tactical air control parties (TACP), and component surveillance and target acquisition elements and assets. The observers or controllers will forward these requests through their respective fire support channels. Requirements should first be passed to suppression systems that belong to or support the unit acquiring the target because they can respond immediately. If the suppression requirement exceeds the capabilities of the

ground forces, an immediate air request for SEAD support will be sent to the air component.

(4) Targets Acquired by Aircrews. When aircrews have acquired SEAD targets of opportunity but have not engaged them because of mission priorities, system capabilities, or SEAD ROE, they pass the information to the agency controlling their mission. This agency immediately passes the targeting data through the appropriate system or systems to coordinate with the force best suited for targeting.

(5) Coordination. Opportune suppression is a continuous operation involving immediate response to acquired AD targets of opportunity. In support of the operation or campaign plan, the component commander may assign, for a specific period of time, a higher priority of effort to those areas where the campaign or operation plans call for air operations. In cases where air assets are not available or not required, the component commander establishes priorities for opportune suppression. These priorities are forwarded from the designated fire support coordinator at component level HQ to the executing commands.

CHAPTER 5

DEFENSIVE COUNTER - AIR OPERATIONS

0501. General. DCA operations are conducted primarily in reaction to adversary air and missile offensive initiatives. DCA includes active and passive measures to protect forces and vital interests from enemy air and missile attacks. DCA operations attempt interception of intruding enemy aircraft and missiles as early as possible and should be conducted as far from the friendly operations area as feasible. They aim to detect, identify, intercept, negate or preferably destroy enemy air and missile forces attempting to attack or penetrate the friendly air environment. Effective employment of limited assets across a broad front can only be achieved by prioritizing tasks and managing risks. Consequently, the ability to react effectively must be premised on a comprehensive infrastructure facilitated by detailed planning.

a. Active Air Defence. Active AD is direct defensive action taken to destroy, nullify, or reduce the effectiveness of hostile air and missile threats against friendly forces and assets. It includes the use of aircraft, air defence weapons, EW, and other available weapons. Integration of these weapon systems will allow for a defence in depth, using multiple engagements.

b. Passive Air Defence. Passive AD consists of all measures, other than active air defence, taken to minimize the effectiveness of hostile air and missile threats against friendly forces and assets. These measures include camouflage, deception, dispersion, and the use of protective construction. Passive air defence improves survivability by reducing the likelihood of detection and targeting and also minimizing the potential effects of surveillance and attack.

0502. Active Air Defense Functions. The resources made available for active AD must be organized to carry out the following functions:

a. Detection;

b. Routing;

c. Identification;

d. Transmission of information;

e. Assignment of weapons;

f. Control of weapons;

g. Engagement;

h. Combat assessment;

i. Recovery of aircraft.

0503. Active Air Defence Components. Components of the active AD system are as follows:

a. Weapon systems:

(1) Aircraft;

(2) GBAD;

(3) Ship AD weapons.

b. The surface environment, which comprises:

(1) Control and reporting agencies together with sensors which include:

(a) Early warning and surveillance systems;

(b) Other netted civilian and military sensors;

(c) Mobile radars;

(d) Identification systems;

(e) EW support measures;

(f) Maritime air search radars and EW systems;

(g) special operations forces surveillance and reconnaissance.

(2) Communications systems.

(3) Data processing facilities.

c. Contributing systems, which include:

(1) AEW;

(2) Civilian and military air traffic control (ATC) agencies;

(3) Satellites;

(4) AAR aircraft;

(5) EW aircraft;

(6) Airborne lasers.

0504. Weapon Systems. Each system has different limitations and advantages such as range, reaction time and flexibility of operation. Closer examination of individual systems shows that the disadvantages of one are often balanced by the advantages of another; active AD requires a mix of weapon types and systems. This balance is required not only between aircraft and surface-to-air weapons, but also between specific types of aircraft, missiles and anti-aircraft artillery.

0505. Surface Environment. Where practical, all AD agencies and sensors should be integrated to provide an effective surface environment system. Efficient control of AD resources relies on the provision and exchange of essential near real time (NRT) information. This information must include AD warnings that allow AD assets to be placed at appropriate readiness states and permit timely target assignment. The exchange of NRT information requires the provision of adequate track capacity within systems and the cross-telling of tracks utilizing data processing systems. Secure, survivable communications systems to connect the control agencies are essential. In addition, the surface environment system itself should be survivable and/or have redundancy.

0506 Sensors. AD sensors are normally optimized to perform specific surveillance or control functions. Individual surface-based systems, including ships, have limitations in range, low level capability, vertical coverage, target discrimination and the provision of height data. Airborne and space-based sensors have better range and vertical coverage capabilities than surface-based systems but may have other limitations. Therefore the best results can be achieved by a complementary sensor mix. Equipment operates on widely differing frequencies, and as a consequence has different susceptibilities to ECM. Similarly, electronic protective measures capability varies from system to system. To provide the spectrum of cover required for DCA a number of complementary systems are therefore necessary. These are a mix of static and mobile equipment. Systems should be netted to enable AD information to be gathered and disseminated under all operational conditions and to provide mutual support.

0507. Contributing Systems

a. Airborne Early Warning. Airborne sensors serve to overcome range and low-level detection limitations inherent in a surface-based sensor system. The control function of AEW aircraft and integration of the information by tactical data links provides for increased flexibility and range.

b. Civilian and Military Air Traffic Control Facilities. ATC facilities may have information or capabilities of value to the ADs. These assets should be explored and exploited to the fullest and where possible connected into the surface environment.

c. AAR aircraft. Air refuelling makes CA operations possible without having to rely on the use of forward bases. An air refuelling capability can extend the combat radius of CA aircraft, lengthen their loiter time, or allow them to carry heavier payloads.

0508. Additional Assets. To increase further the effectiveness of ADs, all other sources or systems available should be used to maximum advantage as they provide:

a. Indications of imminent hostile activity before it would be otherwise detected by the AD system.

b. Host nation or national defence forces may provide ground-based site and force protection to prevent the requirement for committing allied forces to that task.

c. Logistics and support agencies which provide the sustainability to enable the AD force to accomplish its purpose. Adequate and timely support must be planned, coordinated and executed so the AD mission does not falter under the stress of combat.

0509. Types of Active Air Defence Operations. Normally, an effective AD is layered in depth and utilizes the following operational options:

a. Area defence is a posture designed for the defence of friendly assets in a broad area and uses a combination of weapon systems.

b. Point defence is a posture designed for the protection of a more limited area normally in defence of the vital elements or installations including vital civilian infrastructure.

c. HVAA protection defends airborne national assets, which are so important that the loss of even one could seriously impact allied warfighting capabilities. Furthermore, the political ramifications of destroying one of these assets could provide the enemy with a tremendous propaganda victory. High value airborne asset protection is performed by fighter aircraft using various combat air patrol (CAP) or escort techniques.

0510. Self-defence. It is universally recognized that individuals and units have the sovereign right to defend themselves against attack or an imminent attack. ROE do not limit this right. In exercising this right, individuals and units will act in accordance with national law. Self-

defense is the use of such necessary and proportional force, including deadly force, by NATO/NATO-led forces and personnel to defend themselves against attack or an imminent attack. For further details see MC 362.

0511. Passive Air Defence measures. Passive AD measures are required to reduce the effects of hostile aircraft and missile attack. They do not involve the employment of active weapons. These measures are required for all critical military and civil assets and will involve the efforts of both military and civil organizations. Reduction of the effectiveness of potential adversary air and missile action requires extensive preparations in peacetime. The measures available may include:

a. Mobility. Mobility reduces vulnerability and increases survivability by complicating adversary surveillance, reconnaissance and targeting.

b. Hardening of assets. Valuable assets and their shelters are hardened to protect against physical attack, electromagnetic pulse, and transient radiation. Hardening measures should be accomplished during peacetime whenever possible.

c. Reconstitution. Reconstitution is the capability for rapid repair of damage resulting from adversary attacks and the return of damaged units to combat readiness. Examples of recuperation include the repair of airfield operating surfaces and aircraft, the removal of mines and unexploded ordnance, provision of explosive ordnance disposal (EOD) facilities and restoring essential services such as C2 systems, power and fuel.

d. Camouflage, Concealment and Deception (CCD). CCD denies accurate location and targeting of friendly assets by misleading and presenting false information to the adversary. These measures reduce vulnerability of friendly assets by limiting their exposure to targeting. They may be conducted continuously or in response to warning. Timely intelligence concerning the overflight of adversary satellite and aircraft collection systems is important to the effort. CCD may cause the adversary to abort, delay, or modify an attack, or deplete resources by attacking false targets.

e. Nuclear, Biological and Chemical (NBC) Defensive Equipment and Facilities. NBC defensive equipment and facilities protect against the effects of weapons of mass destruction by providing contamination detection, shelter, and decontamination. Individual protective equipment allows vital functions to continue in the NBC environment.

f. Redundancy. Duplication of critical capabilities enables vital systems to continue operating when critical nodes have been destroyed or damaged. Redundancy includes dual, contingency or back up capabilities that can assume primary mission functions in whole or in part upon failure or degradation of the primary system.

g. Provision of EOD facilities.

h. Detection and Warning Systems. Timely detection and warning of air and missile threats provide maximum reaction time for friendly forces to seek shelter or take appropriate action. Connectivity for communications and sensor systems is vital for accurate and timely warning. A combination of air-, space-, and surface-based detection and communications assets should be established to maximize detection and warning. "All clear" procedures should also be established to notify forces when a warning is false or the threat no longer exists.

i. Dispersal. Dispersal of assets compounds the adversary's targeting and weapon selection problems.

j Adoption of a comprehensive electromagnetic emission control policy.

0512. Employment of Air Defence Assets. Early warning of adversary attack is vital if defense in depth is to be obtained. Continuous surveillance is crucial for early detection, identification, and prediction of areas of attack by hostile aircraft and missiles. DCA operations are primarily carried out over friendly territory. They comprise all measures designed to nullify or reduce the effectiveness of enemy offensive air. Establishing the correct aim for the AD Plan and the associated DCA operations is fundamental to their success. Essentially there are two choices:

a. To minimize the damage sustained by friendly forces and facilities.

b. To inflict the maximum attrition on the enemy.

To a certain extent these aims are interdependent: the more enemy aircraft that are shot down, the fewer that are available to inflict damage in future raids. The less damage friendly forces sustain, the more capable they are of defending themselves if the enemy continues with his attacks. Deciding where the priority lies between these two aims has major implications for operational deployment and force structuring, and thus for resource allocation. If the aim is to minimize damage to friendly assets and population, then operational deployment considerations will demand that all the resources need to be devoted to deterring or containing the incoming raids, even if that means allowing vulnerable homebound enemy aircraft to escape. However, in terms of force structuring, significant resources will need to be allocated to passive defense and resilience measures. The operational deployment considerations for achieving maximum attrition should support the interception of enemy aircraft wherever they can be found, before or after they have attacked their targets. Force structuring will need to reflect that passive defense measures will play a less important part, and the need to provide the strongest possible active defense forces will dominate resource allocation. Deciding where the priority lies between the 'minimum damage' air and the 'maximum attrition' aim will depend partly on friendly vulnerability and partly on the nature of the threat which is determined as part of the air estimate process. Although the aim will shape the relative allocation of the resources between active and passive defense systems, this will be a question of emphasis rather than of alternative. An analysis of each vital asset in the JOA for criticality, vulnerability,

recoverability and the ability of the enemy to attack it will influence the degree of emphasis.

The active AD assets should be positioned to provide adequate defence in accordance with established AD priorities. The JFC will select and prioritize his AD priorities based on the following considerations: political guidance, criticality of that asset/installation to the force, vulnerability to air and missile attack, recuperation after attack and the assessed ability of the threat to attack that asset.

0513. Two Mission Types of DCA. Although the AD plan seeks to construct a flexible posture, individual missions react to the initiative of the enemy forces. DCA comprises two mission types as follows:

a. Active defense missions use reactive air-to-air fighters or other assets placed on airborne or ground alert. They employ a mix of weapon and sensor systems supported by secure and highly responsive command, control, communications, computers, and intelligence systems to detect, identify, intercept or track enemy aircraft and missiles in flight. They then attempt to destroy or reduce the effectiveness of hostile air and missile threats against friendly forces and assets.

b. Passive air defense includes all measures, other than active air defense, taken to mimimize the effectiveness of hostile air and missile attacks or measures used to minimize the effectiveness of enemy attacks. Passive air defense measures include camouflage, concealment, deception, dispersal, protective shelters (hardening), and low observable or stealth technologies.

0514. AD Protection. The AD priorities should also specify the type of protection, i.e. protection against TM or air- breathing threat (ABT). Hostile aircraft should also be engaged when egressing if ROE permit. DCA weapons systems comprise two complementary elements: surface-to-air defenses and fighter aircraft. Surface-to-air weapons offer high firepower and rapid responsiveness and their effectiveness requires a reliable, interoperable interface with aircraft operations. Successful integration of these capabilities strengthens mutual support and provides the best overall defensive coverage. They are employed as follows:

a. Aircraft. Aircraft may perform DCA with the assistance of AD radars (i.e. GCI) and could take the form of close, loose, or broadcast control (see STANAG 3993). However, in the event that no form of control is available, fighters should be prepared to operate autonomously. AD fighters may be employed on the following tasks:

(1) Alert. An alert mission normally involves aircrew and aircraft in a high state of readiness for immediate start-up and takeoff for an intercept.

(2) Combat Air Patrol. CAP missions are mounted to enable rapid reaction to adversary intrusion or otherwise unauthorized/unwanted entry into a designated airspace. CAPs may be positioned well forward of or over specified areas to be

defended, in support of friendly forces, over critical areas over air/land/sea corridors, or along political borders. For deconfliction, or to enhance autonomous operations, CAP missions may be assigned a Fighter Area of Responsibility to operate in. In some cases CAP may provide the best utilization of AD-fighter where there is little or no warning of intrusion, where short reaction times are mandated, or for a show of intent.

b. Surface-to-Air Weapons. The employment of surface-to-air weapons will be to a large extent dictated by their prior deployment into area or point defence positions. For some systems, employment against theatre ballistic missiles or ABT must be pre-determined. The combined effect of the separate systems will be at its greatest when they can be integrated into the overall AD effort. The optimum capabilities of each different weapon system occur at different ranges and heights, and only by coordination can they be mutually supporting and provide the best overall cover. It is essential that co-ordination ensures correct deconfliction between surface-to-air weapons and friendly fighter aircraft.

0515. Control and Co-ordination . Effective DCA operations require optimum use of available assets and airspace through an integrated C2 system. The variety of surveillance, tracking and weapon systems of all the force components require detailed planning and coordination to allow rapid AD warnings, effective C2 functions, and timely weapon employment, if required. If the area to be defended is large and the intensity of operations is likely to be high, a number of defensive sectors can be established, each under the control of a sector commander who reports to the ADC. A maritime task group, aircraft carrier battle group or amphibious task force within the JOA may require the establishment of a co-ordinated air defence area within which the anti-air warfare commander or supporting arms co-ordination centre is responsible for the co-ordination of AD operations.

0516. Centralized or Decentralized Control. Although centralized control is the desired standard, AD weapon systems must be capable to execute decentralized operations if the saturation of the C2 system dictates so to maintain highest degree of reaction against an air threat.

0517. Autonomous Operations. Autonomous operations are conducted when centralized control fails or is not possible due to the type of employment. All AD weapon systems must be capable of autonomous operations when control fails or is not possible due to the type of employment. Nevertheless, it is essential to co-ordinate the employment of these assets, at least by procedural means, with the overall AD operations in order to permit the safe passage of friendly/neutral/civilian aircraft without limiting the AD more than necessary.

0518. Area Control of Weapons. To capitalize on the complementary capabilities of the various weapons systems and complete integration wherever possible, at least functional integration or co-ordination, or at least co-ordination of the use of weapons, is necessary. In addition to the ASC procedures detailed in AJP-3.3.5, various means are available to achieve this.

a. Air Defence Operations Area. A geographical area within which procedures are established to minimize interference between AD operations and other types of operations (AAP-6). It may include one or more of the following (see lexicon for description):

(1) Air defence action area;

(2) Air defence area;

(3) Air defence identification zone;

(4) Fire- power umbrella.

b. Weapon Engagement Zone (WEZ). Effective employment of AD weapons within the airspace may be enhanced by the establishment of a WEZ. A WEZ is defined as: In AD, airspace of defined dimensions within which the responsibility for engagement normally rests with a particular weapon system (AAP-6). Use of WEZs does not preclude engagement of high priority targets by more than one type of weapon system if close control is available. WEZs may be pre-planned and their possible locations co-ordinated with the ACA, however, over land they are not ASC means (ACMs) and will not be activated/de-activated through the ACO. Established zones may include:

(1) Fighter Engagement Zone (FEZ). FEZs will normally be established in those areas where no effective surface- to-air capability is deployed.

(2) Missile Engagement Zone (MEZ). SAM units will operate in MEZ's that should normally cover the SAM engagement envelope.

(3) Short-Range Air Defence Engagement Zone (SHORADEZ). A SHORADEZ can be established to define the airspace within which these assets will operate. Because centralized control over short-range AD weapons may not be possible, these areas must be clearly defined and promulgated so that friendly aircraft can avoid them. If friendly aircraft have to penetrate active SHORADEZs, special co-ordination will have to be established.

0519. Control of Fighter Operations

a. Air Defence Aircraft. AD aircraft will be scrambled by the agency controlling the specific AD area in response to the detection and assessment of a hostile, or potentially hostile target, or one whose origin and purpose are unknown. Where possible, fighters will remain under the control of an ASACS unit.

b. Combat Air Patrol. Where warning of adversary air activity may be inadequate for fighters on ground alert to achieve an interception before adversary weapon release

point (for instance, due to the electronic environment, poor low level radar coverage, communications failure or need to intercept at long range), interceptors may be tasked for CAP. Controlled interception may be provided by a controlling agency or fighters may operate autonomously when targets are detected by on board sensors.

c. Routing. Management of airspace in an active AD environment can be extremely difficult but is crucial to successful air operations. Positive control and/or procedural measures must be implemented to ensure friendly aircraft can safely traverse the airspace without inhibiting the ADs. (Also See AJP-3.3.5)

(1) Routing the aircraft is one method of providing control. Imposition of time and space oriented controls over AD weapons defending a particular air route and over transiting aircraft will serve to minimize the risks to these aircraft. Care must be taken to avoid creation of time or space oriented patterns that may be discernible by an adversary.

(2) Regardless of other controls and ASC measures imposed within a volume of defended airspace, AD forces must be readily able to identify all aircraft in the area. This may be accomplished by electronic, visual or procedural means. It is critical to the survival of friendly aircraft, as well as to the effectiveness of AD, that rapid, reliable and secure means of identification be defined and implemented within AD areas.

0520. Control of Surface-to-Air Weapons Operations

a. Means of Control. The lethality of surface-to-air weapons demands a reliable and responsible control architecture and compatible interfaces with the air C2 system. Adequate identification features and procedures preclude engagement of friendly aircraft and unnecessary expenditure of AD resources.

(1) Weapons Control Status. Weapons control of surface-to-air units is expressed as a status, declared for a particular area and time. Weapons control statuses are:

(a) Weapons Free. In AD, a weapon control order imposing a status whereby weapons systems may be fired at any target not positively recognized as friendly. (AAP 6)

(b) Weapons Tight. In AD, a weapon control order imposing a status whereby weapons systems may be fired only at targets recognized as hostile.(AAP 6)

(c) Weapons Hold. In AD, a weapon control order imposing a status whereby weapons systems may only be fired in self-defence or in response to a formal order. (AAP 6)

(2) Fire Control Orders. A fire control order is one given to direct or to inhibit firing by surface-to-air weapons units based on rapidly changing battle situations. Fire control orders may be issued regardless of the weapons control status at any time. It normally addresses a specific unit. These orders are:

(a) Engage. In AD, a fire control order used to direct or authorize units and/or weapons systems to fire on a designated target. (AAP-6)

(b) Cease Engagement. In AD, a fire control order used to direct units to stop the firing sequence against a designated target. Guided missiles already in flight will continue to intercept. (AAP-6)

(c) Hold Fire. In AD, an emergency order used to stop firing. Missiles already in-flight must be prevented from intercepting if technically possible. (AAP-6)

(d) Cover. An FCO used to direct a fire unit to acquire, track, and report speed, altitude, heading and identification of a track.

b. Control of Medium and Long-Range SAM. Control of medium and long-range SAM is achieved through data link or voice facilities of the SAM C2 system.

c. Control of Short-Range Air Defence (SHORAD). All AD assets in a given area should be incorporated into an overall ADP. Autonomous control over the firing operation of SHORAD weapons will be governed by the imposition of active ROE and rules and procedures issued by the ADC. When not linked, control should be exercised through weapons control orders to other procedural means.

(1) SHORAD units in defence of rear area critical assets such as airfields should be integrated into the centralized AD C2 system. While technological limitations may prevent the achievement of the same degree of control possible for the interception of the target after launch than with medium and long-range SAM, an adequate level of control is possible when SHORAD is employed for these tasks.

(2) SHORAD units organic to land manoeuvre forces will be positioned tactically by the land force commander. These units must be responsive to the AD needs and the manoeuvre scheme of the organic force; when possible they should also contribute to the integrated AD of the area. Rules and procedures imposed by the ADC are binding on these units. Liaison between these units and the central AD C2 system is achieved through the functional integration with data links (e.g. LINK 16 capability) and is the desired means for dissemination of weapon control status, early warning information, and friendly air activity information to AD units organic to the land manoeuvre forces.

d. Self-Defense. All military units should be capable of self-defence against air attack by using their organic weapons. This capability can only be attained by continuous training in aircraft recognition and in the AD application of organic weapons. The manoeuvre unit commander may direct his force to engage a threat.

0521. Integrated Air Defence Plan . Generally, the ADC will determine how integral the DCA capability must be among the air, land, maritime and SOFs. Normally this means closest co-ordination possible of all AD matters among the component commands involved and integration of available assets into the overall ADP. As a minimum, the maritime AD resources must be integrated as far as possible into the appropriate AD C2 network. Similarly, land-based AD resources employed in maritime command areas must be integrated into the appropriate maritime AD organization. AD operations conducted near the boundaries between land-based and maritime AOOs should be coordinated by the ADC with the component commanders so as to ensure seamless to prevent interference.

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CHAPTER 6

OPERATIONAL REPORTING AND COMBAT ASSESSMENT

0601. Operational Reporting . The function of operational reporting is to provide feedback within the C2 structure. It is part of the vertical element of communication. Operational reporting provides information on status of forces, mission results and observations by subordinates. Concise, accurate and timely operational reporting is an essential element in the planning and tasking processes. The tasks and responsibilities of the individual elements of the organization determine the requirement for information. The information flow generally follows the command structure. Tailoring information to specific needs requires selection from or compression of the information available.

0602. Combat Assessment. CA missions must be analyzed to determine whether desired effects are being achieved and if the original objectives have been achieved. The conclusions drawn from this analysis will then be considered in planning the next stage of operations. To achieve this, accurate and immediate reporting of all results is needed. A standard system of reporting appropriate to each level of execution should be established (e.g. as per Mission Report in APP-11).

0603. Security. Although security is essential in the protection of plans and capabilities, over classification of operational reports may inhibit operations and should be avoided wherever and whenever possible.

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LEXICON PART I ACRONYMS AND ABBREVIATIONS

AAP	Allied Administrative Publication
AAR	Air-to-Air Refuelling
ABT	air-breathing threats
ACA	airspace control authority
ACC	Air Component Commander
ACM	airspace control means
ACO	airspace control order
ACP	airspace control plan
AD	air defence
ADC	air defense commander
ADP	air defence plan
AEW	airborne early warning
AH	attack helicopter
AJP	Allied Joint Publication
AOB	air order of battle
AOC	air operations centre
AOCC	air operations co-ordination centre
AOO	area of operations
AOR	area of responsibility
APP	allied procedural publication
ARM	anti-radiation missile
ASACS	air surveillance and control system
ASC	airspace control
ATC	air traffic control
ATO	air tasking order
ATP	allied tactical publication
C2	command and control
CA	counter air
CC	component commander
CAP	combat air patrol
CAS	close air support
CCD	camouflage concealment and deception
DCA	defensive counter – air
DE	directed energy

ECM	electronic countermeasures
EMP	electromagnetic pulse
EOD	Explosive ordnance disposal
EW	electronic warfare
FAC	forward air controller
FCO	fire control order
FEZ	fighter engagement zone
FP	force protection
GBAD	ground based air defense
GCI	ground controlled intercept
HQ	headquarters
HVAA	high value airborne assets
Info Ops	information operations
IPB	intelligence preparation of the battlespace
IR	infrared
ISR	intelligence surveillance and reconnaissance
JFACC	joint force air component commander
JFC	joint force commander
JOA	joint operations area
JRFL	joint restricted frequency list
MEZ	missile engagement zone
NATO	North Atlantic Treaty Organization
NBC	nuclear biological and chemical
NRT	near real time
NSA	NATO Standardization agency
OCA	offensive counter - air operation
PFP	Partnership for peace
POL	petroleum, oils, and lubricants
ROE	rules of engagement
SA	situational awareness
SAM	surface-to-air missile
SEAD	suppression of enemy air defences
SHORAD	short-range air defence
SHORADEZ	short-range air defence engagement zone

SOF	special operations force
TACP	tactical air control parties
TM	theater missile
UAV	unmanned aerial vehicle
WEZ	weapon engagement zone

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LEXICON PART II

TERMS AND DEFINITIONS

active air defence
Active measures taken against attacking enemy forces to destroy or nullify any form of air or missile threat or to reduce the effectiveness of any such attack. (AAP 6 2006)

air component commander
Within the NATO static command structure the ACC is the regional air commander (RAC) whilst for the combined joint task force (CJTF) it will be the Combined Joint Force Air Component Commander (CJFACC).

air defence
All measures designed to nullify or reduce the effectiveness of hostile air action. Related terms: active air defence, passive air defence. (AAP-6(2005)).

air defence action area
An area and the airspace above it within which friendly aircraft or surface-to-air weapons are normally given precedence in operations except under specified conditions. (AAP-6 (2005)).

air defence area
A specifically defined airspace for which air defence must be planned and provided. (AAP-6(2005)).

air defence identification zone
Airspace of defined dimensions within which the ready identification, location, and control of aircraft is required. (AAP-6(2005)).

air defence operations area
A geographical area within which procedures are established to minimize interference between air operations and other types of operations. It may include one or more of the following:

a. air defence action area;

b. air defence area;

c. air defence identification zone;

d. fire power umbrella. (AAP-6(2005))

airspace control
A combination of airspace organization planning procedures, the resulting control structure and co-ordination functions to minimize risks and to allow for efficient and flexible use of airspace by all involved elements of joint air, land and sea operations. While airspace control is provided to promote greater flexibility of operations, the authority to approve, disapprove, or deny combat operations is vested only in the operational commander. NOTE: This is the definition agreed upon for ATP-40/AJP-3.3.5 at the 15th meeting of the Tactical Air Working Party.

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. (AAP-6(2005))

air supremacy
That degree of air superiority wherein the opposing air force is incapable of effective interference. (AAP-6(2005))

apportionment
The quantification and distribution by percentage of the total expected effort,
in relation to the priorities which are to be given to the various air operations in geographic
areas for a given period of time. (AAP-6(2005))

attack
See strike. (Note: In ATP-42 “attack” and “strike” are used synonymously despite the fact that only “strike” is defined in AAP-6. The term “seizure” does not apply to tactical air operations.)

broadcast control
A form of aircraft mission control used in the absence of full capability or if the tactical situation precludes close or loose control, in which tactical/target information is passed to enable the aircraft to accomplish the assigned task. The controlling unit, when possible, provides adequate warnings of hazards, but the aircraft commander(s) is (are) responsible for aircraft navigation and collision avoidance. Two-way communications are not a prerequisite for this type of control (STANAG 3993). Broadcast control does not require controller qualification.

cease engagement
In air defence, a fire control order used to direct units to stop the firing sequence against a designated target. Guided missiles already in flight will continue to intercept.
(AAP-6(2005))

close control
A form of aircraft mission control in which the aircraft is continuously controlled, for altitude, speed and heading, to a position from which the mission can be accomplished (AAP-6).

combat air patrol

An aircraft patrol provided over an objective area, the force protected, the critical area of a combat zone, or in an air defence area, for the purpose of intercepting and destroying hostile aircraft before they reach their target (AAP-6(2005)).

counter - air operation
Those integrated operations by all components to counter hostile air and missile threats in order to attain and maintain a desired degree of control of the air (This term is a new term and definition, is being staffed for ratification within the context of AJP 3.3 (A) RD 3, and will be recommended for inclusion in the NTDB and (AAP-6)

deception
Those measures designed to mislead the enemy by manipulation, distortion, of falsification of evidence to induce him to react in a manner prejudicial to his interests. (AAP-6(2005))

defensive counter - air
Active and passive defensive measures designed to detect, identify, intercept, and destroy or make ineffective forces attempting to attack or penetrate friendly airspace (AAP-6 2006)

electronic protective measures
That division of electronic warfare involving actions taken to ensure effective friendly use of the electromagnetic spectrum despite the enemy's use of electromagnetic energy. There are two subdivisions of electronic protective measures: active electronic protective measures and passive electronic protective measures. (AAP-6(2005))

electronic warfare
Military action to exploit the electromagnetic spectrum encompassing: the search for, interception and identification of electromagnetic emissions, the employment of electromagnetic energy, including directed energy, to reduce or prevent hostile use of the electromagnetic spectrum, and actions to ensure its effective use by friendly forces. (AAP-6(2005))

electronic warfare support measures
That division of electronic warfare involving action taken to search for, intercept and identify electromagnetic emissions and to locate their sources for the purpose of immediate threat recognition. It provides a source of information required for immediate decision involving electronic countermeasures, electronic protective measures and other tactical actions. (AAP-6(2005))

engage
In air defence, a fire control order used to direct or authorize units and/or weapon systems to fire on a designated target. (AAP-6(2005))

escort
Aircraft assigned to protect other aircraft during a mission. (AAP-6(2005)--Def 2)

favourable air situation

A favourable air situation is one in which the extent of the air effort applied by the opposing forces is insufficient to affect the success of allied operations.

fighter cover
The maintenance of a number of fighter aircraft over a specified area or force for the purpose of repelling hostile air activities. (AAP-6(2005))

fighter sweep
An offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in an allotted area of operations. (AAP-6(2005))

fire-power umbrella
An area of specified dimensions defining the boundaries of the airspace over a naval force at sea within which the fire of ships anti-aircraft weapons can endanger aircraft, and within which special procedures have been established for the identification and operation of friendly aircraft. (AAP-6(2005))

hold fire
In air defence, an emergency order to stop firing. Missiles already in flight must be prevented from intercepting if technically possible. (AAP-6(2005))

identification
1. The indication by any act or means of one's own friendly character or individuality.
2. The process of attaining an accurate characterization of a detected entity by any act or means so that high confidence real-time decisions, including weapons engagement, can be made. Related terms: detection; friend; hostile; identification friend or foe; neutral; recognition; unknown. 1/10/2003
3. In imagery interpretation, the discrimination between objects within a particular type or class. Synonym: identity. 15/7/2000 (AAP-6(2005))

interoperability
The ability to operate in synergy in the execution of assigned tasks. 22/6/2004 (AAP-6(2005))

loose control
A form of aircraft mission control in which the aircraft commander selects his own speed, altitude, heading and the appropriate tactics required to accomplish the assigned task. The controlling unit will advise the aircraft of the current tactical picture and will provide further advice if and when available (STANAG 3993).

NATO assigned forces
Forces/HQs which nations agree to place under the operational command or operational control of a NATO commander in accordance with the NATO Crisis Response System, or as specified in special agreements such as a MOU or when requested by a Strategic Commander through an Activation Order on the basis of a North Atlantic Council-agreed OPLAN and Execution Directive. Related term: force(s). (AAP-6(2009))

NATO command forces
Forces in being which nations have placed under the operational command or operational control of a NATO commander. Related term: force(s). (AAP-6(2009))

NATO earmarked forces
Forces and/or headquarters that nations agree to place under the operational command or the operational control of a NATO commander at some future time. Related term: force(s). (AAP-6(2009))

offensive counter - air operation
An operation mounted to destroy, disrupt or limit enemy air power as close to its source as possible. (AAP-6(2005))

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. (AAP-6(2005))

operational control
The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are normally 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. (AAP-6(2005))

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. Related terms: active air defence; air defence; air superiority; air supremacy; counter-air operation; defensive counter-air operation; offensive counter-air operation.
(AAP-6 (2009)

recognition
The determination of the nature of a detected person, object or phenomenon, and possibly its class or type. This may include the determination of an individual within a particular class or type. (AAP-6(2005))

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. (AAP-6(2005))

strike
An attack which is intended to inflict damage on, seize, or destroy an objective. (AAP-6(2005))

suppression of enemy air defences
That activity which neutralizes, temporarily degrades or destroys enemy air defences by a destructive and/or disruptive means. (AAP-6)

tactical air operation
The employment of air power in coordination with ground or maritime forces to:

a. attain and maintain air superiority;

b. prevent movement of enemy forces into and within the combat zone and to seek out and destroy these forces and their supporting installations; and

c. assist ground or naval forces in achieving their objectives by combined and/or joint operations. (AAP-6(2005))

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. (AAP-6(2005))

target development
The process of analyzing raw intelligence data to define, identify, locate and place in perspective a potential target or target system.

theater missile
A missile employed to attack friendly assets within the theatre, regardless of the range of the system considered or the method of launch. They are categorized as Theatre Aerodynamic Missiles (TAM) or theatre Ballistic Missiles (TBM) depending on their flight path.

threat radar
Those fire control and acquisition radars connected with adversary weapon systems which can inflict damage or destroy friendly airborne assets or friendly units.

unmanned aerial vehicle
A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal and non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles, and artillery projectiles are not considered unmanned aerial vehicles.

weapon engagement zone
In air defence, airspace of defined dimensions within which the responsibility for engagement normally

rests with a particular weapon system. (AAP-6(2005))

weapons free
In air defence, a weapon control order imposing a status whereby weapons systems may be fired at any target not positively recognized as friendly. (AAP-6(2005))

weapons hold
In air defence, a weapon control order imposing a status whereby weapons systems may only be fired in self-defence or in response to a formal order. (AAP-6(2005))

weapons tight
In air defence, a weapon control order imposing a status whereby weapons systems may be fired only at targets recognized as hostile. (AAP-6(2005))

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REFERENCE PUBLICATIONS

Related publications concerning airpower and employment of air forces are:

AAP-6	NATO Glossary of Terms and Definitions (English and French)
AJP-01	Allied Joint Doctrine
AJP-3	Joint Operations
AJP-3.3	Joint Air and Space Operations Doctrine
AJP-3.3.2	Air Interdiction and Close Air Support
AJP-3.3.3	Air Maritime Co-ordination (AMC)
AJP 3.3.5	Doctrine for Joint Airspace Control
AJP-3.3.7	Combined Joint Force Air Component Command Doctrine
AJP-3.6	Allied Joint Electronic Warfare Doctrine
APP-11	NATO Message Catalogue (NMC)
ATP-3.2	Land Operations
ATP-44	Electronic Warfare (EW) in Air Operations
ATP-49	Use of Helicopters in Land Operations - Doctrine
ATP-56	Air-to-Air Refuelling
STANAG 3993	Air Control Terms and Definitions

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