NATO STANDARD

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ALLIED JOINT DOCTRINE FOR AIR-MARITIME COORDINATION

Edition A Version 1
DECEMBER 2014

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED JOINT PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

2 December 2014

1. The enclosed Allied Joint Publication AJP-3.3.3, Edition A, Version 1, ALLIED JOINT DOCTRINE FOR AIR-MARITIME COORDINATION, approved by the nations in the MCJSB, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 3703.

2. AJP-3.3.3, Edition A, Version 1, is effective upon receipt. It supersedes AJP-3.3.3, which shall be destroyed in accordance with the local procedure for destruction of documents.

4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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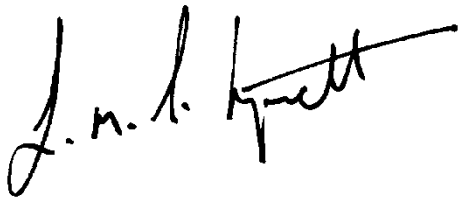
Allied Joint Publication-3.3.3

Allied Joint Doctrine for Air-Maritime Coordination
Edition A Version 1

Allied Joint Publication-3.3.3 (AJP-3.3.3), dated December 2014,
is promulgated
as directed by the Chiefs of Staff



Director Concepts and Doctrine

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
General	DEU, USA

Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
GBR	Chapter 2, Section 2.3, Para 2 Line 7. With the introduction into service of the Queen Elizabeth carriers, Carrier Enabled Power Projection in support of national-only operations will see fixed-wing carrier strike assets under TACOM of the JFACC.
USA	The US ratifies AJP-3.3.3 with the following reservations: (1) The commander of the JFACC will not control all air operations, only those that are designated at his level. Additionally, within any doctrinal pub, an acronym cannot have two meanings (within this document, JFACC is for the command, not the commander). (2) The United States cannot agree with the term "strategic attack" unless it is absolutely clear that the targets described are "military objectives," meaning, "so far as objects are concerned, any object by which its nature, location, purpose or use makes an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage." (See Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996, article 2.6; Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons, article 1.3; see also Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977, article 52.2.). As drafted, the only criteria used to qualify "political, economic or other" as targets is that their selection achieves "military strategic objectives" and does not include the other legally required elements, such as their "nature, location, purpose or use makes an effective contribution to military action." The United States will not strike political, economic, or other targets unless they fall within the definition of a "military objective" as set forth in two treaties to which the United States is a party. Most political and economic targets will not fulfil this requirement.

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CHAPTER 1 INTRODUCTION

1.1. PREAMBLE

1. Allied Joint Publication AJP-3.3.3, Allied Joint Doctrine for Air-Maritime Coordination, is intended as a ready reference for both the air and maritime communities. Although not all encompassing, it provides the user with the most important and commonly used aspects of air-maritime coordination (AMC) and should be used in conjunction with Allied Tactical Publication ATP-3.3.3.1, Air-Maritime Coordination Procedures, which contains detailed coordinated air/sea procedures. AMC, in the context of this document, identifies the cooperative nature of missions employing non-organic air [Allied Air Command (AIRCOM) assets] and organic maritime air [Allied Maritime Command (MARCOM) assets] as mutually supporting elements.

2. Although AJP-3.3.3 is primarily intended for NATO forces, the doctrine is also applicable to operations within the framework of a combined joint task force (CJTF) or multinational force (MNF) of NATO and non-NATO nations. Therefore references to the joint force commander (JFC) throughout this publication would apply equally to the commander (COM) CJTF or COM MNF in those situations.

1.2. AIM

This AJP bridges the enduring principles and guidance between AJP-3.1, Allied Joint Maritime Operations and AJP-3.3, Allied Joint Doctrine for Air and Space Operations. It also frames the use of tactics, techniques and procedures outlined in ATP 3.3.3.1, Air-Maritime Coordination Procedures. Although it is not intended to simply repeat information in these publications, it does provide information at the operational level to aid commanders and their staffs to plan for and control air from both elements (maritime and non-maritime air assets) when conducting joint and combined operations.

1.3. SCOPE

1. This document depicts the command and control structure and planning considerations required to ensure effective coordination of air activities. It also describes air and maritime operations and how air assets from both elements are able to conduct operations in support of either component. The focus of this publication is on how air and maritime air assets are integrated in order to avoid mutual interference, minimise potential for fratricide and improve efficiency and effectiveness, regardless of which component is being supported.

2. This publication does not include procedures for AMC in an amphibious objective area as these procedures are detailed in ATP-08.

1.4. TERMS

1. This document uses terms and descriptions defined in NATO capstone and keystone doctrine.

2. This document uses the following generic terms:

a. Maritime air refers to all land or sea based fixed-wing or rotary-wing, manned or unmanned air assets assigned to the maritime component commander that ordinarily support maritime forces and operations but may be used to support other components.

b. Air assets refer to those assets assigned to the air component commander that primarily support the air campaign but may also support other components.

c. The joint forces air component command (JFACC) is normally the component with the preponderance of air assets and the capability to plan, task and control joint air operations. The JFACC plans, integrates, allocates, controls and tasks joint air operations based on the JFC's guidance and objectives, in accordance with the air apportionment decision and the authority, command relationships and responsibilities laid down by the JFC. For most operations this will be either the static AIRCOM HQ of the NATO Command Structure (NCS) or a JFACC established by COM AIRCOM specifically for an operation.

d. The maritime component command (MCC) is the component responsible for the maritime aspects of the JFC's mission. The MCC coordinates operations with other components, ensures unity of effort, and establishes liaison accordingly. If no JFACC has been appointed, the MCC ensures that land and sea-based maritime air assets are integrated into JFC's operations. The MCC can be either the static MARCOM HQ of the NCS or a MCC designated by COM MARCOM for a specific operation.

e. A maritime air operations centre (MAOC) is the planning and execution element for maritime air operations. It is subordinate to the MCC and can task organic air assets in direct support of the MCC. The MAOC is responsible for providing ATO inputs to the JFACC battle staff and to plan, coordinate, execute, monitor, and assess the maritime air portion of maritime operations. A MAOC can be established within the static MARCOM HQ, within an existing national NATO Force Structure organization ashore or with the task force afloat, as determined by operational requirements.

CHAPTER 2 COMMAND AND CONTROL

2.1. INTRODUCTION

1. NATO's command structure is intentionally flexible to allow command and control (C2) of forces throughout the full range of Alliance missions. Air, land, maritime and special operations are considered as integrated building blocks of joint operations. Though able to operate with a single-service orientation, for joint operations these components must be employed together with the right mix of capabilities to achieve the joint commander's objectives.

2. The pivotal concept of C2 within the NATO command structure is the supported/supporting inter-relationship. This relationship allows the strengths and capabilities of headquarters and forces to complement each other to the best overall effect. The supported commander is the commander with responsibility for achieving the primary objectives of an operation or phase of operation. Supporting commanders plan and employ their forces in line with the higher commander's direction and guidance to achieve specific aims or tasks of the supported commander; however the supporting commander will be allowed considerable latitude in the planning and execution of operations.

3. Maritime air operations are an integral part of the maritime component. Maritime air assets support the maritime campaign but can also play a significant role in the JFC's air campaign. Maritime aircraft can operate independently or as an integral part of a multi-platform task force. The planning, tasking and control of maritime air operations is conducted by either a maritime command headquarters or an MCC through a MAOC. Depending on the scale and scope of the operation, the MAOC may be located ashore with the MCC or co-located with the commander task force (CTF) at sea. The MAOC will coordinate and de-conflict non-maritime air assets through dialogue and liaison with the JFACC elements at all levels. The primary tool that facilitates coordination is the air aasking order (ATO). Though tasking of maritime air is done by the maritime element for maritime missions, inclusion of the missions in the ATO through a maritime feeder ensures a complete air picture is available to all elements. The master air attack plan is an additional planning document that contains key information and helps to support ATO development.

2.2. C2 CHALLENGES

1. Coordinating and integrating is essential because maritime forces, including organic and supporting air assets, are increasingly operating alongside other air assets in littoral and overland operational areas in support of joint operations. This increases the need for closer coordination between the JFACC and MCC in order to avoid mutual interference, minimise potential for fratricide and improve the efficiency and effectiveness of both the

maritime and air components in the overall joint campaign. Rather than there being simply a need to “coordinate to deconflict”, there is now an increased requirement to “coordinate to integrate”.

2. During joint operations, the component commander with the preponderance of air assets and the ability to plan, task and control air operations will normally be designated as the JFACC and will be the principal air advisor to the JFC. The JFACC will make recommendations on the apportionment and employment of all air assets assigned to the JFC. Maritime commanders will normally be delegated operational control of air assets assigned to support maritime operations. The JFACC will usually be designated as the air defence commander and the airspace control authority (ACA), with authorities that extend throughout the area of responsibility. With this comes the requirement for overall integration and deconfliction of all air operations, responsibility for integrated air and missile defence plans, production of a recognized air picture using all available sensors, and development of an airspace control system. Therefore the JFACC must coordinate with the other components to ensure inclusion of all air assets in air operations directives (AOD), airspace control orders (ACO), airspace control plans (ACP) and ATOs.

2.3. JOINT OPERATIONS

1. C2 of maritime air assets assigned to the MCC and air assets assigned to the JFACC is conducted through parallel and separate C2 chains, but liaison must take place at various levels to support the planning process and tasking cycle to ensure coordination. The maritime inputs for the AOD, ACO and ATO from the MCC are transferred by the MAOC to the JFACC’s air battle staff as maritime ‘feeders’. Large and complex joint air campaigns require joint planning and close continuous coordination between the MCC and the JFACC to exercise effective C2 of maritime and maritime air assets that could influence the joint air campaign. In this case, augmentation of the MAOC may be required regardless of its location.

2. Maritime air sorties or capabilities excess to the requirements of the MCC may be made available for joint air operations in consultation with the JFC. Such capabilities are tasked according to the JFC’s air apportionment decision and only the JFC has the authority to reassign or reallocate a component’s air capabilities or forces. Maritime air assets will, if appropriate to the operational situation, be made available by the MCC for tasking by the JFACC. Such maritime air missions will normally operate under tactical control of the JFACC. If this is not possible due to national or other constraints, these excess maritime air missions may be tasked by the MCC and operate in support of the JFACC under the supported/supporting inter-relationship. Joint air operations do not include air capabilities organic to the maritime component and used by the MCC solely in pursuit of maritime operations to accomplish the MCC’s assigned mission. Regardless, organic missions must still appear on the ATO to enable coordination and minimise risk of fratricide or interference. Appearance on the ATO neither implies any command or tasking authority, nor does it restrict the MCC’s flexibility to respond to changing battlespace

dynamics. However, these missions must adhere to the guidance provided in the ACP, the ACO and the air defence plan to assure integration.

3. As maritime air assets are increasingly integrated into joint air operations, so too the degree of coordination required with JFACC assets increases. For a major joint operation (MJO), the scale of joint planning, tasking and execution demands a level of coordination that would require a tailored MAOC. A robust maritime air C2 structure is required, centred on the maritime command HQ but with sufficient planning and coordination elements located within both the MCC and JFACC organizations. This is needed to ensure appropriate air and maritime influence in air operations and to ensure effective utilization of assets with a more streamlined and inclusive ATO planning process. This also provides additional security measures to prevent fratricide. The optimum C2 structure would increase the capacity and capability of both the air and maritime air staffs, as well as improve cross-component coordination and reduce the dependence on limited communications bandwidth. Furthermore, the C2 structure would be flexible enough to accommodate changes in the ‘supported’ and ‘supporting’ relationship as the focus and priorities of the MJO shift between the maritime, air and land environments.

4. The stand up of an MJO or the transition from ongoing NATO Response Force (NRF) or Smaller Joint Operation (SJO) activities to an MJO will involve the transfer of command of maritime air assets to the MCC and the Commander Maritime Air (COMMARAIR). A prime function of COMMARAIR is to coordinate the integration of the maritime air assets apportioned to the MCC into the joint battle. Depending on the operation, these assets might include NRF assets already in theatre, but may also include a significant increase in both numbers and capability as the maritime component of the operation ramps up. To assist COMMARAIR in his duties, a tailored MAOC may be established using personnel drawn from the static, peacetime maritime command HQ, with augmentation as required. This MAOC would be established at the MCC to oversee the planning and execution of maritime air missions, however it will be limited in capability. Therefore, afloat and static MAOCs at the task force level would continue to operate but would plug into the air-maritime C2 integration arrangements.

5. The various liaison and coordination elements that integrate the air-maritime C2 structure and support joint planning are shown in Figure 2-1. The MCC is represented at the JFACC through the maritime liaison element (MLE). This arrangement allows the MCC to advise the JFACC on matters relating to maritime operations and to coordinate additional requirements to support the maritime campaign, as required. Additionally, COMMARAIR will deploy a maritime air liaison element (MALE) to integrate the maritime air mission into the planning of the joint air campaign. The MALE will support the MLE and will provide additional liaison to the JFACC command group and strategy division. It will also enable the MCC, if needed, to call on JFACC expertise and capabilities in air defence (AD), air-to-air refuelling, electronic warfare, intelligence surveillance & reconnaissance, airspace control, combat search & rescue, and joint personnel recovery. Conversely, the JFACC will dispatch an air liaison element (ALE) to the MCC headquarters that will be responsible for operational level inter-component coordination and liaison.

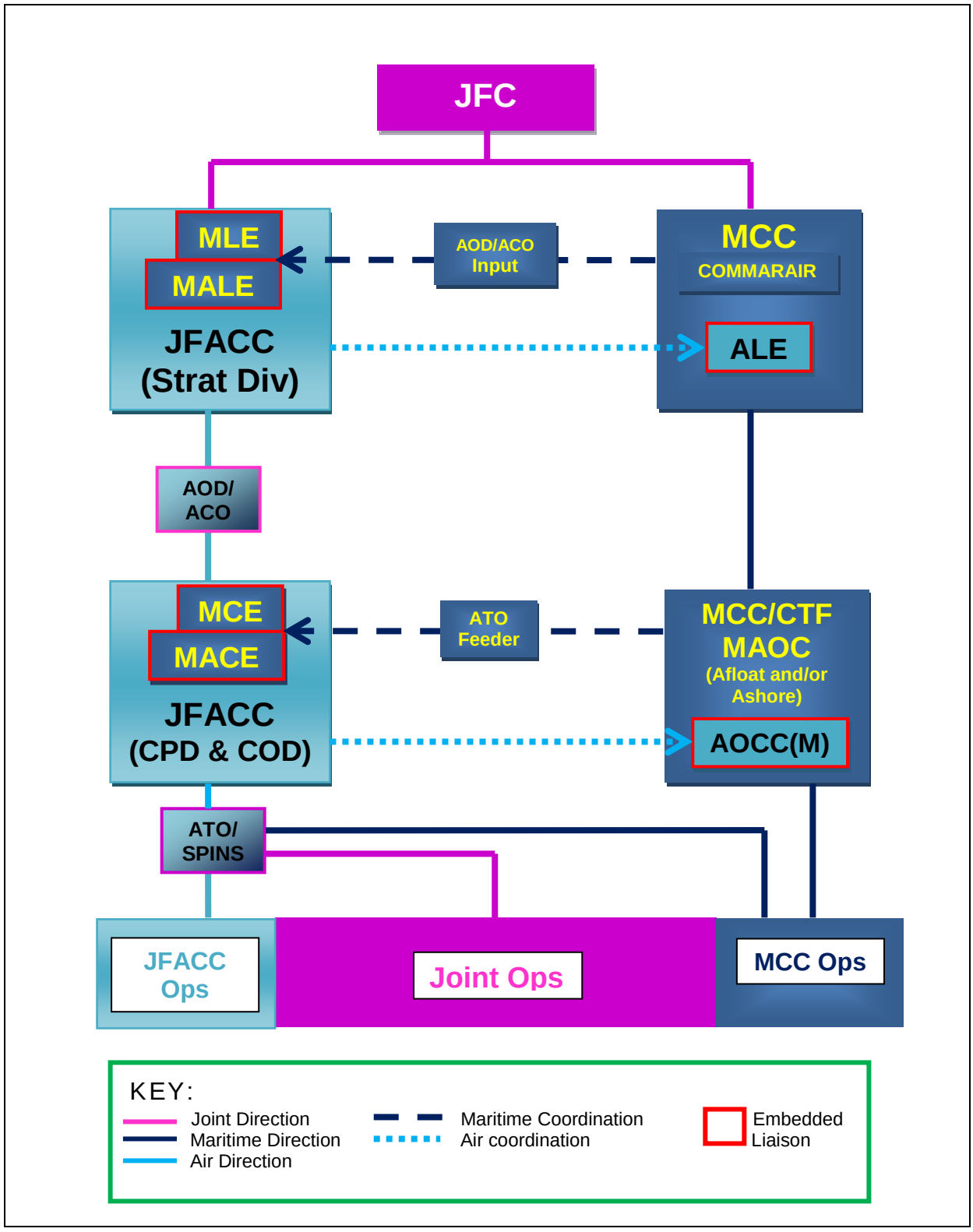

Figure 2.1: Air Maritime C2 Integration (AIRCOM as JFACC, ADA and ACA)

6. To facilitate coordinated execution of the AOD and ATO, a direct line of contact is also required between the MCC and the JFACC at the tactical level. To fully integrate air and maritime operations, the MCC will dispatch a maritime coordination element[1] (MCE) to the JFACC and COMMARAIR will attach a maritime air coordination element (MACE). The MCE provides MCC representation at the tactical level of the air organization while the MACE provides subject matter expertise for coordinating the planning, tasking and execution of maritime air operations with the combat plans division (CPD) and combat operations division (COD) of the JFACC. The MACE also coordinates with the MAOCs to ensure maritime inputs are integrated into the ATO. an air operations coordination centre-maritime [AOCC(M)], subordinate to the JFACC and located within the MAOC, will be established to provide JFACC non-maritime air expertise and liaison to the appropriate supported maritime commander. The AOCC(M) will coordinate the planning and tasking of JFACC missions allocated in support of maritime operations and will also monitor the execution of these missions. The AOCC(M) and MCE jointly coordinate the integration of organic maritime air, as well as maritime systems such as cruise missiles, and ensure maritime anti-air warfare assets are properly integrated into the overall joint AD plan.

7. These air and maritime liaison entities will report to and remain structurally part of their parent command but become functionally part of the headquarters to which they are attached. The actual size and disposition of these organizations will depend upon the operation being conducted. The ALE will focus on issues at the operational level and provide air operational expertise and advice to the MCC concentrating on the operational planning cycle (3 to 7 days). By contrast, the AOCC(M) will coordinate current and future operations within the ATO planning cycle at the lower tactical level. The same holds true with the MLE/MALE focused at the operational level and the MCE/MACE at the tactical level. The MCE/MACE coordinates any MCC-provided air sorties to support JFACC objectives, and as the recipient of ATO feeders from the MAOC, ensures organic maritime air sorties are included in the ATO.

8. The paragraph above and Figure 2.1 describe a situation where AIRCOM Headquarters is designated as JFACC. In the case of a maritime heavy SJO, the air component contribution may be small in comparison to maritime air and the JFACC responsibilities may be assigned to the MCC and delegated to COMMARAIR. In this case, the air component would provide AOD/ACO inputs to the maritime component and ATO feeders to the MAOC. The MAOC would be responsible for producing the AOD, ACO and ATOs. Liaison would still be required as above, however it would be tailored to the scale of the operation and the size of the component contributions.

[1] This is a separate organization that is established as required for operations and is separate from the MCEs that are part of the framework peacetime establishment of CAOCs.

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CHAPTER 3 OPERATIONS

3.1 AIR OPERATIONS

Air operations may support the activities of maritime, land and special operations forces (SOF) components of a joint force and vice versa. Air operations are conducted not just with air component forces, but also maritime air, land aviation and SOF air assets. There are multiple categories of air operations that can be performed by each component, either as part of the joint air campaign or in support of the parent component.

3.2 CORE AIR AND SPACE POWER ACTIVITIES

1. **Strategic Attack.** A strategic attack is a JFC directed offensive action against a target, whether military, political, economic or other, that is specifically selected to achieve military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict or continue an action. These attacks may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition. Suitable targets may include but are not limited to enemy strategic centres of gravity.

2. **Counter-Air**. Counter-air operations are carried out to achieve and maintain the desired degree of control of the air to allow friendly forces greater freedom of action and to minimise vulnerability to detection and attack. Counter-air operations are divided into defensive counter air (DCA) and offensive counter air (OCA).

   a. **Defensive Counter-Air.** DCA involves the destruction, degradation or disruption of adversary forces near to, or over, friendly territory and is generally reactive to the initiative of the adversary. DCA includes the employment of active air defence weapon systems, such as fighters, and surface based air defence systems, complemented by electronic counter-measures and other self-protection measures. It also includes passive measures such as camouflage, concealment, deception, hardening and dispersion, which are part of overall force protection measures to protect against air and missile attacks. DCA in the maritime environment is a component of anti-air warfare (AAW).

   b. **Offensive Counter-Air.** OCA consists of offensive operations to destroy, disrupt or degrade enemy air and missile threats. Ideally, 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. OCA includes surface attack operations, air-to-air missions and suppression of enemy air defences.

3. **Air Power Contribution to Maritime Operations**. Air power operations are conducted to deprive the enemy of the military power needed to occupy territory or exploit sea space by neutralizing, delaying or destroying surface forces. In the maritime environment, operations are carried out by land and sea-based aircraft in support of maritime anti-surface and anti-submarine warfare. Air power contributions must be closely coordinated with the supported commander. They must be integrated with the supporting commander's organic air operations to achieve unity of effort and avoid fratricide.

4. **Reconnaissance and Surveillance**. The primary objective of reconnaissance and surveillance operations is to provide timely collection from sensors and other collectors. This information is used to derive intelligence and targeting data on the activities and resources of an adversary or potential adversary. Air reconnaissance and surveillance operations can be categorized as strategic, operational or tactical depending on the purpose and level of operations for which the information is being gathered.

5. **Airborne Command and Control**. Airborne surveillance systems provide opportunities for conducting air battle management, but to be effective the surveillance must be continuous. Some systems are equipped with search radar for airspace surveillance and communications, which can provide on-board positive control and direction of friendly air defence weapon systems and transfer data to the air defence control system. Other systems are equipped with moving target indicator radar for ground surveillance and communications that can provide sensor to platform information to attack aircraft and transfer data to operation centres and other nodes. To handle time critical situations in the most effective manner, tactical control (TACON) may be delegated to the airborne tactical director in order to exploit the real-time engagement capability of airborne early warning (AEW) assets and ground surveillance aircraft. AEW and ground surveillance systems can also contribute to the intelligence cycle by providing timely information about an adversary's air and ground activities and his potential to attack friendly territory or to interfere with friendly air, land and sea operations. Often, air operations are dependent upon the direction provided by AEW aircraft. Most DCA and OCA missions are monitored and often directed by AEW aircraft. Similarly, airborne warning and control systems and ground surveillance aircraft may support these missions while also supporting strategic air operations.

6. **Electronic Warfare (EW). EW** is defined as military action that exploits electromagnetic energy to provide situational awareness and achieve offensive and defensive effects. Air assets provide valuable support to EW operations, whether through EW support measures or electronic countermeasures (ECM). The overall objective of EW in air operations is to enhance mission effectiveness and increase the survivability of friendly aircraft and other assets.

7. **Air Transport**. Air transport provides a military commander with the capability to deploy, employ and re-deploy forces and equipment quickly and over considerable distances, sustain those forces, and support effective application of their military effort.

The inherent speed, range and flexibility of air transport make it ideally suitable for operations beyond NATO's AOR including those of a humanitarian nature.

8. **Air-to-Air Refuelling (AAR)**. The objective of AAR operations is to enhance combat effectiveness by extending the range, payload or endurance of receiver aircraft. It allows air power to be projected over greater distances and/or concentrated where and when it is most needed. To achieve operational effectiveness, there must be compatibility in terms of equipment (e.g. boom versus drogue), airborne procedures and aircraft performance between AAR aircraft and receivers. Strategic AAR supports the deployment of forces to the theatre whilst theatre AAR provides support to units operating in theatre.

9. **Special Air Operations (SAO). SAO** support special operations and may include combat and non-combat tasks involving the deployment, infiltration, support, exfiltration and withdrawal of SOF. SAO may be conducted in conjunction with other joint operations or may be autonomous. Often SAO must be carried out regardless of the overall combat conditions, and under air situations not normally considered suitable for other air operations. The specialized nature of SAO, and the challenging environment in which operations are usually conducted, require employment concepts, organizations, training methods, aircraft and equipment tailored to each situation.

10. **Combat Search and Rescue (CSAR). CSAR** is a co-ordinated operation using pre-established procedures for the detection, location, identification and rescue of downed aircrew in hostile territory in crisis or conflict and, when appropriate, of isolated personnel in distress, who are trained and equipped to be rescued. CSAR provides a JFC with the means to preserve the force, improve the morale of air units and deny the use of captured personnel as sources of intelligence and propaganda. The scope and scale of CSAR operations will vary widely. The successful commitment of CSAR forces in a threat environment requires detailed intelligence, careful planning and co-ordination, force packaging, risk analysis and rapid, reliable means of secure communication. Well-trained units operating according to standardized procedures are essential for success.

11. **Search and Rescue (SAR). SAR** is defined as the use of aircraft, surface craft, submarines, specialized rescue teams and equipment to search for and rescue personnel in distress on land or at sea (AAP-6). According to the provisions of the International Civil Aviation Organization and the International Maritime Organization, SAR is a national responsibility that is often delegated to its Armed Forces for peacetime operations. The boundaries for SAR responsibility are normally defined by Search and Rescue Regions. However, during operations beyond NATO's AOR by a joint force in a benign environment, the JFC may need to organize a SAR capability in his joint operations area. In this case, the JFC must ensure that international agreements, host nation laws, regulations and policies, as well as host nation SAR capabilities are taken into account when establishing procedures. Control and coordination of SAR operations in peacetime is normally the responsibility of the national Rescue Coordination Centres. Military SAR assets may be made available to assist host nation civil authorities when the task does not interfere with military requirements.

3.3 MARITIME OPERATIONS

1. Maritime operations include any actions performed by forces on, under or over the sea to gain or exploit command of the sea, sea control or sea denial and/or to project power from the sea. In a joint environment, maritime operations can have influence on land operations by the manifestation of deterrence, provision of continued access to the theatre, contribution to battlespace dominance, projection of power ashore and provision of sealift. Maritime operations can be assisted from land with surveillance, logistic and air support. The following terms are used to describe the principal elements of maritime operations.

2. **Command of the sea** gives the freedom to use the sea for one's own purposes and to deny its use to an adversary. Total command of the sea, in the sense that one's own or an alliance's maritime forces are unchallenged anywhere and that an adversary is unable to carry out any maritime operations, can be achieved only by the destruction or neutralization of the adversary's maritime forces.

3. **Sea control** allows the use of the sea in specified areas and for specified periods of time. The early achievement and retention of a level of sea control is a likely requirement across the entire range of military operations. The level of sea control required will be a balance between the desired freedom of action and the degree of acceptable risk. Sea control requires capabilities in all aspects of the maritime domain, space and cyberspace. Sea control is achieved primarily through the demonstrated use or credible threat of force. Sea control requires control of the surface, subsurface, and airspace and relies upon naval forces' maintaining superior capabilities and capacities in all sea control operations. It is established through naval, joint, or combined operations designed to secure the use of ocean and littoral areas by one's own forces and to prevent their use by the enemy.

4. **Sea denial** is exercised when one party, unable to control a maritime area, denies control of the same to another. Sea denial is not a concept distinct from sea control, as denial of an adversary's freedom of action is an aspect of sea control. However, the concept is applicable only when full sea control is not exercised by choice or by necessity. At the operational level, a zone of sea denial may be used as part of the outer defence of a force or area, or a way of containing opposition forces. Sea denial can be exerted in warfare by sustained attack on an adversary's sea lines of communications (SLOCs).

5. **Maritime power projection** is the use of, or threat of the use of, maritime power to directly influence events on land. It exploits sea control to achieve access to littoral areas and to deliver power ashore in the forms of amphibious forces, carrier strike operations, organic aircraft, land attack weapons and SOF. Maritime power projection is a concept that has broad application both during crisis management and in hostilities.

3.4 MARITIME OPERATIONS AND WARFARE AREAS

1. Maritime operations are categorized into distinct warfare functions or warfare areas. These operations are generally divided into the following warfare areas and types of operations.

2. **Anti-Air Warfare (AAW).** In the maritime environment, AAW is the term used for the defence of friendly forces against threat aircraft and airborne weapons, whether launched from air, surface, or sub-surface platforms. Denial of intelligence and achieving adequate attack warning are crucial to the AAW battle. AAW is based on the principle of in depth defence defeating air raids using organic and shore-based aircraft, long and medium range surface-to-air missile (SAM) systems, point defence missile systems, guns, close-in weapons systems and ECM. These layers are necessary to gain early warning, counter the adversary's surveillance and targeting effort, destroy attacking aircraft before they can achieve weapon release and/or destroy/decoy missiles in flight. In a joint operation, AAW is part of the overall AD effort.

3. **Anti-Surface Warfare (ASUW). ASUW** is action against an adversary's surface forces or merchant ships to achieve sea control or sea denial, to disrupt his SLOCs or to defend against surface threat. ASUW operations should ensure the timely detection and engagement of an adversary's surface forces so as to deny their effective employment. It may be conducted by a surface action group comprising a mix of ships, which may be supported by a helicopter action group, fixed wing aircraft and/or submarines.

4. **Anti-Submarine Warfare (ASW). ASW** comprises operations to deny the adversary the effective use of submarines. The ASW protection of a force depends on defence-in-depth and close coordination between ships, helicopters, Maritime Patrol Aircraft (MPA), shore-based facilities and friendly submarines.

5. **Mine Warfare (MW). MW** is divided into minelaying and mine detection/disposal operations. Mine detection and disposal is necessary to counter the threat of an adversary's mines and is referred to as mine countermeasures. MW units typically have limited self-defence capabilities and may require enhanced AD support to carry out their operations.

6. **Amphibious Operations.** As defined in ATP-08, an amphibious operation is a military operation launched from the sea by a naval and landing force (LF) embarked in ships or craft, with the principal purpose of projecting the LF ashore tactically into an environment ranging from permissive to hostile. Aircraft tasked to support an amphibious operation should refer to the detailed guidance contained in ATP-08. The commander amphibious task force is responsible for the safe and timely delivery of sea-borne forces at an amphibious objective and the landing of a force in accordance with the landing plan. These operations require defence of shipping (ASW, AAW, ASUW and MW) and protection of ship-to-shore movement either by surface craft, helicopter or tilt-rotor aircraft.

7. **Strike[1] Warfare**. Maritime forces can contribute to the joint operations against targets ashore using carrier-based strike aircraft, sea-launched cruise missiles, naval guns and SOF. This requires close coordination and de-confliction between the MCC and the JFACC.

8. **Air and Missile Defence**. Maritime forces can contribute to air and missile defence using capabilities that require enhanced data link architecture, optimized sensors, and SAM systems. This mission requires close coordination and de-confliction between all component commanders.

9. **Maritime Interdiction Operations (MIO). MIO** includes the enforcement of economic sanctions via an embargo or quarantine of a particular country's international trade. MIO may require joint maritime and air surveillance for a protracted period.

10. **Non-Combatant Evacuation Operations (NEO)**. These operations are conducted to evacuate non-combatants and non-essential military personnel from a foreign location to an appropriate safe haven in the home nation or elsewhere. A NEO is conducted to evacuate citizens whose lives are in danger and may also include the evacuation of selected citizens of the host nation or third country nationals.

11. **Electronic Warfare.** This involves military action that exploits electromagnetic energy to provide situational awareness and achieve offensive and defensive effects.

3.5 MARITIME AIRBORNE PATROL OPERATIONS

1. Depending on sensors, equipment and weapons, MPA can perform a multitude of missions over water, as well as over land. MPA are normally assigned operational control (OPCON) to the MCC, who has the responsibility for the execution and control of MPA operations. MPA assets not required for assigned joint missions or for fleet defence will normally be made available for tasking via the joint air tasking process. MPA sorties performing overland operations will normally be under TACON of the JFACC.

2. Most MPA will be fitted with some form of acoustic suite to allow sonobuoys to be dropped and monitored from the air. Many modern MPA are also fitted with electro-optical systems capable of stand-off identification of contacts of interest by day or night. Capabilities will vary dramatically depending on the MPA type; therefore early communications with MPA is essential to maximize use of these assets.

3. MPAs are versatile platforms capable of undertaking much more than just traditional maritime patrol missions. The long range and capable sensor suites of MPA make them ideal intelligence, reconnaissance and surveillance (ISR) platforms if the threat situation allows. Their height and endurance advantages over rotary wing assets allow them to

[1] In this context, the term 'strike' is used in the conventional weapons sense.

clear search areas well ahead of a force and provide both electronic support and radar warning of potential hostile units well beyond the force's radar horizon. When trained fire support teams (spotters) are added to the crew, MPA capabilities can be exploited to detect, identify and fix suitable land targets for naval firing units, attack helicopters or tactical air assets, as well as conduct battle damage assessments, again if the threat situation allows. Most MPA will also carry some form of weapon system, be that torpedoes or anti-surface missiles. MPA weapons should normally be used first to conserve ship and organic helicopter stores.

4. Maritime helicopters are also adaptable and able to support a variety of missions. Many are equipped with capable sensor suites and are also able to conduct ISR missions, albeit they are limited in endurance and altitude in comparison to MPA. Considered an extension of the ship, embarked helicopters are normally OPCON to and tasked by the ship to provide direct support, however advantage can be taken of capabilities that are beyond the requirements for traditional maritime helicopter support. Land based helicopters would normally be assigned OPCON to the MCC and tasked in the same manner as MPA.

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CHAPTER 4 PLANNING AND INTEGRATION

4.1. AIR-MARITIME COORDINATION

This chapter describes the planning and targeting considerations to integrate the capabilities of air and maritime assets. This chapter will define air-maritime coordination in the context of air component/maritime component coordinated planning and the air tasking cycle.

4.2. JFACC/MCC LIAISON

Besides the command and supported/supporting relationship, the basic guiding principle for coordination between the JFACC and MCC is to ensure that each component's air assets appear on the ATO in as much detail as possible and that the airspace requirements are included in the ACO. In order to facilitate this seamlessly and effectively, liaison elements are in place as detailed in Chapter 2 and coordination is conducted at all phases of the joint targeting cycle as shown in Figure 4-1. In addition to organic maritime air support, maritime principle warfare commanders (PWC) and/or the officer in tactical command (OTC) may identify a need for support from land-based air assets to support maritime operations. Such support could be anti-air warfare, anti-surface force air operations or supporting air operations. In the same manner, other component commands may have a requirement that can be fulfilled by maritime air assets and as such, support may be requested for their campaigns. Under normal circumstances requests are forwarded via an air support request regardless of the type of air support required.

4.3. PLANNING PROCESS

1. **Deliberate Planning.** When component commanders are able to anticipate support requirements in sufficient time, requests will be met through the joint planning process. Within the JFC staff, the joint campaign plan will be developed and the requirements for air for all components will be articulated through inputs to the AOD. These requirements then become part of the apportionment plan issued to the JFACC and MCC through the AOD. The AOD is then used to develop an ACO and ATO.

2. Initial support requests should be made in advance in accordance with the established battle rhythm so as to be considered at the joint level. The request should indicate the type and scale of support required as well as the approximate time frame and location. When planning continues, an increasing level of detail for the mission requirements should be supplied at the times specified in the established battle rhythm through established liaison/co-ordination elements.

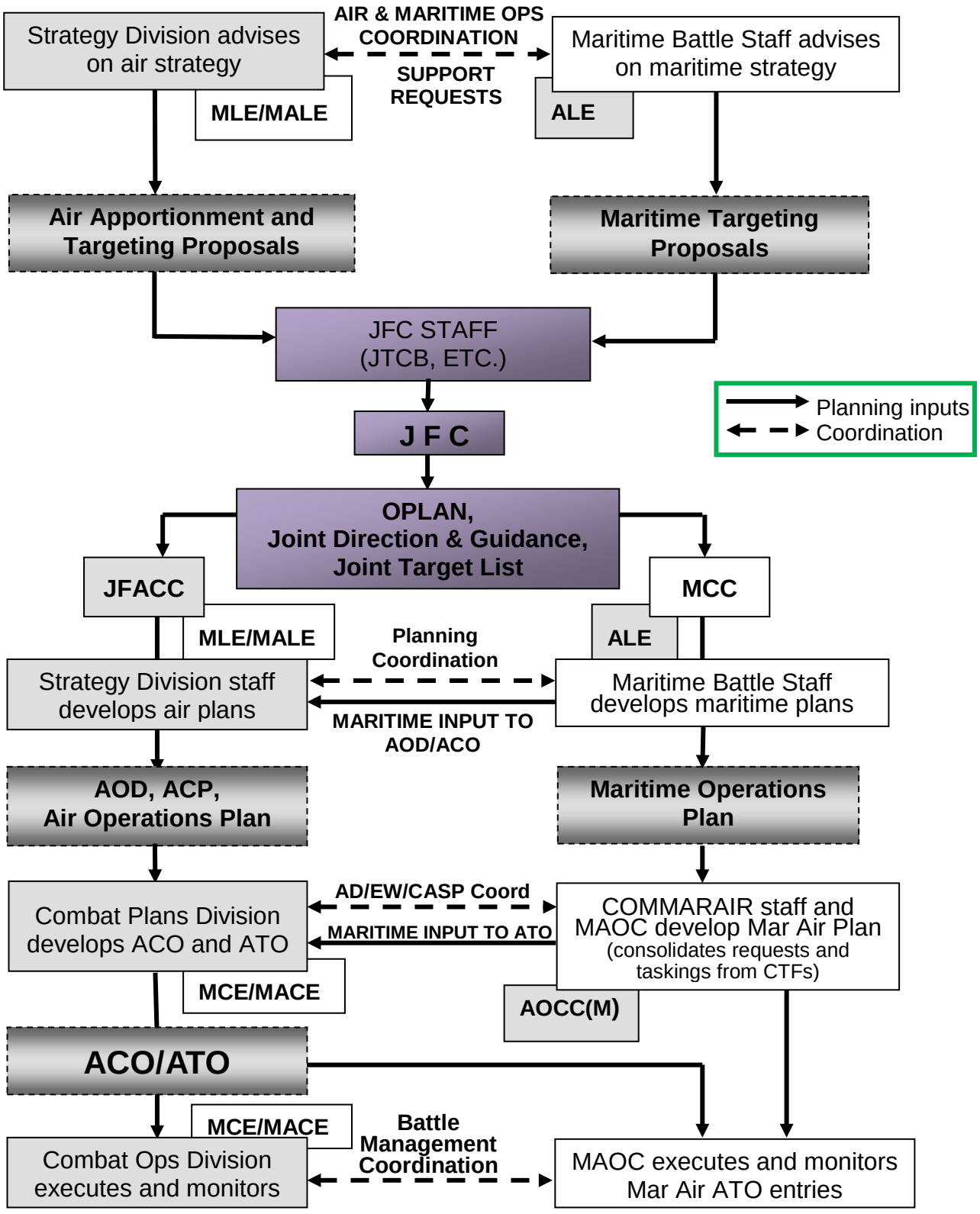

Figure 4.1 - JFACC/MCC Planning (AIRCOM as JFACC, ADA and ACA)

3. In order to react to possible unforeseen tactical circumstances, air assets can be tasked through the ATO to be ‘on alert’. If aircraft are ‘on alert’, the ATO must detail scramble authority and the PWC or OTC must establish a communication circuit through the maritime air request and liaison net or joint anti-air warfare support and coordination net with the alert aircraft or the JFACC COD.

4. If a support requirement was not foreseen, but still occurs prior to AOD release, the MCC will provide a request on the anticipated support requirements direct to the JFACC, to include a request for airspace to the ACA. Based on advice from the MLE, the JFACC will facilitate the request in the AOD within the limits of the direction and guidance (D&G) provided by the JFC. The same process would be used if the JFAC identifies a requirement that can be filled by maritime air assets allocated to the MCC.

5. Should a requirement for support arise after the release of the AOD but prior to the release of the ATO, the MCC can provide an ATO input direct to the JFACC or the JFACC can provide an ATO input direct to the MCC. This input should provide detailed information regarding the requested support (time on/off station, hand-over gates, control frequencies, etc). Based on advice from the maritime coordination element/air operations coordination centre (Maritime) (MCE/AOCC(M)), the JFACC/MCC will facilitate the request into the ATO within the limits of the AOD and joint D&G. Because the ATO process is a fixed cycle, such a support request must be received by the MCE/AOCC(M) within this cycle. Otherwise, an air tasking message (ATM) will be required.

6. **Immediate Requests.** In exceptional circumstances a commander from any component could request immediate (unforeseen) support directly from the MAOC or COD. These requests may be met by any aircraft on alert (ground/air), or by the re-tasking of aircraft conducting other tasks (if compatible with configuration and pilot qualifications). This would be accomplished through the use of a written or verbal ATM.

7. **Additional Offerings.** The focus of maritime air is to achieve the JFC’s objectives. Organic maritime air assets apportioned to but not required by the MCC for maritime operations may be offered to other component commanders. The procedures and timelines are the same for support offerings as they are for support requests.

4.4. RISK MANAGEMENT

As detailed in ATP-31, maritime operational commanders are responsible for promulgating the level of risk authorised for aircraft under their command and shall include a maximum Risk Level when assigning operational control or tactical control to another commander. In the case of shore based aircraft, the maximum risk level shall be included in the appropriate message (Rainform Green or ATO).

4.5. AIR TASKING CYCLE

1. The tasking process is driven by the air operations plan, but it is iterative in that it has its own short term air tasking cycle that assigns responsibilities to specific resources through the production and promulgation of the ATO. Implementation of the ATO entails the detailed and coordinated management of air assets as the situation changes to make sure the JFC's objectives are achieved. This also enables deconfliction of air operations in the air campaign as well as organic activities of other components. Combat assessment measures compare the results achieved against the scheduled air operations plan and inform the start of the next decision/action cycle.

2. The JFC will normally delegate to the JFACC the following aspects of air resource management:

   a. In consultation with other force component commanders, and in consideration of various options available (including lethal and non-lethal), recommend to the JFC the apportionment of the joint air effort that should be devoted to various mission categories and/or to geographic areas to meet the JFC’s campaign objectives; and

   b. Translate the JFC’s decision on apportionment into a division of air effort between force components and provide guidance on targeting in the ATO.

3. Figure 4.2 shows air tasking as a cyclical process consisting of six phases. The phases are built upon the principles of effective and efficient joint targeting and planning. The cycle focuses on the JFC’s objectives for operations, while minimising the likelihood of undesirable consequences.

4. **Phase 1 — Analysis of the JFC’s Objectives, Guidance, and Intent.** The first activity of the joint tasking process is to translate the JFC’s objectives, guidance and intent into discrete tasks and a joint target list (JTL), each logically and directly related to the overall desired end state. The end product is the AOD.

5. **Phase 2 — Target Development, Validation, Nomination, and Prioritisation.** This involves the analysis of the adversary to determine the best targets to engage ensuring compliance with the JFC’s objectives, guidance, and intent. They are then nominated through the proper channels for approval and sent back as a joint prioritised target list (JPTL) based on the JFC’s campaign objectives and effective use of joint force capabilities.

6. **Phase 3 — Capabilities Analysis.** This phase analyses the JPTL and matches appropriate capabilities from any component to targets in order to achieve the JFC’s objectives while minimising undesirable effects. This phase results in a master air attack plan (MAAP), which forms the foundation for the ATO.

7. **Phase 4 — Force Planning and Assignment.** This phase integrates the capabilities analysis with the operational considerations resulting in prioritised targets being assigned to the available engagement assets through the ATO. Special instructions (SPINS) and airspace control orders are also provided to allow components to plan and execute missions.

8. **Phase 5 — Mission Planning and Force Execution.** This phase deals with the planning and execution of engagements, and includes coordinating the necessary assets to conduct assessments of such engagements.

9. P**hase 6 — Combat Assessment.** To complete the cycle, battle damage assessments (BDA) and weapons effectiveness assessments (WEA) are done to determine task accomplishment and target engagement success. This will determine whether a target needs to be re-engaged and therefore included in the next iteration of the cycle.

10. The JFC may establish and task an entity to accomplish targeting oversight functions or may delegate the responsibility to a subordinate commander like the JFACC. Typically, the JFC will create a joint targeting coordination board (JTCB) comprised of representatives from the joint force headquarters and all components of the joint force and, if required, national liaison representatives. As the primary agency for the synchronisation and management of the joint targeting efforts, the JTCB would review target information, develop targeting guidance and priorities, and prepare and refine the JTL for recommendation to the JFC.

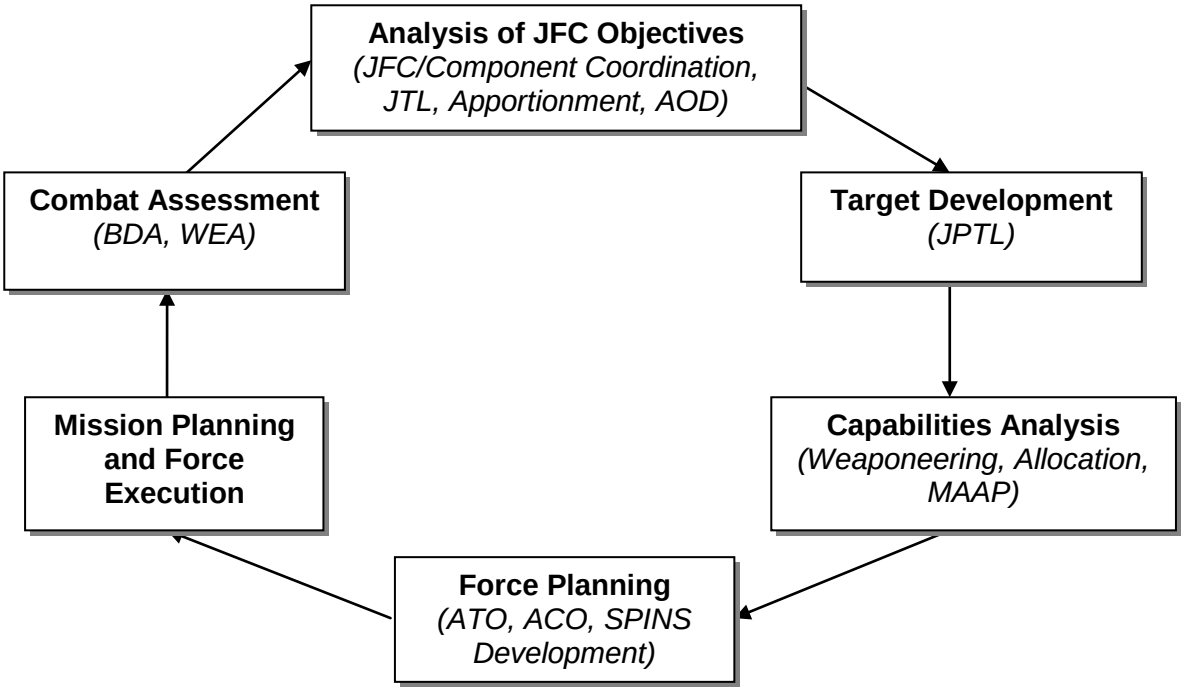

Figure 4.2 – Air Tasking Cycle

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CHAPTER 5 AERIAL SUPPORT TO MARITIME OPERATIONS

5.1. INTRODUCTION

1. Air operations contribute to maritime operations by extending the application of air power over the high seas or the littoral and its adjacent waters. Land and sea-based aircraft work in close cooperation with maritime forces to ensure the most effective use of available air assets to detect, monitor and neutralize or destroy the adversary, achieve defence in depth and seize and retain the initiative. One task of maritime air operations is to assist in the compilation of the recognized maritime picture (RMP) and the recognized air picture (RAP), both elements of the common operational picture.

2. Though dedicated and specifically designed aircraft normally provide support, advantage can be taken of the characteristics of all aircraft and so maritime operations may also be supported by other component's air assets that normally support the air or land campaign. Depending upon the area of operations, a choice may exist between employing ship-borne or land-based aircraft. The advantages and limitations of each should be evaluated before selecting the optimum force mix. The nature and location of the threat is likely to be the major influence in this decision.

5.2 AIR EMPLOYMENT IN THE MARITIME ENVIRONMENT

1. Maritime and land-based air assets may be tasked to provide support for forces at sea in three categories of operations, namely area operations, direct support (DS) or associated support (AS).

2. **Area Operations.** These operations are conducted in a geographic area and are not directly related to the protection of a specific force. They are conducted in areas where adversary forces are known to be, areas through which adversary forces are likely to transit, areas in which friendly forces are planned to operate, or areas within which it is desirable to deny the adversary freedom of action.

3. **Direct Support.** Aircraft in DS are tasked to support and protect a specific force. TACON of supporting aircraft is delegated to the supported force's officer in yactical command (OTC). While in DS, control is normally exercised through the supported force's aircraft control unit.

4. **Associated Support.** Aircraft tasked in AS will operate independently of a specified force or group, but will provide contact information to, receive intelligence from and, if authorized, cooperate and coordinate operations with the supported force. TACON of the aircraft remains with the assigning authority who coordinates tasking and movement of the

aircraft in response to the requirements of the supported force OTC. The aircraft commander should be briefed on the degree of support that can be given to the OTC.

5.3 MISSION TYPES

1. **Air Power Contribution to Maritime Operations.** In the maritime environment, the air contribution includes ASUW and anti-submarine warfare (ASW) operations. The aim is to detect, monitor and neutralise or destroy adversary forces, achieve defence in depth, and to seize and retain the initiative. Land and sea based aircraft, submarines and/or surface vessels can carry out this task, preferably in a coordinated action.

a. **Anti-Surface Warfare.** ASUW covers a wide range of operations involving surveillance and reconnaissance missions that may culminate in the attack of adversary vessels. There are four distinct elements to an ASUW mission as follows:

(1) **Surveillance**. Surveillance of a particular area is used to locate maritime forces and contribute to the RMP to aid in maritime situational awareness so the MCC can coordinate further action. Information can also be passed to the JFACC to add to the RAP;

(2) **Identification and Recognition**. Identification and recognition is part of the process of establishing the RMP, and determines the identity of detected contacts;

(3) **Shadowing**. Shadowing is the continual observation of a ship or force for the purpose of reporting its location, movement, composition and other relevant information; and

(4) **Attack**. Attack can be carried out autonomously by a platform or the platform can act as a target designator for attack by other assets.

Surveillance, identification, recognition and shadowing require sensors that can provide accurate target discrimination, position and identification, together with secure and robust communications. MPA, maritime helicopters or ship-borne unmanned aircraft (UA) can provide this capability, but so too can AEW aircraft and other suitably equipped air component assets. When asset numbers and capabilities permit, the concept of high boy/low boy may be used if no asset is capable of identifying contacts from height. In this scenario, aircraft equipped with advanced maritime radar and maritime automatic identification system receivers operate at height to extend on station time and increase radar coverage. This aircraft would provide cueing to other assets operating at medium to low altitude or to surface units when contacts of interest (COIs) are detected. This high boy/low boy concept maximises effectiveness of assets operating at lower levels as they can be

directed from COI to COI to effect positive identification or engagement rather than spending time in search mode. AEW aircraft, high-altitude long-endurance UA or appropriately equipped MPA are well suited to the high boy task, while MPA, maritime helicopters or UA could be used in the low boy role.

b. **Anti-Submarine Warfare.** The aim of ASW is to deny the adversary effective use of submarines. Countering the submarine threat demands an extensive range of specialized capabilities to search, locate, classify, track and attack. This may involve the use of MPA, helicopters, friendly submarines, surface ships or other aircraft. There are two overall strategies that are available to the maritime commander when conducting ASW operations:

(1) **Offensive ASW.** The purpose of offensive ASW is to deny the submarine access to the environment where it can operate with tactical freedom. It could involve the blockade of ports or an attack before the submarines can manoeuvre into the open ocean. Though a maritime mission, JFACC strike assets could be requested to conduct offensive ASW tasks; and

(2) **Defensive ASW.** Defensive ASW is conducted in areas where the submarine can operate with tactical freedom. The reactive speed and endurance of MPA often means that they are the primary assets available to counter the submarine threat. Good coordination between maritime and air assets, as well as sound water and airspace management are essential to enhance the probability of detection.

2. **Aerial Mining.** Maritime mining operations can be classified as strategic or tactical; offensive, defensive or protective; and embrace all methods whereby damage may be inflicted or adversary sea operations hindered by the use of naval mines. Aircraft by their nature may be the most suitable vehicles for offensive mine laying operations and for replenishing existing fields. The speed of a mine laying aircraft is a great advantage during mining operations that must be executed quickly. Also aircraft can penetrate areas that are denied to surface vessels and submarines, and are not endangered by previously laid mines when replenishing a minefield.

3. **Aircraft Carrier Operations.** Carrier air assets can be tasked to carry out missions either at sea in support of maritime operations or overland in support of the joint force land component. A typical carrier air wing has the assets to conduct all categories of air operations described in Chapter 3, either on its own or with JFACC assets. Maritime forces can contribute to the joint air campaign by striking targets ashore using carrier-based strike aircraft, as well as sea-launched cruise missiles and naval guns. This will require the highest degree of synchronization of air activities, as well as coordination with the supported commander.

4. **Amphibious Operations.** Amphibious warfare incorporates virtually all types of ships, aircraft, weapons and landing forces in a concerted effort launched from the sea with the principal purpose of projecting the landing forces ashore tactically. By their nature, these operations are complex and require detailed planning, training and specialist equipment. These operations will require air support for protection and support of the amphibious task force during all phases of the operation, with a special emphasis during the shaping operations and the ship-to-shore movement (action phase). Air support may also be required for controlling the ship-to-shore movement by helicopter or tilt-rotor aircraft.

5. **Counter-Air Operations.** A key role for aerial support to maritime operations is in the DCA function as discussed briefly in Chapter 3. DCA is a significant force multiplier in the maritime anti-air warfare domain, in particular when maritime forces are limited in organic air assets (no carrier borne aircraft). DCA from shore based aircraft may prove to be essential in enabling maritime forces to achieve objectives.

ANNEX A LEXICON

ACRONYMS AND ABBREVIATIONS

AAR	air-to-air refuelling
AAW	anti-air warfare
ACA	airspace control authority
ACO	airspace control order
ACP	airspace control plan
AD	air defence
AEW	airborne early warning
AIRCOM	Allied Air Command
ALE	air liaison element
AMC	air-maritime coordination
AOCC(M)	air operations coordination centre (maritime)
AOD	air operations directive
AOR	area of responsibility
ASUW	anti-surface warfare
ASW	anti-submarine warfare
ATM	air tasking message
ATO	air tasking order
AS	Associated support
BDA	battle damage assessment
CPD	Combat plans division
C2	command and control
CJTF	combined joint task force
COM	commander
COM AIRCOM	Commander Allied Air Command
COM MARCOM	Commander Allied Maritime Command
COMMARAIR	commander maritime air
COI	contact of interest
CSAR	combat search and rescue
CTF	combined task force
DCA	defensive counter air
D&G	direction and guidance
DS	direct support
ECM	electronic countermeasures
EW	electronic warfare

ISR	intelligence, surveillance and reconnaissance
JFACC	joint forces air component command
JFC	joint force commander
JPTL	joint prioritized target list
JTCB	joint targeting coordination board
JTL	joint target list
LF	landing force
MAAP	master air attack plan
MACE	maritime air coordination element
MALE	maritime air liaison element
MAOC	maritime air operations centre
MCHQ	maritime command headquarters
MARCOM	Allied Maritime Command
MCC	maritime component command
MCE	maritime coordination element
MIO	maritime interdiction operation
MJO	major joint operation
MLE	maritime liaison element
MNF	multinational force
MPA	maritime patrol aircraft
MW	mine warfare
NCS	NATO Command Structure
NEO	non-combatant evacuation operation
NRF	NATO response force
OCA	offensive counter air
OPCON	operational control
OTC	officer in tactical command
PWC	principal warfare commander
RAP	recognized air picture
RMP	recognized maritime picture
SJO	smaller joint operation
SLOC	sea lines of communications
SAR	Search and rescue
SAO	Special air operations
SOF	special operations force
SPINS	special instructions
SAM	Surface-to-air missile

TACON	tactical control
UA	unmanned aircraft
WEA	weapons effect assessment

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ANNEX B RELATED DOCUMENTS

a. Allied Administrative Publication (AAP-6), NATO Glossary of Terms and Definitions (English and French)

b. AAP-15, NATO Glossary of Abbreviations Used in NATO Documents and Publications

c. AAP-42, NATO Standardization Glossary

d. AAP-47, Allied Joint Doctrine Development

e. Allied Joint Publication (AJP-3.1), Allied Joint Maritime Operations

f. AJP-3.3, Allied Joint Doctrine for Air and Space Operations

g. AJP-3.3.5, Doctrine for Joint Airspace Control

h. AJP-3.9, Allied Joint Doctrine for Joint Targeting

i. ATP-8 Volume I, Doctrine for Amphibious Operations

j. Allied Tactical Publication (ATP-24 Vol II), Naval Mining and Minelaying – Planning and Evaluation, Tactics and Execution

k. ATP-31, NATO Above Water Warfare Manual

l. ATP-3.3.3.1, Air-Maritime Coordination Procedures

m. Allied Procedural Publication (APP-11), NATO Message Catalogue

n. MC 389/2, MC Policy on NATO's Combined Joint Task Force

o. BI AC Regional Manual 80-6, Tactical Employment of Air Power

p. ACO Directive (AD) 80-65, Concept of Operations for Air Operations Coordination Centres Land and Maritime (AOCC(L), AOCC(M)) in Allied Command Operations (ACO)

q. ACO Directive (AD) 80-70, Campaign Synchronization and Joint Targeting in ACO

r. Concept of Operations for Alliance Air Command and Control (Air C2 CONOPS)

AJP-3.3.3(A)(1)