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**OPERATIONAL AIR POWER DOCTRINE
– A PROPOSAL**

By

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About the Author

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INTRODUCTION¹

We need to be constantly refining, testing and evaluating our doctrine, especially in relation to joint and combined operations because doctrine forms the basis for the planning and employment of air power.

Air Vice-Marshal P.G. Nicholson²

Operational air power doctrine concerns the planning and execution of air operations at the operational level. Therefore, this doctrine needs to define the command and staff functions of the Air Component Commander and the air staff vis à vis those of the theatre commander and the other component commanders. The doctrine also needs to describe how air operations are planned and executed at the operational level. In simple terms, operational air power doctrine must answer the following questions:

- a. How does air power contribute to joint operations?
- b. What are the command arrangements under which air power is employed?
- c. What are the Air Component Commander's functions?
- d. How is the air component staff organised and what do they do?
- e. How are air operations planned?
- f. How is air targeting done?
- g. What is the air tasking process?

This paper incorporates these questions into a proposed operational air power doctrine. This doctrine is not presented in finished form. For the sake of brevity, the format adopted is more akin to an expanded point summary intended to help the process of drafting such a doctrine. The content of the proposed doctrine is based on the third edition of the Air Power Manual and on current air operation planning practices. Extensive reference has also been made to operational air power doctrine employed by the Royal Air Force and the United States Air Force.³ The doctrine of these allied forces was used because their practices most closely resemble those of the Australian Air Force. Of necessity, classified or sensitive information not available in the open literature has been expunged.

The proposed doctrine has been based on the conviction that operational air power doctrine should be designed for implementation in a joint environment and, ultimately, should be issued as joint doctrine. Hence, operational air power doctrine

¹ Editor's Note: This paper was originally presented in a point summary format but has been modified to meet the format of this volume.

² Nicholson, Air Vice-Marshal P.G., 'Operating the RAAF Beyond 2000', in Stephens, Alan (Ed), *New Era Security—the RAAF in the Next Twenty-Five Years*, Air Power Studies Centre, RAAF Base Fairbairn, 1996, p 255.

³ *Air Operations*, Air Warfare Centre, Royal Air Force Bentley Priory, Stanmore, Middlesex, October 1996. (Classified Restricted). Joint Pub 3-56.1, *Command and Control for Joint Air Operations*, 14 November 1994.

should discuss the command of air operations in the context of a joint theatre campaign. Further, the proposed draft doctrine is based on the belief that Australian air power should be centrally commanded at the theatre level to the maximum extent possible. However, to enhance responsiveness and flexibility in air power application, control of air operations should be devolved to the tactical level to the maximum extent without detriment to operational efficiency. To that end the two-tiered tasking system adopted by the Australian Air Force has been incorporated into the proposed doctrine.

This proposed operational air power doctrine is a first attempt to encapsulate information that is necessary to those involved in the planning and conduct of air operations at the operational level of war. The proposed doctrine is written from a joint perspective in recognition of the ADF's joint command structure, and the high likelihood that ADF air power will operate independently only rarely, if at all. Accordingly, reference throughout is made to ADF or Australian air power. References to air forces are made in a generic sense and should not be understood to refer to the Air Force as a service.

Currently the Air Commander Australia is sponsoring an effort to write an operational air doctrine. It is regrettable though that when such a doctrine is written, in all probability, it will be promulgated as an Air Force manual. In almost every conceivable circumstance, Australian air power will operate in a joint or combined environment. Therefore operational air power doctrine should be written in a joint context and should be promulgated in a joint manual. Unfortunately, formal mechanisms for doing so do not appear to exist at present. The Air Commander's initiative is a step in the right direction. However, the Commander Australian Theatre should have ownership of operational air power doctrine because ultimately it describes how his air staff will operate during operations and how the air staff will interface with other elements of the joint staff within Headquarters Australian Theatre.

The present paper is intended to spark debate on the form that operational air power doctrine should take, the purpose that it should serve, and the subject matter that it should encompass. Active participation in the form of observations, opinions and ideas should be provided to the Air Power Studies Centre to aid the doctrine development process.

SECTION 1 - AIR OPERATIONS IN THE JOINT ENVIRONMENT

Introduction

Military campaigns are carried out to achieve a military end-state that facilitates the accomplishment of national security objectives. Such campaigns may involve operations across a wide spectrum of conflict from peace through operations other than war to war.

The theatre campaign plan integrates and synchronises the actions of the various components, determines the operations to be carried out and the phasing of these operations.

Air operations contribute to the achievement of the desired military end-state either separately or jointly with operations in the land and maritime environments. Such air operations may involve both combat and non-combat capabilities.

The theatre campaign plan assigns objectives and responsibilities and directs the giving and receiving of support between the components. Depending on the nature of the campaign, air power will be employed either in support of one or more of the other components. Alternatively, where deemed appropriate by the Commander Australian Theatre, air power will take the lead and be supported by one or more of the other components. The support/supported force arrangements may vary from one phase of the joint campaign to another.

A plan for the employment of theatre air forces is developed to ensure that air effort is apportioned in accordance with priorities determined by the theatre campaign plan, thereby enabling air power to support the accomplishment of theatre campaign objectives.

The theatre air forces employment plan is derived from the theatre campaign plan and the theatre commander's apportionment decision. This plan defines the scheme for employing theatre air forces and includes the theatre air objectives, the air formula, and the master air attack plan.

HOW AIR POWER CONTRIBUTES TO ADF JOINT OPERATIONS

The mission of the Australian Defence Force is to defend Australia and its regional and global interests. In the defence of Australia priority is given to detecting and defeating hostile incursions in our maritime approaches before they reach Australian territory. This strategy for the defence of Australia relies heavily on our maritime forces; our air and naval capabilities.

Basic air power doctrine defines five core capabilities:

- a. information exploitation,
- b. control of the air,
- c. precision engagement,
- d. precision strike, and
- e. rapid force projection.

These capabilities relate directly to the force structure development priorities identified by Australia's strategic policy.

Air Power and the Defence of Australia

Air Capabilities and the Knowledge Edge

'The Knowledge Edge', the first force structure priority, concerns the exploitation of information technologies to allow us to gain maximum leverage from our small, technologically advanced combat forces. Key air power assets that help generate the Knowledge Edge include two squadrons of Long Range Maritime Patrol aircraft, the Orion P3-Cs, and four R/F-111 aircraft. Australia is also acquiring AEW&C aircraft.

Australia's Knowledge Edge is enhanced further through the acquisition of a theatre air operations management system intended to enhance the ability to command air operations in a dynamic theatre environment. Such a system speeds up the air operations planning process through the automation of repetitive, routine functions and facilitates the deconfliction of theatre air operations. It also provides a facility for recording and monitoring air mission outcomes.

Air Capabilities for Defeating Threats in our Maritime Approaches

The key to defeating attacks on Australia is the delivery of combat power to defeat hostile aircraft, surface and sub-surface vessels in our maritime approaches. Air power provides the ability to project force rapidly, at long range and with precision against hostiles in our maritime approaches. Air power performs two vital functions: it provides the means to gain the required measure of air control, and with surface vessels and submarines is one of the triad of forces that can engage and defeat hostile surface and sub-surface threats.

Control of the Air. Control of the air is a primary air power capability which seeks to deny freedom of action in the air to the enemy while retaining that freedom for friendly air forces.

- a. The attainment of air control is not an end in itself; rather it facilitates friendly offensive operations by air, land and naval forces and assists in the defence of friendly forces and centres of gravity. Control of the air may be local or temporary in nature (air superiority), or be absolute (air supremacy).
- b. Control of the air is achieved through offensive and defensive counter-air operations. These operations are executed using both air and surface forces.

Where hostile elements in Australia's maritime approaches are within range of land-based aircraft, the most responsive and cost-effective means of engaging and defeating these threats is through air power.

Precision Engagement. It may be possible, indeed preferable, to defeat the hostile intent of intrusions into our maritime approaches through intimidatory precision engagement. This may make the application of firepower unnecessary and has the additional benefit of not being escalatory. Air power offers the ability to carry out precision engagement in the maritime approaches through activities such as surreptitiously tracking or overtly shadowing surface and sub-surface vessels.

Key air power assets capable of defeating maritime threats include the two Orion P3-C squadrons of Maritime Patrol Group, the three operational F/A-18 Hornet squadrons of Tactical Fighter Group, and Strike Reconnaissance Group's FR/F-111 aircraft. Combat support capabilities including the AEW&C aircraft planned for acquisition and the four B707 air-to-air refuelling aircraft force enhance the effectiveness and extend the operating radius of the combat assets.

Air Strike Capabilities

Precision strike operations use air power to destroy or neutralise surface targets. Through air strikes Australia can attack targets within an adversary's own territory. The intent may be to attack strategic targets or to counter forces that may be brought to bear against Australia.

F-111 aircraft constitute our primary air strike capability. However, over shorter ranges, F/A-18 Hornets with the support of B707 air-to-air refueling aircraft may also be used for precision air strikes.

Air Capabilities for Land Warfare

Air power is a flexible, powerful form of firepower that is a vital force multiplier in land warfare. Several key air power functions are essential contributors to land warfare, including air interdiction, close air support and reconnaissance. Air assets that may be employed in land warfare include F/A-18 Hornets with the new AEW&C capability being acquired and F/RF-111 aircraft, as well as B707 air-to-air refuelling aircraft and transport aircraft including B707s, C-130 Hercules, and Caribou.

Depending on the number of areas and the distances over which the conflict is conducted, air power capabilities are in danger of being spread extremely thinly. Therefore, normally, it will be necessary to concentrate on one priority role at a time.

- a. The ability to carry out effective counter-land force operations depends to a large extent on the ability to maintain the requisite level of air control. Where air control is lacking and where enemy air forces constitute a significant threat, friendly forces have the dual burden of defending against enemy air action while at the same time attempting to attack opposing land forces. In this situation it would be operationally more effective to first win the requisite level of air control before attempting to engage enemy land forces.
- b. Close air support may be used to defend land forces under attack and to supplement land forces firepower. Used in this way air power can influence only the immediate battle while having possibly little influence on the conduct of the campaign. Unless friendly forces are imperilled, a more profitable use of air power is in interdiction operations against unengaged enemy forces and their combat assets and supplies before they have the opportunity to join in the battle.

The defeat of hostile land forces on Australian territory represents the fourth priority for force development.

The Command of ADF Air Power

In times of tension air power capabilities will be in high demand to collect intelligence, carry out surveillance and reconnaissance, identify targets, engage targets, provide close air support and in the case of AEW&C aircraft, to carry-out airborne control operations.

Although the ADF has highly capable, multi-role air assets they are extremely limited in number. The maritime approaches to Australia and the Australian continent represent a vast area to defend. Therefore there is a need to carefully prioritise and task air assets in accordance with theatre priorities. This is only possible through effective centralised command of air operations.

Maximising Air Power Impact

The ability to derive maximum rate of effort is important for a relatively small force. Various means of deriving maximum effort may be employed:

- a. ***Improving Effectiveness.*** The technology cycle of aviation and related technologies is very short. Obsolescence begins to set in immediately after such technologies enter service and is well advanced within seven years. The development of counter-measures further reduces the effectiveness of air platforms. Therefore, there is a need to program technology upgrades to maintain and hopefully improve relative effectiveness. Effectiveness may also be enhanced through the acquisition of improved weapons and through the development of delivery tactics.
- b. ***Improving Survivability.*** The capacity to maintain maximum effort hinges on the ability of air platforms to survive their missions. Survivability may be improved through the ruggedisation of the airframe, and through equipping aircraft with appropriate self-defence weapons and electronic warfare capabilities, as appropriate. Survivability may be improved also through the acquisition of stand-off weapons.
- c. ***Improving Availability.*** The rate of effort hinges on the relative ease with which aircraft and their systems may be maintained in forward areas. Maintainability may be improved through design enhancements, through the provision of adequate support capabilities in theatre and through the development of appropriate contingency maintenance policies and procedures.

Air Power and Regional Engagement

Being engaged with the Asia-Pacific region means that we must make a contribution to the region's security. Australian forces could be called upon to play a part in regional security operations as a member of a regional coalition.

In regional terms, Australia is a major air power exponent. Although numerically small Australian air forces are technologically advanced and technically competent. Our air combat capabilities are substantial by regional standards when measured in

terms of the number, capability and technological state of aircraft and weapons, the operational efficiency of aircrews, and the quality of logistic and technical support.

Australia maintains a regional air presence through its participation in the Integrated Air Defence System (IADS) and through participating in exercises with regional air forces. These contacts are important in promoting mutual awareness and understanding of operational air doctrine, tactics and procedures thereby improving the respective levels of interoperability.

Air Power and Australia's Global Interests

Australia frequently contributes air elements to multinational forces, either in peace operations under a United Nations mandate, or in combat operations as part of a coalition force. Participation in such operations enables Australia to protect its global interests and to establish and maintain relations with friends and allies within the wider global community.

Australia's ability to provide air forces in support of such operations will depend on the cost, the level of interoperability that exists with other participant forces, and on the risk to which Australian air combat elements are likely to be exposed.

- a. Interoperability may be enhanced through the establishment and maintenance of links with allied air forces and through the participation in personnel exchanges and exercises.
- b. Costs may be decreased through efforts to reduce the deployment footprint.
- c. Risks may be mitigated through enhancing the survivability of air assets, the acquisition of air defences and through deployment footprint reductions.

THEATRE COMMAND ARRANGEMENTS

Commander Australian Theatre assumes command of assigned operational forces to accomplish specific military objectives. Organisation of these theatre forces is then the responsibility of Commander Australian Theatre.

Several command arrangements are possible:

- a. Commander Australian Theatre may assume direct command of operations,
- b. One or more of the Australian Theatre Component Commanders may be assigned command of operations,
- c. One or more of the Joint Force Commands may be activated, or
- d. A combination of the above.

ORGANISATION OF THEATRE AIR FORCES

The organisation of theatre forces will depend on the theatre concept of operations and the command arrangements put in place by Commander Australian Theatre. Sound organisation should provide for unity of effort, coordinated joint operations, and the ability to function effectively and efficiently in a fluid, uncertain operational environment.

Command of theatre air forces may be assigned to one or more of the Theatre Component Commanders and the Joint Force Commanders.

The organisation of theatre air forces should aim to generate the maximum operational benefit of the aggregate of theatre air forces. This is most readily achieved through centralised planning at the theatre level and the production of a theatre air forces employment plan.

SECTION 2 - THEATRE AIR COMMAND AND CONTROL

Air Effort Available

Commander Australian Theatre determines how theatre air forces will be assigned to the theatre component commanders and to the Joint Force Commanders, as appropriate. This determination depends on several factors, including the theatre mission, the concept of operations, the missions and tasks assigned to subordinate commanders, the forces available, the expected duration and nature of air operations and the desired level of unity of command.

Organic air assets and other air forces assigned to other components for direct support are not under the command of the Theatre Air Component Commander but may be incorporated into the theatre air employment plan and the theatre airspace control plan for the purposes of deconfliction and coordination.

THE THEATRE AIR COMPONENT COMMANDER'S AUTHORITY

Commander Australian Theatre determines the air forces to be assigned for tasking by the Theatre Air Component Commander.

Commander Australian Theatre assigns the mission and establishes the authority and command relationships of the Theatre Air Component Commander. This will include establishing supported and supporting commander relationships between the Theatre Component Commanders and between the former and Joint Force Commanders.

THEATRE AIR COMPONENT COMMANDER RESPONSIBILITIES

Commander Australian Theatre assigns responsibilities to and establishes the authority of the Theatre Air Component Commander. The range of responsibilities and the nature of authority so assigned will depend on the theatre mission, the concept of operations, and the role air power will play in the campaign. Specific responsibilities may include:

- a. developing a theatre air forces employment plan;
- b. recommending a formula for the apportionment of theatre air effort;
- c. providing centralised planning, allocation and tasking for assigned air assets;
- d. controlling execution of the theatre air forces employment plan to the extent approved by Commander Australian Theatre;
- e. coordinating theatre air operations with those of the other Theatre Component Commanders and Joint Force Commanders;
- f. providing to Commander Australian Theatre assessments of the outcomes of theatre air operations;
- g. performing the duties of theatre airspace coordination authority, when assigned this responsibility by Commander Australian Theatre;
- h. performing the duties of theatre air defence commander, when assigned this responsibility by Commander Australian Theatre;
- i. functioning as the supporting commander for operations as directed by the Commander Australian Theatre, including close air support, air interdiction in the land and maritime environments, fleet support, and air lift; and
- j. functioning as the supported commander for operations as directed by the Commander Australian Theatre, including counter air operations, strategic air attack and air interdiction.

THEATRE AIR DEFENCE AND AIRSPACE CONTROL

The responsibilities of the Theatre Air Component Commander for the development of a theatre air forces employment plan and recommendation of an air apportionment formula are linked inextricably with the functions of theatre airspace control and air defence coordination.

- a. Theatre airspace control requires the development, and promulgation of theatre airspace control procedures. These procedures need to be coordinated with all users of the theatre airspace.

- b. Theatre air defence coordination involves the coordination of air defence operations with other operations in the three environments.

Close coordination between these three functions is essential to ensure safe and efficient use of the theatre air space. It makes sense for the Theatre Air Component Commander to be appointed Theatre Airspace Control Authority and Theatre Air Defence Coordination Authority. Making the one appointment responsible for these three functions will simplify the coordination process.

THE THEATRE AIR COMPONENT COMMANDER ORGANISATION

The Theatre Air Component Commander staff operates out of the theatre air operations centre. A notional organisation for this staff is shown in Figure 1. The key elements of the air staff are as follows:

- a. ***Senior Advisory/Planning Group.*** The permanent members of this group are the Chief of Operations, the Directors of the Air Operations Planning and Air Operations Management Groups, and a senior intelligence adviser. Other specialist advisers may be invited from time to time on an as required basis.
- b. ***Air Operations Planning Group.*** The main function of this group is to produce the theatre air forces employment plan and to continually update that plan as the campaign progresses and in response to changes in the Commander's Guidance.
- c. ***Air Operations Management Group.*** This group generates the daily Air Tasking Directive based on the plans developed by the Air Operations Planning Group and manages daily air operations. In addition, the Air Operations Management group monitors the results of daily air operations and provides this information to the Air Operations Planning group.

Continuity between plan development and task generation is assured in three ways:

- a. The Chief of Operations and the Directors heading the planning and operations management groups are members of the Senior Advisory/Planning Group where the planning directive is produced and where the plan and its implementation are reviewed.
- b. The theatre air staff operate in a highly integrated manner relying on the active participation of several specialist staffs. Examples of such specialist staffs are depicted in Figure 1 in parenthesis between the two branches of the theatre air operations staff. The specialist staffs advise and participate in several working groups operated by the two branches of the air operations staff.
- c. Role specialists who advise the Air Operations Planning group are also employed in the Air Operations Management group.

The organisational structure of the theatre air operations centre may vary depending on the specific operational circumstances.

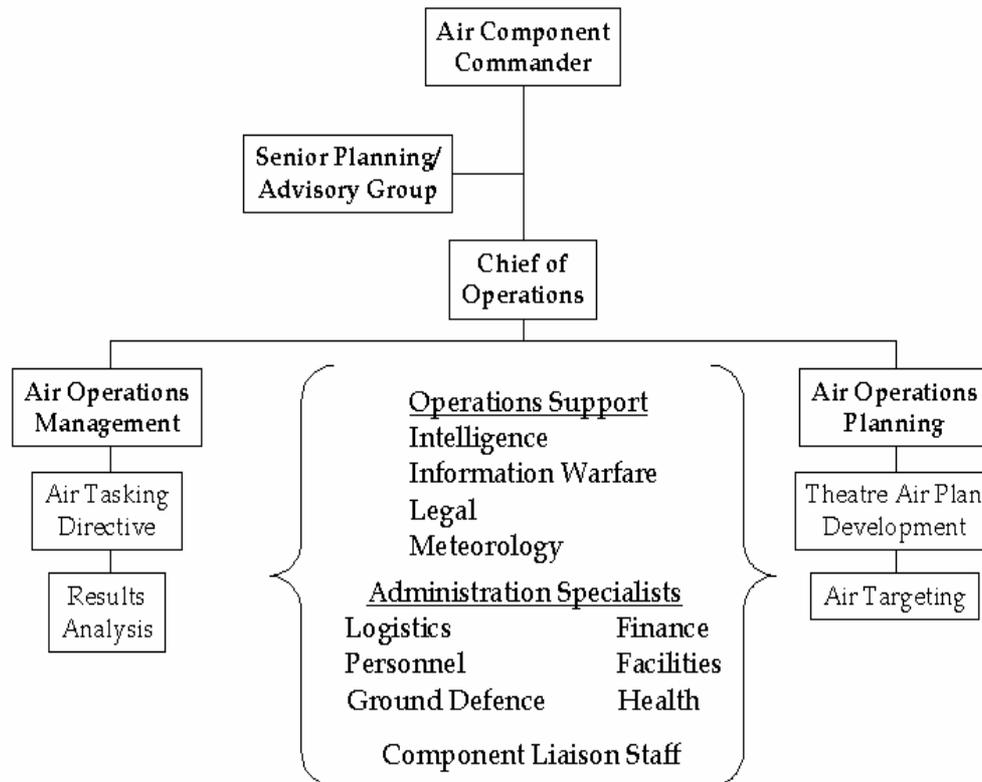


Figure 1 - Notional Theatre Air Operations Centre Organisation

LIAISON WITH THE OTHER COMPONENTS

The success of theatre air operations and ultimately the campaign rely on the level of coordination achieved between the various components. There are two reasons for this. First, synergistic effects are derived only through coordinated action. Second, coordination is important to ensure that the actions of the various components are not counterproductive to one another or, more importantly, do not lead to blue on blue engagements.

Coordination with the other components is achieved in various ways, both formal and informal.

- a. The Theatre Air Component Commander communicates directly and on a regular basis with Commander Australian Theatre and the other component commanders both during formal planning meetings and outside those meetings.
- b. Similarly, senior staff from the theatre air operations centre may communicate with their counterparts in the other component headquarters on important and time-sensitive issues. The authority and means to achieve this level of communication must be provided.

- c. Liaison staffs from each component are also embedded within the theatre air operations centre. Component liaison staff is the working level interface between their component commander and the theatre air operations centre. The former perform the vital function of providing their component's perspective in warfare planning and tasking, and enhancing the level of coordination. For this reason component liaison staff must be expert in the warfighting doctrine and standard operating procedures of their component.

The opportunity offered by peacetime should be exploited to resolve many of the issues that are likely to arise between components in operations.

- a. Conflicting or incompatible warfighting doctrine, organisation, operating procedures, equipment and other issues need to be identified and resolved.
- b. Active liaison across all levels of components is necessary to identify and resolve these issues.
- c. Exercises and training opportunities should be used to test and validate proposed doctrinal, organisational, procedural and equipment changes.

STAFFING THE THEATRE AIR OPERATIONS CENTRE

To a large extent the success of the theatre air operations centre relies on the quality and expertise of its staff. Specific staffing requirements will be determined based on the operational scenario and the availability of suitably qualified personnel.

- a. A broad range of functional expertise will be needed to support the operations planning and operations management functions. Functional expertise is required in such diverse fields as intelligence, airspace management, logistics, communications, meteorology, oceanography, public information, law of armed conflict and rules of engagement, aeromedical evacuation, joint and single service doctrines, etc.
- b. In addition there will be a need for role specialists in such areas as strike and interdiction in the land and maritime environments, air-to-air and air-to-ground combat, air-to-air refuelling, airborne early warning and control, reconnaissance, maritime patrol, airlift, combat search and rescue, etc.

Providing such staff the requisite training and experience is a complicated task because peacetime economies prohibit staffing the theatre air operations centre with other than a staff nucleus. During contingencies and exercises, augmentation staff will be posted into the theatre air operations centre to enable sustained 24-hour operations. Augmentation staff need to have a similar level of expertise as that of core staff.

The career development and training of staff destined for employment in the theatre air operations centre needs to be carefully managed to ensure the requisite skills and experience are created.

TRANSITION OF RESPONSIBILITY FROM THE THEATRE AIR COMPONENT COMMANDER

It is conceivable that sometime after the start joint of operations the scope and complexity of air operations reduce to the extent that activation of the Theatre Air Component Commander and the theatre air operations centre is no longer warranted. In this situation Commander Australian Theatre may delegate responsibility for the conduct of air operations to another commander. Where that is the case, it may be necessary to attach some of the theatre air operations centre staff to that commander to ensure adequate continuity and to facilitate smooth transition of responsibility.

ALTERNATIVE COMMAND OPTIONS

As noted earlier, the authority assigned to the Theatre Air Component Commander is scenario dependent. Accordingly, there may be situations when the Commander Australian Theatre may elect not to assign authority for the command of air operations to the Theatre Air Component Commander. Such a situation may arise when:

- a. the contingency situation is of limited duration, scope and complexity such that Commander Australian Theatre may choose to take direct command of operations, or delegate it to a Joint Force Commander;
- b. air power is planned to play a minor role in support of operations led by another component, and activation of the Theatre Air Component Commander is deemed unnecessary;

If Commander Australian Theatre assumes command of operations, the Australian Theatre joint staff will undertake the responsibilities and functions ascribed previously to the Theatre Air Component Commander.

Similarly, if Commander Australian Theatre delegates responsibility for operations to a Joint Force Commander, the latter's staff will undertake the responsibilities and functions previously ascribed to the Theatre Air Component Commander.

Responsibility for airspace control and air defence does not automatically accompany delegation of responsibility for air operations. Commander Australian Theatre may choose to assign this responsibility separately.

Irrespective of the specific command arrangements put in place by Commander Australian Theatre, the functions and responsibilities associated with command of air operations and with airspace control and air defence are those stated previously in relation to the Theatre Air Component Commander. In summary, these responsibilities and functions include:

- a. development of an air operations plan;
- b. coordination of air operations with other activities;

- c. managing the implementation of the air operations plan;
- d. airspace control;
- e. air defence; and
- f. arranging for the provision of support to air operations as required, for instance ground based air defences, security of air bases etc.

At the discretion of Commander Australian Theatre, those commanders responsible for the conduct of air operations may be given access to the functional and role expertise resident within the theatre air operations centre.

TRANSITION OF RESPONSIBILITY TO THE THEATRE AIR COMPONENT COMMANDER

In the event the duration and scope of operations exceeds that expected, Commander Australian Theatre may elect to activate the Theatre Air Component Commander. Such activation may necessitate that the staff responsible for planning and managing the conduct of air operations is transferred to the theatre air operations centre to ensure adequate continuity and to facilitate smooth transition of responsibility.

SECTION 3 - AIR OPERATIONS PLANNING

The Strategic Dimension

The Australian Government determines the national security goals and the actions required to achieve them, including diplomatic, economic, social and military initiatives. For military operations, the Government determines the military objectives, the forces to be employed and the constraints to be observed.

Within these confines, the Chief of the Defence Force directs Commander Australian Theatre to conduct military operations to achieve stated military objectives. The Chief of the Defence Force issues a directive to that effect informing and advising Commander Australian Theatre regarding all aspects of the intended operations.

THE COMMANDER'S GUIDANCE

Commander Australian Theatre develops a campaign plan and assigns objectives, forces and the requisite authority to subordinate commanders. The campaign plan also states the political and military aims, defines the Rules of Engagement and specifies the approved command and control arrangements. Based on the campaign plan, Commander Australian Theatre develops Commander's Guidance outlining his requirements for the conduct of operations. This guidance is a statement of the required time phased operations with allocated resources. These operations include

those in the three environments, which together comprise the theatre scheme of manoeuvre.

The Commander's Guidance provided to the Theatre Air Component Commander should be validated against the following points:

- a. The Commander's Guidance must state the political aims and military objectives.
- b. The Commander's Guidance must state the restraints required to be observed in undertaking military actions. Specifically, instructions must be included regarding the approval of requests concerning Rules of Engagement.
- c. Air objectives contained in the Commander's Guidance must be clear, unambiguous, and consistent with the political aims, military objectives and the stated restraints.
- d. Each air objective must be achievable and have clearly stated measures of successful achievement.
- e. The Commander's requirements for the phasing of air operations and the need for coordination and synchronisation with operations by the other components must be stated clearly.
- f. The assigned force levels together with the logistic and other forms of support must be adequate to enable achievement of the military objectives.
- g. The command and control arrangements stated in the Commander's Guidance must not hinder achievement of the stated air objectives.

THE THEATRE AIR COMPONENT COMMANDER'S ESTIMATE PROCESS

The estimate (or military appreciation) process has been developed over many years to form the basis for planning military operations and is used at each level of war. For instance, the Chief of the Defence Force uses it to develop the directive provided to Commander Australian Theatre. The latter uses the same process to develop the Commander's Guidance.

The Theatre Air Component Commander plans air operations using the estimate process adapted to match the characteristics of the environment and the scale and tempo unique to air operations. The steps of the Air Estimate Process are outlined below.⁴

⁴ Several different versions of the estimate process exist. They all cover similar subject matter and they all have merit. The process illustrated in Figure 2 and outlined above has been adapted from several sources, the intent being to provide an illustration of an appropriate estimate process, rather than to provide the definitive air estimate process.

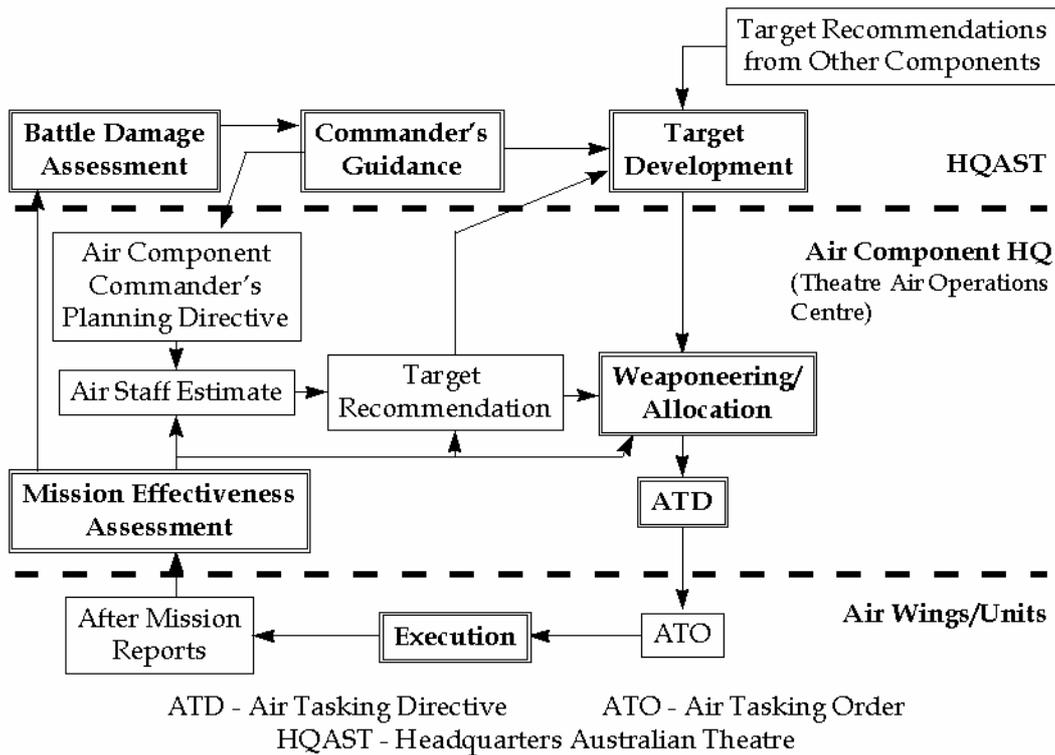


Figure 2 - Structure of the Theatre Air Staff Estimate Process

Mission and Situation Analysis

Mission Analysis. The purpose of the mission analysis is to determine what is required to be achieved through air operations and how one is to assess that the required mission has been accomplished. Hence, the mission analysis begins by examining the background to the contingency and the causes of the conflict. It continues with an examination of the political and military objectives stated in the Commander's Guidance and a determination of the criteria upon which the decision to cease air operations will be made. Conditions required to be established for conflict termination form the basis for formulating the air objectives. At the end of the mission analysis air planners should have a clear understanding of the following aspects:

- the strategic objectives and the specific objectives of the theatre campaign;
- the required air tasks (eg air control, air interdiction, air strike etc);
- the objectives, nature and key timings of operations by the other components,
- the linkage and interdependence between air operations and those of the other components, and
- the limitations of authorised action with particular emphasis on the nature and period of effect of constraints.

If air planners do not have an unambiguous understanding of these aspects, clarification of the Commander's Guidance must be obtained.

Situation Analysis. The purpose of the situation analysis is to facilitate the identification of enemy and own courses of action, ultimately leading to the selection of the preferred own course. Situation analysis encompasses the following steps:

- a. ***Geopolitical Analysis.*** This analysis should consider all factors that could influence the conflict, including:
 - i. the feelings and perceptions of the public including the attitude of the media;
 - ii. the economic situation including major economic influences such as dependencies on any particular industries, resources or trade arrangements;
 - iii. internal and external political dynamics;
 - iv. any historical, ethnic, cultural and religious influences;
 - v. the presence or absence of any moral constraints;
 - vi. international interests such as treaties, alliances and trade blocs, and the positions relevant international organisations have adopted in relation to the conflict;
 - vii. the operational environment including the geography, hydrography, climate and weather patterns of the theatre and related areas; and
 - viii. the availability of transportation, communications, industrial and civilian infrastructure and the availability of secure air bases and logistic support.
- b. ***Enemy Situation Analysis.*** This analysis should consider the enemy's military capabilities and key vulnerabilities. The analysis should examine:
 - i. the enemy's operational advantages and limitations;
 - ii. the readiness, composition, strength, location, disposition and combat effectiveness of enemy armed forces including their capacity for and proficiency in joint operations;
 - iii. the effectiveness of the enemy leadership and the command and control system;
 - iv. the ability to sustain operations through the resupply and reinforcement of operational forces; and
 - v. any pertinent time and space factors.

The foregoing analysis should be used to identify the courses of action

available to the enemy and to identify the enemy's likely course of action.

- c. ***Centre of Gravity Analysis.*** The centre of gravity concept was coined by Clausewitz to describe the enemy's single vital point against which a successful attack is likely to yield a decisive outcome to the conflict.⁵
- i. In conflict, a decisive outcome is sought at the strategic and operational levels. However, this does not necessarily imply that an engagement with enemy forces is required.⁶
 - ii. Centre of gravity analysis consists of two parts: identification of enemy centres of gravity to be attacked, and own centres of gravity to be protected from attack.
 - iii. The purpose of attacking centres of gravity is to degrade an adversary's ability to resist using military means. This ability is supported by the enemy's capacity to wage war and his will to continue doing so. Targets selected for attack must impact one or both of these aspects, though the targets need not be military in nature, and the form of attack need not be either lethal or militarily effective.⁷
 - iv. The protection of own centres of gravity also does not necessarily imply a military engagement.⁸
 - v. The selection of enemy targets for attack should be on the basis that they are valid centres of gravity and that attack is feasible and has an adequate likelihood of success. Target sets developed in this way need to be considered by the Joint Targeting Coordination Board to determine the optimum mode of attack — ie. to decide whether lethal or non-lethal means are most appropriate and whether air, land, sea or a combination of forces should be used. These target sets and the mode of attack may also need to be approved at the strategic level.
- d. ***Friendly Situation Analysis.*** This analysis should be on the same lines as that of the enemy situation analysis. Friendly military capabilities and key vulnerabilities need to be considered. Specifically, the analysis should examine:
- i. own operational advantages and limitations;

⁵ Although the centre of gravity concept remains valid in modern warfare, the Clausewitzian approach of identifying a single centre of gravity is simplistic. Modern societies are complex systems often forming parts of networks that transcend national boundaries.

⁶ The air raids by the United States against Libya and by Israel against the Osiraq nuclear reactors achieved strategic outcomes without a military engagement.

⁷ In the Gulf War, coalition air forces used leaflet drops in psychological operations against the Iraqi public and military forces. In contrast, the Iraqis used a lethal but militarily ineffective weapon, the Scud missile, to attack a coalition centre of gravity - the cohesiveness of the coalition itself.

⁸ The Berlin Air Lift and Operation Provide Comfort in Bosnia used non-lethal means to protect own centres of gravity — the wellbeing of civilian populations - without a military engagement.

- ii. the readiness, composition, strength, location, disposition and combat effectiveness of own armed forces, including their capacity for and proficiency in joint operations;
 - iii. the vulnerabilities of own command and control system;
 - iv. own ability to sustain operations through the resupply and reinforcement of operational forces; and
 - v. any pertinent time and space factors.
- e. **Restrictions Analysis.** This analysis seeks to identify those limitations to the use of force. These restrictions may be imposed in the Commander's Guidance. Alternatively, limitations may arise as a result of other commitments such as the need to provide support to other strategic requirements such as diplomatic, economic and information warfare efforts.
- f. **Assumptions.** Any assumptions on which the conduct of operations is based must be noted and validated. Even assumptions made by higher authority cannot be taken for granted.
- g. **Deductions.** When analysing each of the previous six factors, a series of key questions need to be asked. The answers to these questions will assist in developing courses of action. The relevant questions are:
- i. How does the factor affect the enemy?
 - ii. How does the factor affect our own situation?
 - iii. How does the factor affect the achievement of the campaign objectives?
 - iv. What should the theatre commander do about it?

Courses of Action Development

Own Courses of Action. Possible own courses of action may be developed based on the analysis to date. Courses of action must be capable of achieving the set air objectives, must not contravene any restrictions imposed by the Commander's Guidance and must be feasible. A concept of operations should be developed for each course of action. The concept of operations will identify the major operational tasks that will need to be performed, the requisite forces and the time frames involved. Subordinate concepts covering logistics support requirements and the deployment plan will also need to be developed.

Enemy Courses of Action. Courses of action available to the enemy are considered to determine the possible effects they may have on the success of each own course of action. This analysis serves to re-validate the adequacy, feasibility and achievability of own courses of action, and helps identify the advantages and disadvantages associated with each course of action.

Comparative Analysis. A comparative analysis is carried out to evaluate the relative capabilities of enemy and friendly air power. The comparison is made in relation to factors such as the following⁹:

- a. available weapons and air platforms, including force multipliers, such as airborne early warning and control and air-air refueling capabilities;
- b. radii of action;
- c. the sophistication and location of available air bases, including available deployment and turnaround facilities;
- d. the availability of host nation or allied support;
- e. ground defence and security of forward deployed air forces;
- f. command, control, communications and intelligence capabilities; and
- g. training and doctrine.

Courses of Action Analysis

Analysis of Operational Potential. Before continuing the development of own courses of action, there is a need to assess the operational potential for each type of air task (eg. interdiction, air-to-air refueling, strike, reconnaissance, etc.). The intention is to establish whether the overall sortie generation potential and/or the ability to apportion sorties will constitute limiting factors in the development of own courses of action. In carrying out this analysis the existence of multi-role, multi-mission capabilities need to be taken into consideration. The air tasks to be carried out can be derived from the air objectives. All possible courses of action should be considered and reviewed against the campaign and air objectives to ensure there is continuity of purpose.

Timing. In planning air operations, a key consideration is the extent to which different air objectives can be pursued in parallel. If the capacity for parallel air operations is limited, there may be significant implications for operations by the other components. Ultimately the duration and phasing of the theatre campaign may be affected. Planners will need to be alert to the potential for conflicts or inconsistencies with operations by the other components that will need resolution.

Presentation of Alternative Courses of Action. The alternative courses of action can be presented in a concise form using the apportionment matrix as illustrated in Figure 2. The effects of attrition should be incorporated in the construction of the apportionment matrices for the alternative courses of action. For the purposes of subsequent analysis, enemy courses should be similarly represented using the apportionment matrix technique.

⁹ This is not an exhaustive list of factors.

Selection and Implementation of Preferred Course

Selection of Preferred Course. The final step of the estimate process begins with a comparison of own courses of action. The Theatre Air Component Commander selects as the preferred course that course shown to give the best chance of achieving the campaign and air objectives. Commander Australian Theatre must approve the selected course of action before it can proceed to implementation. Once approved by Commander Australian Theatre, the air operations plan will form the basis of the Theatre Air Component Commander's concept of air operations.

Concept of Theatre Air Operations Development. The concept of air operations should:

- a. integrate the efforts of theatre air resources to achieve the theatre campaign objectives;
- b. identify objectives and targets by priority order, describe the desired results and the weight of effort that should be applied;
- c. account for current and potential offensive and defensive threats;
- d. indicate the phasing of air operations in relation to theatre campaign phases;
- e. indicate the capabilities and forces required to achieve the set air objectives;
- f. include a comprehensive assessment of sustainability requirements; and
- g. include procedures for allocating, tasking and exercising command and control of theatre air forces and capabilities assigned to the Theatre Air Component Commander.

Implementation. Finally, the concept of air operations is used to develop the theatre air forces employment plan. This plan assigns specific air tasks to units and forms the basis for the generation of the Air Tasking Directive. Clearly, completion of the concept of air operations is but the first stage in an iterative planning process that continues throughout the conduct of air operations.

Continuous Air Operations

The continuous air operations planning process has two essential aspects: continuous air operations planning; and management of the day-to-day operations. The Air Planning and Air Operations Management groups perform these tasks, respectively. These are the two major functional areas located within the theatre air operations centre. Figure 3 illustrates the continuous air planning process and depicts the areas of responsibility of these two groups.

Air Operations Planning. The continuous planning process begins with a re-examination of the Commander's Guidance. As the campaign progresses, this guidance will be modified to take into account any new directives from the strategic level and observed developments in the operational environment. Depending on the

extent of changes in the Commander's Guidance, a fresh staff appreciation may be necessary possibly resulting in the development of a new air operations plan. If the changes are not significant, this plan may require only minor adjustment. The new or updated plan is then translated into tasks for the next period of operations and released to tasked units for execution. The period of the tasks covered by the adjusted plan can vary depending on how dynamic the operational environment is. In a dynamic situation this period may cover just twenty-four hours; in a less dynamic situation it may cover several days.

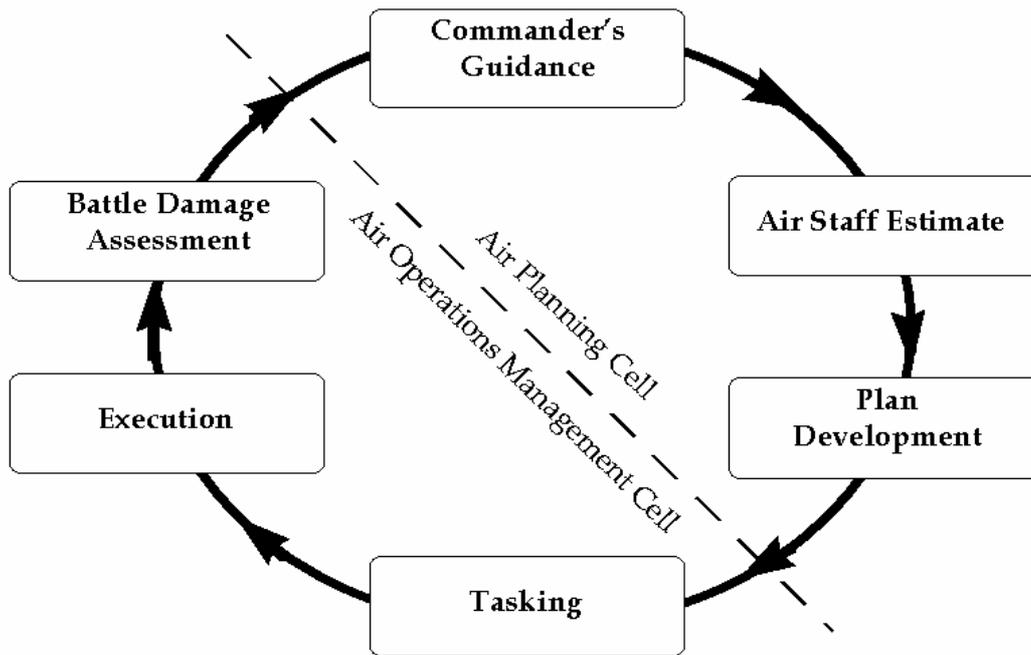


Figure 3 - Continuous Air Operations Planning

Air Operations Management. The Air Operations Management group is responsible for translating theatre air plans into actual tasks appearing in the Air Tasking Directive and for managing their execution. This management function involves responding to clarification questions from tasked units, adjusting the programmed tasks when the need arises, and monitoring mission outcomes and battle damage assessments. The objective is to release the Air Tasking Directive 12 hours before the scheduled sortie launch times. However, as air operations progress, changes to the Air Tasking Directive will be inevitable.

- a. Poor weather, the need to respond to changed conditions in the battlespace, or the unavailability of aircraft, aircrew or the necessary support capabilities are some of the factors that will necessitate the reprogramming of air tasks.
- b. Every effort should be made to minimise the disruption caused by changes to programmed tasks and to allow maximum time for tasked units to carry out detailed mission planning.

- c. Changes to the programmed tasks must not deviate significantly from the intent of the air operations plan. Where there is a possibility that a major deviation will be necessary, the change must be cleared by the Air Operations Planning group.

The Air Tasking Directive

The Air Tasking Directive produced by the Air Operations Management group provides tasked units details of what tactical objectives need to be accomplished within the period covered by the Directive. Tasks will appear in two ways:

- a. **Apportionment Directive.** This will reflect the apportionment decision made by Commander Australian Theatre and will detail how the available air effort should be distributed between the air tasks (eg. the proportion of available effort that should be expended on close air support, air defence, strike and interdiction etc.).
- b. **Targeting Tasks.** Sufficient details of specific targets to be attacked, the relative target priorities, the effect to be generated at each target, critical timings, etc. will be provided. However, tactical level commanders are responsible for determining how individual strike and interdiction missions should be carried out.

Computer Assisted Force Management

The ability to plan and communicate air operations tasks relies on the availability of a secure, robust force management and data exchange system with reliable connectivity to the Headquarters Australian Theatre, the other theatre component headquarters, and the operational units. The Theatre Air Component Commander is responsible for developing and implementing such a system, and for confirming its operation.

SECTION 4 — AIR TARGETING

Introduction

Targeting is the process of selecting targets, planning the application of force, executing the attack and assessing the resulting effects. The purpose of attacking specific targets may be to generate either lethal or non-lethal effects at the strategic, operational and/or tactical levels.¹⁰

- a. A strategic impact may be achieved through striking military and non-military targets of national significance to the enemy. The Chief of the Defence Force approves strategic attacks.
- b. Targeting at the operational level is used to support the theatre scheme of manoeuvre or to defeat that of the enemy. At this level the focus is on mobile

¹⁰ During the Gulf War non-lethal air attacks were used to put out of commission civilian power stations in Baghdad.

and immobile targets of military significance. Such targets may include civil infrastructure, command, control and communication facilities, engaged and non-engaged military forces, etc. Targeting at the theatre level is conducted by the Joint Targeting Coordination Board under the guidance of Commander Australian Theatre.

- c. During battle, targeting is focussed on the supplementation of friendly firepower and the protection of engaged friendly forces, thereby furthering the accomplishment of tactical objectives.

In targeting the objective is to apply the optimum mass and type of force at the optimum times against targets selected in accordance with the Commander's Guidance and the Law of Armed Conflict to achieve the maximum desired effect at an acceptable level of risk to own forces. The force thus applied can be either lethal or non-lethal.

THE NEED FOR JOINT AIR TARGETING

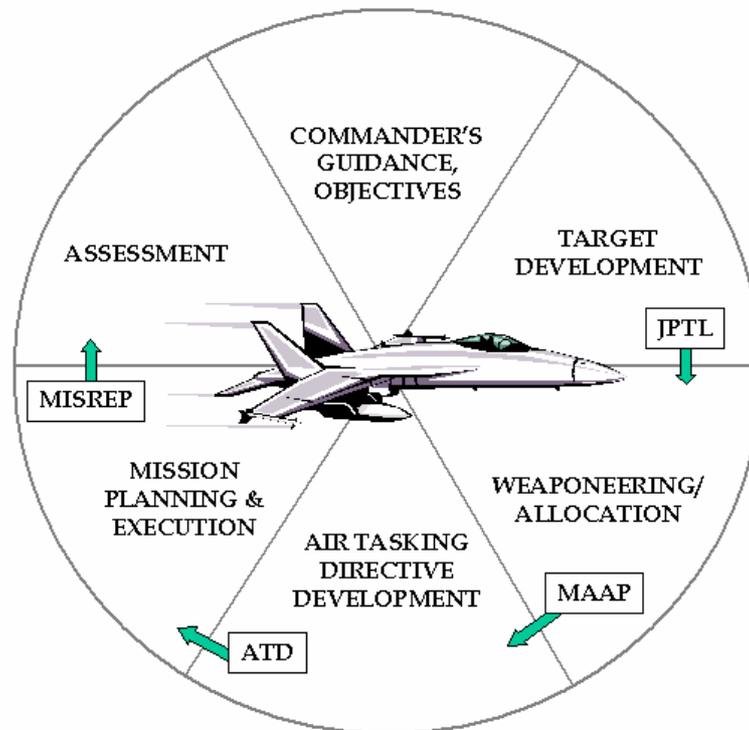
Air targeting is where air forces are employed to carry out the attack. Air targeting is a joint process for the following reasons:

- a. The purpose of air targeting is to facilitate the accomplishment of campaign objectives. Therefore, it serves a joint purpose.
- b. Target selection and prioritisation needs to be considered within a joint context to ensure that available operational forces are employed in an optimum manner.
- c. Normally it will be possible to attack selected targets using a variety of forces including land, sea, air, or a combination of forces. Force allocation, therefore, becomes a process of optimally matching available forces to selected targets in accordance with the theatre objectives and priorities.
- d. Targeting needs to be coordinated and deconflicted with operations planned by all theatre components to ensure that there is synergy, no duplication, no interference, and no added risk to attacking forces.
- e. The utilisation of shared operational support capabilities, for instance intelligence collection assets, needs to be prioritised across all theatre requirements.

THE AIR TARGETING CYCLE

Figure 4 depicts the air targeting cycle, a process that begins with a review of the Commander's Guidance, encompasses target development, weaponeering, air tasking and execution, and ends with an assessment of the results. At this point, the cycle begins again with a review of the Commander's Guidance in light of the assessed targeting outcomes and any further direction from the strategic level. The air targeting

cycle enables a systematic and logical application of theatre air power in support of campaign objectives.



ATD - Air Tasking Directive JPTL - Joint Prioritised Target List
 MAAP - Master Air Attack Plan MISREP - Mission Report

Figure 4 - The Air Attack Cycle

The activities depicted in Figure 4 do not take place entirely within the theatre air operations centre. Further, these activities are not conducted in isolation from the overall air operations planning process. Several activities involved in continuous air operations planning contribute to air targeting. The relationship between these activities and those associated with air targeting is shown in Figure 5. This Figure also indicates the levels at which all air targeting and related activities are performed.

COMMANDER'S GUIDANCE

Commander Australian Theatre provides the Commander's Guidance to the theatre component commanders who use it as the basis for their own planning. The Commander's Guidance is then modified as the campaign progresses to take into account events in the theatre, recommendations and feedback from the component commanders, and directions from strategic headquarters.

As noted earlier, the Commander's Guidance will define the Commander's intent for the conduct of the theatre campaign and the objectives to be accomplished. The Commander's Guidance is developed in consultation with strategic headquarters and

with the theatre Component Commanders. The Commander's Guidance will provide the following with respect to air targeting:

- a. **The Theatre Scheme of Manoeuvre.** The theatre scheme of manoeuvre will determine:
 - i. the allocation of forces and the assignment of objectives to theatre component commanders;
 - ii. the links and supporting/supported relationships between operations to be conducted by the various theatre component commanders; and
 - iii. the phasing of these operations.

These arrangements will determine the need for interdiction and strike operations.

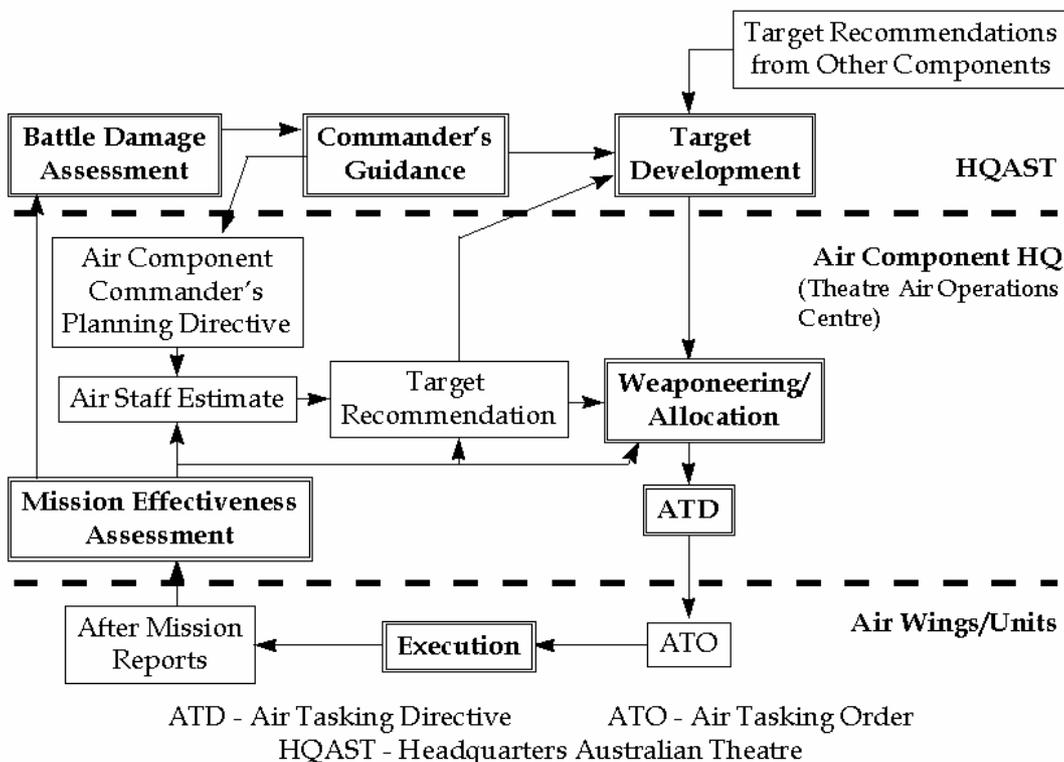


Figure 5 - Air Targeting Process

- b. **Air Apportionment.** The Commander's Guidance will determine how the total available air effort will be used in support of the campaign objectives. Air power can perform a wide variety of functions, cover great distances and is able to shift rapidly from one function and locality to another. Ideally, the employment of air power will be based on the principle that air power is a theatre resource:
 - i. Air power should be commanded centrally at the theatre level to the maximum extent possible.

- ii. Theatre air power should be apportioned by priority or percentage of effort into geographic areas and/or by categories such as strategic attack, interdiction, counter air, maritime support, and close air support.
- c. ***Strategic Targets.*** Where appropriate, strategic targets approved for attack will be identified in the Commander's Guidance in the form of a master target list. This list will provide the initial basis for targeting and associated planning.

TARGET DEVELOPMENT

Target development is the process of selecting and prioritising targets for attack. It is important to consider potential targets as elements of a system. A target system may comprise a group of facilities, structures, functions etc. that in combination sustain the enemy's ability and will to fight. Potential targets may be identified in various ways.

- a. an initial set of strategic targets may be included in the Commander's Guidance;
- b. targets will be identified by the Component staffs as an outcome of the centre of gravity analysis aspect of the staff estimate; and
- c. targets may be identified during the continual planning process that accompanies campaign execution.

Responsibility for reviewing potential targets rests with the Joint Targeting Coordination Board, an advisory group established by the Commander Australian Theatre. Board members include senior representatives of the theatre Component Commanders and specialist advisers such as legal and intelligence staff. The Board performs two essential functions:

- a. it produces a prioritised list of targets proposed for attack; and
- b. for each target proposed determines the preferred means of attack and proposes assignment of targeting responsibility to the relevant commander.

The selection of a target system for attack, determination of the means for attack, and the priority assigned to the attack will depend on:

- a. how well the attack would support the campaign objectives;
- b. the target system's impact on the enemy's will and ability to sustain operations and what would be the enemy's likely reaction to the attack;
- c. the immediacy of this impact;
- d. the accessibility of the target to attack;
- e. the probability of successful attack;

- f. the effort required; and
- g. the associated risk to own forces.

As shown in Figure 4, the outcome of Joint Targeting Coordination Board deliberations is a joint prioritised target list including the proposed assignment of targeting responsibility to relevant commanders. The final approval of this list rests with Commander Australian Theatre.

WEAPONNEERING AND ALLOCATION

Once the joint prioritised target list and the associated proposed targeting responsibilities are approved by Commander Australian Theatre, targets designated for air attack are passed to the theatre air operations centre for weaponneering and allocation. Targets that had been previously authorised for air attack but which had not been successfully attacked are considered at this time for possible re-attack.

Weaponneering. Weaponneering is the process of matching weapons to targets. This process involves an analysis of targets and any associated target area threat, location of appropriate aim points and the determination of the type and number of weapons required to achieve the desired effect. In conducting this analysis, the outcomes of previous similar attacks are taken into consideration, as are the experiences of aircrew. These details are recorded in mission reports and are evaluated in mission effectiveness analyses.

Allocation. When the weaponneering analysis is completed, the prioritised targets and the related details are entered into the Master Air Attack Plan. This document is used to allocate the targeting tasks among the available operational units. The allocation is determined based on the operational capacity and the weapons and aircraft available to the various operational units. During the allocation process, the requirement for operational support capabilities such as airborne early warning and control and air-to-air refueling is also determined. These details are added to the Master Air Attack Plan. This plan forms the basis for developing the Air Tasking Directive.

AIR TASKING DIRECTIVE DEVELOPMENT

Targeting tasks are combined with other air tasks and all are incorporated into the Air Tasking Directive. The content of the Air Tasking Directive was discussed in Section 3. A primary consideration in preparing the Air Tasking Directive is to ensure that all air tasks are deconflicted and that there has been adequate coordination with other friendly forces operating in the area to ensure mutual safety.

MISSION PLANNING AND EXECUTION

Detailed mission planning is carried out by tasked air units. This level of planning includes working out number of sorties and weapons loads, specific times on target,

delivery tactics, flight routes, coordination with friendly forces, call signs etc. Back-up targets should be assigned in the event the attacks on the primary targets are unable to take place.

After the release of the Air Tasking Directive a need may arise to vary the air tasks to be executed, timings or other key parameters.

For air operations to be responsive to battlespace dynamics, the Theatre Air Component Commander should be delegated a measure of authority to vary air tasks within predefined limits, including:

- a. re-ordering targeting priorities;
- b. redirecting sorties/missions; and
- c. varying the air apportionment formula.

The Theatre Air Component Commander should also be empowered to delegate this authority to the necessary extent to tactical level air commanders and ground or airborne command and control mission commanders. The extent of the Theatre Air Component Commander's authority to vary air tasks and the degree to which this authority may be delegated will be determined by Commander Australian Theatre.

Proposed changes outside the authority of the theatre air operations centre to approve should be elevated, as appropriate, to the Theatre Air Component Commander, the Joint Targeting Coordination Board or Commander Australian Theatre.

ASSESSMENT

The assessment of air operations takes place on several levels. Upon completion of their missions, operational units raise after-mission reports. These reports address all aspects of the mission including the effectiveness of mission planning, coordination, tactics, execution, weapons effects etc. These reports are forwarded to the theatre air operations centre where they are used to assess mission effectiveness. This consolidated information is provided to Headquarters Australian Theatre staff to aid their further planning.

In addition, theatre intelligence agencies using independent intelligence sources perform battle damage assessments to determine the degree to which campaign objectives have been achieved through the various targeting operations. This information is used within Headquarters Australian Theatre to inform further planning and any revision of the Commander's Guidance.¹¹

¹¹ There is a need to ensure that these various assessments are integrated thereby providing a comprehensive and consistent picture of the air situation. Mechanisms are needed to ensure common interpretative techniques are used providing a common basis for assessing air operations outcomes.