AIR OPERATIONS PLANNING AND EXECUTION:
A VIEW FROM THE OPERATIONAL LEVEL OF WAR

By

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About the Author

Wing Commander Despina Tramoundanis graduated from Monash University with a BE in Chemical Engineering before joining the RAAF as an Armaments Officer in 1981. She has served at No 481 Squadron, No 1 Central Ammunition Depot and RAAF logistics Command as well as Navy Office. Despina holds an MSc in Explosives Engineering and in 1992 graduated from RAAF Command and Staff Course receiving a Graduate Diploma in Management Studies. In 1994 she undertook a Chief of the Air Staff fellowship at the Air Power Studies Centre writing a book titled ‘Australian Air Power in Joint Operations’. Upon promotion to Wing Commander in 1995 she was posted to her present appointment in Logistics Branch Air force Office. Despina has been a past contributor to the Air Power Studies Centre Working Paper series. Despina graduated with a Master in Defence Studies in 1995 from the Australian Defence Force Academy.
INTRODUCTION

Australian Defence Force (ADF) doctrine for the conduct of air operations in support of joint campaigns exists in a variety of publications. These include two manuals in the Australian Defence Force Publication (ADFP) series, Doctrine and Joint Planning, as well as the RAAF's The Air Power Manual. Another manual in the ADFP series, which will soon be published with the title of Operations; will add to this doctrine. Moreover, an overview of air campaign planning, the role of the Air Component Commander and the Commander's Estimate process has been published. All these sources provide a valuable insight into air operations planning in the joint context. However, the specific functions of the Air Component Commander and those of his staff, and the 'mechanics' of ADF air operations planning and execution in a joint context have yet to be subjected to detailed analysis. This paper seeks to fill this need.

To that end, the following discussion focuses on the functions of the Air Component Commander and his staff. However, to understand the context in which the Air Component Commander operates, a brief description is provided of the circumstances in which war is waged, the four-level construct of war, and the functions and responsibilities associated with each level. This is followed by an analysis of the hierarchy of objectives which forms a backdrop for air operations planning. Next the hierarchy of processes involved in air operations planning and execution is discussed. Finally, the functions and organisation of the Air Component Commander's staff are examined.

WAR IN CONTEXT

A state of war exists whenever one nation or a state (or a party within a state) uses or threatens to use force against another which responds in a similar manner. It is irrelevant whether or not the two parties to the conflict have declared war. Indeed, it is equally irrelevant whether or not they admit to being at war. Moreover, the actual amount of force employed by each side does not determine whether a state of war obtains, it merely defines the intensity of conflict.

In war, the military defeat of an opponent is not an end unto itself. Warfare has the objective of producing a military end-state which creates the necessary conditions for the achievement of political aims. The military end-state is only an intermediate

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2 Australian Defence Force Publication 6 (ADFP 6), Operations. (At the time of writing, this publication was in draft form and undergoing final review before formal promulgation.)
4 Although the term air campaign planning is commonly used within air force circles, it can be ambiguous in that air operations do not of themselves necessarily constitute independent campaigns, rather, air operations are frequently component parts of an overarching joint campaign. Accordingly, the term air operations planning is adopted here because it is equally applicable to independent air operations and to air power operations conducted in a joint context.
5 The term war as it is used here, encompasses all armed conflict ranging from general war to insurgencies. Elsewhere the lower end of armed conflict has been termed ‘operations short of war.'
objective; it merely defines the military conditions which must be attained for the conclusion of hostilities. The ultimate aim of war is to create a post-conflict state conducive to the achievement of the national strategic objectives. Hence, the ultimate purpose of war is a political one.

War is more than military conflict. It is a contest of opposing wills. The objective in war is to impose one's will upon the enemy. Bending the enemy to one's will is achieved through two means: by destroying the enemy's capacity to resist militarily, and by eliminating his desire to continue resisting. In the words of one writer:

[A]ll actions are aimed at the mind of the enemy command. Thus one does not conduct an attack against industry or infrastructure because of the effect it might or might not have on fielded forces. Rather, one undertakes such an attack for its effect on national leaders and commanders who must assess the cost of rebuilding, the effect on the state's economic position in the postwar period, the internal political effect on their own survival, and on the cost versus the potential gain from continuing the war.\(^6\)

**RESPONSIBILITIES AND FUNCTIONS IN WAR**

Contemporary military doctrine divides the activities involved in the conduct of war into three levels: the strategic, operational and tactical levels of war. Within the strategic level there are two tiers aligned with the political and military areas of responsibility; these tiers are designated grand strategic and military strategic, respectively.\(^7\) The grand strategic tier represents the highest level of command comprising the national leadership and is where the most fundamental decisions are made: whether or not to go to war; what the political aims of the war are; what military conditions are required to be produced through the use of force; what political and military constraints are to be observed; and what alliance/adversary relationships obtain. In addition, the grand strategic tier determines the forces and other national resources to be committed to the war.

While command responsibility at the grand strategic tier clearly rests with the political leadership, this responsibility is not normally exercised without input from the military strategic tier. The military input comprises advice on the range of feasible military options and their relative merit and probability of success (given the constraints imposed), the likely response from the enemy, and the reaction of allies. Furthermore, military advice would include an assessment of the military capability of the enemy, the preparedness of the friendly forces, and the required commitment, in terms of numbers and weight of effort, of military and civil resources over the likely period of conflict. An assessment of the requisite rules of engagement (ROE) and broad law of armed conflict implications would also be provided in the military input to the decision making process at the grand strategic level. During the war this advice


\(^7\) Frequently, four levels of war are postulated: the grand strategic, military strategic, operational and tactical levels of war. See AAP 1000, *The Air Power Manual*, pp 10-11. Occasionally the grand strategic level of war is also referred to as the national strategic level.
would be constantly updated, thereby necessitating a close working relationship between the grand strategic and military strategic levels.

The highest level of military command is at the military strategic tier. This is where the responsibility for translating grand strategy into military strategic guidance resides. Hence, military strategy is subordinate to, dependent upon, and derived from grand strategy. Given the constraints imposed by the grand strategic tier, at the military strategic level decisions are made on where and how to fight, the allocation of forces to the war effort and, where more than one theatre of operations is active, the weight of effort to be apportioned to each theatre. Based on grand strategic guidance, conditions may also be imposed on the use of force and on the employment of national power resources made available by the political leadership.

Commanders functioning at the military strategic tier are also responsible for translating political aims into military objectives. Importantly, they also define the required end-state: that is, 'the military conditions that must be attained to support the national strategic goals'.

The operational level of war is 'primarily concerned with how to achieve the strategic ends of the war with the forces allotted', while operating within the constraints imposed by strategic guidance. The operational level of war is where strategic guidance is translated into tactical objectives and where plans are drawn up for the employment of forces in the conduct of operations. The outcomes of this planning process constitute tactical objectives and tasks which are assigned to tactical level commanders, together with the appropriate support from other force elements.

In generating campaign plans and individual tasks, the operational level interacts with both the tactical and military strategic levels. The tactical level of war is where the campaign plans developed at the operational level are executed. This involves 'the planning and conduct of battle ... to gain [the] objectives' applicable to the missions and tasks specified by operational level commanders. Tactical level commanders review their assigned tasks and the constraints of time, space, force levels, and combat and support resources. Where tactical commanders foresee problems or shortcomings they can refer these to the operational commander for resolution. Where necessary, these issues are referred up the chain of command to the military strategic and grand strategic levels. This is vital if deviation from the strategic guidance is considered necessary, as for example where additional forces are requested or where a change in the ROE is deemed necessary.

As the discussion so far indicates, the levels of war are not discrete centres of activity; there is extensive interaction between them. Modern war is conducted simultaneously on multiple levels; activities at one tier influence those at the other levels of war. Consequently, the need for coordination and integration between activities at the four levels of war is increased. The operational level of war plays the pivotal role of coordinating and integrating tactical activities with those conducted at the strategic level.

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8 ADFP 9, Joint Planning.
10 ADFP 1, Doctrine, p xxxix.
HIERARCHY OF OBJECTIVES

Combat forces are deployed and employed to achieve military objectives. These objectives form the backdrop against which military campaigns and operations are planned and executed. Each level of war acts upon objectives set by the next higher level. Hence, the structure of objectives representing the aims and requirements generated at each level of war is hierarchical and provides the logical sequence connecting strategic objectives to tactical actions.

Table 1 - The Hierarchy of Objectives for Australian Air Power

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grand Strategic: Prime Minister and Cabinet</strong></td>
<td>Strategic Objectives - define the national security goals designed to further national interests, and define the political and military constraints</td>
</tr>
<tr>
<td><strong>Military Strategic: Minister for Defence and CDF</strong></td>
<td>Military Objectives - define the military end-state and provide guidance for the application of military force</td>
</tr>
<tr>
<td><strong>Operational: Lead Joint Commander (or CJFA or JFC)</strong></td>
<td>Campaign Objectives - outline the aims and extent of operations to be planned and executed by Component Commanders as part of an overarching campaign</td>
</tr>
<tr>
<td><strong>Operational - Air Environment: Air Component Commander</strong></td>
<td>Air Tasking Directives (ATD) - detail the objectives of air operations and assign responsibilities and delegate authority to Force Element Commanders</td>
</tr>
<tr>
<td><strong>Tactical: Force Element Commander</strong></td>
<td>Air Tasking Orders (ATO) - set the objectives and detailed requirements for individual air tasks</td>
</tr>
</tbody>
</table>

For example, in the 1991 Gulf War, one of the strategic objectives set by President Bush was the liberation of Kuwait. The means for achieving this objective were determined to be: isolate the Iraqi regime diplomatically, levy economic sanctions on Iraq, and evict Iraqi forces from Kuwait. From these 'means' were developed military objectives which applied during Operation Desert Shield and Operation Desert Storm. For instance, in order to satisfy the objective of imposing economic sanctions, an effective military blockade of Iraq was established. This was not the only related activity but it was critical. During Desert Storm the need to evict Iraqi forces from Kuwait led to the Commander-in-Chiefs (CINC's) campaign objectives of isolating Iraqi forces in the Kuwaiti Theatre of Operations, degrading their fighting capability by 50 per cent through air attack and, subsequently, over-running them in the land battle.

Air operations designed to achieve the CINC's campaign objectives were planned by the Joint Force Air Component Commander based upon the CINC's guidance on apportionment of air effort and targeting. Strike and interdiction operations were developed from the Master Attack Plan (MAP) which had been formulated with the CINC's guidance before Desert Storm began. Similarly, close air support operations were planned in the light of the CINC's apportionment decision and the air support

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requirements of the overarching campaign plan, especially the land force scheme of manoeuvre.

**CAMPAIGN PLANNING AND EXECUTION**

**Command Arrangements**

Current ADF doctrine allows that in the event of a contingency, an Operational Commander will be appointed. Depending on the nature of the contingency and the scale of forces committed, the Operational Commander may be a Commander Joint Forces Australia (CJFA), a Lead Joint Commander (WC) or a Joint Force Commander (JFC). Forces assigned to the Operational Commander will be under his operational command, operational control or in support.

The Operational Commander is responsible for planning the overarching campaign in which these forces will be employed. This involves determining the campaign objectives, deciding their relative priority and the weight of effort to be attributed to their achievement. The Operational Commander also approves the apportionment and allocation of air forces, the land forces scheme of manoeuvre, and maritime operations as appropriate. Unless the contingency is of a minor scale or it is confined to a single environment, it is likely that a component command structure will be adopted. In this situation environmental commanders act in the capacity of component commanders with responsibility for the planning and execution of operations in their respective environments. In these circumstances, the Air Component Commander may be Air Commander Australia (ACAUST) or, where the scale of conflict does not necessitate ACAUST's involvement, a subordinate commander may be appointed Air Component Commander. irrespective of the command arrangements, the role of the Air Component Commander and his staff remains the same.

**The Hierarchy of Processes in Campaign Planning**

The Operational Commander is responsible for developing the overarching campaign plan which details the means through which the military objectives will be achieved. The overarching campaign plan also assigns responsibilities (ie. campaign objectives) and forces to the component commanders, while stating the underlying assumptions, for example the military situation including enemy capability and disposition, the availability of own forces, allies, and operational constraints.

Based upon the overarching campaign plan, component commanders carry out detailed planning of operations. Their plans identify operational objectives (in accordance with the campaign objectives) and enemy centres of gravity, match forces to tasks, and develop timephased plans of deployment and employment of forces. As the war progresses, the operations plans and the campaign plan are either adjusted or changed depending on the observed outcomes.

Campaign planning is a hierarchical process beginning with the provision of strategic objectives and guidance and ending with the conduct of tactical operations. It is also a dynamic process. As changes in policy and strategic guidance develop, tactical outcomes are observed, fresh intelligence and commanders' assessments and advice
are fed back to higher levels of command, and a need may be perceived for adjustment or change of the campaign plan. Once the campaign plan is modified this generates a need for subordinate plans to be reviewed and amended to reflect the updated campaign plan. A simplified representation of the hierarchy of planning processes involved in campaign planning is provided at Figure 1.

![Figure 1 - The Hierarchy of Campaign Planning](image)

**AIR OPERATIONS PLANNING AND EXECUTION**

**Air Component Commander Tasks**

The Air Component Commander plans the deployment and employment of air power to support the Operational Commander's campaign plan and guides the tasking of air power to attain the campaign objectives. With the aid and advice of the Air Operations Group, the Air Component Commander performs the following tasks:

a. develops and maintains air operations plans to support attainment of the overarching campaign objectives;

b. in accordance with the Operational Commander's apportionment decision, assigns the weight of air effort to be allocated to particular air operations;

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13 This name has been coined here to describe the Air Component Commander's advisory staff. The composition of the Air Operations Group is discussed below.
14 Apportionment is the determination and assignment of the total effort (by percentage and/or priority) that should be devoted to the various air operations and/or geographic areas for a given time.
c. assigns responsibilities to subordinate air commanders and directs the allocation\textsuperscript{15} of air power force elements;

d. liaises with the Operational Commander and the other component commanders to ensure that his planning and direction of air operations is compatible with plans developed by the other commanders; and

e. in his dual role as National/Sector Air Defence Commander, exercises air space control over the Area of Operations (AO).

**Air Operations Group Functions**

In performing these tasks, the Air Component Commander is supported by staff in the Air Operations Group (AOG). The AOG performs the following three functions:

a. **Air Operations Planning.** The AOG develops air operations plans for the deployment and employment of the available air power force elements. These plans assign responsibilities (objectives) and forces to subordinate commanders in accordance with the overarching campaign plan and the Operational Commander's apportionment decision. The air operations plans form the basis for the direction of day-to-day air operations.

b. **Air Operations Direction and Monitoring.** In addition, the AOG operations cell directs day-to-day air operations through the production and promulgation of Air Tasking Directives and Operational Instructions. The AOG also monitors air operations outcomes and the effects of enemy action on existing capability.

**Operations Effects Analysis and Assessment.** The AOG also analyses the developing situation in the AO, the outcomes of air operations, any changes in guidance provided by higher command echelons, intelligence assessments and reports from the force elements under command. This information is analysed with a view to ensuring the continued validity of the air operations plans and their underlying assumptions. In particular, the AOG must execute the following functions, the outcome of which is to keep the Air Component Commander abreast of developments:

a. analyse and provide assessments to the Air Component Commander on developments in the strategic, operational and tactical levels of war and their implications for the continued conduct of air operations;

b. ensure that the planning and execution of air operations is compatible with the overarching campaign objectives;

c. provide options and recommend to the Air Component Commander directions for the development of future air operations plans.

\textsuperscript{15} Allocation is the translation of the Operational Commander's Apportionment decision into total numbers of sorties by aircraft type available for each task.
d. assess and advise the Air Component Commander regarding the continued validity of the Operational Commander's apportionment decision and the Air Component Commander's allocation of air elements;

e. assess and advise the Air Component Commander on the continued adequacy of the ROE and the need for changes given the developing situation;

f. monitor and advise the Air Component Commander on the continued viability of the present air operations plans and the effectiveness of current air operations and recommend remedial courses of action as appropriate;

g. liaise at staff level with the Joint Headquarters and the other Component Headquarters and advise the Air Component Commander on the intentions of the Operational Commander and the other component commanders and the implications of these intentions for the employment and deployment of air elements; and

h. assess the need for additional intelligence products and generate intelligence tasking requests.

Air Operations Group Organisation

The Air Operations Group will need to have expertise and/or access to specialist advice in a broad range of areas including:

a. air combat operations,

b. air weapons systems and munitions,

c. electronic warfare,

d. targeting,

e. surveillance and reconnaissance,

f. air lift and air refuelling,

g. deception planning,

h. combat search and rescue,

i. intelligence,

j. communications and computer systems,

k. logistics,

l. meteorology and oceanography,

m. administrative support,
n. aeromedical evacuation and evacuation of civilians,

o. international political affairs and public affairs,

p. Law of Armed Conflict,

q. joint doctrine and air power doctrine, and

r. other components' operational capabilities.

Within the Air Component Commander's organisation there should also be liaison cells from the other components, checking the compatibility and synchronisation of the proposed air operations and advising the Air Component Commander accordingly. The liaison function is vital to ensure that the operations of all components form a cohesive coordinated campaign. Accordingly, the liaison officers should have sufficient rank status and experience to be able to speak with some authority, and have access to the higher command levels of the Air Component Commander's organisation. While this liaison function enables formal communication between the component headquarters, informal interaction should also be encouraged at all levels between staffs of headquarters. Doing so will develop a team approach to operations planning and improve the coordination and compatibility of operations.

A suggested organisational structure for the AOG is shown in Figure 2. In this structure, the Plans Cell would be responsible for producing longer term air operations plans in support of the overarching campaign. These longer term plans form the basis for planning daily operations and address the phasing of air operations, the allocation of assets and responsibilities, and the apportionment of air effort at various stages of the campaign. Moreover, these plans derive from the overarching campaign plan and are orchestrated with similar plans for land and maritime operations.

The daily conduct of operations would come under the purview of the operations Cell which would develop daily Air Tasking Directives in accordance with the longer term plans produced by the Plans Cell. The Operations Cell would also monitor daily operations to determine achievements against objectives.

The Component Liaisons represent their Service's interests within the Air Component Headquarters acting both as advocates and liaison officers for the Land and Maritime Components. The Liaisons also facilitate the communications between the environmental headquarters and assist in the interpretation of their parent Component Commander's plans and intents.

A number of specialist advisers support the activities of the AOG, dealing with such functions as logistics, medical, legal, and administration. While these specialists may not be permanent members of the AOG, and in the case of Air Command are commanded by the Chief of Support, their contribution to the AOG activities is essential. In essence they provide a pool of wide expertise which supports the activities of the AOG as a whole rather than having a direct alignment to any one of the cells. Because their support of the AOG is vital, these specialist advisers should be intimately familiar with the functions, objectives, and procedures of the AOG and understand how their input contributes to the products generated by the AOG.
The role of the Air Intelligence Cell is to provide the intelligence assessments which form the basis both for developing longer term plans and for the conduct of daily operations. The intelligence function is discussed in more detail below.

Whatever form it takes, the structure adopted within the Air Component Commander's headquarters should allow for free interaction and cooperation between the various groups. This will ensure that a cohesive set of air operations is able to be planned and executed and that these may be analysed and assessed to provide the necessary inputs, thus creating a valid basis for further planning. It will also ensure that the transition from planning to execution is smooth.

**Effective Monitoring of Operational Outcomes**

As discussed earlier, monitoring air operations is a primary function of the AOG. To do this effectively, there is a need to develop appropriate measures against which to gauge operational achievements. But this has not been done very well in the past. The reason is that the things which are readily measured often are not appropriate measures of effectiveness. For instance, common measures are based on rates of effort, such as the number of sorties flown, or the tonnage of ordnance expended. Other commonly used measures are the level of damage inflicted, for example, the number of artillery platforms destroyed and the number of enemy casualties, to name but two. According to such measures, American military performance in the Korean and Vietnam wars was of an exceptionally high standard. Yet the majority of American combat operations in these wars have been universally assessed to be of dubious value in terms of achieving the strategic objective. In both these wars the United States was forced to dilute its originally stated strategic objective in order to achieve a face-saving conclusion to hostilities, or 'peace with honour'.

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**Figure 2 - Suggested Air Operations Group Organisation**
While operations effectiveness measures based on rates of effort and on the level of battle damage inflicted upon the enemy are valid in terms of assessing performance at the tactical level, at the operational level a more complete picture is required. The sole true measure of effectiveness at the operational level is the degree to which the military objectives have been achieved. These military objectives comprise the effects that the operational commander seeks to inflict upon the enemy. For instance, it is pointless counting off the number of bridges destroyed if the enemy is able to use other means of transporting combat supplies and reserve forces to the AO.

Having the wrong measures of effectiveness is not only nugatory, but it can give a false sense of achievement. Furthermore, it can lead to a misuse of combat power by continuing unfruitful operations. During the Gulf War, the Royal Air Force persisted with high-risk attacks against heavily defended Iraqi runways for a full week, despite an assessment by the JFACC, General Homer, that ‘they ain't achieving much in relation to the risks they're taking and the effort they're putting in’.

In the words of Air Chief Marshal Sir Patrick Hine, Joint Commander of British forces involved in the Gulf War, there was no point in ‘going on putting holes in the runways, which they [the Iraqis] would fill in within 48 hours, and running the risk of losing more aircraft’.

Hence, at the operational level there is a need for a more complete picture than that provided by a statistical summary of rates of effort and battle damage inflicted. At this level there is a requirement for an assessment of the effects that operations have had upon the enemy relative to the desired effects. There is a need to focus on the ability of the enemy to perform specific functions as opposed to the level of destruction inflicted upon enemy forces, equipment and facilities. An analysis of the Iraqi’s ability and willingness to continue with air operations would have shown that continued runway attacks were unnecessary.

At the tactical level it is sufficient to know whether targets subjected to attack have, indeed, been destroyed or degraded to the level required by the operational commander. Having this information the tactical commander can decide whether to reprogram targets for attack in subsequent waves or whether to direct effort at other targets appearing on the MAP.

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17 *ibid.*, Six Royal Air Force Tornados were lost in combat during these operations in the first week of the war. In a footnote on page 208 of *Storm Command*, Sir Peter de la Billiere describes the loss of these aircraft in the following terms. ‘(T)wo are believed to have flown into the ground, which is hardly surprising when pilots were weaving through total darkness at 200 feet or less to avoid defences. One aircraft was almost certainly destroyed by a bomb which exploded immediately after release, and two were hit by surface-to-air missiles - one as it pulled up to a higher level some distance from the target and tossed conventional [unguided] bombs to help suppress the defences, the other as it was completing a level attack from medium altitude. The sixth aircraft was disabled by a surface-to-air missile at medium level.’
However, the operational commander needs to know whether the attacks have had the desired effect or whether the enemy has been able to recover the situation through other means. With this information the Air Component Commander can decide whether to pursue the current scheme of attack or to rethink the air operations plan. For example, consider the situation where the desired effect is to achieve air superiority and to deny the use of the air to the enemy. Assume the original plan called for runway denial operations. Finding that these operations had very little impact on the enemy's ability to fly, because he was able to recover from the attacks by quickly repairing damaged runways, should trigger a review of the original plan. Perhaps more lucrative targets may be found in the form of the airfield radar system, maintenance facilities or the fuel dump. Destruction of these facilities may degrade enemy air operations for longer periods for the same level of effort than would cratering runways which prove to be easily repairable.

The focus on operational outcomes and effects has significant implications for the AOG. Their focus would need to embrace the analysis of effects as well as monitoring battle damage assessment (BDA). The following example from the Gulf War will serve to distinguish the difference in approaches between focusing on BDA and monitoring the effects of operations. In General Schwarzkopf's words:

> After two weeks of war, my instincts and experience told me that we'd bombed most of our strategic targets enough to accomplish our campaign objectives ... But our experts, a team of 'battle damage assessment' specialists from the intelligence agencies in Washington assigned to Central Command, disagreed. Their job was to analyze [sic] bombing results and tell us which targets we had to re-strike ... . They'd say things like, 'You failed to destroy the power plant in Baghdad' yet we knew that in Baghdad the lights were out.

Irrespective of the merits of the particular case in the above example, what is of interest is the difference in perspective between the intelligence analysts and the operational commander, General Schwarzkopf. The effects monitoring approach entails having the ability to look beyond the BDA statistics to the implications of 'the lights being out' in Baghdad. This change in emphasis has implications not only for the way intelligence is analysed but also for the nature of the intelligence that is collected. To take the example cited: to be able to confirm the achievement of the campaign objective, the intelligence analysts would have to confirm that the lights were, indeed 'out' and that it was not an Iraqi ruse. The analysts would also have to assess the likely period for which the lights would remain 'out' and the implications that that would have for subsequent operations. This form of analysis relies only to a limited extent on battlefield imagery. There may be a need to collect information from additional sources such as covert reconnaissance, monitoring enemy communications and, in the instance of this example, monitoring the CNN broadcasts from inside Baghdad.

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18 For instance the enemy may negate the effectiveness of maritime interdiction operations by moving supplies and reserves using airlift or overland transport.

19 The acronym BDA normally stands for bomb damage assessment. However, the term battle damage assessment is gaining currency. The broader meaning is preferred here because not all battle damage is inflicted by bombing.

THE AIR OPERATIONS PLANNING AND EXECUTION CYCLE

In air operations, the process of determining objectives, producing a plan, developing, executing, and assessing air operations is cyclical. This planning and execution cycle can take from several hours to several days to complete. The characteristics of an effective planning and execution process are:

a. the process is flexible and responsive to changes in the strategic, operational and tactical situation;

b. the operational commander and the Air Component Commander have adequate oversight of the campaign and air operations and their outcomes:

c. the other component commanders have visibility of air operations planning, execution and outcomes; and

d. air combat units are given timely directions to allow them to plan air tasks so that their ability to execute them is not adversely affected.

A notional air operations planning and execution cycle is shown in Figure 3.

Figure 3 - Air Component Commander's Planning and Execution Cycle

Adherence to a set planning and execution process can be both a strength and a weakness depending on the degree of inflexibility that it imposes on air operations. Its strength is that air tasking decisions are made in an orderly fashion and are properly based on assessments of the operational outcomes relative to the desired objectives. This allows a constant testing and re-validation of the planning assumptions that
underpin the campaign and the air operations plan, and provides the opportunity to make adjustments as the need arises. The potential weakness in following such a deliberate process is that, in a rapidly changing situation, it could lead to an inability to keep up with a high tempo of operations. The danger is that the planning and execution cycle could fall behind the pace of operations to the extent that they become seriously out of synchronisation, enabling the enemy to capture the initiative by operating within our decision cycle.

Although it may sound odd to say so, the most important feature of the air operations planning and execution process is not necessarily the time it takes, i.e. faster is not always better. Given the lengthy time it takes for BDA and target development, a fast planning and execution cycle can potentially get out of synchronisation with that longer process. Were this to happen, the 'big picture' outlook could be overwhelmed by the rapidity of tactical operations. Hence, there is a need to consider how far the planning and execution cycle time period may be shortened before it becomes seriously out of synchronisation with the longer BDA/target development process.

When looking for means to speed up the planning and execution cycle, the emphasis is frequently on communications and office automation aspects, in particular the physical generation of air tasking directives. However, efficiencies should be sought in all the functions of the larger process in which the planning and execution cycle resides. Accordingly, ways should be sought to reduce the time taken for higher level decision making, intelligence production, BDA and target development.

In addition to improving command and control structures and communications and computing facilities, innovative measures should be considered in improving BDA and intelligence gathering. For instance, near real-time BDA may potentially be obtained through the analysis of data-linked images and other information obtained from precision guided munitions (PGMs) or targeting systems. Unmanned aerial vehicles (UAVs) are already used as PGM launch platforms. It is conceivable that the UAV platform may be used post-PGM launch to collect imagery or other information that could be data-linked back to the air intelligence centre, thus expediting BDA. Such innovations would enhance the BDA process and enable the planning and execution cycle to be expedited.

The intention here is not to make a case for new, 'smarter' weaponry. Rather, the point to be made is that in seeking to expedite the air operations planning and execution cycle, the entire process needs to be examined, including command and control, and intelligence gathering, processing and dissemination.

The decision making process may be improved by simplifying the chain of command and staff structure, but also by introducing decision support systems such as modelling and simulation aids. However, care is needed to avoid a piecemeal approach to such decision support systems. Gains in flexibility and the speed of processing information will be quickly negated if there are incompatibilities in hardware and software, and in the organisation of shared databases. Accordingly,

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21 Target development is defined here as the process of gathering intelligence data on prospective targets, and any associated defences, and identifying possible aiming points and any other factors that should inform time and mode of attack, weapon selection, ingress and egress routes etc.

computing hardware and software systems introduced within the Air Component Headquarters should be be compatible with those at the collocated Joint Headquarters and also those at tactical headquarters.\footnote{Collocated Joint Headquarters refers to the standing operational level headquarters currently being established by the ADF.}

Lastly, in pursuing reductions in the time taken for the planning and execution cycle, care must be taken to ensure that the duration and make-up of this cycle is such that it allows adequate time for the tactical units to plan their missions.

**ISSUES FOR PRIORITY ATTENTION**

There are several issues that have been raised in this paper that merit attention. However, five actions will provide a strong basis for enhancing air operations planning and execution at the operational level. These are the creation of a standing cadre AOG, the improvement of objective articulation, the introduction of air operations assessment as one of the primary functions of the AOG, and the integration of intelligence. These are discussed below.

**Establishment of a Cadre AOG**

Current practice within Air Command is to form the Air Component Commander's staff (previously called the Battle Staff and the Battle Management Group) at the time a contingency arises or whenever there is an exercise. It could be argued that after two to three days of exercise operations the Air Component Commander's staff group gains in experience and competence and is able to operate effectively for the remainder of the exercise. That is potentially a dangerous attitude to bring to a genuine contingency which does not evolve in accordance with a pre-set 'script'. Past wars have been lost and won in a matter of days.

While the development of standard operating procedures is important in providing a record of corporate memory and provides a basis for further improvements as more experience is gained, these procedures are only part of the solution. The ability to operate effectively in a contingency would be substantially enhanced if a cadre of staff officers representing the key functional areas which form part of the air operations planning and execution cycle were established to form a standing AOG.\footnote{To minimise the impact on primary tasks, membership on the AGO may be made a secondary duty.}

The functional areas that should be represented in such a group should be Operations, Plans, Intelligence and Logistics staff as well as the Component Liaisons. Air Headquarters staff should be rotated into the AOG at a set interval (say, 12 months) to broaden the experience base of headquarters staff.

It is envisaged that the AOG would be responsible for drafting and maintaining air operations standard operating procedures. Moreover, the AOG would potentially provide these additional long-term benefits:

a. it would constitute a cadre group of officers expert in air operations planning and execution which could be augmented for operations and exercises (these
officers should receive appropriate training in joint warfare and operations planning):

b. it will serve as a vehicle for identifying and resolving (at staff level) disputes and misunderstandings between the various functional areas before they escalate,

c. it will provide a corporate memory and training ground for staff officers who are rotated into the AOG from time to time;

d. it will act as a test-bed for evaluating new concepts and air operations management tools; and

e. it will provide a long-range planning capability for scenario building and the conduct of 'what-if assessments.

Articulation of Objectives

Successful air operations rely on the articulation of clear, coherent objectives which are derived from the Operational Commander's campaign objectives. These objectives become the basis of air operations plans which are developed using the Air Component Commander's Estimate process. The Air Component Commander's operational art resides in the ability to achieve objectives by orchestrating air operations to produce effects which are mutually reinforcing and which reinforce, and are reinforced by, land and maritime operations.

Because the objectives would derive from the Commander's Estimate process, which is performed by the AOG, it would not be unusual for the planners to formulate these objectives and propose them to the Air Component Commander. Accepting that this is likely to be the case, arrangements need to be established to help the planners do their job in such an environment. One way of doing this is to develop and maintain a menu of potential campaign and operational objectives covering a broad range of scenarios. These objectives would need to be linked to political aims. Such menus of exemplar objectives could be refined through exercises and command post exercises. Planners could then tailor these baseline objectives to specific contingency scenarios.

25 The Estimate process is described in some detail in Waters, G., and Stephens, A., Operational Level Doctrine: Planning an Air Campaign, Annex A.
The creation of such a menu of objectives would provide a focus for an analysis of air operations. In particular, insights could be derived on three important issues:

a. What is the appropriate weight of effort to be applied to operational and campaign objectives over time?;^{26}

b. How does achievement of these objectives help secure the political aims?;^{27} and

c. What are the appropriate measures of effectiveness for monitoring operational outcomes, and what are the intelligence products required to support these measures?

**Scenario Building**

Scenario building is not only important for refining the process of articulating objectives. The AOG performs several other functions which could be practised, honed and expedited through scenario building, and war gaming. These functions include:

a. air power apportionment;

b. air force element allocation and deployment;

c. estimation of activity levels for assessing logistic support requirements (this could provide the basis for logistic capability assessment); and d) air operations assessment (see next section).

In peacetime the AOG could produce scenarios for all these planning and activities which could form the basis for subsequent operations and exercises.

**The AOG Assessment**

During Exercise Kangaroo '95, an observation of the Air Component Commander's main daily briefings showed a tendency for staff to report tactical events and results without interpreting the implications of these incidents. Ideally, the Air Component Commander's decisions should be based on the assessment of air operations effectiveness in achieving campaign objectives. This most vital function should be a primary role of the AOG and should be performed under the leadership and guidance of the AOG Executive Officer.

As envisaged, the AOG Assessment would provide an analysis of developments in the strategic, operational and tactical levels of war and their implications for the continued conduct of air operations. The AOG Assessment would tell the Air Component Commander how well current air operations are supporting the overarching campaign, to what extent campaign and air operational objectives are being achieved, and whether there is a need for a change in direction, emphasis or

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^{27} ibid.
phasing. The objective of the AOG Assessment would be to provide the Air Component Commander with a means of validating the effectiveness of current air operations and to provide a basis for planning future ones. At the conclusion of the Assessment there should be a series of recommendations to the Air Component Commander regarding the allocation and employment of air assets, the apportionment of air effort, and the phasing of planned and future air operations. The requirement for additional intelligence products should also be identified.

**Integration of Intelligence**

Intelligence is another key area where attention is merited. Having an appropriate intelligence support structure which provides the right intelligence to the right people at the right time will lead to correct objectives, plans and measures of effectiveness being developed.

In conflict there are several intelligence organisations, civilian and military, which generate intelligence products. Australian civilian organisations which are the source of intelligence assessments include the Department of Foreign Affairs and Trade, the Office of National Assessments, Australian Security Intelligence Service (ASIS) and Australian Security Intelligence Office (ASIO). Military intelligence organisations include the Defence Signals Directorate, the Defence Intelligence Organisation, the Joint Intelligence Centre within the collocated Joint Headquarters, and intelligence staffs supporting component commanders and others deployed with the force elements. With so many sources of intelligence information and assessments, there is the potential for the various commanders to be operating with confusing, conflicting information. Such was the case in the war in Vietnam and, to a lesser extent, it was also the case in the Gulf War.

Confusing and conflicting intelligence can degrade the integrity of the campaign and the cohesiveness of purpose among decision makers. Therefore, there is a need to ensure that commanders at all levels have the same intelligence picture, both in terms of the progress of the campaign as a whole and also in terms of their area of responsibility. This may be achieved by integrating the various intelligence organisations into an effective network. The links, relationships and processes underpinning such a network between the intelligence community need to be established and maintained in peacetime. Moreover, lessons learned during exercises should be analysed and applied. To do otherwise will create the potentially dangerous situation where intelligence and planning staffs are required to climb steep learning curves in the crucial first days of conflict.

Within the AOG, the relationship between intelligence, plans and operations staffs is vital because intelligence provides the feedback based on which plans and operations staff carry out their duties. Delayed or misconstrued intelligence can lead to wasted effort if unnecessary re-attacks of destroyed targets or if counter-productive operations are planned. In an ideal world, intelligence staffs would have, a deep understanding of the planners' functions and requirements to the extent that they may anticipate the need for information thus cutting down the time required to furnish it.
CONCLUSION

At the time of writing, various aspects of ADF air power doctrine for air operations planning and execution at the operational level of war exists in numerous manuals. However, a comprehensive statement of such doctrine does not exist, making the job of air operations staff difficult. This paper has reviewed the roles of the Air Component Commander and his staff with a view to analysing the organisation and functions of the Air Component Headquarters. This analysis was informed by a review of Gulf War experiences and those of ADF air operations during Exercise Kangaroo ‘95.

The present analysis has identified several areas where attention is required in order to enhance the efficiency of air operations planning and execution. Primarily, a need has been identified for a standing AOG to be formed within Air Headquarters Australia for the purpose of establishing and refining air operations planning and execution procedures. This group could be instrumental in improving air operations planning and execution through creating menus of objectives to suit a variety of contingency situations and using these to aid scenario building. The AOG should not be used solely for planning and operations directing and monitoring. A primary role of this group should be the assessment of air operations for the purpose of determining the success of air operations relative to the campaign objectives and for informing the planning of future air operations.

The AOG is thus a major user of intelligence products produced by a multitude of intelligence agencies. Past experience has shown that these agencies do not always cooperate to provide a single comprehensive intelligence picture common to all commanders. This has frequently resulted in confusion and can result in dysfunctional operations. The AOG should direct efforts towards aiding the creation of an intelligence network.